Data Summary Report
Phase 2 2020 Drilling Investigation

CONTRACT NO.: W912DQ-18-D-3008
DELIVERY ORDER NO.: W912DQ19F3048

700 South 1600 East PCE Plume Site
Salt Lake City, Utah

U.S. Army Corps of Engineers
Kansas City District

Department of Veterans Affairs
Veterans Health Administration Salt Lake City
Health Care System

July 7, 2021

CDM Smith

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Acronyms and Abbreviations

bgs	below ground surface
CDM Smith	CDM Federal Programs Corporation
DSR	data summary report
EPA	U.S. Environmental Protection Agency
ESS	East Side Springs
IDW	investigation-derived waste
Jacobs	Jacobs Engineering Group Inc.
OU	operable unit
PCE	tetrachloroethene
PID	photoionization detector
PVC	polyvinyl chloride
QAPP	quality assurance project plan
RI	remedial investigation
ROW	right-of-way
SOP	standard operating procedure
SVP	soil vapor probe
USACE	U.S. Army Corps of Engineers
VAMC	Veterans Affairs Medical Center
VHA	Veterans Health Administration
VOC	volatile organic compound
ZIST	zone isolation sampling technology

Section 1
Introduction

Under the U.S. Army Corps of Engineers (USACE), Kansas City District, Contract No. W912DQ-18-D-3008, Task Order No. W912DQ19F3048, CDM Federal Programs Corporation (CDM Smith) was directed to perform a remedial investigation (RI) for Operable Unit (OU) 1 of the 700 South 1600 East Tetrachloroethene (PCE) Plume Superfund Site in Salt Lake City, Utah. CDM Smith prepared this data summary report (DSR) to present the results of the Phase 2 2020 drilling investigation as part of the RI field characterization activities.

1.1 Background

The Salt Lake City Healthcare System George E. Wahlen Veterans Affairs Medical Center (VAMC) is in Salt Lake City, Utah (**Figure 1**). PCE contamination was first identified in groundwater in 1990 at the nearby Mt. Olivet Cemetery irrigation well during routine monitoring by the Salt Lake City Department of Public Utilities. This led to U.S. Environmental Protection Agency (EPA) and Utah Department of Environmental Quality involvement at the site and the preliminary determination that the source of PCE in groundwater was the historic dry cleaning facility at the VAMC. The Veterans Health Administration (VHA) operated a part-time dry cleaning operation that used PCE over a 6-year period in the late 1970s and early 1980s. During this period, dry cleaning residuals were disposed in the sanitary sewer. The PCE plume is present beneath the VAMC property and in areas hydraulically downgradient, extending to the East Side Springs (ESS) neighborhood.

In 2018, as part of the RI for the former OU2, 18 shallow monitoring wells (including 7 monitoring well pairs and 4 individual wells) were constructed at the site. Additionally, two deep monitoring wells were installed: MW-03R on the VAMC campus, installed as a multilevel completion with four screened intervals, and MW-08, installed on 700 South near 1300 East as a multilevel completion with three screened intervals (Jacobs Engineering Group Inc. [Jacobs] 2019).

Soil vapor investigations and surface water and groundwater sampling were also conducted as part of the RI effort. The soil vapor investigation identified elevated PCE concentrations around Buildings 6 and 7 on the VAMC campus and along the sanitary sewer line that runs from Building 7 through Sunnyside Park to the main sewer line on 900 South, specifically near a manhole in Sunnyside Park (Jacobs 2019).

As part of the Phase 1 RI field investigation, 27 groundwater monitoring wells were installed at 11 boring locations. Seven boring locations (MW-23 through MW-29) were selected to evaluate conditions in and immediately downgradient of suspected source areas. Four boring locations (MW-30, MW-31, MW-32, and MW-34) were advanced to laterally and vertically delineate the plume (CDM Smith 2021a).

1.2 Purpose and Scope

The purpose of this DSR is to present the field work conducted and data collected during the 2020 Phase 2 groundwater monitoring well installation event. The rationale and approach for completing the Phase 2 groundwater monitoring well installation were presented in the Final Phase 2 OU1 RI Work Plan (CDM Smith 2020a), and minor field modification #1 to the Phase 2 Field Sampling Plan (CDM Smith 2020b). The well installation described in the Phase 2 OU1 RI Work Plan was planned to delineate the extent of the PCE plume to the north, northwest, and south within the ESS area, as well as any additional locations that were not adequately delineated by wells installed during Phase 1. Following completion of Phase 1 drilling activities, the remaining investigation activities included installation of wells in the ESS area for plume delineation and replacement of two wells at MW-30 which were damaged during installation. While Phase 1 included the collection and analysis of groundwater and soil samples during drilling to characterize the subsurface in suspected source areas and inform the monitoring well installation, Phase 2 well installation was primarily focused on lateral delineation of the plume outside of the suspected source areas; therefore, limited soil or groundwater sampling was necessary during Phase 2.

Two monitoring wells were installed as replacement wells for MW-30A and MW-30B, which were damaged during installation in the Phase 1 well installation event. A total of seven new groundwater monitoring wells were installed at four boring locations. The boring locations were selected to evaluate subsurface conditions in the downgradient area (ESS) to vertically and spatially delineate the extent of the plume. Soil profiling included field screening of soil cores using a photoionization detector (PID). Push-ahead groundwater samples were collected at one location and screened using AQ Colortec and submitted for laboratory volatile organic compound (VOC) analysis to evaluate the vertical distribution of VOCs in the aquifer (CDM Smith 2019). This report summarizes the field work conducted and presents the field data collected during the event. **Appendix A** includes the daily quality control reports submitted to USACE and VHA during the event. **Appendix B** includes copies of field logbook notes for the field work.

Section 2
Monitoring Well Installation

The following sections outline the field activities completed during the Phase 2 2020 drilling event. The field activities were conducted per the agency-approved OU1 Phase 2 OU1 RI Work Plan and Quality Assurance Project Plan (QAPP) (CDM Smith 2020a) and Modification #1 to the Phase 2 Field Sampling Plan (CDM Smith 2020b), with deviations outlined in Section 2.7.

2.1 Utility Clearance and Permitting

Prior to drilling, all locations were surveyed for utilities using geophysical survey methods. Location clearance requests were submitted to Blue Stakes of Utah, and the utility location notifications were updated as required during the drilling event. TWS Environmental conducted the geophysical surveys for the boring locations in the ESS area. GPRS conducted the geophysical survey for MW-13 near East High School. Utility locate reports are included in **Appendix C.**

2.1.1 Borehole Preclearing

Prior to drilling, all of the boring locations were precleared using a hydrovac-excavation or hand auger. Excavation to 15 feet below ground surface (bgs) was attempted on the VAMC campus at MW-30R. VHA safety staff approved the location prior to drilling and issued an excavation permit. The ESS boring locations were hydrovac-excavated to at least 5 feet bgs. The MW-13L location was precleared with a hand auger to 5 feet bgs. The preclearing cuttings were managed as soil and water investigation-derived waste (IDW).

Table 1 summarizes the well locations, dates, depths, and issues/comments related to the hydrovac excavation.

Table 1 Hydrovac Summary

Well ID	Date	Depth (feet bgs)	Issues/Comments
MW-30R	11/4/2020	9	Unable to advance to 15 feet bgs. Approved by VHA Safety
MW-13L	12/1/2020	5	Hand-augured; Off campus well located near East High School
MW-36	11/11/2020	7	Off campus well located on Herbert Avenue
MW-37	11/11/2020	7	Off campus well located on 1000 East; due to marked utilities boring location moved to planting strip on west side of road
MW-38	1/11/2020	5.5	Off campus well located on 1200 East

2.1.2 Permitting

The Salt Lake City Corporation Engineering Division issued a right-of-way (ROW) permit for MW-36, MW-37, MW-38, and MW-13L in the ESS area. A performance bond and certificate of liability insurance accompanied the ROW permit application. Utah Barricade created traffic control plans, included in **Appendix D**, which were submitted to the Salt Lake City Division of Transportation for traffic control permits at the boring locations.

Copies of the ROW permit, traffic control permit, and associated documents can be found in **Appendix E**. Excavation permits were issued by VHA Safety for the duration of MW-30R on the VAMC campus. Daily excavation checklists were completed by CDM Smith and are included in **Appendix F**.

2.2 Drilling

Drilling occurred between November 5 and December 3, 2020. MW-30R was drilled to replace the A and B well zones of MW-30, which were damaged during the Phase 1 installation (CDM Smith 2021a). Four plume delineation borings were advanced in the ESS area and completed as either multilevel wells or single-screen intervals (CDM Smith 2020a). MW-13L was installed near MW-13S/D south of East High School along 900 South (CDM Smith 2020b). MW-36 is on Herbert Avenue, near the intersection with 1200 East. MW-37S/D is along 1000 East, north of 800 South. MW-38 S/D is on 1200 East, north of 700 South. New and existing monitoring well locations are presented on **Figure 1**.

Holt Services used a Terrasonic 150 track-mounted mini-rotosonic drill rig to advance the borings. Continuous soil cores were collected and field screened using a PID. The lithology was logged and photos were taken of the core intervals. Borehole logs are included in **Appendix G** and photos of the soil cores are included in **Appendix H**. Well construction details are discussed in Section 2.4 and presented in **Table 2**. Soil cuttings were managed as IDW.

The plume delineation wells include MW-30, in the northwest corner of the VAMC campus near Foothill Drive, north of MW-03R, and is part of the Guardsman Way transect to delineate the plume to the north. MW-30 A and B zones were damaged during installation and were abandoned by grouting in place. The MW-30C zone and the soil vapor point remain installed at the original location. MW-30R was relocated approximately 20 feet south of the original location. The hydrovac excavation encountered refusal at 9 feet bgs. The rotosonic drilling began November 5, 2020 and reached a total depth of 295 feet bgs on November 10, 2020. Groundwater was encountered at approximately 235 feet bgs. MW-30R was installed with two well screens on November 11, 2020.

MW-36, on Herbert Avenue, is south of MW-14S/D and east of MW-15S/D. MW-36 was installed to delineate the plume to the south-southwest. The hydrovac excavation was completed to 7 feet bgs. The rotosonic drilling occurred November 17, 2020 and reached a total depth of 110 feet bgs. Groundwater was encountered at approximately 32 feet bgs. MW-36 was installed with one screen interval on November 18, 2020.

MW-37, on 1000 East, is north of 800 South and west of MW-16S/D. MW-37 was installed to delineate the plume to the west of MW-16. The hydrovac excavation was completed to 7 feet bgs. The rotosonic drilling began and reached a total depth of 70 feet bgs on November 12, 2020. Groundwater was encountered at approximately 20 feet bgs. MW-37 was completed with two screen intervals and one soil vapor point on November 13, 2020.

MW-38, on 1200 East, is north of 700 South. MW-38 was installed to delineate the plume northwest of MW-08 and northeast of MW-16. The hydrovac excavation was completed to 5.5 feet bgs. The rotosonic drilling reached a total depth of 80 feet bgs on November 14, 2020.

Groundwater was encountered at approximately 18 feet bgs. MW-36 was completed with two screened intervals and one soil vapor point on November 15, 2020.

MW-13L (lower), located along 900 South near East High School, was installed to vertically delineate the plume in an area with known PCE (MW-13S/D) (CDM Smith 2021b). MW-13D is screened from 79-84 feet bgs and has had a PCE concentration greater than 50 µg/L. The rotosonic drilling began on December 2, 2020 and reached a total depth of 160 feet bgs on December 3, 2020. MW-13L was completed with one screened interval on December 3, 2020.

2.3 Groundwater Sampling

Two push-ahead groundwater samples were collected during the MW-37 boring in the water-bearing zones (CDM Smith 2019). These samples were used to determine if the MW-37 boring was outside the boundary of the plume and verify whether a step-out boring to the north was necessary. Push-ahead grab groundwater samples were collected for laboratory VOC analysis by EPA method 8260C with a 24-hour turnaround. There was no detectable PCE or trichloroethene in the groundwater samples. The data validation report and complete laboratory package for these data is included in the **Appendix I**.

2.4 Well Construction

Final well construction designs were determined following a review of the lithology. A summary of the well construction information for the wells installed during this event is presented in **Table 2**. Two-inch-diameter polyvinyl chloride (PVC) well casings were installed with the rotosonic drill casing in place. Wells were installed according to the procedures described in the Phase 2 OU1 RI Work Plan (CDM Smith 2020a). Screens consisted of a 0.02-inch slot screen in 5- or 10-foot intervals. The filter pack was constructed using 10/20 silica sand and extended 2 to 3 feet above the top of the screened intervals. At locations where multilevel wells were installed, hydrated bentonite chips were installed between filter pack intervals to seal the borehole between intervals. Hydrated bentonite chips were installed above the shallowest sand filter pack interval to approximately 3 feet bgs.

Soil vapor probes (SVPs) were installed at MW-37S and MW-38S at 8 feet bgs to assess potential vapor hazards in the ESS. SVPs are AMS, 6-inch-long, double-woven stainless-steel wire screens (0.0057-inch pore) with Swagelok fittings connected to 0.25-inch outer diameter Teflon-lined tubing. SVPs were installed within a 2-foot sand pack using 10/20 silica sand.

Each monitoring well location was completed at the surface with a flush-mounted manhole vault. MW-36 and MW-38 required a Salt Lake City-approved concrete batch mix for the surface completion because the location was in the ROW. Well completion diagrams, including screen, sand, and bentonite intervals, and SVP depths, are included on the boring logs in **Appendix G**. Survey data for the well locations are presented in **Appendix J.**

2.4.1 MW-13L

The MW-13L well design consists of one 2-inch conventional well to allow for monitoring groundwater chemistry and water level to assess deeper groundwater in the ESS area.

- A 2-inch PVC monitoring well was installed with a 0.020 slot screen from 150 to 160 ft bgs in a saturated zone deeper than the screened interval at MW-13D (79 to 84 feet bgs).

2.4.2 MW-30R

The well design at MW-30R consists of two 2-inch conventional wells to replace the A and B zones at MW-30, which were damaged during installation.

- Zone A was installed with 0.020 slot screen from 240 to 250 feet bgs.
- Zone B was installed with 0.020 slot screen from 280 to 290 feet bgs.

2.4.3 MW-36

The well design at MW-36 consists of one 2-inch conventional well.

- A 2-inch PVC monitoring well was installed with a 0.020 slot screen from 47 to 52 feet bgs. The boring was advanced to 110 feet bgs. No significant water-bearing zones were encountered deeper than the screened interval.

2.4.4 MW-37 S/D

The well design at MW-37S/D consists of two 2-inch conventional wells with one SVP installed at the following intervals:

- MW-37S (shallow) was installed with 0.020 slot screen from 25 to 35 feet bgs.
- MW-37D (deep) was installed with 0.020 slot screen from 60 to 70 feet bgs.
- The SVP was installed at 8 feet bgs with sand pack from 7 to 9 feet bgs.

2.4.5 MW-38 S/D

The well design at MW-38S/D consists of two 2-inch conventional wells with one SVPs installed at the following intervals:

- MW-38S (shallow) was installed with 0.020 slot screen from 27 to 37 feet bgs.
- MW-38D (deep) was installed with 0.020 slot screen from 60 to 70 feet bgs.
- The SVP was installed at 8 feet bgs with sand pack from 7 to 9 feet bgs.

2.5 Well Development

The 2-inch monitoring wells installed during Phase 2 were developed by purging with a bailer (to remove sediment from the screened interval) and a pump, according to methods described in Section 3.2.4 of the OU1 RI Work Plan (CDM Smith 2020a). A minimum purge volume was calculated prior to development. The wells were purged until the minimum volume had been removed and parameter stabilization and turbidity requirements were met. **Table 3** lists the development technique used and volume purged from each well. Well development field forms are included in **Appendix K**. The development water was handled as IDW. Because of accumulated sediment in the well screen and the depth of the well, MW-13L required additional

development using a development rig with a winch line to bail sediment, followed by pumping until parameter stabilization and turbidity requirements were met.

Additional development was required for some of the zone isolation sampling technology (ZIST) wells installed during spring and summer 2020, specifically MW-26B/C/D and MW-34B/C. The ZIST wells were developed in accordance with manufacturer recommendations (**Appendix K**), using a gas lifting method with compressed nitrogen to purge water and sediment from the well casing while simultaneously surging the well to remove sediment from the filter pack. The gas lifting method consists of lowering a stinger tube to approximately the center of the water column above the well screen, delivering nitrogen to the water column and lifting the water in the well casing to the surface and into a tote. At locations requiring a more aggressive approach, gas lifting was completed by delivering nitrogen into the well casing and forcing water to the surface through the stinger tubing and into a tote. As ZIST wells have a receiver that restricts the placement of any objects into the well screen, surging refers to the agitation that occurs during gas lifting. Gas lifting continued until visible clearing of the extracted water. Water quality parameters were not measured during gas lifting because of the disturbance to the water during the process. For ZIST wells in which air lifting development was insufficient or unsuccessful, development was attempted with a Waterra inertial pump (MW-34A).

2.6 Decontamination and Investigation-Derived Waste

All decontamination waste produced during the drilling effort was collected and managed in accordance with Standard Operating Procedure (SOP) 4-5, *Field Equipment Decontamination at Nonradioactive Sites* (CDM Smith 2020a). Waste was produced from decontaminating all downhole drilling equipment prior to drilling activities, between boreholes, and after the drilling investigation, and the decontamination of the push-ahead groundwater sampler after each use. Additional equipment decontaminated after each use include the drilling tag line, water level meters, development pump, swab, and nondedicated bailer.

All IDW was handled per SOP 2-2, *Guide to Handling Investigation-Derived Waste* (CDM Smith 2020a). All decontamination, hydrovac, and purge/development water was transferred to the holding tanks at the VAMC campus IDW yard. The excavated soils from drilling and pre-clearing were placed in lined roll-off bins. Prior to disposal, groundwater and soil were characterized and determined to be nonhazardous. Approximately 1,800 gallons of decontamination and IDW water and approximately 19 tons of soil, contained in three soil roll-off bins, were disposed off-site at Wasatch Regional Landfill.

Waste profiles and nonhazardous manifests are included in **Appendix L.**

2.7 Deviations from the Quality Assurance Project Plan

Monitoring well MW-13L was developed by bailing with a PVC bailer and submersible pump. A well development form was not completed during development of this well. Purging was conducted until the water was clear. Approximately 550 gallons of water was purged during development. Well development forms were also not completed during development of some of the ZIST wells. The work that was completed is recorded in the field logbook and a summary is provided in **Table 3**. As sufficient detail of the development activities were recorded in the field logbook, data quality objectives were met.

Soil samples were not collected for total ferrous mineral analysis as described in the OU1 RI Work Plan (CDM Smith 2020a, Appendix A, Section 3.3) during the Phase 2 drilling investigation. It was determined that an adequate number of samples to meet data quality objectives had been collected during the Phase 1 drilling investigation.

As soil and groundwater samples were collected at MW-30 during the Phase 1 2020 drilling investigation, no samples were collected during the Phase 2 drilling of the replacement well MW-30R.

Section 3
Summary

This report presents a summary of field activities, monitoring well construction details, and observed lithology from the Phase 2 groundwater monitoring well installation event. Further analysis and evaluation of these results will be presented in the RI report.

The MW-30 A and B zones installed during the summer 2020 drilling, which were determined to be damaged, were abandoned by grouting in place. MW-30R was drilled to replace the zones with 2-inch conventional wells.

Four plume delineation borings were installed as part of this investigation. MW-13L was installed near East High School along 900 South. MW-36 was installed along Herbert Avenue near the intersection with 1200 East. MW-37 S/D were installed along 1000 East, north of 800 South. MW-38 S/D were installed along 1200 East, north of 700 South. SVPs were installed at MW-37S and MW-38S.

The addition of these eight sampling points at five locations will lead to a better understanding of the groundwater gradients and lateral and vertical extent of the PCE plume. Data collected during this investigation will be evaluated further to refine the conceptual site model and will be summarized in the RI report.

Section 4
References

CDM Smith. 2021a. *Data Summary Report Spring and Summer 2020 Drilling Investigation, 700 South 1600 East PCE Plume, Salt Lake City, Utah*. Prepared for the U.S. Army Corps of Engineers.

CDM Smith. 2021b. *Data Summary Report Q3 2020 Groundwater Sampling Event, 700 South 1600 East PCE Plume, Salt Lake City, Utah*. Prepared for the U.S. Army Corps of Engineers.

CDM Smith. 2020a. *DRAFT FINAL Phase 2 Remedial Investigation Work Plan, Operable Unit 1, 700 South 1600 East PCE Plume, Salt Lake City, Utah*. Prepared for the U.S. Army Corps of Engineers.

CDM Smith. 2020b. *Minor Field Modification #1 to the Phase 2 Field Sampling Plan, 700 South 1600 East PCE Plume, Salt Lake City, Utah.* Prepared for the U.S. Army Corps of Engineers.

CDM Smith. 2019. Modification #3 to *OU-2 Remedial Investigation Work Plan and Sampling and Analysis Plan, 700 South 1600 East PCE Plume, Salt Lake City, Utah*. Prepared for the U.S. Army Corps of Engineers.

Jacobs. 2019. *OU-2 Data Summary Report, Operable Unit 2 Remedial Investigation 700 South 1600 East PCE Plume, Salt Lake City, Utah*. Prepared for the U.S. Army Corps of Engineers.

Figures

Legend

- Monitoring Well
- Monitoring Well installed during Phase 2
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line

Notes:
(1) Location of University of Utah Well #1 is approximate; well is located less than 100 feet east of Fountain of Ute.
(2) Proposed monitoring wells MW-07, MW-09, MW-10, MW-11, MW-33, and MW-35 were not installed.

OU = operable unit
PCE = tetrachloroethene
VHA = Veterans Health Administration

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N
W E
S

0 500 1,000 Feet

1 inch = 800 feet

CDM Smith

Figure 1
Site Location Map

Phase 2 Drilling DSR
OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Drilling_Field_Modification\Fig1_DrillingPh2_DSR_SiteMap.mxd WAGNERA 4/21/2021

Tables

Table 2
Monitoring Well Survey Data and Construction Details

Location	Sample Interval	Soil Vapor Point Depth (ft bgs)	X Coordinate (Utah State Plane, ft)[1]	Y Coordinate (Utah State Plane, ft)[1]	Surface Elevation (ft amsl)[2]	Top of Casing Elevation (ft amsl)[2]	Total Well Depth (ft bgs)	Screen Start (ft bgs)	Screen End (ft bgs)	Pump Depth (ft bgs)	Pump Type
MW-13L	-	-	1541851.01	7442106.30	4483.67	4483.23	160	150	160	155	Solinst bladder pump
MW-30R	A	-	1545425.12	7445055.62	4722.89	4722.60	252	240	250	245	Solinst bladder pump
	B	-				4722.36	291	280	290	285	Solinst bladder pump
MW-36	-	-	1541547.17	7440955.06	4429.01	4428.49	54	47	52	50	Solinst bladder pump
MW-37D	-	-	1539938.63	7443160.46	4348.36	4347.97	70	60	70	65	Solinst bladder pump
MW-37S	-	8				4348.00	35	25	35	30	Solinst bladder pump
MW-38D	-	-	1541593.58	7443931.79	4498.56	4497.80	70	60	70	65	Solinst bladder pump
MW-38S	-	8				4497.64	37	27	37	32	Solinst bladder pump

Notes:
[1] X/Y coordinates measured using NAD 83 State Plane Coordinate System
[2] Elevations measured using NAVD 88 vertical datum
Acronyms:
amsl = above mean sea level
bgs = below ground surface
ft = feet

Table 3
Monitoring Well Development Summary

Location	Sample Interval	Development Approach	Date Developed	Volume of Water Added During Drilling (gallons)	Volume of Water Removed During Development (gallons)	Pump Type
MW-23	A	Not developed	NA	300	NA	ZIST w/ reciever
	B	Not developed	NA		NA	ZIST w/ reciever
	C	Air lift	6/12/2020		NR	ZIST w/ reciever
MW-24	-	Bail and pump (submersible) by Holt	6/18/2020	200	640	Solinst bladder pump
MW-25	A	Pump (Panacea) by CDM Smith	6/9/2020	0	4	ZIST w/ reciever
	B	Air lift	6/8/2020		NR	ZIST w/ reciever
	C	Pump (Panacea) by CDM Smith	6/9/2020		4	ZIST w/ reciever
MW-26	A	Bailer	11/10/2020	0	0	ZIST w/ reciever
	B	Air lift	12/9/2020		27	ZIST w/ reciever
	C	Air lift	11/10/2020		60	ZIST w/ reciever
			1/20/2021		125	
	D	Air lift	6/11/2020		NR	ZIST w/ reciever
		Air lift	11/10/2020		70	
		Air lift	1/18/2021		95	
MW-27	-	Bail and pump by Holt	6/17/2020	0	360	Solinst bladder pump
MW-28	-	Bail and pump by Holt	6/18/2020	0	370	Solinst bladder pump
MW-29	A	Pump (Panacea) by CDM Smith	7/31/2020	0	NR	ZIST w/o reciever
	B	Pump (Panacea) by CDM Smith	7/31/2020		NR	ZIST - w/ reciever
	C	Air lift	7/29/2020		20	ZIST - w/ reciever
MW-30	RA	Bail and pump by Holt	12/1/2020	0	28	Solinst bladder pump
	RB	Bail and pump by Holt	12/2/2020		62	Solinst bladder pump
	C	Air lift	7/27/2020		20	ZIST w/ reciever
MW-31	A	Pump (Panacea) by CDM Smith	7/29/2020	0	NR	ZIST w/o reciever
	B	Pump (Panacea) by CDM Smith	7/29/2020		NR	ZIST w/ reciever
	C	Air lift	7/29/2020		27	ZIST w/ reciever
MW-32	A	Bail and pump by CDM Smith	7/31/2020	0	47	Solinst bladder pump
	B	Air lift	7/31/2020		20	ZIST w/o reciever
	C	Air lift	7/31/2020		30	ZIST w/o reciever
MW-34	A	Waterra Pump	12/7/2020	0	89	ZIST w/o reciever
	B	Pump (Panacea) by CDM Smith	7/30/2020		NR	ZIST w/o reciever
		Air lift	1/19/2021		30	
			1/21/2021		95	
	C	Air lift	7/30/2020		20	ZIST w/o reciever
		Air lift	1/19/2021		20	
	D	Air lift	7/30/2020		40	ZIST w/o reciever
MW-36	-	Bail and pump	12/3/2020	0	46	Solinst bladder pump
MW-37S	-	Bail and pump	12/5/2020	0	64	Solinst bladder pump
MW-37D	-	Bail and pump	12/6/2020	0	68	Solinst bladder pump
MW-38S	-	Bail and pump	12/4/2020	0	46	Solinst bladder pump
MW-38D	-	Bail and pump	12/4/2020	0	116	Solinst bladder pump
MW-13L	-	Bail and pump (submersible) by CDM Smith	12/7/2020	0	120	Solinst bladder pump
	-	Bail and pump (submersible) by Conetec	2/3/2021	0	550	Solinst bladder pump

Notes:
Grey shading indicates wells that were developed during Phase 2

Acronyms:
amsl = above mean sea level
bgs = below ground surface
ft = feet
NA = not applicable
NR = not recorded
ZIST = zone isolation sampling technology

Appendix A

Daily Quality Control Reports

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 11/3/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway Wasatch Env. – Kevin Murphy Badger – Levi Patterson TWS – Jeff Baker Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon VA Safety – Linda Gallegor
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	**50 to 70 º F**	32 to 50 º F	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig (x2) (mobilized, not used) • Skid Steer (Bobcat) • Rig Hauler • Air Vac Truck • HNu PID

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at MW-30R and laydown area

Drilling:

MW-30R:
Borehole was cleared by vac truck (Badger) to 9 ft bgs. Large cobbles and boulders encountered at 9 ft bgs. Kevin with Wasatch oversaw. VA approved excavation permit.
MW-30 A and B wells were tagged for total depth to ensure correct wells will be abandoned tomorrow.

Utility Markout:

TWS encountered vehicles on/near some locations, so markings had to be completed around the vehicles.

MW-36 S/D: TWS identified and unmarked linear anomaly near the proposed MW-36 location. This boring will be shifted closer to the curb (north) to avoid this anomaly.

MW-37 S/D: 1000 East has utilities on both sides of the road. Without closing the lanes of traffic for installation and sampling, after TWS marking and consultation with Jeff (driller) from Holt, the best place to completed MW-37 would be on the grass planter strip (near sidewalk) to the west of the street.

MW-38 S/D: TWS located both proposed locations for MW-38. The location on Elizabeth street north of 700 S had identifiable utilities. TWS did not identify any underground utilities on 1200 E north of 700 S.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
United Site Services did not deliver porta-potty or fencing today.

Projected Work – Near Term:

11/4/2020 – abandon MW-30 A and B wells.

11/4/2020 through end of week – drill MW-30R to 295 ft bgs

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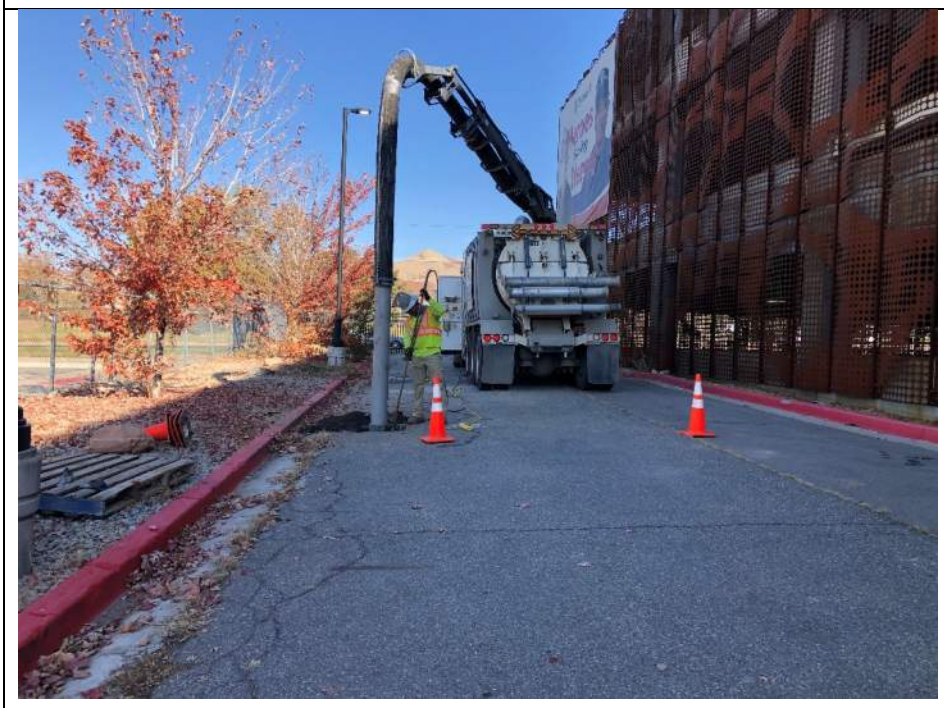
Other Activities/Remarks:

Holt Crew arrived onsite, unloaded equipment and supplies, and decontaminated drill steel.

TWS located utilities at MW-37, 2 MW-38 alternate locations, MW-36, GW-10, GW-11, GW-16, GW-20, GW-49, GW-50, GW-52, GW-53, GW-59, and GW-61.

Photos:

	**Date: 11/3/2020** **Location:** MW-30R **Description:** Rolloff delivered to MW-30R
	**Date: 11/3/2020** **Location:** MW-30R **Description:** Air vac clearing by Badger

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	**Date: 11/3/2020** **Location:** MW-36 **Description:** Utility markings
	**Date: 11/3/2020** **Location:** MW-36 **Description:** Utility markings where proposed boring location was selected. Will shift boring towards the curb.

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DATE: 11/4/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	**50 to 70 º F**	32 to 50 º F	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • Rig Hauler • HNu PID

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area.

Drilling:

MW-30:
Zones A and B at original MW-30 location were grouted using Quik Grout through ½-inch tubing with hand pump. Grout was brought to top of casing. Will top off later, if needed, and capped with cement. A and B zones were checked for total depth yesterday and again today. MW-30A tagged at approx. 240 ft bgs and MW-30B was tagged at approx. 282 ft bgs (both top of screen).

MW-30R:
Holt drill crew moved 200 feet of 8-inch casing, drill pipe, and other equipment to site. Rig was set up on MW-30R, but no footage drilled today. See below.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
United Site Services did not deliver porta-potty or fencing today.

At approx. 13:15, rig was set up on hole and it was noticed that it had been dripping diesel. It was a small leak, Shannon Smith was notified. Sorbent rags were used to wipe up the spilled fuel. Holt added plastic under rig. Holt crew left site to purchase casing and new part for rig. Holt replaced the part that leaked and identified another piece that needs repaired or replaced. Rig maintenance will resume in the morning.

Projected Work – Near Term:

11/5/2020 – complete part replacement and start up rig

11/5/2020 through end of week – drill MW-30R to 295 ft bgs

Other Activities/Remarks:

Photos:

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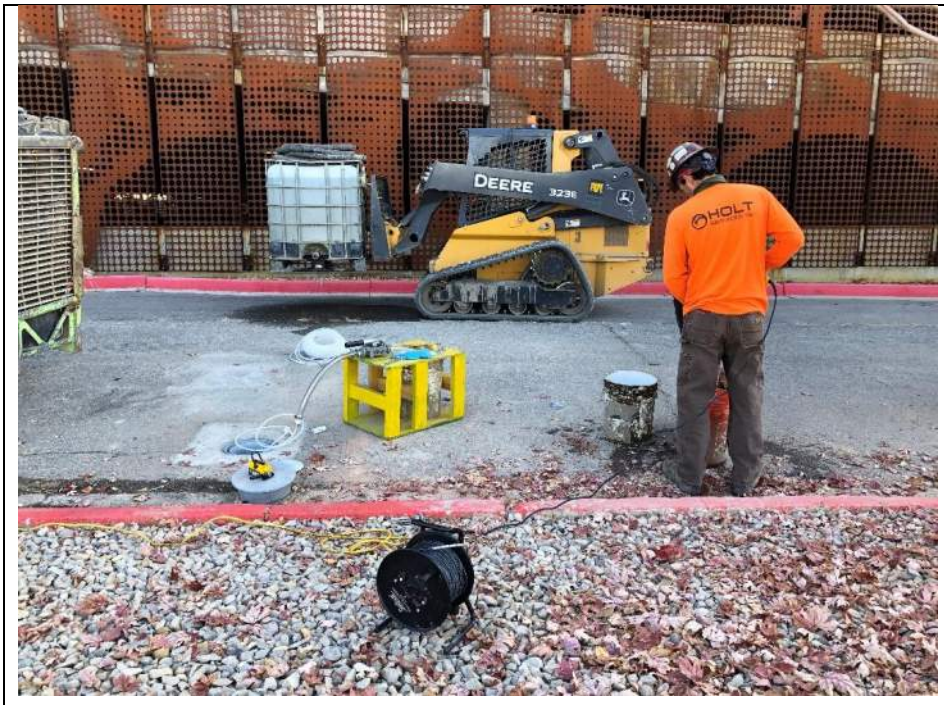	**Date: 11/4/2020** **Location:** MW-30 A/B **Description:** Mixing and pumping grout through tubing in MW-30A and MW-30B. Grout was mixed with water and a paddle mixer was used to agitate. Grout was poured into bucket in yellow holding box and hand-pumped down well through tubing.
	**Date: 11/4/2020** **Location:** MW-30 **Description:** MW-30C is covered with ZIST tubing. MW-30A and MW-30B are open and were tagged for total depth prior to grouting.

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Date: 11/4/2020

Location: MW-30R

Description: Drill set up on MW-30R. Plastic sheeting underneath length of rig in order to catch any leaks during part replacement.

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DATE: 11/5/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	**50 to 70 º F**	32 to 50 º F	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • Rig Hauler • HNu PID

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area.

Drilling:

MW-30R:
Rig repairs were completed and Holt resumed drilling from 9 ft bgs (previously cleared to 9 ft bgs by Badger). The boring was advanced to 110 ft bgs with the 7-inch core barrel and 8" sonic casing (currently to 100'). The soil cores were screened with a PID and logged. No laboratory samples were collected. Grab samples were collected for magnetic susceptibility screening.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
United Site Services did not deliver porta-potty or fencing today.

Magnetic susceptibility meter will be delivered to Wasatch on Friday, 11/6.

Projected Work – Near Term:

11/6/2020 through end of week – continue to drill MW-30R to 295 ft bgs

Other Activities/Remarks:

Photos:

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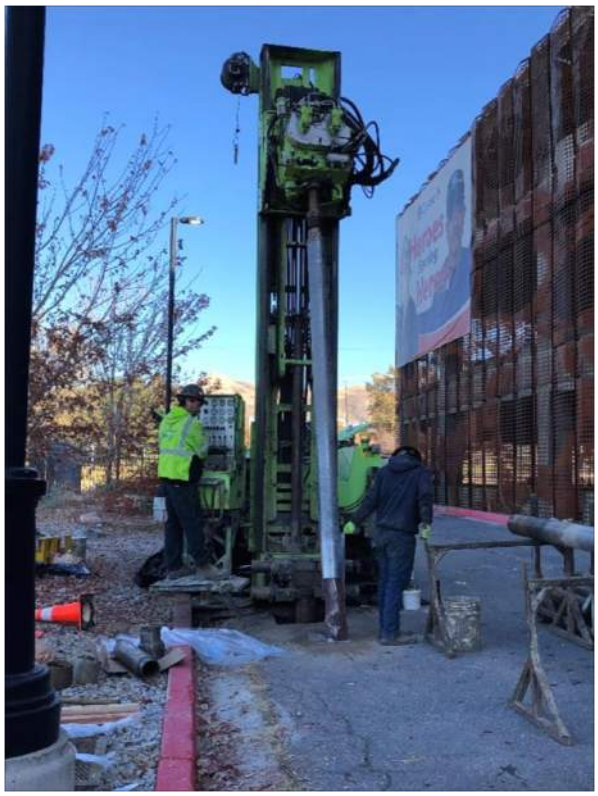
Salt Lake City, Utah

	**Date: 11/5/2020** **Location:** MW-30R **Description:** Soil collection from core barrel to bags for description.
	**Date: 11/5/2020** **Location:** MW-30R **Description:** Drilling set-up.

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	**Date: 11/5/2020** **Location:** MW-30R **Description:** Core barrel drill bit (7-inch).
	**Date: 11/5/2020** **Location:** MW-30R **Description:** Soil cores laid out on plastic sheeting for easy description, screening, and photos.

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DATE: 11/6/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	Sunny	**Partly Cloudy**	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	**50 to 70 º F**	32 to 50 º F	To 32 º F
Wind	Still	**Moderate**	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • Rig Hauler • HNu PID

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at MW-30R well site.

Drilling:

MW-30R:
Drilling was advanced from 110 ft bgs to 183 ft bgs. The soil cores were screened with PID and logged. No laboratory samples were collected. Grab samples were collected for magnetic susceptibility screening. Drilling was completed using a 7-inch core barrel and 8-inch casing (currently at 170 ft bgs).

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
United Site Services delivered the jobsite toilet today. The temporary fencing will be delivered on Monday, 11/9.

Projected Work – Near Term:

11/7/2020 and 11/9/2020: Continue to drill MW-30R to 295 ft bgs.

11/9/2020: Meet with ELM locating services to confirm MW-37 location clear to drill. There is a 16" natural gas line approximately 20 feet from the proposed boring location.

Other Activities/Remarks:

Vac truck soil from MW-30R in containment area was transferred into the rolloff at MW-30R.

Driller took measurements of drilling set up at MW-36 and MW-37 in order to decide the most appropriate well location for pre-clearing.

Photos:

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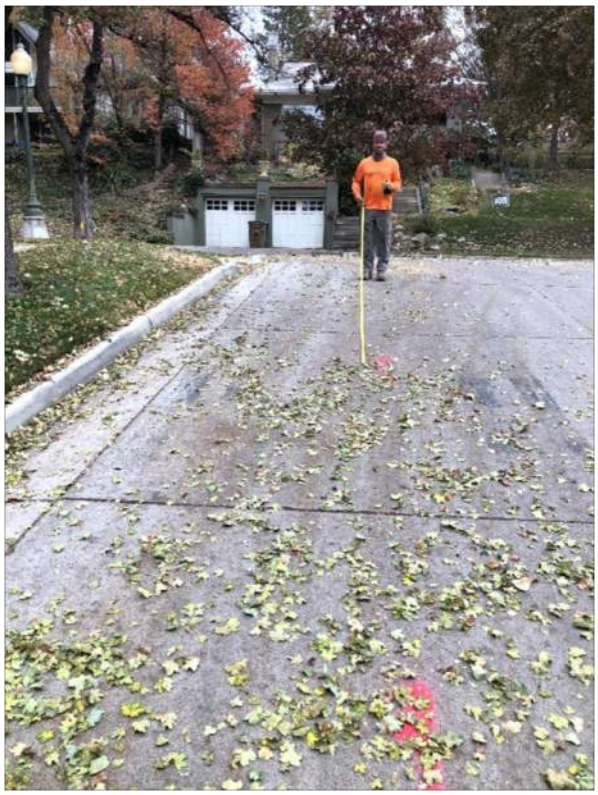
	**Date: 11/6/2020** **Location:** MW-30R **Description:** Clearing core barrel during drilling.
	**Date: 11/6/2020** **Location:** MW-36R **Description:** Photo from near potential well location to back of drill pipes to estimate footprint of drilling set-up.

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	**Date: 11/6/2020** **Location:** MW-37R **Description:** Measuring from sewer line to potential well location.
	**Date: 11/6/2020** **Location:** MW-30R **Description:** Photo of soil core with large cobble with diameter of core barrel (7 inches) cut by sonic drill bit, at 167 ft bgs.

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DATE: 11/7/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	Sunny	Partly Cloudy	Overcast	**Rain**	Snow
Temperature	85+ º F	70 to 85º F	**50 to 70 º F**	**32 to 50 º F**	To 32 º F
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • Rig Hauler • HNu PID

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at MW-30R well site.

Drilling:

MW-30R:
Drilling was completed from 183 ft bgs to 250 ft bgs. Lithology was logged and soil was screened with PID. No laboratory samples were collected. Grab samples were collected for magnetic susceptibility screening. Drilling was completed using a 7-inch core barrel and 8-inch casing (currently at 250 ft bgs).

Crew offloaded fresh water totes and winterized their decontamination unit in preparation for freezing temperatures.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
United Site Services delivered the jobsite toilet today. The temporary fencing will be delivered on Monday, 11/9.

Projected Work – Near Term:

11/9/2020 – continue to drill MW-30R to 295 ft bgs, now with 4-inch core barrel and 6-inch casing

11/10-2020 – set and install dual nested wells at MW-30R

Other Activities/Remarks:

Photos:

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Date: 11/7/2020

Location: MW-30R

Description: Tripping in drill pipe with core barrel for sampling.

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	**Date: 11/7/2020** **Location:** MW-30R **Description:** Offloading soil from tilt hopper to rolloff onsite.
	**Date: 11/7/2020** **Location:** MW-30R **Description:** Tripping out drill pipe to collect lithology sample. Rainy weather.

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DATE: 11/9/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	Sunny	Partly Cloudy	Overcast	Rain	***Snow***
Temperature	85+ º F	70 to 85º F	50 to 70 º F	32 to 50 º F	**To 32 º F**
Wind	***Still***	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • Rig Hauler • HNu PID

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at MW-30R well site.

Drilling:

MW-30R:
Trip in 6-inch casing to 250 feet.

Drilling was completed from 250 ft bgs to 295 ft bgs. Lithology was logged and soil was screened with PID. No laboratory samples were collected. Grab samples were collected for magnetic susceptibility screening. Drilling was completed using a 4-inch core barrel and 6-inch casing (currently at 290 ft bgs).

MW-37:
Reviewed utilities onsite with ELM and Jeff Jones. There is an abandoned, underground gas line near our proposed location, but based on measurements from ELM, our proposed location is still ok (2 feet to the east of sidewalk in planter strip).

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
United Site Services delivered fencing today.

Rig had trouble starting up this morning due to cold weather. Crew had to take some this morning to troubleshoot before they got it working properly.

Projected Work – Near Term:

11/10/2020 – set and install dual nested wells at MW-30R

11/11/2020 – decontamination, clean-up and demobilize from MW-30R.

Other Activities/Remarks:

Photos:

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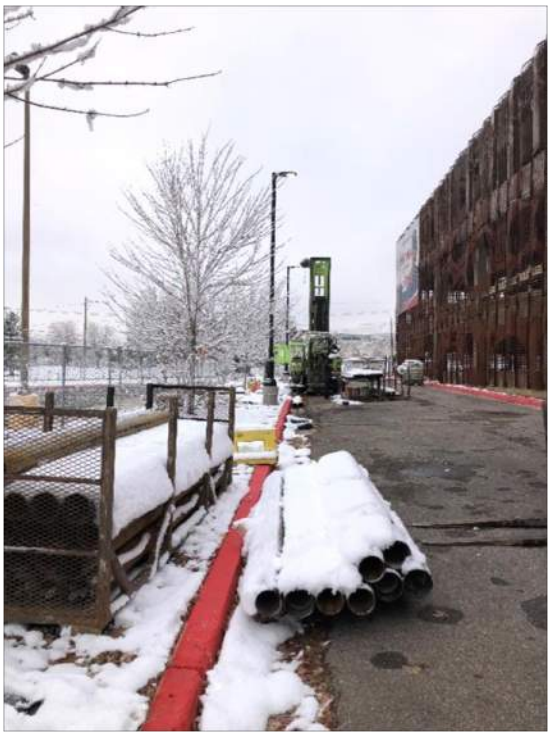	**Date: 11/9/2020** **Location:** MW-30R **Description:** Snowy weather onsite. 6-inch casing in foreground.
	**Date: 11/9/2020** **Location:** MW-30R **Description:** Water-bearing clayey sand zone near 280 feet bgs.

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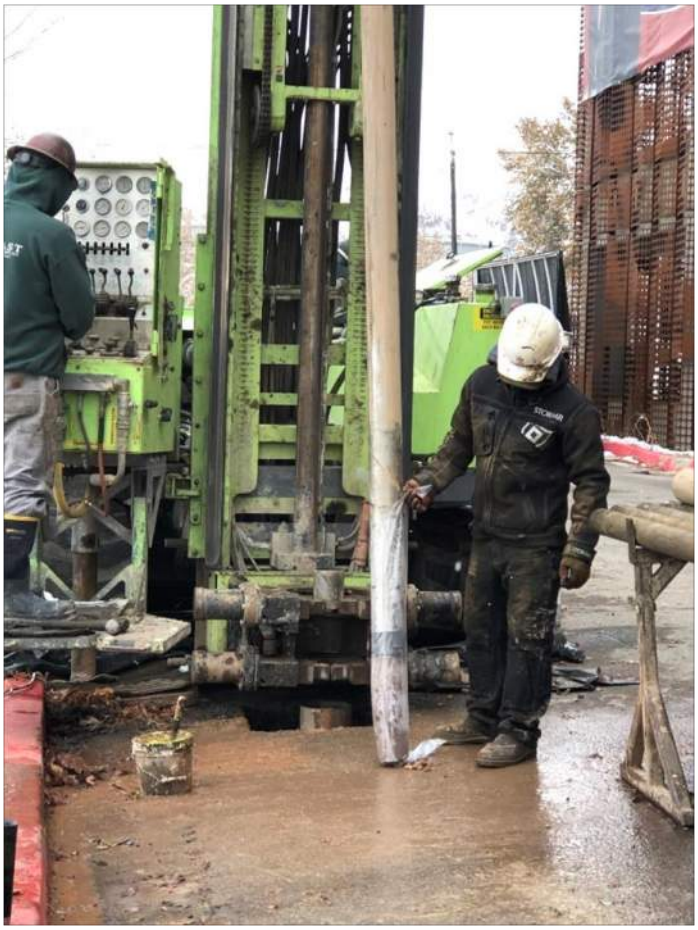

Date: 11/9/2020

Location: MW-30R

Description: Collecting soil sample in bags from 4-inch core barrel.

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DATE: 11/10/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway CDM Smith – Emma Rott Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon Wasatch Env. – Anna Fiorni
Visitors/Others:	

Weather	Sunny	Partly Cloudy	Overcast	Rain	***Snow***
Temperature	85+ º F	70 to 85º F	50 to 70 º F	32 to 50 º F	**To 32 º F**
Wind	**Still**	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • Rig Hauler • HNu PID • Water level meter • Compressed gas for development

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at MW-30R well site.

Drilling: (Whitney Treadway and Holt crew)

MW-30R:
Well zones A and B were installed as follows:

Zone A:	2-inch SCH 40 blank PVC	0 – 240 ft bgs
	2-inch SCH 40 0.020 slot PVC screen	240 – 250 ft bgs
	Hydrated bentonite chip seal	8 – 237 ft bgs
	10/20 sand filter pack	237 – 252 ft bgs
Zone B:	2-inch SCH 40 blank PVC	0 – 280 ft bgs
	2-inch SCH 40 0.020 slot PVC screen	280 – 290 ft bgs
	Hydrated bentonite chip seal	252– 277 ft bgs
	10/20 sand filter pack	277 – 291 ft bgs

MW-37:
MP Environmental roll-off delivered.

Development: (Emma Rott and Anna Fiorni)
Air lifting was used to remove sediment and water from MW-26D and MW-26C.
Approximately 60 gallons of water was removed from MW-26D. Parameter stabilization was not reached (turbidity continued to decrease), however, the team purged 10x the well volume and saw visible decrease in turbidity.
Approximately 40 gallons of water was removed from MW-26C. The team will continue to develop at this location tomorrow.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
The development team attempted to develop MW-26A using a stainless steel bailer. The team was unable to get the bailer past approximately 206' below top of casing. The team does not plan on returning to develop this interval.

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Projected Work – Near Term:

11/11/2020 – Drilling: decontamination, clean-up and demobilize from MW-30R. Development: return to MW-26 for development of the C and B intervals. Plan to develop MW-34A.

11/12/2020 – mobilize to MW-37 and begin drilling

Other Activities/Remarks:

Photos:

Date: 11/10/2020

Location: MW-30R

Description: Installation of 10/20 sand filter pack through 6-inch casing.

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	**Date: 11/10/2020** **Location:** MW-30R **Description:** Installation of medium bentonite chips through 6-inch casing.
	**Date: 11/10/2020** **Location:** MW-30R **Description:** Installation of 2-inch PVC well casing.

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Date: 11/10/2020

Location: MW-326C

Description: Development set-up with compressed gas and purge water collected in 55-gallon drums.

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Salt Lake City, Utah

DATE: 11/11/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway CDM Smith – Emma Rott Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon Wasatch Env. – Anna Fiorni Wasatch Env. – Kiel Keller Badger – Trevor Kindschy
Visitors/Others:	

Weather	Sunny	Partly Cloudy	Overcast	Rain	**Snow**
Temperature	85+ º F	70 to 85º F	50 to 70 º F	32 to 50 º F	**To 32 º F**
Wind	**Still**	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter • Compressed gas for development

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at MW-30R well site and MW-37 with Badger.

Drilling: (Whitney Treadway, Kiel Keller, and Holt crew)

MW-30R:
Add pea gravel from 8 ft bgs to 2 ft bgs
Completed 12-inch traffic-rated flush-mount well box with concrete from 2 ft bgs.
8-inch casing, core barrels, and drill pipe decontaminated on decontamination pad.

MW-36:
Cleared to 7 ft bgs by vac truck (Kiel oversaw).
Steel plate placed on top of open hole.
Soil offloaded to containment area on VA campus.

MW-37:
Cleared to 7 ft bgs by vac truck (Kiel oversaw).
Mobilized rig, Bobcat, and fencing to site.
Soil offloaded to containment area on VA campus.

MW-38:
Cleared to 5.5 ft bgs by vac truck (Kiel oversaw).
Steel plate placed on top of open hole.
Soil offloaded to containment area on VA campus.

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Development: (Emma Rott and Anna Fiorni)

MW-26C:
Air lifting was used to remove sediment and water. Approximately 60 gallons total of water was removed. Decreasing turbidity values were observed.

MW-26B:
Development using air lifting was attempted, however, there was not enough water column available to produce the lift needed for water to surface. The team then attempted to develop using the ZIST pump (with the filter removed); but they were unable to produce water through this method. Lastly, the team attempted to use a stainless-steel bailer, but was unable to get the bailer past approximately 114 ft below top of casing.

MW-34A:
Attempted development using a stainless-steel bailer but was unable to get the bailer past approximately 130' below top of casing.

MW-34B, MW-34C, and MW-34D:
Transducers were installed at all three zones.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
See issues with development above.

Second forklift was delivered onsite for Holt crew.

There were three VA vehicles blocking the entrance to the containment area onsite for the Badger pre-clearing crew. We were able to find someone who found the keys and was able move the three vehicles.

Projected Work – Near Term:

11/12/2020 – begin drilling at MW-37, begin development at MW-30RA and MW-30RB

Other Activities/Remarks:

Photos:

Date: 11/11/2020

Location: MW-37

Description: Rig, bobcat, and drill rods mobilized at MW-37 with fencing.

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	**Date: 11/11/2020** **Location:** MW-30R/laydown area **Description:** Decontamination of sonic casing and drill rods.
	**Date: 11/11/2020** **Location:** MW-38 **Description:** Installation of steel plate at MW-38 after pre-clearing.

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	**Date: 11/10/2020** **Location:** MW-30R **Description:** Installation of concrete at well box.
	**Date: 11/10/2020** **Location:** MW-34B **Description:** IntelliPump attachment added on to the ZIST pump to house transducer.

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Salt Lake City, Utah

DATE: 11/12/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway CDM Smith – Joe Miller CDM Smith – Emma Rott Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon Wasatch Env. – Anna Fiorni
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter • Compressed gas for development

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Drilling: (Whitney Treadway, Joe Miller, and Holt crew)

MW-37:
Drilled to 70 ft bgs using 7-inch core barrel and 8-inch sonic casing (to 70 ft bgs).
One groundwater sample was collected at 30 ft bgs using a bailer in a push-ahead sampler.
Two other samples were attempted: one at 20 ft bgs and one at 70 ft bgs. Both were muddy, but no water. Casing was pushed to 70 ft bgs and borehole was cleaned out at end of day. Another attempt at collecting groundwater sample at 70 ft bgs will occur tomorrow morning. Samples were labeled, bagged, and on ice.
Lithology was logged, and soil was screened with a PID and magnetic susceptibly meter. Lithology included sandy clay with wet sand lenses, and a hard clay confining layer at 45 ft bgs to approximately 54 ft bgs.
Site was contained in fencing and rolloff locked and end of day.

Development: (Emma Rott and Anna Fiorni)

MW-30RB:
Began development at MW-30RB. The team encountered issues with removing sediment and water with a bailer and the Grundfos pump. The team plans to continue troubleshooting these issues tomorrow.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
See issues with development above.

Due to the soft, flowing nature of the lithology, in some cases the soil sample in the core barrel was lost back down the borehole. The drill crew used a "flapper" drill bit to contain sample in core barrel, and when possible, retrieve unrecovered interval.

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Salt Lake City, Utah

Projected Work – Near Term:

11/13/2020 – install MW-37, demobilize from MW-37 and mobilize to MW-38, continue development at MW-30RA and MW-30RB.

Other Activities/Remarks:

Photos:

Date: 11/12/2020

Location: MW-37

Description: Push-ahead sampler screen.

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	**Date: 11/12/2020** **Location:** MW-37 **Description:** Hard clay layer at 45 ft bgs.
	**Date: 11/12/2020** **Location:** MW-37 **Description:** Collecting soil from core barrel in plastic bags.

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Date: 11/12/2020

Location: MW-37

Description: Bailer for groundwater sampling lowered down into drill pipe and push-ahead sampler.

Daily Quality Control Report
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Salt Lake City, Utah

DATE: 11/13/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Emma Rott Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon Wasatch Env. – Anna Fiorni
Visitors/Others:	MP Environmental

Weather	Sunny	**Partly Cloudy**	**Overcast**	**Rain**	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	Still	**Moderate**	**High**		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter • Compressed gas for development

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Drilling: (Joe Miller, and Holt crew)

MW-37:
Depth to water was in tagged at 50.96' with 8" sonic casing to 70' bgs. A groundwater sample was collected at the 70' bgs interval.

The MW-37D zone was installed with 2" PVC 0.020 slot screen from 60-70' bgs and a sand pack from 57-70' bgs.
The MW-37S zone was installed with 2" PVC 0.020 slot screen from 25-35' bgs and a sand pack from 22-39' bgs.
A soil vapor probe was installed on the MW-37S casing at 8' bgs with a sand pack from 6.5-9' bgs.

MW-38:
The drill rig and support equipment was mobilized to the MW-38 location. MP Environmental relocated the rolloff from MW-37 to MW-38. MP also staged a roll off near the MW-36 location.

Development: (Emma Rott and Anna Fiorni)
Began development at MW-30RA. The team attempted to use the Grundfos pump and a Solinst pump to remove sediment from the well. Both pumps were unable to due to filter and valve clogging in the pumps.

Installed tamper proof bolts at MW-17D.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
See issues with development above.

Projected Work – Near Term:

11/14/2020 – Drill MW-38. Development crew will mobilize from the site.

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Salt Lake City, Utah

Other Activities/Remarks:

Photos:

	**Date: 11/13/2020** **Location:** MW-37 **Description:** Holt installing bentonite between MW-37D and MW-37S zones.
	**Date: 11/13/2020** **Location:** MW-37 **Description:** Wells installed prior to installing surface completion.

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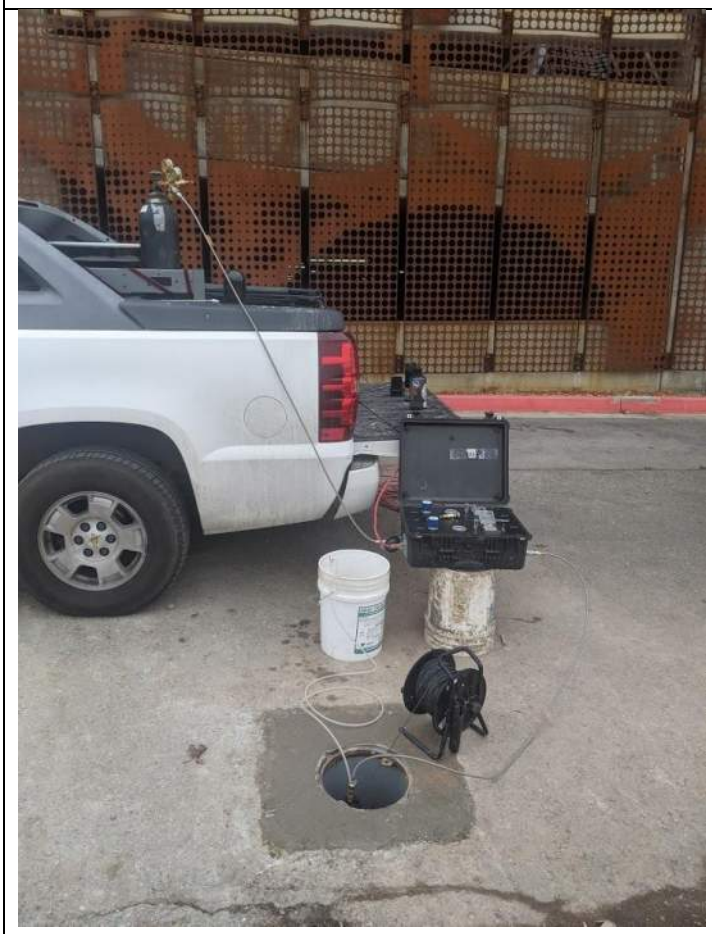
	**Date: 11/13/2020** **Location:** MW-38 **Description:** MP Environmental delivering roll off to MW-38 location.
	**Date: 11/13/2020** **Location:** MW-30R **Description:** Bladder pump installation and purge attempt at MW-30RA.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 11/14/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	None

Weather	Sunny	Partly Cloudy	**Overcast**	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Drilling: (Joe Miller and Holt crew)

The MW-38 boring was advanced to 80 feet bgs with the 7-inch core barrel. The 8-inch sonic casing is installed to 70 feet bgs. The soil cores were screened and logged. There were no elevated PID readings and no samples were collected. With the boring drilled and cased to 70 feet bgs, the DTW was 27.23 feet bgs.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
None

Projected Work – Near Term:

11/15/2020 – Rest Day

11/16/2020 – Install MW-38; mob to MW-36

Other Activities/Remarks:

None

Photos:

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Salt Lake City, Utah

	**Date: 11/14/2020** **Location:** MW-38 **Description:** Holt setting up work zone at MW-38.
	**Date: 11/14/2020** **Location:** MW-38 **Description:** Saturated soil cuttings at 30-32 feet bgs interval.

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Salt Lake City, Utah

	**Date: 11/14/2020** **Location:** MW-38 **Description:** Soil cuttings from 46-48 feet bgs. Dry lean clay, very stiff, trace fine gravel.
	**Date: 11/14/2020** **Location:** MW-38 **Description:** Soil cuttings from 60-62 feet bgs. Wet gravel with sand and clay.

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700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 11/16/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	USACE – Greg Hattan

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	**50 to 70 º F**	32 to 50 º F	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Drilling:

The MW-38 S/D wells were installed in the boring. MW-38D was installed with 0.020 slot screen from 60-70 feet bgs. The sand pack was installed from 57-71 feet bgs.

MW-38S was installed with 0.020 slot screen from 27-37 feet bgs. The filter pack was installed from 25-39 feet bgs. A soil vapor probe was installed at 8 feet bgs on the MW-38S casing.

Holt mobilized the drill rig and bobcat to the MW-36 boring location.

The 8" casing and drill rods were deconned back at the VA.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
None

Projected Work – Near Term:

11/17/2020 – Drill MW-36 boring

Other Activities/Remarks:

Greg Hattan verified one of the piezometer replacement locations.

Photos:

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Salt Lake City, Utah

	**Date: 11/16/2020** **Location:** MW-38 **Description:** Holt crew installing MW-38S
	**Date: 11/16/2020** **Location:** MW-36 **Description:** Work zone setup at MW-36 location.

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Date: 11/16/2020

Location: MW-36

Description: Precleared boring location after road plate was removed.

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700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 11/17/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	USACE – Greg Hattan

Weather	Sunny	**Partly Cloudy**	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	**50 to 70 º F**	32 to 50 º F	To 32 º F
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Drilling:

MW-36 boring was drilled to 110 feet bgs. The soil cores were screened and logged. No soil samples were collected. Groundwater was encountered during the 30-40 feet run. The soil below 52 feet bgs was mostly silt and clay and did not have a good water bearing zone. Discussion with the VA and USACE decided to install a 5' screen from 47-52 feet bgs.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
None

Projected Work – Near Term:

11/18/2020 – Install MW-36 well, mobilize equipment back to the VA laydown.

Other Activities/Remarks:

Photos:

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	**Date: 11/17/2020** **Location:** MW-36 **Description:** Soil core from 50-52.5 feet bgs was a saturated gravel with sand.
	**Date: 11/17/2020** **Location:** MW-36 **Description:** Soil core from 102-104 feet bgs was laminated clayey silt.

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Date: 11/17/2020

Location: MW-36

Description: Holt extracting soil core from sonic core barrel.

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700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 11/18/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	USACE – Greg Hattan

Weather	Sunny	Partly Cloudy	**Overcast**	Rain	Snow
Temperature	85+ º F	70 to 85º F	**50 to 70 º F**	32 to 50 º F	To 32 º F
Wind	Still	Moderate	**High**		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Drilling:

The MW-36 well was installed with 0.020 slot screen from 47-52 feet bgs. The sand filter pack was installed from 44-54 feet bgs. Holt mobilized equipment back to the VA laydown area.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

Holt planned to complete MW-38 and MW-36 surface completions in the road, however due to ROW concrete requirements they could not schedule a delivery this week. The wells are secured with road 5x5' steel road plates and cones indicating the hazard. The concrete truck has been scheduled for when Holt returns from Thanksgiving.

Projected Work – Near Term:

11/19/2020 – Develop MW-30R A/B with 5' PVC bailer; decon drill steel

Other Activities/Remarks:

Photos:

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Salt Lake City, Utah

	**Date: 11/18/2020** **Location:** MW-36 **Description:** Holt preparing to install 2" PVC at MW-36.
	**Date: 11/18/2020** **Location:** MW-36 **Description:** Holt towered down rig and preparing to move it to install the road plate.

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Salt Lake City, Utah

DATE: 11/19/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	Sunny	**Partly Cloudy**	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	Still	Moderate	**High**		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
Holt used a 5-foot weighted PVC bailer to develop MW-30RA. Prior to bailing the depth to bottom was 250.56 feet BTOC. After bailing ~16 gallons, the depth to bottom was 251.23 feet BTOC. Bailing removed 0.67 feet of accumulated sediment.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
Holt had drill issues turning the spool to lift the bailer. Wasatch Environmental provided a generator that helped run the corded drill to lift the bailer.

Projected Work – Near Term:

11/20/2020 – Holt crew mob home for days off; MP stage roll off bins at VA campus laydown.

Other Activities/Remarks:

Holt topped of the grout at MW-30 A and B abandonments.

Photos:

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Date: 11/19/2020

Location: MW-30R

Description: Holt spooling cable to lift the PVC bailer.

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Salt Lake City, Utah

Date: 11/19/2020

Location: MW-30R

Description: Sediment filled water removed by bailer.

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Salt Lake City, Utah

DATE: 11/20/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller
Visitors/Others:	MP Environmental

Weather	Sunny	**Partly Cloudy**	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	Still	Moderate	**High**		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

No Drilling activities occurred on 11/20/2020.

MP Environmental relocated roll offs from MW-30R, MW-36 and MW-38 S/D locations to the VA campus laydown area for staging during drilling break.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

Holt had drill issues turning the spool to lift the bailer. Wasatch Environmental provided a generator that helped run the corded drill to lift the bailer.

Projected Work – Near Term:

11/30/2020 – Holt crew return to Salt Lake.

12/1/2020 – Develop MW-30RB zone and set up drill rig at MW-13 additional well; Install flush mount Augustyn vaults at MW-36 and MW-38 S/D.

Other Activities/Remarks:

Photos:

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	**Date: 11/20/2020** **Location:** MW-38 S/D **Description:** MP Environmental picking up Roll off bin.
	**Date: 11/20/2020** **Location:** VA Laydown Area **Description:** MP Environmental staging bin from MW-36 at laydown area.

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Salt Lake City, Utah

DATE: 11/30/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	Ready Made Concrete

Weather	Sunny	**Partly Cloudy**	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	Still	Moderate	**High**		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Ready Made Concrete arrived and Holt installed the Augustyn flush mount vaults at MW-36 and MW-38 boring locations.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
Projected Work – Near Term:

12/1/2020 – Develop MW-30RB with a bailer, develop MW-30RA with a development pump, complete geophysical survey at MW-13L, and mobilize drilling equipment to MW-13L.

Other Activities/Remarks:

Photos:

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	**Date: 11/30/2020** **Location:** MW-36 **Description:** Augustyn vault installed at MW-36
	**Date: 11/30/2020** **Location:** MW-38 **Description:** Augustyn Vault installed at MW-38 location.

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Salt Lake City, Utah

DATE: 12/1/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	MP Environmental GPRS – Geophysical survey

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID (x2) • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
The Holt crew used a bailer to develop MW-30RB. Approximately 25 gallons of water was bailed from MW-30RB.
CDM Smith and Wasatch developed MW-30RA with a Geotech double valve pump. Approximately 12 gallons was purged.

Drilling at MW-13L:
GPRS performed a geophysical locate at MW-13L. They identified a potential irrigation line south of the proposed boring area. MP Environmental relocated one of the roll-off bins from the VA to the boring location. Holt set up the drill rig, fencing and traffic control at the MW-13L drill location.

The MW-13L boring was hand augured to 5 feet bgs.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

Upon arrival at the IDW area connex there was no electricity. The breakers were checked and had not been tripped. Maintenance shop personnel were contacted, and they had flipped the breaker in the shop across from the IDW area.

Projected Work – Near Term:

12/2/2020 – Develop MW-30RB zone with Geotech double valve pump and install dedicated pumps at MW-30RA/B

12/2/2020 – Drill MW-13L

Other Activities/Remarks:

None.

Photos:

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	**Date: 12/1/2020** **Location:** MW-13L **Description:** GPRS identified potential irrigation lines and estimated less than 1 foot bgs.
	**Date: 12/1/2020** **Location:** MW-30RB **Description:** Silty water from bailer development at MW-30RB.

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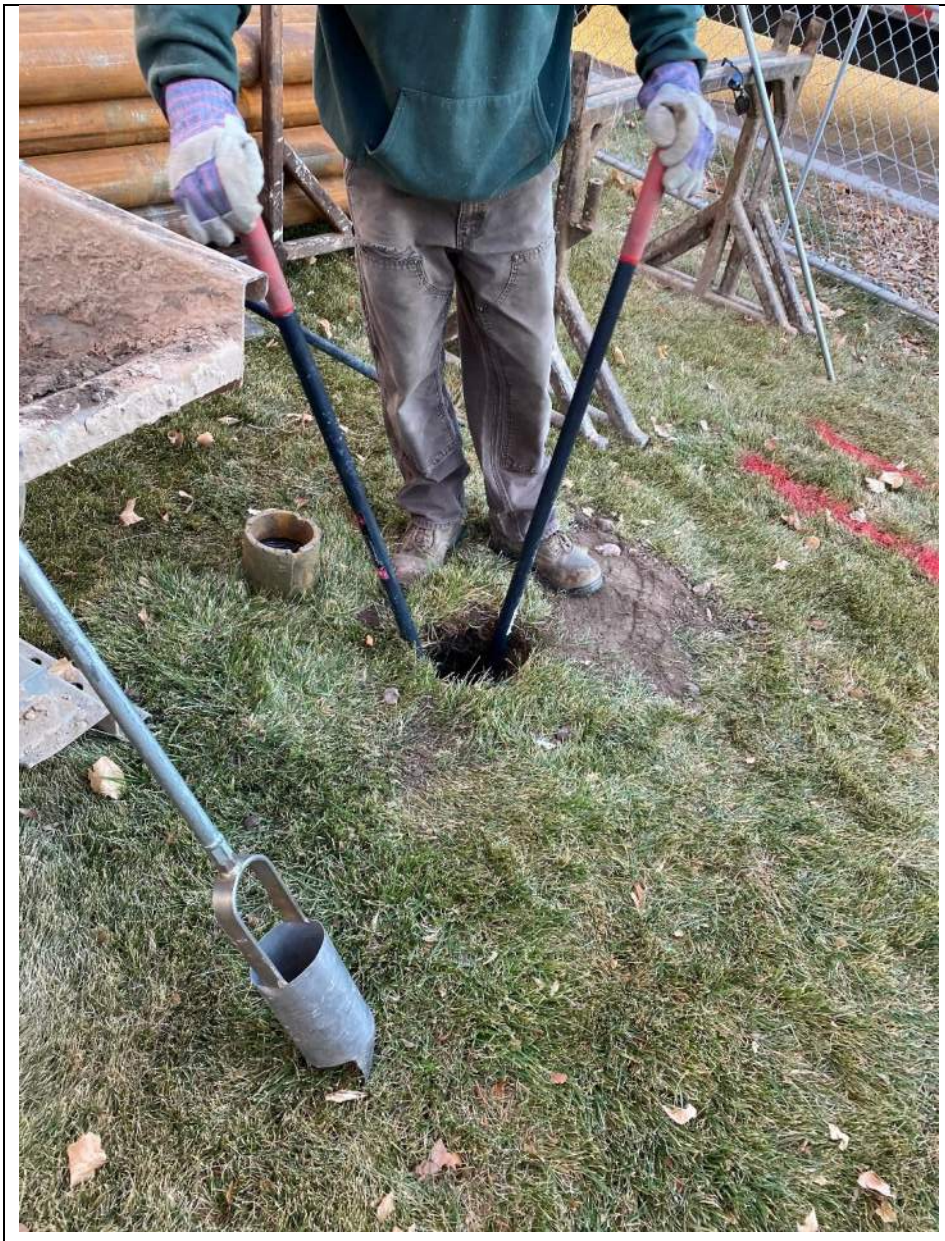

Date: 12/1/2020

Location: MW-13L

Description: Holt hand digging MW-13L to 5 feet bgs.

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DATE: 12/2/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID (x2) • Water level meter • YSI Multiparameter meter • Apera instruments pH60 pH meter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor • Solinst bladder pump

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
CDM Smith and Wasatch developed MW-30RB with the Geotech Reclaimer double valve pump and removed approximately 37 gallons of water. The dedicated Solinst bladder pump was deployed at MW-30RA.

Drilling at MW-13L:
The MW-13L boring was advanced to 150 feet bgs. The 6-inch sonic casing has also been advanced to the bottom of the borehole. The soil cores were screened and logged no samples were collected. Groundwater was first encountered about 23 feet bgs. A clay confining unit was encountered about 104 feet bgs. There were wet sand stringers below the confining unit, but no distinct layer. All PID readings were less than 5 ppm.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

No electricity at connex after attempting to plug in a single heater. The breakers were checked and had not been tripped. Maintenance shop personnel will be attempted to be contacted again tomorrow, they need to flip the breaker again in the shop across from the IDW area.

Projected Work – Near Term:

12/3/2020 – Develop MW-36, MW-38S and potentially MW-38D zone by bailing and pumping with Geotech Reclaimer pump.

12/3/2020 – Drill MW-13L to 160 feet. Discuss well design and begin installation at MW-13L.

Other Activities/Remarks:

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None.

Photos:

	**Date: 12/2/2020** **Location:** MW-13L **Description:** Holt work zone setup at MW-13L. Preparing to resume drilling.
	**Date: 12/2/2020** **Location:** MW-13L **Description:** Soil cuttings from 102.5-105 feet bgs. Encountered clay confining layer.

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Date: 12/2/2020

Location: MW-13L

Description: Soil cuttings from 135-137 feet bgs. Moist to we gravelly sand stringer at ~136 feet bgs.

Date: 12/2/2020

Location: MW-30RB

Description: Pump development discharge water prior to development (final turbidity reading after purging additional 37 gallons was <20NTU).

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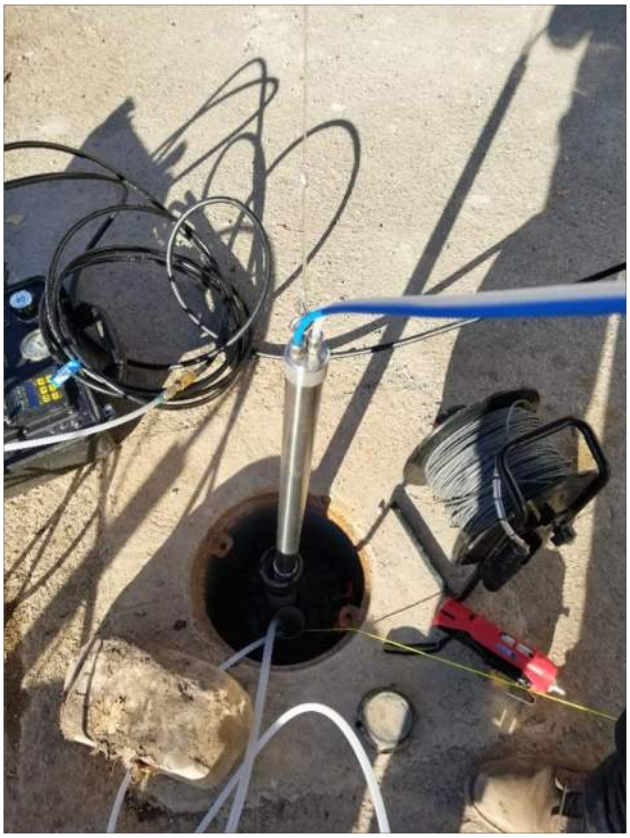	**Date: 12/2/2020** **Location:** MW-30RA **Description:** Deployment of dedicated bladder pump at MW-30RA.
	**Date: 12/2/2020** **Location:** MW-30RA **Description:** Completed deployment of dedicated bladder pump at MW-30RA.

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DATE: 12/3/2020	**Prepared by:** Joe Miller and Tea Vrtlar

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID (x2) • Water level meter • YSI Multiparameter meter • Apera instruments pH60 pH meter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor • Solinst bladder pump

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
CDM Smith and Wasatch developed MW-36: they surged with the bailer, removed approximately 25 gallons by bailing, and removed approximately 21 gallons by pumping. The dedicated Solinst bladder pump was deployed at MW-30RB. Locks were added to MW-30RA and MW-36.

MW-13L:
The MW-13L boring was advanced to 160 feet bgs. The zone from 156-160 feet bgs was a saturated sandy gravel. Following discussion with the VA, the 2-inch PVC well was set with 10 feet of 0.020 slot screen from 150-160 feet bgs. The sand pack was installed from 147-160 feet bgs. Holt completed backfilling and the surface completion at MW-13L. The drill rig and drilling equipment was mobilized back to the VA laydown area. Holt decontaminated the drill steel used for MW-13L.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

No electricity at connex. The breakers behind the connex were checked and had not been tripped. Maintenance shop personnel were contacted. The connex breaker in the shop across from the IDW area was checked and had not been tripped, but the breaker was flipped off and on again to try to resolve the issue. The same procedure was repeated at the breakers behind the connex. Still unable to get electricity to connex.

Casings for MW-30RA and MW-30RB are too close to each other where Solinst well cap assembly couldn't be placed on MW-30RB. No lock was placed on MW-30RB since the lid couldn't be closed.

Projected Work – Near Term:

12/4/2020 – Develop MW-38S/D. Deploy dedicated Solinst bladder pump at MW-36 and potentially MW-38S and D.

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12/4/2020 – Move fencing from MW-13L location back to VA; load equipment and mobilize home.

Other Activities/Remarks:

None.

Photos:

	**Date: 12/3/2020** **Location:** MW-13L **Description:** Soil core from MW-13L from 157-160 feet bgs. Saturated sandy gravel layer.
	**Date: 12/3/2020** **Location:** MW-13L **Description:** Holt preparing to install 2" PVC at MW-13L.

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	**Date: 12/3/2020** **Location:** MW-36 **Description:** Pump discharge water during development.
	**Date: 12/3/2020** **Location:** MW-36 **Description:** Pump discharge water after development.

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Date: 12/3/2020

Location: MW-30RB

Description: Dedicated pump deployment at MW-30RB complete.

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Salt Lake City, Utah

DATE: 12/4/2020	**Prepared by:** Joe Miller and Tea Vrtlar

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID (x2) • Water level meter • YSI Multiparameter meter • Apera instruments pH60 pH meter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor • Solinst bladder pump

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
CDM Smith and Wasatch developed MW-38S by bailing approximately 10 gallons and pumping (with the Geotech Reclaimer pump) approximately 36 gallons. At MW-38D, 18 gallons were bailed, and 40 gallons were pumped, however, well development was not complete and will continue tomorrow. The dedicated Solinst bladder pump was installed at MW-38S

Drilling Demob:
Holt picked up fencing and remaining equipment from MW-13L. They loaded all their equipment and mobilized from site.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

VA Electricians informed us that the connex boxes have been tripping the breaker at the main circuit. They reset the breaker and asked us to reduce our load on the circuits. All equipment has been unplugged and only minimal equipment will be allowed to be plugged in at the connex boxes (eg printer/copier, battery chargers).

Projected Work – Near Term:

12/5/2020 – Complete development at MW-38D. Develop MW-37S and, if time permits develop MW-37D and deploy dedicated Solinst bladder pumps at MW-36, MW-38S and MW-38D.

Other Activities/Remarks:

None.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date: 12/4/2020** **Location:** MW-13L **Description:** SMW-13L pad near the MW-13 S/D pads. The well was offset due to underground utilities identified during the geophysical survey.
	**Date: 12/4/2020** **Location:** VA laydown area **Description:** Holt has loaded casing, the drill rig and bobcat for demobilization.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date: 12/4/2020** **Location:** MW-38S **Description:** Pump discharge water during development.
	**Date: 12/4/2020** **Location:** MW-38S **Description:** Pump discharge water after development.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/5/2020	**Prepared by:** Joe Miller and Tea Vrtlar

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• HNu PID (x2) • Water level meter • YSI Multiparameter meter • Apera instruments pH60 pH meter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor • Solinst bladder pump

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at connex.

Development:
The development at MW-38D was completed; approximately 116 gallons were pumped from the well. CDM Smith and Wasatch developed MW-37S by bailing approximately 16 gallons and pumping approximately 48 gallons. Development was initiated at MW-37D; 20 gallons were bailed. The dedicated Solinst bladder pump was deployed at MW-36. Locks were placed on MW-36 and MW-38S/D.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

None.

Projected Work – Near Term:

12/6/2020 –Complete development at MW-37D, and initiate development at MW-13L. If time permits, deploy dedicated Solinst bladder pumps at MW-38S/D.

Other Activities/Remarks:

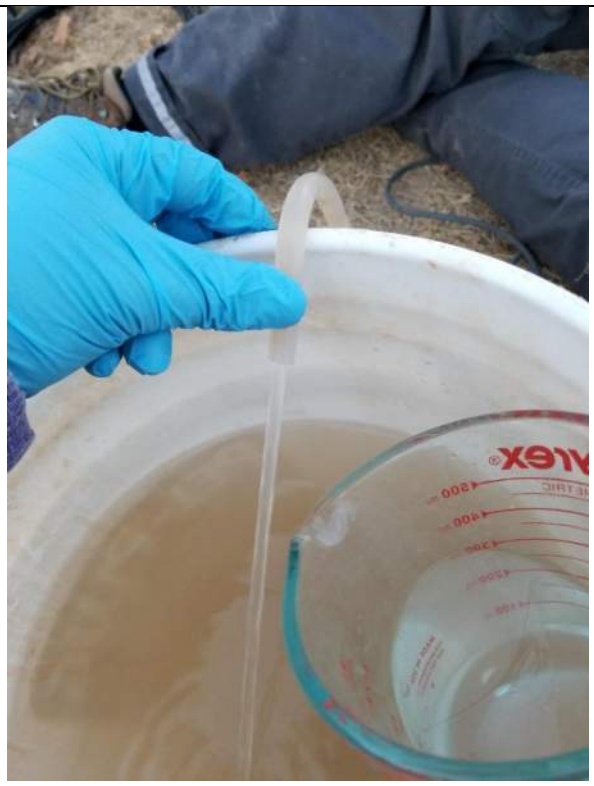
None.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date: 12/5/2020** **Location:** MW-37S and MW-37D **Description**: MW-37S (right) and MW-37D (left) wells.
	**Date: 12/5/2020** **Location:** MW-37S **Description:** Pump discharge water prior to development.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date: 12/5/2020** **Location:** MW-37S **Description:** Pump discharge water after development.
	**Date: 12/5/2020** **Location:** MW-36 **Description:** Dedicated pump deployment

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/6/2020	**Prepared by:** Joe Miller and Tea Vrtlar

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• HNu PID • Water level meter • YSI Multiparameter meter • Hach 2100Q turbiditimeter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at connex.

Development:
CDM Smith completed development of MW-37D by pumping approximately 48 gallons. Development was initiated at MW-13L by bailing approximately 8 gallons and pumping approximately 17 gallons. The development was paused due to lack of sunlight and will be continued tomorrow.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
None

Projected Work – Near Term:

Development:
12/7/2020 – Complete development at MW-13L. Initiate development of MW-34A or MW-26B with Waterra pump. If time permits, deploy dedicated Solinst bladder pumps at MW-37S/D and MW-38S/D.

Groundwater Sampling:
12/7/2020 – Complete synoptic water level measurements. Obtain/renew all badges for groundwater sampling team. Confirm receipt of all groundwater sampling equipment.

Other Activities/Remarks:

None.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date: 12/6/2020** **Location:** MW-37D **Description**: Development of MW-37D.
	**Date: 12/6/2020** **Location:** MW-13L **Description:** Bailing of MW-13L.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

Date: 12/6/2020

Location: MW-13L

Description: Development of MW-13L.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/7/2020	**Prepared by:** Ben Carreon

Personnel on site, including Contractors:	CDM Smith – Ben Carreon, Maria Day, Tea Vrtlar, Emma Rott, Joe Miller, Iona Campbell, Connor Kelley Wasatch – Kevin Murphy
Visitors/Others:	None

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**0 To 32 º F**
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development equipment • Water level and low-flow groundwater sampling equipment

Description of Field Activities – including samples/data collected, etc:

- A H&S tailgate was conducted at the IDW yard area.
- Equipment was calibrated.
- Synoptic Water Level Event
  - All water levels were completed except at monitoring wells: MW-08A/B/C, MW-14D, MW-17S, MW-28, MW-29 A/B/C, and MW-32A/B/C. These locations will be completed 12/8/20.
- Groundwater Sampling
  - No groundwater samples were collected.
- Development
  - MW-13L
    - Prior to development, the total depth at MW-13L was 151.06' below top of casing; anticipated depth should be 160' below top of casing. Eight gallons bailed and 17 gallons were pumped on 12/6/20. Depth to bottom was measured at 152.1' below top of casing. Today (12/7/20), surging and pumping with the Geotech reclaimer pump removed approximately 100 gallons and depth to water at the end of the day was 154.15' below top of casing. Depth to bottom will be measured tomorrow (12/8/20), at that time we will assess how to move forward with further development and sampling during this event.
  - MW-34A
    - Development was initiated at MW-34A using the Waterra pump, and 15 gallons were removed. At the end of the day turbidity was still high; development will continue tomorrow.
  - MW-38S/D
    - Dedicated pumps were deployed.
- Samples collected:
  - IDW15-GW120720 – Poly water tank
  - IDW16-GW120720 – Drum with sediment water and hydraulic fluid from phase I of investigation
- Samples to be collected tomorrow:
  - 2x IDW soil samples from remaining roll off bins.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

- MP10H controller solenoid was sticking until the temperature was above 35F. All controllers will be kept in the hotel rooms to prevent any moisture build up and reduce sticking at low temperatures.
- Development at MW-13L (see above).
- The teams were short one water level meter due to a shipping issue with Field Environmental. Everything else shipped for the groundwater sampling event was accounted for except 50' of silicone and a regulator. The missing equipment and supplies are expected to arrive 12/7/20.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

- Salt Lake County has a mandatory mask mandate in effect since Saturday, June 27. Masks are required in public.

Projected Work – Near Term:

- One team will continue development of MW-34A and will begin development of MW-26B. Following development, pumps will be deployed at MW-37S/D (time permitting).
- One team will complete the synoptic water level event and then begin sampling.
- Two teams will begin groundwater sampling.

Other Activities/Remarks:

Photos:

	**Date:** 12/7/2020 **Location:** MW-06 **Description:** Measuring water level
	**Date:** 12/7/2020 **Location:** MW-02 **Description:** Stockpile of salt/gravel near well

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/8/2020	**Prepared by:** Ben Carreon

Personnel on site, including Contractors:	CDM Smith – Ben Carreon, Maria Day, Tea Vrtlar, Emma Rott, Joe Miller, Iona Campbell, Connor Kelley Wasatch – Kevin Murphy
Visitors/Others:	None

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**0 To 32 º F**
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development equipment • Water level and low-flow groundwater sampling equipment

Description of Field Activities – including samples/data collected, etc:

- A H&S tailgate was conducted at the IDW yard area.
- Equipment was calibrated.
- Synoptic Water Level Event
    - The remaining water levels were measured.
- Groundwater Sampling
    - Groundwater samples collected:
        - MW-05R (MW05R-GW120820 and FD05-GW120820)
            - For the following parameters:
                - VOCs
                - Geochemistry
                    - Metals
                    - Dissolved gases
                    - Sulfate, chloride
                    - Nitrate + nitrite (total N)
                    - TOC
                    - Alkalinity
        - MW-24 (MW24-GW120820)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-27 (MW27-GW120820)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-28 (MW28-GW120820)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-30RA (MW30RA-GW120820)
            - For the following parameters:
                - VOCs
                - 1,4-Dioxane

        - Geochemistry
    - MW-30RB (MW30RB-GW120820)
        - For the following parameters:
            - VOCs
            - 1,4-Dioxane
            - Geochemistry
  - No samples were shipped to EMAX Labs.
- Development
  - MW-13L
    - DTB was measured at 153.91' BTOC.
  - MW-34A
    - Development was completed. A total of 88.5 gallons were purged with the Waterra pump.
  - MW-26B
    - Began development however not much progress was made with the limited daylight available.
- Drilling IDW
  - Samples collected:
    - Roll off bin #5843
    - Roll off bin #6030
  - IDW samples collected 12/7 and 12/8 were shipped to the lab.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

- At the beginning of purging MW-30RB, water did not surface at expected pressures. The pump was pulled and rinsed to remove sediment which corrected the issue and the well was sampled.
- MW-12S was dry. Water level was not measured, and samples will not be collected.
- The water level at MW-31A was below the top of the volume booster. As the installation of the volume booster was difficult at this location, the pump was not pulled, and a water level was not measured.
- The water level at MW-29A was below the top of the volume booster. After pulling the pump, the airline was noted to be twisted. Spare swagelok fittings will be purchased should any issues be encountered while sampling. The tubing was straightened however the tubing should be trimmed as preventative maintenance in the near future.
- MP10H controller solenoids were again sticking despite keeping the controllers in hotel rooms overnight.
- One YSI had a pH sensor in need of replacement. A replacement YSI was requested and will arrive 12/9/20.
- Salt Lake County has a mandatory mask mandate in effect since Saturday, June 27. Masks are required in public.

Projected Work – Near Term:

- Continue development of MW-26B. Following development, pumps will be deployed at MW-37S/D.
- Continue groundwater sampling.

Other Activities/Remarks:

- United services picked up the fencing and jobsite toilet.
- Drilling PIDs and Mag Sep meters were packed for shipment.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date:** 12/8/2020 **Location:** MW-29A **Description:** Twisted tubing
	**Date:** 12/8/2020 **Location:** MW-26B **Description:** Waterra foot valve

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

Date: 12/8/2020

Location: MW-26B

Description: Development setup

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 1/18/2021	**Prepared by:** Karla Leslie

Personnel Onsite, including Contractors:	Wasatch Environmental – Kevin Murphy
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development Equipment

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

MW-26D was developed using air lifting techniques until turbidity was below 50 NTU. A total of 95 gallons of water was removed. Initial total depth was 353.40 feet below top of casing (btoc) and after development the new total depth was 358.30 feet btoc, suggesting approximately 5 feet of sediment was removed from the well.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

Work had been planned at MW-34, however, as Rowland Hall was closed for the holiday and the gate was closed but not locked, the field team was concerned about accidently getting locked in. Development at MW-34 will begin tomorrow (Tuesday January 19).

Projected Work – Near Term:

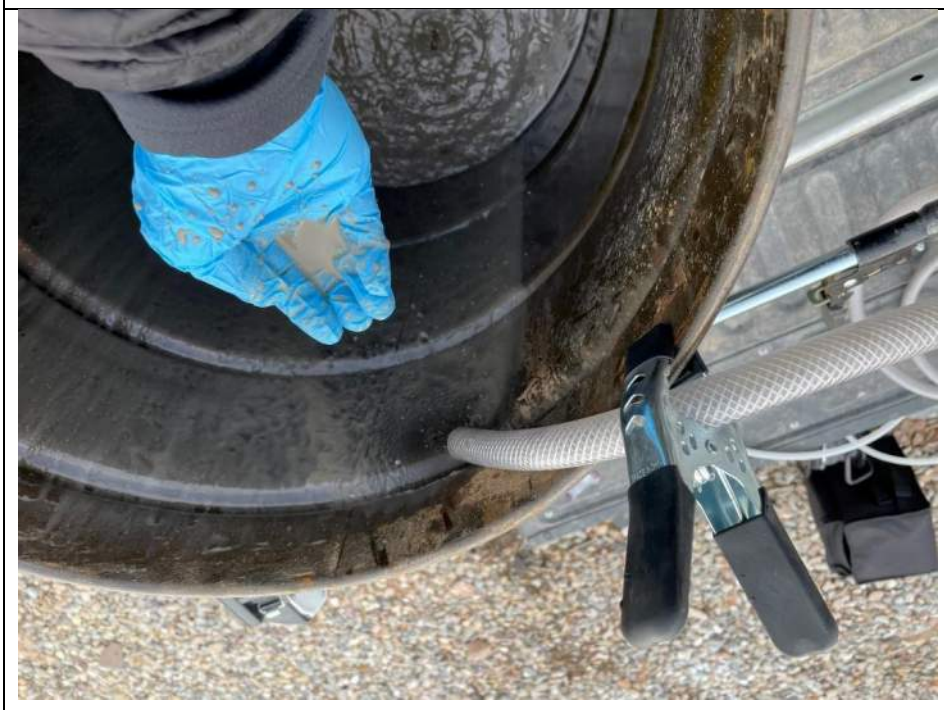
Development of MW-34B/C.

Other Activities/Remarks:

None.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date:** 1/18/2021 **Location:** MW-26D **Description:** Development equipment set up at MW-26D
	**Date**: 1/18/2021 **Location**: MW-26D **Description**: Purge water at the start of development

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 1/19/2021	**Prepared by:** Karla Leslie

Personnel Onsite, including Contractors:	Wasatch Environmental – Kevin Murphy VA – Wynn John
Visitors/Others:	None

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development Equipment

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

MW-34C was developed using air lifting techniques until turbidity was below 50 NTU. A total of 20 gallons of water was removed. Initial total depth was 262.5 feet below top of casing (btoc) and after development the total depth was 263.1 feet btoc, suggesting less than 1 foot of sediment was removed from the well.

Development was initiated at MW-34B using air lifting techniques. A total of 30 gallons was removed. Initial total depth was 186.9 ft btoc, and after removing 30 gallons the total depth was 188.8 ft btoc. As turbidity was not improving, this well will be further developed on Thursday (1/21).

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

Development was not completed at MW-34B and will be continued on Thursday (January 21).

Projected Work – Near Term:

Development of MW-26C on Wednesday, January 20.

Development of MW-34B and surveying of new well locations on Thursday, January 21.

Other Activities/Remarks:

None.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date:** 1/19/2021 **Location:** MW-34C **Description:** Development purge water
	**Date**: 1/19/2021 **Location**: MW-34B **Description**: Sediment that was dried from the purge water

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 1/20/2021	**Prepared by:** Karla Leslie

Personnel Onsite, including Contractors:	Wasatch Environmental – Kevin Murphy
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development Equipment

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

MW-26C was developed using air lifting techniques. A total of 125 gallons of water was removed. Initial total depth was 320.05 feet below top of casing (btoc) and after development the total depth was 327.57 feet btoc, suggesting approximately 7.5 feet of sediment was removed from the well. Turbidity did not stabilize below 50 NTU, however, however, due to the large volume removed and time spent developing this location, development is considered complete.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

Development was completed at MW-26C; however, turbidity did not stabilize below 50 NTU.

Projected Work – Near Term:

Development of MW-34B and surveying of new well locations on Thursday, January 21.

Other Activities/Remarks:

None.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date:** 1/20/2021 **Location:** MW-26C **Description:** Purge water at the start of development.
	**Date**: 1/20/2021 **Location**: MW-26C **Description**: Purge water at the end of development

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 1/21/2021	**Prepared by:** Karla Leslie

Personnel Onsite, including Contractors:	Wasatch Environmental – Kevin Murphy RECON Land Surveying – Tony Marturello and Jack Nisogi
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development Equipment • Surveying Equipment

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

New wells (MW-36, MW-37S/D, MW-38S/D, MW-30RA/B, and MW-13L) were surveyed by REDCON Land Surveying.

Development at MW-34B was completed using air lifting techniques. A total of 125 gallons of water was removed (30 gallons on 1/19 and 95 gallons on 1/21). Initial total depth on 1/19 was 186.9 ft btoc, and after removing 30 gallons the total depth was 188.8 ft btoc. The initial and final total depth on 1/21 was 188.8 feet btoc. Turbidity did not stabilize below 50 NTU, however, however, due to the large volume removed and time spent developing this location, development is considered complete.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

Development was completed at MW-34B; however, turbidity did not stabilize below 50 NTU.

Projected Work – Near Term:

None.

Other Activities/Remarks:

None.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date:** 1/21/2021 **Location:** MW-34B **Description:** Purge water at the start of development on 1/21/2021.
	**Date**: 1/21/2021 **Location**: MW-34B **Description**: Purge water at the end of development

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

Date: 1/21/2021

Location: MW-13L

Description: Surveying new well MW-13L

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 2/12/2021	**Prepared by:** Joe Miller

Personnel Onsite, including Contractors:	CDM Smith – Whitney Treadway Wasatch Environmental – Kiel Keller VA- Shannon Smith MP Environmental
Visitors/Others:	

Weather	Sunny	Partly Cloudy	Overcast	**Rain**	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Skid Steer for soil transfer

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

CDM Smith redeployed pumps from MW-26A and MW-13S, and shipped slug testing equipment to vendors and wrapped up site activities.

Wasatch Environmental transferred soil generated from hydrovacing into roll off bin. MP Environmental hauled soil roll off bin #6030 from site. MP also hauled 1800 gallons of IDW water from one of the poly tanks onsite.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

None.

Projected Work – Near Term:

None.

Other Activities/Remarks:

None.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

Date: 2/12/2021

Location: VA IDW area

Description: MP environmental connected to poly IDW water tank.

Appendix B

Field Logbook Notes

VA PCE Plume

@ 700 S 1600 E

Rite in the Rain.

ALL-WEATHER

ENVIRONMENTAL

Nº 550F

11/3/20 -

Book 5

Pine Environmental Services LLC

The Environmental Supply and Support People

Rentals - Sales - Repairs

www.pine-environmental.com

CONTENTS

PAGE	REFERENCE	DATE

Location VA Campus - MW-30R Date 11/3/20

Project / Client PCE Plume 700S 1600E / VA / USACE

W. Treadway

Weather: Sunny, 50's°F - 70s°F

Personnel: W. Treadway (CDM Smith)
Kevin Murphy (Wasatch)

Task: Mobilize to MW-30R, utility locate, pre-clear MW-30R

HNS: Site-specific plan; traffic, VOCs, S/T/FS, masks

PPE: level D + mask

0710 WT + KM onsite at conexs.

0715 H&S tailgate meeting.

0730 Begin cutting concrete/asphalt at MW-30R.

0800 Roll off arrives at [#5919 MW-30R.]

0820 Left w/ TWS onsite at MW-37.

0830 Complete cutting at MW-30R.

0845 WT to meet Jeff @ MW-37.
KM to Home Depot for plastic sheeting.

0900 MW-37: utilities on both sides of street + in planter strip.

0915 Mark alternate MW-38 locations w/ Jeff. on Elizabeth + 700S + 1200E + 700S.

WMA 11/3/20

Location VA Campus - MW-30R Date 11/3/20

Project / Client PCE Plume 7005 1600E / VA / USACE

W. Treadway

0930 WT + KM back at Conex. Re-do containment system.

1000 Levi Patterson w/ Badger onsite

1010 At MW-30R w/ Levi. H&S meeting.
I asked him to pre clear ~9-10 inches in diameter to 15 ft.

1030 KM at mw-30R. Start vacuum.

1045 Levi said there is a boken valve and he can't turn vac on/off. His Supervisor is coming to check it out.
WT to locate piezometers.

1053 Badger Sup. showed up.

1100 At MW-36 w/ Jeff. Many utilities here, along North side, down middle, in planter strip, along south side.

1130 Per J. Miller looking at map, GW-59 is between retaining wall and sidewalk, 1-2 sidewalk blocks from corner. There is white

WMA 11/3/20

Location VA Campus - MW-30R Date 11/3/20

Project / Client PCE Plume 7005 1600E / VA / USACE

W. Treadway

markings from Kiel, but cannot locate actual piezometer.

1145 GW-20 Not located; too much vegetation. Kiel marked a "locate" arrow where we think it should be

1200 Hoot onsite. Unload at laydown area.

1350 WT at MW-30R. KM said Badger can't get past 9 ft.
WT called Brian Treasure. He will send some one to issue permit.
Needed to find H_2O Source for Hoot. Previous source is locked in fencing. I asked a shop? VA employee and he said to use faucet on same bldg, to east on east side of double doors near alley / road. Hoot is filling polys and getting supplies at Home Depot.
Also Jeff w/ TWS wants me to go back and mark all piezos, even ones not found.

WMA 11/3/20

Rite in the Rain

Location VA Campus - MW-30R Date 11/3/20

Project / Client PCE Plume 700S 1600E/VA/USACE

W. Treadway

Will talk to Joe about piezo locations.

1530 Decon pad is complete.

Holt begins decanning piped.

KM to measure MW-30 A/B.

A = 242.55 ft BTOC

B = 282.17 ft BTOC

C has 2IST pump.

WT to mark more GW locations for Jeff w/ TWS

** Earlier, Jeff w/ Holt + WT walk MW-37, 36, and 2-38s.

MW-37 = west side in grass planter strip (away from sewer)

MW-38 on 1200 E + 700S is OK.

MW-36 can only be in middle of street and will be tough if it's snowy/icey.

1615 KM offsite.

1630 Jeff w/ Holt and WT track rig to MW-30R.

Shannon Smith stops by

WMA 11/3/20

Location VA Campus MW-30R Date 11/3/20

Project / Client PCE Plume 700S 1600E/VA/USACE

W-Treadway.

She said to let her know "the big/intersting stuff" or/and when we move off a well.

1700 Decon complete.

1715 Holt offsite. WT to charge PIDs + lock cores and gates. Shop gate was open so I left it open.

1730 Jeff w/ TWS complete.

WT to add caution tape + cones to MW-30R.

** Jeff said he'll need to move roll off bin.

** 2nd containment w/ vac truck soil has not been pumped. Waiting to let it settle.

1745 WT offsite.

WMA 11/3/20

Location VA Campus MW-30R Date 11/4/20

Project / Client PCE Plume 7005 1600E / VA / ~~HS~~ ACE

W. Treadway

Weather: Sunny, 50's °F - 70's °F

Personnel: W. Treadway (COM Smith)
J. Jones
Andy Mangle } Holt
Alex Langdon

TASK: grout abandon MW-30 A/B
begin drilling at MW-30R

~~HAS~~: site specific, vocs, traffic, S/F/FS, heavy equip, machinery

PPE: level D + mask

0650 WT onsite at corex.
Load supplies.

0715 H&S tailgate at laydown yard.
Gather supplies

0800 At MW-30, Jeff needs different parts to grout 1".

0830 Andy + WT to badging office.
Jeff + Alex to hardware store.

0900 Andy + WT onsite @ MW-30

0924 Calibrate PID. see separate sheet.

0937 Jeff + Alex back onsite.
1 pallet of 10/20 sand, 1 pallet of med. Chips

1000 Check A + B depths one more time
A ≈ 242 ft (top of screen)
B ≈ 282 ft. (top of screen).

WT 11/4/20

Location VA Campus MW-30R Date 11/4/20

Project / Client PCE Plume 7005 1600E / VA / ACE

W. Treadway

~~Start of~~ WT Sediment on tip of sounder.

1005 Start grouting B w/ Baroid Quik-Grout + H2O. Mixing by hand in 5-gallon buckets then pumping through ½ inch tubing w/ hand pump.

1030 Having some issues pumping it through tubing. It's clogging up.

1044 B is full, begin pumping in A.

1145 Grout at surface at A.
Put caps on. Will put concrete caps on later. Lock + secure.

~~1200~~ WT Drillers break for lunch.

1200 Drillers to laydown yard to pick up pipe (11 x 10ft).

1315 Set up rig on MW-30R
20 x 10 ft of 8" casing.

1340 Jeff let me know they have a diesel leak. A small puddle was under the rig. <6" in diameter. Plastic under rig now. Called Shannon Smith.

WT 11/4/20

Location VA Campus MW-30R Date 11/4/20
Project / Client 700S 1600E PCE Plume / VA / ACE W
W. Treadway

1410 Waiting on call back about a part for the rig.
1430 Holt offsite to purchase screen + casing.
1620 Holt back onsite. They got a part to replace on rig. Will attempt to replace it now.
1730 While installing new part, a connection broke. They'll have to get a piece tomorrow. Also, they got the wrong slot size. Store loaded wrong box.
1750 Holt offsite. We will meet later tomorrow. WT secures site, locks conxes and gates.
** Jeff had clamped fuel lines w/ vice grips to keep from leaking. OK. overnight.
1805 WT offsite.

WSmA 11/4/20

Location VA Campus MW-30R Date 11/5/20
Project / Client PCE Plume 700S 1600E / VA / ACE W
W. Treadway

Weather: Sunny, 40's°F – 70's°F
Personnel: W. Treadway (CDM Smith)
J. Jones
Andy Mengle > Holt
Alex Langdon
Task: rig repair; begin drilling MW-30R
H+S: Site-specific plan, VOCs, traffic, S/T/As, heavy machinery
PPE: Level D + mask
0650 WT onsite. Calibrate PID (separate sheet) Holt picking up rig part.
0740 Holt onsite.
0745 H+S tailgate meeting.
0755 Finishes ~~part~~ fixing part in rig
0800 Fixed!
0828 Begin drilling at MW-30R @ 0 ft bgs.
1215 Break for lunch. at 67 ft bgs.
1305 Begin drilling again at 67 ft bgs.
1400 At 70 ft, Jeff broke up a large cobble/boulder, when it came out it was pulverized w/ large chunks

WSmA 11/5/20

Rite in the Rain

of gray limestone. This limestone is only from ~70 - 70.5 ft. Could be fallen from another depth. - Possibly 60 ft.

1615 Jeff is switching out core barrels. He said they weren't screwing together well + he didn't want to break them. Instead of 2 x 10 ft, he will have 4 x 5 ft core barrels.

1705 Last run 100 to 110 ft bgs. Trip in 1 more 10 ft casing to 100 ft. Clean up and wait for Bobcat to regen. I mentioned to Jeff about marking MW-36 + MW-37 and cleaning secondary containment.

1745 Now refueling rig.

1755 WT to conex to unload + lock up. Holt offsite.

1805 All gates locked, WT offsite.

WhA 11/5/20

Weather: 50's °F - cloudy
Personnel: W. Treadway (COM Smith)
J. Jones
Andy Mengle > Holt
Alex Langdon
Task: drill @ MW-30R from 110 ft
clean containment, rain prep, Mark location
H+S: site-specific H+S plan, heavy equip, S/T/Fs, traffic
PPE: Level D + mask

0640 WT onsite. Calibrate PID, scan with logs, update paperwork.

0711 Holt crew onsite @ MW-30R Start up rig.

0730 H+S tailgate meeting. Talk about tasks for today.

0745 Begin drilling at MW-30R @ 110 ft.

0900 Slow drilling, only 110 to 117 ft so far.

1215 United Services onsite with 1 porta-potty

1255 @ 157 ft, Stop for lunch.

1340 Jeff + WT to MW-36. A + A to containment area

WhA 11/6/20

Rite in the Rain

Location VA Campus MW-30R Date 11/6/20

Project / Client 700S 1600E PCE Plume/VA/USACE

W. Treadway

Jeff and I measured out set up at MW-36. Worried about runoff rolling down hill put on 1200E around corner? Tight for traffic. Worried about slippery snow. Spoke w/ J. Miller about these issues.

A+A scooped soil from containment in hopper.

1425 Started pump in containment area, head back to MW-30R to offload soil + start drilling. Will check on pump frequently.

1445 Start drilling at 157 ft.

1450 WT checks on pump slowly going.

1455 WT @ MW-30R

1555 Still pumping at containment area.

1615 Still pumping at containment.

1700 Still pumping " ".

1730 Stop drilling at 183 ft bgs. Clean up, refuel rig.

WHA 11/6/20

Location VA Campus MW-30R Date 11/6/20

Project / Client 700S 1600E PCE Plume/VA/USACE

W. Treadway

1745 To corex to clean pump + turn off.

Secured MW-30R (caution tape + cones, "DETOUR" BARRIERS (every night).

PID charge, pump off, corex + gates locked.

1800 All offsite.

WHA 11/6/20

Location VA Campus MW-30R Date 11/7/20

Project / Client 700S 1600E PCE Plume / VA / ~~VA~~ US ACE

W. Treadway

Weather: partly cloudy, 50s-

Personnel: W. Treadway (CDM Smith)
J. Jones
Alex Langdon } Holt
Andy Mengle

TASK: drill MW-30R
~~MW~~ WT

H&S: Site-specific plan: S/T/Fs, traffic, weather, heavy equipment

PPE: Level D. + mask

0645 WT onsite. Calibrate PID.
Load supplies.

0700 Holt onsite loading 8" casing for MW-30R.
~~3 x 8~~ They had 170' in yesterday w/ 3 x 10ft broken joints.
Today they have 7 x 10ft at site.
Unload, warm up rig.

0730 H+S tailgate meeting.

0745 Start drilling @ 183-ft bgs.
I mentioned to crew about watching the storm drain when things get wet.

WMA 11/7/20

Location VA Campus MW-30R Date 11/7/20

Project / Client 700S 1600E PCE Plume / VA / US ACE

W. Treadway

They have a silt sock around the drain now.

1300 @ 228-ft bgs. Break for lunch.
Weather is turning, rain coming soon & possibly lightning.

1340 Begin drilling again @ 228 ft.
Rainy off and on through afternoon; closest lightning 1 time at 6 miles away, otherwise further than 10 miles.

1620 Reached 250ft bgs.
left clean out hole.

1635 Trips in 8" casing to 250ft.
Clean out again.
Clean up & offload soil into rolloff.
Empty fresh water poly.
Close rolloff.
Lock up rig.

1725 Refuel rig.

1737 Empty fresh water tank & decon unit.
Charge PID & load gates.
MW-30R site secure w/ cones, caution tape & barricades

1800 All offsite.

WMA 11/7/20

Rite in the Rain

Location VA Campus MW-30R Date 11/9/20

Project / Client PCE Plume 7005 1600E / VA / USACE

W. Treadway

Weather: Snowy, cloudy; 30's°F

Personnel: W. Treadway > CDM Smith
~~E. Pott~~ WT
J. Jones
Andy Mengle > Holt
Alex Langdon
WT

TASK: drill MW-30R, ~~develop~~ WT

H+S: Slips (ice) cold stress, traffic, heavy lifting, heavy equipment.

PPE: Level D. + mask

0640 WT onsite. Calibrate PID. Scan with logs.

0700 Holt onsite. Begin moving 6" casing from laydown yard to MW-30R. H+S Tailgate meeting

0750 A+A to exchange screen. WT + JJ to meet ELM @ MW-37. We noticed another (2") gas line in sidewalk. Try to split difference btwn sewer ii gas + 2" gas in sidewalk. ELM said

WMA 11/9/20

Location VA Campus MW-30R Date 11/9/20

Project / Client PCE Plume 7005 1600E / VA / USACE

maps of utilities may be wrong, and there is an abandoned line somewhere. They are going to take measurements + confirm some locations.

0845 All back onsite.

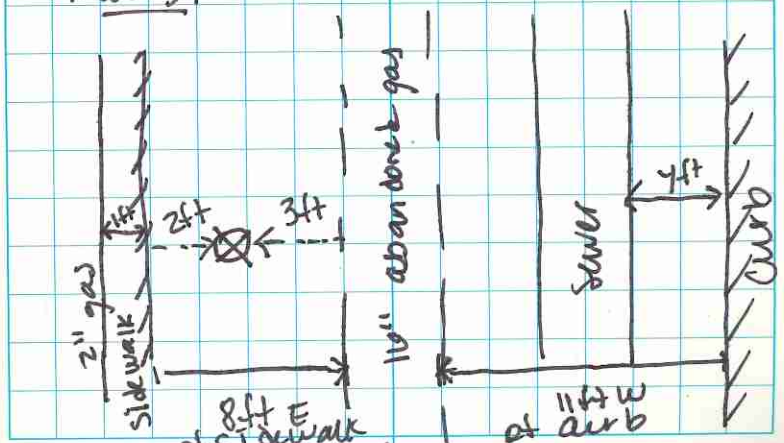
0855 Warming rig up.

0925 Jeff let me know the rig isn't holding air because of a WT ~~Sp~~ spring (cold or broke?)

1000 Jeff said he's working w/ TerraSonic to try some things to fix the screen.

From Michael @ ELM:

MW-37



WMA 11/9/20

Rite in the Rain

Location VA Campus MW-30R Date 11/9/20

Project / Client PCE Plume 7005 1600E/VA/USACE

W. Treadway

1000	Fencing delivered to laydown area.
1100	Holt is able to start working. Begin tripping in 6" casing.
1150	Break for lunch. 6" casing at 250 ft. Had 290 ft of 6" casing on site.
1220	Begin tripping in drill pipe to drill at 250 ft w/ 4" core barrel. Jeff said air spring is working ok for now. He will keep his eye on it.
1518	A drill rod broke while tripping out core barrel. Will need to trip back in to fish it out.
1340-1355	Stop drilling to refuel rig.
1645	Reached TD of 295 ft bgs. Reviewed B zone lithology w/ N. Smith. Will decide final depth for installation tomorrow.
1705	Holt offsite. Lt locks corexs, secures site.
1730	Offsite.

11/9/20

Location VA Campus MW-30R Date 11/10/20

Project / Client PCE Plume 7005 1600E/VA/USACE

W. Treadway

Weather: partly cloudy, 30's °F

Personnel: W. Treadway, E. Rath } CDM Smith

J. Jones, A. Mengle, A. Langdon } Holt

Anna Fiani Wasatch

TASK: install MW-30R, develop

H+S: site-specific plan, S/T/Fs, cold stress, traffic, heavy lifting

PPE: Level D + mask

0645 WT onsite. Calibrate PID. Load/unload.

0700 Holt crew onsite. Bring well materials to MW-30R.

1 pallet 10×20 Sand (64 x lb)

1 pallet bentonite chips (48 x lb)

Dispose of garbage bags, warm up rig, H+S meeting

0814 TD = 291 ft bgs.

0825 Tag for foot clamp. Holt is using our orange foot-clamp.

0839 1×10 ft SCH40 0.010 slot screen + end cap

28×10 ft SCH40 Blank PVC

WM 11/10/20

Rain

Location VA Campus MW-30R Date 11/10/20

Project / Client PCE Plume 7005 1600E/VA/USACE

W. Treadway

0900 Begin adding 10/20 sand. Then stop to pull casing a little bit. Jeff took many measurements and adjusting to make sure casing (PVC) is where it is supposed to be. It took them a little time to string cable through head to hang casing.

1000 Begin adding Sand again.

1015 Pull 10ft of casing, add Sand

1025 Pull 10ft of casing. Sand at 277 ft bgs. (4 x 50 lb bags)

1032 Start adding medium bentonite chips (PureGold)

1045 Pull 10ft, add bent.

1100 Pull 10ft, add bent. (250ft 6" in)

1134 Bentonite at 252 ft bgs, 5.5 x 50lbs Pull 250 ft of 6" casing.

1205 Still pulling casing, then break for lunch. VT to MW-37 rolloff delivery. VA had another field trailer delivered in this area.

What 11/10/20

Location VA Campus MW-30R Date 11/10/20

Project / Client PCE Plume 7005 1600E/VA/USACE

W. Treadway

1224 Delivery of rolloff #5483 at MW-37

1234 VT back at MW-30R

1250 Prepare pvc casing for A zone.

1310 Install 1 x 10ft SCH40 .020 slot screen + 24 x 10ft blank SCH40 + endcap.

1325 Add 10/20 Sand. Take measurements, pull casing slightly. Add more Sand

1345 Pull 10ft of 8" casing. Continue adding Sand.

1400 Alex to get water in poly tank.

1409 Pull 10ft casing, Sand @ 237 ft bgs, 8 x 50 lb bags Begin adding bentonite chips

1416 Pull casing; at 220ft.

1515 Alex left earlier for more bentonite. Jeff + Andy have been adding chips + pulling casing. 80ft out, 170ft still in.

1525 Alex back onsite w/ 2 pallets of Pure Gold Medium Bentonite chips

1600 120ft out, 130ft casing in.

1040 180ft out, 70ft casing in.

What 11/10/20

Location VA Campus MW-30R Date 11/10/20

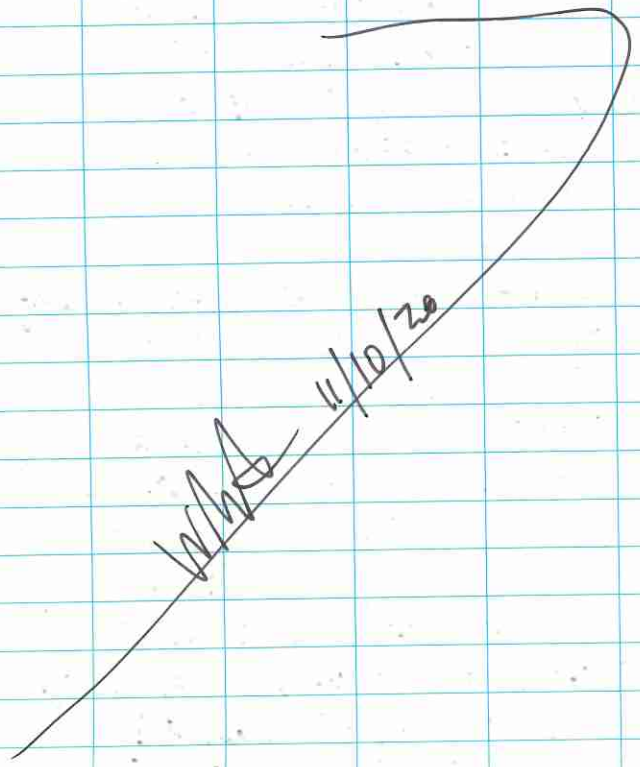
Project / Client PCE Plume 7005 1000 E / VA / USACE

W. Treadway

1725 All casing out. Bentonite to 8 ft bgs. will finish during well box instalation. 120 x 50 lb bags used.

1745 All offsite.

NOTE: Anna + Emma were at MW-26 for development today.



Location VA Campus / Neighborhood locations Date 11/11/20

Project / Client PCE Plume 7005 1600 E / VA / USACE

W. Treadway

Weather: Snowy 30's °F

Personnel: W. Treadway, E. Rott > COM Smith

Anna Fiorni, Kiel Keller > Woodard

Jeff Jones, Alex Langdon, Andy Mengle, Trevor > HOLT

Badger lost

0640 WT onsite. Load / unload

0700 Holt crew onsite.
Kiel Keller onsite.
H&S meeting.

0715 Kiel + WT to MW-37, 36, 38 to confirm locations.
3 steel plate at MW-36.
Car near MW-38.
Traffic cones + sign will be moves from MW-36 to MW-37.

0800 WT back to site.
Holt moving equipment to laydown area.

1000 Holt to Home Depot now.

11/11/20

Location VA Campus / Neighborhood locations Date 11/11/20

Project / Client PCE Plume 700S 1600E / VA / USACE

W. Treadway

1000 Kiel completed cutting MW-36. At MW-38 now. Jeff wants a 2nd forklift for neighborhood location. J. Miller said ok.

1125 Holt back onsite, Kiel onsite.

1135 Kiel to his office until Badger calls. Holt adds gravel to MW-30R from 8ft to 2ft bgs.

1200 Holt prepping for decon.

1210 Break for lunch.

1240 Heard from Badger. At MW-37 w/ Kiel to meet Badger.

1315 WT back at laydown. Holt is deconning. Jeff out to get well box.

** There are 2 vehicles + a golf cart in the way of our connexs + containment. I called Shannon. She suggested building another containment at laydown area, or calling Boiler plant, VA police. J. Miller suggested hauling offsite.

WMA 11/11/20

Location VA Campus / Neighborhood locations Date 11/11/20

Project / Client PCE Plume 700S 1600E / VA / USACE

W. Treadway

Left voicemail for Neil.

1345 Spoke w/ Boiler Plant employee. He said someone is looking for keys for the 3 vehicles to move.

1355 Jeff is loading up the rig. Andy + Alex are finishing deconning.

@1345, MW-37 cleared to 7ft.

1420 MW-38 cleared to 5.5 ft.

1430 Move rig hauler w/ rig, drill pipe and fencing to MW-37.

1450 MW-36 is 7ft bgs from surface, Left bgs below concrete bottom.

1500 fencing set up around rig @ MW-37.

Plate put on MW-36 / Kiel did this

Holt picked up other 2 and put one on MW-38, other at laydown yard.

Bobcat in fencing w/ rig, plywood over hole @ MW-37

1600 Kiel offsite, Holt + WT @ laydown. Badger offloaded soil @ containment.

WMA 11/11/20

Rite in the Rain

Location VA Campus Date 11/11/20

Project / Client PCE Plume 7005 1600E / VA / USACE

W. Treadway

~1500	JCB 550-170 forklift delivered. (Sunbelt Rentals)
1620	Prepare to set well box at MW-30R. Add 6" of PVC to A. A is higher. B is lower.
1625	Well box complete, covered w/ plastic from snow.
1730	Holt crew unloads materials at laydown.
1740	Holt offsite.
1750	WT offsite. Connex locked.

11/11/20

Location WT ~~VA Campus~~ MW-37 Date 11/12/20

Project / Client PCE Plume 7005 1600E / VA / USACE

W. Treadway

Weather: cold, sunny < 30°F

Personnel: W. Treadway, J. Miller, E. Roth (CDM Smith); J. Jones, A. Mengle, A. Langdon (Holt); A. Fiorni - Wasatch

TASK: drill MW-37, develop MW-30R

H+S: Site-specific plan, STI/FS, cold stress, traffic.

PPE: Level D+ mask

0620 Mt WT onsite. Prep for day. Calibrate PID. Spread salt around Connex area. Start measuring mag sus. w/ meter.

0720 H+S meeting w/ Holt at laydown. Holt warms equipment, loads supplies and equipment to bring to MW-37. Multiple trips.

0900 Still loading / mixing supplies and warming up rig.

WTA 11/12/20

Rite in the Rain

Location MW-37 Date 11/12/20

Project / Client PCE Plume 700S 1600E/VA/USACE W. Treadway.

0950 Begin drilling at 7 ft bgs at MW-37.

1030 Attempted H_2O sample at 20 ft bgs, only mud.

1045 Jeff said they need a flapper bit because soil isn't staying in core barrel. They will push sampler down to 30 ft bgs, but we don't have sample from 20-30 ft. It fell out.

1100 Push ahead @ 30 ft bgs. Wait. Andy + Alex to pick up flapper bit.

1120 Collect MW37-GW111220-30

No soil description 20-30 ft.

1000 Collect TB56-GW111220

1145 Andy + Alex onsite.

1211 Begin drilling again.

1317 There is hard clay at 50 ft bgs and Jeff is switching back to auger bit because flapper bit won't work well in hard clay.

1338 From 50-60 ft, rock in shoe, no sample in core barrel.

WMA 11/12/20

Location MW-37 Date 11/12/20

Project / Client PCE Plume 700S 1600E

W. Treadway

Jeff pushed casing down + said hard clay ends at approx 54 ft bgs.

1425 J. Miller Field Book Author Holt Mob to decon Sample 60' casing has slid to 62' drilled to 70' w/ Boring open to 68'. Flapper Bit Recovery 12' from ~~55~~ JM to 60→70'

*NOTE: MW-30 A + B will need to be topped off. Well box was full of water (~1.5-2 gal removed) and vapor probe + MW-30C tubing were submerged. Zone A cap came off while purging out well box + some surface water went down into Zone A, which means it needs to be topped off. Need 2 people to pull pump in Zone C to check total depth, i.e. if grout is in Zone C or not.

1518 Holt back onsite.

WMA 11/12/20

Rite in the Rain

Location MW-37 Date 11/12/20

Project / Client PCE Plume 700S 1600E / VA / USACE
W. Treadway

1525 Collect EB49-111220 (after MW37-GW111220-30) decon from
1545 DTW in push ahead sampler ~35 ft bgs.
Try collecting GW sample in push ahead at 70ft bgs.
Tried and vibed sampler 3 times and still no water, just mud.
1620 Casing is only at 60 ft bgs, so push casing to 70 ft bgs, clean out, + we'll try again.
1655 DTW: 50.97 ft bgs, after clean out, w/ casing to 70 ft bgs.
Collect sample tomorrow.
Clean up at site.
1711 All offsite. Holt decons push ahead sampler, WT + JM to Connex.
1725 E. Roth + JM to MW-30R + MW-30. MW-30C has H_2O in well box again. Some went down the well.
1820 Gates/connexs locked. All offsite.
WMA 11/12/20

Location MW-37 Date 11/13/20

Project / Client SLC VA 700S 1600E PCE Plume
J. Miller

0625 J. Miller Onsite
0700 Holt Onsite H+S tailgate
weather 23-40°F Clear
Attendees:
Joe Miller
Jeff Jones
Alex Langdon
Andy Mengle
Emma Roth
Anna Filetini
Topics: why we work safe
crush points, slips, cold,
Task: Sample MW-37 @ 70
Build well
0720 Check out VAC containment
0730 Mob to drillsite
0745 Warm up rig Ingredion
0750 DTW 50.96
0800 Trip in Sample
0810 MP Drop Rolloff @ MW 36 #6030
0820 Move Rolloff MW 37 to MW-38
0830 Holt to campus for well materials
J Miller call about well design
JM

Location MW37 Date 11/13/20

Project / Client 700S 1600E PCE Plume
SLC VA

0910 Holt Returns w/ well materials
0915 Collect MW37-GW111320-70 GW Sample
well Plan is MW-37S Screen 25-35
MW 37D 60-70' screen
SVP @
well 2" Sch. 40 0.020 Slot
0945 MW37D Installed Begin backing out casing and installing sand pack 10/20 Silica Sand
0955 pull 10' casing continue to add Sand
1005 8 bags Sand to 57' pull casing begin adding Bentonite Chips
1020 pull 10' casing
Emma / Anna take Samples to FedEx
1048 Install MW-37S Screen 25-35 w/SVP @ 8' Bgs ~~Start~~ Bentonite to ~~39~~ 34' Begin adding Sand from 34'
11/13/20
1120 Neighbor from Lowell Ave Inquiring about well. provided flier
1130 Holt Break for lunch
1215 Holt Back on site
1230 Sand 9-6.5' for SVP

Location MW-37 S/D Date 11/13/20

Project / Client 700 S 1600 E PCE Plume
SLC VA

1245 Mob Rig from hole prep for Surface completion
1315 Begin installing well completion
1330 Jeff walk rig to MW-38
1345 Rig to MW-38
1400 Run Hoppe to MW-38
1420 Holt Finish surface Completion
Mob water tote + well building materials back to Layday
1445 ~~Sam~~ Holt Returns to load casing
~~A~~Andy to Sunbelt
1500 Holt continue to Mob Equipment to MW-38
1530 Begin pumping out Containment IDW Managment
1700 Holt Offsite / CDM Offsite

11/13/20

Location SLC VA MW-38 Date 11/14/20

Project / Client 700 S 1600 E PCE Plume

0630	J. Miller CDM Smith Onsite
0700	H+S tailgate weather 34-45°F Overcast
	Task: drill @ MW-38
	Attendees: Joe Miller CDM Smith
	Jeff Jones - Holt
	Alex Langdon - Holt
	Andy Meighe - Holt
	Topics: Cold, Traffic, Facing, Lifting crush points
0715	Mob to MW-38
0730	Warm up Equipment Holt moves to get 8" casing from Langdon
0815	Holt offloads 8" casing
0845	Holt Returns w/ Drill Rods/core Barrels
0855	Begin Drilling
1000	Drilling 30-40' water present
	DTW 22.04'
1120	Boring + Casing to 70' less moist
	waiting to log + check water
1130	Holt breaks for Lunch
1150	DTW 27.23'
1230	Call from Neil determine go to 80'
1245	Resume drilling
1315	Boring TD'd @ 80'.

Location SLC VA MW-38 Date 11/14/20

Project / Client 700 S 1600 E PCE Plume

1320	Clean up Cuttings
1345	Secure Fencing + Rolloff
1400	Joe To Campus Holt Finishing site wrapup
1430	CDM + Holt Mob from Site

11/14/20

Location SLC VA MW-38 Date 11/16/20

Project / Client 700 S 1600 E PCE Plume Site

0630 CDM Smith Onsite - J. Miller

0700 H&S tailgate
Weather: 35-50°F Clear
Task: Install MW-38
Attendees:
Joe Miller - CDM Smith
Jeff Jones - Holt
Alex Langdon - Holt
Andy Mengle - Holt
Topics: Lifting, Crush Points, Traffic
Cold Stress

0715 Holt load up well materials transport to MW-38

0730 Holt to B&B well supply for Bentonite

0805 Holt Returns to MW-38
Begin warm up & Inspections

0830 Call w/ VA USACE about well design

0915 Mob to Laydown Holt to pump out containment

0940 ~~to~~ Some water pumped still Mucky

0945 Call w/ Shannon & Neil.
MW38D Screen 60-70
MW38S Screen 27-37

Tom 11/16/20

Location SLC VA MW-38 Date 11/16/20

Project / Client 700 S 1600 E PCE Plume

1015 Begin installing MW-38D
Sch40 PVC 2" 0.020 screen Run
60-70' Bgs
Add 10/20 silica Sand

1036 Sand to 58' Begin adding medium Bentonite chips
pull 10' Casing 1/1

1100 Install MW-38S w/ SVP 8'

1110 Begin adding 10/20 Sand 39-25'

1127 pull 10' casing 1'
Bentonite chips added
SVP 8' sand 9-7'

1145 Bentonite to 4'

1150 Holt Break for lunch

1230 Holt Returns from Lunch Loadup

1255 Holt Mob Equipment to Laydown

1315 Holt Returns Loads up casing
Mob to Laydown

1330 G. Hatton Onsite

1350 Holt Returns loads up drill steel

1355 Holt Mob Steel to laydown

1415 Holt loading Fencing

1420 Holt walk Rig to MW-38

11/16/20

Location SLC VA MW-36 Date 11/16/20

Project / Client 700S 1600E PCE Plume

1500	Holt Setup @ MW-36 Fencing
1510	Holt picks up Extra Cones from MW-37 for MW-36
1520	Holt Back w/ cones
1545	Holt Back w/ Hopper
1600	Mob to VA
1615	Holt Setup to decon drill Steel
1620	Fill H_2O tote
1640	Holt Begins decon 8"
~~17~~	~~Dm~~
1730	off Site

11/16/20

Location SLC VA MW-36 Date 11/17/20

Project / Client 700S 1600E PCE Plume

35-60°F Clear

0630	J. Miller CDM Smith Onsite
0700	H+S tailgate
	Topics: traffic, Fatigue, Lifting, uneven ground, Crushpoints
	Attendees:
	Joe Miller CDM Smith
	Holt - Jeff Jones
	Alex Langdon
	Andy Meagle
	Greg Hartman - USACE
	Task: Drill MW-36
0725	Holt mob to MW-36
0740	Holt warm up Equipment / Return for Casing
0800	Open / Label Rolloff 6030
0805	Holt Returns w/ casing
	Setup Rig over Boring
0820	Greg Onsite
0840	Begin drilling
0930	Boring 40' sample slid out Random w/ flapper Bit Driller thinks wet at 32'
1000	DTW 30.82'

11/17

Rite in the Rain

Location SLC VA MW-36 Date 11/17/20

Project / Client 700 S 1600 E PCE Plume

1010	Due to loss of sample Had to tell location of wet zone Likely 32-35'
1155	Boring to 80' cased to 70' Holt takes lunch brings Back 30' casing
1300	Holt Resumes adds Casing to 80'
1400	Boring to 100' Bgs ~~No water~~ Some wet Zones but nothing looks like it will make great water
1440	Greg to VA to visit shannon
1510	Call from Neil Discuss 10' deeper He will Notify shannon
1520	Holt presume drilling
1540	Holt Fuel Rig
1600	Dump cores wrapup Site
1630	Call w/ Shannon, Neil, Greg about well screen decide 48-52' w/5' screen
1710	Mob Back to VA
1720	Off Site

Location SLC VA MW-36 Date 11/18/20

Project / Client 700 S 1600 E PCE Plume

65°F windy

0640	CDM Onsite - J. Mille
0700	H+S tailgate at Laydown Topics: Focus, Fatigue, Lifting Traffic Attendees: Jae Miller - CDM Smith Greg Hatton - USACE Jeff Jones - Holt Alex Langdon - Holt Andy Mengle - Holt Task: ~~Install~~ Install MW-36 Mob Equipment Back to VA
0715	Holt to MW-36 w/ pallet of Bentonite
0730	Holt Mobs fence back to VA then heads to B+B for Supplies
0820	Holt Returns to MW-36
0830	Boring tagged to 105'
0845	Begin adding bentonite chips
0855	Pull 10' casing
0905	~~Beginning~~ Pull 10' Casing
0925	Pull 10' casing
0945	Pull 10' casing
1005	Pull 10' Casing Bentonite to 54'

Location SLC VA MW-36 Date 11/18/20

Project / Client 700 S 1600 E PCE Plume

65°F

1010	Install MW-36 w/ 5' sch 40 0.020 slot Screen. 47-52'
1020	Begin adding 10/20 silica Sand Sand from 54- 44'
1050	pull 10' casing
1100	Greg Hatton Offsite
1115	All casing pulled from Boring
1130	Holt Mob casing to VA
1210	Holt Returns to load up more Equipment Hydrate chips
1230	Holt takes load to VA
1300	Holt Returns to Load More Equipment
1320	Holt Mobs Rig to VA
1355	Holt @ VA w/ Rig
1410	Holt to get Backhoe and Cable for Development
1610	Holt Back Onsite pump Hose from Container
1640	Holt + CDM offsite

Location MW-30R SLC VA Date 11/19/20

Project / Client 700 S 1600E PCE plume

55°F Overcast

0630	J. Miller CDMSmith Onsite
0645	H+S Tailgate Task: Bail development at MW-30R Attendees: Joe Miller - CDMSmith Jeff Jones - Holt Alex Longden Andy Mangle Topics: Fatigue, Focus, Lifting Crushpoints Hand placement
0715	Arrive MW30R MW-30R DTW 229.56 DTB 288.03
0730	MW30RA DTW 227.57 DTB 250.56
0735	Begin Bailing MW-30RA
0900	Return to Excavation Permit to Logan @ VA Safety
1015	Drill batteries dead Bail by Hand
1100	Holt Back for Inch Recharge Batteries
1145	try Drill Rig Inverter
1250	Joe Back w/ Wasatch Gear

Rite in the Rain

Location SLC VA Date 11/19/20

Project / Client 700 S 1600 E PCE Plume

1315	Demob Drill dead
1430	Return w/ New drill
1610	DTB ~~25.10~~ 25.23
1630	Wrap up site for days off
	Bailed ~12 gallons
1645	Off site

11/19/20

Location SLC VA Date 11/20/2020

Project / Client 700 S 1600 E PCE Plume

0800	J. Mills Onsite
	H+S Mitigate
	Topics: Lone worker, traffic, cold stress
	Focus
	Weather 30-50°F Clear
	Tasks: Site mapping
0900	MP @ MW-36 to haul
	Rolloff Back to the VA
0930	MW-38 Rolloff pickedup
0940	Delivered to VA
0950	More MW-30R Rolloff to VA
	Laydown
1010	Clean up IDW area/Connex
1045	J. Mills Offsite

11/20/2020

Location SLC VA Date 12/1/20

Project / Client 700 S 1600 E PCE Plume

0700	Onsite Carney Power is Out
0715	H+S Tailgate
	Task: Develop MW-30R
	Weather 28-40°F Clear
	Attendees
	Joe Miller
	Tea Vitko
	Kevin Murphy
	Jeff Jones
	Alex Longden
	Andy Mangold
	Topics Focus, Covid, Lifting, Traffic
0730	Arrive MW30R
	MW30R B DTW 229.35
	MW30R B DTB knock at 288.20'
	worked down to 289.20'
0750	Drillers Begin Bailing
	Break pull Cord on generator
0800	J. Miller Head to MW-13L for GPR
	Ivan ~~GPR~~ GPRS Onsite
	Identified irrigation line ~1' deep
	South of well pair
0830	J. Miller Head Back to Camper
	Generator Running

Location SLC VA Date 12/1/20

Project / Client 700 S 1600 E PCE Plume

0900	J. Miller + Jeff Jones scout
	set up at MW-13L
0930	Return to well hold still bailing
1020	MP Onsite to move Rolloff
1430	End Bailing ~2 Gallons
1445	Pump purge into Tote
1500	Load up Rig and Equipment for MW-13L
1530	Unload Equipment @ 13L
1600	Begin to Hand Auge — Need More
	Equipment
1700	MW-13L prechared to 5' bgs
1735	Joe Help w/ development Crew
1830	Offsite

12/1/20

Location SLCVA MW-13L Date 12/2/20

Project / Client 700S 1600E PCE Plume Site

0615	Joe Miller CDM Smith Onsite
0625	Collect IDW13-SB120220 from Vac truck Cuttings
0640	Collect IDW14-SB120220 from MW-30R Rolloffbin 5919
0650	Calibrate PID
0700	H+S Tailgate
	Weather 20-40°F Clear
	Task: Drill MW-13L / Develop MW-30R/B
	Topics: COVID, Fatigue, Cold, Crush points Lifting
	Attendees:
	Joe Miller
	Tea Vetter
	Kevin Murphy
	Andy Mengle
	Alex Longden
	Jeff Jones
0720	Drill Crew Arrive MW-13L
	Begin Warm up/Inspections
	Need to charge Rig Batteries
0815	Rig JM started
0845	Tower up

Location SLCVA MW-13L Date 12/2/20

Project / Client 700S 1600E PCE Plume

0905	Begin ~~drilling~~ JM Running Rig through it's movements
0930	Begin drilling MW-13L
1030	Halt heads to VA for Move plywood
1120	Resume drilling
1235	Halt Breaks for lunch Boring to 90'
1315	Resume drilling
1615	Boring to 150' cased to 150'
	Halt Fuel Rig
1645	Site wrapped up Halt Offsite
1700	J. Miller to Convey to Offloop

12/2/20

Rite in the Rain

Location SLC VA MW-13L Date 12/3/20

Project / Client 700 S 1600 E PCE Plume

0645	J Miller onsite
0700	H&S Tailgate
	Task: Drill Install MW-13L
	Develop MW36 and MW38S/D
	Weather 25-40°F Clear
	Attendees:
	Joe Miller
	Trea Vathaw
	Kevin Murphy
	Jeff Jones
	Andy Mungle
	Alex Langdon
	Topics: Traffic Fatigue cold stress
	Stop work authority
0730	Holt load up well Materials
0740	Arrive @ well site Begin Warming
	Equipment
0805	DTH 342C
0830	Resume drilling Head not holding pressure
	allow it to warm more
0900	Resume drilling
0930	Core from 150-160
0940	Holt Break while deciding interval
1030	Holt Clean out to 160'

Location SLC VA MW-13L Date 12/3/20

Project / Client 700 S 1600 E PCE Plume

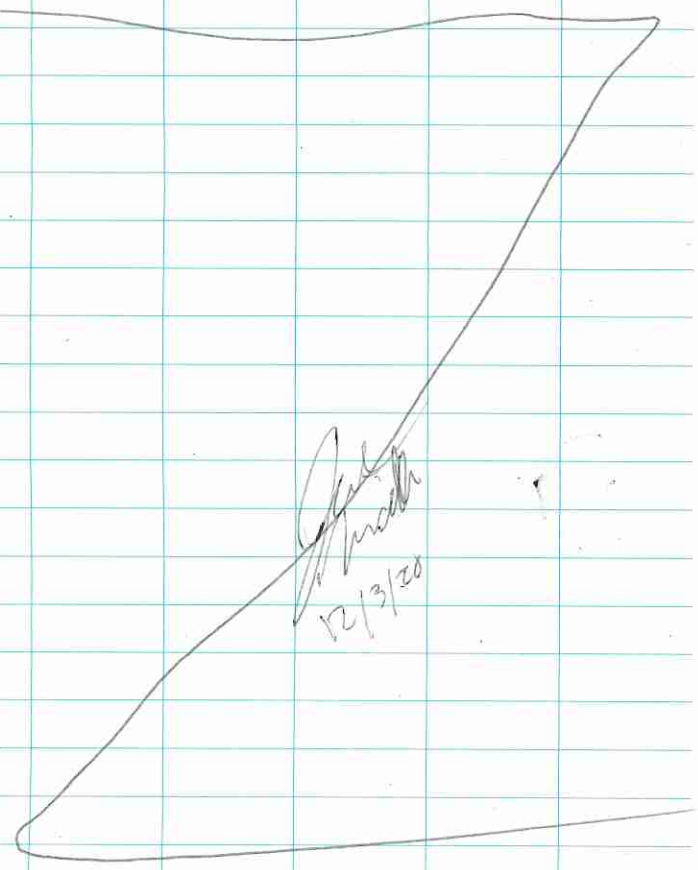
1045	Call w/ Neil, Nathan, and Shannon
	decide to set well @ 150-160'
1100	Holt to B+B for well supplies
1200	Holt begin installing well with 10' screen
	from 150-160' Bgs 0.020 slot Schedule
1215	Begin adding 10/20 Sand
1230	pull 10' casing continue to add sand
1235	Sand to 147
1240	pull 10' casing begin adding Medium
	Bentonite chips
1250	pull 10' casing resume adding Bentonite
1300	pull 10' casing add Bentonite
1315	pull 10' casing add Bentonite
1325	pull 10' casing add Bentonite
1335	pull 10' casing add Bentonite
1345	pull 10' casing add Bentonite
1353	pull 10' casing add Bentonite
1358	pull 10' Casing add Bentonite
1405	pull 10' casing add Bentonite + Personnel
1410	pull last 10' section add Bentonite to 5' Bgs
1420	Holt takes load to VA
1440	Holt Returns for another load
1450	Holt load Rig and Bobcat

Rite in the Rain

Location SLC VA Date 12/3/20

Project / Client 700 S 1600 E PCE Plume

1500	Holt Mob Rig to VA
1530	Holt begin surface completion
1600	Holt Mob back to VA Begin Decon
	while takes of water are liquid
1730	Off site



Location SLC VA Date 12/4/20

Project / Client 700 S 1600 E PCE Plume

0645	On site
0700	H+S Tailgate
	Task: Loading/Clean up site/Development
	Topics: Fatigue, crush points, lifting, Foam
	Hand placement
	Attendees:
	Joe Miller
	Jeff Jones
	Alex Langdon
	Andy Mengle
	weather 20-40°F Clear
0730	Head to MW-13C to load Fencing
0806	Return to VA, warm Equipment,
	Pipe Hauler On site
0815	Tea Vitlar / Kevin Murphy On site
	H2S tailgate
0830	Call Boiler plant about power
	Connex
0930	Pipe Hauler Off site
1000	Holt Offload Fencing
1010	load up drill Rig
1030	Dump 2 remaining Soil drums from
	phase I in Roll off

Rite in the Rain

Location SLC VA Date 12/4/20

Project / Client 700S 1600E PCE Plume

1100	Holt continues to load up Equipmen
1215	Holt heads offsite
1230	Place Cones @ MW-12, 15, 32, 08
1300	Airgas Onsite exchange 5 cylinders
1315	Call to the Boiler plant again to see about Electricity talked to Dave. He is going to call an electrician to see about getting service.
1345	Head to MW-38 to see if Tea/Kevin need Help
1400	Badging office for Renewal
1500	Offsite

12/4/20

Location SLC VA Date 12/5/20

Project / Client 700S 1600E PCE Plume

0745	Arrive Onsite - J. Mills
0800	H+S tailgate w/ Tea + Kevin
	Task: Joe Bail MW-37S/D
0900	Arrive MW-37S
	DTW 18.32' BTOC Casing Diss Bags
	DTB 33.55' BTOC
	~3" muck on Bottom of Bail
0940	Bailed ~8 gallon DTW 19.80'
	DTB 34.50' BTOC
1030	Bailed ~16 gallon from MW-37S
1035	MW-37D DTW 42.30' BTOC
	TOC ~0.55' BGS
	DTB 69.29' BTOC
1220	Bailed ~20 Gallon DTW 42.51
	DTB 69.31 BTOC
1330	Head to MW-38S/D Help out Tea
1400	Offsite

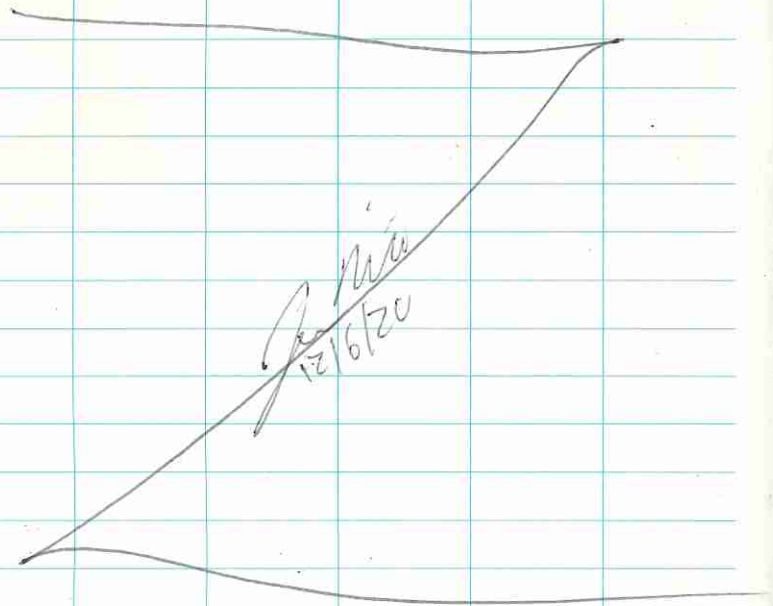
12/5/20

Rite in the Rain

Location SCLVA Date 12/6/20

Project / Client 700S 1600E PCE

1045 Arrive MW-13 cluster
1050 MW-13S DTW 14.16' BMP
1055 MW-13D DTW 13.56' BMP
1100 MW-13L DTW 22.09 BTOC
DTB 151.06 BTOC
TOC 0.83' BGS
1105 Begin Bailing
1145 Call to Neil about dtb of well
decide to keep Bailing and Reasses
1240 ~8 gallons Bailed
DTW 21.55'



Location SCLVA Develop Date 12/7/20

Project / Client 700 S 1600± PCE Plume

Task: MW-13L Development

0720 Onsite load up
0815 H+S tailgate w/ GW Team
0835 Arrive MW-13
0845 MW-13S DTW 14.03' BMP
0850 MW-13D DTW 13.38' BMP
0855 MW-13L DTW 19.83' BTOC
DTB 151.70' BTOC
0910 Deploy pump @ MW-13L
0917 Begin pumping
0930 Pump controller Freezing + tubing warm up in truck
Kevin to connect to compress tubing
1015 Emma Onsite w/ MP10H
1115 Troubleshooting MP10H delay in pump discharge Call Karla
Purging @ 800ml/min
1145 Surge w/ pump
1200 Increase flow Rate to 1200ml/min
1215 Surge w/ pump
1228 Surge w/ pump
1250 Surge w/ pump
1315 Surge w/ pump

12/7/20

Location SLC VA Date 12/7/20

Project / Client 700S 1600 PCE Plum

Task: MW-13L Development

1330	Surge w/ pump Swap drums 50 gal purged
1350	Surge w/ pump
1400	Surge w/ pump
1410	Surge w/ pump
1420	Surge w/ pump
1425	Down load MW-13D Transducer Samples 1848 Battery 94%
1430	Surge w/ pump
1440	Surge w/ pump
1450	Surge w/ pump
1500	Surge w/ pump
1510	Surge w/ pump
	Call to Neil about development Goals
	Surging w/ pump is not freeing
	Sediment from the screen, But water
	is still being produced.
	Decide to continue to purge but
1610	MW-13L DTW ~~19~~ 19.80' BTOC Pump off
1626	DTB 154.15' purged 100 gal
1730	Collect IDW 15 - GW 120720
	Water tote
1800	Collect IDW 16 - GW 120720
	Hydraulic Oil drums w/ water
1900	offsite

12/7/20

Location SLC VA Date 12/8/20

Project / Client 700S 1600E

1310	Collect IDW17-SB120820
	from Rolloff Bin # 5483
1345	Collect IDW18-SB120820
	from Rolloff Bin # 6030
1400	MW-13L DTB 153.91
1430	TB01 - SB120820 w/ Soil
1440	TB02 - ~~SB~~ GW120820 w/ IDW15
1500	Ship samples @ Fedex
1530	Organize Equipment @ Conex
1600	help GW team
1800	offsite

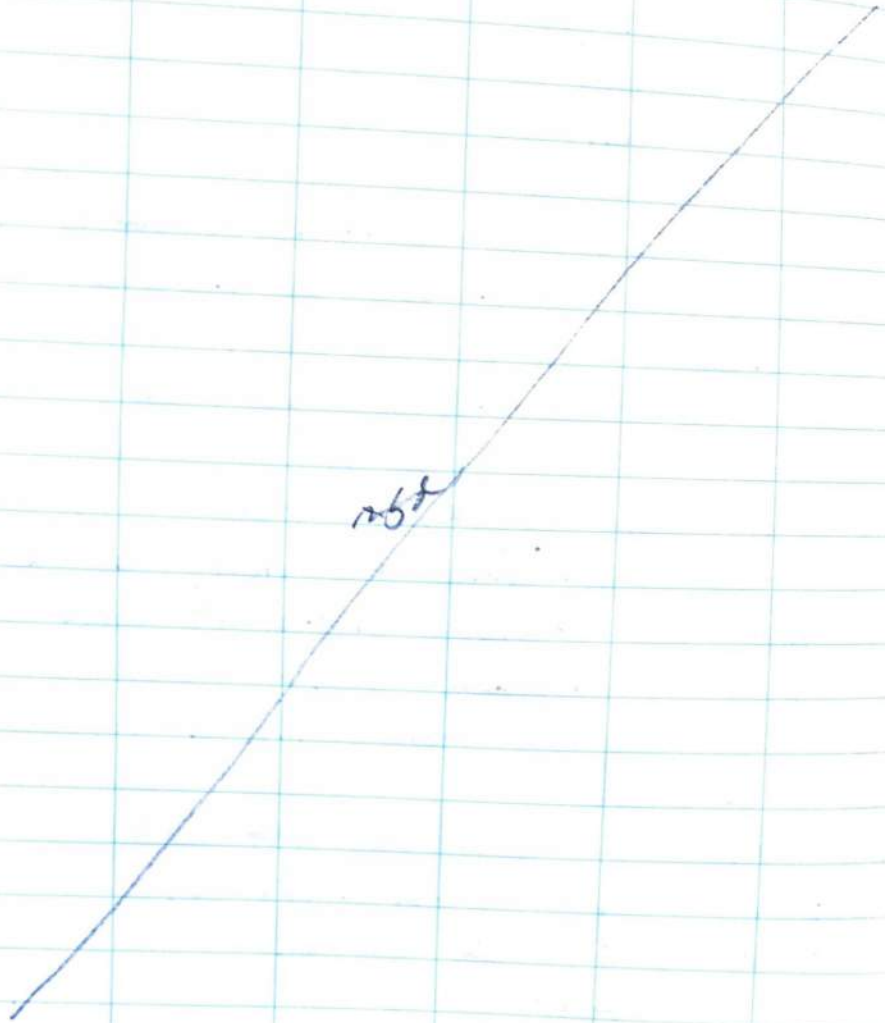
12/8/20

Location SLC VA

Project / Client VA 700 S 1600 E PCE Plume

Date 10/1

shipped samples.
Disposed of empty used core boxes at landfill.
organized conex buildings
1930 COM offsite.



Location SLC VA

Project / Client VA 700S 1600E PCE Plume

Date 11/10/20

Weather: Cloudy, 30°F
Task: GW well development
PPE: Level D
Personell: E. Rott (Author), A. Forni (Wasatch)

0700 E. Rott onsite. Calibrate PID.
Begin loading equiptment
0900 A. Forni onsite. Calibrate YSI.
H+S meeting.
0900 Team to MW-26. Plan to develop all 4- intervals.
1000
1040 Begin Development at MW-26D by airlift. Set stinger @ 289 ft btoc.
1115 E. Rott to connex for airgas dropoff
1130 E. Rott back to MW-26D.
1220 End development at MW-26D. Did not reach parameter stability. Saw visible decrease in turbidity. Purged a total of approx. 70 gal
1230 To connex to empty purge water and switch nitrogen tanks.
1245 Return to MW-26. Begin development at MW-26C. Set stinger at 268 ft btoc.

Location SLC VA

Project / Client 700S 1600E PCE Plume

Date 11/10/20

1400 Attempt development at MW-26A with 3/4" stainless steel bailer.

1415 Evident bailer is getting stuck in casing. Pulled up bailer and no water, hadn't dropped far enough.

1430 Attempt bailer in MW-26A again able to get it slightly further than previously. Stuck on way up.

1500 Able to get bailer out of MW-26A. Called Joe Miller (COM Smith) to discuss issues. Assumes casing is slightly crooked and won't be able to get to water column. Decision to not develop at MW-26A.

1700 End development at MW-26C for the day. Purged approx. 38 gallons. Water still very turbid, but decreasing. Will return tomorrow to continue.

1800 Field team offsite.

Emma Rott
11/10/20

Location SLC VA

Project / Client 700S 1600E PCE Plume

Date 11/11/20

Weather: Snow/Rain, 30-40°F
Task: Well Development
PPE: Level D
Personell: E. Rott (Author), A. Forni (Wasatch)

0715 Field team onsite.
0730 H+S meeting
0735 Calibrate PID. YSI was dropped. No longer calibrating correctly.
0750 Anna to Wasatch to get functioning water quality meter.
0830 E. Rott to MW-34A to see if bailer will work for development.
0840 Bailer getting stuck at around 130' btoc at MW-34A.
0850 E. Rott back to connexs, Meets A. Forni and loads equipment.
0930 Team to MW-26. Setup on MW-26B.
1005 Begin airlift at MW-26B. Set stinger at 222' btoc.
1015 No water present. Lower stinger approx. 8'.
1030 No water. Determine not enough water column to use airlifting for development.

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/11/20

1045 E. Rott called Miles Kheeler (BESST) to discuss using ZIST pump w/o filter for development. He states we can attempt, but likely too coarse of material for the pump to function.

1100 Team Continues development at MW-2 looks clear at first.

1115 E. Rott Attempts to use ZIST pump at MW-26B w/o filter.

1130 Slug of water comes out of MW-26B, assumed to be water remaing in tubing from last sampling.

1140 No more water from MW-26B. Team pulls pump and cleans out. No visible sediment within pump.

1150 Re-deploy pump at MW-26B.

1200 No water present. Determined pump will not work for development. Team pulls pump and brings it to connex.

1220 Complete development at MW-26C. Purged >60 gallons total. Saw slight increase in turbidity towards the end. Stopped based on volume metrics.

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/11/20

1230 Attempted bailer at MW-26B.

1245 Unable to get bailer past 114' btoc.

1300 Team to connex to prep transducers for deployment at MW-34.

1500 Team to MW-34.

1515 WL = 131.0' @ MW-34B. Install pump + transducer attachment by removing filter and threading on intellipump.

1535 WL = 130.41 @ MW-34D. Install pump + transducer attachment

1557 WL = 130.72' @ MW-34C. Install pump + transducer attachment

1615 Team to connex. E. Rott spoke with K. Lesue + N. Smith to determine not to install transducer at MW-34A until it can be developed.

1645 E. Rott to MW-6 and MW-17 to make determinations for tamper-proof bolts

1730 Field team offsite.

Emma Rott
11/11/20

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/12/20

Weather: Sunny, 30-50°F
Task: Well development
PPE: Level D
Personnel: E. Rott (author), Anna Fiorni, Joe Miller (COM Smith)

0700 Field team onsite. Calibrate PID. Begin packing vehicles. H+S meeting.
0720 E. Rott to Hose & Rubber to purchase tubing (½" OD) for grundfos pump use.
0730 A. Fiorni calibrates YSI.
0940 E. Rott onsite.
1000 Team to ~~MW-26~~ OR MW-30RA/B.
1005 WL = 229.75' btoc @ MW-30RB
TD = ~~293.0' btoc~~ OR 290.92' btoc
1010 Team to use 2" poly bailer to surge/collect sediment.
1020 Bailer doesn't weigh enough. Team to attempt using stainless bailer (3/4") to see rope depth.
1045 Stainless bailer comes up full of sludge. E. Rott to connex to find weight to add to poly bailer. Stainless is too small to be effective.

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/12/20

1115 Send poly bailer down w/ weight. Comes up partially full with sludgy water.
1145 Continued to bail, but kept pulling up empty bailer. Team assumes the ball can't sit well b/c sediment. Anything that does fill leaks out by the time it's brought to the surface.
1200 Begin setting up Grundfos Redi flo 2.
1220 Deploy @ 250' btoc (max length on pump cord). Using Wasatch's generator (3150 Watt champion)
1230 Begin pumping. Gradually increasing Hz.
1245 Controller faults at approx 300Hz
1300 After restarting, controller faults again at 336 Hz. Spoke with Joe Miller, decided to attempt renting new larger capacity generator.
1315 Team pulls pump.
1400 Team to Sunburst Rentals. Rented Honda EU7000IS, 6500 watt

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/12/20

1430 Field team onsite. To MW-30RB.

1445 Team deploys pump. Error when plugged into new generator. (Fault → under voltage).

1530 Team continues to encounter fault. Pulls pump.

1545 To connex. ~~Or~~ Plan to try pump in 5-gallon bucket of water to see if the pump was the issue.

1620 Pump not functioning with either generator. E. Rott calls Pine Environmental.

1630 Remove bottom of pump. Dirty water comes out. Rinsed multiple times.

1640 Re-run pump, working this time. Likely clogged. Pine representative stated that running pump at max (400 Hz) is risky for very long.

1700 A. Fiorni offsite.

1740 J. Miller, E. Rott to MW-30. WL = 227.40 @ MW-30RA.

1745 Team notes water in well vault at MW-30C. Team offsite.

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/13/20

Weather:

Task: Well development

PPE: Level D

Personnel: E. Rott (Author), A. Fiorni (Wasatch)

0700 E. Rott onsite. A. Fiorni to Sunbelt rentals to drop off rented generator.

0715 Calibrate PID.

0730 E. Rott to get ice for drilling crew.

0800 E. Rott onsite.

0900 A. Fiorni onsite.

0915 Team to ~~MW-20R~~ MW-30RA. Plan to attempt using Grundfos pump for development. TD = 250.6' btoc.

0925 Deployed Grundfos Redi Flow 2 at approx 240' btoc. Using Wasatchs generator.

0940 Pump faulted at approx. 300 Hz. Team to pull pump.

0950 Pulled pump and saw sludge water leave it when cleaning. Assumed to have clogged with sediment.

1000 Team to drilling crew at MW-37. Packed push ahead sample.

1030 Team to fedex to ship samples

Location VA Plume

Project / Client 700S 1600E PCE Plume

Date 11/13/20

1030 Shupped Sounst controller and YSI back.

1100 Team to Wasatch to pickup tubing for sounst pump install.

1120 Pine shupped 4x 250' rolls, only will be able to install at MW 30RA

1140 Team onsite to connex to load equiptment to use for sounst pump deployment and purging.

1215 Deployed sounst pump in MW 30RA at 240' btoc. Hung on 1/16" wire cable. 1/4" x 1/4" bonded tubing.

1220 Begin purge to attempt development.

1240 Water at surface. Very turbid, filled with sediment.

1245 Water stopped flowing. Team turned off controller. Assume it clogged.

1315 Pulled pump. Ball valves filled with sediment.
Team cleared line and cleaned pump. Brought back to connex.

1400 Pulled MW-30C and took TD
TD = 325.8' btoc.
difficult to guage with skinny dipper. No sign of grout.

Location VA Plume

Project / Client 700S 1600E PCE Plume

Date 11/13/20

1415 Placed pump back in MW 30C.

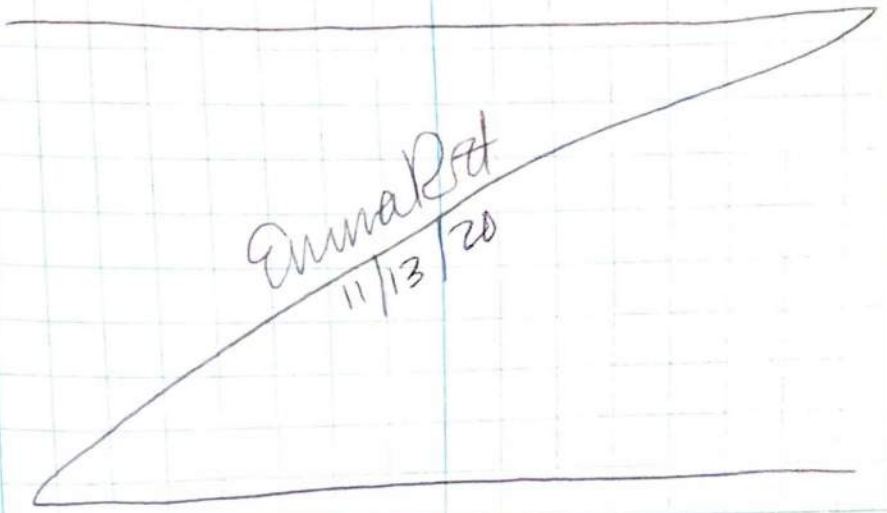
1430 Team to connex to unload vehicles. Take inventory on sampling bottles

1530 Team to MW-17D to tap well cap. Need larger tap wrench. Team to ACE.

1600 Return to MW-17D. Tap well cap. Tamper proof bolts now sitting properly. Return to connex.

1630 Pack remaining equiptment to ship

1700 Team offsite.



Location SLC VA Date 12/01/2020

Project / Client 700 S 1600 E PCE PLUME

WEATHER: SUNNY, LOW 21°F, HIGH 40°F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: T. VR TLOR (EDIT SMITH AUTHOR)
KEVIN MURPHY (WASATCH ENVIRONMENTAL)

0650 TEI ONSITE

0720 KEVIN AND TEI MEETING DRILLING TEAM FOR HEALTH AND SAFETY MEETING AT MW-30

0730 BACK AT CONNEX CALIBRATING YSI AND PID CHECKING BOXES WITH EQUIPMENT. LOADING GAS CYLINDERS. IDENTIFYING MISSING EQUIPMENT.

0815 KEVIN TO MW 30 TO HELP DRILLING CREW WITH GENERATOR ISSUES

0820 RESOLVING ISSUE WITH NO ELECTRICITY AT THE CONNEX

0845 KEVIN TO WASATCH ENV OFFICE TO PICK UP THE REST OF THE EQUIPMENT

0915 YSI HASN'T ARRIVED YET. KEVIN BRINGING YSI OWNED BY WASATCH

0930 CONDUCTING INVENTORY FOR GW MONITORING TEAM

1000 KEVIN BACK AT CONNEX

1015 CALIBRATION SOLUTIONS AND YSI ARE FROZEN. WAITING ON UNFREEZING THEM. TROUBLESHOOTING ISSUES WITH PH CALIBRATION (NOT STABILIZING, NOT ALLOWING ACCEPTANCE OF THE CALIBRATION POINT)

Location SLC UT

Date 12/01/2020

Project / Client 700 S 1600 E PCE PLUME

1300 MOBILIZE TO MW-30RA
1315 TAKING DEPTH TO WATER AND TOTAL DEPTH MEASUREMENTS. TOC IS AT ~3in FROM THE MONUMENT
1330 DEPLOYED SOLINST PUMP. ADDED EXCESS OF 75 FT OF TUBING. LIFTED PUMP 5 FT FROM THE BOTTOM OF THE WELL
1345 STARTED DEVELOPMENT
1405 WATER CURRENT
1410 WATER FLOW TO VIEWING AIR IN THE DISCHARGE TUBE. TURNED OFF CONTROLLER, PULLED OUT THE PUMP, NO CLOGGING. PLACED THE PUMP INTO THE WELL AGAIN. TRIED BUILDING UP WATER COLUMN MORE SLOWLY A FEW TIMES.
1730 DEVELOPED 12 GALLONS. TURBIDITY <50 ... ONESITE APPROVED COMPLETION OF WELL DEVELOPMENT. SETTINGS USED WERE:
1.25 PSI
.5 seconds DISCHARGE
4.5 seconds RECHARGE (MANUAL ...)
1.5 GAS CYLINDERS USED
FLOWRATE 300 mL/min
Used AQUA FOR pH MEASUREMENTS
3 POINT CALIBRATED, SEE THE ...
1830 TEAM OFFSITE. GETTING SUPPLIES AND CHECKING ON EQUIPMENT

Location SLC VA Date 12/2/20

Project / Client 700 S 1600 E PCE PLUME

WEATHER	SUNNY, HIGH 41°F, LOW 19°F
TASK	GW WELL DEVELOPMENT
PPE	LEVEL D
PERSONNEL	T. VRBAR (CDM SMITH, AUTHOR), KEVIN MURPHY
	(WASATCH ENVIRONMENTAL
0700	FIELD TEAM ONSITE
0705	FIELD TEAM TO STAGING AREA TO JOIN
	DRILLING TEAM IN H&S MEETING
0715	FIELD TEAM BACK TO CONNEX TO CALIBRATE
	EQUIPMENT. ELECTRICITY OUT AGAIN. PH MEASUREMENTS
	ON YSI NOT WITHIN RANGE, CALIBRATED APERA PH
	MEASURING TOOL TO USE IN SYNC WITH YSI IF
	THE MEASUREMENTS ARE NOT GOOD.
0850	FIELD TEAM TO MW-30RB. TOC TO MONUMENT IS -8.5 in
0935	STARTED DEVELOPMENT AT WELL MW-30RB
0951	GROUNDWATER APPEARS PICTURE THEN. FLOWRATE ~ 1300 mL/min
1200	BOTH GAS CYLINDERS EMPTY. PAUSED DEVELOPMENT
	TO GET NEW GAS CYLINDERS
1230	RESUMING WITH NEW GAS CYLINDERS AT REDUCED PRESSURE
	FLOWRATE NOW IS 450 mL/min
1315	KEVIN TO CONNEX TO GET DEDICATED PUMP FOR
	MW-30RA AND GET BAGGING DONE
1045	FEDEX RUN FOR DRILLING TEAM (TEA SHIPPED THE SAME
1430	WATER QUALITY PARAMETERS STABLE, PURGE VOLUME 37 GALLONS

Location SLC UT Date 12/2/20

Project / Client 700 S 1600 E PCE PLUME

TIME OF PURGING WAS 4 hrs. CONTROLLER PARAMETERS ARE 20 DISCHARGE, 10 RECHARGE, 150 PSI, FLOW RATE ~~4~~ 450 mL/min. USED AFERA FOR PH MEASUREMENTS.

1445 DEPLOYED DEDICATED PUMP TO MW-30RA

1500 ~~DECO~~ DECONTAMINATED GEOTECH RECLAIMER PUMP, PACKED EVERYTHING TO GO BACK TO CONNEX

1600 ORDERED GAS CYLINDER ~~REPLACE~~ TV 12/2 RESUPPLY AND PICK UP OF EMPTY GAS CYLINDERS. PARTS FOR DEDICATED PUMP DEPLOYMENT AT MW-30RB WERE GATHERED MISSING PARTS WERE IDENTIFIED TO BE PURCHASED. NO ELECTRICITY AT THE CONNEX.

1700 FIELD TEAM OFFSITE. KEVIN STOPPING BY THE OFFICE TO PICK UP SUPPLIES. TEA TO HARDWARE STORE TO PICK UP MISSING DEDICATED PUMP PART.

[signature] 12/2/20

Location SLC VA Date 12/13/23

Project / Client 700 S 1600 E PCE PLUME

WEATHER:	SUNNY LOW 19°F, HIGH 40°F
TASK:	GW WELL DEVELOPMENT
PPE:	LEVEL D
PERSONNEL:	T. VRTAR (CDM SMITH, AUTHOR)
	KEVIN MURPHY (WASATCH ENVIRONMENTAL)
0700	FIELD TEAM ONSITE
0710	FIELD TEAM TO STAGING AREA FOR HEALTH AND SAFETY MEETING WITH DRILLING TEAM
0725	FIELD TEAM TO CONEX TO CALIBRATE EQUIPMENT. ISSUES WITH EVERYTHING FREEZING. NO ELECTRICITY AT CONEX.
0900	~~ATV~~ 0915 TEAM TO MW-36, TD = 52.05. DTW = TOC = 7ft
0930	TEAM STARTED BAILING MW-36. BAILED ~25 gallons
1200	DEPLOYED SOLINST PUMP @ 51 ft INTAKE, 45 ft SET PUMP TO DEPTH
1240	WATER FLOWING AT 400 mL/min, settings ARE 10 DISCHARGE, 20 RECHARGE AT 50 PSI. SIDENOTE: THERE IS 2.5 GALLONS OF WATER FROM THE TUBING PREVIOUSLY DEPLOYED AT MW-30105. DTW AT THE MOMENT IS 44.53 ft BTOC
1300	STARTED TAKING WATER QUALITY PARAMETERS
1350	PURGING STOPPED AT 21 GALLONS. WATER QUALITY PARAMETERS STABLE, TURBIDITY IS 0. TOTAL VOLUME BAILED AND PURGED NOW IS 46 GALLONS. ALL DETAILS ARE ON THE WELL DEVELOPMENT LOG. SETTINGS ARE THE SAME AS ONES RECORDED AT 1240, FLOWRATE STILL 400 mL/min.

1400 BACK TO CONNER TO TRANSFER PURGED WATER FROM THE DRUM. ATTEMPTED TO RESOLVE ISSUE WITH LACK OF ELECTRICITY BY REQUESTING HELP FROM LARRY (OFFICE NEAR THE GATES). HE CHECKED THE BREAKERS IN THE SHOP ACROSS FROM THE IDW AREA AND SAID BREAKERS HAVE NOT BEEN TRIPPED. HE TRIED TURNING THEM OFF AND ON AGAIN, NO ELECTRICITY AT CONNER. FIELD TEAM ATTEMPTED FLIPPING SWITCHES ON BREAKERS BEHIND CONNER OFF AND ON AGAIN, NO LUCK. REACHED OUT TO NEIL, HE WILL CONTACT SHANNON TO RESOLVE THE ISSUE.

1500 ASSEMBLED NECESSARY EQUIPMENT FOR DEPLOYMENT OF PUMP AT MW-30RB. K. LESLIE CONFIRMED TO USE SWAGELOK FITTINGS ON MW-30RB AND BARB FITTINGS ON MW-36/37/38.

1530 FIELD TEAM TO MW-30RB TO DEPLOY DEDICATED PUMP.

1645 DEDICATED PUMP DEPLOYED AT MW-30RB AT THE DEPTH OF 285 FEET BELOW TOP OF CASING. SANITARY CAP COULDN'T BE ADDED AS CASING FOR MW-30RA IS TOO CLOSE TO MW-30RB. LOCKS WERE ADDED TO MW-36 AND MW-30RA.

1700 FIELD TEAM OFFSITE.

Location SLC VA Date 12/9/20

Project / Client 700 S 1600 E PCE PLUME

WEATHER: SUNNY, LOW 21°F, HIGH 40°F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: TEA VETLAR (COLT SMITH, AUTHOR)
KEVIN MURRAY (WASATCH ENVIRONMENTAL)

0700 EQUIPMENT CALIBRATED AT HOTEL TO AVOID FREEZING ISSUES.

0810 FIELD TEAM MEETING GW DRILLING TEAM ONSITE FOR HEALTH AND SAFETY MEETING. HELD TEAM MEETING

0825 FIELD TEAM TO CONTINUE TO LOAD UP EQUIPMENT FOR IN ITU DRILLING ACTIVITIES

0845 FIELD TEAM TO MW-38S AND MW-38D. MEASURED WATER LEVEL AND DTW AS WELL AS DISTANCE FROM TOP OF CASING TO THE MONUMENT

WELL:	DTW IN ITU	TD	TOC TO MONUMENT	LOCATION
MW-38S	~~38~~ 19.70	36.68	0.98 FT	W
MW-38D	18.66	70.34	0.83 FT	E

0930 BAILED 10 GALLONS FROM MW-38S.

1000 ~~COMMENCED~~ IN ITU DEPLOYED SAMPLE PUMP AT 32 FT BTOC

1015 WATER APPEARS AT 450 mL/min RATE, SETTINGS USED ARE 10 SECONDS, 5 DISCHARGE, 35 PSI

1130 STARTED BAILING MW-38D

1200 OUT OF GAS, AIRGAS HASN'T DELIVERED THEIR GAS CYLINDERS. KEVIN TO AIRGAS TO PICK UP ADDITIONAL

Location SLC VA Date 12/4/20

Project / Client 700 S 1600 E PCE PLUME

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ARE RUNNING OUT OF DAYLIGHT, WILL PAUSE FOR TODAY AND CONTINUE TOMORROW, 12/5/20

TOTAL VOLUME PURGED TODAY IS 40 GALLONS WITH BAILING, WE REMOVED 58 GALLONS. CONTINUE TOMORROW WITH SETTINGS FROM 1515 INPUT TODAY

1730 FIELD TEAM TO CONNEX

1805 FIELD TEAM OFFSITE. TEAM TO STORE TO GRAB FIELD SUPPLIES.

12/4/20

WEATHER: SUNNY, LOW 24°F, HIGH 41°F
TASK: GW WELL DEVELOPMENT
PPE: LEVEL D
PERSONNEL: TEA VARIAN, JOE MILLER (COH SAFETY), KEVIN MURPHY (CHASTITY)
0700 EQUIPMENT CALIBRATED AT THE HOTEL
0800 FIELD TEAM ONSITE
0815 HEALTH AND SAFETY MEETING.
0845 TEA AND LEV TO MW-350, JOE TO MW-375
0915 AIRLINE HAS WATER, PUMP RETRIEVED FROM MW-350 AND REDEPLOYED AGAIN (FIRST TIME DEPLOYED AT 0900).
1000 WELLED WITH WITNESSPIC TO MW TO ~~MAXIMIZE~~ MAXIMIZE FLOW RATE. GOT UP TO 40 RECHARGE, 20 DISCHARGE, 100 PSI BEFORE BLOWTHROUGH OCCURRED AT 110 PSI. DECIDED TO CUT THE 300' TUBE INTO 200 AND 100 FT INTERVAL. CONTINUING TO USE 100 FT SECTION AT MW-350. FINAL SETTINGS WE HAVE SETTLED AT ARE 20 RECHARGE, 10 DISCHARGE, 5.5 PSI FLOWRATE IS 1300 mL/min.
1155 TURBIDITY SUBSTANTIALLY DECREASED. STARTED TO TAKE READINGS RECORDED IN WELL DEVELOPMENT LOG.
1230 JOE COMPLETED PULLING AT MW-375 (16 GALLONS) AND MW-370 (20 GALLONS) AND JOINS KEVIN AND COUNTING SUPPLIES

Location SLC VA Date 12/5/25

Project / Client 700 S 1600 E PCE PLUME

CONT. FROM PAGE 117

TEA AT MW-38D. JOE COLLECTED FOLLOWING ~~PARAMET~~ TV 1405 MEASUREMENTS FOR MW-37 S/D

WELL ID	DTW (ft BTOC)	TD (ft BTOC)	TOC TO PAD/MONUMENT (ft)
MW-37S	18.32	33.55	0.35
MW-37D	42.3	69.29	0.55

1325 WATER QUALITY PARAMETERS AT MW-38D MET, ~~RE~~ TV 1415 TOTAL VOLUME PURGED DURING DEVELOPMENT IS 116 GALLONS. DEVELOPMENT COMPLETED.

1345 TEAM TO MW-37S

1405 DEVELOPMENT OF MW-37S STARTED PUMP DEPLOYED AT 28.55 ft BTOC. SETTINGS AT THE CONTROLLER ARE 10s RECHARGE, 5s DISCHARGE, 30 PSI. FLOWRATE IS 1400 mL/min.

1410 KEVIN TO WASATCH ENVIRONMENTAL OFFICE TO PICK UP SUPPLIES.

1515 TEA AND KEVIN TO MW-36 TO DEPLOY THE DEDICATED PUMP.

1630 DEDICATED PUMP DEPLOYED AT 49.5 FT BTOC AT MW-36 TEA AND KEVIN BACK TO MW-37S

1645 WATER QUALITY PARAMETERS MET AT MW-37S. TOTAL VOLUME PURGED IS 48 GALLONS.

1700 TEAM TO CONNEX. UNPACKING RECEIVED BOXES.

1805 FIELD TEAM OFFSITE. TEA TO ACE TO GET SUPPLIES FOR DEPLOYING THE REST OF THE DEDICATED PUMPS.

Location SCC VA Date 12/6/20

Project / Client 703 S 1600 E PCE PLUME

WEATHER SUNNY, LOW 23°F, HIGH 46 F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: TEA VATLAR AND JOE MILLER (COH SMITH)

0745 EQUIPMENT CALIBRATED AT THE HOTEL

0805 FIELD TEAM ONSITE. JM ARRIVED AT 0745

0815 HEALTH AND SAFETY MEETING

0820 PLACING CYLINDERS AND STANDS TO TRUCKS. LOADING EQUIPMENT.

0845 PLACING CONES FOR GW MONITORING EVENT ARMS

0900 FIELD TEAM AT MW-370. DTW = 42.25FT BTOC. TD = 63.84FT BTOC. DEPLOYED AT 63.84FT BTOC. CONTROLLER SETTINGS AT 20s RETRIEVE, 10s DISCHARGE, 40 psi. FLOWRATE APPROXIMATELY 900 mL/min

1040 JOE TO MW-13L TO BAIL IT. WILL CHECK DTW FOR MW-13S AND 13D PRIOR TO COLLECTING DTW, TD AND TOC TO FT BIS MEASUREMENTS.

1320 JOE RETURNS TO MW-370 HE BAILED APPROXIMATELY 8 GALLONS FROM MW-13L AND TOOK THE FOLLOWING WATER LEVEL MEASUREMENTS PRIOR TO BAILING AND DISTURBING THE SYSTEM.

WELL ID	DTW	UNITS
MW-13S	14.16	FT BTOC
MW-13D	13.56	FT BTOC
MW-13L	22.09	FT BTOC

Cont on page 120

Location SLC VA Date 12/6/12

Project / Client 7005 1600 E PCE PLUME

cont from pg 119

J. MILLER ALSO HAS A FIELD NOTEBOOK WHERE ... MEASUREMENTS ARE RECORDED. DISTANCE FROM TOC TO TOP OF MONUMENT IS 0.83 FT

1330 STARTED RECORDING WATER QUALITY PARAMETERS AFTER THE TURBIDITY HAS DECREASED

1425 WELL ~~DEVELOPMENT~~ TV 126 WQ PARAMETERS ARE STABLE AFTER AN HOUR OF TAKING MEASUREMENTS. WELL DEVELOPMENT IS COMPLETE AFTER APPROXIMATELY 48 GALLONS OF GROUNDWATER GOT PURGED. SETTINGS AND FLOWRATE WERE THE SAME AS INPUT RECORDED AT 0900

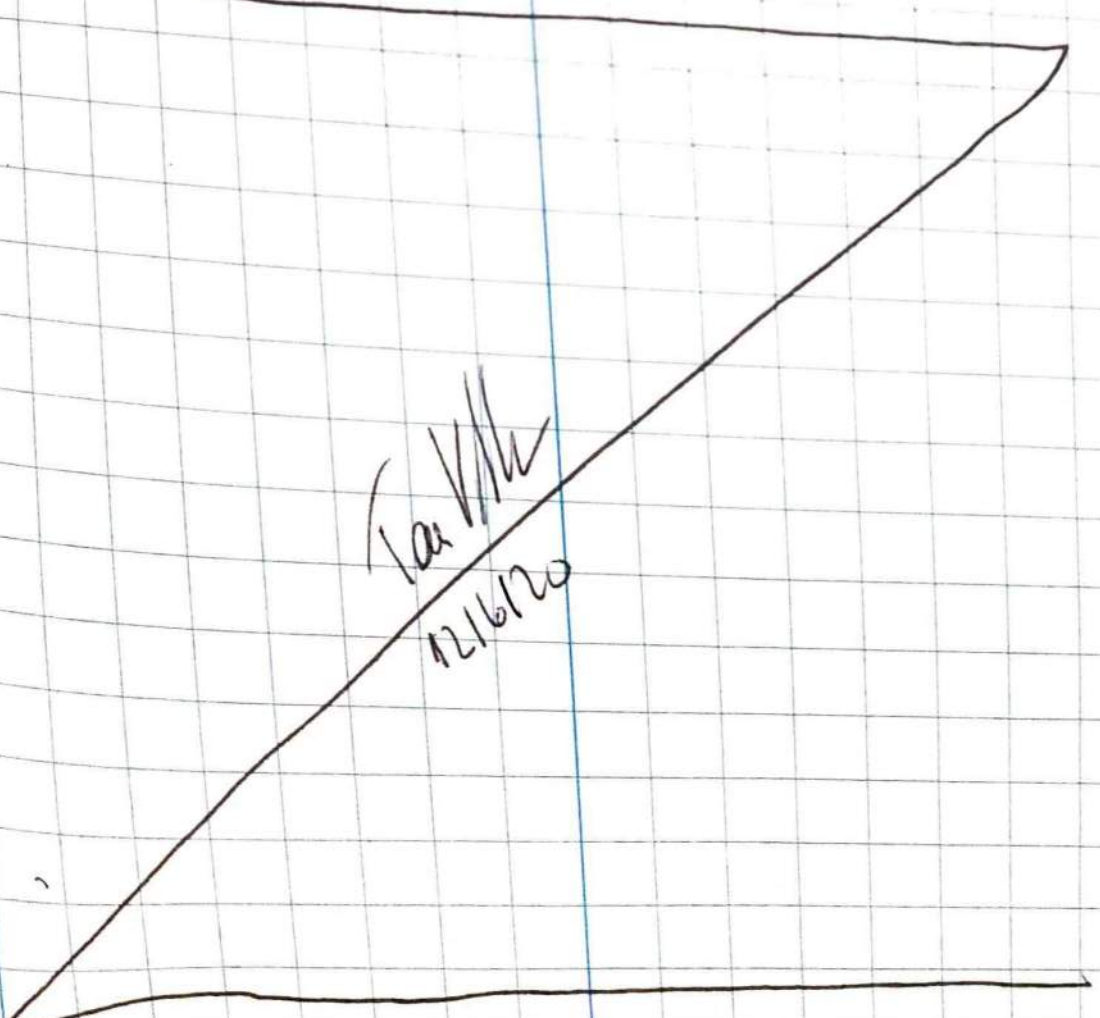
1445 FIELD TEAM TO MW-13L. AFTER BAILING 8 GAL TO MEASURED BY WATER LEVEL METER IS 150 WE KNOW THAT THE WELL SHOULD BE AT -160 FT BTOC TO SO PUMP WAS DEPLOYED AT THE BOTTOM AND LIFTED 1 FT, MEASURED PUMP TOP DEPTH WAS 148.7 FT BTOC, INDICATING THAT PURGING STARTED AT 151.7 FT BTOC. NOTE IS THAT WELL DEVELOPMENT WILL ALLOW FOR FUTURE LOWERING OF THE PUMP, UP TO DESIRED DEPTH OF 154 FT. ONCE DEVELOPMENT AT THAT DEPTH IS MET, THE DEDICATED PUMP WOULD BE DEPLOYED AT ~ 155 FT

1530 GROUNDWATER APPEARS. CONTROLLER SETTINGS ARE 11s RECHARGE, 9s DISCHARGE, 85 PSI. FLOWRATE IS 1500 mL/min.

1630 STOPPED DEVELOPMENT DUE TO LACK OF SUNLIGHT. PURGED A TOTAL OF 17 GALLONS MEASURED TOTAL DEPTH, WHICH IS NOW ~~AT~~ 152 FT BTOC. PUMP APPEARS SEEMS TO BE WORKING MORE EFFICIENTLY THAN BAILING. DEVELOPMENT WILL BE CONTINUED FIRST THING TOMORROW MORNING.

1645 FIELD TEAM TO CONNEX

1740 FIELD TEAM OFFSITE



Location SLC UT Date 12/7/20

Project / Client 700S 1600E PCE PLUME

WEATHER: SUNNY, LOW 21°F, HIGH 43°F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: TEA VRTUAR (CDM SMITH, AUTHOR)
KEVIN MURPHY (WASATCH ENVIRONMENTAL)
JOE MILLER, EMMA NOTT (CDM SMITH)

0630 EQUIPMENT CALIBRATED AT THE HOTEL

0730 TEA AND JOE ONSITE LOADING EQUIPMENT

0800 MEETING GW SAMPLING TEAM AT CONNEX

0815 HEALTH AND SAFETY MEETING WITH GW SAMPLING TEAM

0840 TEA, JOE AND KEVIN TO MW-13L CLEARED OUT LIQUID FROM BOTH TUBINGS PRIOR TO DEPLOYMENT OF PUMP AT 151.7 FT BTOC. JOE ALSO TOOK MEASUREMENTS AND LOGGED THEM IN HIS FIELD NOTEBOOK. DEPLOYED A PUMP, GOT BREAKTHROUGH. SINCE THEN, NO FLOW. TRIED SURGING, UNFREEZING SURFACE PARTS OF TUBING. CONTROLLER ISN'T RELEASING AIR. KEVIN TO CONNEX TO GET A DIFFERENT CONTROLLER. TUBING AND EXISTING CONTROLLER PLACED INTO TRUCK TO HEAT UP USING AIR.

1020 KEVIN AND TEA TO PICK UP GAS CYLINDERS (5) FROM AIRGAS

1100 BACK TO MW-13L. CONTROLLER RELEASING PRESSURE WITH DELAY. TRIED GW MONITORING TEAM'S CONTROLLER. GOT ~800 ML WATER FLOW.

Location SLC VA Date 12/12/23

Project / Client 7905 1600 E PCE PLUME

1215 KEVIN AND TEA DEPLOYING PUMPS AT MW-38
TOOK DTW MEASUREMENTS: MW-38S AT 19.59 FT BTOC,
0.99' FROM TOC TO TOP OF MONUMENT.
MW-38D 18.53 FT BTOC, 0.82' TOC TO TOP OF
MONUMENT.
TD AT MW-38S IS 36.49' BTOC. DEDICATED
PUMP DEPLOYED AT 32 FT BTOC AT MW-38S.
1300 TD AT MW-38D IS 70.3' BTOC. DEPLOYED
DEDICATED PUMP AT 65 FEET BTOC
1330 KEVIN AND TEA TO CONNEX, WHILE BRINGING
DJE MORE GAS. AT MW-13C, OBTAINING
WATERRA PUMP AND TUBING FROM CONNEX,
GETTING SKINNY WATER LEVEL METER FROM GW
SAMPLING TEAM
1420 TEA, EMMA AND KEVIN TO MW-34 TO USE
WATERRA PUMP ON MW-34A TAKE DTW MEASU-
REMENTS: MW-34A 130.15 FT BTOC, 0.53' BTOC
TO MONUMENT AND MW-34B IS 130.60 FT BTOC *
1504 STARTED PUMPING WITH WATERRA PUMP
* WATER LEVEL AT MW-34C IS 129.87 FT BTOC.
WATER LEVEL AT MW-34D IS 130.0 FT BTOC
1521 WATER E MERGES, USING THE SPEED OF THE PUMP NO WATER
ON THE OTHER END. CUT 200 FT OF 500 FT
TUBING

Rite in the Rain

124

Location SLC VA Date 12/7/20

Project / Client 7003 1600 E PCE PLUME

1545	650 mL/min OF WATER PURGE RATE AT MW-34A. EMMA LEFT 34A TO HELP JOE AT MW-13L CONNECTED PUMP TO TEA'S TRUCK. FLOWRATE 800 mL/MIN
1630	STARTED TAKING WATER QUALITY MEASUREMENTS. TURBIDITY STILL TOO HIGH TO READ, WATER LEVEL METER CANNOT BE DEPLOYED ALONGSIDE WATERRA TUBING.
1645	STOPPED PURGING DUE TO SUNSET AND LACK OF SUNLIGHT. PURGED TOTAL OF 15 gallons. DEVELOPMENT WILL CONTINUE IN THE MORNING
1700	KEVIN AND TEA TO CONNER. JOE HAS APPROVED THE DEVELOPMENT AND KEPT TRACK OF ALL THE CHALLENGES ENCOUNTERED TODAY IN HIS FIELD NOTEBOOK. HE WILL CONTINUE DEVELOPMENT AT MW-13L IN THE MORNING. HE ALSO JOE WITH COLLECTION OF IDW SAMPLES.
1835	FIELD TEAM OFFSITE.

12/7/20

Project / Client 700 S 1600 E PCE PLUME

WEATHER: SUNNY, LOW 23°F, HIGH 44°F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: TEA VERTLAAR (CDM SMITH, AUTHOR)
KEVIN MURPHY (WASATCH ENVIRONMENTAL)
JOE MILLER (CDM SMITH)

0700 EQUIPMENT CALIBRATED AT THE MOTEL

0800 FIELD TEAM ONSITE

0815 HEALTH AND SAFETY MEETING WITH GW SAMPLING TEAM.

0845 TEAM TO MW-34A. MW-13C DEVELOPMENT NO LONGER A PRIORITY SO JOE JOINED THE GW SAMP. ~~TD = 130.95 FT BTOC~~ DTW = 131.45, TD = 152.64 FT BTOC. TOC TO TOP OF MONUMENT IS 0.55 FT.

0920 STARTED WELL DEVELOPMENT, PURGE RATE IS 1500 mL/min

1000 NO WATER SURFACING. GUESSING IT IS DUE TO DRYING OUT THE WELL. LETTING THE WELL RECHARGE FOR 10 MINUTES. NOT WORKING. TRIED PULLING OUT THE TUBING. THERE WERE CLOGGING ISSUES WITH CHECK VALVE. CLEANED OUT CHECK VALVE AND TUBING. GOT 600 mL/min, THEN NO FLOW. TRIED STOPPING AND LETTING RECHARGE, NO LUCK. TRIED POWERING FROM GENERATOR INSTEAD OF INVERTER

CONT ON PAGE 126

Location SLC VA Date 12/8/20

Project / Client 720 S 162 E PW: PLUME

cont from pg 125

DIDN'T WORK. TRIED MEASURING DTW AGAIN, IT'S 130.45 FT BTOC SO NOT A DRAWDOWN ISSUE. TRIED SLOWLY PURGING FOR EXTENDED PERIOD, CHECK VALVE IS 1 FT ABOVE TD. NO FLOW. GOT FLOW WHEN WE LIFTED UP CHECK VALVE 2 FT ABOVE THE BOTTOM OF THE WELL. NOTICED THAT TUBING IS MOVING. REACHED A VICE GRIP ON TOP OF THE PUMP TO HELP WITH HOLDING TUBING. WORKS FOR NOW

1250 STARTED TAKING WATER QUALITY READINGS TURBIDITY > 7000 NTU FLOW IS ~1000 mL/min

1315 STARTED USING N2 READINGS UPPED THE FLOW TO MAX ~ 2400 mL/min. WAITING FOR TURBIDITY TO DROP.

1400 SIGNIFICANT DECREASE IN TURBIDITY OBSERVED REDUCED FLOWRATE TO 800 mL/min, TAKING WATER QUALITY MEASUREMENTS AGAIN

1545 TURBIDITY DROPPED BELOW 100 NTU, OK TO STOP. PURGED A TOTAL OF .885 GALLONS (STOPPED AT 1541) FLOWRATE AT THE END WAS 1100 mL/min

1600 TOOH TO MW-26B.

1630 SET UP AT MW-26B. DTW AT MW-26B IS 195.28 FT BTOC, TD IS ~~245.8 FT~~ 246.32 (12/8/20) BTOC TOC TO TOP OF MONUMENT IS 0.6 FT. DECIDED TO SET PUMP AT APPROXIMATELY 245 FT BTOC.

Location SLC VA Date 12/8/20

Project / Client 700 S 1600 E PCE PLUME

1640 STARTED DEVELOPMENT OF MW-26B. PUMP OPERATED FOR 15 MINS, NO WATER WAS PURGED. PULLED THE TUBING OUT, ABOUT 20 FT OF WATER WITH HIGH TURBIDITY WAS IN THE TUBING. STOPPING DEVELOPMENT FOR THE DAY, KEVIN WILL CONTINUE TOMORROW.

1700 BACK TO CONNEX TO UNLOAD THE TRUCK. ELECTRICITY DISAPPEARED AGAIN. USED GENERATOR FOR REMOVING WATER FROM THE BARRELS.

1805 TEAM OFFSITE. TEA AND JOE LEAVING TOMORROW.

[signature] 12/8/20

Appendix C

Utility Locate Reports

Utility Locate Report

SITE

VA Plume, Salt Lake City, Utah

11/3/2020

PREPARED FOR

CDM Smith

PREPARED BY

TWS ENVIRONMENTAL, LLC

Denver, CO

TABLE OF CONTENTS

CLIENT NAME:	CDM Smith
CLIENT ADDRESS:	555 17th Street Suite 500 Denver, CO 80202
PROJECT NAME & LOCATION ADDRESS:	VA Plume – Salt Lake City, Utah
TWS PROJECT MANAGER:	Jeff Baker
TWS TEAM REPRESENTATIVE:	Jeff Baker

Fig 1. MW-37 S/D

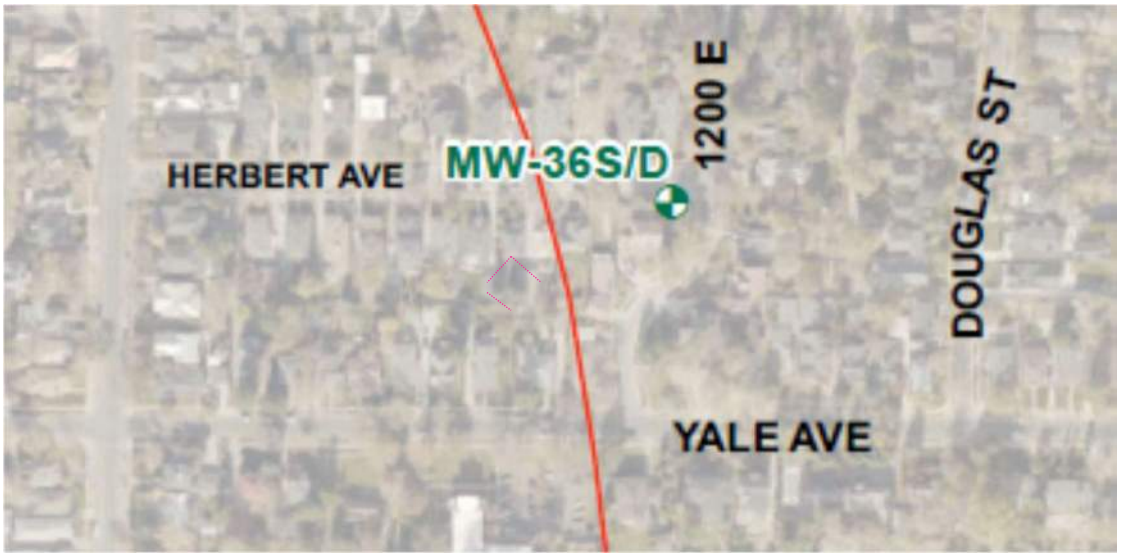


Fig 2. MW-36 S/D

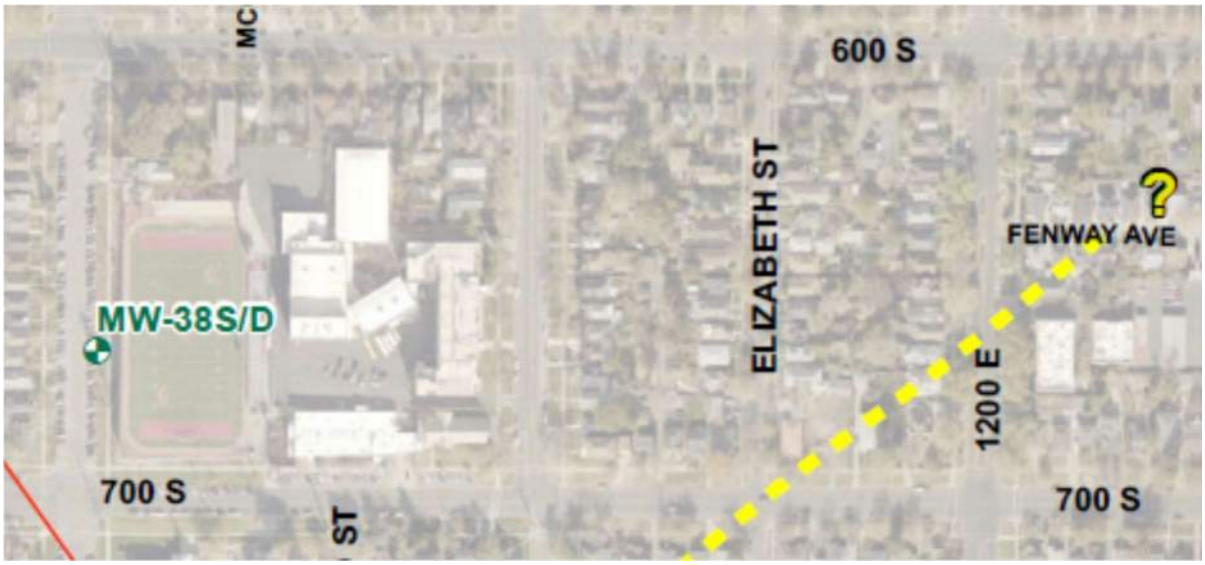


Fig 3. MW-38 S/D

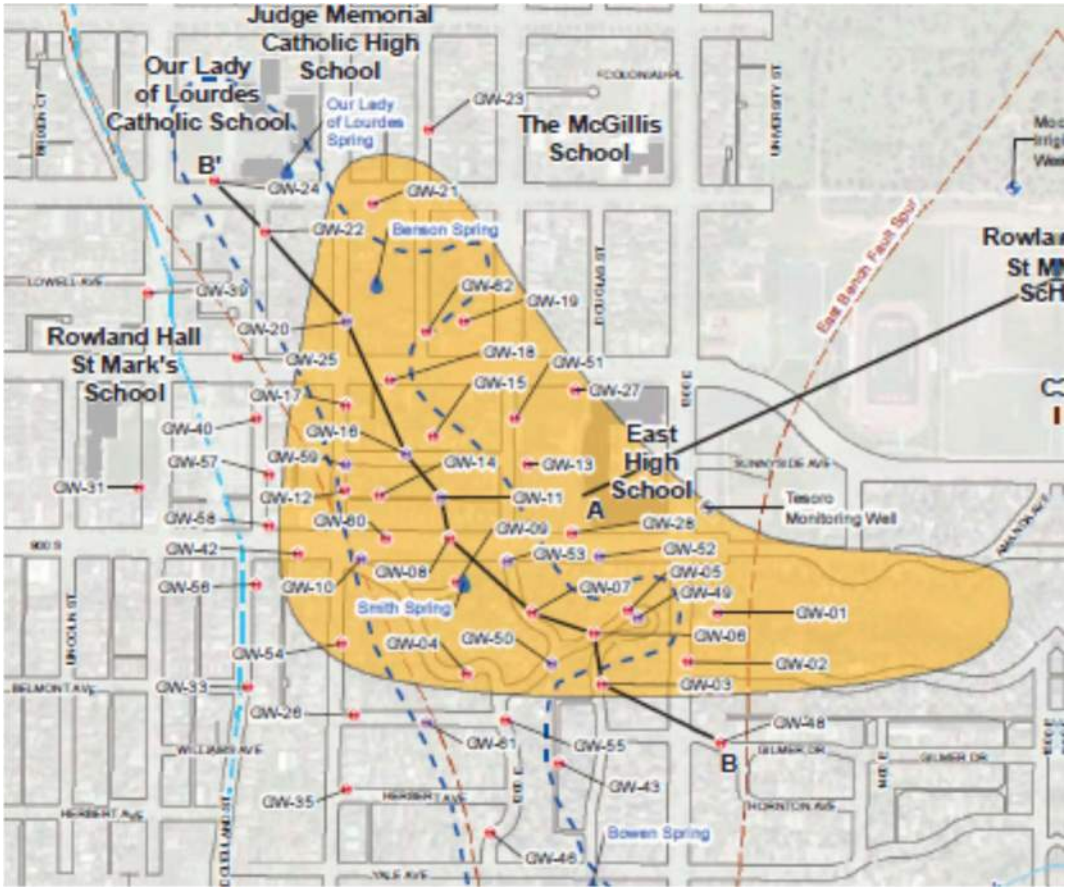


Fig 4. AOU-1

2.1 Site Location

The sites are located across East Side Springs and are part of OU-2 Remedial Investigation 700 South 1600 East PCE Plume Salt Lake City, Utah.

2.2 Equipment on Site:

- **SeekTech SR-20 Line Tracer and Underground Utility Locator**
- **SeekTech ST-305 Line Transmitter**
- **Schonstedt GA-52-Cx Magnetometer**
- **Ground-penetrating radar: GSSI UtilityScan/ rough terrain cart**

2.3 Equipment Capabilities:

Electromagnetic Induction

Electromagnetic Inductions consists of two steps. First, a transmitter is used to transfer an alternating electrical current to the pipe or wire to be located. Next, a receiver is used to analyze the transmitted signal, and localize the position and depth of the facility. The transmitter can transfer the signal to the facility either by a direct connections, or by inducing a signal. The direct connect method introduces a signal into pipes or cables (or the fluids within pipes) that is radiated from the facility to aid its detection and location. The surface-induced method generates a signal a t the ground surface that will induce a response in the cable, pipe or tracer wire underground.

Typical applications:

- Conductive utilities: Steel or copper pipes (water service, gas service) Copper telecom cables.
- Tracer lines on non-conductive utilities

Limitations:

- EM/RF locating requires a conductive object (pipe, cable, conduit, or tracer) into which a radio signal can be introduced. The signal cannot travel through non-conductive (insulating) materials. The signal may be interrupted or lost on a conductive utility that is not continuous (damaged, broken, corroded, repaired with non-conductive materials, or constructed of segments with non-conductive gaskets, i.e. rubber)
- RF locating requires some level of access or prior knowledge to effectively introduce the radio signal. An exposed portion (or end) of a utility is needed for direct connections or to utilize an inductive clamp. A point of well-known location and direction is needed for an inductive drop.
- RF locating signals are susceptible to “bleeding” onto nearby conductive utilities. Due care will be taken to recognize and minimize bleed-off, and to confirm utility locations with alternate methods. All utility marks should be afforded and industry-standard tolerance zone of 24” to either side.

- A known (or visible) point of connection is generally needed to identify the function of a

utility.
- A hand-dug or vacuum-excavated test hole should be used to precisely confirm horizontal or vertical locations of any utility.

Magnetometer

The GA-52Cx magnetic locator detects the magnetic field of ferromagnetic objects. It responds to the difference in the magnetic field between two sensors that are spaced approximately 20 inches apart. This difference is referred to as the "signal strength" and is represented in the instrument by an audio tone.

Typical applications:

- Locating ferrous pipes/utilities: Steel or other ferrous metal objects or pipes can be located with this tool.

Limitations:

- The instrument will not detect non-ferrous metals, such as gold, silver, copper, brass and aluminum.

Ground-Penetrating Radar (GPR)

350 MHz "HyperStacking" GPR Antenna – GPR works by sending a tiny pulse of energy into a material and recording the strength and the time required for the return of any reflected signal. Our GPR system uses state of the art HyperStacking Technology which provides excellent near-surface resolution and increased depth penetration in all soil types. We will be able to quickly search the location and depth of service utilities such as gas, communications, and sewer lines – as well as other metallic and nonmetallic targets including underground storage tanks and PVC pipes. For rough terrain conditions, we are able to place the unit into a rugged utility cart to complete the search.

Principle of operation:

- Ground- penetrating radar (GPR) uses a pair of radio antennas (transmitting and receiving), moved together across the ground surface. The transmitted radar wave penetrates into the ground until it reaches an "interface", or boundary, between materials of differing electrical properties. The wave is then reflected and detected by the receiving antenna.

Typical applications:

- Non- conductive utilities: Plastic pipes, gas and water main/services, etc. Bituminous fiber pipe ("Orangeburg", "Bermico"), asbestos-cement pipes ("Transite"). Cast iron pipe with rubber gaskets, or other insulating materials.

- Subsurface structures: Buried tanks, cisterns, septic tanks, cesspools, dry wells and oil-water separators. Buried vaults, manholes, and utility tunnels. Historical building foundations and other structures.

Limitations:

- For an object to produce a signal that is able to be interpreted by operations, the transmitted radar wave must penetrate to the depth of the object of interest, reflect, and return the receiving antenna.

- Depth of penetration is reduced by soils that are electrically conductive, due to water saturation or otherwise. Depth of penetrating is reduced by especially rocky, mixed, or inconsistent soil. A metallic ground surface (i.e. steel plate), or standing water, interferes with penetration of the transmitted signal into the soil.

- A reflection of the radar signal depends on the "interface", or boundary, of materials of differing electrical properties – such as the encountered at boundaries between soil layers of differing compaction, or at the surface of a hard object embedded in the soil. The reflection is weakened when the boundary has a lower contrast in electrical properties. An object of a give diameter will producte a reflection of decreasing strength with increasing depth to cover. Generally, one inch of diameter is required, per foot of cover, to produce a strong reflection.

- A known (or visible) point of connecting is generally needed to identify the function of a utility.

- Any utility, subsurface structure, or anomaly located with GPR and marked on site should be afforded an industry – standard tolerance zoned of 24'.

- A hand-dug or vacuum-excavated test hole should be used to precisely confirm horizontal or vertical location of any utility.

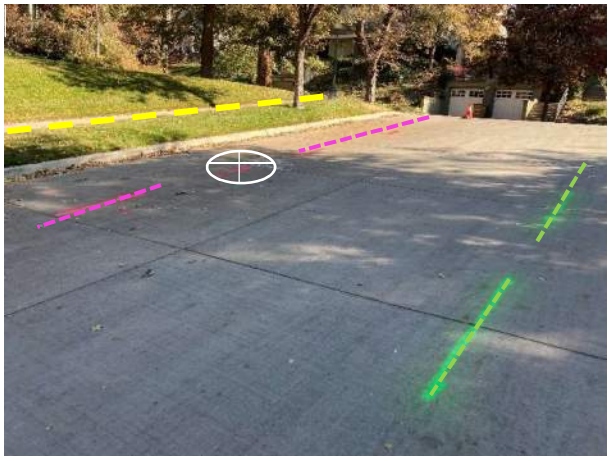
3.1 Physical Setting

The sites are located in Salt Lake City, Utah. These sites are a combination of neighbor hoods that are near the VA hospital campus including residential neighborhoods to the West of the campus. There are a total of three (3) proposed well locations MW 37, MW 36 and MW 38 (MW-38 had two areas scanned as options) and 10 ground water locations that were scanned on this round of work. There were no locations on the VA campus on this round of work. The well locations were all in or near parking lanes on the street. The majority of the ground water locations were located in landscaped/grass areas near residential homes and included GW-20, GW-16, GW-59, GW-11, GW-10, GW-53, GW52, GW-49, GW-50 and GW-61. Once all health and safety discussions and a tailgate meeting with the CDM field staff was completed, the crew proceeded to clear the area around each proposed location. This occurred over the course of one day on Tuesday, November 3rd, 2020. The temperature was in the low to mid 60's during this engagement. Skies were mostly clear.

3.2 Results

TWS personnel worked on site to locate and mark utilities, and to survey the areas of the proposed boring/well locations residential locations on November 3rd, 2020. Methods used include both radio-frequency (EM/RF) locating and ground-penetrating radar (GPR) as well as utilizing a magnetometer/pipe locator. As disclosed at the bidding stage, GPR penetration rates in the Salt Lake area were expected to be between 0-3 feet bgs. Depths beyond that may be impacted by soil conditions and data quality may be affected. Utilities located and marked in the vicinity of the work areas included anomalies/unknowns electrical, gas, water, and communication. There were also storm water drains and sewer networks across the properties. A combination of paint on the ground and paint and pin flags in the grassy areas were utilized to mark out utilities and anomalies in the general areas where there are proposed boring/well locations are planned. It is recommended that the areas for MW-38 (both the location off Elizabeth and 1200 E) as well as all of the ground water (GW) locations be called in to Blue Stake of Utah 811 prior to any drilling activities.

3.3 Project Photos



MW-36, anomaly (pink) located running through the proposed boring location, gas and sewer marked as well..

MW-37, gas and sewer (located in the grass parallel to the roadway) located and marked.

MW 38 (Elizabeth Street option) note proximity of water line markings. Sewer in center of street, recommend engaging Blue Stake before proceeding.

MW 38 (1200 E option) Water located along sidewalk and crossing the street to the North of the proposed location. Recommend engaging Blue Stake before proceeding.

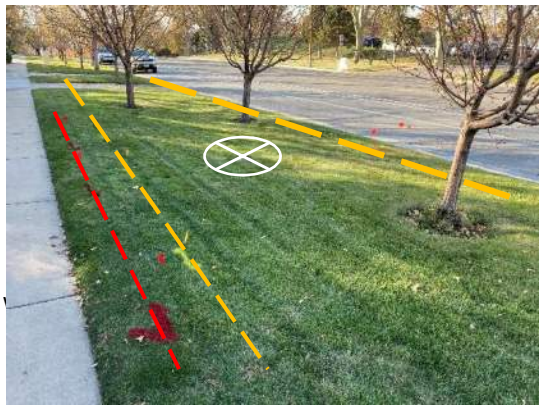
GW-10, multiple communication and sewer lines nearby proposed location.

GW-11, storm water drainage runs down the alley approximately in the middle of the road.

Storm water lines and unknown line located in street adjacent form existing GW-16 location

Water line located running up the street adjacent to planter where GW-20 was located in the planter area.

GW-49, possible storm water line running along the road parallel to the site.



GW-52, Communication running along the road, gas and power between the sidewalk and GW-52.

Water, sewer and power near intersection near proposed work area for GW-53.

Water near proposed work area for GW-53. (Relocated by CDM Staff)

Water and drain lines near proposed work area for GW-59.

Electrical lines in planter near proposed work area for GW-61

Metal landscaping rings potentially interfering with magnetometer readings near. MW-61.

Appendix D

Traffic Control Plan

UTAH BARRICADE
Your Safety Is our Business

Date: 11/4/20 **Author:** ERNESTO

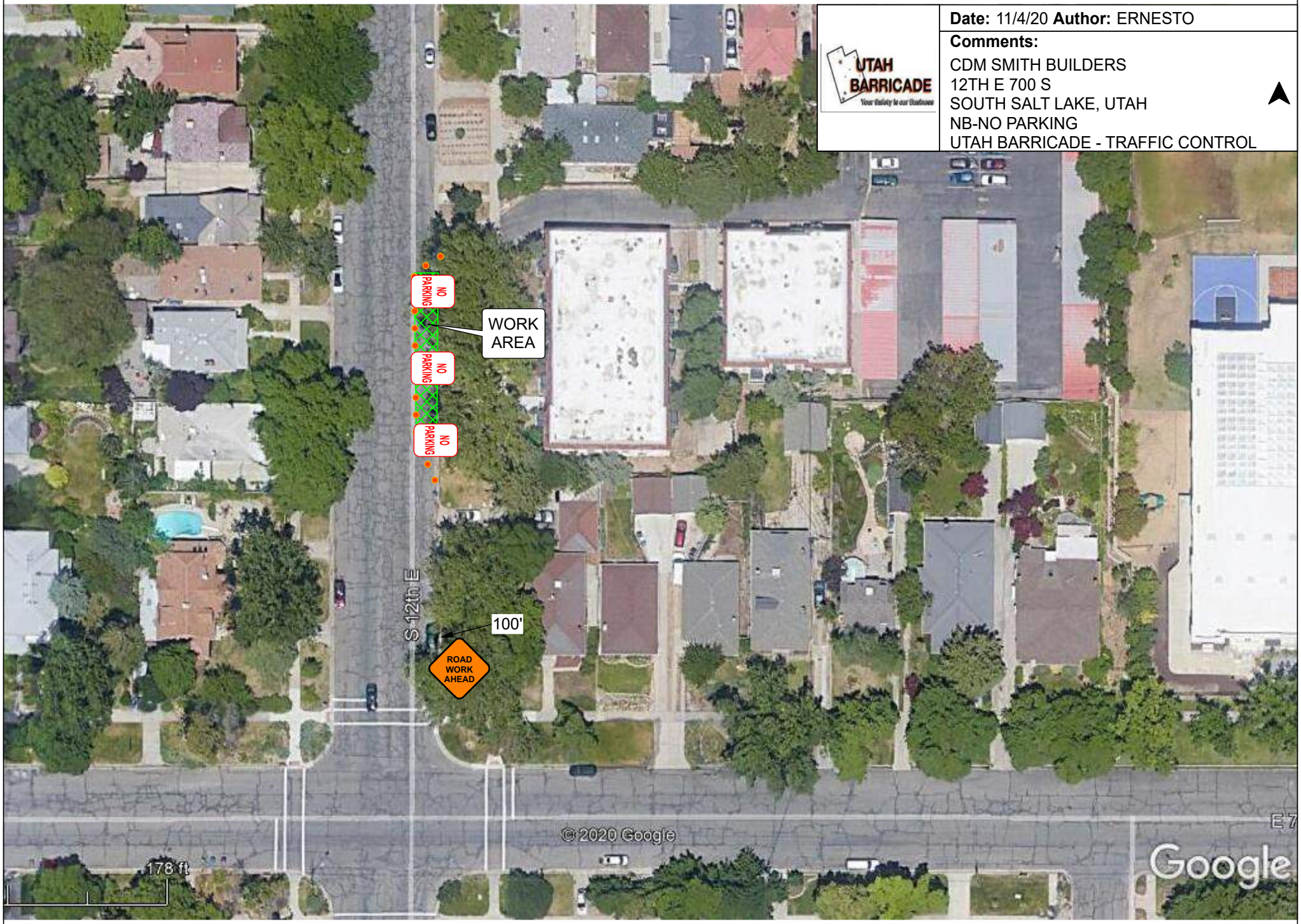
Comments:

CDM SMITH
1000 E LOWELL AVE
SOUTH SALT LAKE, UTAH
SB-SHOULDER WORK & SIDEWALK
UTAH BARRICADE - TRAFFIC CONTROL

Date: 11/4/20 **Author:** ERNESTO

Comments:

CDM SMITH BUILDERS
12TH E 700 S
SOUTH SALT LAKE, UTAH
NB-NO PARKING
UTAH BARRICADE - TRAFFIC CONTROL



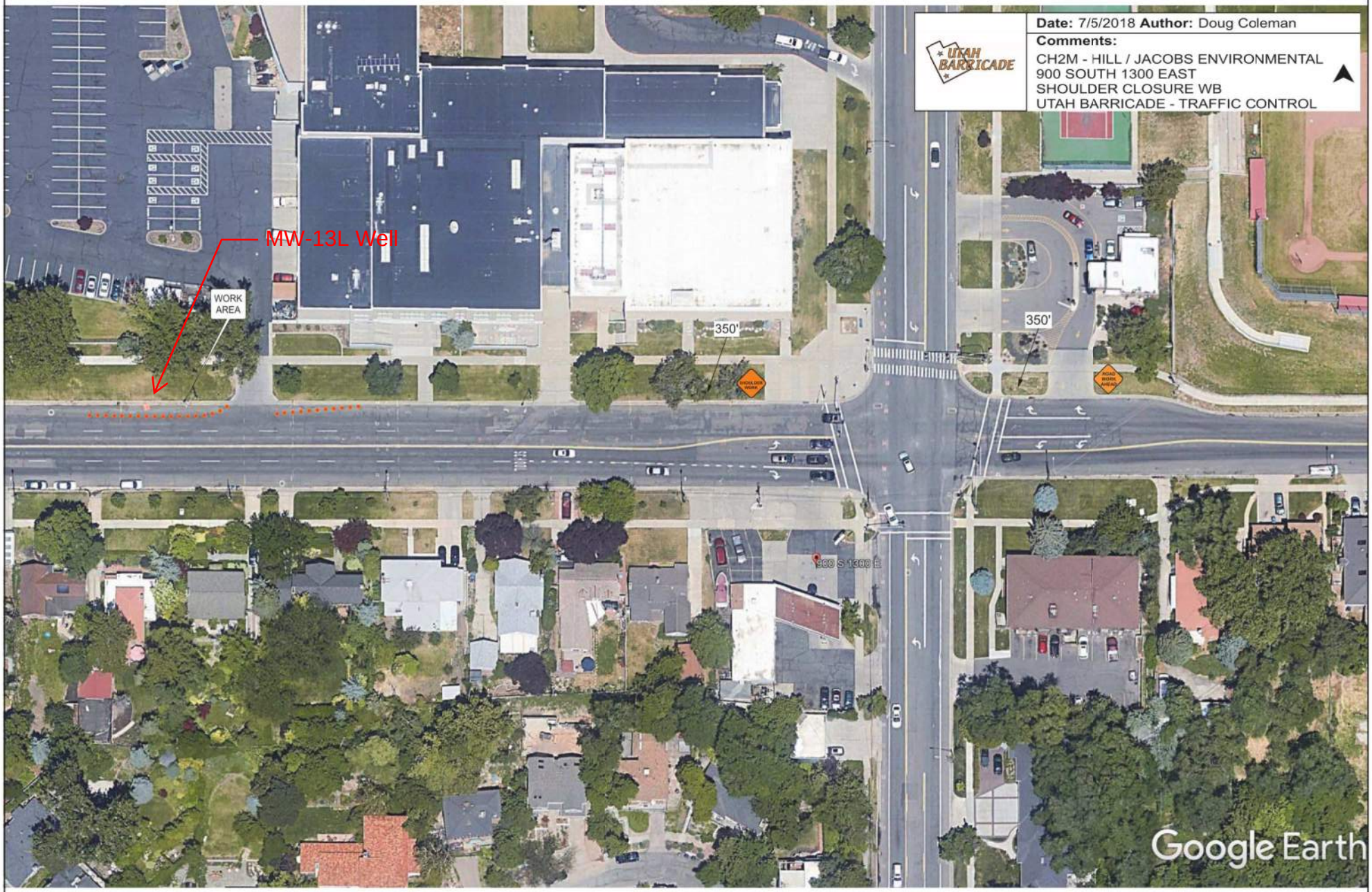
Date: 10/29/20 **Author:** ERNESTO

Comments:

CDM SMITH
HERBERT AVE 12TH E
SOUTH SALT LAKE, UTAH
SHOULDER WORK
UTAH BARRICADE - TRAFFIC CONTROL

MW-13S/D Traffic Control Plan

www.invarion.com



Appendix E

Salt Lake City Traffic Control, Engineering, and Right-of-Way Permits

SALT LAKE CITY CORPORATION
ENGINEERING DIVISION
349 SOUTH 200 EAST, SUITE 100
SALT LAKE CITY, UTAH 84111
PHONE (801) 535-6396
FAX (801) 535-6093
engpermit@slcgov.com

ENG2020-02422

Assigned Inspector: Jack Crockett
Office Phone: 801.703.5964
Cell Phone:

Please contact inspector 24 hours before beginning work

PERMIT TO WORK IN THE PUBLIC WAY

Job Address:	**Contractor Phone**
1183 E HERBERT Ave	Phone1: Phone2: FAX:

Applicant Name:	Business Name: CDM FEDERAL PROGRAMS	Mailing Address: SALT LAKE CITY, UT

Traffic Control Plan		**Starting and Ending Dates**		**Fee**	
Barricade Manual Figure	**TA6**	Begin Date:	**11/09/2020**	Total Fee:	**$123.75**
Traffic Permit Number:	**TRN2020-02820, 2821, 2822**	Expiration Date:	**12/07/2020**		

Certificate of Insurance as Per City Ordinance – Chapter 14.32.065	Number: TB7611B8T8Z6040T
Bonds As Per City Ordinance – Chapter 14.32.070	Number: 9340850
State Contractors License As Per City Ordinance – Chapter 14.32.025	Number:

Work Type: **Test Bore**
Drawing Included: **Yes**
APWA Standard:

Field Contact: Joe **Phone:** 513.602.1619

Comments or Additional Requirements:

Installation of 3 monitoring wells. 1183 E Herbert 752 S 1000 E 647 S 1200 E Work will only take 3-4 days. Project manager will call Jack when complete. Joe 513.602.1619 additional monitoring well is being added to the project. A week fee and well fee has been added. -Jack Crockett 11/24/2020 Added approximately 2 week(s) to the permit The old completion date was 11/27/2020 The new completion date is 12/07/2020 Changes performed by Jack Crockett on 11/24/2020 Extension fees not charged because: A fee was already applied. The amount of time occupying the public way is reflected in that fee. The drilling schedule is tentative so a wide range was provided.

Notice: CALL 24 HOURS BEFORE COMMENCING WORK (535-6727) for Public Utility inspections or assigned inspector for all other inspections or 48 hours if work is scheduled on holidays and weekends. **Digging within ten feet (10') of any parkstrip street tree requires written authorization from Salt Lake City Urban Forestry. Contact Urban Forestry at (801) 535-7818, before any excavation with in ten feet of a street tree, for inspection and authorization.**
BEFORE EXCAVATION CONTACT BLUE STAKES – 811 or 1-800-662-4111

PERMIT APPLICATION: Application is hereby made for a permit to work in the public way as specified above.
Applicant agrees to the terms on the reverse side and to any increase in fees should they be required by Engineering.
Print name of Applicant:

Signature of Applicant: Joe Miller Date: 11/24/2020

Permit Issued By: Jack Crockett

**** WORK GUARANTEED - 3 YEARS FROM ACCEPTANCE DATE ****

GENERAL CONDITIONS

ACCEPTANCE OF CONDITIONS. It is understood and agreed by the Permittee that performing any work under this permit constitutes acceptance of Title 14 Chapter 32 of the Revised Ordinances of Salt Lake City and the City's Regulations for controlling construction, excavation and obstructions in the Public Right ¬of ¬Way, latest revision.
PROXIMATE WORK. Applicant agrees that no other work shall be done under this permit except that specifically set forth herein. It is the applicants responsibility to verify the exact location of city and private facilities prior to commencing excavation operations.
PERMIT AND DRAWINGS AT JOB SITE. The permittee shall have at the work site a copy of the permit, the traffic control plan, and the City approved drawings. NOTIFICATION. Notify the assigned inspector 24 hours before commencing work. Provide the following information: permit number, name and telephone number of permittee, date/time work is to commence, location of work and any other information which may be relevant to the work.
CONFORMANCE TO EXISTING LAWS AND CITY SPECIFICATIONS. Permittee agrees to be fully informed of all federal, state and local laws, ordinances, rules, regulations, and City Construction Specifications which, in any manner, affect the work, and at all times shall observe and comply with such laws, ordinances, rules, regulations and specifications. The City Engineer reserves the right to shut down and/or issue a citation for violation of these provisions.
ENVIRONMENTAL LIABILITY. Permittee agrees to indemnify, defend and hold harmless Salt Lake City, its officers, agents and employees against any claims, losses, damages, or expenses, including, without limitation, any fees or penalties imposed by the United States Environmental Protection Agency, the Utah State Department of Environmental Protection Agency, the Utah State Department of Environmental Quality or any other government or regulatory agency and any attorney's fees or costs sustained on account of, or related to, the presence, release, discovery or creation of hazardous wastes or similar materials as those materials are defined under applicable federal or state statutes or regulations, including, without limitation, the Resource Conservation and Recovery Act of 1976.
STANDARD SPECIFICATIONS AND STANDARD DRAWINGS. Comply with all Salt Lake City Standard Specifications and Standard Drawings for cutting surface, traffic control, backfill, compaction, selection of subgrade materials, asphalt and concrete surfacing requirements. Printed copies of the Regulations and Specifications can be obtained through the City Engineer's Office.
WARRANTY. Permittee shall guarantee the worksite restoration for a period of three years from completion and acceptance of the work, reasonable wear and tear excepted.

SPECIAL CONDITIONS

EXCAVATION OPERATIONS BLUE STAKES. Before commencing excavation operations, Permittee shall call "Blue Stakes" at 811
TRAFFIC CONTROL DEVICES. Traffic control devices must be in place before excavation begins.
ENVIRONMENTAL CONTROL DUST AND DEBRIS. Keep dust and debris controlled at the work site at all times. If necessary, wet down dusty areas with water and provide containers for debris.
WHEEL CLEANING ORDINANCE. Conform to Section 18.20.210 of the Revised Ordinances of Salt Lake City, 1987. The ordinance describes the City's requirements for keeping the public way clean.
NOISE. Permittee shall control noise in accordance with the Salt Lake County Health Department Noise Ordinance.
CLEANUP. Remove all equipment, material, barricades and similar items from the right of way. Areas used for storage of excavated material will be smoothed and returned to their original contour. Vacuum sweeping or hand sweeping is required when Engineer determines cleaning equipment is ineffective.
CONFORMANCE TO ENGINEERING REGULATIONS. All provisions of Salt Lake City Engineering Regulation 5¬R¬4, "Regulations for Controlling Construction in the City's Public Way", and other pertinent Engineering Regulations, will be adhered to. Engineering Regulations can be obtained in the office of the City Engineer, 349 South 200 East, Suite 100, Salt Lake City, Utah 84111.
TRAFFIC INTERRUPTION. Construction operations will be conducted in a manner to minimize the amount of interference or interruption of roadway traffic. Except during emergency conditions or unless authorized by the Engineer, construction operations such as excavation, backfill and pavement restoration on major/collector and CBD streets are prohibited during peak traffic hours of 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.
TRAFFIC CONTROL MANUAL. All provisions of the current "Traffic Control Manual" shall be adhered to. This manual provides regulations concerning traffic control construction barricades, road closures, public and private access, traffic control signing, traffic control in Central Business Area and traffic control devices.
EMERGENCY INFORMATION. Permittee shall clearly post on barricades in letters not less than two inches (2 in.) high emergency information consisting of the name and emergency telephone number of the permittee, and the permittee shall cause at least one such barricade per block to be erected at every job site until the work is complete and formally accepted by the City.
STREET EXCAVATION IN WINTER. Excavation of City Streets during the winter months (herein defined as November 15 to April 1) will be allowed only if the work is a new service connection, required maintenance or emergency, or otherwise approved by the Engineer. Permanent patching of City streets excavated in the winter may be delayed until April 1, provided the permittee provides and maintains a temporary asphalt surface until such time as the permanent surfacing is accomplished.
PRECONSTRUCTION PICTURES OF EXISTING PUBLIC WAY IMPROVEMENTS. Prior to commencing the permit work, the permittee is encouraged to secure pictures of the conditions of the existing public way improvements such as curbing, sidewalk, landscaping, asphalt surfaces, etc.
TIME LIMIT. Unless authorized otherwise by the Engineer on the permit, all paving and replacement of street facilities shall be done within seven (7) calendar days from the time the excavation commences, or within three (3) calendar days on major or collector streets from the time excavation commences, except as provided for during excavation in winter or during weather conditions that do not allow paving according to applicable standards and specifications. If work is expected to exceed the above duration, the permittee shall submit a detailed construction schedule for approval. The schedule will address means and methods to minimize traffic disruption and complete the construction as soon as possible.
EXCAVATION WITHIN 10 FEET OF STREET TREES. Before commencing excavation activities, Permittee shall contact Salt Lake City Urban Forestry (801) 535-7818 for an inspection.

SALT LAKE CITY CORPORATION
ENGINEERING DIVISION
349 SOUTH 200 EAST, SUITE 100
SALT LAKE CITY, UTAH 84111
PHONE (801) 535-6248
FAX (801) 535-6093
engpermit@slcgov.com

PERMIT NUMBER: ENG2020-02422

Assigned Inspector: Jack Crockett
Office Phone: 801.703.5964
Cell Phone:

PERMIT TO WORK IN THE PUBLIC WAY

Job Address:	**Contractor Phone**
1183 E HERBERT Ave	Phone1: Phone2: FAX:

Applicant Name:	Business Name:	Mailing Address:
	CDM FEDERAL PROGRAMS	SALT LAKE CITY, UT

Traffic Control Plan		**Starting and Ending Dates**		**Fee**	
Barricade Manual Figure	**TA6**	Begin Date:	**11/09/2020**	Total Fee:	**$123.75**
Traffic Permit Number:	**TRN2020-02820,**	Expiration	**11/27/2020**		

Certificate of Insurance as Per City Ordinance – Chapter 14.32.065	Number: TB7611B8T8Z6040T
Bonds As Per City Ordinance – Chapter 14.32.070	Number: 9340850
State Contractors License As Per City Ordinance – Chapter 14.32.025	Number:

Work Type: **Test Bore**
Drawing Included: **Yes**
APWA Standard:

Comments or Additional Requirements:
Installation of 3 monitoring wells.

1183 E Herbert
752 S 1000 E
647 S 1200 E

Notice: Work shall be completed within 30 days from the date the permit is granted unless extended by the City Engineer. CALL 24 HOURS BEFORE COMMENCING WORK (535-6727) for Public Utility inspections or assigned inspector for all other inspections) or 48 hours if work is scheduled on holidays and weekends. Contact Urban Forestry 972-7818, 48 hours prior of work to be done if work impacts a city tree.

BEFORE EXCAVATION CONTACT BLUE STAKES – 811 or 1-800-662-4111

PERMIT APPLICATION: Application is hereby made for a permit to work in the public way as specified above. Applicant agrees to the terms on the reverse side and to any increase in fees should they be required by Engineering.

Print name of Applicant:

Signature of Applicant: Date: 11/10/2020

Joe Miller

Permit Issued By: CJ9250

**** WORK GUARANTEED - 3 YEARS FROM ACCEPTANCE DATE ****

GENERAL CONDITIONS

ACCEPTANCE OF CONDITIONS. It is understood and agreed by the Permittee that performing any work under this permit constitutes acceptance of Title 14 Chapter 32 of the Revised Ordinances of Salt Lake City and the City's Regulations for controlling construction, excavation and obstructions in the Public Right ¬of ¬Way, latest revision.
PROXIMATE WORK. Applicant agrees that no other work shall be done under this permit except that specifically set forth herein. It is the applicants responsibility to verify the exact location of city and private facilities prior to commencing excavation operations.
PERMIT AND DRAWINGS AT JOB SITE. The permittee shall have at the work site a copy of the permit, the traffic control plan, and the City approved drawings. NOTIFICATION. Notify the assigned inspector 24 hours before commencing work. Provide the following information: permit number, name and telephone number of permittee, date/time work is to commence, location of work and any other information which may be relevant to the work.
CONFORMANCE TO EXISTING LAWS AND CITY SPECIFICATIONS. Permittee agrees to be fully informed of all federal, state and local laws, ordinances, rules, regulations, and City Construction Specifications which, in any manner, affect the work, and at all times shall observe and comply with such laws, ordinances, rules, regulations and specifications. The City Engineer reserves the right to shut down and/or issue a citation for violation of these provisions.
ENVIRONMENTAL LIABILITY. Permittee agrees to indemnify, defend and hold harmless Salt Lake City, its officers, agents and employees against any claims, losses, damages, or expenses, including, without limitation, any fees or penalties imposed by the United States Environmental Protection Agency, the Utah State Department of Environmental Protection Agency, the Utah State Department of Environmental Quality or any other government or regulatory agency and any attorney's fees or costs sustained on account of, or related to, the presence, release, discovery or creation of hazardous wastes or similar materials as those materials are defined under applicable federal or state statutes or regulations, including, without limitation, the Resource Conservation and Recovery Act of 1976.
STANDARD SPECIFICATIONS AND STANDARD DRAWINGS. Comply with all Salt Lake City Standard Specifications and Standard Drawings for cutting surface, traffic control, backfill, compaction, selection of subgrade materials, asphalt and concrete surfacing requirements. Printed copies of the Regulations and Specifications can be obtained through the City Engineer's Office.
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SPECIAL CONDITIONS

EXCAVATION OPERATIONS BLUE STAKES. Before commencing excavation operations, Permittee shall call "Blue Stakes" at 811
TRAFFIC CONTROL DEVICES. Traffic control devices must be in place before excavation begins.
ENVIRONMENTAL CONTROL DUST AND DEBRIS. Keep dust and debris controlled at the work site at all times. If necessary, wet down dusty areas with water and provide containers for debris.
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CLEANUP. Remove all equipment, material, barricades and similar items from the right of way. Areas used for storage of excavated material will be smoothed and returned to their original contour. Vacuum sweeping or hand sweeping is required when Engineer determines cleaning equipment is ineffective.
CONFORMANCE TO ENGINEERING REGULATIONS. All provisions of Salt Lake City Engineering Regulation 5¬R¬4, "Regulations for Controlling Construction in the City's Public Way", and other pertinent Engineering Regulations, will be adhered to. Engineering Regulations can be obtained in the office of the City Engineer, 349 South 200 East, Suite 100, Salt Lake City, Utah 84111.
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TRAFFIC CONTROL MANUAL. All provisions of the current "Traffic Control Manual" shall be adhered to. This manual provides regulations concerning traffic control construction barricades, road closures, public and private access, traffic control signing, traffic control in Central Business Area and traffic control devices.
EMERGENCY INFORMATION. Permittee shall clearly post on barricades in letters not less than two inches (2 in.) high emergency information consisting of the name and emergency telephone number of the permittee, and the permittee shall cause at least one such barricade per block to be erected at every job site until the work is complete and formally accepted by the City.
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PRECONSTRUCTION PICTURES OF EXISTING PUBLIC WAY IMPROVEMENTS. Prior to commencing the permit work, the permittee is encouraged to secure pictures of the conditions of the existing public way improvements such as curbing, sidewalk, landscaping, asphalt surfaces, etc.
TIME LIMIT. Unless authorized otherwise by the Engineer on the permit, all paving and replacement of street facilities shall be done within seven (7) calendar days from the time the excavation commences, or within three (3) calendar days on major or collector streets from the time excavation commences, except as provided for during excavation in winter or during weather conditions that do not allow paving according to applicable standards and specifications. If work is expected to exceed the above duration, the permittee shall submit a detailed construction schedule for approval. The schedule will address means and methods to minimize traffic disruption and complete the construction as soon as possible.

Traffic Control Permit

Salt Lake City Community and Neighborhoods
Division of Transportation
349 South 200 East #150
Salt Lake City, Utah 84111
Telephone (801) 535-6630
E-Mail TechPermit@slcgov.com

Permit # TRN2020-02820

Organization Name: CDM Federal Programs Corp
Address: 10560 Arrowhead Drive Suite 500 Fairfax, 22030
Contact Person: Joseph Miller Phone: 3033832328 Cell: 5136021619
Barricade Company: Barricade Phone:

WORK SHALL COMPLY WITH PART 6 OF THE 2009 MUTCD.
PERMITS MUST BE EXTENDED 24 HOURS IN ADVANCE OF EXPIRATION.
IF THE TRAFFIC CONTROL PERMIT IS ALLOWED TO EXPIRE, A NEW PERMIT, AND AN ADDITIONAL FEE WILL BE REQUIRED.
CLOSURES ON A DIFFERENT STREET THAN LISTED WILL REQUIRE AN ADDITIONAL TRAFFIC CONTROL, AND ENGINEERING PERMIT.
THE ORGANIZATION ISSUED THE TRAFFIC CONTROL PERMIT SHALL BE RESPONSIBLE FOR ALL BARRICADE PLACEMENT AND MAINTENENCE.
AN ADDITIONAL PERMIT FROM SLC ENGINEERING MAY ALSO BE REQUIRED.
SHALL MAINTAIN ACCESS TO ALL PROPERTIES.
SHALL INFORM BUSINESSES & RESIDENTS OF PROJECT & DURATION.
SHALL COORDINATE WITH BUSINESSES & RESIDENTS AFFECTED.
SHALL OBTAIN A PERMIT FOR ALL PARKING METERS OR OTHER RESTRICTED PARKING MADE UNAVAILBABLE TO THE PUBLIC.
TRAFFIC CONTROL PERMITS ARE NOT VALID UNTIL PAID IN FULL.
CHANGES TO PERMIT MAY BE REQUIRED AND MADE UPON REVIEW and/or COMPLAINT.

Project Name / Description: Monitoring well installation for 700 S 1600 E PCE Plume site. Parking lane closure with minor encroachment
General Work Type: Staging Specific Work Type: Excavation
City Project # Public Way Permit #
Special Event Permit # Block Party Permit #

Closure Type	*On Street Name*	*From Number*	*To Number*	*Side of Street*
Street	**Herbert**	**1177**	**1183**	**N**

Start Date	*End Date*	*Full Road Closure?*	*Barricade Manual Fig #*	*Description*
11/09/2020	11/27/2020	No	TA-6	Closure of parking lane with minor encroachment.

Approved By: Joseph Jacobsen Issue Date: 11/4/2020

Traffic Control Permit

Salt Lake City Community and Neighborhoods
Division of Transportation
349 South 200 East #150
Salt Lake City, Utah 84111
Telephone (801) 535-6630
E-Mail TechPermit@slcgov.com

Permit # TRN2020-02821

Organization Name: CDM Federal Programs Corp
Address: 10560 Arrowhead Drive Suite 500 Fairfax, 22030
Contact Person: Joseph Miller Phone: 3033832328 Cell: 5136021619
Barricade Company: Barricade Phone:

WORK SHALL COMPLY WITH PART 6 OF THE 2009 MUTCD.
PERMITS MUST BE EXTENDED 24 HOURS IN ADVANCE OF EXPIRATION.
IF THE TRAFFIC CONTROL PERMIT IS ALLOWED TO EXPIRE, A NEW PERMIT, AND AN ADDITIONAL FEE WILL BE REQUIRED.
CLOSURES ON A DIFFERENT STREET THAN LISTED WILL REQUIRE AN ADDITIONAL TRAFFIC CONTROL, AND ENGINEERING PERMIT.
THE ORGANIZATION ISSUED THE TRAFFIC CONTROL PERMIT SHALL BE RESPONSIBLE FOR ALL BARRICADE PLACEMENT AND MAINTENENCE.
AN ADDITIONAL PERMIT FROM SLC ENGINEERING MAY ALSO BE REQUIRED.
SHALL MAINTAIN ACCESS TO ALL PROPERTIES.
SHALL INFORM BUSINESSES & RESIDENTS OF PROJECT & DURATION.
SHALL COORDINATE WITH BUSINESSES & RESIDENTS AFFECTED.
SHALL OBTAIN A PERMIT FOR ALL PARKING METERS OR OTHER RESTRICTED PARKING MADE UNAVAILBABLE TO THE PUBLIC.
TRAFFIC CONTROL PERMITS ARE NOT VALID UNTIL PAID IN FULL.
CHANGES TO PERMIT MAY BE REQUIRED AND MADE UPON REVIEW and/or COMPLAINT.

Project Name / Description: Work area will be sidewalk and planting strip on west side 1000 E south of Lowell.
General Work Type: Staging Specific Work Type: Excavation
City Project # Public Way Permit #
Special Event Permit # Block Party Permit #

Closure Type	*On Street Name*	*From Number*	*To Number*	*Side of Street*
Street	**S 1000 E**	**746**	**752**	**W**

Start Date	*End Date*	*Full Road Closure?*	*Barricade Manual Fig #*	*Description*	*Special Requirements*
11/09/2020	11/20/2020	No	TA-6	Closure of parking lane on west side of 1000 E.	Sidewalk Closure for 70'.

Approved By: Joseph Jacobsen Issue Date: 11/4/2020

Traffic Control Permit

Salt Lake City Community and Neighborhoods
Division of Transportation
349 South 200 East #150
Salt Lake City, Utah 84111
Telephone (801) 535-6630
E-Mail TechPermit@slcgov.com

Permit # TRN2020-02822

Organization Name: CDM Federal Programs Corp
Address: 10560 Arrowhead Drive Suite 500 Fairfax, 22030
Contact Person: Joseph Miller Phone: 3033832328 Cell: 5136021619
Barricade Company: Barricade Phone:

WORK SHALL COMPLY WITH PART 6 OF THE 2009 MUTCD.
PERMITS MUST BE EXTENDED 24 HOURS IN ADVANCE OF EXPIRATION.
IF THE TRAFFIC CONTROL PERMIT IS ALLOWED TO EXPIRE, A NEW PERMIT, AND AN ADDITIONAL FEE WILL BE REQUIRED.
CLOSURES ON A DIFFERENT STREET THAN LISTED WILL REQUIRE AN ADDITIONAL TRAFFIC CONTROL, AND ENGINEERING PERMIT.
THE ORGANIZATION ISSUED THE TRAFFIC CONTROL PERMIT SHALL BE RESPONSIBLE FOR ALL BARRICADE PLACEMENT AND MAINTENENCE.
AN ADDITIONAL PERMIT FROM SLC ENGINEERING MAY ALSO BE REQUIRED.
SHALL MAINTAIN ACCESS TO ALL PROPERTIES.
SHALL INFORM BUSINESSES & RESIDENTS OF PROJECT & DURATION.
SHALL COORDINATE WITH BUSINESSES & RESIDENTS AFFECTED.
SHALL OBTAIN A PERMIT FOR ALL PARKING METERS OR OTHER RESTRICTED PARKING MADE UNAVAILBABLE TO THE PUBLIC.
TRAFFIC CONTROL PERMITS ARE NOT VALID UNTIL PAID IN FULL.
CHANGES TO PERMIT MAY BE REQUIRED AND MADE UPON REVIEW and/or COMPLAINT.

Project Name / Description: Work area for monitoring well installation on east side of S 1200 E, north of 700 S.
General Work Type: Staging Specific Work Type: Excavation
City Project # Public Way Permit #
Special Event Permit # Block Party Permit #

Closure Type	*On Street Name*	*From Number*	*To Number*	*Side of Street*
Street	**S 1200 E**	**647**	**659**	**E**

Start Date	*End Date*	*Full Road Closure?*	*Barricade Manual Fig #*	*Description*
11/09/2020	11/20/2020	No	TA-6	Parking lane closure with minor encroachment.

Approved By: Joseph Jacobsen Issue Date: 11/4/2020

Traffic Control Permit

Salt Lake City Community and Neighborhoods
Division of Transportation
349 South 200 East #150
Salt Lake City, Utah 84111
Telephone (801) 535-6630
E-Mail TechPermit@slcgov.com

Permit # TRN2020-02973

Organization Name: CDM Federal Programs Corp
Address: 10560 Arrowhead Drive Suite 500 Fairfax, 22030
Contact Person: Joseph Miller Phone: 3033832328 Cell: 5136021619
Barricade Company: Barricade Phone:

WORK SHALL COMPLY WITH PART 6 OF THE 2009 MUTCD.
PERMITS MUST BE EXTENDED 24 HOURS IN ADVANCE OF EXPIRATION.
IF THE TRAFFIC CONTROL PERMIT IS ALLOWED TO EXPIRE, A NEW PERMIT, AND AN ADDITIONAL FEE WILL BE REQUIRED.
CLOSURES ON A DIFFERENT STREET THAN LISTED WILL REQUIRE AN ADDITIONAL TRAFFIC CONTROL, AND ENGINEERING PERMIT.
THE ORGANIZATION ISSUED THE TRAFFIC CONTROL PERMIT SHALL BE RESPONSIBLE FOR ALL BARRICADE PLACEMENT AND MAINTENENCE.
AN ADDITIONAL PERMIT FROM SLC ENGINEERING MAY ALSO BE REQUIRED.
SHALL MAINTAIN ACCESS TO ALL PROPERTIES.
SHALL INFORM BUSINESSES & RESIDENTS OF PROJECT & DURATION.
SHALL COORDINATE WITH BUSINESSES & RESIDENTS AFFECTED.
SHALL OBTAIN A PERMIT FOR ALL PARKING METERS OR OTHER RESTRICTED PARKING MADE UNAVAILBABLE TO THE PUBLIC.
TRAFFIC CONTROL PERMITS ARE NOT VALID UNTIL PAID IN FULL.
CHANGES TO PERMIT MAY BE REQUIRED AND MADE UPON REVIEW and/or COMPLAINT.

Project Name / Description: Equipment staging for monitoring well installation in planting strip near the curb.
General Work Type: Staging Specific Work Type: Excavation
City Project # Public Way Permit #
Special Event Permit # Block Party Permit #

Closure Type	*On Street Name*	*From Number*	*To Number*	*Side of Street*
Street	**E 900 S**	**1217**	**1235**	**N**

Start Date	*End Date*	*Full Road Closure?*	*Barricade Manual Fig #*	*Description*
12/01/2020	12/08/2020	No	TA-6	Parking lane closure for equipment staging for monitoring well installation in planting strip north of the curb

Approved By: Joseph Jacobsen Issue Date: 11/23/2020

Appendix F

Salt Lake City VHA Daily Excavation Checklists

Attachment C

TRENCHING AND EXCAVATION PERMIT

Permit Issued to: CDM Smith (Service/Contractor Printed name) 11/03/2020 (Signature/Date)

Permit Issued by: Linda Gallegos (Printed name) Gallegos 11/03/20 (Signature/Date)

Date: 11/03/20 Job Location: West side garage

Inspection Item	Yes/No	Comment
Competent Person Identified?	Y	Whitney Treadway
Surface encumbrances protected?	Y	
Spoils pile set back 2 feet?	Y	
Access/egress to trench to limit travel25 feet?	N	If no, ladders are required.
Area barricaded or protected?	Y	
Soils Analysis Completed?		Type B Type C ✓
Protective System: if 5' or deeper Shoring ____ Benching ____ Sloping ____ Shielding ✓ sonic casing		Type B Soil: 1H:1V ____ Type C Soil: 1½H:1V ____
Utilities Located and marked?	Y	
Potential for hazardous atmosphere?	?	If yes, Confined Space evaluation needed.
Potential for engulfment?	N	If yes, Confined Space evaluation needed.

Note: Daily checklist required when excavation activities in the same location exceed 24 hrs.

Date received: 11/03/20 Safety Office signature: Gallegos

ATTACHMENT A

Daily Excavation Checklist
(To be completed by the CP)

Site Location: MW-30R A/B VA Campus PCE Plume 7005 1605E		
Date: 11/3/20 Time:	CP:	
Soil Type: NA		
Soil Classification: NA	Excavation Depth: 9'	Excavation Width: 18"
Type Of Protective System Used: none, boring		

Indicate for each item: YES - NO - or N/A for not applicable.
Provide date item last inspected if not required daily

1. General Inspection of Jobsite:	
A. Excavations, adjacent areas, and protective systems inspected by a CP daily before the start of work.	✓
B. CP has the authority to remove employees from the excavation immediately.	✓
C. Surface encumbrances removed or supported.	✓
D. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.	✓
E. Hard hats worn by all employees	✓
F. Spoils, materials, and equipment set back at least two feet from the edge of the excavation. → removed by vac truck	✓
G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.	✓
H. Walkways and bridges over excavations six feet or more in depth are equipped with standard guardrails and toe boards (fall protection).	NA
I. Warning vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.	✓
J. Warning system established and utilized when mobile equipment is operating near the edge of the excavation.	NA
K. Employees are required to stand away from any vehicle being loaded or unloaded.	✓
L. Employees are not permitted underneath loads handled by lifting or digging equipment.	✓
M. Employees prohibited from working on the faces of slopes or benched excavations above other employees.	✓
2. Utilities:	
A. Utility companies contacted and/or utilities located.	✓
B. Exact location of utilities marked.	✓
C. Underground installations protected, supported, or removed when excavation is open.	NA

A. 29 CFR 1926.650; Scope, application, and definitions applicable to this subpart

B. 29 CFR 1926.651; Specific excavation requirements

C. 29 CFR 1926.652; Requirements for protective systems

D. OSHA Technical Manual (OTM) Section V: Chapter 2, Excavations: Hazard Recognition in Trenching and Shoring.

7. ATTACHMENTS:

Attachment A: Daily Excavation Checklist
Attachment B: Maximum Allowable Slopes and Slope Configurations
Attachment C: Trenching and Excavation Permit

8. RESCISSION:

Memorandum 00Q.44, "Excavation Safety Program", dated June 23, 2017.

9. RECERTIFICATION:

This MCP is scheduled for recertification on or before the last working day of September 2025. This MCP will continue to serve as local policy until it is recertified or rescinded. In the event of contradiction with national policy, the national policy supersedes and controls.

10. SIGNATORY AUTHORITY

/s//

Shella Stovall, MNA, RN
George E. Wahlen VA Medical Center Director
Date Approved: September 23, 2020

NOTE: *The signature remains valid until rescinded by an appropriate administrative action.*

3. Means of Access and Egress:	
A. Lateral travel to means of egress no greater than 25 feet in excavations four feet or more in depth.	NA
B. Ladders used in excavations secured and extended three feet above the edge trench.	NA
C. Structural ramps used by employees designed by a CP.	NA
D. Structural ramps used for equipment designed by a registered professional Engineer (RPE).	NA
E. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with no-slip surface.	NA
F. Employees protected from cave-ins when entering or exiting the excavation.	NA
4. Wet Conditions:	
A. Precautions take to protect employees from the accumulation of water.	✓
B. Water removal equipment monitored by a CP.	✓
C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation.	✓
D. Inspections made after every rainstorm or other hazard-increasing occurrence.	✓
5. Hazardous Atmosphere:	
A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful contaminant exposing employees to a hazard. PID for air monitoring	✓
B. Adequate precautions taken to protect employees from exposure to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres.	✓
C. Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas.	✓
D. Testing conducted often to ensure that the atmosphere remains safe.	✓
E. Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist.	✓
F. Employees trained to use personal protective and other rescue equipment.	✓
G. Safety harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations.	NA
6. Support Systems:	
A. Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads.	NA
B. Materials and equipment used for protective systems inspected and in good condition.	✓
C. Materials and equipment not in good condition have been removed from service.	✓
D. Damaged materials and equipment used for protective systems inspected by a registered professional engineer (RPE) after repairs and before being placed back into service.	✓

E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or threat of being struck by materials or equipment.	✓
F. Members of support system securely fastened to prevent failure.	✓
G. Support systems provided in ensure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	NA
H. Excavations below the level of the base or footing supported, approved by an RPE.	NA
I. Removal of support systems progresses from the bottom and members are released slowly as to note any indication of possible failure.	NA
J. Backfilling progresses with removal of support system.	✓
K. Excavation of material to a level no greater than two feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.	NA
L. Shield system placed to prevent lateral movement. Sonic casing	✓
M. Employees are prohibited from remaining in shield system during vertical movement.	✓
Corrective Action and Comments	

Signature of CP/COR

9/3/20
Date

Whitney Treadway
Printed name of CP/COR

ATTACHMENT A

Daily Excavation Checklist
(To be completed by the CP)

Site Location: VA Campus MW-30R		
Date: 11/6/20	Time: 0745	CP: W. Treadway
Soil Type:		
Soil Classification:	Excavation Depth: 10 ft bgs	Excavation Width: 8"
Type Of Protective System Used: casing		

Indicate for each item: YES - NO - or N/A for not applicable.
Provide date item last inspected if not required daily

1. General Inspection of Jobsite:	
A. Excavations, adjacent areas, and protective systems inspected by a CP daily before the start of work.	✓
B. CP has the authority to remove employees from the excavation immediately.	✓
C. Surface encumbrances removed or supported.	✓
D. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.	✓
E. Hard hats worn by all employees	✓
F. Spoils, materials, and equipment set back at least two feet from the edge of the excavation.	NA
G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.	NA
H. Walkways and bridges over excavations six feet or more in depth are equipped with standard guardrails and toe boards (fall protection).	NA
I. Warning vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.	✓
J. Warning system established and utilized when mobile equipment is operating near the edge of the excavation.	✓
K. Employees are required to stand away from any vehicle being loaded or unloaded.	✓
L. Employees are not permitted underneath loads handled by lifting or digging equipment.	✓
M. Employees prohibited from working on the faces of slopes or benched excavations above other employees.	NA
2. Utilities:	
A. Utility companies contacted and/or utilities located.	✓
B. Exact location of utilities marked.	✓
C. Underground installations protected, supported, or removed when excavation is open.	✓
3. Means of Access and Egress:	
A. Lateral travel to means of egress no greater than 25 feet in excavations four	NA

feet or more in depth.	
B. Ladders used in excavations secured and extended three feet above the edge trench.	NA
C. Structural ramps used by employees designed by a CP.	NA
D. Structural ramps used for equipment designed by a registered professional Engineer (RPE).	NA
E. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with no-slip surface.	NA
F. Employees protected from cave-ins when entering or exiting the excavation.	NA
4. Wet Conditions:	
A. Precautions take to protect employees from the accumulation of water.	NA
B. Water removal equipment monitored by a CP.	NA
C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation.	NA
D. Inspections made after every rainstorm or other hazard-increasing occurrence.	✓
5. Hazardous Atmosphere:	
A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful contaminant exposing employees to a hazard.	✓
B. Adequate precautions taken to protect employees from exposure to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres.	✓
C. Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas.	✓
D. Testing conducted often to ensure that the atmosphere remains safe.	✓
E. Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist.	✓
F. Employees trained to use personal protective and other rescue equipment.	✓
G. Safety harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations.	NA
6. Support Systems:	
A. Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads.	NA
B. Materials and equipment used for protective systems inspected and in good condition.	✓
C. Materials and equipment not in good condition have been removed from service.	✓
D. Damaged materials and equipment used for protective systems inspected by a registered professional engineer (RPE) after repairs and before being placed back into service.	✓
E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or threat of being struck by materials or equipment.	NA

F. Members of support system securely fastened to prevent failure.	NA
G. Support systems provided in ensure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	NA
H. Excavations below the level of the base or footing supported, approved by an RPE.	NA
I. Removal of support systems progresses from the bottom and members are released slowly as to note any indication of possible failure.	NA
J. Backfilling progresses with removal of support system.	NA
K. Excavation of material to a level no greater than two feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.	NA
L. Shield system placed to prevent lateral movement. radius	NA ✓
M. Employees are prohibited from remaining in shield system during vertical movement.	NA
Corrective Action and Comments	

Signature of CP/COR — Date 11/16/20

Whitney Treadway
Printed name of CP/COR

One copy shall be provided for both the contractor conducting the work and COR (VASLCHCS)

ATTACHMENT A

Daily Excavation Checklist
(To be completed by the CP)

Site Location: VA Campus MW-30R		
Date: 11/7/20 | Time: 0745	CP: Whitney Treadway	
Soil Type: NA		
Soil Classification: NA	Excavation Depth: 183 ft	Excavation Width: 8"
Type Of Protective System Used: Sonic casing		

Indicate for each item: YES - NO - or N/A for not applicable.
Provide date item last inspected if not required daily

1. General Inspection of Jobsite:	
A. Excavations, adjacent areas, and protective systems inspected by a CP daily before the start of work.	✓
B. CP has the authority to remove employees from the excavation immediately.	✓
C. Surface encumbrances removed or supported.	✓
D. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.	✓
E. Hard hats worn by all employees	✓
F. Spoils, materials, and equipment set back at least two feet from the edge of the excavation.	NA
G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.	✓
H. Walkways and bridges over excavations six feet or more in depth are equipped with standard guardrails and toe boards (fall protection).	NA
I. Warning vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.	✓
J. Warning system established and utilized when mobile equipment is operating near the edge of the excavation.	✓
K. Employees are required to stand away from any vehicle being loaded or unloaded.	✓
L. Employees are not permitted underneath loads handled by lifting or digging equipment.	✓
M. Employees prohibited from working on the faces of slopes or benched excavations above other employees.	NA
2. Utilities:	
A. Utility companies contacted and/or utilities located.	✓
B. Exact location of utilities marked.	✓
C. Underground installations protected, supported, or removed when excavation is open.	✓
3. Means of Access and Egress:	
A. Lateral travel to means of egress no greater than 25 feet in excavations four	NA ✓

feet or more in depth.	
B. Ladders used in excavations secured and extended three feet above the edge trench.	NA
C. Structural ramps used by employees designed by a CP.	NA
D. Structural ramps used for equipment designed by a registered professional Engineer (RPE).	NA
E. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with no-slip surface.	NA
F. Employees protected from cave-ins when entering or exiting the excavation.	NA
4. Wet Conditions:	
A. Precautions take to protect employees from the accumulation of water.	NA
B. Water removal equipment monitored by a CP.	NA
C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation.	NA
D. Inspections made after every rainstorm or other hazard-increasing occurrence.	✓
5. Hazardous Atmosphere:	
A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful contaminant exposing employees to a hazard.	✓
B. Adequate precautions taken to protect employees from exposure to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres.	✓
C. Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas.	✓
D. Testing conducted often to ensure that the atmosphere remains safe.	✓
E. Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist.	✓
F. Employees trained to use personal protective and other rescue equipment.	✓
G. Safety harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations.	✓
6. Support Systems:	
A. Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads.	✓
B. Materials and equipment used for protective systems inspected and in good condition.	✓
C. Materials and equipment not in good condition have been removed from service.	✓
D. Damaged materials and equipment used for protective systems inspected by a registered professional engineer (RPE) after repairs and before being placed back into service.	✓
E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or threat of being struck by materials or equipment.	✓

F. Members of support system securely fastened to prevent failure.	NA
G. Support systems provided in ensure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	NA
H. Excavations below the level of the base or footing supported, approved by an RPE.	NA
I. Removal of support systems progresses from the bottom and members are released slowly as to note any indication of possible failure.	NA
J. Backfilling progresses with removal of support system.	NA
K. Excavation of material to a level no greater than two feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.	NA
L. Shield system placed to prevent lateral movement. sonic casing	✓
M. Employees are prohibited from remaining in shield system during vertical movement.	NA
Corrective Action and Comments	

Signature of CP/COR

11/7/20
Date

Whitney Treadway
Printed name of CP/COR

One copy shall be provided for both the contractor conducting the work and COR (VASLCHCS)

ATTACHMENT A

Daily Excavation Checklist
(To be completed by the CP)

Site Location: VA Campus MW-30R			
Date: 11/9/20	Time: 0730	CP: Whitney Treadway	
Soil Type: NA			
Soil Classification: NA	Excavation Depth: 295ft	Excavation Width: 8", 6"	
Type Of Protective System Used: Sonic Casing			

Indicate for each item: YES - NO - or N/A for not applicable.
Provide date item last inspected if not required daily

1. General Inspection of Jobsite:	
A. Excavations, adjacent areas, and protective systems inspected by a CP daily before the start of work.	✓
B. CP has the authority to remove employees from the excavation immediately.	✓
C. Surface encumbrances removed or supported.	NA
D. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.	NA
E. Hard hats worn by all employees	✓
F. Spoils, materials, and equipment set back at least two feet from the edge of the excavation.	NA
G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.	NA
H. Walkways and bridges over excavations six feet or more in depth are equipped with standard guardrails and toe boards (fall protection).	NA
I. Warning vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.	✓
J. Warning system established and utilized when mobile equipment is operating near the edge of the excavation.	✓
K. Employees are required to stand away from any vehicle being loaded or unloaded.	✓
L. Employees are not permitted underneath loads handled by lifting or digging equipment.	✓
M. Employees prohibited from working on the faces of slopes or benched excavations above other employees.	NA
2. Utilities:	
A. Utility companies contacted and/or utilities located.	✓
B. Exact location of utilities marked.	✓
C. Underground installations protected, supported, or removed when excavation is open.	✓
3. Means of Access and Egress:	
A. Lateral travel to means of egress no greater than 25 feet in excavations four	NA

feet or more in depth.	
B. Ladders used in excavations secured and extended three feet above the edge trench.	NA
C. Structural ramps used by employees designed by a CP.	NA
D. Structural ramps used for equipment designed by a registered professional Engineer (RPE).	NA
E. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with no-slip surface.	NA
F. Employees protected from cave-ins when entering or exiting the excavation.	NA
4. Wet Conditions:	
A. Precautions take to protect employees from the accumulation of water.	NA
B. Water removal equipment monitored by a CP.	NA
C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation.	NA
D. Inspections made after every rainstorm or other hazard-increasing occurrence.	✓
5. Hazardous Atmosphere:	
A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful contaminant exposing employees to a hazard.	✓
B. Adequate precautions taken to protect employees from exposure to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres.	✓
C. Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas.	✓
D. Testing conducted often to ensure that the atmosphere remains safe.	✓
E. Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist.	✓
F. Employees trained to use personal protective and other rescue equipment.	✓
G. Safety harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations.	✓
6. Support Systems:	
A. Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads. casing	✓
B. Materials and equipment used for protective systems inspected and in good condition.	✓
C. Materials and equipment not in good condition have been removed from service.	✓
D. Damaged materials and equipment used for protective systems inspected by a registered professional engineer (RPE) after repairs and before being placed back into service.	✓
E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or threat of being struck by materials or equipment.	✓

F. Members of support system securely fastened to prevent failure.	✓
G. Support systems provided in ensure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	NA
H. Excavations below the level of the base or footing supported, approved by an RPE.	NA
I. Removal of support systems progresses from the bottom and members are released slowly as to note any indication of possible failure.	NA
J. Backfilling progresses with removal of support system.	NA
K. Excavation of material to a level no greater than two feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.	NA
L. Shield system placed to prevent lateral movement. casing	✓
M. Employees are prohibited from remaining in shield system during vertical movement.	NA
Corrective Action and Comments	

Signature of CP/COR

Date 11/9/20

Whitney Treadway

Printed name of CP/COR

One copy shall be provided for both the contractor conducting the work and COR (VASLCHCS)

ATTACHMENT A

Daily Excavation Checklist
(To be completed by the CP)

Site Location: MW-30R VA Campus		
Date: 11/10/20 Time: 0730	CP: Whitney Treadway	
Soil Type: NA		
Soil Classification: NA	Excavation Depth: 295ft	Excavation Width: 8-6"
Type Of Protective System Used: Sonic casing		

Indicate for each item: YES - NO - or N/A for not applicable.
Provide date item last inspected if not required daily

1. General Inspection of Jobsite:	
A. Excavations, adjacent areas, and protective systems inspected by a CP daily before the start of work.	✓
B. CP has the authority to remove employees from the excavation immediately.	✓
C. Surface encumbrances removed or supported.	NA
D. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.	NA
E. Hard hats worn by all employees	✓
F. Spoils, materials, and equipment set back at least two feet from the edge of the excavation.	NA
G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.	NA
H. Walkways and bridges over excavations six feet or more in depth are equipped with standard guardrails and toe boards (fall protection).	NA
I. Warning vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.	✓
J. Warning system established and utilized when mobile equipment is operating near the edge of the excavation.	✓
K. Employees are required to stand away from any vehicle being loaded or unloaded.	✓
L. Employees are not permitted underneath loads handled by lifting or digging equipment.	✓
M. Employees prohibited from working on the faces of slopes or benched excavations above other employees.	NA
2. Utilities:	
A. Utility companies contacted and/or utilities located.	✓
B. Exact location of utilities marked.	✓
C. Underground installations protected, supported, or removed when excavation is open.	✓
3. Means of Access and Egress:	
A. Lateral travel to means of egress no greater than 25 feet in excavations four	NA

feet or more in depth.	
B. Ladders used in excavations secured and extended three feet above the edge trench.	NA
C. Structural ramps used by employees designed by a CP.	NA
D. Structural ramps used for equipment designed by a registered professional Engineer (RPE).	NA
E. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with no-slip surface.	NA
F. Employees protected from cave-ins when entering or exiting the excavation.	NA
4. Wet Conditions:	
A. Precautions take to protect employees from the accumulation of water.	NA
B. Water removal equipment monitored by a CP.	NA
C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation.	NA
D. Inspections made after every rainstorm or other hazard-increasing occurrence.	NA
5. Hazardous Atmosphere:	
A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful contaminant exposing employees to a hazard.	✓
B. Adequate precautions taken to protect employees from exposure to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres.	✓
C. Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas.	✓
D. Testing conducted often to ensure that the atmosphere remains safe.	✓
E. Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist.	✓
F. Employees trained to use personal protective and other rescue equipment.	✓
G. Safety harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations.	✓
6. Support Systems:	
A. Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads. casing	✓
B. Materials and equipment used for protective systems inspected and in good condition.	✓
C. Materials and equipment not in good condition have been removed from service.	✓
D. Damaged materials and equipment used for protective systems inspected by a registered professional engineer (RPE) after repairs and before being placed back into service.	✓
E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or threat of being struck by materials or equipment.	V

F. Members of support system securely fastened to prevent failure.	✓
G. Support systems provided in ensure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	NA
H. Excavations below the level of the base or footing supported, approved by an RPE.	NA
I. Removal of support systems progresses from the bottom and members are released slowly as to note any indication of possible failure.	NA
J. Backfilling progresses with removal of support system.	✓
K. Excavation of material to a level no greater than two feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.	NA
L. Shield system placed to prevent lateral movement. casing	✓
M. Employees are prohibited from remaining in shield system during vertical movement.	
Corrective Action and Comments	

Signature of CP/COR

11/10/20
Date

Whitney Treadway
Printed name of CP/COR

One copy shall be provided for both the contractor conducting the work and COR (VASLCHCS)

ATTACHMENT A

Daily Excavation Checklist
(To be completed by the CP)

Site Location: VA Campus MW-30R			
Date: 11/5/20	Time: 0800	CP: W. Treadway	
Soil Type:			
Soil Classification:	Excavation Depth: 9 ft bgs	Excavation Width: 8"	
Type Of Protective System Used: casing			

Indicate for each item: YES - NO - or N/A for not applicable.
Provide date item last inspected if not required daily

1. General Inspection of Jobsite:	
A. Excavations, adjacent areas, and protective systems inspected by a CP daily before the start of work.	✓
B. CP has the authority to remove employees from the excavation immediately.	✓
C. Surface encumbrances removed or supported.	✓
D. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.	✓
E. Hard hats worn by all employees	✓
F. Spoils, materials, and equipment set back at least two feet from the edge of the excavation.	✓
G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.	✓
H. Walkways and bridges over excavations six feet or more in depth are equipped with standard guardrails and toe boards (fall protection).	NA
I. Warning vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.	✓
J. Warning system established and utilized when mobile equipment is operating near the edge of the excavation.	✓
K. Employees are required to stand away from any vehicle being loaded or unloaded.	✓
L. Employees are not permitted underneath loads handled by lifting or digging equipment.	✓
M. Employees prohibited from working on the faces of slopes or benched excavations above other employees.	NA
2. Utilities:	
A. Utility companies contacted and/or utilities located.	✓
B. Exact location of utilities marked.	✓
C. Underground installations protected, supported, or removed when excavation is open.	✓
3. Means of Access and Egress:	
A. Lateral travel to means of egress no greater than 25 feet in excavations four	NA

feet or more in depth.	
B. Ladders used in excavations secured and extended three feet above the edge trench.	NA
C. Structural ramps used by employees designed by a CP.	NA
D. Structural ramps used for equipment designed by a registered professional Engineer (RPE).	NA
E. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with no-slip surface.	NA
F. Employees protected from cave-ins when entering or exiting the excavation.	NA
4. Wet Conditions:	
A. Precautions take to protect employees from the accumulation of water.	NA
B. Water removal equipment monitored by a CP.	NA
C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation.	NA
D. Inspections made after every rainstorm or other hazard-increasing occurrence.	✓
5. Hazardous Atmosphere:	
A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful contaminant exposing employees to a hazard.	✓
B. Adequate precautions taken to protect employees from exposure to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres.	✓
C. Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas.	✓
D. Testing conducted often to ensure that the atmosphere remains safe.	✓
E. Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist.	✓
F. Employees trained to use personal protective and other rescue equipment.	✓
G. Safety harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations.	✓
6. Support Systems:	
A. Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads.	NA
B. Materials and equipment used for protective systems inspected and in good condition.	NA
C. Materials and equipment not in good condition have been removed from service.	NA
D. Damaged materials and equipment used for protective systems inspected by a registered professional engineer (RPE) after repairs and before being placed back into service.	✓
E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or threat of being struck by materials or equipment.	NA

F. Members of support system securely fastened to prevent failure.	NA
G. Support systems provided in ensure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	NA
H. Excavations below the level of the base or footing supported, approved by an RPE.	NA
I. Removal of support systems progresses from the bottom and members are released slowly as to note any indication of possible failure.	NA
J. Backfilling progresses with removal of support system.	NA
K. Excavation of material to a level no greater than two feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.	NA
L. Shield system placed to prevent lateral movement.	✓
M. Employees are prohibited from remaining in shield system during vertical movement.	NA
Corrective Action and Comments	

Signature of CP/COR

11/5/20
Date

Whitney Treadway
Printed name of CP/COR

One copy shall be provided for both the contractor conducting the work and COR (VASLCHCS)

Appendix G

Borehole Logs with Well Construction Diagrams

CDM Smith
555 17th Street, Suite 500
Denver, CO 80202
(303) 383-2300

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	238824.6495-F3048-005.DRILL	**BORING/WELL NUMBER**	MW-13L
PROJECT NAME	700 S 1600 E PCE Plume	**DATE DRILLED**	12/2/2020 - 12/3/2020
LOCATION	Salt Lake City, UT	**CASING TYPE/DIAMETER**	2-inch Schedule 40 PVC
DRILLING METHOD	Sonic	**SCREEN TYPE/SLOT**	2-inch Schedule 40 0.020-slot
SAMPLING METHOD	Sonic Grab	**GRAVEL PACK TYPE**	#10/20 sand
GROUND ELEVATION (FT MSL)	4483.67	**GROUT TYPE/QUANTITY**	Hydrated Bentonite Chips
TOP OF CASING (FT MSL)	4483.23	**DEPTH TO WATER (FT BGS)**	19.83
LOGGED BY	Joe Miller	**GROUND WATER ELEVATION (FT MSL)**	4463.84
REMARKS	Groundwater measured while drilling		

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							No recovery. Hand augered to 5 ft bgs.	
				5				5.0
					SM		Silty SAND: brown (10YR 5/4); 70% fine sand, poorly graded; 30% silt; loose; moist.	6.0
0	0.528				ML		Sandy SILT: yellowish brown (10YR 5/4); 60% silt; 40% sand; soft; moist.	7.0
0.1	0.371						Sandy CLAY: mottled gray and light yellowish brown (2.5Y 6/3); 80% clay; 20% fine sand; stiff; cohesive; moist.	
0.1				10	CL			
0.6	0.138							12.0
					SM		Silty SAND: yellowish brown (10YR 5/4); 70% sand, poorly graded, fine to coarse; 30% silt; loose; wet.	12.7
	0.182						SAND: yellowish brown (10YR 5/4); fine to coarse, poorly graded; loose; wet.	
0.6					SP			
	0.135			15				
								16.5
0.4	0.254				GM		Silty GRAVEL with Sand: reddish brown (5YR 4/3); 60% gravel, fine to coarse, subangular to subrounded; 20% silt; 20% sand, fine to coarse; medium dense; cohesive in places; wet.	
0.1								
				20				20.0

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WELL DIAGRAM

- Flush-mounted vault (10-inch).
- Hydrated bentonite chips (2 to 147 ft bgs).
- 2-inch SCH 40 PVC blank.

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-13L
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 12/2/2020 - 12/3/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.7	0.085				GM			21.5	
0.4	0.112			25	SM		Silty SAND: reddish brown (5YR 4/3); 60% sand, poorly graded, fine to coarse; 40% silt; cohesive; compact; wet. At 24.5 feet bgs, trace gravel.	25.0	Hydrated bentonite chips (2 to 147 ft bgs).
1.1	0.103				GM		Silty GRAVEL with Sand: reddish brown (5YR 4/3); 70% gravel, fine to coarse; 20% silt; 10% sand; compact; cohesive; wet.	28.0	
0.7	0.062			30	SW		SAND: reddish brown (5YR 4/3); 60% sand, well graded, fine to coarse, subangular to subrounded; 40% gravel, fine to coarse, loose; wet.	30.0	2-inch SCH 40 PVC blank.
0.5	0.58						Silty GRAVEL with Sand: reddish brown (5YR 4/3); 50% gravel, fine to coarse, subangular to subrounded; 30% silt; 20% sand; compact; cohesive in places; wet.		
0.7	0.78				GM		At 33.3 feet bgs, increase in sand content, decrease in silt content.		
0.6	0.123			35			At 34.5 feet bgs, decrease in sand content, increase in silt content.	37.0	
0.4	0.998				ML		Clayey SILT: reddish brown (7.5YR 5/4); 100% fines, low to medium plasticity; firm to stiff; cohesive; moist to wet. At 39 feet bgs, trace sand, wet.	40.0	
0.5	0.962			40	ML		Sandy SILT: reddish brown (7.5YR 5/4); 80% silt, low plasticity; 20% sand; stiff; moist to wet.		

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BORING/WELL CONSTRUCTION LOG

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PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.4	0.335				ML		At 44 feet bgs, trace fine gravel.	43.0	
				45				45.0	
0.4	0.128				GM		Silty GRAVEL: reddish brown (5YR 5/4); 60% gravel, fine to coarse, subangular to subrounded; 30% silt; 10% sand, fine to coarse; cohesive in places; compact; wet.		
1	0.334						At 48 feet bgs, large clasts.		
1							At 49.5 feet bgs, less moisture.	50.0	Hydrated bentonite chips (2 to 147 ft bgs).
				50					
0.5	0.543				SP		SAND: brown (7.5YR 4/4); 90% sand, poorly graded, fine to coarse; 10% fine gravel; loose; wet.	52.0	
					GC		Clayey GRAVEL: brown (7.5YR 4/4); 70% coarse gravel; 30% clay; dense; moist.	52.8	
	0.351				SP		SAND with Gravel: light reddish brown (5YR 6/4); 85% fine sand, poorly graded; 15% fine gravel; loose; moist.	54.0	
2.1					GC		Clayey GRAVEL: brown (7.5YR 4/4); 70% gravel, fine to coarse; 30% clay; dense; moist to wet.		2-inch SCH 40 PVC blank.
				55					
0.6	0.478						At 57.5 feet bgs, increase in moisture.	58.5	
0.8	0.682				CL		CLAY: brown (7.5YR 4/4); low to medium plasticity clay; stiff; cohesive; dry to moist.	60.0	
				60					
0.8	0.262				ML		Clayey SILT: brown (7.5YR 5/4); low to medium plasticity; stiff; cohesive; moist.	63.0	
0.7					CL		CLAY: brown (7.5YR 5/4); lean clay; very stiff; cohesive; cemented in places; dry to moist.		
	0.274			65					

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BORING/WELL CONSTRUCTION LOG

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PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.8	0.273				CL			66.0	
								67.0	
					SP		SAND with Gravel: light reddish brown (5YR 6/4); 85% sand, poorly graded, fine to coarse; 15% gravel, fine to coarse; dry.	68.0	
							Clayey SILT: brown (7.5YR 5/4); low to medium plasticity; firm to stiff; cohesive; moist.		
0.9	0.218			70					
1.2	0.38				ML		At 72 feet bgs, wet sandy lens.		
1	0.582							74.5	
				75			Clayey GRAVEL: brown (7.5YR 5/4); 70% gravel, fine to coarse, subrounded to rounded; 30% clay; dense; cohesive; moist.		Hydrated bentonite chips (2 to 147 ft bgs).
1.2	0.542				GC				
								79.0	
1.1	0.243				ML		Sandy SILT: brown (7.5YR 5/4); 60% silt; 40% sand; trace fine gravel; firm; cohesive; moist; wet in places.		
				80				80.0	2-inch SCH 40 PVC blank.
							Sandy SILT: light brown (7.5YR 6/4); 70% silt, low plasticity; 30% sand; firm; cohesive; moist.		
1.2	0.379								
1.3	0.515				ML				
				85					
1.2	0.507							87.0	
							Clayey SILT: light brown (7.5YR 6/4); low to medium plasticity; 10% sand; firm; cohesive; moist.		
					ML				

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PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1	0.604				ML			89.0	
				90				90.0	
					ML		SILT with Sand and Gravel: light brown (7.5YR 6/4); 60% silt; 20% sand; 20% gravel; firm; cohesive; moist to wet.		
1.8	0.395							91.5	
					CL		Gravelly CLAY: light brown (7.5YR 6/4); low to medium plasticity; moist.		
1.6	0.282								
							At 94.25 feet bgs, large clast.	94.8	
				95			CLAY: light brown (7.5YR 6/4); 80% clay, low to medium plasticity; 10% sand, fine to coarse; 10% gravel, fine to coarse; firm to stiff; cohesive; moist.		Hydrated bentonite chips (2 to 147 ft bgs).
1.5	0.61								
1.5	0.226				CL				
				100					2-inch SCH 40 PVC blank.
1.8	0.448								
2.1	0.222								
								104.0	
				105			CLAY: light olive brown (2.5Y 5/3); lean clay; trace fine gravel; hard; cohesive; dry.		
1	0.118								
					CL				
0.6	0.131								
				110					
								111.0	
1.7	0.093								

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PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
					CL			113.0	
1.8	0.092			115	CL		CLAY with Sand: light olive brown (2.5Y 5/3) with brown mottling; 85% lean clay, low to medium plasticity; 15% sand; trace silt; laminated; firm to stiff; cohesive; moist.		
2.1								116.5	
	0.082						CLAY: light olive brown (2.5Y 5/3) with brown mottling; lean clay, low to medium plasticity; hard; cohesive; dry.		
1.7	0.126								
				120	CL				Hydrated bentonite chips (2 to 147 ft bgs).
1.2	0.171								
							At 122.25 feet bgs, increase in silt.		
1.5									
								124.0	
	0.343				SM		Silty SAND: pale brown (10YR 6/3); 70% fine sand, poorly graded; 30% silt; loose; moist to wet. Sample is closer to wet than moist, but not saturated.	124.5	
					ML			125.0	
				125	SM		Sandy SILT: light olive brown with brown mottling; low plasticity; moist to wet.		2-inch SCH 40 PVC blank.
								126.0	
1.5	0.508						Silty SAND: pale brown (10YR 6/3); 70% fine sand, poorly graded; 30% silt; loose; moist to wet. Sample is closer to wet than moist, but not saturated.		
							Sandy SILT: pale brown (10YR 6/3) with trace iron oxide staining in places; 70% silt, low plasticity; 30% sand; laminated; firm to stiff; cohesive; moist.		
					ML				
1.3	0.141								
				130					
							At 130.3 feet bgs, increase in clay.		
1.8	0.118								
								131.5	
	0.802						Sandy SILT: brown (7.5YR 4/4); 70% silt; 30% sand; laminated; firm to stiff; cohesive; moist to wet.		
					ML				

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-13L

PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.6				135	ML		Sandy SILT: brown (7.5YR 4/4); 60% silt; 30% sand; 10% fine gravel; moist to wet.	134.5	
								135.5	
1.9	0.273				SM		Silty SAND: brown (7.5YR 4/4); 60% sand, fine to coarse; 30% silt; 10% fine gravel; dense; wet.	137.0	
							SILT with SAND: brown (7.5YR 4/4); 70% silt; 20% sand; 10% gravel; moist.		
1.6	0.446			140			At 140 feet bgs, less gravel.		Hydrated bentonite chips (2 to 147 ft bgs).
2.5					ML				
1.9				145					2-inch SCH 40 PVC blank.
1.8								146.5	
					ML		Gravelly SILT: brown (7.5YR 5/5); 60% silt; 40% gravel, fine to coarse; stiff; cohesive; moist to wet. At 147.5 feet bgs, less stiff and wetter.	148.0	
2.9					ML		SILT with Gravel: brown (7.5YR 5/5); 85% silt; 15% gravel; stiff; cohesive; moist.		#10/20 sand filter pack (147 to 160 ft bgs).
2.1	0.265			150	ML		Sandy SILT: brown (7.5YR 5/4); 60% silt, low plasticity; 40% sand, fine to coarse; trace fine gravel; firm; cohesive; moist to wet. At 152.5 feet bgs, increase in gravel.	150.0	
2.2	0.416				ML		SILT with Sand: brown (7.5YR 5/5); 85% silt; 15% sand; firm to stiff; cohesive; moist to wet.	153.0	
2.4	0.612			155					2-inch SCH 40 PVC 0.020-slot screen (150 to 160 ft bgs).
					GM		GRAVEL with Sand and Silt: brown (7.5YR 5/4); 50% gravel; poorly graded, fine to coarse, subangular to subrounded; 35% sand, fine to coarse; 15% silt; saturated; wet.	156.0	
								157.0	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-13L

PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
2.7	0.105				GM		At 158 feet bgs, decrease in silt.		
				160			End of boring at 160 feet bgs.	160.0	

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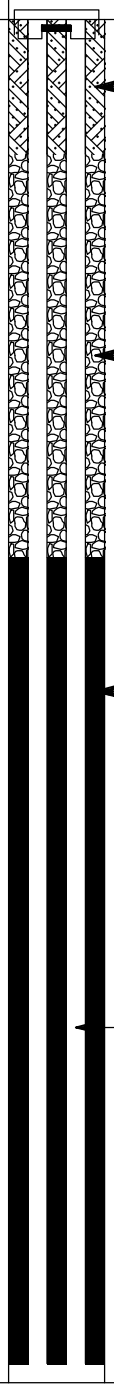
BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL
PROJECT NAME 700 S 1600 E PCE Plume
LOCATION Salt Lake City, UT
DRILLING METHOD Sonic
SAMPLING METHOD Sonic Grab
GROUND ELEVATION (FT MSL) 4722.89
TOP OF CASING (FT MSL) A: 4722.60 B: 4722.36
LOGGED BY Whitney Treadway
REMARKS Groundwater measured after installation.

BORING/WELL NUMBER MW-30R
DATE DRILLED 11/5/2020 - 11/10/2020
CASING TYPE/DIAMETER 2-inch Schedule 40 PVC
SCREEN TYPE/SLOT 2-inch Schedule 40 0.020-slot
GRAVEL PACK TYPE #10/20 sand
GROUT TYPE/QUANTITY Hydrated Bentonite Chips
DEPTH TO WATER (FT BGS) A: 227.57 B: 229.56
GROUND WATER ELEVATION (FT MSL) A: 4495.03 B: 4492.8

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
				0			No recovery. Hydrovac to 9 ft bgs.	
				5				
0								9.0
0	0.009			10			Silty SAND: dark yellowish brown (10YR 4/6); 50% sand, well graded, fine to coarse, subangular to subrounded; 30% silt, non-plastic; 20% gravel and cobbles, well graded, fine to coarse, subrounded, maximum diameter is 4 inches; dry. At 10 feet bgs, cobbles are up to 6 inches.	
0							At 12 feet bgs, color changes to yellowish red (5YR 5/6).	
							At 13 feet bgs, color changes to brown (7.5YR 4/4).	
0					SM			
	0.236			15				
0							At 16 feet bgs, cobbles are up to 7 inches.	
0								18.5
					SM		Silty SAND: brown (7.5YR 5/4); 45% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 40% silt, non-plastic; 15% gravel, poorly graded, fine to coarse, mostly fine, subrounded to subangular, maximum diameter is 4	20.0
				20			*Continued Next Page*	

WELL DIAGRAM



WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020_WT.JM.GPJ LAEWNN01.GDT 3/10/21

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-30R

PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0	0.08				CH		inches; moist.	20.3	
0					SC		CLAY: light brown (7.5YR 6/4); high plasticity clay with dark red and light green stained nodules.		
							Clayey SAND with Gravel: brown (7.5YR 4/4); 55% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 30% high plasticity clay; 15% gravel, poorly graded, fine to coarse, mostly fine; moist.	22.0	
					SM		Silty SAND: brown (7.5YR 4/4); 85% sand, poorly graded, fine, subangular to subrounded; 15% silt, non-plastic; moist.	23.0	
0					CH		Gravelly CLAY: brown (7.5YR 5/4); 60% high plasticity clay; 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 5 inches; moist.	24.0	
0	0.122			25	GC		Clayey GRAVEL with Sand: brown (7.5YR 5/4); 50% gravel, well graded, fine to coarse, subangular to subrounded; 30% sand, well graded, fine to coarse, subangular to subrounded; 20% high plasticity clay with light green staining. Gradual transition from gravelly clay above.	26.0	Hydrated bentonite chips (8 to 237 ft bgs).
0					SC SM		Silty Clayey SAND: brown (7.5YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 20% clay, medium to high plasticity (in nodules and layers); 20% silt, non-plastic; trace fine gravel; moist.		
0								30.0	
	0.069			30			Silty SAND with Gravel: brown (7.5YR 4/4); 60% sand, well graded, fine to coarse, subangular to subrounded; 20% silt, non-plastic; 20% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; moist.		2-inch SCH 40 PVC blank.
0							At 32 feet bgs, sandy gravelly CLAY lens; 32 to 33 feet bgs.		
0					SM				
0	0.065			35					
								36.0	
0					CH		Gravelly CLAY: reddish brown (5YR 4/4); 70% high plasticity clay; 40% gravel, well graded, fine to coarse, subangular to subrounded; moist.		
								38.0	
					SM		Silty SAND with Gravel: brown (7.5Y 5/4); 40% sand, well graded, fine to coarse; 20% silt, non-plastic; 20% gravel, well graded; 10% clay.	39.0	
0					SM		Silty SAND with Gravel: light brownish gray (2.5Y 6/2); 60% sand, poorly graded, mostly fine, angular to subangular; 30% silt, non-plastic; 10% gravel, poorly graded, mostly fine, angular to subangular; dry. Crushed rock.	40.0	
	0			40			Clayey GRAVEL: brown (7.5YR 4/3); 70% gravel, well graded, fine to coarse, angular to suangular, maximum diameter is 4 inches; 30% medium plasticity clay matrix; moist.		
0.7					GC		At 42 feet bgs, large tan to light gray boulder, approximately 1 foot in diameter.		

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-30R
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.7					GC			43.0	
								44.5	
0.5	0			45	SM		Silty SAND with Gravel: light brownish gray (2.5Y 6/2); 40% sand, well graded, fine to coarse, angular to subrounded; 30% gravel, well graded, fine to coarse, angular to subrounded, maximum diameter is 5 inches; 30% silt, non-plastic; moist.		
								47.0	
0.3					SC		Clayey SAND with Gravel: red boulders, gravel, and sand with clay matrix. Maximum diameter is 6 inches.		
								48.0	
0.2					SM		Silty SAND with Gravel: light brownish gray (2.5Y 6/2); 40% sand, well graded, fine to coarse, angular to subrounded; 30% gravel, well graded, fine to coarse, angular to subrounded, maximum diameter is 5 inches; 30% silt, non-plastic; moist.		
								50.0	
	0.098			50			CLAY: light brown (7.5YR 6/3); 95% high plasticity clay, slightly mottled; 5% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 4 inches.		Hydrated bentonite chips (8 to 237 ft bgs).
0.7					CH		At 52 feet bgs, small, olive silt nodules.		
0.4							At 53.5 feet bgs, clay is mottled with red.		
								54.5	
					SC		Clayey SAND with Gravel: brown (7.5YR 5/4); 40% sand, well graded, fine to coarse, sunangular to subrounded; 35% gravel, well graded, fine to coarse, angular to subangular, maximum diamter is 4 inches; 15% medium plasticity clay; 10% silt, non-plastic; moist.	55.0	
0.2	0.029			55					2-inch SCH 40 PVC blank.
0.2					SP		SAND with Gravel: brown (7.5YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine to medium; 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; trace silt; moist.		
0.1							At 58 feet bgs, trace clay.		
								60.0	
	0.048			60			At 60 feet bgs, light gray pulverized rock; limestone.		
0							Silty SAND with Gravel: brown (7.5YR 5/4); 50% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 5 inches; 20% silt, non-plastic; moist.		
0					SM		At 63 feet bgs, lithified fragment with clay.		
0	0.02			65					

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PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-30R
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0					SM		At 66 feet bgs, clay content increases to 15%, silt content decreases to 5%.	66.0	
							At 68 feet bgs, 8 inches cobble.		
								69.0	
	0.058			70	CH		Sandy CLAY: brown (7.5YR 4/4); 75% high plasticity clay; 20% sand, poorly graded, fine; 5% gravel, well graded; small nodules of red sand in clay. Mostly lithified. At 70 feet bgs, white to light gray crushed rock; gray limestone.	70.5	
0					GC		Clayey GRAVEL with Sand: brown (7.5YR 4/4); 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 7 inches; 30% medium plasticity clay; 30% sand, poorly graded, fine to medium, subangular to subrounded; moist.		
0								75.0	Hydrated bentonite chips (8 to 237 ft bgs).
0	0.016			75	SM		Silty SAND with Gravel: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 4 inches; 20% silt, non-plastic; moist.		
0							At 79 feet bgs, cobble of crystalline rock.		
	0			80			Silty Clayey SAND with Gravel: brown (7.5YR 4/4); 55% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounde, maximum diameter is 6 inches; 15% clay and silt (varies by depth), low plasticity; moist.	80.0	2-inch SCH 40 PVC blank.
0									
0									
0	0.056			85	SC SM				
0									

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PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0	0.069			90	SC SM		Silty Clayey SAND with Gravel: brown (7.5YR 4/4); 55% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounde, maximum diameter is 6 inches; 15% clay and silt (varies by depth), low plasticity; moist.	89.0	
0					CH		Gravelly CLAY: brown (7.5YR 4/4); 60% high plasticity clay; 25% gravel, well graded, fine to coarse, subangular to subrounded; 15% sand, poorly graded, fine to medium, subangular to subrounded; moist. Lenses of light yellow sand.	91.0	
0					GC		Clayey GRAVEL: reddish brown (5YR 4/4); 60% gravel, well graded, fine to coarse, subangular to subrounded; 20% medium plasticity clay; 20% sand, poorly graded, mostly fine to medium, subangular to subrounded; moist.	92.5	
0	0.074			95	SM		Silty SAND with Gravel: reddish brown (5YR 5/3); 50% sand, poorly graded, fine to coarse, mostly fine to medium; 30% gravel, well graded, fine to coarse, subangular to subrounded; 20% silt, non-plastic; moist. Some large, 6-inch cobbles.	94.0	Hydrated bentonite chips (8 to 237 ft bgs).
0								99.0	
0					SM		Silty SAND: brown (7.5YR 4/4); 60% sand, poorly graded, fine to medium; 30% silt, non-plastic; 10% gravel, poorly graded, fine, subrounded; moist.	100.0	
0	0.013			100	GC		Clayey Silty GRAVEL with Sand: yellowish red (5YR 5/6); 50% gravel and cobbles, poorly graded, mostly coarse, maximum diameter is 7 inches, subangular to subrounded; 30% sand, poorly graded, mostly fine to medium, subangular to subrounded; 20% silt and clay, low plasticity; moist. At 102 feet bgs, broken, light pink boulder.		2-inch SCH 40 PVC blank.
0								103.5	
0	0.052			105	SC SM		Clayey Silty SAND with Gravel: yellowish red (5YR 5/6); 50% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, poorly graded, mostly fine; 10% silt and clay, low plasticity; moist.		
0								110.0	
0	0.012			110	GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 45% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 35% sand, well graded, fine to coarse, subangular to subrounded; 20%	111.0	

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PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0							medium plasticity clay with some non-plastic silt; moist. Samples look like clay matrix around gravel that was more lithified before it was drilled.		
0	0.03		D	115	GC		At 114 feet bgs, largest cobbles.	117.0	
	0.041		D	120	SC		Clayey SAND with Gravel: reddish brown (5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 7 inches; 20% medium plasticity clay with some non-plastic silt; moist. Gradual transition from above. Similar to sample above, looks like clay matrix around sand and gravel that was once more lithified. More clay from 120 to 122 feet bgs.		Hydrated bentonite chips (8 to 237 ft bgs).
0	0.158		D	125					2-inch SCH 40 PVC blank.
0	0.052		D	130			More clay from 130 to 131 feet bgs.		
0							At 133 feet bgs, 6-inch lens of reddish yellow (5YR 7/8) medium sand.		

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
								135.0	
0	0.035			135	GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 40% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 30% sand, well graded, fine to coarse, subangular to subrounded; 30% medium to high plasticity clay matrix around sand and gravel; moist.	137.0	
0					SC		Clayey SAND with Gravel: reddish brown (5YR 4/4); 50% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 15% medium plasticity clay matrix with non-plastic silt; moist.		
0				140					Hydrated bentonite chips (8 to 237 ft bgs).
0	0.076							142.0	
0					SC		Clayey SAND with Gravel: reddish brown (5YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 20% medium plasticity clay matrix; 20% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; moist.		
0	0.078			145			Sand becomes well graded, fine to coarse.		2-inch SCH 40 PVC blank.
0					SM		Silty SAND with Gravel: brown (7.5YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine; 20% silt, non-plastic; 20% gravel, well graded, fine to ccoarse; trace clay; moist.	147.5	
0				150				150.0	
	0.049				SW SC		SAND with Gravel and Clay: reddish brown (5YR 4/4); 50% sand, well graded, fine to coarse, subangular to subrounded; 40% gravel, well graded, fine to coarse, maximum diameter is 7 inches; 10% medium plasticity clay; moist.		
							At 153 feet bgs, lighter 6-inch layer with silt (not clay); brown (5YR 6/4).		
0	0.122			155					
			B					157.0	

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0					GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 50% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 7 inches; 35% sand, well graded, fine to coarse, subangular to subrounded; 15% low to medium plasticity clay matris; moist.	159.0
0				160	SC SM		Clayey Silty SAND with Gravel: reddish brown (5YR 4/4); 55% sand, well graded, fine to coarse, mostly fine, subangular to subrounded; 25% clay and silt intermixed; 20% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded, maximum diameter is 4 inches; moist.	164.0
0	0.099			165	CH		Gravelly CLAY: reddish brown (5YR 4/4); 75% medium plasticity clay; 25% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 4 inches; moist; slightly lithified.	166.0
					ML		Gravelly SILT: reddish brown (5YR 4/4); 75% silt, non-plastic; 25% gravel, poorly graded, coarse, subangular to subrounded, maximum diameter is 4 inches; moist; lithified.	166.5
0							Large, white to light pink cobble/boulder, cut by core barrel, including silt and fine sand from cutting and grinding.	167.5
					SM		Silty SAND with Gravel: reddish brown (5YR 4/4); 40% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded; 30% silt; moist.	168.5
0					SC		Clayey SAND and GRAVEL: reddish brown (5YR 4/4); 40% sand, poorly graded, fine to coarse, subangular to subrounded; 40% gravel, well graded, fine to coarse, subangular to subrounded; 20% low plasticity clay; moist; with lenses of light-colored, fine sand.	170.0
0				170	SC		Clayey SAND with Gravel: reddish brown (5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 20% medium plasticity clay; moist.	172.0
0					GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 40% gravel, well graded, fine to coarse, subangular to subrounded; 30% medium plasticity clay; 30% sand, well graded, fine to coarse, subangular to subrounded; moist.	174.0
2.5	0.067			175	SM		Silty SAND and GRAVEL: reddish brown (5YR 5/4); 40% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 20% silt, non-plastic; moist. At 175 feet bgs, large pulverized cobbles, light gray powder with dark gray cobbles. At 176 feet bgs, 6-inch fine sand layer (trace coarse).	
1.1								178.0
2.1				180	SM		Silty SAND with Gravel: reddish brown (5YR 4/3); 40% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 5 inches; 25% clay and silt; moist. Most gravel and cobbles are of dark gray limestone.	180.0

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WELL DIAGRAM

- Hydrated bentonite chips (8 to 237 ft bgs).
- 2-inch SCH 40 PVC blank.

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020_WT.JM.GPJ LAEWNN01.GDT 3/10/21

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-30R
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
	0.06								
1.3					SM				
								183.0	
					SM		Silty SAND with Gravel: brown (7.5YR 4/4); 65% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 20% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded, maximum diameter is 3 inches; 15% silt, slight plasticity; moist.		
0.2	0.058			185					Hydrated bentonite chips (8 to 237 ft bgs).
								186.0	
					ML		SILT with Gravel: brown (7.5YR 4/4); 85% silt, non-plastic; 15% gravel, poorly graded, mostly fine, subangular to subrounded; trace sand lenses; moist. Gradual transition to clay below.		
0								187.5	
					CH		CLAY with Sand and Gravel: brown (7.5YR 4/4); 80% medium to high plasticity clay; 10% fine gravel, subangular to subrounded; 10% fine to medium sand; moist. Transition to silty sand below is a thin silt layer.	188.5	
0					SM		Silty SAND: brown (7.5YR 4/4); 70% sand, poorly graded, mostly fine, subangular to subrounded; 20% silt, non-plastic; 10% gravel, well graded, fine to coarse, maximum diameter is 3 inches; moist.	190.0	2-inch SCH 40 PVC blank.
	0.173			190					
0					SM		Silty SAND with Gravel: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 7 inches; 20% silt, slightly plastic; moist.		
0								194.0	
					CH		CLAY with Sand and Gravel: brown (7.5YR 4/4); 70% medium to high plasticity clay; 15% gravel, poorly graded, fine, subangular to subrounded; 15% sand, well graded, fine to coarse, subangular to subrounded; moist.	195.0	
0	0.058			195					
					SM		Silty SAND with Gravel: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded; 20% silt, slightly plastic; moist.		
0								197.0	
					SC		Clayey SAND: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded; 20% clay; moist.		
0								199.5	
					SC		Silty Clayey SAND with Gravel: brown (7.5YR 4/4); 40% sand, well graded, fine to coarse, subangular to subrounded; 40% silt and clay; 20% gravel, well graded, fine to coarse, subangular to subrounded; moist.	200.0	
	0.068			200	SM				
0					SM		Silty SAND with Gravel: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 20% medium plasticity clay; moist.		

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PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0					CL		CLAY: yellowish brown (10YR 5/4); 100% low to medium plasticity clay; trace coarse gravel and cobbles; moist. Clay is slightly mottled.	203.0	
								204.5	
0				205	SM		Silty SAND with Gravel: brown (7.5YR 5/4); 60% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 20% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 20% silt, non-plastic; moist.		
0								208.5	
0					SC		Clayey SAND with Gravel: brown (7.5YR 4/4); 60% sand, well graded, fine to coarse, subangular to subrounded; 20% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded, maximum diameter is 4 inches; 20% clay, medium plasticity clay; moist.		Hydrated bentonite chips (8 to 237 ft bgs).
	0.016			210			At 210 feet bgs, 3-inch clay layer.	210.5	
0							Silty Clayey SAND with Gravel: brown (7.5YR 4/4); 65% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 20% clay and silt (alternating layers of none to medium plasticity); 15% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded; moist.		
0									
0	0.07			215	SC SM				2-inch SCH 40 PVC blank.
0							At 218 feet bgs, 3-inch clay later.		
0								220.0	
	0.188			220			Silty Clayey SAND with Gravel: brown (7.5YR 4/3); 60% sand, well graded, fine to coarse, subangular to subrounded; 20% gravel, well graded, fine to coarse, subangular to subrounded; 20% clay and silt (varying degrees of plasticity); moist. Gradual transition to clayey sand below.		
0					SC SM				
0	0.063			225					

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
								226.0	
0					SC		Clayey SAND and GRAVEL: brown (7.5YR 4/3); 40% sand, well graded, fine to coarse, subangular to subrounded; 40% gravel, well graded, fine to coarse, subangular to subrounded; 20% clay; moist.	228.0	
0				230	CH		Sandy CLAY: brown (7.5YR 4/3); 60% medium to high plasticity clay; 30% sand, poorly graded, fine to medium, subangular to subrounded; 10% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded; moist.	231.0	Hydrated bentonite chips (8 to 237 ft bgs).
0					CL		CLAY: brown (7.5YR 4/3); 100% low plasticity clay; trace sand and gravel; moist.	231.5	
0					CH		Gravelly CLAY: brown (7.5YR 5/4); 50% medium to high plasticity clay; 30% gravel, well graded, fine to coarse, subangular to subrounded; 20% sand, well graded, fine to coarse, subangular to subrounded; moist. At 233 feet bgs, large, 7-inch cobble. Gravel is coarse, including cobbles, with lenses of wet sand.	235.0	
	0.018			235					
0					SC		Clayey SAND with Gravel: yellowish brown (10YR 5/4); 40% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded; 30% high plasticity clay; wet.		#10/20 sand filter pack (237 to 252 ft bgs).
0				240	GC		Clayey GRAVEL with Sand: yellowish brown (10YR 5/4); 60% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 20% sand, poorly graded, coarse, subangular to subrounded; 20% high plasticity clay; wet.	240.0	
0					CH		Gravelly CLAY: yellowish brown (10YR 5/4); 50% high plasticity clay; 30% gravel, poorly graded, fine to coarse, mostly fine with some large cobbles, maximum diameter is 5 inches; 20% sand, poorly graded, coarse, subangular to subrounded; wet.	242.0	
0	0.008			245	SP SC		SAND with Clay and Gravel: yellowish brown (10YR 5/4); 70% sand, poorly graded, medium to coarse, subangular to subrounded; 20% gravel, poorly graded, mostly fine, subangular to subrounded; 10% medium plasticity clay; wet. From 246 to 246.5 feet bgs, more clay.	244.0	2-inch SCH 40 PVC 0.020-slot screen nested well (240 to 250 ft bgs).
0					ML		SILT: reddish brown (5YR 5/4); 100% silt, slightly mottled; trace coarse groavel and cobbles at lower contact.	247.5	
								248.3	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-30R
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0					GC		Clayey GRAVEL: yellowish brown (10YR 5/4); 50% gravel, poorly graded, mostly fine, some coarse and cobbles; 30% sand, poorly graded, medium to coarse, subangular to subrounded; 20% high plasticity clay; wet.	250.0	
				250			CLAY: reddish brown (5YR 4/4); 95% medium to high plasticity clay; 5% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; moist.		
0									#10/20 sand filter pack (237 to 252 ft bgs).
					CH				
0									
								255.0	
0	0.062			255			Silty Clayey SAND with Gravel: reddish brown (5YR 4/4); 40% sand, poorly graded, fine to medium, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; 15% clay; 15% silt (in layers of differing plasticity); moist.		
0					SC SM				
								259.0	
0					CH		CLAY: reddish brown (5YR 4/4); 90% medium to high plasticity clay; 10% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; moist.	260.0	
	0.144			260			Gravelly CLAY: reddish brown (5YR 4/3); 70% low plasticity clay; 30% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; trace sand; moist.		2-inch SCH 40 PVC blank.
0					CL				
								264.0	
0					CH		CLAY: reddish brown (5YR 4/4); 100% high plasticity clay; trace sand and gravel; moist.	265.0	Hydrated bentonite chips (252 to 277 ft bgs).
0	0.111			265			Gravelly CLAY: reddish brown (5YR 4/4); 70% low plasticity clay; 30% gravel, poorly graded, mostly fine, maximum diameter is 2 inches; moist.		
					CL				
0									
								268.0	
					GM		Silty GRAVEL with Sand: reddish brown (5YR 5/4); 45% gravel, poorly graded, mostly fine; 35% sand, poorly graded, mostly fine; 20% silt; moist. Lithified fragments.	269.0	
0							Gravelly CLAY: reddish brown (5YR 4/4); 60% low to medium plasticity clay; 40% gravel, well graded, fine to coarse, maximum diameter is 4 inches; moist. At 270 feet bgs, clay content increases to 70%, gravel content decreases to 30%.		
	0.08			270	CL				
0								271.0	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-30R
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
					CL			273.0
0							Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; 30% sand, well graded, fine to coarse, subangular to subrounded; 30% low plasticity clay; moist. Lithified fragments.	
0	0.018			275	GC			
0								278.0
					SC		Clayey SAND: reddish brown (5YR 4/4); 60% sand, poorly graded, coarse, subangular to subrounded; 40% high plasticity clay; wet.	
0								
	0.175			280			At 280 feet bgs, some gravel.	281.0
0					GC		Clayey GRAVEL: reddish brown (5YR 4/4); 60% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; 40% low to medium plasticity clay; moist.	
0								284.0
0	0.184			285	GC		Clayey GRAVEL: reddish brown (5YR 4/4); 45% gravel, poorly graded, fine to coarse, mostly fine, some cobbles; 35% sand, well graded, fine to coarse, subangular to subrounded; 20% low to medium plasticity clay; moist.	286.0
0					SM		Silty SAND with Gravel: very pale brown (10YR 7/3); 40% sand, poorly graded, mostly fine, subangular to subrounded; 30% gravel, poorly graded, mostly fine, some coarse and cobbles; 30% silt, non-plastic; moist. Possibly crushed rock.	288.0
0					CL		Thin, reddish yellow (5YR 6/6) sand lens at 288 feet bgs, then Gravelly CLAY: reddish brown (5YR 4/4); 70% low to medium plasticity clay; 30% gravel, well graded, fine to coarse, subangular to subrounded; moist.	
	0.16			290				290.0
					SC		Clayey SAND with Gravel: reddish brown (5YR 4/4); 40% sand, well graded, fine to coarse, subangular to subrounded; 40% medium plasticity clay; 20% gravel, poorly graded, mostly fine, subangular to subrounded; wet.	292.5
					CL		Gravelly CLAY: reddish brown (5YR 4/4); 60% low to medium plasticity clay; 30% gravel, well graded, fine to coarse; 10% sand, poorly graded, coarse; moist.	

Continued Next Page

WELL DIAGRAM

- Hydrated bentonite chips (252 to 277 ft bgs).
- #10/20 sand filter pack (277 to 291 ft bgs).
- 2-inch SCH 40 PVC 0.020-slot screen nested well (280 to 290 ft bgs).
- Native soil sluff (291 to 295 ft bgs).

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-30R

PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
	0.064		D	295			End of boring at 295 feet bgs.	295.0	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	238824.6495-F3048-005.DRILL	**BORING/WELL NUMBER**	MW-36
PROJECT NAME	700 S 1600 E PCE Plume	**DATE DRILLED**	11/17/2020
LOCATION	Salt Lake City, UT	**CASING TYPE/DIAMETER**	2-inch Schedule 40 PVC
DRILLING METHOD	Sonic	**SCREEN TYPE/SLOT**	2-inch Schedule 40 0.020-slot
SAMPLING METHOD	Sonic Grab	**GRAVEL PACK TYPE**	#10/20 sand
GROUND ELEVATION (FT MSL)	4429.01	**GROUT TYPE/QUANTITY**	Hydrated Bentonite Chips
TOP OF CASING (FT MSL)	4428.49	**DEPTH TO WATER (FT BGS)**	44.72
LOGGED BY	Joe Miller	**GROUND WATER ELEVATION (FT MSL)**	4384.29
REMARKS	Groundwater measured while drilling		

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Hydrovac to 6 ft bgs.	
				5				6.0
	0.519				ML		SILT: light yellowish brown (10YR 5/6); 60% silt; 30% clay; 10% fine sand; cohesive; moist to wet.	8.0
0.6							SAND: yellowish brown (10YR 5/6); 100% sand, poorly graded, fine to medium; loose; moist.	
1.1	0.185			10	SP			
								11.0
0.5	0.369				SM		Silty SAND: brown (10YR 4/3); 80% sand; 20% silt; cohesive; firm; moist to wet.	12.5
1.7	0.158				SP		SAND: brown (10YR 4/3); 100% sand, poorly graded, fine; loose; moist.	
								14.5
					SM		Silty SAND: light yellowish brown (2.5Y 6/4); 80% sand; 20% silt; cohesive; firm; moist to wet.	15.0
0.7	0.117			15			SAND: brown (10YR 4/3); 100% sand, poorly graded, fine; loose; moist.	
0.6	0.061				SP		At 18 feet bgs, silty layer; moist to wet.	
1.6	0.098							
				20			At 19.5 feet bgs, silty layer; moist to wet; light yellowish brown	20.0

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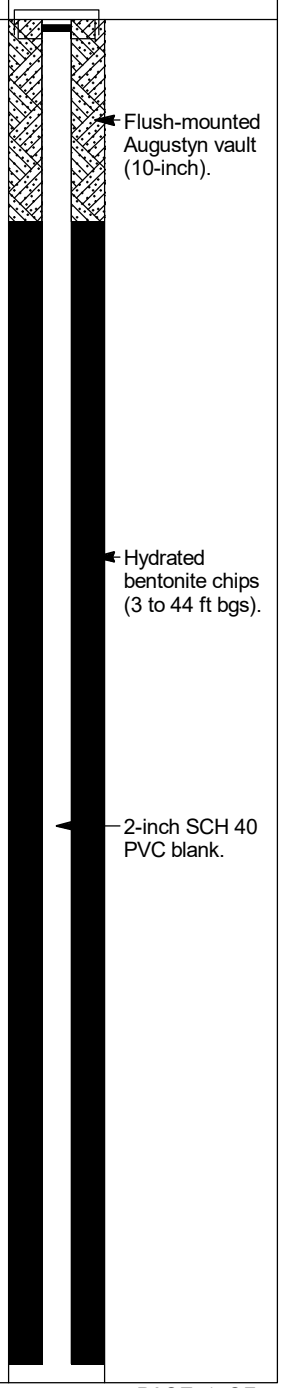

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020_WT.JM.GPJ LAEWNN01.GDT 3/10/21

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-36
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/17/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							(2.5Y light yellowish brown).		
5.7	0.438				SP		SAND: brown (10YR 4/3); 100% sand, poorly graded, fine; loose; moist.		Hydrated bentonite chips (3 to 44 ft bgs).
								24.5	
					SM		Silty SAND: yellowish brown (10YR 5/4); 80% sand; 20% silt; cohesive; firm; moist to wet.	25.0	
2.2	0.442			25			SAND: yellowish brown (10YR 5/4); 100% sand, poorly graded, fine; loose; moist.		
1.7	0.121				SP				
							At 28.5 feet bgs, silty layer; moist to wet.		
1.9	0.251								
				30				30.0	2-inch SCH 40 PVC blank.
							Silty SAND: 70% sand; 30% silt; cohesive in places; loose to firm; moist to wet. NOTE: sample slid out of core barrel.		
7.5	0.348				SM		Depth to water at time of drilling: 30.82 feet bgs.		
								32.0	
							Silty SAND: 60% sand; 40% silt; laminated; loose; saturated wet. NOTE: most of sample lost.		
0	0.127				SM				
								35.0	
0.4	0.631			35			SILT with SAND: dark grayish brown (2.5Y 4/2); 80% silt; 20% sand; laminated; soft to firm; wet but not saturated.		
					ML				
0.1	0.558								
								38.0	
							No recovery; shoe sample was muck.		
								40.0	
				40			Sandy SILT: dark grayish brown (2.5Y 4/2); 80% silt; 40% sand; cohesive; moist to wet.		
0	0.935				ML				
							At 42 feet bgs, color changes to brown (7.5YR 4/2).		

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-36
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/17/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0.7	0.435				ML		At 43 feet bgs, wetter zone.	43.0
							At 44.5 feet bgs, wetter zone, increased sand.	45.0
0.3	0.432			45			Silty SAND: 70% sand; 30% silt; some iron oxide staining; cohesive; loose.	
0.6	0.17				SM			
0.4	0.36				SP		SAND: brown (7.5YR 5/2); fine to coarse sand; trace fine gravel; loose; saturated wet.	49.0
					SM		Silty SAND: 70% sand; 30% silt; some iron oxide staining; cohesive; loose.	49.8
0.5	0.158			50	GP		GRAVEL with Sand and Silt: brown (7.5YR 5/2); 70% gravel, poorly graded, fine to coarse, subangular to rounded; 20% sand, coarse; 10% silt; wet.	50.0
0.4							SILT: very dark gray (7.5YR 3/1); laminated; trace iron oxide staining; trace clay; trace fine gravel; stiff; moist, decreasing moisture with depth.	52.2
	0.663			55				
					ML		At 56 ft bgs, dry to moist.	
0.8	0.68							
1.2	0.765							
				60			SILT: black (10YR 2/1); clayey silt; trace fine to coarse gravel; cohesive; very stiff; dry.	60.0
0.8	1.07							
					ML		At 62 feet bgs, color changes to dark gray (7.5YR 4/1); firm to stiff; trace fine gravel; moist.	
0.3	0.876							
				65				65.0
0.5	0.555						CLAY: brown (7YR 5/4); 50% clay; 40% silt; 10% gravel, fine to coarse, subangular to surounded; dry to moist.	

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WELL DIAGRAM

- #10/20 sand filter pack (44 to 54 ft bgs).
- 2-inch SCH 40 PVC 0.020-slot screen nested well (47 to 52 ft bgs).
- Hydrated bentonite chips (54 to 105 ft bgs).

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-36

PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/17/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.7	0.48				CL		CLAY: brown (7YR 5/4); 50% clay; 40% silt; 10% gravel, fine to coarse, subangular to surounded; dry to moist.	68.0	
					ML		SILT: trace fine gravel; cohesive; stiff; moist.	69.0	
0.8	0.12				GC		Clayey GRAVEL: brown (7.5YR 5/4); 60% gravel, fine to coarse; 40% clay; moist.	70.0	
				70			SILT: brown (7.5YR 5/4); 80% silt; 15% clay; 5% fine gravel; cohesive; very stiff; moist.		
1	0.572								
0.4	0.58				ML				
0.6	0.286			75				76.0	
					ML		Gravelly SILT: brown (7.5YR 5/4); 60% silt; 40% gravel; moist.	76.5	
1.6	0.421				ML		SILT: brown (7.5YR 5/4); trace gravel; cohesive; stiff; laminated; dry to moist.	78.0	
					ML		Gravelly SILT: brown (7.5YR 5/4); 70% silt; 30% fine gravel; cohesive; stiff; moist.	79.0	
1.4	0.348			80	GM		Silty GRAVEL: light yellowish brown (2.5Y 6/3); 60% gravel, fine to coarse, angular to subangular; 30% silt; 10% sand; cohesive; medium dense; moist to wet. At 80 feet bgs, color changes to light yellowish brown (10YR 6/4).		Hydrated bentonite chips (54 to 105 ft bgs).
0.9	0.54							82.0	
0.6	0.45				GM		Silty GRAVEL: light yellowish brown (10YR 6/4); 60% gravel, fine to coarse, angular to subrounded; 40% silt; cohesive; dense; moist.	84.0	
					SM		Silty SAND: light yellowish brown (10YR 6/4); 60% sand, fine to coarse; 30% silt; 10% fine gravel; loose to medium dense; moist to wet.	85.0	
4.6	0.129			85			Silty GRAVEL: light yellowish brown (10YR 6/4); 60% gravel, fine to coarse, subangular to subrounded, cobbles up to 4 inches in diameter; 40% silt; cohesive; dense; moist; socketed matrix.		
6.7	0.103				GM				

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-36
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/17/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
7	0.237			90	GM		Silty GRAVEL: light yellowish brown (10YR 6/4); 60% gravel, fine to coarse, subangular to subrounded, cobbles up to 4 inches in diameter; 40% silt; cohesive; dense; moist; socketed matrix. At 90 feet bgs, moist to wet.	89.0	
3.1	0.176						At 91 feet bgs, moist to wet sandy lens.		
1.8	0.073						At 92.5 feet bgs, wet, sandy lens.		
1.8	0.11			95			At 95 feet bgs, 5-inch cobble. At 96 feet bgs, wet, sandy lens.		Hydrated bentonite chips (54 to 105 ft bgs).
2.2	0.057								
4	0.119				CL		CLAY: pale olive (5Y 6/3); iron oxide staining in places; laminated; very stiff; dry to moist.	98.5	
0.4	0.785			100			SILT: dary gray (5Y 4/1); clayey silt; laminated; cohesive; very stiff; moist; possibly lake bed sediments.	100.0	
0.8	1.4								
0.7	2.34			105	ML				
0.7	2.89								Native sluff (105 to 110 feet bgs).
1.1	2.25			110			End of boring at 110 feet bgs.	110.0	

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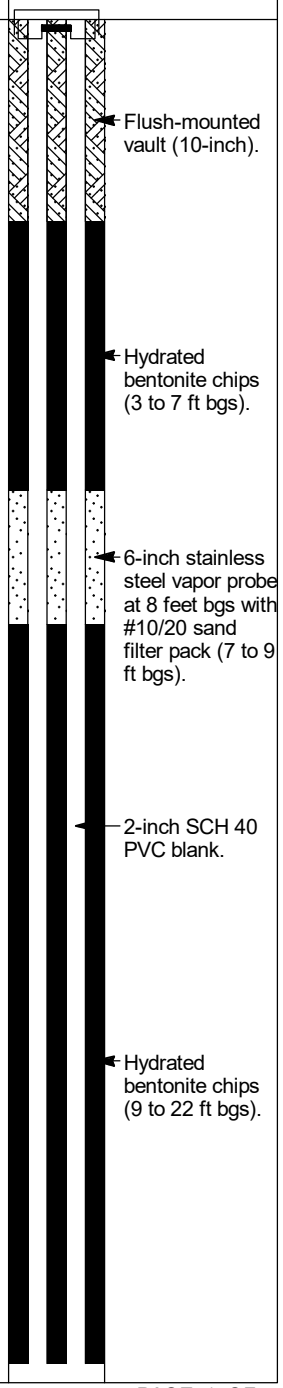
BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	238824.6495-F3048-005.DRILL	**BORING/WELL NUMBER**	MW-37
PROJECT NAME	700 S 1600 E PCE Plume	**DATE DRILLED**	11/12/2020-11/13/2020
LOCATION	Salt Lake City, UT	**CASING TYPE/DIAMETER**	2-inch Schedule 40 PVC
DRILLING METHOD	Sonic	**SCREEN TYPE/SLOT**	2-inch Schedule 40 0.020-slot
SAMPLING METHOD	Sonic Grab	**GRAVEL PACK TYPE**	#10/20 sand
GROUND ELEVATION (FT MSL)	4348.36	**GROUT TYPE/QUANTITY**	Hydrated Bentonite Chips
TOP OF CASING (FT MSL)	S: 4348.00 D: 4347.97	**DEPTH TO WATER (FT BGS)**	S: 18.45 D: 42.28 BTOC
LOGGED BY	Joe Miller and Whitney Treadway	**GROUND WATER ELEVATION (FT MSL)**	S: 4329.55 D: 4305.69
REMARKS	Groundwater measured after installation.		

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Hydrovac to 7 ft bgs.	
				5				7.0
1.7	0.135				CL		CLAY with Gravel: light olive brown (2.5Y 5/3) with red iron oxide staining; 90% low to medium plasticity clay; 10% gravel, poorly graded, mostly fine, subangular to subrounded; moist.	
1.6	0.089							
1.5	0.01			10				10.0
					ML		SILT: light olive brown (2.5Y 5/3) with red iron oxide staining; 100% silt with none to low plasticity; moist.	
0.4	0.157						At 11 feet bgs, 3-inch medium sand layer, dark reddish brown (5YR 3/4); wet.	11.3
0.4	0.135				CH		Sandy CLAY: dark brown (7.5YR 3/4); 70% medium to high plasticity; 30% sand, poorly graded, fine, subangular to subrounded; wet.	
								14.5
0.4	0.168			15	CH		CLAY: dark brown (7.5YR 3/4); 100% high plasticity clay; moist.	
0.5	0.067				SC		Sandy CLAY/Clayey SAND: dark brown (7.5YR 3/4); moist.	17.5
					SP			18.5
							SAND: medium to coarse sand and fine gravel; wet. 4-inch layer.	18.8
0.6	0.037				SC		Sandy CLAY/Clayey SAND: dark brown (7.5YR 3/4); moist.	
				20				20.0
							Continued Next Page	

WELL DIAGRAM



WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020_WT.JM.GPJ LAEWNN01.GDT 3/10/21

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-37
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/12/2020-11/13/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0	0.095	Attempted bailer sample; no water.					CLAY: yellowish brown (5YR 4/6); 100% high plasticity clay; wet. NOTE: recovery was not in-situ.	
0.4	0.103				CH			
0.5	0.063			25				
0.5	0.1							27.5
0.6	0.042				SC		Clayey SAND: yellowish red (5YR 4/6); 70% sand, poorly graded, fine to medium subangular to subrounded; 30% high plasticity clay; wet. NOTE: recovery was not in-situ, depth may not be exact.	
				30				30.0
0.1	0.087	MW37-GW111220-30			CH		CLAY with SAND: yellowish red (5YR 4/6); high plasticity clay with orange and black staining; sand content varies, mostly fine to medium; moist. At 31 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	
0.3	0.172						At 32.5 feet bgs, thin, wet, fine sand lense with red/orange and black staining. At 33 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	
							At 34 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	34.5
0.4	0.062			35	CH		CLAY: yellowish red (5YR 4/6) mottled with light greenish gray; hard clay; moist.	35.8
					CH		Sandy CLAY: yellowish red (5YR 4/6); 50% high plasticity clay with orange and black staining; 30% sand, well graded, fine to coarse, subangular to subrounded; 20% gravel, poorly graded, fine; wet.	36.5
0.4	0.276						At 36.5 feet bgs, thin, wet, fine sand lense with red/orange and black staining, then CLAY with SAND: yellowish red (5YR 4/6); high plasticity clay with orange and black staining; sand content varies, mostly fine to medium; moist.	
0.5	0.202				CH		At 38.5 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	
				40			At 40 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	40.5
0.7	0.153						Sandy CLAY: yellowish red (5YR 4/6); high plasticity clay; sand content varies; moist.	
					CH		At 42 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	

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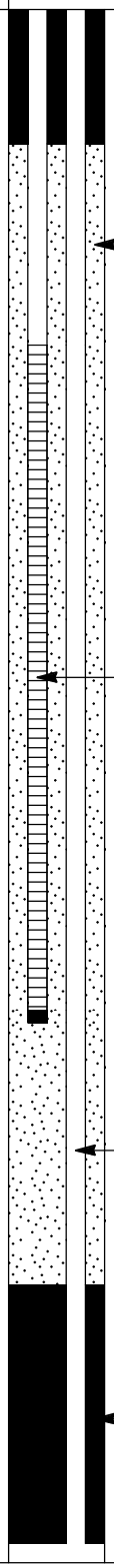
WELL DIAGRAM



WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020_WT.JM.GPJ LAEWNN01.GDT 3/10/21

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-37
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/12/2020-11/13/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1	0.124						At 43 feet bgs, large cobble.	43.5	
					CH		Sandy CLAY with Gravel: yellowish red (5YR 4/6); 50% high plasticity clay; 30% sand, well graded; 20% fine gravel; wet.	44.3	
							CLAY: mottled dark reddish brown (5YR 3/4) and pale brown (10YR 6/3); 100% high plasticity clay; hard; moist.		
	0.43			45					
							At 46 feet bgs, color changes to mottled light olive gray (5Y 6/2) and yellowish brown (10YR 4/6) (possible staining); softer than above.		
1.2	0.205				CH				Hydrated bentonite chips (39 to 57 ft bgs).
1.3	0.143							50.0	
				50			No recover from 50 to 60 feet bgs due to rock in drill bit.		2-inch SCH 40 PVC blank.
							At 54 feet bgs approximate contact per driller.		
				55					
									#10/20 sand filter pack (57 to 70 ft bgs).
				60				60.0	
1.2	0.217						CLAY: mottled dark reddish brown (5YR 3/4) with dark yellowish brown (10YR 4/4); 85% high plasticity clay, firm to stiff; 10% fine sand; 5% silt; cohesive in places; moist to wet. Mixed recovery. NOTE: likely soft material pushed down from above.		
					CH				
1.9	0.237								2-inch SCH 40 PVC 0.020-slot screen nested well (60 to 70 ft bgs).
								64.5	
2	0.351			65	CH		CLAY with Gravel: 70% medium to high plasticity clay; 30% gravel, fine to coarse, angular to subrounded; cohesive in placest; wet. Mixed Recovery.		

Continued Next Page

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-37

PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/12/2020-11/13/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
								66.0	#10/20 sand filter pack (57 to 70 ft bgs).
2.3	0.458				CH		CLAY with Gravel: 70% medium to high plasticity clay; 30% gravel, fine to coarse, angular to subrounded; cohesive in placest; wet. Mixed Recovery.	67.5	
							Gravelly CLAY: reddish brown (5YR 4/3); 55% medium to high plasticity clay, soft; 30% fine gravel; 15% fine sand; very wet. Mixed recovery. NOTE: boring open to 68 feet bgs, boring making water.		2-inch SCH 40 PVC 0.020-slot screen nested well (60 to 70 ft bgs).
1.8	0.36	MW37-GW111320-70			CH				
				70			End of boring at 70 feet bgs.	70.0	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	238824.6495-F3048-005.DRILL	**BORING/WELL NUMBER**	MW-38
PROJECT NAME	700 S 1600 E PCE Plume	**DATE DRILLED**	11/14/2020
LOCATION	Salt Lake City, UT	**CASING TYPE/DIAMETER**	2-inch Schedule 40 PVC
DRILLING METHOD	Sonic	**SCREEN TYPE/SLOT**	2-inch Schedule 40 0.020-slot
SAMPLING METHOD	Sonic Grab	**GRAVEL PACK TYPE**	#10/20 sand
GROUND ELEVATION (FT MSL)	4498.56	**GROUT TYPE/QUANTITY**	Hydrated Bentonite Chips
TOP OF CASING (FT MSL)	S: 4497.64 D: 4497.8	**DEPTH TO WATER (FT BGS)**	S: 19.59 D: 18.53 BTOC
LOGGED BY	Joe Miller	**GROUND WATER ELEVATION (FT MSL)**	S: 4478.05 D: 4479.27
REMARKS	Groundwater measured after installation.		

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Hydrovac to 7 ft bgs.	
				5				7.0
0.7			D		SM		Silty SAND: brown (7.5YR 5/4); 75% loose, fine sand; 25% silt; moist.	9.0
	0.385			10	CL		Sandy CLAY: brown (7.5YR 5/4); 70% cohesive, laminated clay; 30% sand; moist. At 10 feet bgs, sample is stiff.	
0.3	0.646							12.0
					CL		Sandy CLAY: brown (7.5YR 5/4); 60% clay, less cohesive, firm; 40% sand; moist.	13.0
0.3	0.305						Sandy CLAY: brown (7.5YR 5/4); 75% clay, cohesive, stiff; 25% sand; trace fine, rounded gravel; moist.	
	0.518		D	15				
					CL		At 16 feet bgs, increase in moisture; firm.	
0.3								
							At 18 feet bgs, wet, sandy lens.	
0.3	0.442			20				19.5
							GRAVEL with Sand and Clay: brown (7.5YR 5/4); 60%	

Continued Next Page

WELL DIAGRAM

- Flush-mounted Augustyn vault (10-inch).
- Portland cement seal (3 to 7 ft bgs).
- 6-inch stainless steel vapor probe at 8 feet bgs with #10/20 sand filter pack (7 to 9 ft bgs).
- 2-inch SCH 40 PVC blank.
- Hydrated bentonite chips (9 to 25 ft bgs).

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020_WT.JM.GPJ LAEWNN01.GDT 3/10/21

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-38
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/14/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
					GW GC		gravel, fine to coarse, angular to subrounded; 30% fine sand; 10% clay; loose; moist to wet.	20.5
0.3	0.503						Sandy CLAY: brown (7.5YR 5/4); 80% clay, soft, cohesive; 20% fine sand; moist to wet.	
							At 22 feet bgs, trace coarse gravel. Depth to water at time of drilling: 22.09 feet bgs. At 22.5 feet bgs, wet lens.	
0.2	0.467						At 23.75 feet bgs, 2 to 3 inch clast, less moisture.	
					CL			
0.1	0.355			25			At 25.5 feet bgs, 2 to 3 inch clast, increase in fine sand.	
0.2	0.485						At 27.5 feet bgs, wet, sandy lens with trace gravel.	
								28.5
0.2	0.507				CL		Sandy CLAY: brown (7.5YR 5/3); 70% clay, cohesive, stiff to firm; 20% fine sand; 10% gravel, fine to coarse, subangular to subrounded; dry to moist.	30.0
				30				
0.4	0.397				SC		Clayey SAND: brown (7.5YR 5/3); 75% sand, fine to coarse, loose; 25% clay; trace fine gravel; cohesive; wet.	32.0
0.4	0.498						Clayey SAND with Gravel: brown (7.5YR 5/3); 60% sand, fine to coarse; 25% clay; 15% gravel, fine to coarse; loose to compact; moist to wet.	
0.4				35	SC		At 35 feet bgs, wet lens, increase in gravel.	
	0.395						At 37 feet bgs, wet lens, increase in gravel.	
								38.0
					CL		Sandy CLAY: brown (7.5YR 5/4); 70% clay, cohesive; 30% sand; trace fine gravel; wet.	39.0
0.3	0.103						GRAVEL with Sand and Clay: 80% gravel, fine to coarse, subangular to subrounded; 20% sand and clay; sand is poorly graded, fine to coarse; loose; wet (saturated).	
				40	GP GC			
1.1	0.42						At 41 feet bgs, increase in clay (gray layer).	
								42.0
							At 42 feet bgs, 6 to 8 inch clast, then Sandy CLAY with Gravel: brown (7.5YR 5/4); 60% lean clay, cohesive, firm to	

Continued Next Page

WELL DIAGRAM

- Hydrated bentonite chips (9 to 25 ft bgs).
- #10/20 sand filter pack (25 to 39 ft bgs).
- 2-inch SCH 40 PVC 0.020-slot screen nested well (27 to 37 ft bgs).
- Hydrated bentonite chips (39 to 57 ft bgs).

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020_WT.JM.GPJ LAEWNN01.GDT 3/10/21

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-38
PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/14/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.1	0.446				CL		stiff; 30% fine sand; 10% fine to coarse gravel, subangular to subrounded; moist to wet.		
1	0.394			45				45.5	
							CLAY: light gray (5Y 7/2) mottled with brown; lean clay, very stiff to hard; cohesive; dry.		
1	0.095								Hydrated bentonite chips (39 to 57 ft bgs).
0.9	0.088				CL				
				50					2-inch SCH 40 PVC blank.
1	0.27							52.5	
1.1	0.252				SP		SAND with Gravel: dark reddish brown (5YR 3/4); 60% sand, fine to coarse; 40% gravel, fine to coarse, rounded; loose; wet.	54.0	
1.2	0.22			55	GC		Clayey GRAVEL with Sand: yellowish brown (10YR 5/4); 60% gravel, fine to coarse, subangular to subrounded; 20% clay; 20% sand; cohesive; dense; moist to wet.	56.0	
1	0.239				ML		SILT: yellowish brown (10YR 5/4); 80% silt; 10% fine sand; 10% fine gravel; very stiff; cohesive; moist.		
								59.0	#10/20 sand filter pack (57 to 71 ft bgs).
1	0.243				GM		Silty GRAVEL with Sand: yellowish brown (10YR 5/4); 60% gravel, poorly graded, fine to coarse, subangular to subrounded; 20% silt; 20% sand; cohesive; medium dense; moist to wet.	60.0	
				60					
1	0.15				SP		SAND: dark brown (10YR 3/3); poorly graded sand; loose; saturated; wet.		
								62.5	
1.1	0.12				GP GC		GRAVEL with Clay: brown (7.5YR 4/4); 80% gravel, fine to coarse, subangular to subrounded; 10% clay; 10% sand, medium to coarse; loose; wet.	63.5	2-inch SCH 40 PVC 0.020-slot screen nested well (60 to 70 ft bgs).
					ML		SILT: brown (7.5YR 4/4); cohesive; stiff; moist to wet.	64.0	
1	0.112			65	GP		GRAVEL with Sand: brown (7.5YR 4/4); 70% gravel, poorly graded, fine to coarse, subangular to subrounded; 25% sand, fine to coarse; 5% clay; loose; wet.		

Continued Next Page

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL **BORING/WELL NUMBER** MW-38

PROJECT NAME 700 S 1600 E PCE Plume **DATE DRILLED** 11/14/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
								66.0	2-inch SCH 40 PVC 0.020-slot screen nested well (60 to 70 ft bgs).
0.9	0.172				GP		GRAVEL with Sand: brown (7.5YR 4/4); 70% gravel, poorly graded, fine to coarse, subangular to subrounded; 25% sand, fine to coarse; 5% clay; loose; wet.	67.5	
							Silty GRAVEL: brown (7.5YR 4/3); fine to coarse gravel, rounded; cohesive; dense; moist.		#10/20 sand filter pack (57 to 71 ft bgs).
1.2	0.344				GM				
				70				70.0	
					GP GM		GRAVEL with Sand and Silt: brown (7.5YR 4/3); 70% gravel, poorly graded, fine to coarse; 20% sand, fine to coarse; 10% silt; loose; wet.	71.0	
1.2	0.183						Sandy SILT: brown (7.5YR 4/4); 80% silt, 20% sand; cohesive; firm to stiff; moist to wet.		Hydrated bentonite chips (71 to 72 ft bgs).
					ML				
1	0.406							74.0	
					GP GM		GRAVEL with Sand and Silt: brown (7.5YR 4/3); 70% gravel, poorly graded, fine to coarse; 20% sand, fine to coarse; 10% silt; loose; wet.	75.0	
0.9	0.27			75			Sandy SILT: 80% silt; 20% sand; trace gravel, fine to coarse; cohesive; firm; moist.		Native soil sluff (72 to 80 ft bgs).
1.2	0.66				ML				
1.3	0.423						At 79.5 feet bgs, increase in clay; stiff.	80.0	
				80			End of boring at 80 feet bgs.		

Appendix H

Soil Core Photo Log

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
1	11/6/20

Location:

MW-30R

Description:

9-10’

Photo No.	**Date:**
2	11/6/2020

Location:

MW-30R

Description:

10-12’

Photo No.	**Date:**
3	11/6/20

Location:

MW-30R

Description:

12-14’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 4	**Date:** 11/6/20
Location: MW-30R	
Description: 14-16’	

Photo No. 5	**Date:** 11/6/20
Location: MW-30R	
Description: 16-18’	

Photo No. 6	**Date:** 11/6/20
Location: MW-30R	
Description: 18-20’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No.	Date:
7	11/6/20

Location:

MW-30R

Description:

20-21.5’

Photo No.	Date:
8	11/6/20

Location:

MW-30R

Description:

21.5-24’

Photo No.	Date:
9	11/6/20

Location:

MW-30R

Description:

24-26’

CDM Smith **PHOTOGRAPHIC LOG**

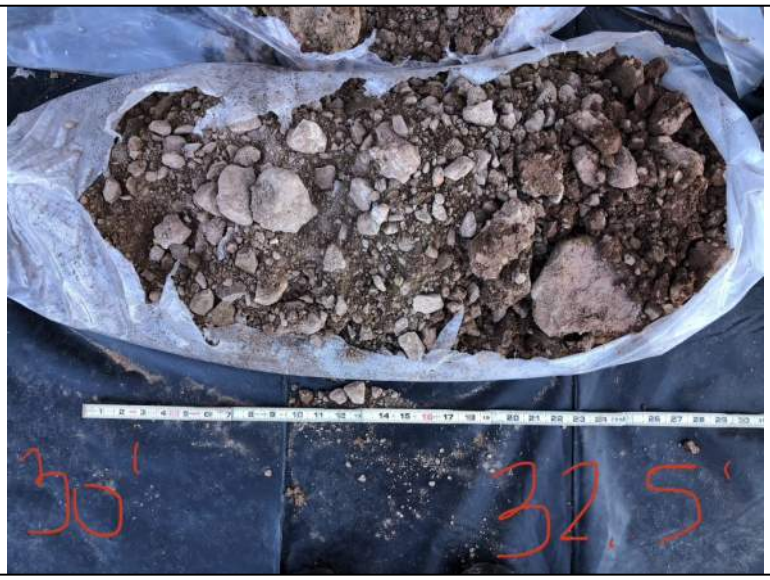
Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 10	**Date:** 11/6/20
Location: MW-30R	
Description: 26-28’	

Photo No. 11	**Date:** 11/6/20
Location: MW-30R	
Description: 28-30’	

Photo No. 12	**Date:** 11/6/20
Location: MW-30R	
Description: 30-32.5’	



CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 13	Date: 11/6/20
Location: MW-30R	
Description: 32.5-35’	

Photo No. 14	Date: 11/6/20
Location: MW-30R	
Description: 35-37’	

Photo No. 15	Date: 11/6/20
Location: MW-30R	
Description: 37-39’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 16	Date: 11/6/20
Location: MW-30R	
Description: 39-40’	

Photo No. 17	Date: 11/6/20
Location: MW-30R	
Description: 40-42’	

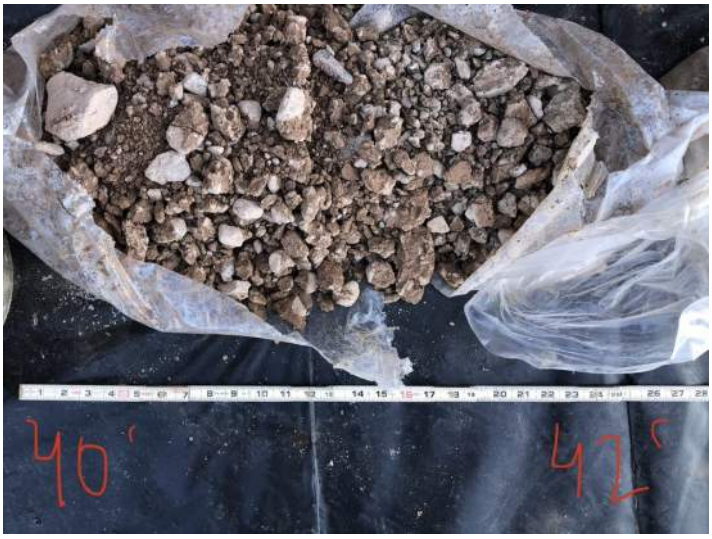


Photo No. 18	Date: 11/6/20
Location: MW-30R	
Description: 42-44’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 19	**Date:** 11/6/20
Location: MW-30R	
Description: 44-46’	

Photo No. 20	**Date:** 11/6/20
Location: MW-30R	
Description: 46-48’	

Photo No. 21	**Date:** 11/6/20
Location: MW-30R	
Description: 48-50’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 22	**Date:** 11/6/20

Location:

MW-30R

Description:

50-52.5’

Photo No. 23	**Date:** 11/6/20

Location:

MW-30R

Description:

52.5-55’

Photo No. 24	**Date:** 11/6/20

Location:

MW-30R

Description:

55-57.5’

CDM Smith **PHOTOGRAPHIC LOG**	**Site:** 700 South 1600 East PCE Plume	**Project No.** 238824

Photo No. **25**	**Date:** 11/6/20
Location: MW-30R	
Description: 57.5-60’	

Photo No. **26**	**Date:** 11/6/20
Location: MW-30R	
Description: 60-62’	

Photo No. **27**	**Date:** 11/6/20
Location: MW-30R	
Description: 62.5-65’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 28	**Date:** 11/6/20
Location: MW-30R	
Description: 65-67’	

Photo No. 29	**Date:** 11/6/20
Location: MW-30R	
Description: 67-70’	

Photo No. 30	**Date:** 11/6/20
Location: MW-30R	
Description: 70-72’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 31	Date: 11/6/20
Location: MW-30R	
Description: 72-74’	

Photo No. 32	Date: 11/6/20
Location: MW-30R	
Description: 74-76’	

Photo No. 33	Date: 11/6/20
Location: MW-30R	
Description: 76-78’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 34	Date: 11/6/20
Location: MW-30R	
Description: 78-80’	

Photo No. 35	Date: 11/6/20
Location: MW-30R	
Description: 80-82’	

Photo No. 36	Date: 11/6/20
Location: MW-30R	
Description: 82.5-85’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 37	Date: 11/6/20
Location: MW-30R	
Description: 85-87.5’	

Photo No. 38	Date: 11/6/20
Location: MW-30R	
Description: 87.5-90’	

Photo No. 39	Date: 11/6/20
Location: MW-30R	
Description: 90-92.5’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	Project No.
700 South 1600 East PCE Plume	238824

Photo No. 40	Date: 11/6/20

Location:

MW-30R

Description:

92.5-95’

Photo No. 41	Date: 11/6/20

Location:

MW-30R

Description:

95-97.5’

Photo No. 42	Date: 11/6/20

Location:

MW-30R

Description:

97.5-100’

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 43	Date: 11/6/20
Location: MW-30R	
Description: 100-102’	

Photo No. 44	Date: 11/6/20
Location: MW-30R	
Description: 102-104’	

Photo No. 45	Date: 11/6/20
Location: MW-30R	
Description: 104-106’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 46	**Date:** 11/6/20
Location: MW-30R	
Description: 106-108’	

Photo No. 47	**Date:** 11/6/20
Location: MW-30R	
Description: 108-110’	

Photo No. 48	**Date:** 11/6/20
Location: MW-30R	
Description: 110-112’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 49	**Date:** 11/6/20
Location: MW-30R	
Description: 112-114.5’	

Photo No. 50	**Date:** 11/6/20
Location: MW-30R	
Description: 114.5-117’	

Photo No. 51	**Date:** 11/6/20
Location: MW-30R	
Description: 117-119.5’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 52	Date: 11/6/20
Location: MW-30R	
Description: 119.5-121.5’	

Photo No. 53	Date: 11/6/20
Location: MW-30R	
Description: 121.5-123.5’	

Photo No. 54	Date: 11/6/20
Location: MW-30R	
Description: 123.5-125’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 55	**Date:** 11/6/20
Location: MW-30R	
Description: 125-127’	

Photo No. 56	**Date:** 11/6/20
Location: MW-30R	
Description: 127-129.5’	

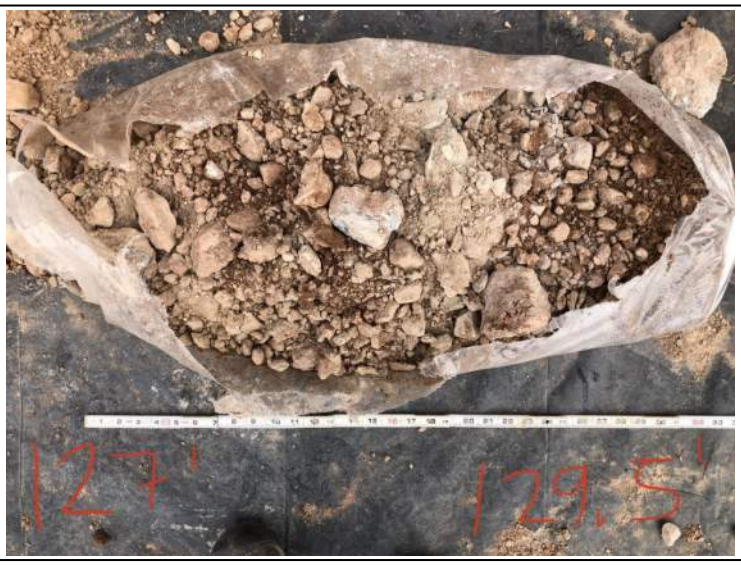


Photo No. 57	**Date:** 11/6/20
Location: MW-30R	
Description: 129.5-132’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 58	**Date:** 11/6/20
Location: MW-30R	
Description: 132-133.5’	

Photo No. 59	**Date:** 11/6/20
Location: MW-30R	
Description: 133.5-135’	

Photo No. 60	**Date:** 11/6/20
Location: MW-30R	
Description: 135-137’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 61	**Date:** 11/6/20
Location: MW-30R	
Description: 137-139’	

Photo No. 62	**Date:** 11/6/20
Location: MW-30R	
Description: 139-142’	

Photo No. 63	**Date:** 11/6/20
Location: MW-30R	
Description: 142-144’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 64

Date: 11/6/20

MW-30R

Description:
144-146'

Photo No. 65

Date: 11/6/20

Location:

MW-30R

Description:

146-148'

Photo No. 66

Location:

MW-30R

Description:

148-150'

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume
Project No.
23882 4

Photo No.	**Date:**
67	11/6/20

Location:

MW-30R

Description:

150-152’

Photo No.	**Date:**
68	11/6/20

Location:

MW-30R

Description:

152-155’

Photo No.	**Date:**
69	11/6/20

Location:

MW-30R

Description:

155-157’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 70	**Date:** 11/6/20
Location: MW-30R	
Description: 157-159’	

Photo No. 71	**Date:** 11/6/20
Location: MW-30R	
Description: 159-162’	

Photo No. 72	**Date:** 11/6/20
Location: MW-30R	
Description: 162-164’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 73	**Date:** 11/6/20
Location: MW-30R	
Description: 164-166’	

Photo No. 74	**Date:** 11/6/20
Location: MW-30R	
Description: 166-168’	

Photo No. 75	**Date:** 11/6/20
Location: MW-30R	
Description: 168-170’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 76	**Date:** 11/6/20
Location: MW-30R	
Description: 170-172.5’	

Photo No. 77	**Date:** 11/6/20
Location: MW-30R	
Description: 172.5-174’	

Photo No. 78	**Date:** 11/6/20
Location: MW-30R	
Description: 174-176’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 79	Date: 11/6/20
Location: MW-30R	
Description: 176-178’	

Photo No. 80	Date: 11/6/20
Location: MW-30R	
Description: 178-180.5’	

Photo No. 81	Date: 11/6/20
Location: MW-30R	
Description: 180.5-183’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 82	**Date:** 11/7/20
Location: MW-30R	
Description: 183-185’	

Photo No. 83	**Date:** 11/7/20
Location: MW-30R	
Description: 185-187.5’	

Photo No. 84	**Date:** 11/7/20
Location: MW-30R	
Description: 187.5-190’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 85	**Date:** 11/7/20
Location: MW-30R	
Description: 190-192’	

Photo No. 86	**Date:** 11/7/20
Location: MW-30R	
Description: 192-194’	

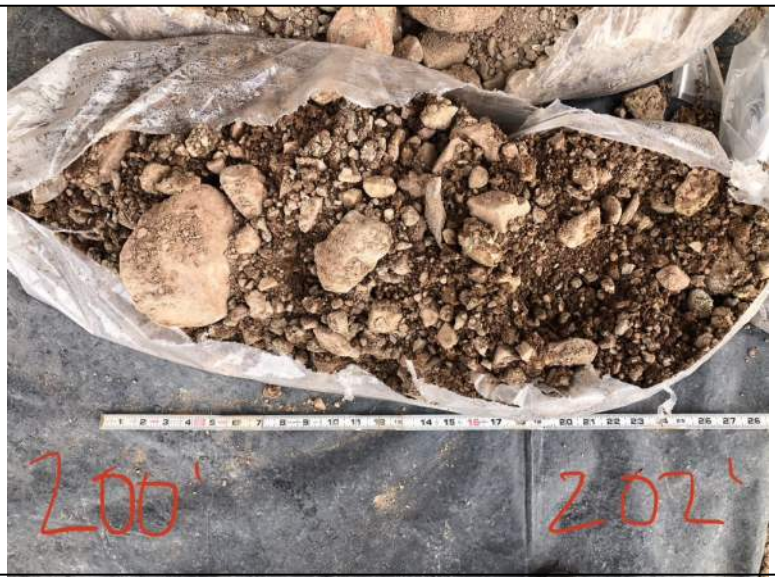
Photo No. 87	**Date:** 11/7/20
Location: MW-30R	
Description: 194-196’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 88	Date: 11/7/20
Location: MW-30R	
Description: 196-198’	

Photo No. 89	Date: 11/7/20
Location: MW-30R	
Description: 198-200’	

Photo No. 90	Date: 11/7/20
Location: MW-30R	
Description: 200-202’	



CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 91	**Date:** 11/7/20
Location: MW-30R	
Description: 202-203.5’	

Photo No. 92	**Date:** 11/7/20
Location: MW-30R	
Description: 203.5-2-5.5’	

Photo No. 93	**Date:** 11/7/20
Location: MW-30R	
Description: 205.5-207.5’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 94	**Date:** 11/7/20
Location: MW-30R	
Description: 207.5-210’	

Photo No. 95	**Date:** 11/7/20
Location: MW-30R	
Description: 210-212’	

Photo No. 96	**Date:** 11/7/20
Location: MW-30R	
Description: 212-213.5’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 97	Date: 11/7/20
Location: MW-30R	
Description: 213.5-216’	

Photo No. 98	Date: 11/7/20
Location: MW-30R	
Description: 216-218’	

Photo No. 99	Date: 11/7/20
Location: MW-30R	
Description: 218-220’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 100	Date: 11/7/20
Location: MW-30R	
Description: 220-221.5’	

Photo No. 101	Date: 11/7/20
Location: MW-30R	
Description: 221.5-223’	

Photo No. 102	Date: 11/7/20
Location: MW-30R	
Description: 223-225.5’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 103	Date: 11/7/20
Location: MW-30R	
Description: 225.5-228’	

Photo No. 104	Date: 11/7/20
Location: MW-30R	
Description: 228-229.5’	

Photo No. 105	Date: 11/7/20
Location: MW-30R	
Description: 229.5-231.5’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 106	Date: 11/7/20
Location: MW-30R	
Description: 231.5-233’	

Photo No. 107	Date: 11/7/20
Location: MW-30R	
Description: 233-235’	

Photo No. 108	Date: 11/7/20
Location: MW-30R	
Description: 235-237’	

CDM Smith **PHOTOGRAPHIC LOG**	**Site:** 700 South 1600 East PCE Plume	**Project No.** 238824

Photo No. **109**	**Date:** 11/7/20
Location: MW-30R	
Description: 237-240’	

Photo No. **110**	**Date:** 11/7/2020
Location: MW-30R	
Description: 240-242’	

Photo No. **111**	**Date:** 11/7/20
Location: MW-30R	
Description: 242-243.5’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 112	**Date:** 11/7/20
Location: MW-30R	
Description: 243.5-246’	

Photo No. 113	**Date:** 11/7/20
Location: MW-30R	
Description: 246-247.5’	

Photo No. 114	**Date:** 11/7/20
Location: MW-30R	
Description: 247.5-250’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	Project No.
700 South 1600 East PCE Plume	238824

Photo No.	Date:
115	11/9/20

Location:

MW-30R

Description:

250-252.5’

Photo No.	Date:
116	11/9/20

Location:

MW-30R

Description:

252.5-255’

Photo No.	Date:
117	11/9/20

Location:

MW-30R

Description:

255-257’

CDM Smith **PHOTOGRAPHIC LOG**

Site:	Project No.
700 South 1600 East PCE Plume	238824

Photo No. 118	Date: 11/9/20

Location:

MW-30R

Description:

257-259’

Photo No. 119	Date: 11/9/20

Location:

MW-30R

Description:

259-261’

Photo No. 120	Date: 11/9/20

Location:

MW-30R

Description:

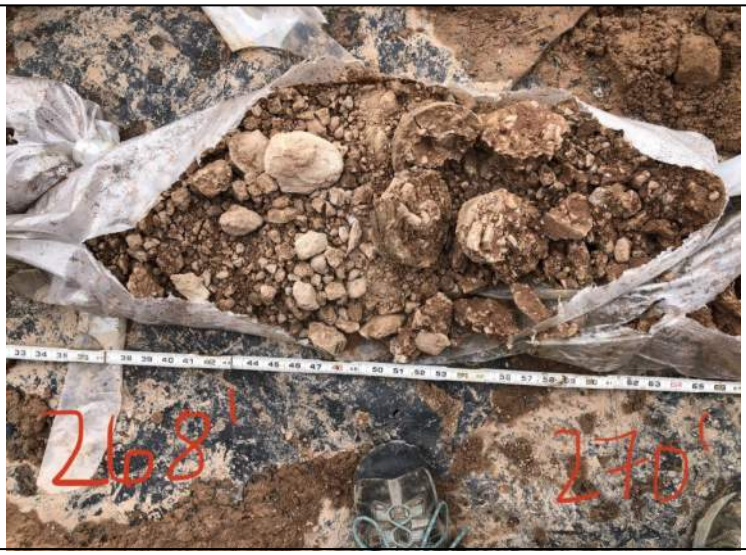
261-263’

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 121	Date: 11/9/20
Location: MW-30R	
Description: 263-265’	

Photo No. 122	Date: 11/9/20
Location: MW-30R	
Description: 265-268’	

Photo No. 123	Date: 11/9/20
Location: MW-30R	
Description: 268-270’	



CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 124	**Date:** 11/9/20
Location: MW-30R	
Description: 270-272’	

Photo No. 125	**Date:** 11/9/20
Location: MW-30R	
Description: 272-274’	

Photo No. 126	**Date:** 11/9/20
Location: MW-30R	
Description: 274-276’	

PHOTOGRAPHIC LOG

Site:	Project No.
700 South 1600 East PCE Plume	238824

Photo No.	Date:
127	11/9/20

Location:

MW-30R

Description:

276-278’

Photo No.	Date:
128	11/9/20

Location:

MW-30R

Description:

280-282’

Photo No.	Date:
129	11/9/20

Location:

MW-30R

Description:

282-284’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 130	**Date:** 11/9/20
Location: MW-30R	
Description: 284-286’	

Photo No. 131	**Date:** 11/9/20
Location: MW-30R	
Description: 286-288’	

Photo No. 132	**Date:** 11/9/20
Location: MW-30R	
Description: 288-290’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 133	Date: 11/9/20
Location: MW-30R	
Description: 290-292.5’	

Photo No. 134	Date: 11/9/20
Location: MW-30R	
Description: 292.5-295’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 1	Date: 12/2/20
Location: MW-13L	
Description: 0-5’ No Photo – Pre-cleared with hand auger	

Photo No. 2	Date: 12/2/2020
Location: MW-13L	
Description: 5-6’	

Photo No. 3	Date: 12/2/20
Location: MW-13L	
Description: 6-10’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 4	Date: 12/2/20
Location: MW-13L	
Description: 10-11’	

Photo No. 5	Date: 12/2/20
Location: MW-13L	
Description: 11-14’	

Photo No. 6	Date: 12/2/20
Location: MW-13L	
Description: 14-17’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
7	12/2/20

Location:

MW-13L

Description:

17-20’

Photo No.	**Date:**
8	12/2/20

Location:

MW-13L

Description:

20-22.5’

Photo No.	**Date:**
9	12/2/20

Location:

MW-13L

Description:

22.5-25’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 10	**Date:** 12/2/20
Location: MW-13L	
Description: 25-27.5’	

Photo No. 11	**Date:** 12/2/20
Location: MW-13L	
Description: 27.5-30’	

Photo No. 12	**Date:** 12/2/20
Location: MW-13L	
Description: 30-33’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
13	12/2/20

Location:

MW-13L

Description:

33-36’

Photo No.	**Date:**
14	12/2/20

Location:

MW-13L

Description:

36-38’

Photo No.	**Date:**
15	12/2/20

Location:

MW-13L

Description:

38-40’

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
16	12/2/20

Location:

MW-13L

Description:

40-44’

Photo No.	**Date:**
17	12/2/20

Location:

MW-13L

Description:

44-47’

Photo No.	**Date:**
18	12/2/20

Location:

MW-13L

Description:

47-50’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 19	**Date:** 12/2/20
Location: MW-13L	
Description: 50-53’	

Photo No. 20	**Date:** 12/2/20
Location: MW-13L	
Description: 53-56’	

Photo No. 21	**Date:** 12/2/20
Location: MW-13L	
Description: 56-58’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 22	**Date:** 12/2/20
Location: MW-13L	
Description: 58-60’	

Photo No. 23	**Date:** 12/2/20
Location: MW-13L	
Description: 60-63.5’	

Photo No. 24	**Date:** 12/2/20
Location: MW-13L	
Description: 63.5-65’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 25	**Date:** 12/2/20
Location: MW-13L	
Description: 65-68’	

Photo No. 26	**Date:** 12/2/20
Location: MW-13L	
Description: 68-70’	

Photo No. 27	**Date:** 12/2/20
Location: MW-13L	
Description: 70-73’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
28	12/2/20

Location:

MW-13L

Description:

73-75’

Photo No.	**Date:**
29	12/2/20

Location:

MW-13L

Description:

75-77.5’

Photo No.	**Date:**
30	12/2/20

Location:

MW-13L

Description:

77.5-80’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 31	**Date:** 12/2/20
Location: MW-13L	
Description: 80-82.5’	

Photo No. 32	**Date:** 12/2/20
Location: MW-13L	
Description: 82.5-85’	

Photo No. 33	**Date:** 12/2/20
Location: MW-13L	
Description: 85-87.5’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 34	**Date:** 12/2/20
Location: MW-13L	
Description: 87.5-90’	

Photo No. 35	**Date:** 12/2/20
Location: MW-13L	
Description: 90-92.5’	

Photo No. 36	**Date:** 12/2/20
Location: MW-13L	
Description: 92.5-95’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 37	**Date:** 12/2/20

Location:

MW-13L

Description:

95-97.5’

Photo No. 38	**Date:** 12/2/20

Location:

MW-13L

Description:

97.5-100’

Photo No. 39	**Date:** 12/2/20

Location:

MW-13L

Description:

100-102.5’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 40	**Date:** 12/2/20
Location: MW-13L	
Description: 102.5-105’	

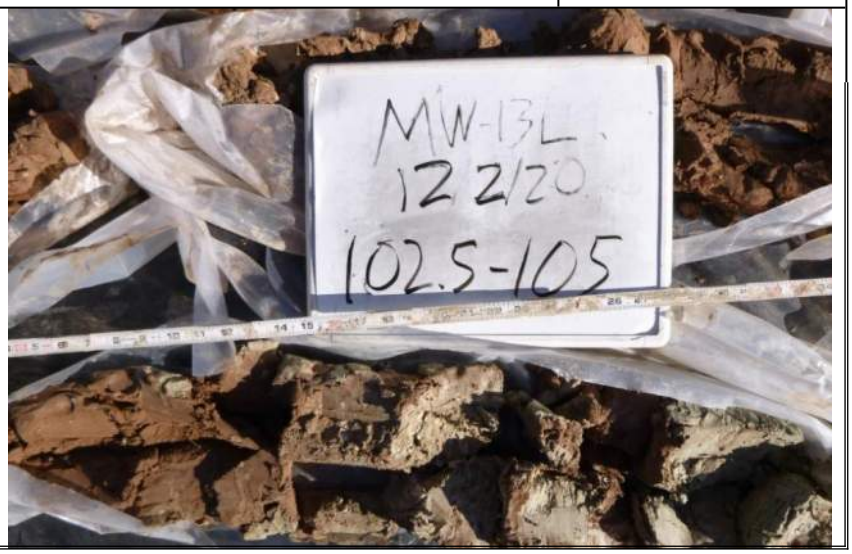


Photo No. 41	**Date:** 12/2/20
Location: MW-13L	
Description: 105-107.5’	

Photo No. 42	**Date:** 12/2/20
Location: MW-13L	
Description: 107.5-110’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 43	**Date:** 12/2/20
Location: MW-13L	
Description: 110-112.5’	

Photo No. 44	**Date:** 12/2/20
Location: MW-13L	
Description: 112.5-115’	

Photo No. 45	**Date:** 12/2/20
Location: MW-13L	
Description: 115-117.5’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 46	**Date:** 12/2/20
Location: MW-13L	
Description: 117.5-120’	

Photo No. 47	**Date:** 12/2/20
Location: MW-13L	
Description: 120-122.5’	

Photo No. 48	**Date:** 12/2/20
Location: MW-13L	
Description: 122.5-125’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 49	**Date:** 12/2/20

Location:

MW-13L

Description:

125-127.5’

Photo No. 50	**Date:** 12/2/20

Location:

MW-13L

Description:

127.5-130’

Photo No. 51	**Date:** 12/2/20

Location:

MW-13L

Description:

130-132.5’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 52	**Date:** 12/2/20
Location: MW-13L	
Description: 132.5-135’	

Photo No. 53	**Date:** 12/2/20
Location: MW-13L	
Description: 135-137.5’	

Photo No. 54	**Date:** 12/2/20
Location: MW-13L	
Description: 137.5-140’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 55	**Date:** 12/2/20
Location: MW-13L	
Description: 140-142.5’	

Photo No. 56	**Date:** 12/2/20
Location: MW-13L	
Description: 142.5-145’	

Photo No. 57	**Date:** 12/2/20
Location: MW-13L	
Description: 145-147.5’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 58	Date: 12/2/20
Location: MW-13L	
Description: 147.5-150’	

Photo No. 59	Date: 12/3/20
Location: MW-13L	
Description: 150-152.5’	

Photo No. 60	Date: 12/3/20
Location: MW-13L	
Description: 152.5-155’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 61	**Date:** 12/3/20

Location:

MW-13L

Description:

155-157.5’

Photo No. 62	**Date:** 12/3/20

Location:

MW-13L

Description:

157.5-160’

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 1	Date: 11/12/20
Location: MW-37	
Description: 0-7’ No photo – Vacuum Excavated	

Photo No. 2	Date: 11/12/2020
Location: MW-37	
Description: 7-8’	

Photo No. 3	Date: 11/12/20
Location: MW-37	
Description: 8-9’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 4	Date: 11/12/20
Location: MW-37	
Description: 9-10’	

Photo No. 5	Date: 11/12/20
Location: MW-37	
Description: 10-12’	

Photo No. 6	Date: 11/12/20
Location: MW-37	
Description: 12-14’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 7	**Date:** 11/12/20
Location: MW-37	
Description: 14-16’	

Photo No. 8	**Date:** 11/12/20
Location: MW-37	
Description: 16-18’	

Photo No. 9	**Date:** 11/12/20
Location: MW-37	
Description: 18-20’	

CDM Smith **PHOTOGRAPHIC LOG**	**Site:** 700 South 1600 East PCE Plume	**Project No.** 238824

Photo No. **10**	**Date:** 11/12/20
Location: MW-37	
Description: 20-22’	

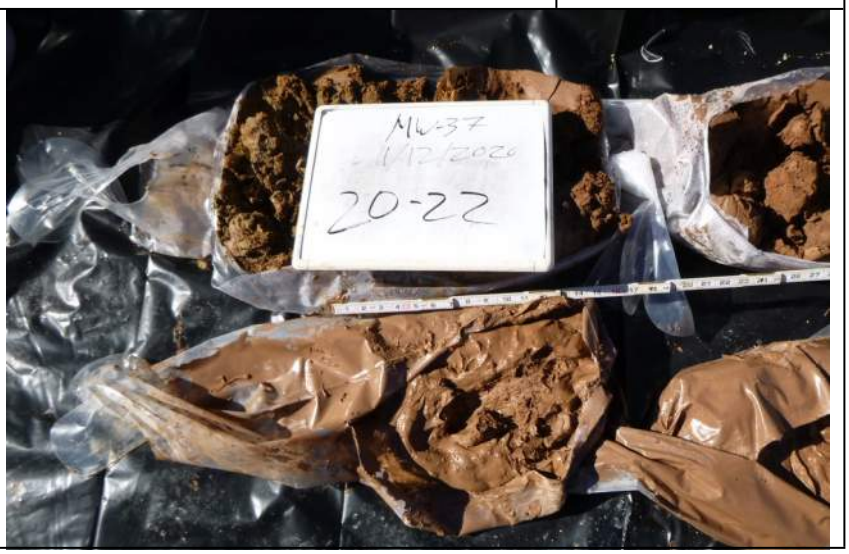


Photo No. **11**	**Date:** 11/12/20
Location: MW-30R	
Description: 22-24’	

Photo No. **12**	**Date:** 11/12/20
Location: MW-30R	
Description: 24-26’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 13	Date: 11/12/20
Location: MW-30R	
Description: 26-28’	

Photo No. 14	Date: 11/12/2020
Location: MW-30R	
Description: 28-30’	

Photo No. 15	Date: 11/12/20
Location: MW-30R	
Description: 30-32’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 16	Date: 11/12/20
Location: MW-30R	
Description: 32-34’	

Photo No. 17	Date: 11/12/20
Location: MW-30R	
Description: 34-36’	

Photo No. 18	Date: 11/12/20
Location: MW-30R	
Description: 36-38’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 19	**Date:** 11/12/20
Location: MW-30R	
Description: 38-40’	

Photo No. 20	**Date:** 11/12/20
Location: MW-30R	
Description: 40-42.5’	

Photo No. 21	**Date:** 11/12/20
Location: MW-30R	
Description: 42-45’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 22	Date: 11/12/20
Location: MW-30R	
Description: 45-47.5’	

Photo No. 23	Date: 11/12/20
Location: MW-30R	
Description: 47.5-50’	

Photo No. 24	Date: 11/12/20
Location: MW-30R	
Description: 50-60’ No photo due to no recovery	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 28	**Date:** 11/12/20
Location: MW-30R	
Description: 60-61’	

Photo No. 29	**Date:** 11/12/20
Location: MW-30R	
Description: 61-63’	

Photo No. 30	**Date:** 11/12/20
Location: MW-30R	
Description: 63-65’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No.	**Date:**
31	11/12/20

Location:

MW-30R

Description:

65-66’

Photo No.	**Date:**
32	11/12/20

Location:

MW-30R

Description:

66-68’

Photo No.	**Date:**
33	11/12/20

Location:

MW-30R

Description:

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 1	Date: 11/14/20
Location: MW-38	
Description: 0-7’ No Photo – Vacuum Excavated	

Photo No. 2	Date: 11/14/2020
Location: MW-38	
Description: 7-10’	

Photo No. 3	Date: 11/14/20
Location: MW-38	
Description: 10-12.5’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 4	Date: 11/14/20
Location: MW-38	
Description: 12.5-15’	

Photo No. 5	Date: 11/14/20
Location: MW-38	
Description: 15-17.5’	

Photo No. 6	Date: 11/14/20
Location: MW-38	
Description: 17.5-20’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 7	**Date:** 11/14/20

Location:

MW-38

Description:

20-22’

Photo No. 8	**Date:** 11/14/20

Location:

MW-38

Description:

22-24’

Photo No. 9	**Date:** 11/14/20

Location:

MW-38

Description:

24-26’

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 10	Date: 11/14/20
Location: MW-38	
Description: 26-28’	

Photo No. 11	Date: 11/14/20
Location: MW-38	
Description: 28-30’	

Photo No. 12	Date: 11/14/20
Location: MW-38	
Description: 30-32’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 13	**Date:** 11/14/20
Location: MW-38	
Description: 32-35’	

Photo No. 14	**Date:** 11/14/2020
Location: MW-38	
Description: 35-37.5’	

Photo No. 15	**Date:** 11/14/20
Location: MW-38	
Description: 37.5-40’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 16	Date: 11/14/20
Location: MW-38	
Description: 40-42’	

Photo No. 17	Date: 11/14/20
Location: MW-38	
Description: 42-44’	

Photo No. 18	Date: 11/14/20
Location: MW-38	
Description: 44-46’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 19	Date: 11/14/20
Location: MW-38	
Description: 46-48’	

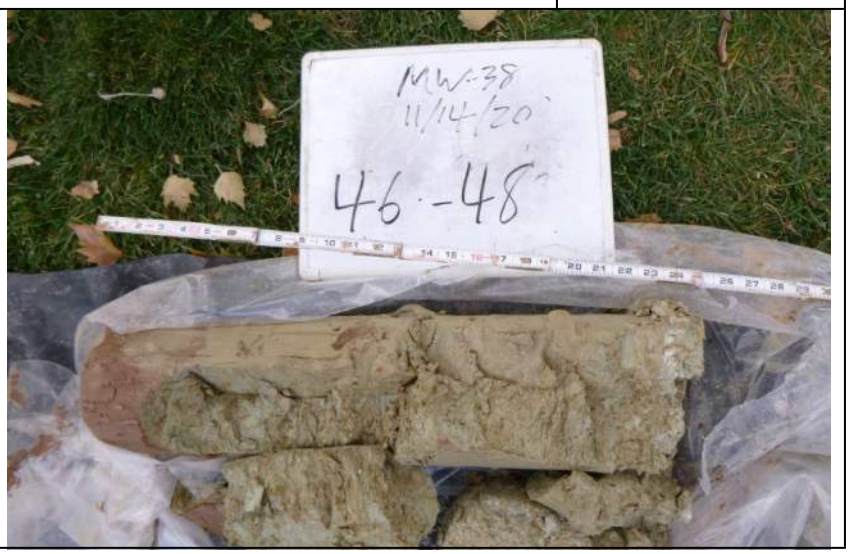


Photo No. 20	Date: 11/14/20
Location: MW-38	
Description: 48-50’	

Photo No. 21	Date: 11/14/20
Location: MW-38	
Description: 50-52’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
22	11/14/20

Location:

MW-38

Description:

52-54’

Photo No.	**Date:**
23	11/14/20

Location:

MW-38

Description:

54-56’

Photo No.	**Date:**
24	11/14/20

Location:

MW-38

Description:

56-58’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 25	**Date:** 11/14/20
Location: MW-38	
Description: 58-60’	

Photo No. 26	**Date:** 11/14/2020
Location: MW-38	
Description: 60-62’	

Photo No. 27	**Date:** 11/14/20
Location: MW-38	
Description: 62-64’	

CDM Smith **PHOTOGRAPHIC LOG**	**Site:** 700 South 1600 East PCE Plume	**Project No.** 238824

Photo No. **28**	**Date:** 11/14/20
Location: MW-38	
Description: 64-66’	

Photo No. **29**	**Date:** 11/14/20
Location: MW-38	
Description: 66-68’	

Photo No. **30**	**Date:** 11/14/20
Location: MW-38	
Description: 68-70’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 31	**Date:** 11/14/20
Location: MW-38	
Description: 70-72’	

Photo No. 32	**Date:** 11/14/2020
Location: MW-38	
Description: 72-74’	

Photo No. 33	**Date:** 11/6/20
Location: MW-38	
Description: 74-76’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 34	Date: 11/14/20
Location: MW-38	
Description: 76-78’	

Photo No. 35	Date: 11/14/2020
Location: MW-38	
Description: 78-80’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 1	Date: 11/17/20
Location: MW-36	
Description: 0-6’ No Photo – Vacuum excavated	

Photo No. 2	Date: 11/17/2020
Location: MW-36	
Description: 6-6.5’	

Photo No. 3	Date: 11/17/20
Location: MW-36	
Description: 6.5-8’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 4	Date: 11/17/20
Location: MW-36	
Description: 8-10’	

Photo No. 5	Date: 11/17/20
Location: MW-36	
Description: 10-12’	

Photo No. 6	Date: 11/17/20
Location: MW-36	
Description: 12-14’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 7	**Date:** 11/17/20

Location:

MW-36

Description:

14-16’

Photo No. 8	**Date:** 11/17/20

Location:

MW-36

Description:

16-18’

Photo No. 9	**Date:** 11/17/20

Location:

MW-36

Description:

18-20’

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 10	Date: 11/17/20
Location: MW-36	
Description: 20-22.5’	

Photo No. 11	Date: 11/17/20
Location: MW-36	
Description: 22.5-25’	

Photo No. 12	Date: 11/17/20
Location: MW-36	
Description: 25-27.5’	

CDM Smith **PHOTOGRAPHIC LOG**	**Site:** 700 South 1600 East PCE Plume	**Project No.** 238824

Photo No. 13	**Date:** 11/17/20
Location: MW-36	
Description: 27.5-30’	

Photo No. 14	**Date:** 11/17/20
Location: MW-36	
Description: 30-32’	

Photo No. 15	**Date:** 11/17/20
Location: MW-36	
Description: 33-35’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 16	Date: 11/17/20
Location: MW-36	
Description: 35-37’	

Photo No. 17	Date: 11/17/20
Location: MW-36	
Description: 37-40’	

Photo No. 18	Date: 11/17/20
Location: MW-36	
Description: 40-42’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
19	11/17/20

Location:

MW-36

Description:

42-44’

Photo No.	**Date:**
20	11/17/20

Location:

MW-36

Description:

44-45’

Photo No.	**Date:**
21	11/17/20

Location:

MW-36

Description:

45-47.5’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 22	**Date:** 11/17/20
Location: MW-36	
Description: 47.5-50’	

Photo No. 23	**Date:** 11/17/20
Location: MW-36	
Description: 50-52.5’	

Photo No. 24	**Date:** 11/17/20
Location: MW-36	
Description: 52.5-55’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 25	**Date:** 11/17/20
Location: MW-36	
Description: 55-57.5’	

Photo No. 26	**Date:** 11/17/20
Location: MW-36	
Description: 57.5-60’	

Photo No. 27	**Date:** 11/17/20
Location: MW-36	
Description: 60-61’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 28	Date: 11/17/20
Location: MW-36	
Description: 61-64’	

Photo No. 29	Date: 11/17/20
Location: MW-36	
Description: 64-66’	

Photo No. 30	Date: 11/17/20
Location: MW-36	
Description: 66-68’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
31	11/17/20

Location:

MW-36

Description:

68-70’

Photo No.	**Date:**
32	11/17/20

Location:

MW-36

Description:

70-73’

Photo No.	**Date:**
33	11/17/20

Location:

MW-36

Description:

73-75’

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 34	**Date:** 11/17/20
Location: MW-36	
Description: 75-76’	

Photo No. 35	**Date:** 11/17/20
Location: MW-36	
Description: 76-78’	

Photo No. 36	**Date:** 11/17/20
Location: MW-36	
Description: 78-80’	

CDM Smith **PHOTOGRAPHIC LOG**

Site: 700 South 1600 East PCE Plume

Project No. 238824

Photo No. 37	**Date:** 11/17/20
Location: MW-36	
Description: 80-82’	

Photo No. 38	**Date:** 11/17/20
Location: MW-36	
Description: 82-85’	

Photo No. 39	**Date:** 11/17/20
Location: MW-36	
Description: 85-87.5’	

CDM Smith **PHOTOGRAPHIC LOG**

Site:	**Project No.**
700 South 1600 East PCE Plume	238824

Photo No.	**Date:**
40	11/17/20

Location:

MW-36

Description:

87.5-90’

Photo No.	**Date:**
41	11/17/20

Location:

MW-36

Description:

90-92’

Photo No.	**Date:**
42	11/17/20

Location:

MW-36

Description:

92-94’

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 43	Date: 11/17/20
Location: MW-36	
Description: 94-96’	

Photo No. 44	Date: 11/17/20
Location: MW-36	
Description: 96-98’	

Photo No. 45	Date: 11/17/20
Location: MW-36	
Description: 98-100’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 46	Date: 11/17/20
Location: MW-36	
Description: 100-102’	

Photo No. 48	Date: 11/17/2020
Location: MW-36	
Description: 102-104’	

Photo No. 49	Date: 11/17/20
Location: MW-36	
Description: 104-106’	

CDM Smith PHOTOGRAPHIC LOG	Site: 700 South 1600 East PCE Plume	Project No. 238824

Photo No. 50	Date: 11/17/20
Location: MW-36	
Description: 106-108’	

Photo No. 51	Date: 11/17/2020
Location: MW-36	
Description: 108-110’	

Appendix I

Laboratory Data Package and Data Validation Report

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889

Date: 11-17-2020
EMAX Batch No.: 20K141

Attn: Cherie Zakowski

CDM Smith
555 17th Street, Suite 500
Denver, CO 80202

Subject: Laboratory Report
Project: VA SALT LAKE CITY

Enclosed is the Laboratory report for samples received on 11/14/20.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
MW37-GW111220-30	K141-01	11/12/20	WATER	VOCS BY 8260C
TB56-GW111220	K141-02	11/12/20	WATER	VOCS BY 8260C
EB49-GW111220	K141-03	11/12/20	WATER	VOCS BY 8260C
MW37-GW111320-70	K141-04	11/13/20	WATER	VOCS BY 8260C

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

Caspar J. Pang
Laboratory Director

EMAX certifies that results included in this report meets all TNI & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number CA002912018-15
ANAB Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing
California ELAP Accredited Certificate Number 2672

CHAIN OF CUSTODY

EMAX Laboratories, Inc.
1835 W. 205th Street, Torrance, CA 90501
Tel # : 310-618-8889 FAX#: 310-618-0818
Email: info@emaxlabs.com

PO NUMBER:
SAMPLE STORAGE

EMAX CONTROL NO. 20K141
PROJECT CODE:

CLIENT: CDM Smith
PROJECT: PCE Plume 700S 1600E
COORDINATOR: Cherie Zakowski
TEL: 720 264 1109 FAX: EMAIL: ZakowSkica@cdmSmith.com
SEND REPORT TO: Cherie Zakowski 720 264 1109
COMPANY: CDM Smith
ADDRESS: 555 17th St. Ste 500
Denver, CO 80201
EMAX PM: Raman Singh

MATRIX CODE	PRESERVATIVE CODE
DW=Drinking Water	IC = Ice
GW=Ground Water	HC = HCl
WW=Waste Water	HN=HNO3
SD=Solid Waste SL=Sludge	SH=NaO3
SS=Soil/ Sediment	ST=Na2S2O3
WP=Wipes PP=Pure Products	ZA=Zinc Acetate
AR=Air	HS=H2SO4
O=	

ANALYSIS REQUIRED: VOCs 8260

TAT:
- [x] Rush __24__hrs.
- [ ] Rush __48_hrs
- [ ] Rush_72_hrs
- [ ] 7 days
- [ ] 14 days
- [ ] 21 days

LAB	SAMPLE ID CLIENT	SAMPLING LOCATION	DATE	TIME	CONTAINER NO.	SIZE	TYPE	MATRIX CODE	QC	PRESERVATIVE CODE HC	COMMENTS
1	MW37-GW111220-30	MW-37	11/12/20	1120	3	40mL	VOA	GW		X	
2	TBSie-GW111220	MW-37	11/12/20	1000	3	40mL	VOA	GW		X	
3	EB49-GW111220	MW-37	11/12/20	1525	3	40mL	VOA	GW		X	
4	MW37-GW111320-70	MW-37	11/13/20	0915	3	40mL	VOA	GW		X	
5											
6											
7											
8											
9											
10											

Instructions
p/s CC: millerjc@cdmsmith.com w/ Results

Cooler #	Temp. (°C)	Sample #s
1	3.6	

SAMPLER: Joe Miller / Whitney Treadway
COURIER/AIRBILL: FedEX

RELINQUISHED BY	Date	Time	RECEIVED BY
	11/13/20	1020	
	11/14/2020	1045	Jenessa Nakagawa

NOTICE: Turn-around-time (TAT) for samples shall not begin untill all discrepancies have been resolved. For samples received and discrepacies resolved after 1500 hrs, TAT shall start at 0800 hrs the next business day. The client is responsible for all cost associted with sample disposal. Samples shall be disposed of as soon as practical (but not prior to fifteen (15) calendar days) after issuance of analytical report unless a different sample disposal schedule is pre-arranged with EMAX. Disposal fee for samples defined by CA Title 22 as non-hazardous shall be $5.00 per sample. EMAX will return hazardous samples to the client at the client's expense unless directed in writing otherwise.

SAMPLE RECEIPT FORM 1

Type of Delivery	Airbill / Tracking Number	ECN 20K141
☑ Fedex ☐ UPS ☐ GSO ☐ Others	3988 9911 9061	Recipient Jenessa Nakagawa
☐ EMAX Courier ☐ Client Delivery		Date 11/14/2020 Time 1045

COC INSPECTION

☑ Client Name	☑ Client PM/FC	☑ Sampler Name	☑ Sampling Date/Time	☑ Sample ID	☑ Matrix
☑ Address	☑ Tel # / Fax #	☐ Courier Signature	☑ Analysis Required	☐ Preservative (if any)	☐ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☑ Cooler	☐ Box	☐ Other		
Condition	☑ Custody Seal	☐ Intact	☐ Damaged		
Packaging	☐ Bubble Pack	☐ Styrofoam	☐ Popcorn	☐ Sufficient	☐ _____
Temperatures (Cool, ≤6 °C but not frozen)	☑ Cooler 1 3.6 °C	☐ Cooler 2 _____ °C	☐ Cooler 3 _____ °C	☐ Cooler 4 _____ °C	☐ Cooler 5 _____ °C
	☐ Cooler 6 _____ °C	☐ Cooler 7 _____ °C	☐ Cooler 8 _____ °C	☐ Cooler 9 _____ °C	☐ Cooler 10 _____ °C
Thermometer:	*A - S/N* 19238146 4	*B - S/N* 200291755	*C - S/N* 200291756	*D - S/N* 14025267	

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action
1,4	1-3,12	D14		R4, R1
2,3	4,8	D10		

11/16/20 11/16/20

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS: Sediment on sample #1, #4

LEGEND:

☐ **Continue to next page.**

Code	Description- Sample Management
D1	Analysis is not indicated in _____
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in _____
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in _____
D7	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
D10	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in _____
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	_____
D23	_____
D24	_____

Code	Description-Sample Management
R1	Proceed as indicated in ☐ COC ☐ Label
R2	Refer to attached instruction
R3	Cancel the analysis
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	_____
R9	_____
R10	_____
R11	_____
R12	_____

REVIEWS:

Sample Labeling Jenessa Nakagawa 11/16/2020 — **Date** 11/16/20

SRF _____ — **Date** 11/16/20

PM _____ — **Date** 11/16/20

Do Not Lift Using This Tag

ORIGIN ID:NPHA (406) 241-3259

COM SMITH
555 17TH ST STE 1100

DENVER, CO 80202
UNITED STATES US

SHIP DATE: 13NOV20
ACTWGT: 21.80 LB
CAD: 6997117/SSF02121
DIMS: 17x13x12 IN

BILL THIRD PARTY

Part # 15825[illegible] XP 10/21

TO **EMAX LABORATORIES INC**
ATTN: SAMPLE RECEIVING
1835 W. 205TH ST

TORRANCE CA 90501

(406) 241-3259 REF: 2388246495F3048.DRIL

INV:
PO: DEPT:

FedEx Express

J202020071401uv

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 0201 **3988 9911 9061**

AHS
90501
CA-US LAX

WO HHRA

sealed
3.0 °C
B

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

CDM SMITH

VA SALT LAKE CITY

METHOD SW5030B/8260C
VOLATILE ORGANICS BY GC/MS

SDG#: 20K141

CASE NARRATIVE

Client : CDM SMITH

Project: VA SALT LAKE CITY

SDG : 20K141

METHOD SW5030B/8260C
VOLATILE ORGANICS BY GC/MS

A total of four(4) water samples were received on 11/14/20 to be analyzed for Volatile Organics by GC/MS in accordance with Method SW5030B/8260C and project specific requirements.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument tune check was performed prior to calibration. Result was within acceptance criteria. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried out at a frequency required by the project. All calibration requirements were satisfied. Average response factors for all analytes were within method recommended response factors with the exception of Acetone, 2-Butanone and 2-Hexanone. However, percent recoveries for all target analytes were within 70-130% on all calibration points. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. VO67K15B - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. VO67K15L/VO67K15C were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample
No matrix QC sample was provided on this SDG.

Surrogate
Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS

Client : CDM SMITH
Project : VA SALT LAKE CITY

SDG NO. : 20K141
Instrument ID : 67

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	V067K15B	1	NA	11/16/2014:03	11/16/2014:03	RKC272	RJC459	V067K15	Method Blank
LCS1W	V067K15L	1	NA	11/16/2012:46	11/16/2012:46	RKC269	RJC459	V067K15	Lab Control Sample (LCS)
LCD1W	V067K15C	1	NA	11/16/2013:12	11/16/2013:12	RKC270	RJC459	V067K15	LCS Duplicate
TB56-GW111220	K141-02	1	NA	11/16/2014:29	11/16/2014:29	RKC273	RJC459	V067K15	Field Sample
EB49-GW111220	K141-03	1	NA	11/16/2014:54	11/16/2014:54	RKC274	RJC459	V067K15	Field Sample
MW37-GW111220-30	K141-01	1	NA	11/16/2015:20	11/16/2015:20	RKC275	RJC459	V067K15	Field Sample
MW37-GW111320-70	K141-04	1	NA	11/16/2015:45	11/16/2015:45	RKC276	RJC459	V067K15	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD SW5030B/B260C
VOLATILE ORGANICS BY GC/MS

Client : CDM SMITH	Date Collected: 11/12/20
Project : VA SALT LAKE CITY	Date Received: 11/14/20
Batch No. : 20K141	Date Extracted: 11/16/20 15:20
Sample ID: MW37-GW111220-30	Date Analyzed: 11/16/20 15:20
Lab Samp ID: K141-01	Dilution Factor: 1
Lab File ID: RKC275	Matrix : WATER
Ext Btch ID: V067K15	% Moisture : NA
Calib. Ref.: RJC459	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	1.0	0.10
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11
1,1,2-TRICHLOROETHANE	ND	1.0	0.10
1,1-DICHLOROETHANE	ND	1.0	0.10
1,1-DICHLOROETHENE	ND	1.0	0.10
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25
1,2-DICHLOROBENZENE	ND	1.0	0.10
1,2-DICHLOROETHANE	ND	1.0	0.10
1,2-DICHLOROPROPANE	ND	1.0	0.10
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.12
1,3-DICHLOROBENZENE	ND	1.0	0.11
1,4-DICHLOROBENZENE	ND	1.0	0.10
2-BUTANONE	ND	20	2.5
2-HEXANONE	ND	20	2.5
ACETONE	5.6J	20	2.5
BENZENE	ND	1.0	0.10
BROMOCHLOROMETHANE	ND	1.0	0.11
BROMODICHLOROMETHANE	ND	1.0	0.10
BROMOFORM	ND	1.0	0.15
BROMOMETHANE	ND	1.0	0.16
CARBON DISULFIDE	ND	1.0	0.25
CARBON TETRACHLORIDE	ND	1.0	0.10
CHLOROBENZENE	ND	1.0	0.10
CHLOROETHANE	ND	1.0	0.27
CHLOROFORM	1.7	1.0	0.10
CHLOROMETHANE	ND	1.0	0.15
CIS-1,2-DICHLOROETHYLENE	ND	1.0	0.10
DIBROMOCHLOROMETHANE	ND	1.0	0.10
DICHLORODIFLUOROMETHANE	ND	1.0	0.15
ETHYLBENZENE	ND	1.0	0.10
ISOPROPYLBENZENE	ND	1.0	0.10
M,P-XYLENE	ND	2.0	0.21
4-METHYL-2-PENTANONE	ND	20	2.5
METHYLENE CHLORIDE	ND	2.0	0.50
TERT-BUTYL METHYL ETHER	ND	1.0	0.13
O-XYLENE	ND	1.0	0.10
STYRENE	ND	1.0	0.25
TETRACHLOROETHENE	ND	1.0	0.15
TOLUENE	ND	1.0	0.10
TRANS-1,2-DCE	ND	1.0	0.10
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11
TCE	ND	1.0	0.10
TRICHLOROFLUOROMETHANE	ND	1.0	0.15
VINYL CHLORIDE	ND	1.0	0.12
1,2-DIBROMOETHANE	ND	1.0	0.10
VINYL ACETATE	ND	2.0	0.25
TRICHLOROTRIFLUOROETHANE	ND	1.0	0.15
METHYL ACETATE	ND	2.0	0.25

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.99	10.00	99.9	70-130
BROMOFLUOROBENZENE	9.6B	10.00	96.B	70-130
TOLUENE-D8	9.73	10.00	97.3	70-130
DIBROMOFLUOROMETHANE	10.1	10.00	101	70-130

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC275.D Vial: 9
Acq On : 16 Nov 2020 3:20 pm Operator: VLu
Sample : 20K141-01 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:09 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

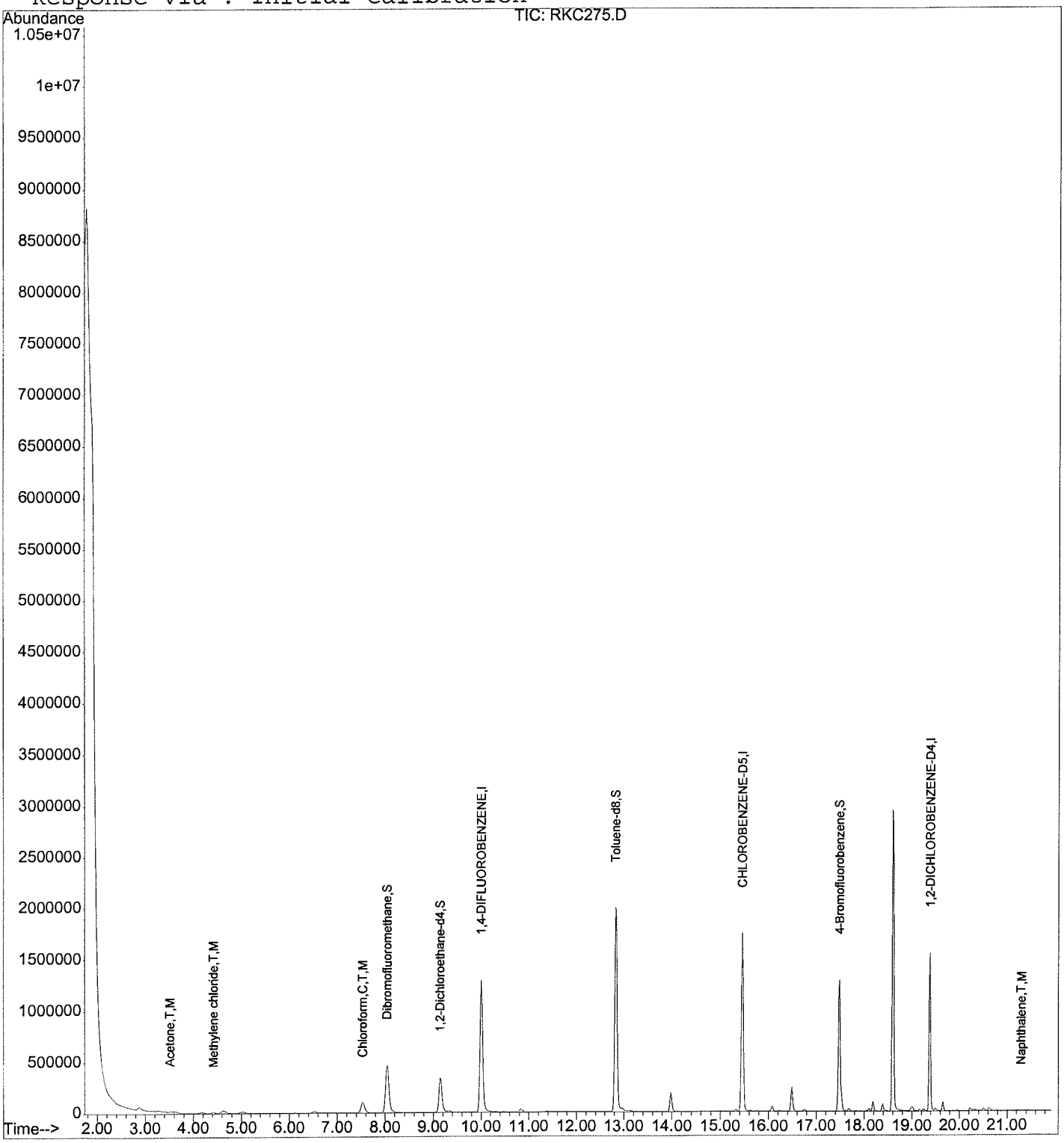
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2340059	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1769078	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	557734	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	772442	10.11	ug/l	0.02
Spiked Amount 10.000			Recovery =	101.10%		
43) 1,2-Dichloroethane-d4	9.14	65	488515	9.99	ug/l	0.00
Spiked Amount 10.000			Recovery =	99.90%		
56) Toluene-d8	12.82	98	2627870	9.73	ug/l	0.00
Spiked Amount 10.000			Recovery =	97.30%		
77) 4-Bromofluorobenzene	17.48	95	733773	9.68	ug/l	0.02
Spiked Amount 10.000			Recovery =	96.80%		
Target Compounds						Qvalue
13) Acetone	3.52	43	40629	5.63	ug/l	57
19) Methylene chloride	4.42	49	10266	0.10	ug/l	94
32) Chloroform	7.53	83	251390	1.68	ug/l	97
96) Naphthalene	21.29	128	7199	0.13	ug/l	92

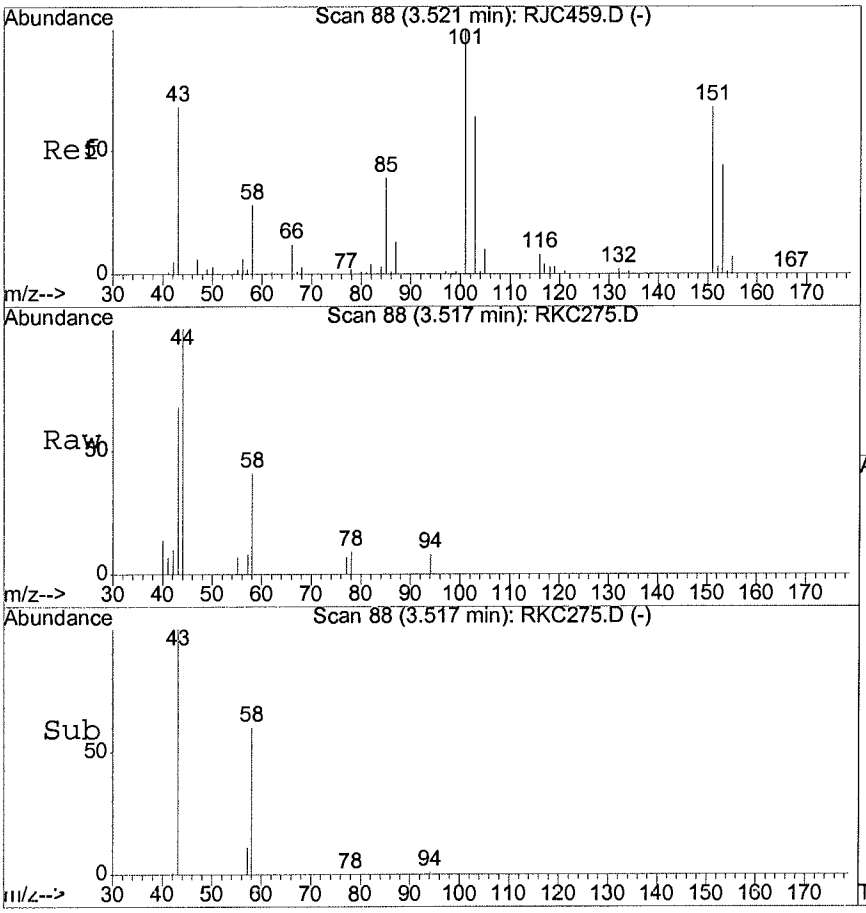
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC275.D Vial: 9
Acq On : 16 Nov 2020 3:20 pm Operator: VLu
Sample : 20K141-01 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:09 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration

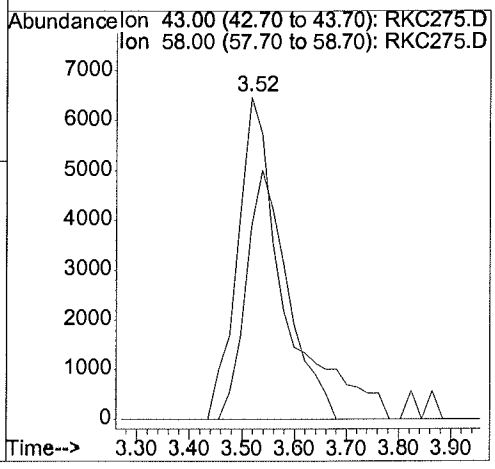


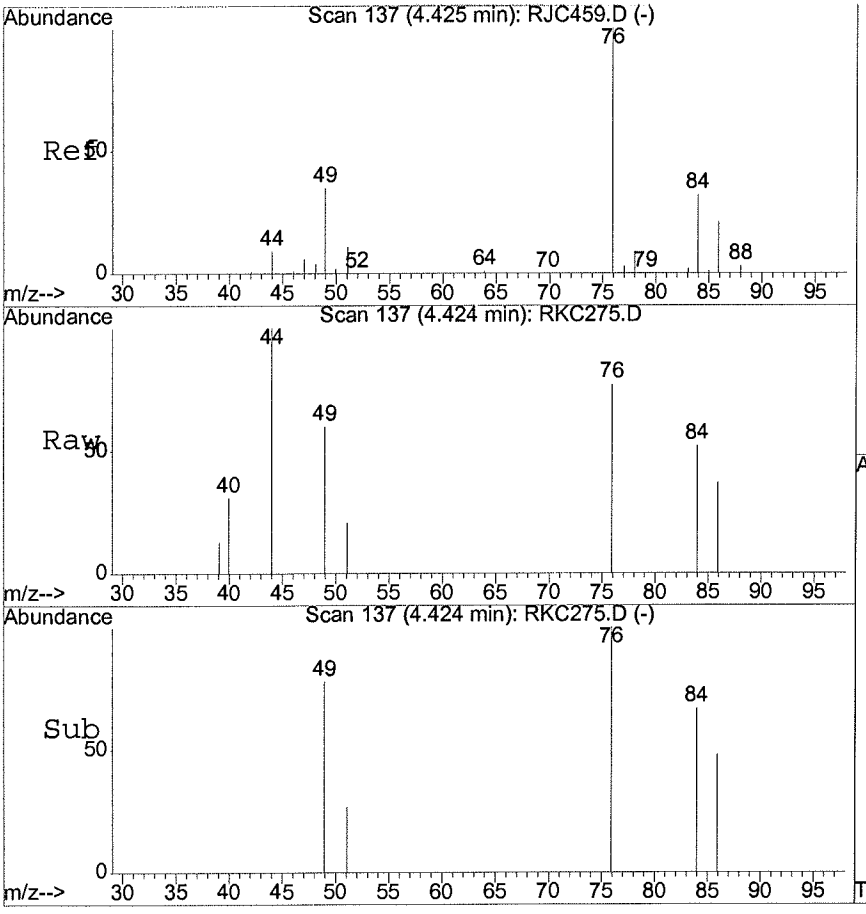


#13
Acetone
Concen: 5.63 ug/l
RT: 3.52 min Scan# 88
Delta R.T. -0.00 min
Lab File: RKC275.D
Acq: 16 Nov 2020 3:20 pm

Tgt Ion: 43 Resp: 40629

Ion	Ratio	Lower	Upper
43	100		
58	69.2	12.2	72.2

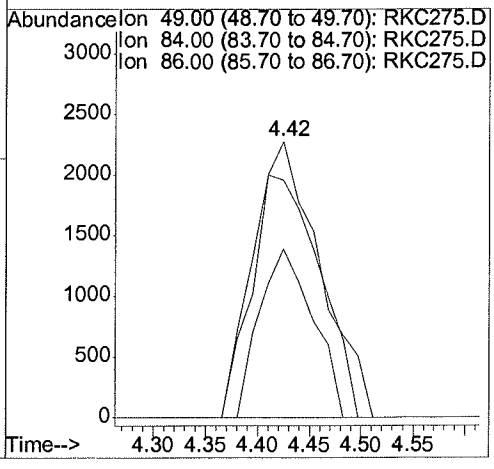


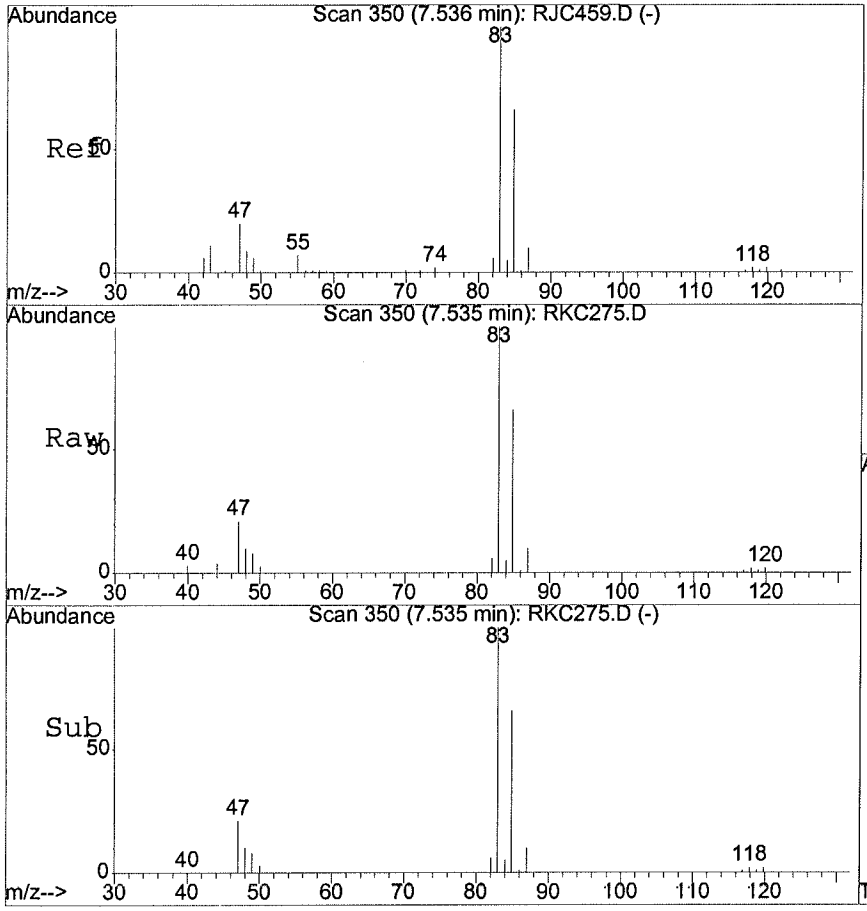


#19
Methylene chloride
Concen: 0.10 ug/l
RT: 4.42 min Scan# 137
Delta R.T. -0.00 min
Lab File: RKC275.D
Acq: 16 Nov 2020 3:20 pm

Tgt Ion: 49 Resp: 10266

Ion	Ratio	Lower	Upper
49	100		
84	88.6	60.1	120.1
86	48.8	27.5	87.5

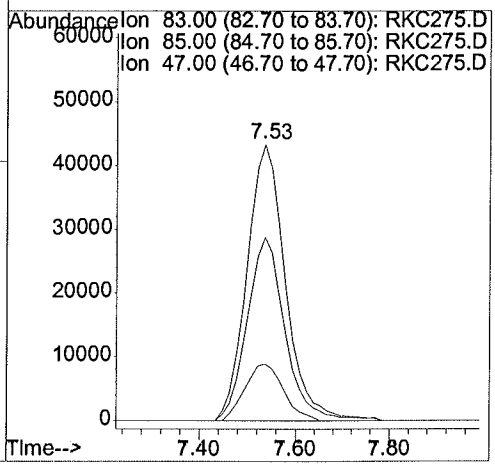


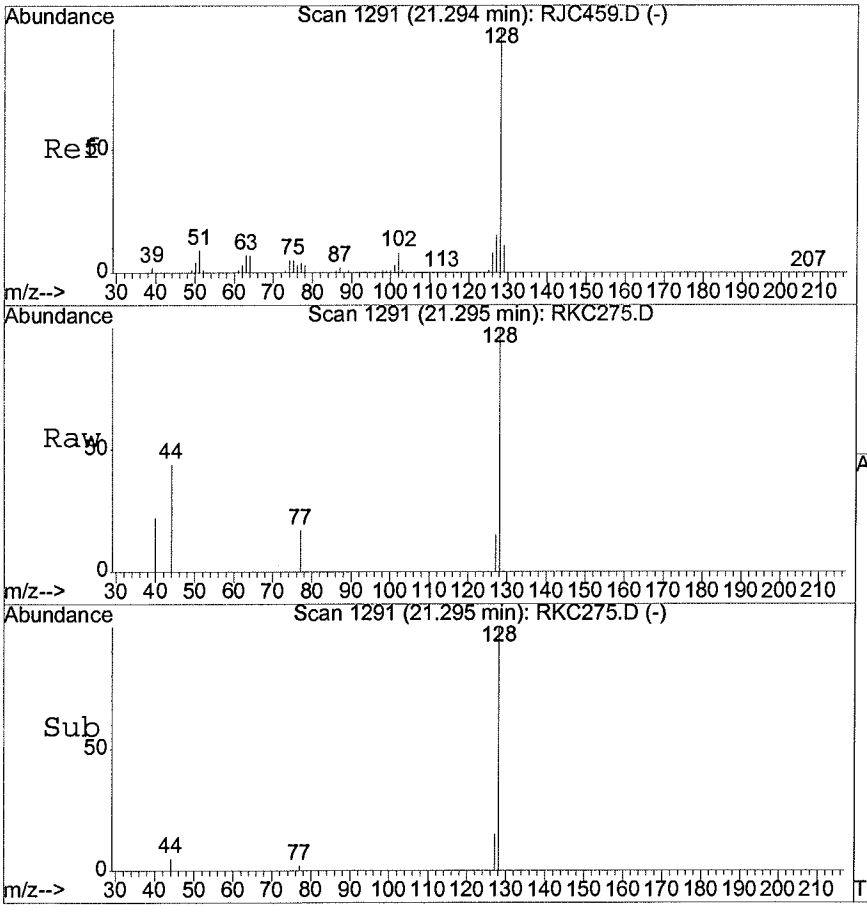


#32
Chloroform
Concen: 1.68 ug/l
RT: 7.53 min Scan# 350
Delta R.T. -0.00 min
Lab File: RKC275.D
Acq: 16 Nov 2020 3:20 pm

Tgt Ion: 83 Resp: 251390

Ion	Ratio	Lower	Upper
83	100		
85	65.2	37.8	97.8
47	19.6	0.0	50.5

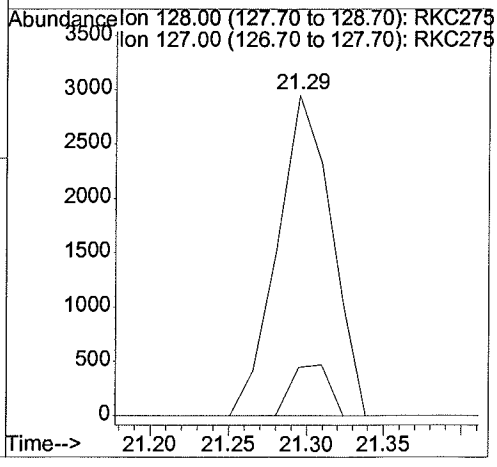




#96
Naphthalene
Concen: 0.13 ug/l
RT: 21.29 min Scan# 1291
Delta R.T. 0.00 min
Lab File: RKC275.D
Acq: 16 Nov 2020 3:20 pm

Tgt Ion:128 Resp: 7199

Ion	Ratio	Lower	Upper
128	100		
127	11.2	0.0	44.4



METHOD SW5030B/B260C
VOLATILE ORGANICS BY GC/MS

Client	: CDM SMITH	Date Collected:	11/12/20
Project	: VA SALT LAKE CITY	Date Received:	11/14/20
Batch No.	: 20K141	Date Extracted:	11/16/20 14:29
Sample ID:	TB56-GW111220	Date Analyzed:	11/16/20 14:29
Lab Samp ID:	K141-02	Dilution Factor:	1
Lab File ID:	RKC273	Matrix	: WATER
Ext Btch ID:	VO67K15	% Moisture	: NA
Calib. Ref.:	RJC459	Instrument ID	: 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	1.0	0.10
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11
1,1,2-TRICHLOROETHANE	ND	1.0	0.10
1,1-DICHLOROETHANE	ND	1.0	0.10
1,1-DICHLOROETHENE	ND	1.0	0.10
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25
1,2-DICHLOROBENZENE	ND	1.0	0.10
1,2-DICHLOROETHANE	ND	1.0	0.10
1,2-DICHLOROPROPANE	ND	1.0	0.10
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.12
1,3-DICHLOROBENZENE	ND	1.0	0.11
1,4-DICHLOROBENZENE	ND	1.0	0.10
2-BUTANONE	ND	20	2.5
2-HEXANONE	ND	20	2.5
ACETONE	3.3J	20	2.5
BENZENE	ND	1.0	0.10
BROMOCHLOROMETHANE	ND	1.0	0.11
BROMODICHLOROMETHANE	0.23J	1.0	0.10
BROMOFORM	0.17J	1.0	0.15
BROMOMETHANE	ND	1.0	0.16
CARBON DISULFIDE	ND	1.0	0.25
CARBON TETRACHLORIDE	ND	1.0	0.10
CHLOROBENZENE	ND	1.0	0.10
CHLOROETHANE	ND	1.0	0.27
CHLOROFORM	0.10J	1.0	0.10
CHLOROMETHANE	ND	1.0	0.15
CIS-1,2-DICHLOROETHYLENE	ND	1.0	0.10
DIBROMOCHLOROMETHANE	0.38J	1.0	0.10
DICHLORODIFLUOROMETHANE	ND	1.0	0.15
ETHYLBENZENE	ND	1.0	0.10
ISOPROPYLBENZENE	ND	1.0	0.10
M,P-XYLENE	ND	2.0	0.21
4-METHYL-2-PENTANONE	ND	20	2.5
METHYLENE CHLORIDE	ND	2.0	0.50
TERT-BUTYL METHYL ETHER	ND	1.0	0.13
O-XYLENE	ND	1.0	0.10
STYRENE	ND	1.0	0.25
TETRACHLOROETHENE	ND	1.0	0.15
TOLUENE	ND	1.0	0.10
TRANS-1,2-DCE	ND	1.0	0.10
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11
TCE	ND	1.0	0.10
TRICHLOROFLUOROMETHANE	ND	1.0	0.15
VINYL CHLORIDE	ND	1.0	0.12
1,2-DIBROMOETHANE	ND	1.0	0.10
VINYL ACETATE	ND	2.0	0.25
TRICHLOROTRIFLUOROETHANE	ND	1.0	0.15
METHYL ACETATE	ND	2.0	0.25

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.75	10.00	97.5	70-130
BROMOFLUOROBENZENE	10.2	10.00	102	70-130
TOLUENE-DB	9.72	10.00	97.2	70-130
DIBROMOFLUOROMETHANE	10.1	10.00	101	70-130

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC273.D Vial: 7
Acq On : 16 Nov 2020 2:29 pm Operator: VLu
Sample : 20K141-02 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:06 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

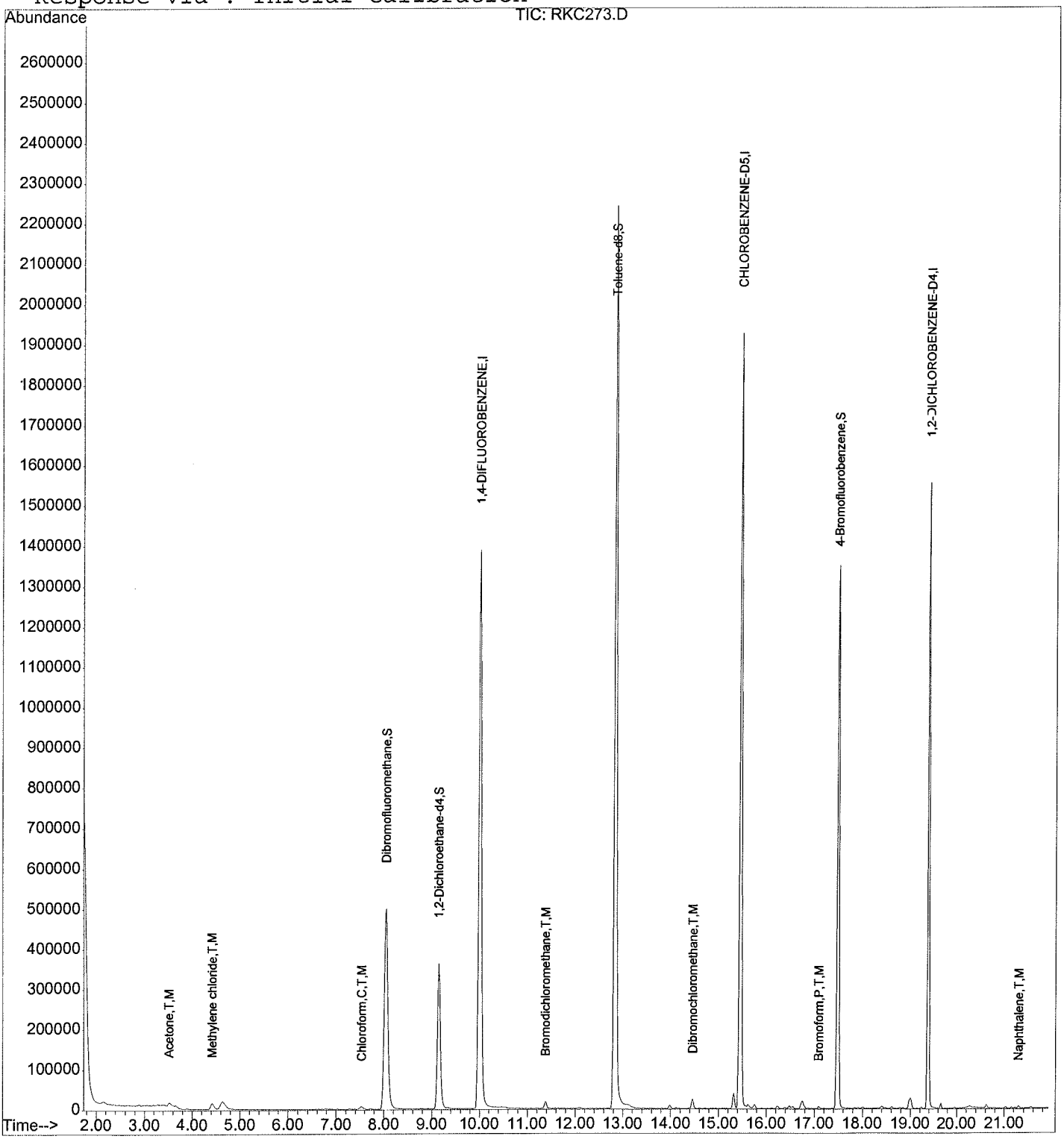
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2528704	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1924036	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	563240	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	832284	10.08	ug/l	0.02
Spiked Amount 10.000			Recovery = 100.80%			
43) 1,2-Dichloroethane-d4	9.14	65	515300	9.75	ug/l	0.00
Spiked Amount 10.000			Recovery = 97.50%			
56) Toluene-d8	12.82	98	2854760	9.72	ug/l	0.00
Spiked Amount 10.000			Recovery = 97.20%			
77) 4-Bromofluorobenzene	17.47	95	779475	10.18	ug/l	0.00
Spiked Amount 10.000			Recovery = 101.80%			
Target Compounds						Qvalue
13) Acetone	3.52	43	25701	3.30	ug/l	95
19) Methylene chloride	4.43	49	19748	0.18	ug/l	99
32) Chloroform	7.54	83	16281	0.10	ug/l	93
49) Bromodichloromethane	11.38	83	22907	0.23	ug/l	97
64) Dibromochloromethane	14.46	129	21341	0.38	ug/l	97
75) Bromoform	17.09	173	4354	0.17	ug/l	93
96) Naphthalene	21.29	128	9987	0.17	ug/l	98

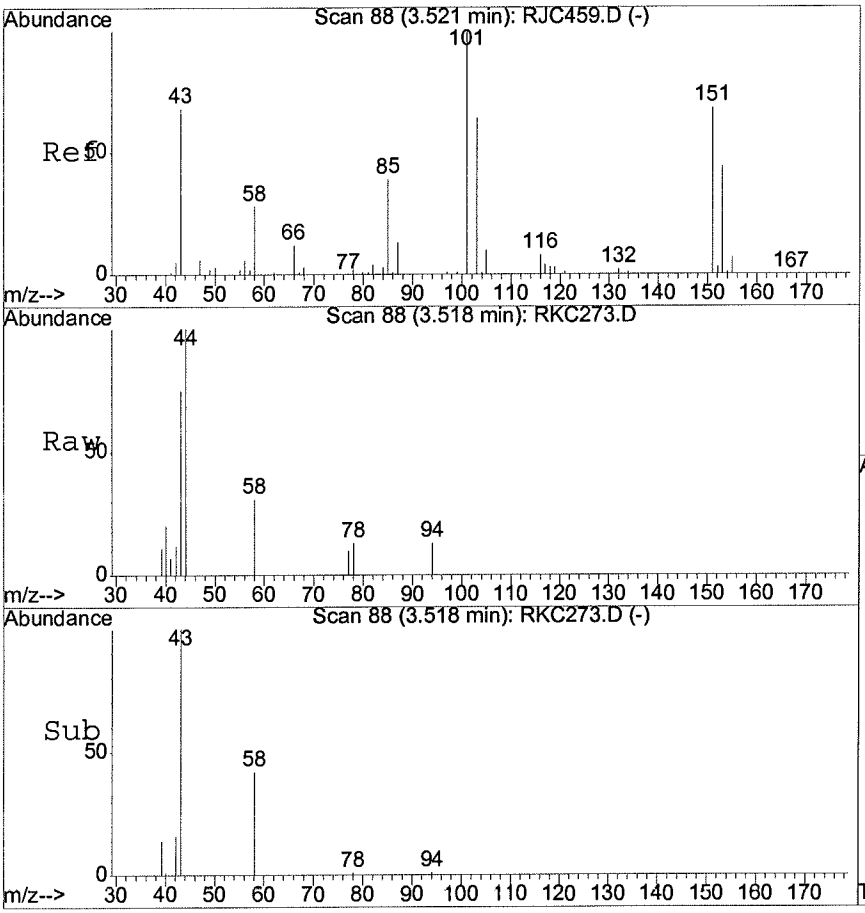
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC273.D Vial: 7
Acq On : 16 Nov 2020 2:29 pm Operator: VLu
Sample : 20K141-02 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:06 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration

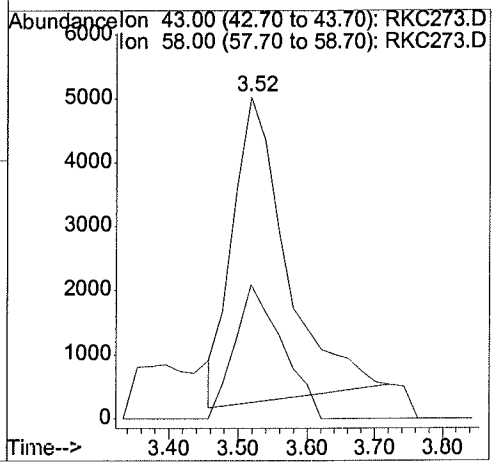


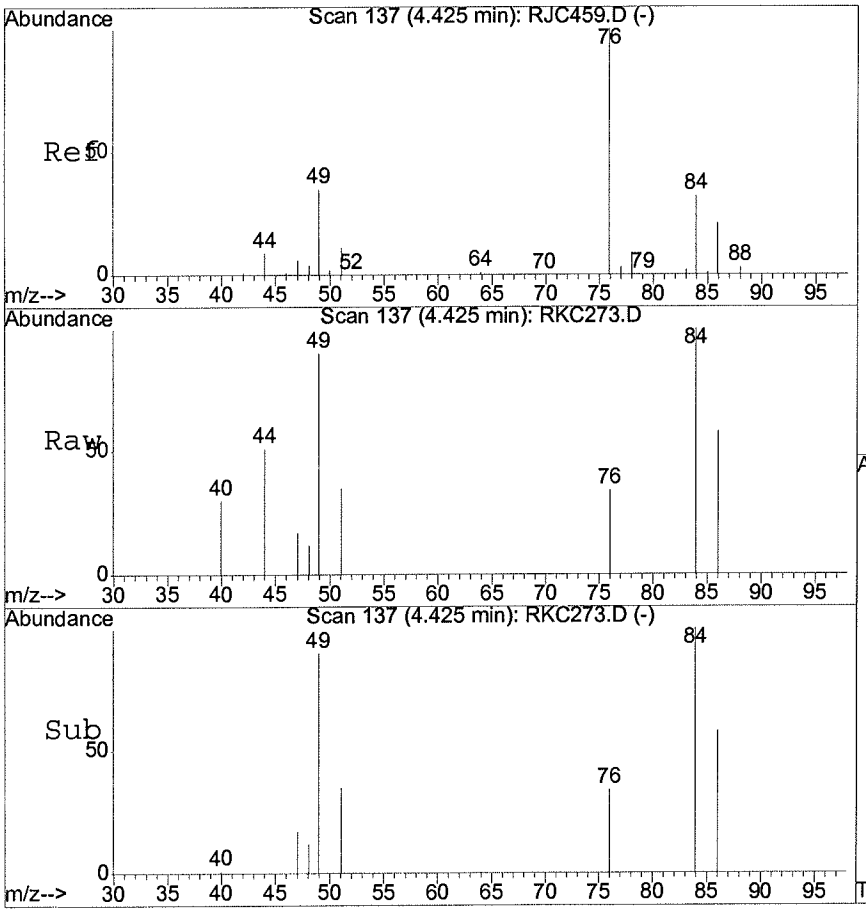


#13
Acetone
Concen: 3.30 ug/l
RT: 3.52 min Scan# 88
Delta R.T. -0.00 min
Lab File: RKC273.D
Acq: 16 Nov 2020 2:29 pm

Tgt Ion: 43 Resp: 25701

Ion	Ratio	Lower	Upper
43	100		
58	39.0	12.2	72.2

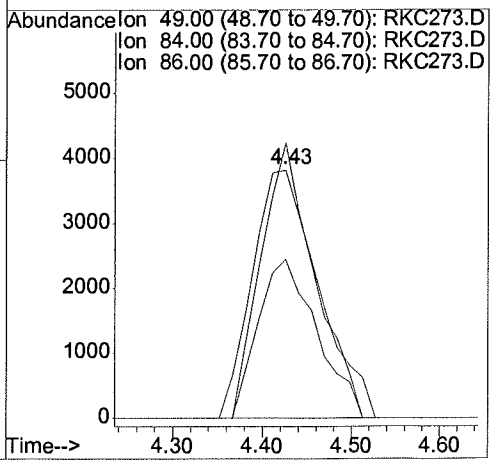


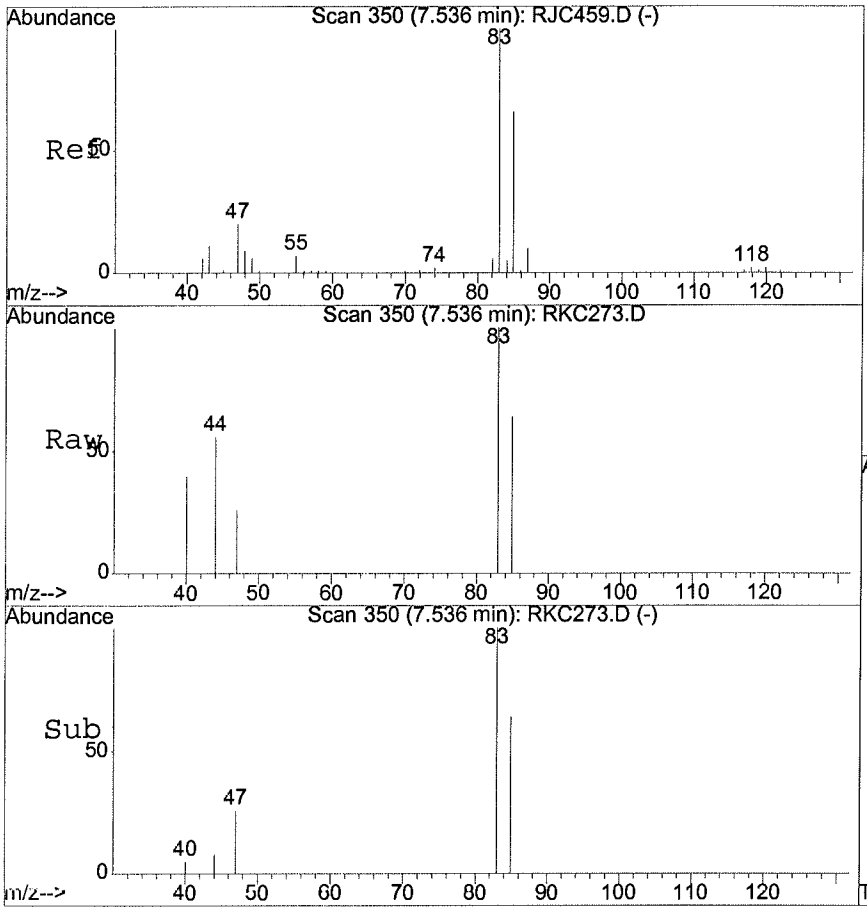


#19
Methylene chloride
Concen: 0.18 ug/l
RT: 4.43 min Scan# 137
Delta R.T. 0.00 min
Lab File: RKC273.D
Acq: 16 Nov 2020 2:29 pm

Tgt Ion: 49 Resp: 19748

Ion	Ratio	Lower	Upper
49	100		
84	89.8	60.1	120.1
86	56.6	27.5	87.5

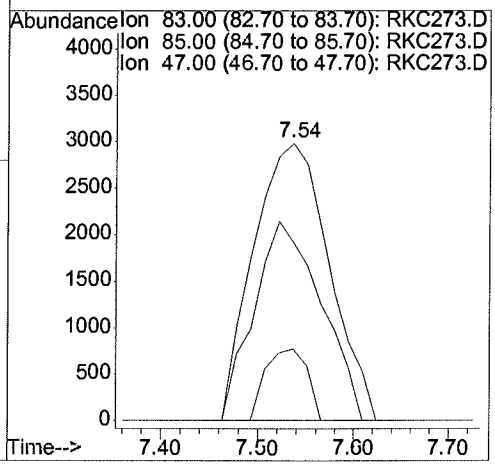


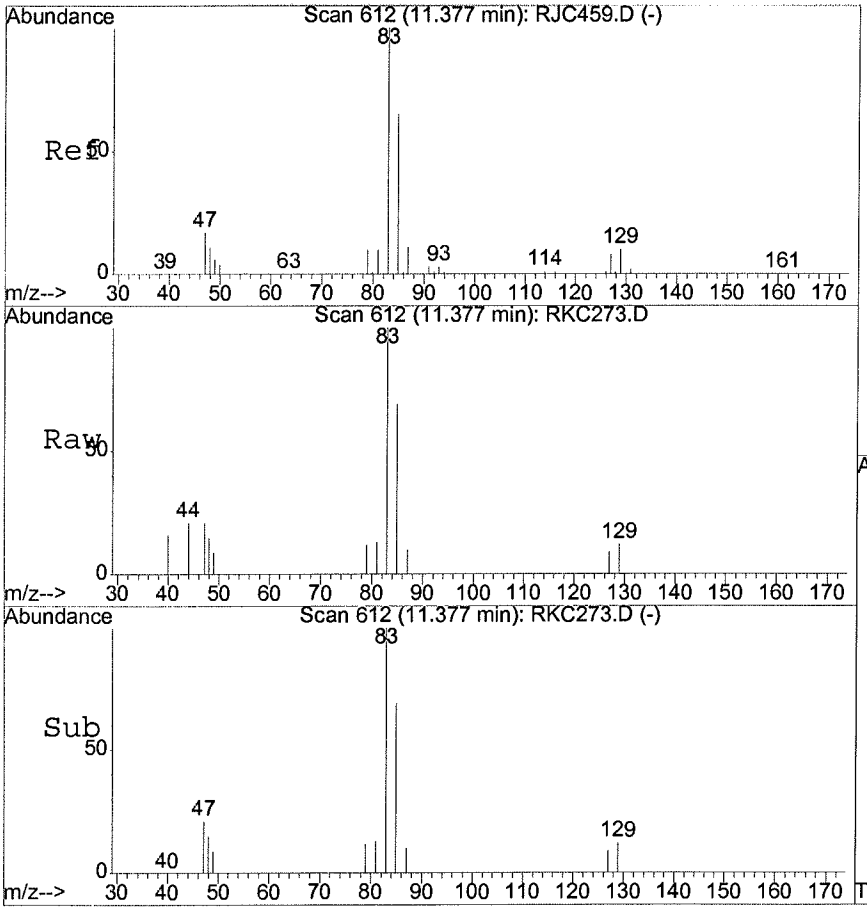


#32
Chloroform
Concen: 0.10 ug/l
RT: 7.54 min Scan# 350
Delta R.T. 0.00 min
Lab File: RKC273.D
Acq: 16 Nov 2020 2:29 pm

Tgt Ion: 83 Resp: 16281

Ion	Ratio	Lower	Upper
83	100		
85	64.2	37.8	97.8
47	14.3	0.0	50.5

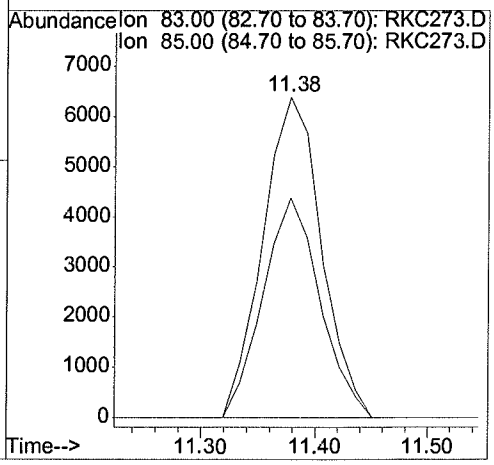


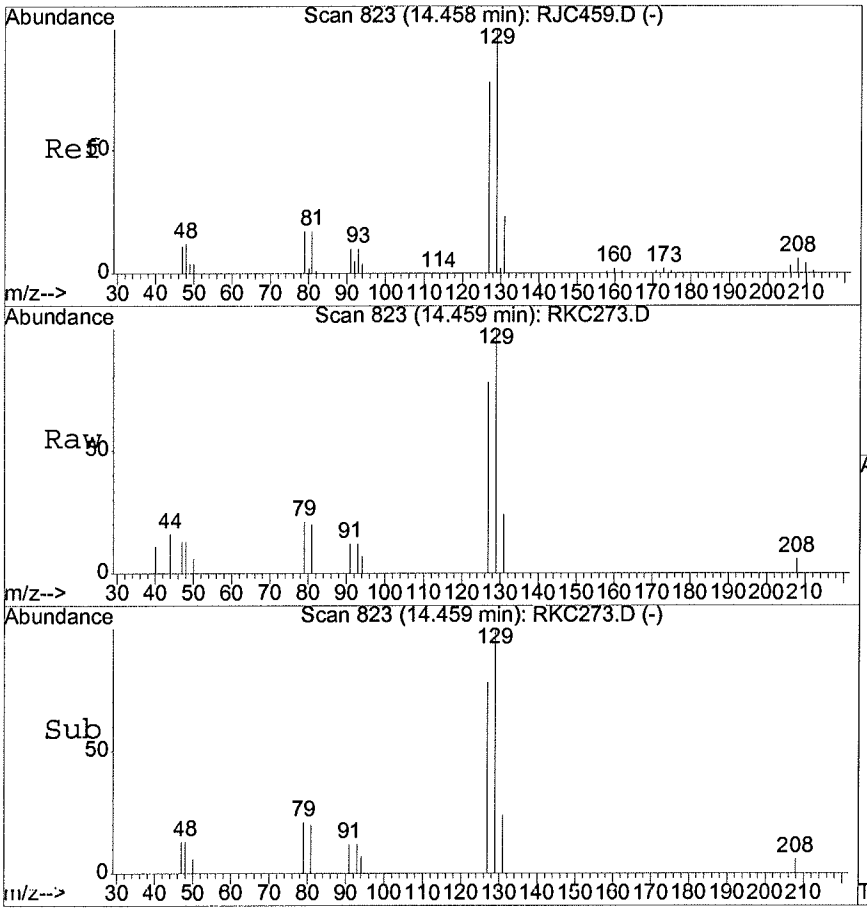


#49
Bromodichloromethane
Concen: 0.23 ug/l
RT: 11.38 min Scan# 612
Delta R.T. 0.00 min
Lab File: RKC273.D
Acq: 16 Nov 2020 2:29 pm

Tgt Ion: 83 Resp: 22907

Ion	Ratio	Lower	Upper
83	100		
85	66.6	34.3	94.3

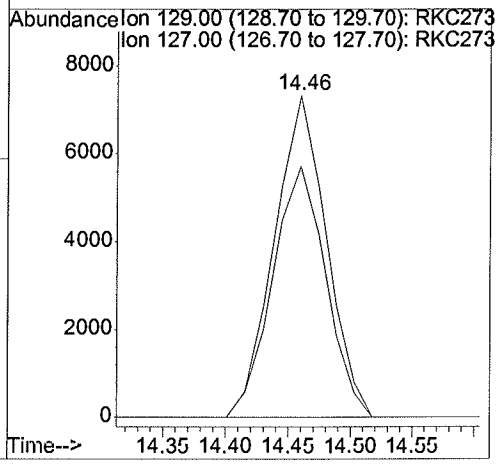


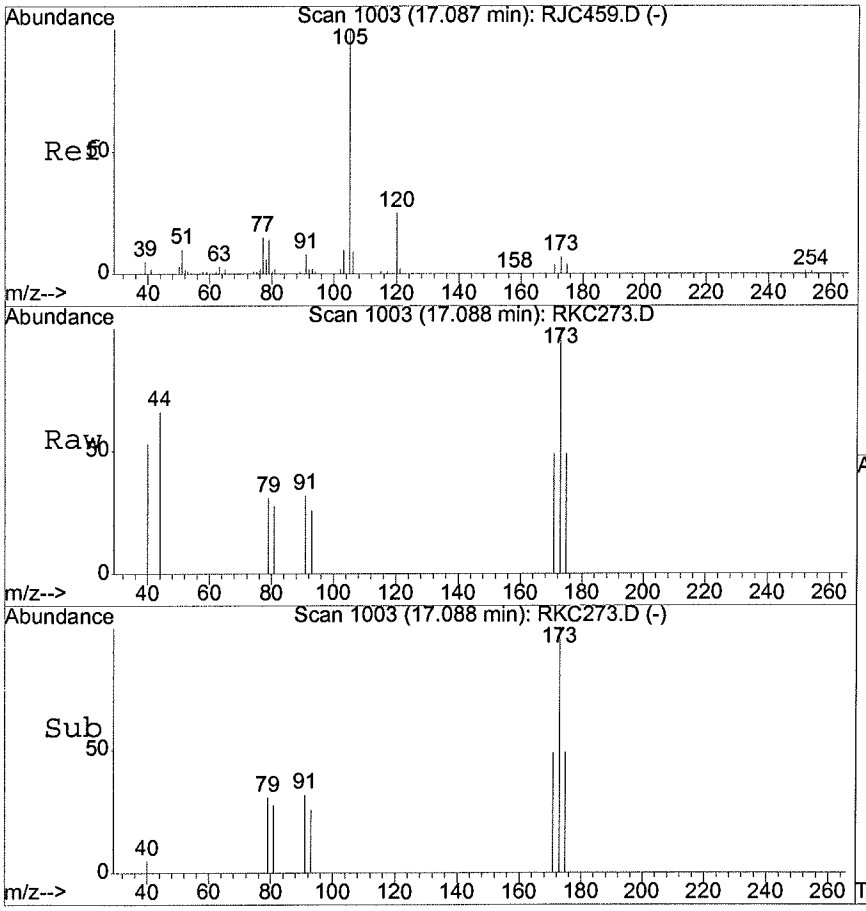


#64
Dibromochloromethane
Concen: 0.38 ug/l
RT: 14.46 min Scan# 823
Delta R.T. 0.00 min
Lab File: RKC273.D
Acq: 16 Nov 2020 2:29 pm

Tgt Ion:129 Resp: 21341

Ion	Ratio	Lower	Upper
129	100		
127	79.8	47.4	107.4

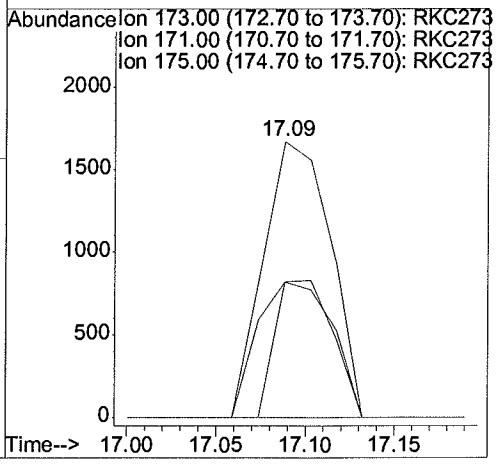


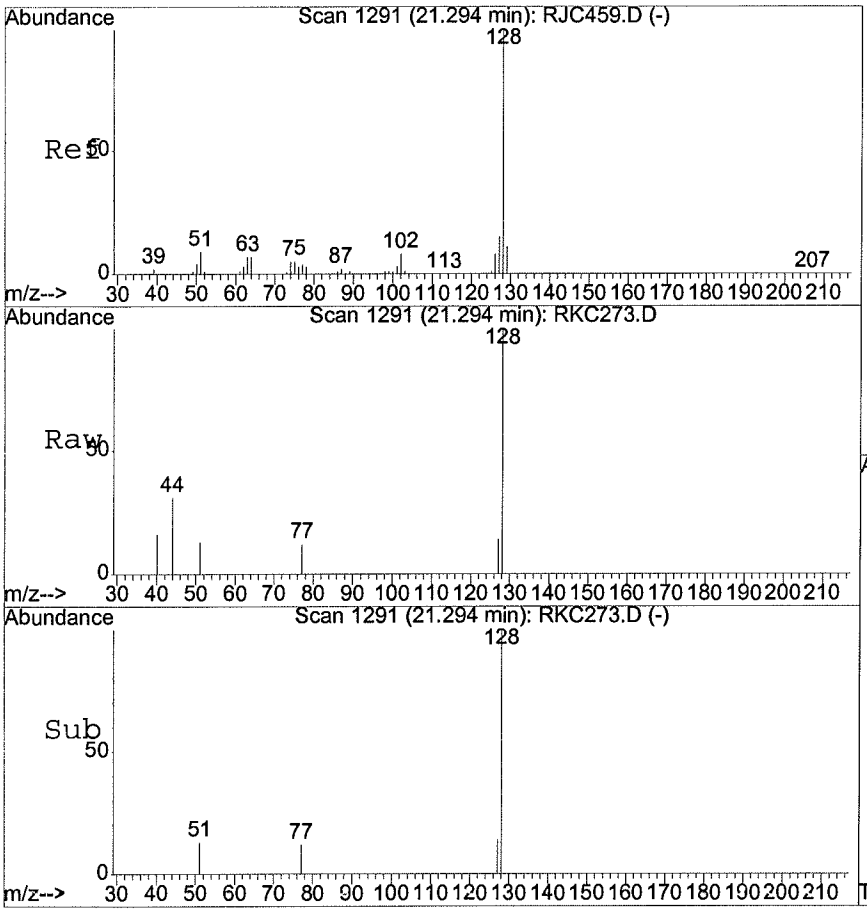


#75
Bromoform
Concen: 0.17 ug/l
RT: 17.09 min Scan# 1003
Delta R.T. 0.00 min
Lab File: RKC273.D
Acq: 16 Nov 2020 2:29 pm

Tgt Ion:173 Resp: 4354

Ion	Ratio	Lower	Upper
173	100		
171	54.5	21.3	81.3
175	42.7	18.8	78.8

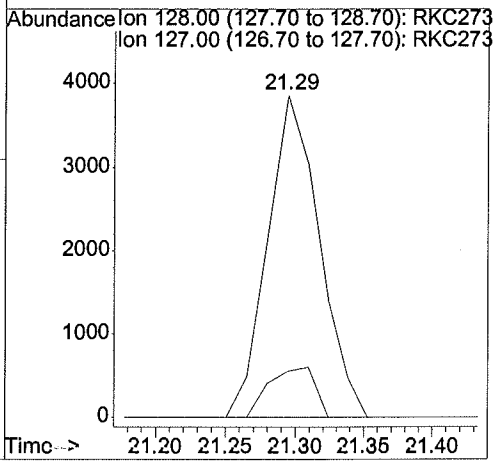




#96
Naphthalene
Concen: 0.17 ug/l
RT: 21.29 min Scan# 1291
Delta R.T. 0.00 min
Lab File: RKC273.D
Acq: 16 Nov 2020 2:29 pm

Tgt Ion:128 Resp: 9987

Ion	Ratio	Lower	Upper
128	100		
127	13.7	0.0	44.4



METHDD SW5030B/B260C
VDLATILE DRGANICS BY GC/MS

Client : CDM SMITH	Date Collected: 11/12/20
Project : VA SALT LAKE CITY	Date Received: 11/14/20
Batch No. : 20K141	Date Extracted: 11/16/20 14:54
Sample ID: EB49-GW111220	Date Analyzed: 11/16/20 14:54
Lab Samp ID: K141-03	Dilution Factor: 1
Lab File ID: RKC274	Matrix : WATER
Ext Btch ID: VD67K15	% Moisture : NA
Calib. Ref.: RJC459	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	1.0	0.10
1,1,2,2-TETRACHLDRDETHANE	ND	1.0	0.11
1,1,2-TRICHLDRDETHANE	ND	1.0	0.10
1,1-DICHLDRDETHANE	ND	1.0	0.10
1,1-DICHLOROETHENE	ND	1.0	0.10
1,2,3-TRICHLDRDBENZENE	ND	1.0	0.15
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11
1,2-DIBROMD-3-CHLOROPROPANE	ND	2.0	0.25
1,2-DICHLOROBENZENE	ND	1.0	0.10
1,2-DICHLOROETHANE	ND	1.0	0.10
1,2-DICHLDROPROPANE	ND	1.0	0.10
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.12
1,3-DICHLDRDBENZENE	ND	1.0	0.11
1,4-DICHLORDBENZENE	ND	1.0	0.10
2-BUTANONE	ND	20	2.5
2-HEXANONE	ND	20	2.5
ACETDNE	3.7J	20	2.5
BENZENE	ND	1.0	0.10
BROMOCHLDROMETHANE	ND	1.0	0.11
BROMDDICHLOROMETHANE	ND	1.0	0.10
BROMOFORM	ND	1.0	0.15
BROMOMETHANE	ND	1.0	0.16
CARBON DISULFIDE	ND	1.0	0.25
CARBON TETRACHLORIDE	ND	1.0	0.10
CHLDRDBENZENE	ND	1.0	0.10
CHLOROETHANE	ND	1.0	0.27
CHLORDFORM	ND	1.0	0.10
CHLOROMETHANE	ND	1.0	0.15
CIS-1,2-DICHLDROETHYLENE	ND	1.0	0.10
DIBROMOCHLDROMETHANE	ND	1.0	0.10
DICHLDRDDIFLUOROMETHANE	ND	1.0	0.15
ETHYLBENZENE	ND	1.0	0.10
ISOPROPYLBENZENE	ND	1.0	0.10
M,P-XYLENE	ND	2.0	0.21
4-METHYL-2-PENTANDNE	ND	20	2.5
METHYLENE CHLDRIDE	ND	2.0	0.50
TERT-BUTYL METHYL ETHER	ND	1.0	0.13
O-XYLENE	ND	1.0	0.10
STYRENE	ND	1.0	0.25
TETRACHLOROETHENE	ND	1.0	0.15
TOLUENE	ND	1.0	0.10
TRANS-1,2-DCE	ND	1.0	0.10
CIS-1,3-DICHLDRDPRDPENE	ND	1.0	0.10
TRANS-1,3-DICHLDRDPRDPENE	ND	1.0	0.11
TCE	ND	1.0	0.10
TRICHLDRDFLUOROMETHANE	ND	1.0	0.15
VINYL CHLORIDE	ND	1.0	0.12
1,2-DIBROMDETHANE	ND	1.0	0.10
VINYL ACETATE	ND	2.0	0.25
TRICHLORDTRIFLUORDETHANE	ND	1.0	0.15
METHYL ACETATE	ND	2.0	0.25

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECDVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.69	10.00	96.9	70-130
BROMOFLUORDBENZENE	10.2	10.00	102	70-130
TOLUENE-D8	9.73	10.00	97.3	70-130
DIBROMOFLUDROMETHANE	10.0	10.00	100	70-130

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC274.D Vial: 8
Acq On : 16 Nov 2020 2:54 pm Operator: VLu
Sample : 20K141-03 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:09 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

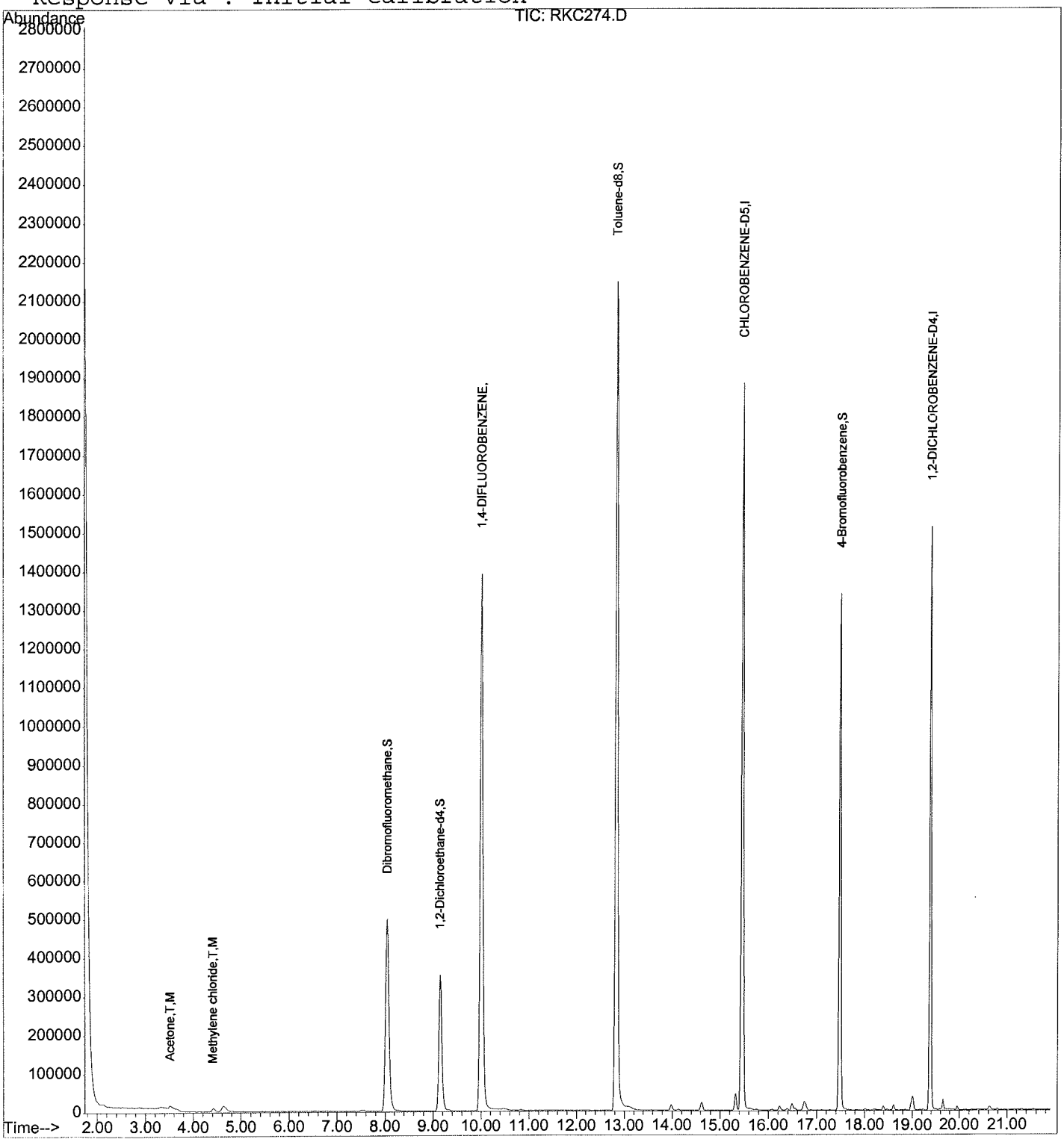
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2503499	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1885585	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	552814	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	821092	10.04	ug/l	0.02
Spiked Amount 10.000			Recovery = 100.40%			
43) 1,2-Dichloroethane-d4	9.14	65	506619	9.69	ug/l	0.00
Spiked Amount 10.000			Recovery = 96.90%			
56) Toluene-d8	12.82	98	2801131	9.73	ug/l	0.00
Spiked Amount 10.000			Recovery = 97.30%			
77) 4-Bromofluorobenzene	17.48	95	767463	10.21	ug/l	0.02
Spiked Amount 10.000			Recovery = 102.10%			
Target Compounds						Qvalue
13) Acetone	3.52	43	28243	3.66	ug/l	78
19) Methylene chloride	4.41	49	11396	0.10	ug/l	94

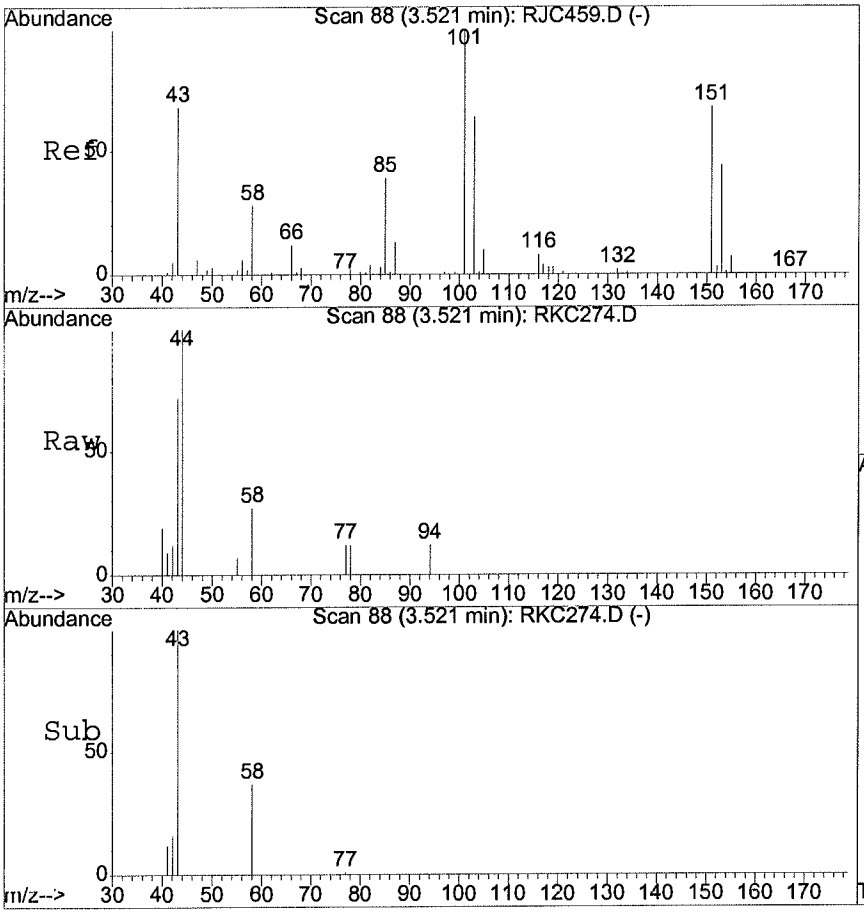
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC274.D Vial: 8
Acq On : 16 Nov 2020 2:54 pm Operator: VLu
Sample : 20K141-03 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:09 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration

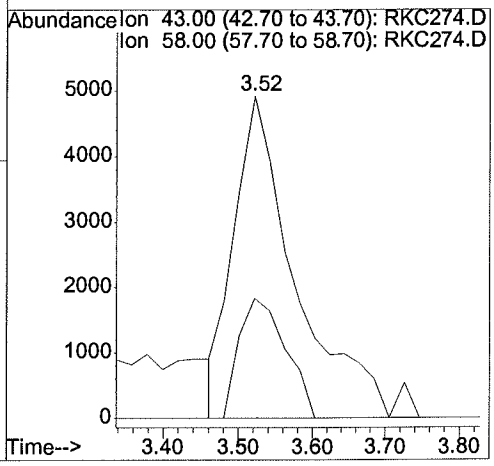


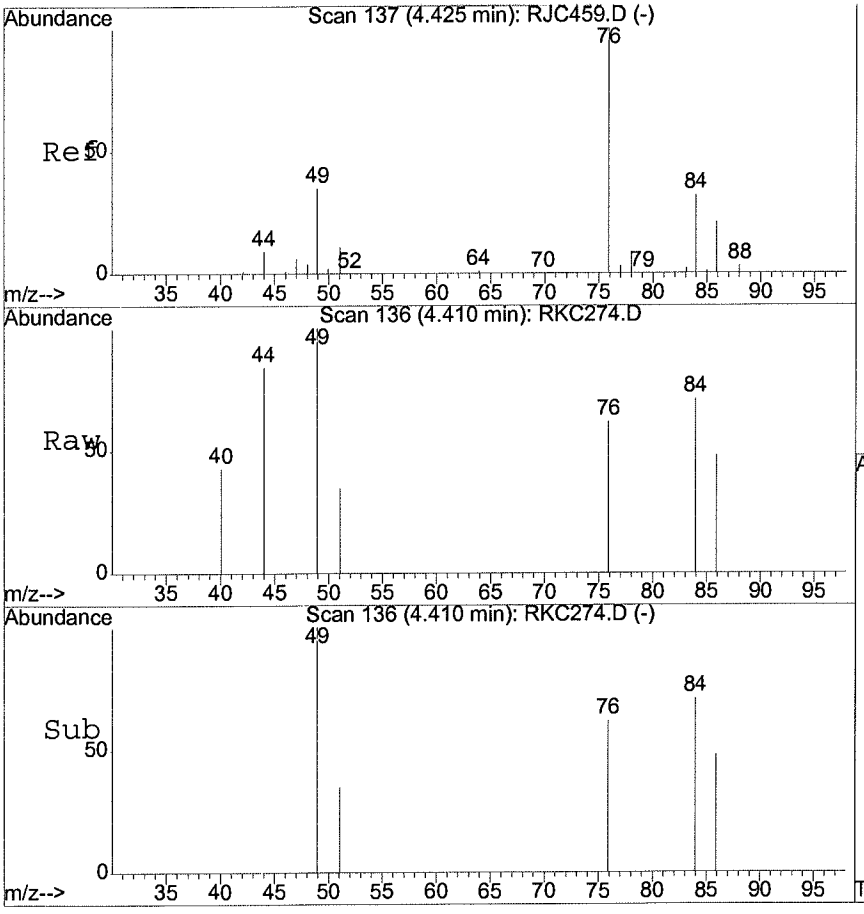


#13
Acetone
Concen: 3.66 ug/l
RT: 3.52 min Scan# 88
Delta R.T. 0.00 min
Lab File: RKC274.D
Acq: 16 Nov 2020 2:54 pm

Tgt Ion: 43 Resp: 28243

Ion	Ratio	Lower	Upper
43	100		
58	28.4	12.2	72.2

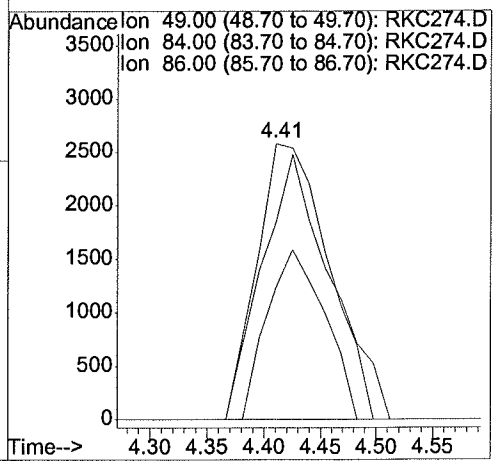




#19
Methylene chloride
Concen: 0.10 ug/l
RT: 4.41 min Scan# 136
Delta R.T. -0.01 min
Lab File: RKC274.D
Acq: 16 Nov 2020 2:54 pm

Tgt Ion: 49 Resp: 11396

Ion	Ratio	Lower	Upper
49	100		
84	92.9	60.1	120.1
86	50.0	27.5	87.5



METHOD SW5030B/8260C
VOLATILE ORGANICS BY GC/MS

Client : CDM SMITH	Date Collected: 11/13/20
Project : VA SALT LAKE CITY	Date Received: 11/14/20
Batch No. : 20K141	Date Extracted: 11/16/20 15:45
Sample ID: MW37-GW111320-70	Date Analyzed: 11/16/20 15:45
Lab Samp ID: K141-04	Dilution Factor: 1
Lab File ID: RKC276	Matrix : WATER
Ext Btch ID: V067K15	% Moisture : NA
Calib. Ref.: RJC459	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	1.0	0.10
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11
1,1,2-TRICHLOROETHANE	ND	1.0	0.10
1,1-DICHLOROETHANE	ND	1.0	0.10
1,1-DICHLOROETHENE	ND	1.0	0.10
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25
1,2-DICHLOROBENZENE	ND	1.0	0.10
1,2-DICHLOROETHANE	ND	1.0	0.10
1,2-DICHLOROPROPANE	ND	1.0	0.10
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.12
1,3-DICHLOROBENZENE	ND	1.0	0.11
1,4-DICHLOROBENZENE	ND	1.0	0.10
2-BUTANONE	ND	20	2.5
2-HEXANONE	ND	20	2.5
ACETONE	8.7J	20	2.5
BENZENE	0.21J	1.0	0.10
BROMOCHLOROMETHANE	ND	1.0	0.11
BROMODICHLOROMETHANE	ND	1.0	0.10
BROMOFORM	ND	1.0	0.15
BROMOMETHANE	ND	1.0	0.16
CARBON DISULFIDE	ND	1.0	0.25
CARBON TETRACHLORIDE	ND	1.0	0.10
CHLOROBENZENE	ND	1.0	0.10
CHLOROETHANE	ND	1.0	0.27
CHLOROFORM	0.52J	1.0	0.10
CHLOROMETHANE	0.33J	1.0	0.15
CIS-1,2-DICHLOROETHYLENE	ND	1.0	0.10
DIBROMOCHLOROMETHANE	ND	1.0	0.10
DICHLORODIFLUOROMETHANE	ND	1.0	0.15
ETHYLBENZENE	ND	1.0	0.10
ISOPROPYLBENZENE	ND	1.0	0.10
M,P-XYLENE	ND	2.0	0.21
4-METHYL-2-PENTANONE	ND	20	2.5
METHYLENE CHLORIDE	ND	2.0	0.50
TERT-BUTYL METHYL ETHER	ND	1.0	0.13
O-XYLENE	ND	1.0	0.10
STYRENE	ND	1.0	0.25
TETRACHLOROETHENE	ND	1.0	0.15
TOLUENE	0.42J	1.0	0.10
TRANS-1,2-DCE	ND	1.0	0.10
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11
TCE	ND	1.0	0.10
TRICHLOROFLUOROMETHANE	ND	1.0	0.15
VINYL CHLORIDE	ND	1.0	0.12
1,2-DIBROMOETHANE	ND	1.0	0.10
VINYL ACETATE	ND	2.0	0.25
TRICHLOROTRIFLUOROETHANE	ND	1.0	0.15
METHYL ACETATE	ND	2.0	0.25

SURROGATE PARAMETERS	RESULTS	SPK AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.1	10.00	101	70-130
BROMOFLUOROBENZENE	9.70	10.00	97.0	70-130
TOLUENE-D8	9.63	10.00	96.3	70-130
DIBROMOFLUOROMETHANE	10.1	10.00	101	70-130

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC276.D Vial: 10
Acq On : 16 Nov 2020 3:45 pm Operator: VLu
Sample : 20K141-04 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:10 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

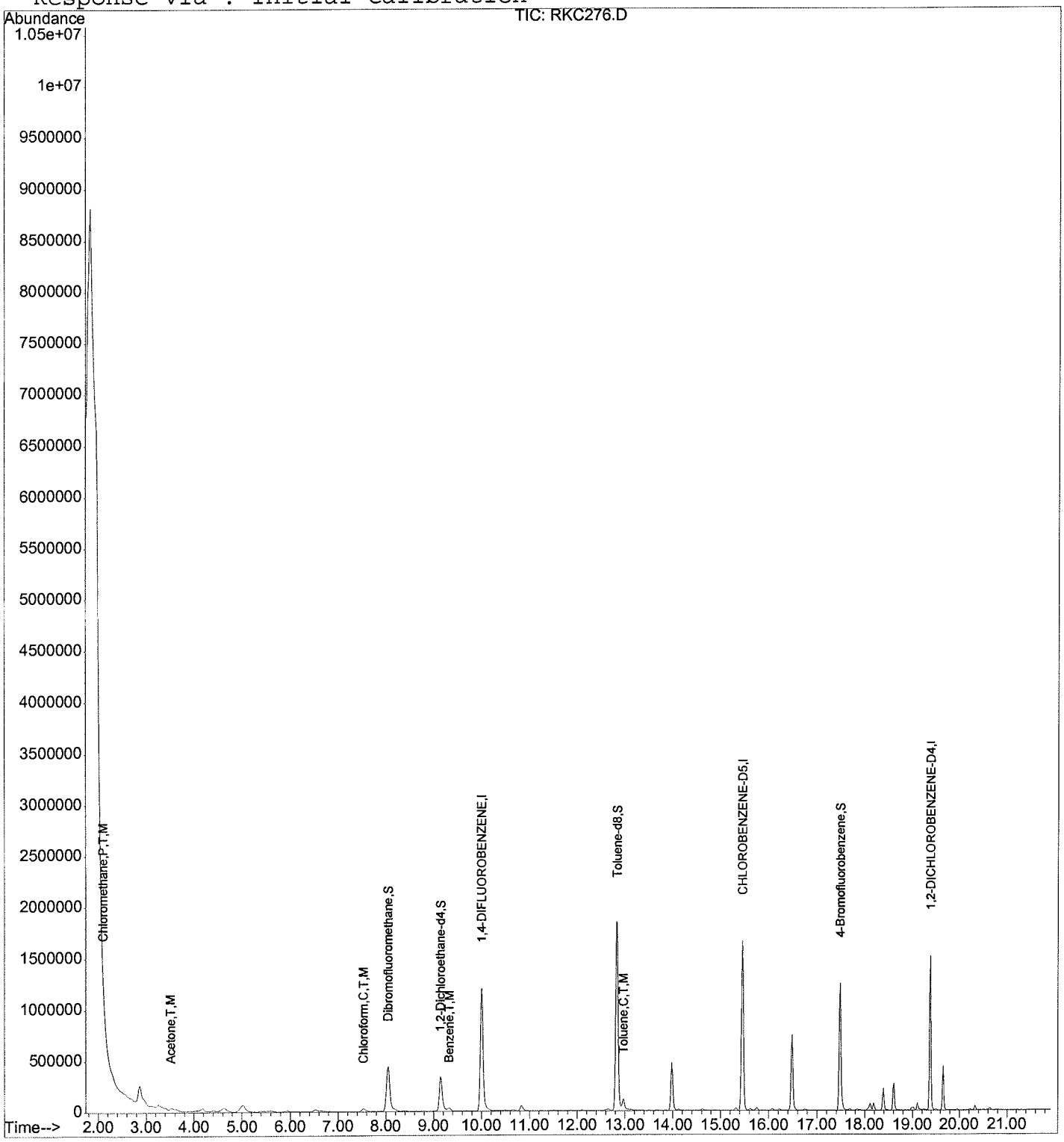
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2212184	10.00	ug/l		0.00
55) CHLOROBENZENE-D5	15.45	117	1686588	10.00	ug/l		0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	535275	10.00	ug/l		0.00
System Monitoring Compounds							
35) Dibromofluoromethane	8.05	111	730350	10.11	ug/l		0.01
Spiked Amount 10.000			Recovery	=	101.10%		
43) 1,2-Dichloroethane-d4	9.14	65	469024	10.15	ug/l		0.00
Spiked Amount 10.000			Recovery	=	101.50%		
56) Toluene-d8	12.84	98	2480243	9.63	ug/l		0.01
Spiked Amount 10.000			Recovery	=	96.30%		
77) 4-Bromofluorobenzene	17.48	95	705485	9.70	ug/l		0.01
Spiked Amount 10.000			Recovery	=	97.00%		
Target Compounds							Qvalue
4) Chloromethane	2.11	50	39192	0.33	ug/l		92
13) Acetone	3.52	43	59601	8.74	ug/l	#	15
32) Chloroform	7.54	83	73291	0.52	ug/l		91
45) Benzene	9.33	78	67648	0.21	ug/l		91
57) Toluene	12.97	91	139567	0.42	ug/l		100

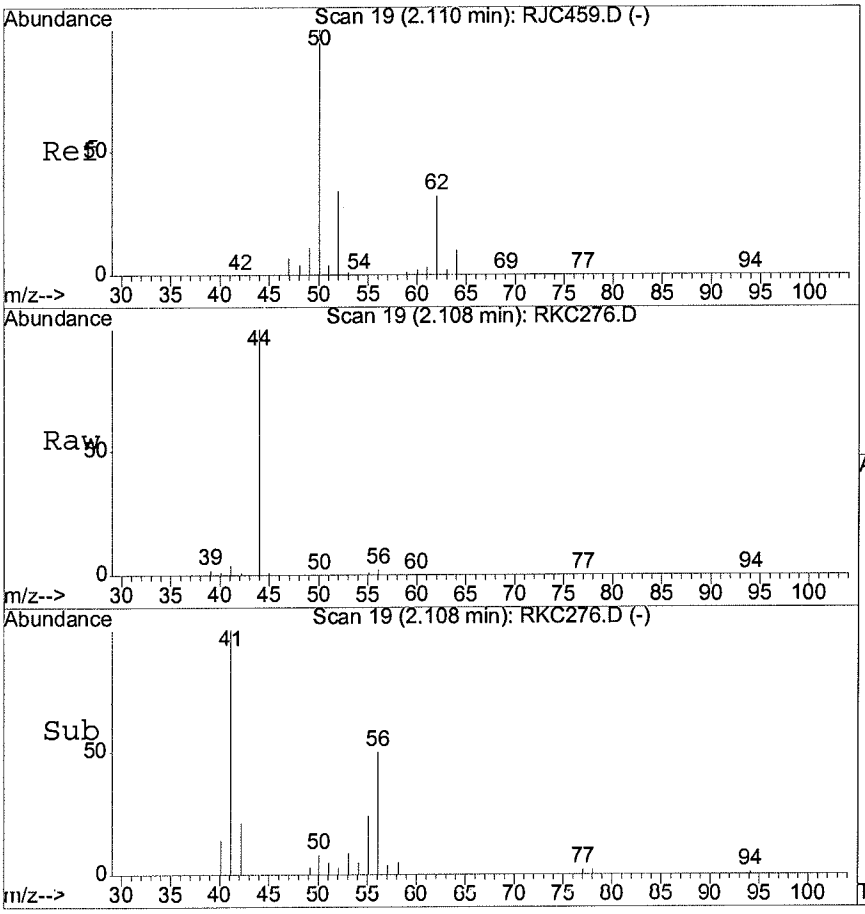
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC276.D Vial: 10
Acq On : 16 Nov 2020 3:45 pm Operator: VLu
Sample : 20K141-04 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:10 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration

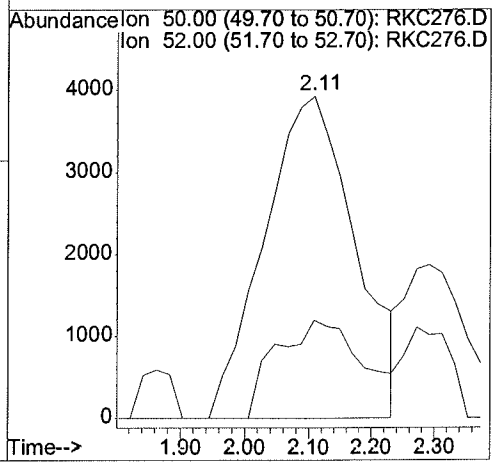


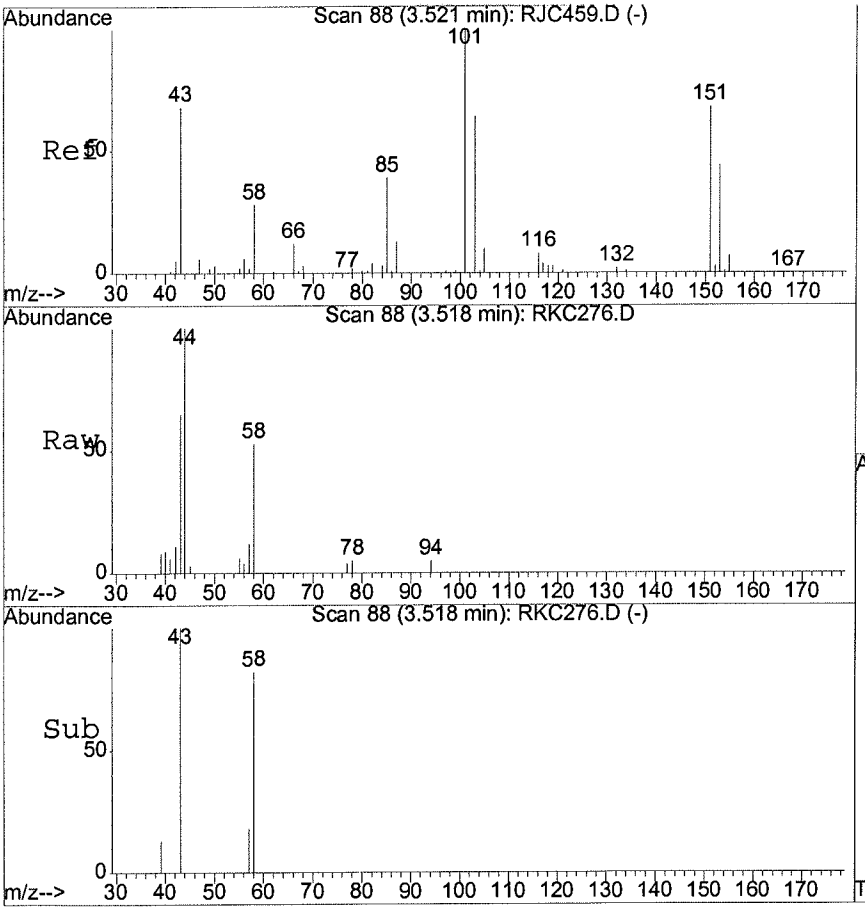


#4
Chloromethane
Concen: 0.33 ug/l
RT: 2.11 min Scan# 19
Delta R.T. -0.00 min
Lab File: RKC276.D
Acq: 16 Nov 2020 3:45 pm

Tgt Ion: 50 Resp: 39192

Ion	Ratio	Lower	Upper
50	100		
52	29.1	3.5	63.5

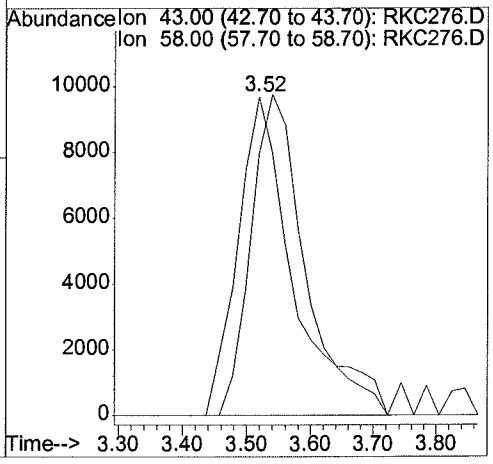


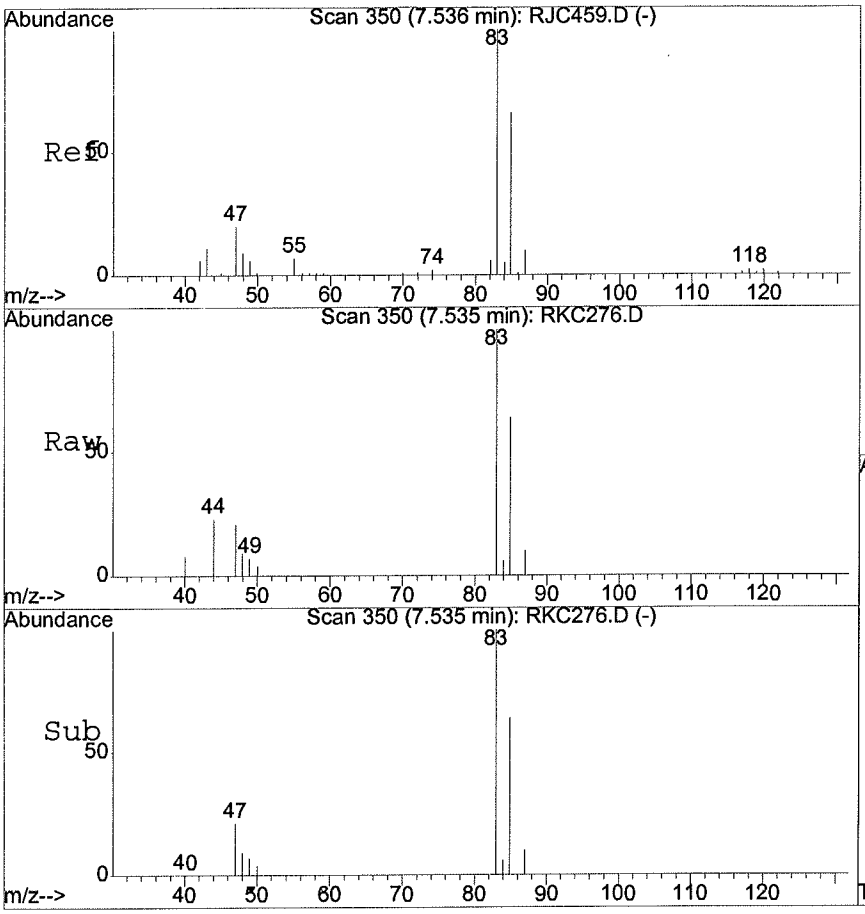


#13
Acetone
Concen: 8.74 ug/l
RT: 3.52 min Scan# 88
Delta R.T. -0.00 min
Lab File: RKC276.D
Acq: 16 Nov 2020 3:45 pm

Tgt Ion: 43 Resp: 59601

Ion	Ratio	Lower	Upper
43	100		
58	96.2	12.2	72.2#

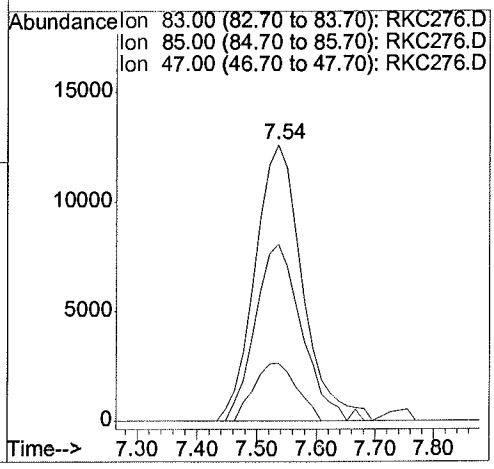


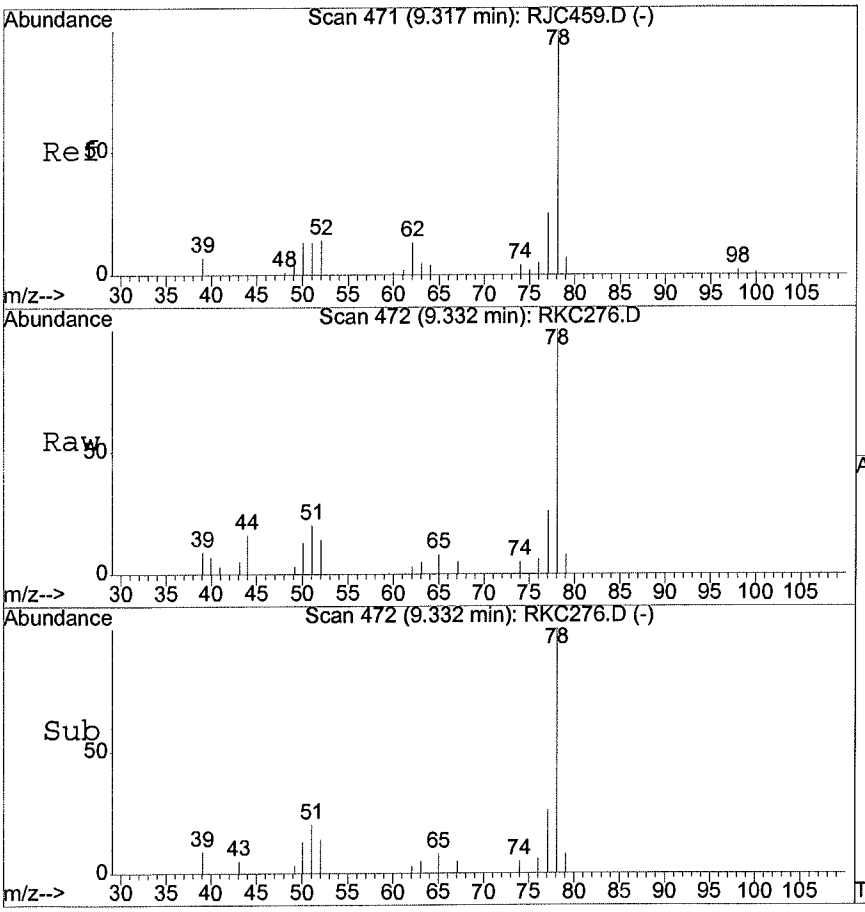


#32
Chloroform
Concen: 0.52 ug/l
RT: 7.54 min Scan# 350
Delta R.T. -0.00 min
Lab File: RKC276.D
Acq: 16 Nov 2020 3:45 pm

Tgt Ion: 83 Resp: 73291

Ion	Ratio	Lower	Upper
83	100		
85	59.9	37.8	97.8
47	18.0	0.0	50.5

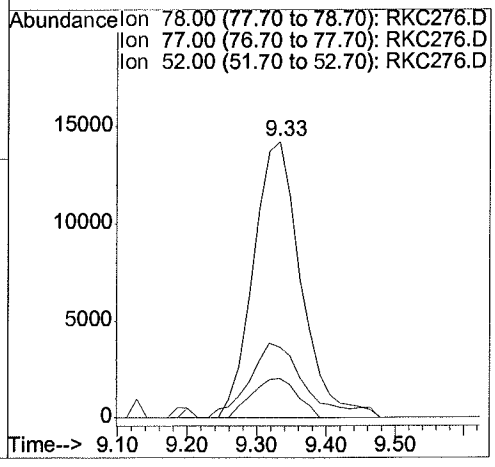


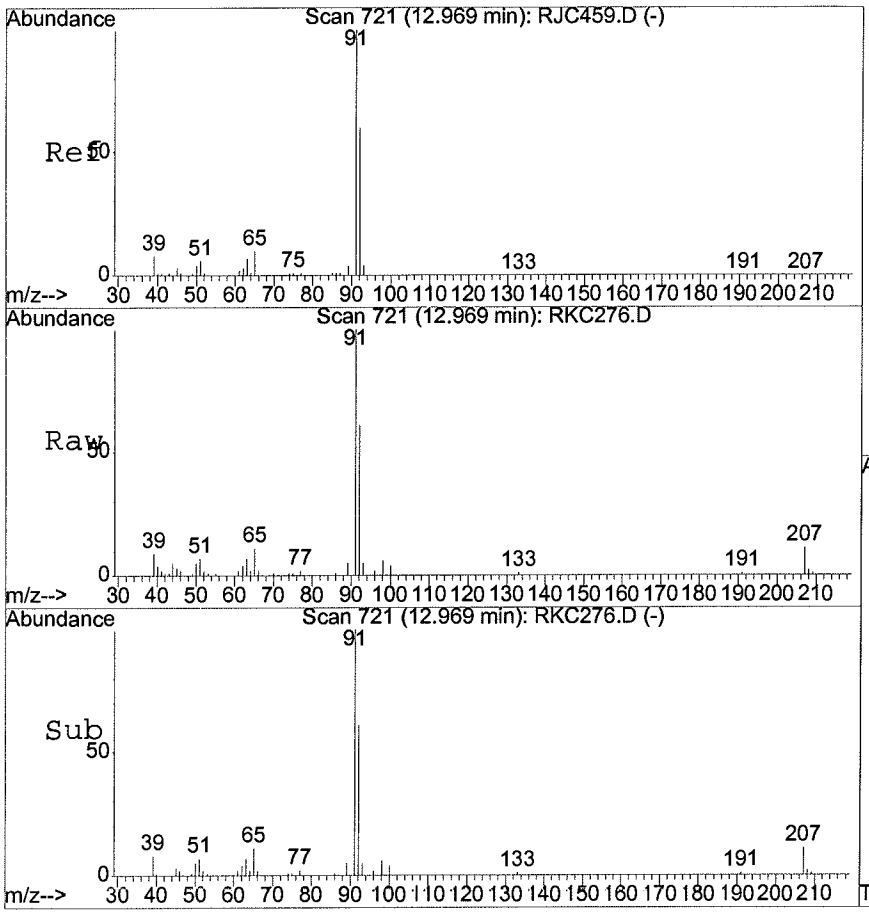


#45
Benzene
Concen: 0.21 ug/l
RT: 9.33 min Scan# 472
Delta R.T. 0.01 min
Lab File: RKC276.D
Acq: 16 Nov 2020 3:45 pm

Tgt Ion: 78 Resp: 67648

Ion	Ratio	Lower	Upper
78	100		
77	31.7	0.0	55.1
52	13.7	0.0	44.3

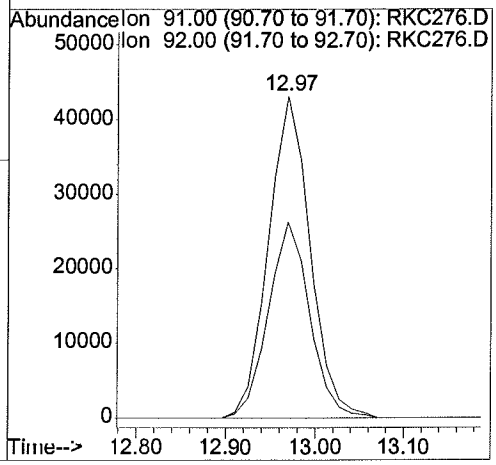




#57
Toluene
Concen: 0.42 ug/l
RT: 12.97 min Scan# 721
Delta R.T. 0.00 min
Lab File: RKC276.D
Acq: 16 Nov 2020 3:45 pm

Tgt Ion: 91 Resp: 139567

Ion	Ratio	Lower	Upper
91	100		
92	60.4	30.6	90.6



QC SUMMARIES

METHOD SW5030B/B260C
VOLATILE ORGANICS BY GC/MS

Client : CDM SMITH	Date Collected: NA
Project : VA SALT LAKE CITY	Date Received: 11/16/20
Batch No. : 20K141	Date Extracted: 11/16/20 14:03
Sample ID: MBLK1W	Date Analyzed: 11/16/20 14:03
Lab Samp ID: V067K15B	Dilution Factor: 1
Lab File ID: RKC272	Matrix : WATER
Ext Btch ID: V067K15	% Moisture : NA
Calib. Ref.: RJC459	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	1.0	0.10
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11
1,1,2-TRICHLOROETHANE	ND	1.0	0.10
1,1-DICHLOROETHANE	ND	1.0	0.10
1,1-DICHLOROETHENE	ND	1.0	0.10
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25
1,2-DICHLOROBENZENE	ND	1.0	0.10
1,2-DICHLOROETHANE	ND	1.0	0.10
1,2-DICHLOROPROPANE	ND	1.0	0.10
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.12
1,3-DICHLOROBENZENE	ND	1.0	0.11
1,4-DICHLOROBENZENE	ND	1.0	0.10
2-BUTANONE	ND	20	2.5
2-HEXANONE	ND	20	2.5
ACETONE	ND	20	2.5
BENZENE	ND	1.0	0.10
BROMOCHLOROMETHANE	ND	1.0	0.11
BROMODICHLOROMETHANE	ND	1.0	0.10
BROMOFORM	ND	1.0	0.15
BROMOMETHANE	ND	1.0	0.16
CARBON DISULFIDE	ND	1.0	0.25
CARBON TETRACHLORIDE	ND	1.0	0.10
CHLOROBENZENE	ND	1.0	0.10
CHLOROETHANE	ND	1.0	0.27
CHLOROFORM	ND	1.0	0.10
CHLOROMETHANE	ND	1.0	0.15
CIS-1,2-DICHLOROETHYLENE	ND	1.0	0.10
DIBROMOCHLOROMETHANE	ND	1.0	0.10
DICHLORODIFLUOROMETHANE	ND	1.0	0.15
ETHYLBENZENE	ND	1.0	0.10
ISOPROPYLBENZENE	ND	1.0	0.10
M,P-XYLENE	ND	2.0	0.21
4-METHYL-2-PENTANONE	ND	20	2.5
METHYLENE CHLORIDE	ND	2.0	0.50
TERT-BUTYL METHYL ETHER	ND	1.0	0.13
O-XYLENE	ND	1.0	0.10
STYRENE	ND	1.0	0.25
TETRACHLOROETHENE	ND	1.0	0.15
TOLUENE	ND	1.0	0.10
TRANS-1,2-DCE	ND	1.0	0.10
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11
TCE	ND	1.0	0.10
TRICHLOROFLUOROMETHANE	ND	1.0	0.15
VINYL CHLORIDE	ND	1.0	0.12
1,2-DIBROMOETHANE	ND	1.0	0.10
VINYL ACETATE	ND	2.0	0.25
TRICHLOROTRIFLUOROETHANE	ND	1.0	0.15
METHYL ACETATE	ND	2.0	0.25

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.3	10.00	103	70-130
BROMOFLUOROBENZENE	10.1	10.00	101	70-130
TOLUENE-D8	9.62	10.00	96.2	70-130
DIBROMOFLUOROMETHANE	10.2	10.00	102	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: CDM SMITH
PROJECT: VA SALT LAKE CITY
BATCH NO.: 20K141
METHOD: SW5030B/8260C

MATRIX: WATER % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1W
LAB SAMP ID: V067K15B V067K15L V067K15C
LAB FILE ID: RKC272 RKC269 RKC270
DATE EXTRACTED: 11/16/2014:03 11/16/2012:46 11/16/2013:12 DATE COLLECTED: NA
DATE ANALYZED: 11/16/2014:03 11/16/2012:46 11/16/2013:12 DATE RECEIVED: 11/16/20
PREP. BATCH: V067K15 V067K15 V067K15
CALIB. REF: RJC459 RJC459 RJC459

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1,1-Trichloroethane	ND	10.0	8.70	87	10.0	8.92	89	2	74-131	20
1,1,2,2-Tetrachloroethane	ND	10.0	9.04	90	10.0	9.19	92	2	71-121	20
1,1,2-Trichloroethane	ND	10.0	8.69	87	10.0	8.76	88	1	80-119	20
1,1-Dichloroethane	ND	10.0	8.82	88	10.0	8.94	89	1	77-125	20
1,1-Dichloroethene	ND	10.0	7.83	78	10.0	8.21	82	5	71-131	20
1,2,3-Trichlorobenzene	ND	10.0	9.23	92	10.0	9.66	97	5	69-129	20
1,2,4-Trichlorobenzene	ND	10.0	9.07	91	10.0	9.40	94	4	69-130	20
1,2,4-Trimethylbenzene	ND	10.0	8.86	89	10.0	9.08	91	2	76-124	20
1,2-Dibromo-3-chloropropane	ND	10.0	10.2	102	10.0	10.7	107	5	62-138	20
1,2-Dichlorobenzene	ND	10.0	8.55	85	10.0	8.61	86	1	80-119	20
1,2-Dichloroethane	ND	10.0	9.26	93	10.0	9.27	93	0	73-128	20
1,2-Dichloropropane	ND	10.0	8.97	90	10.0	9.07	91	1	78-122	20
1,3,5-Trimethylbenzene	ND	10.0	8.59	86	10.0	8.75	88	2	75-124	20
1,3-Dichlorobenzene	ND	10.0	8.49	85	10.0	8.61	86	1	80-119	20
1,4-Dichlorobenzene	ND	10.0	8.44	84	10.0	8.60	86	2	79-118	20
2-Butanone	ND	50.0	50.8	102	50.0	51.2	102	1	56-143	20
2-Hexanone	ND	50.0	47.3	95	50.0	47.3	95	0	57-139	20
Acetone	ND	50.0	46.5	93	50.0	47.1	94	1	39-160	20
8enzene	ND	10.0	8.92	89	10.0	8.96	90	0	79-120	20
8romochloromethane	ND	10.0	9.61	96	10.0	9.48	95	1	78-120	20
Bromodichloromethane	ND	10.0	9.50	95	10.0	9.49	95	0	79-125	20
8romoform	ND	10.0	9.54	95	10.0	9.69	97	2	66-130	20
Bromomethane	ND	10.0	8.27	83	10.0	8.20	82	1	53-141	20
Carbon Disulfidc	ND	10.0	7.97	80	10.0	8.06	81	1	64-133	20
Carbon Tetrachloride	ND	10.0	8.56	86	10.0	8.94	89	4	72-136	20
Chlorobenzene	ND	10.0	8.63	86	10.0	8.60	86	0	82-118	20
Chloroethane	ND	10.0	8.96	90	10.0	8.93	89	0	60-138	20
Chloroform	ND	10.0	9.20	92	10.0	9.22	92	0	79-124	20
Chloromethane	ND	10.0	8.54	85	10.0	8.71	87	2	50-139	20
cis-1,2-Dichloroethylene	ND	10.0	8.73	87	10.0	8.84	88	1	78-123	20
Dibromochloromethane	ND	10.0	9.35	94	10.0	9.33	93	0	74-126	20
Dichlorodifluoromethane	ND	10.0	7.15	72	10.0	7.28	73	2	32-152	20
Ethylbenzene	ND	10.0	8.27	83	10.0	8.28	83	0	79-121	20
Isopropylbenzene	ND	10.0	8.59	86	10.0	8.71	87	1	72-131	20
m,p-Xylene	ND	20.0	16.9	84	20.0	16.9	84	0	80-121	20
4-Methyl-2-Pentanone	ND	50.0	49.1	98	50.0	49.6	99	1	67-130	20
Methylene Chloride	ND	10.0	8.59	86	10.0	8.63	86	1	74-124	20
tert-Butyl Methyl Ether	ND	10.0	9.46	95	10.0	9.54	95	1	71-124	20
o-Xylene	ND	10.0	8.46	85	10.0	8.44	84	0	78-122	20
Styrene	ND	10.0	8.68	87	10.0	8.41	84	3	78-123	20
Tetrachloroethene	ND	10.0	7.85	78	10.0	8.00	00	2	74-129	20
Toluene	ND	10.0	8.41	84	10.0	8.48	85	1	80-121	20
Trans-1,2-DCE	ND	10.0	8.47	85	10.0	8.62	86	2	75-124	20
cis-1,3-Dichloropropene	ND	10.0	9.31	93	10.0	9.30	93	0	75-124	20
Trans-1,3-Dichloropropene	ND	10.0	8.80	88	10.0	8.84	88	1	73-127	20
TCE	ND	10.0	8.67	87	10.0	8.79	88	1	79-123	20
Trichlorofluoromethane	ND	10.0	9.13	91	10.0	9.28	93	2	65-141	20
Vinyl Chloride	ND	10.0	8.84	88	10.0	9.18	92	4	58-137	20
1,2-Dibromoethane	ND	10.0	9.06	91	10.0	9.10	91	0	77-121	20
Vinyl Acetate	ND	10.0	10.1	101	10.0	10.0	100	1	54-146	20
Trichlorotrifluoroethane	ND	10.0	8.19	82	10.0	8.73	87	6	70-136	20
Methyl Acetate	ND	10.0	9.92	99	10.0	9.78	98	2	50-136	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	8SD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	10.0	9.89	99	10.0	9.85	99	70-130
8romofluorobenzene	10.0	9.43	94	10.0	9.34	93	70-130
Toluene-d8	10.0	9.48	95	10.0	9.38	94	70-130
Dibromofluoromethane	10.0	10.3	103	10.0	10.2	102	70-130

QC DATA

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC272.D Vial: 6
Acq On : 16 Nov 2020 2:03 pm Operator: VLu
Sample : VO67K15B 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:46 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

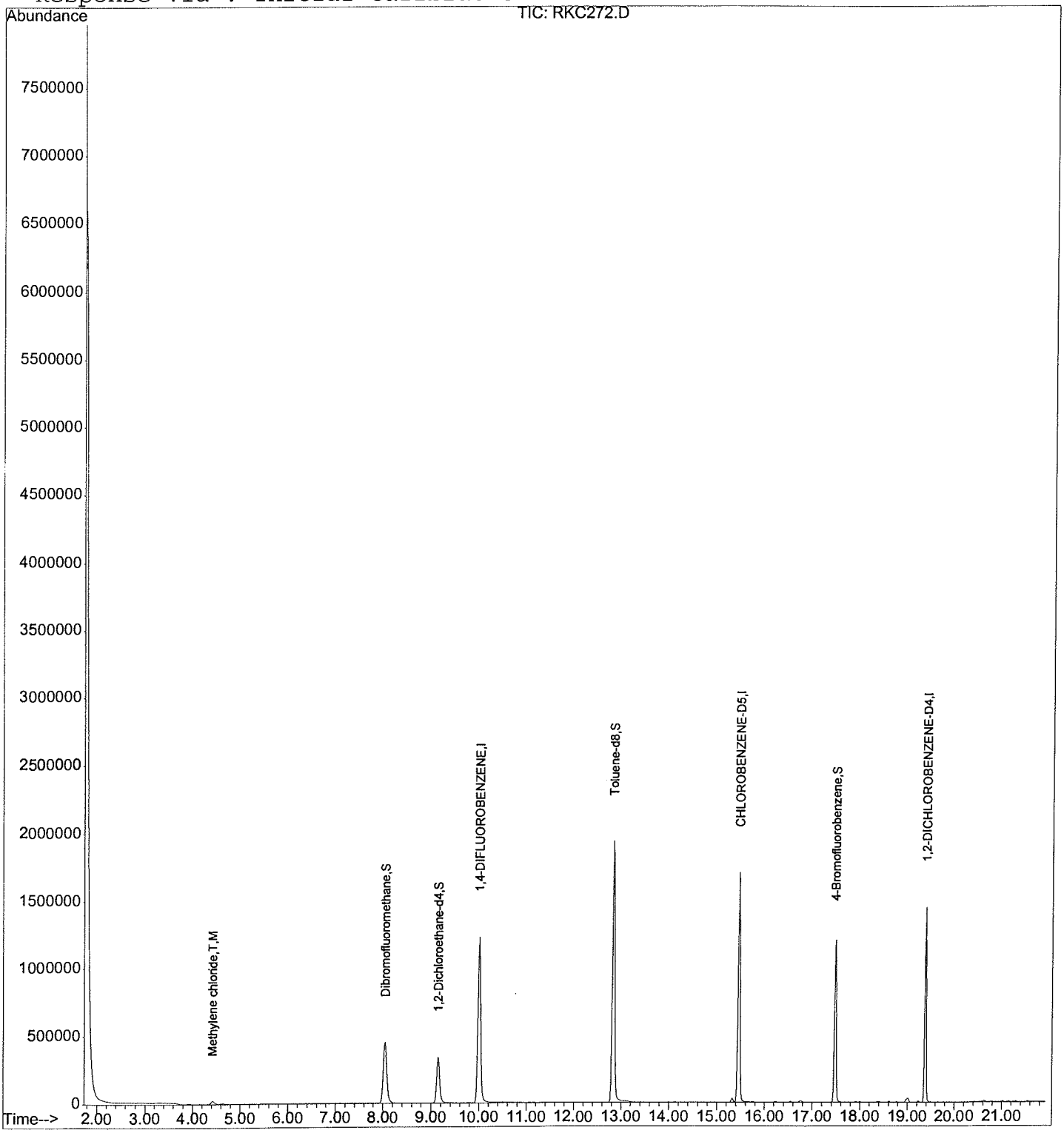
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2240564	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1703768	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	513415	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	746385	10.20	ug/l	0.01
Spiked Amount 10.000			Recovery =	102.00%		
43) 1,2-Dichloroethane-d4	9.14	65	483572	10.33	ug/l	0.00
Spiked Amount 10.000			Recovery =	103.30%		
56) Toluene-d8	12.82	98	2500789	9.62	ug/l	0.00
Spiked Amount 10.000			Recovery =	96.20%		
77) 4-Bromofluorobenzene	17.47	95	704309	10.09	ug/l	0.00
Spiked Amount 10.000			Recovery =	100.90%		
Target Compounds						Qvalue
19) Methylene chloride	4.42	49	32094	0.33	ug/l	99

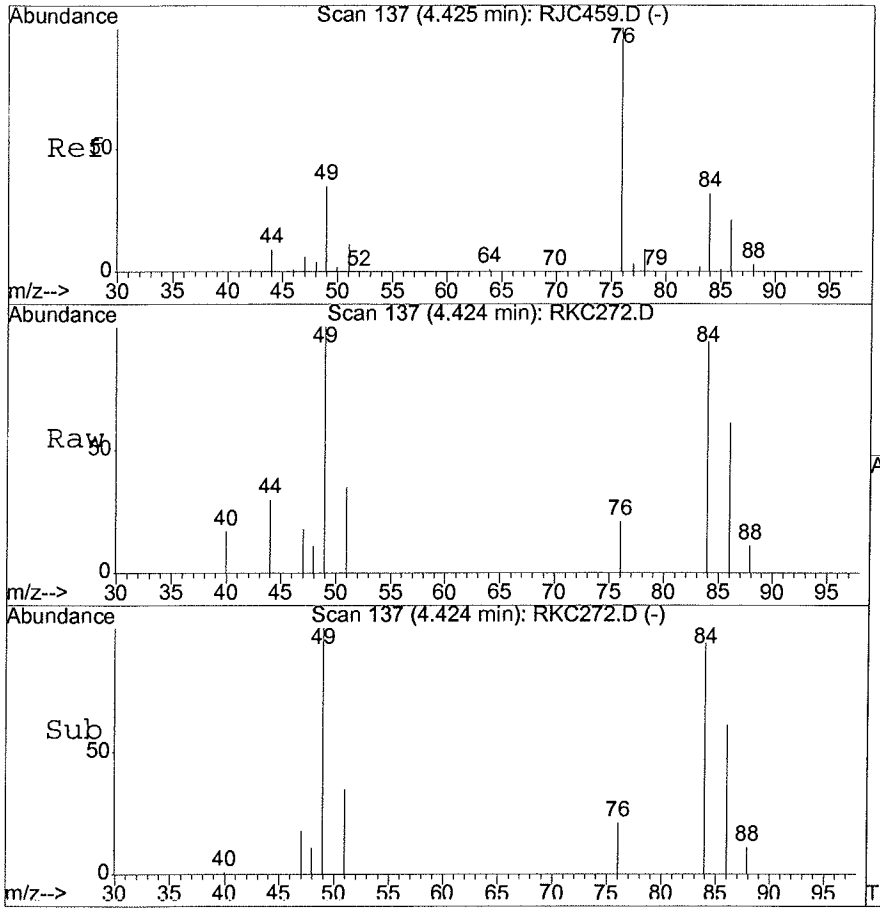
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC272.D Vial: 6
Acq On : 16 Nov 2020 2:03 pm Operator: VLu
Sample : VO67K15B 25mL Inst : 67
Misc : DF=1.0 Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:46 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration

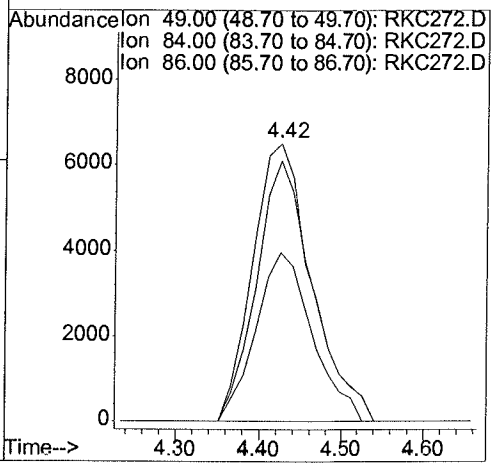




#19
Methylene chloride
Concen: 0.33 ug/l
RT: 4.42 min Scan# 137
Delta R.T. -0.00 min
Lab File: RKC272.D
Acq: 16 Nov 2020 2:03 pm

Tgt Ion: 49 Resp: 32094

Ion	Ratio	Lower	Upper
49	100		
84	90.1	60.1	120.1
86	58.5	27.5	87.5



Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC269.D Vial: 3
Acq On : 16 Nov 2020 12:46 pm Operator: VLu
Sample : VO67K15L Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2512984	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1954554	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	639218	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.03	111	842296	10.26	ug/l	0.00
Spiked Amount 10.000			Recovery = 102.60%			
43) 1,2-Dichloroethane-d4	9.14	65	519320	9.89	ug/l	0.00
Spiked Amount 10.000			Recovery = 98.90%			
56) Toluene-d8	12.82	98	2829240	9.48	ug/l	0.00
Spiked Amount 10.000			Recovery = 94.80%			
77) 4-Bromofluorobenzene	17.47	95	819395	9.43	ug/l	0.00
Spiked Amount 10.000			Recovery = 94.30%			
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	621136	7.15	ug/l	99
4) Chloromethane	2.11	50	1135948	8.54	ug/l	100
5) Vinyl chloride	2.23	62	1108614	8.84	ug/l	100
6) Bromomethane	2.64	94	901989	8.27	ug/l	98
7) Chloroethane	2.64	64	823340	8.96	ug/l	100
8) Dichlorofluoromethane	2.72	67	1655028	8.50	ug/l	100
9) Trichlorofluoromethane	2.91	101	1183423	9.13	ug/l	100
11) Acrolein	3.44	56	282517	51.93	ug/l	99
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	564789	8.19	ug/l	100
13) Acetone	3.52	43	360309	46.49	ug/l	99
14) 1,1-Dichloroethene	3.68	61	1221363	7.83	ug/l	98
15) tert-Butyl alcohol	3.81	59	665994	248.00	ug/l	99
16) Methyl acetate	4.19	43	253840	9.92	ug/l	99
17) Iodomethane	4.13	142	1284139	9.15	ug/l	99
18) Acetonitrile	4.23	41	1111229	89.39	ug/l	99
19) Methylene chloride	4.42	49	944650	8.59	ug/l	98
20) Carbon disulfide	4.39	76	3038005	7.97	ug/l	99
21) Acrylonitrile	4.64	53	553596	48.34	ug/l	99
22) tert-Butyl methyl ether (M	4.69	73	1189858	9.46	ug/l	99
23) trans-1,2-Dichloroethene	4.91	96	941776	8.47	ug/l	98
24) Isopropyl ether (DIPE)	5.56	45	2193458	9.28	ug/l	96
25) 1,1-Dichloroethane	5.74	63	1515144	8.82	ug/l	99
26) Vinyl acetate	5.80	43	862765	10.07	ug/l	98
28) tert-Butyl ethyl ether (ET	6.47	59	1739753	9.54	ug/l	99
29) 2-Butanone	6.75	72	164977	50.83	ug/l	100
30) 2,2-Dichloropropane	7.04	77	1031311	8.75	ug/l	99
31) cis-1,2-Dichloroethene	7.14	96	946376	8.73	ug/l	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC269.D Vial: 3
Acq On : 16 Nov 2020 12:46 pm Operator: VLu
Sample : VO67K15L Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
32)	Chloroform	7.52	83	1476068	9.20	ug/l	100
33)	Bromochloromethane	7.90	130	456964	9.61	ug/l	100
36)	Tetrahydrofuran	7.97	42	69273	8.48	ug/l	94
37)	1,1,1-Trichloroethane	8.43	97	1137068	8.70	ug/l	99
38)	Cyclohexane	8.41	84	1635316	10.78	ug/l	96
40)	1,1-Dichloropropene	8.76	110	420620	8.40	ug/l	100
41)	Carbon tetrachloride	8.95	119	918301	8.56	ug/l	99
42)	tert-Amyl methyl ether (TA	9.10	87	310549	9.73	ug/l	99
44)	1,2-Dichloroethane	9.33	62	600906	9.26	ug/l	100
45)	Benzene	9.32	78	3282011	8.92	ug/l	99
46)	Trichloroethene	10.57	130	844292	8.67	ug/l	98
47)	Methylcyclohexane	10.66	83	2057513	12.01	ug/l	99
48)	1,2-Dichloropropane	10.94	63	725232	8.97	ug/l	98
49)	Bromodichloromethane	11.38	83	923487	9.50	ug/l	99
50)	1,4-Dioxane	11.46	88	56309	190.89	ug/l	95
51)	Dibromomethane	11.45	93	339354	9.03	ug/l	97
53)	4-Methyl-2-pentanone	12.09	43	1467721	49.08	ug/l	97
54)	cis-1,3-Dichloropropene	12.43	75	1097687	9.31	ug/l	99
57)	Toluene	12.97	91	3237873	8.41	ug/l	100
58)	Ethyl methacrylate	13.38	69	508248	9.11	ug/l	98
59)	trans-1,3-Dichloropropene	13.35	75	781731	8.80	ug/l	100
60)	1,1,2-Trichloroethane	13.60	97	407617	8.69	ug/l	99
61)	2-Hexanone	13.66	43	915714	47.29	ug/l	97
62)	1,3-Dichloropropane	14.05	76	742004	8.67	ug/l	100
63)	Tetrachloroethene	14.09	164	602252	7.85	ug/l	99
64)	Dibromochloromethane	14.46	129	529563	9.35	ug/l	100
65)	1,2-Dibromoethane	14.79	107	401910	9.06	ug/l	100
66)	1-Chlorohexane	15.13	91	1283758	8.38	ug/l	99
67)	Chlorobenzene	15.51	112	1867349	8.63	ug/l	99
68)	1,1,1,2-Tetrachloroethane	15.60	131	615482	9.11	ug/l	99
69)	Ethylbenzene	15.61	91	3542385	8.27	ug/l	99
70)	m-Xylene & p-Xylene	15.74	91	5289976	16.86	ug/l	98
71)	o-Xylene	16.47	91	2508702	8.46	ug/l	98
72)	Styrene	16.55	104	2004203	8.68	ug/l	100
73)	Isopropylbenzene	17.09	105	3312005	8.59	ug/l	99
75)	Bromoform	17.09	173	275083	9.54	ug/l	99
76)	1,1,2,2-Tetrachloroethane	17.38	83	423501	9.04	ug/l	100
78)	1,2,3-Trichloropropane	17.58	110	105345	9.24	ug/l	98
79)	trans-1,4-Dichloro-2-buten	17.19	53	97983	8.44	ug/l	99
80)	n-Propylbenzene	17.69	91	4139586	8.33	ug/l	100
81)	Bromobenzene	17.75	156	632545	8.99	ug/l	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC269.D Vial: 3
Acq On : 16 Nov 2020 12:46 pm Operator: VLu
Sample : VO67K15L Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:47 2020 Quant Results File: VO67J30.RES

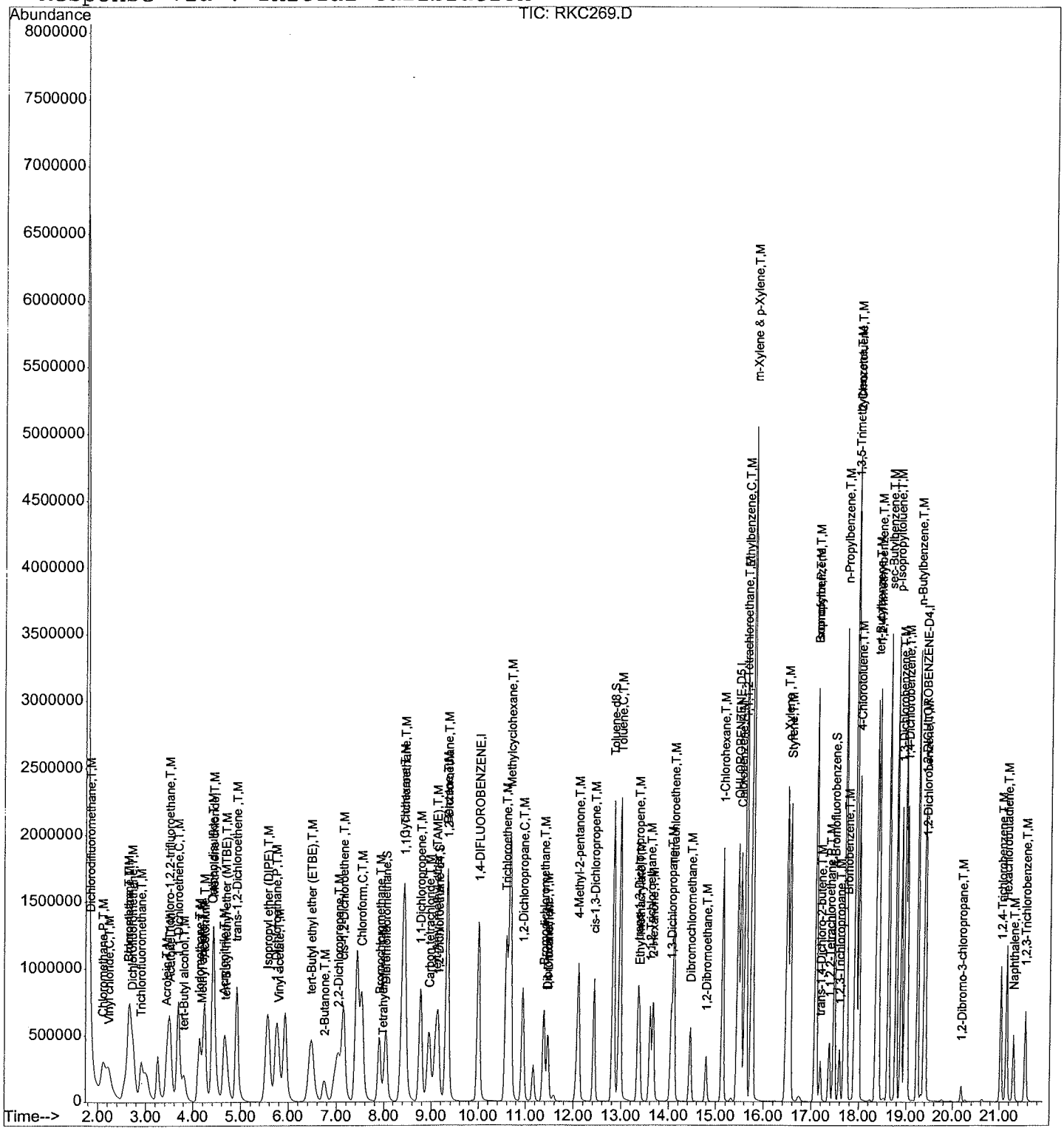
Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
82)	1,3,5-Trimethylbenzene	17.91	105	2540472	8.59	ug/l	100
83)	2-Chlorotoluene	17.92	91	2619818	8.59	ug/l	99
84)	4-Chlorotoluene	17.99	91	1933823	7.56	ug/l	99
85)	tert-Butylbenzene	18.36	134	559006	8.61	ug/l	98
86)	1,2,4-Trimethylbenzene	18.40	105	2459023	8.86	ug/l	98
87)	sec-Butylbenzene	18.62	105	3566595	8.53	ug/l	100
88)	p-Isopropyltoluene	18.78	119	2814457	8.89	ug/l	99
89)	1,3-Dichlorobenzene	18.88	146	1224382	8.49	ug/l	99
90)	1,4-Dichlorobenzene	19.00	146	1191277	8.44	ug/l	99
91)	n-Butylbenzene	19.23	91	2769081	8.50	ug/l	99
92)	1,2-Dichlorobenzene	19.41	146	983939	8.55	ug/l	100
93)	1,2-Dibromo-3-chloropropan	20.18	157	50592	10.17	ug/l	99
94)	1,2,4-Trichlorobenzene	21.03	180	493335	9.07	ug/l	99
95)	Hexachlorobutadiene	21.15	225	366444	8.18	ug/l	99
96)	Naphthalene	21.29	128	607195	9.35	ug/l	100
97)	1,2,3-Trichlorobenzene	21.54	180	341402	9.23	ug/l	98

(#) = qualifier out of range (m) = manual integration

Data File : D:\HPCHEM\1\DATA\20K16\RKC269.D Vial: 3
Acq On : 16 Nov 2020 12:46 pm Operator: VLu
Sample : VO67K15L Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:47 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC270.D Vial: 4
Acq On : 16 Nov 2020 1:12 pm Operator: VLu
Sample : VO67K15C Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:04 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2473525	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1933406	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	623404	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	823015	10.19	ug/l	0.01
Spiked Amount 10.000			Recovery =	101.90%		
43) 1,2-Dichloroethane-d4	9.14	65	509209	9.85	ug/l	0.00
Spiked Amount 10.000			Recovery =	98.50%		
56) Toluene-d8	12.82	98	2769019	9.38	ug/l	0.00
Spiked Amount 10.000			Recovery =	93.80%		
77) 4-Bromofluorobenzene	17.47	95	791453	9.34	ug/l	0.00
Spiked Amount 10.000			Recovery =	93.40%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	622010	7.28	ug/l	100
4) Chloromethane	2.11	50	1140682	8.71	ug/l	100
5) Vinyl chloride	2.23	62	1132779	9.18	ug/l	99
6) Bromomethane	2.64	94	880528	8.20	ug/l	98
7) Chloroethane	2.66	64	807507	8.93	ug/l	100
8) Dichlorofluoromethane	2.74	67	1675099	8.74	ug/l	99
9) Trichlorofluoromethane	2.90	101	1184435	9.28	ug/l	100
11) Acrolein	3.44	56	282817	52.82	ug/l	99
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	592399	8.73	ug/l	99
13) Acetone	3.52	43	359125	47.08	ug/l	98
14) 1,1-Dichloroethene	3.68	61	1259896	8.21	ug/l	99
15) tert-Butyl alcohol	3.80	59	655291	247.91	ug/l	100
16) Methyl acetate	4.19	43	246112	9.78	ug/l	97
17) Iodomethane	4.13	142	1270069	9.19	ug/l	99
18) Acetonitrile	4.23	41	1126648	92.08	ug/l	100
19) Methylene chloride	4.42	49	934997	8.63	ug/l	99
20) Carbon disulfide	4.41	76	3025029	8.06	ug/l	99
21) Acrylonitrile	4.66	53	542150	48.10	ug/l	99
22) tert-Butyl methyl ether (M	4.69	73	1181199	9.54	ug/l	99
23) trans-1,2-Dichloroethene	4.92	96	943094	8.62	ug/l	98
24) Isopropyl ether (DIPE)	5.56	45	2177613	9.36	ug/l	97
25) 1,1-Dichloroethane	5.75	63	1510170	8.94	ug/l	99
26) Vinyl acetate	5.81	43	843587	10.00	ug/l	99
28) tert-Butyl ethyl ether (ET	6.48	59	1722754	9.60	ug/l	99
29) 2-Butanone	6.75	72	163612	51.22	ug/l	89
30) 2,2-Dichloropropane	7.04	77	1051987	9.07	ug/l	99
31) cis-1,2-Dichloroethene	7.16	96	943274	8.84	ug/l	98

(#) = qualifier out of range (m) = manual integration

Data File : D:\HPCHEM\1\DATA\20K16\RKC270.D Vial: 4
Acq On : 16 Nov 2020 1:12 pm Operator: VLu
Sample : VO67K15C Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:04 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
32)	Chloroform	7.54	83	1455755	9.22 ug/l	100
33)	Bromochloromethane	7.90	130	443345	9.48 ug/l	99
36)	Tetrahydrofuran	7.99	42	73682	9.16 ug/l	95
37)	1,1,1-Trichloroethane	8.43	97	1147295	8.92 ug/l	99
38)	Cyclohexane	8.41	84	1564010	10.48 ug/l	96
40)	1,1-Dichloropropene	8.78	110	427977	8.68 ug/l	99
41)	Carbon tetrachloride	8.95	119	944129	8.94 ug/l	100
42)	tert-Amyl methyl ether (TA	9.10	87	308642	9.83 ug/l	100
44)	1,2-Dichloroethane	9.35	62	591742	9.27 ug/l	100
45)	Benzene	9.32	78	3244295	8.96 ug/l	99
46)	Trichloroethene	10.59	130	842571	8.79 ug/l	99
47)	Methylcyclohexane	10.66	83	1974299	11.71 ug/l	99
48)	1,2-Dichloropropane	10.94	63	721528	9.07 ug/l	99
49)	Bromodichloromethane	11.38	83	908409	9.49 ug/l	99
50)	1,4-Dioxane	11.46	88	56038	193.00 ug/l	99
51)	Dibromomethane	11.46	93	336690	9.10 ug/l	98
53)	4-Methyl-2-pentanone	12.09	43	1458627	49.55 ug/l	98
54)	cis-1,3-Dichloropropene	12.43	75	1080069	9.30 ug/l	99
57)	Toluene	12.97	91	3227247	8.48 ug/l	100
58)	Ethyl methacrylate	13.38	69	509844	9.24 ug/l	98
59)	trans-1,3-Dichloropropene	13.35	75	777307	8.84 ug/l	98
60)	1,1,2-Trichloroethane	13.60	97	406871	8.76 ug/l	98
61)	2-Hexanone	13.67	43	905270	47.26 ug/l	98
62)	1,3-Dichloropropane	14.05	76	734679	8.68 ug/l	99
63)	Tetrachloroethene	14.11	164	607217	8.00 ug/l	99
64)	Dibromochloromethane	14.46	129	522624	9.33 ug/l	100
65)	1,2-Dibromoethane	14.79	107	399145	9.10 ug/l	100
66)	1-Chlorohexane	15.13	91	1303540	8.61 ug/l	99
67)	Chlorobenzene	15.51	112	1841911	8.60 ug/l	99
68)	1,1,1,2-Tetrachloroethane	15.61	131	605818	9.06 ug/l	100
69)	Ethylbenzene	15.63	91	3505073	8.28 ug/l	99
70)	m-Xylene & p-Xylene	15.76	91	5233904	16.87 ug/l	98
71)	o-Xylene	16.47	91	2476834	8.44 ug/l	99
72)	Styrene	16.55	104	1921573	8.41 ug/l	98
73)	Isopropylbenzene	17.09	105	3320957	8.71 ug/l	99
75)	Bromoform	17.09	173	272510	9.69 ug/l	99
76)	1,1,2,2-Tetrachloroethane	17.38	83	420236	9.19 ug/l	99
78)	1,2,3-Trichloropropane	17.58	110	106516	9.58 ug/l	97
79)	trans-1,4-Dichloro-2-buten	17.19	53	97333	8.60 ug/l	97
80)	n-Propylbenzene	17.69	91	4139062	8.54 ug/l	100
81)	Bromobenzene	17.74	156	620825	9.05 ug/l	98

(#) = qualifier out of range (m) = manual integration

Data File : D:\HPCHEM\1\DATA\20K16\RKC270.D Vial: 4
Acq On : 16 Nov 2020 1:12 pm Operator: VLu
Sample : VO67K15C Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:04 2020 Quant Results File: VO67J30.RES

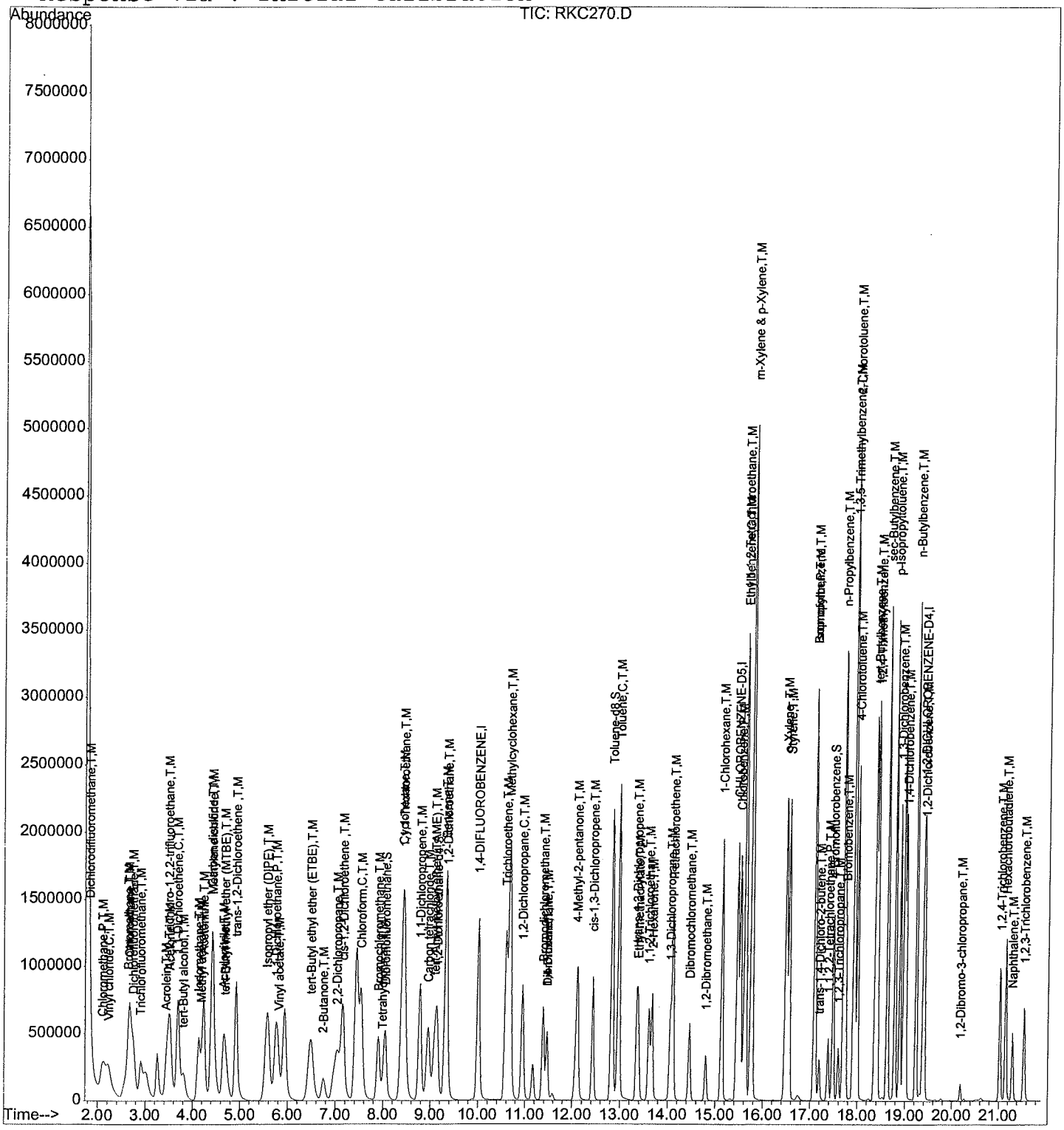
Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
82)	1,3,5-Trimethylbenzene	17.90	105	2525281	8.75	ug/l	100
83)	2-Chlorotoluene	17.92	91	2538754	8.53	ug/l	99
84)	4-Chlorotoluene	17.99	91	1977776	7.92	ug/l	99
85)	tert-Butylbenzene	18.37	134	556899	8.79	ug/l	97
86)	1,2,4-Trimethylbenzene	18.42	105	2457484	9.08	ug/l	99
87)	sec-Butylbenzene	18.62	105	3620625	8.88	ug/l	100
88)	p-Isopropyltoluene	18.78	119	2835887	9.18	ug/l	99
89)	1,3-Dichlorobenzene	18.88	146	1210746	8.61	ug/l	99
90)	1,4-Dichlorobenzene	19.01	146	1184234	8.60	ug/l	99
91)	n-Butylbenzene	19.23	91	2801257	8.82	ug/l	99
92)	1,2-Dichlorobenzene	19.41	146	966559	8.61	ug/l	99
93)	1,2-Dibromo-3-chloropropan	20.18	157	52095	10.74	ug/l	99
94)	1,2,4-Trichlorobenzene	21.03	180	498802	9.40	ug/l	99
95)	Hexachlorobutadiene	21.15	225	376754	8.62	ug/l	99
96)	Naphthalene	21.29	128	621171	9.81	ug/l	99
97)	1,2,3-Trichlorobenzene	21.54	180	348569	9.66	ug/l	99

(#) = qualifier out of range (m) = manual integration

Data File : D:\HPCHEM\1\DATA\20K16\RKC270.D Vial: 4
Acq On : 16 Nov 2020 1:12 pm Operator: VLu
Sample : VO67K15C Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 11:04 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



INITIAL CALIBRATION

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMAX Inc
Lab Code: EMXT Case No.:
Lab File ID: RJC453
Instrument ID: 67
GC Column: RTX502.2 ID:0.25mm (mm)

Contract: ICAL
SAS No.: SDG No.: ICAL
BFB Injection Date : 10/30/20
BFB Injection Time : 10:46
Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.73
75	30.0 - 60.0% of mass 95	46.50
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.92
173	Less than 2.0% of mass 174	0.00(0.0)1
174	Greater than 50% of mass 95	70.04
175	5.0 - 9.0% of mass 174	6.17(8.8)1
176	95.0 - 101.0% of mass 174	68.44(97.7)1
177	5.0 - 9.0% of mass 176	4.68(6.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD,BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	VSTD0.3	V067J301	RJC454	10/30/20	11:33
2	VSTD0.5	V067J302	RJC455	10/30/20	11:59
3	VSTD01	V067J303	RJC456	10/30/20	12:24
4	VSTD02	V067J304	RJC457	10/30/20	12:50
5	VSTD05	V067J305	RJC458	10/30/20	13:16
6	VSTD010	V067J306	RJC459	10/30/20	13:41
7	VSTD020	V067J307	RJC461	10/30/20	14:07
8	VSTD030	V067J308	RJC462	10/30/20	14:33
9	VSTD050	V067J309	RJC463	10/30/20	14:59
10	VSTD100	V067J3010	RJC464	10/30/20	15:24
11	VSTD010	IV067J3001	RJC467	10/30/20	16:41

5a
11/04/20

INITIAL_CALIBRATION - RELATIVE_RESPONSE_FACTOR

Instrument ID :67
Beginning DateTime :10/30/20 11:33
Spike Units :PPB
IC File :RJC459

Column Spec :RTX502.2 ID :0.25MM
Ending DateTime :10/30/20 15:24
HPChem Method :V067J30

M	IDX	Parameters	.3 11:33 RJC454	.5 11:59 RJC455	1 12:24 RJC456	2 12:50 RJC457	5 13:16 RJC458	10 13:41 RJC459	20 14:07 RJC461	30 14:33 RJC462	50 14:59 RJC463	100 15:24 RJC464	Av_RRF	%_RSD	Av_Rt_M
	1	1,4-DIFLUOROBENZENE	1	1	1	1	1	1	1	1	1	1	1	0	10.0028
	2	Dichlorodifluoromethane	0.324	0.373	0.330	0.337	0.356	0.348	0.352	0.339	0.342	0.353	0.346	4.09	1.8426
	3	Dichlorotetrafluoroethane	------	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
	4	Chloromethane	------	0.568	0.596	0.550	0.553	0.539	0.513	0.474	0.442	------	0.529	9.60	2.1132
	5	Vinyl chloride	0.409	0.490	0.537	0.513	0.560	0.547	0.527	0.477	0.429	------	0.499	10.49	2.2260
	6	Bromomethane	------	0.379	0.422	0.419	0.460	0.453	0.459	0.444	0.432	0.438	0.434	5.86	2.6241
	7	Chloroethane	0.337	0.358	0.391	0.364	0.391	0.371	0.375	0.362	0.353	0.355	0.366	4.63	2.6398
	8	Dichlorofluoromethane	0.828	0.807	0.718	0.776	0.770	0.734	0.791	0.793	0.768	0.760	0.774	4.22	2.7134
	9	Trichlorofluoromethane	------	0.476	0.533	0.510	0.536	0.531	0.540	0.509	0.495	0.516	0.516	4.10	2.9035
	10	sec-Propyl alcohol	------	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
5	11	Acrolein	------	------	0.024	0.023	0.022	0.020	0.021	0.022	0.020	0.020	0.022	6.11	3.4369
	12	1,1,2-Trichloro-1,2,2-trifluoroethane	0.280	0.279	0.246	0.269	0.276	0.266	0.284	0.287	0.278	0.278	0.274	4.23	3.4942
	13	Acetone	------	------	------	0.039	0.031	0.029	0.030	0.030	0.029	0.029	0.031	12.15	3.5189
5	14	1,1-Dichloroethene	0.615	0.596	0.552	0.606	0.609	0.592	0.660	0.668	0.650	0.655	0.620	5.98	3.6803
	15	tert-Butyl alcohol	0.010	0.011	0.010	0.011	0.011	0.010	0.011	0.011	0.011	0.011	0.011	3.92	3.8131
25	16	Methyl acetate	------	------	------	0.111	0.102	0.101	0.098	0.100	0.099	0.101	0.102	4.46	4.1930
	17	Iodomethane	0.548	0.574	0.550	0.574	0.537	0.534	0.555	0.571	0.555	0.590	0.559	3.19	4.1322
	18	Acetonitrile	0.052	0.050	0.046	0.049	0.049	0.047	0.050	0.051	0.050	0.051	0.049	3.84	4.2330
10	19	Methylene chloride	0.515	0.474	0.416	0.432	0.420	0.404	0.427	0.434	0.422	0.434	0.438	7.48	4.4229
	20	Carbon disulfide	------	1.395	1.532	1.417	1.512	1.523	1.566	1.555	1.568	1.585	1.517	4.44	4.4017
	21	Acrylonitrile	------	0.042	0.042	0.044	0.045	0.045	0.047	0.049	0.047	0.049	0.046	6.52	4.6532
5	22	tert-Butyl methyl ether (MTBE)	0.486	0.492	0.468	0.506	0.502	0.486	0.512	0.529	0.512	0.515	0.501	3.56	4.6930
	23	trans-1,2-Dichloroethene	0.449	0.434	0.399	0.436	0.438	0.427	0.458	0.464	0.452	0.468	0.442	4.61	4.9121
	24	Isopropyl ether (DIPE)	0.961	0.966	0.887	0.957	0.930	0.891	0.944	0.964	0.943	0.960	0.940	3.11	5.5635
	25	1,1-Dichloroethane	0.682	0.683	0.632	0.690	0.678	0.655	0.701	0.706	0.691	0.714	0.683	3.55	5.7505
	26	Vinyl acetate	0.311	0.336	0.352	0.339	0.332	0.335	0.347	0.353	0.337	0.367	0.341	4.45	5.8045
25	27	2-Butanol	------	0.009	0.009	0.009	0.010	0.010	0.010	0.010	0.009	0.010	0.009	4.80	6.2857
	28	tert-Butyl ethyl ether (ETBE)	0.712	0.735	0.684	0.752	0.735	0.698	0.733	0.747	0.728	0.731	0.726	2.97	6.4763
5	29	2-Butanone	------	0.011	0.011	0.013	0.013	0.013	0.014	0.014	0.014	0.014	0.013	7.77	6.7515
	30	2,2-Dichloropropane	0.560	0.490	0.456	0.479	0.466	0.446	0.477	0.455	0.433	0.427	0.469	8.03	7.0386
	31	cis-1,2-Dichloroethene	0.425	0.421	0.395	0.430	0.427	0.417	0.445	0.454	0.442	0.455	0.431	4.27	7.1496
	32	Chloroform	0.631	0.614	0.606	0.655	0.638	0.613	0.655	0.663	0.644	0.665	0.638	3.40	7.5323
	33	Bromochloromethane	0.181	0.181	0.173	0.188	0.189	0.184	0.197	0.202	0.196	0.200	0.189	4.96	7.8996
5	34	tert-Amyl alcohol	------	------	0.008	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	5.02	7.9978
	35	Dibromofluoromethane	0.286	0.297	0.300	0.330	0.332	0.351	0.339	0.352	0.332	0.348	0.327	7.33	8.0413
	36	Tetrahydrofuran	------	0.032	0.032	0.033	0.033	0.033	0.033	0.033	0.032	0.032	0.033	1.34	7.9919
	37	1,1,1-Trichloroethane	0.533	0.526	0.478	0.519	0.515	0.500	0.532	0.539	0.523	0.535	0.520	3.60	8.4283
	38	Cyclohexane	0.495	0.484	0.588	0.596	0.635	0.639	0.646	0.643	0.634	0.677	0.604	10.83	8.4137
	39	2,2,4-Trimethylpentane	------	1.528	1.705	1.722	1.801	1.819	1.761	1.760	1.738	1.816	1.739	5.11	8.5940
	40	1,1-Dichloropropene	0.195	0.187	0.178	0.201	0.200	0.194	0.208	0.211	0.206	0.213	0.199	5.50	8.7759
	41	Carbon tetrachloride	0.425	0.427	0.386	0.428	0.429	0.413	0.443	0.445	0.433	0.440	0.427	4.00	8.9512
	42	tert-Amyl methyl ether (TAME)	0.120	0.127	0.118	0.130	0.128	0.125	0.131	0.134	0.128	0.129	0.127	3.90	9.1002
	43	1,2-Dichloroethane-d4	0.187	0.197	0.194	0.217	0.211	0.222	0.214	0.222	0.208	0.217	0.209	5.86	9.1426
	44	1,2-Dichloroethane	0.254	0.260	0.244	0.260	0.255	0.250	0.265	0.269	0.259	0.266	0.258	2.93	9.3441
	45	Benzene	1.501	1.449	1.344	1.466	1.449	1.409	1.522	1.557	1.542	1.400	1.464	4.63	9.3222
	46	Trichloroethene	0.394	0.379	0.345	0.377	0.378	0.372	0.394	0.407	0.401	0.429	0.388	5.88	10.5855
	47	Methylcyclohexane	0.609	0.570	0.648	0.666	0.700	0.705	0.711	0.717	0.718	0.775	0.682	8.78	10.6629
	48	1,2-Dichloropropane	0.317	0.312	0.295	0.323	0.318	0.309	0.330	0.337	0.331	0.345	0.322	4.61	10.9390

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49	Bromodichloromethane	0.373	0.378	0.360	0.386	0.383	0.373	0.400	0.408	0.397	0.410	0.387	4.30	11.3771
20 50	1,4-Dioxane	------	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	3.76	11.4680
51	Dibromomethane	0.145	0.143	0.140	0.148	0.149	0.146	0.156	0.158	0.153	0.157	0.150	4.21	11.4604
52	2-Chloroethyl vinyl ether	------	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
5 53	4-Methyl-2-pentanone	0.109	0.115	0.108	0.115	0.117	0.116	0.123	0.130	0.125	0.130	0.119	6.59	12.1001
54	cis-1,3-Dichloropropene	0.458	0.451	0.424	0.458	0.460	0.450	0.486	0.498	0.491	0.516	0.469	5.89	12.4301
55	CHLOROBENZENE-D5	1	1	1	1	1	1	1	1	1	1	1	0	15.4534
56	Toluene-d8	1.337	1.410	1.410	1.544	1.556	1.659	1.610	1.685	1.628	1.426	1.526	8.00	12.8274
57	Toluene	1.990	1.959	1.820	1.939	1.925	1.880	2.044	2.088	2.080	------	1.969	4.61	12.9675
58	Ethyl methacrylate	0.260	0.271	0.265	0.278	0.280	0.277	0.296	0.310	0.301	0.315	0.285	6.68	13.3824
59	trans-1,3-Dichloropropene	0.423	0.431	0.416	0.444	0.450	0.437	0.475	0.489	0.479	0.502	0.455	6.53	13.3503
60	1,1,2-Trichloroethane	0.237	0.237	0.224	0.238	0.234	0.231	0.246	0.253	0.245	0.256	0.240	4.12	13.6015
5 61	2-Hexanone	0.094	0.097	0.094	0.098	0.098	0.097	0.101	0.106	0.102	0.104	0.099	4.26	13.6701
62	1,3-Dichloropropane	0.417	0.420	0.407	0.427	0.432	0.421	0.450	0.465	0.454	0.483	0.438	5.55	14.0499
63	Tetrachloroethene	0.398	0.381	0.349	0.373	0.379	0.368	0.402	0.411	0.413	0.455	0.393	7.60	14.1010
64	Dibromochloromethane	0.269	0.287	0.269	0.285	0.287	0.280	0.301	0.309	0.299	0.313	0.290	5.36	14.4573
65	1,2-Dibromoethane	0.205	0.221	0.219	0.226	0.227	0.221	0.234	0.243	0.234	0.241	0.227	4.99	14.7962
66	1-Chlorohexane	0.775	0.749	0.706	0.759	0.770	0.746	0.810	0.823	0.820	0.876	0.783	6.26	15.1350
67	Chlorobenzene	1.111	1.088	1.017	1.097	1.086	1.056	1.149	1.175	1.177	1.116	1.107	4.55	15.5162
68	1,1,1,2-Tetrachloroethane	0.321	0.340	0.311	0.332	0.335	0.326	0.355	0.368	0.372	0.395	0.346	7.64	15.6053
69	Ethylbenzene	2.212	2.177	1.997	2.158	2.152	2.099	2.314	2.388	2.219	------	2.191	5.21	15.6224
2 70	m-Xylene & p-Xylene	1.622	1.584	1.443	1.577	1.577	1.557	1.745	1.735	------	------	1.605	6.11	15.7496
71	o-Xylene	1.503	1.476	1.408	1.505	1.497	1.451	1.586	1.621	1.614	------	1.518	4.86	16.4793
72	Styrene	1.222	1.176	1.074	1.168	1.162	1.144	1.213	1.244	1.240	1.174	1.182	4.33	16.5488
73	Isopropylbenzene	1.948	1.917	1.783	1.943	1.964	1.904	2.097	2.174	2.023	------	1.973	5.78	17.0894
74	1,2-DICHLOROBENZENE-D4	1	1	1	1	1	1	1	1	1	1	1	0	19.3807
75	Bromoform	0.410	0.430	0.419	0.436	0.441	0.440	0.478	0.497	0.510	------	0.451	7.82	17.0910
76	1,1,2,2-Tetrachloroethane	0.749	0.744	0.707	0.733	0.717	0.707	0.738	0.749	0.728	0.760	0.733	2.50	17.3769
77	4-Bromofluorobenzene	1.330	1.278	1.333	1.344	1.333	1.402	1.342	1.385	1.340	1.505	1.359	4.49	17.4733
78	1,2,3-Trichloropropane	0.160	0.183	0.176	0.188	0.177	0.174	0.181	0.186	0.178	0.181	0.178	4.41	17.5887
79	trans-1,4-Dichloro-2-butene	------	0.186	0.171	0.179	0.179	0.174	0.186	0.187	0.184	0.190	0.182	3.52	17.1916
80	n-Propylbenzene	8.148	7.745	7.167	7.723	7.644	7.453	8.191	8.146	------	------	7.777	4.72	17.6885
81	Bromobenzene	1.113	1.055	1.023	1.060	1.055	1.031	1.112	1.134	1.151	1.270	1.100	6.72	17.7391
82	1,3,5-Trimethylbenzene	4.869	4.575	4.258	4.508	4.483	4.390	4.801	4.957	4.805	------	4.627	5.18	17.9089
83	2-Chlorotoluene	4.827	4.572	4.346	4.549	4.440	4.719	5.133	5.166	5.200	------	4.772	6.86	17.9219
84	4-Chlorotoluene	4.432	4.188	3.841	4.014	4.020	3.530	3.899	4.014	4.100	------	4.004	6.18	17.9933
85	tert-Butylbenzene	1.045	0.984	0.918	0.992	0.981	0.959	1.027	1.035	1.063	1.158	1.016	6.51	18.3657
86	1,2,4-Trimethylbenzene	4.692	4.342	4.064	4.293	4.215	4.127	4.444	4.475	4.411	------	4.340	4.44	18.4071
87	sec-Butylbenzene	6.940	6.605	6.060	6.441	6.395	6.243	6.823	6.830	------	------	6.542	4.75	18.6214
88	p-Isopropyltoluene	5.231	4.909	4.609	4.967	4.841	4.794	5.199	5.275	4.774	------	4.955	4.69	18.7820
89	1,3-Dichlorobenzene	2.350	2.229	2.058	2.202	2.159	2.114	2.310	2.338	2.379	2.408	2.255	5.32	18.8856
90	1,4-Dichlorobenzene	2.232	2.169	2.036	2.173	2.133	2.083	2.261	2.323	2.354	2.312	2.208	4.84	19.0068
91	n-Butylbenzene	5.499	5.055	4.722	5.088	5.039	5.004	5.412	5.401	4.640	------	5.096	5.87	19.2283
92	1,2-Dichlorobenzene	1.910	1.784	1.672	1.758	1.751	1.704	1.813	1.838	1.841	1.939	1.801	4.72	19.4070
93	1,2-Dibromo-3-chloropropane	0.063	0.076	0.069	0.079	0.080	0.080	0.084	0.086	0.081	0.081	0.078	8.92	20.1840
94	1,2,4-Trichlorobenzene	0.944	0.854	0.780	0.843	0.827	0.819	0.863	0.869	0.857	0.857	0.851	4.94	21.0223
95	Hexachlorobutadiene	0.797	0.714	0.663	0.702	0.688	0.671	0.702	0.694	0.685	0.693	0.701	5.28	21.1479
96	Naphthalene	1.055	0.991	0.968	1.012	1.008	1.020	1.039	1.066	1.012	0.983	1.015	3.05	21.2940
97	1,2,3-Trichlorobenzene	0.628	0.575	0.531	0.585	0.571	0.571	0.586	0.594	0.578	0.570	0.579	4.16	21.5423

Spike Amount = Nominal Amount * M

Ave_%RSD : 5.4 Max_%RSD : 12.2

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INITIAL_CALIBRATION - RELATIVE_RESPONSE_FACTOR(%REC)

Instrument ID :67
Beginning DateTime :10/30/20 11:33
Spike Units :PPB
IC File :RJC459

Column Spec :RTX502.2 ID :0.25MM
Ending DateTime :10/30/20 15:24
HPChem Method :V067J30

M	IDX	Parameters	.3 11:33 RJC454	.5 11:59 RJC455	1 12:24 RJC456	2 12:50 RJC457	5 13:16 RJC458	10 13:41 RJC459	20 14:07 RJC461	30 14:33 RJC462	50 14:59 RJC463	100 15:24 RJC464	AvDRec	%_RSD	Av_Rt_M
	1	1,4-DIFLUOROBENZENE	1	1	1	1	1	1	1	1	1	1	1	0	10.0028
	2	Dichlorodifluoromethane	94	108	95	97	103	101	102	98	99	102	3.2	4.09	1.8426
	3	Dichlorotetrafluoroethane	------	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
	4	Chloromethane	------	107	113	104	105	102	97	90	84	------	7.5	9.60	2.1132
	5	Vinyl chloride	82	98	108	103	112	110	106	96	86	------	8.5	10.49	2.2260
	6	Bromomethane	------	87	97	97	106	104	106	102	100	101	4.3	5.86	2.6241
	7	Chloroethane	92	98	107	99	107	101	102	99	96	97	3.6	4.63	2.6398
	8	Dichlorofluoromethane	107	104	93	100	99	95	102	102	99	98	3.2	4.22	2.7134
	9	Trichlorofluoromethane	------	92	103	99	104	103	105	99	96	100	3.2	4.10	2.9035
	10	sec-Propyl alcohol	------	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
5	11	Acrolein	------	------	109	105	100	91	95	100	91	91	5.7	6.11	3.4369
	12	1,1,2-Trichloro-1,2,2-trifluoroethane	102	102	90	98	101	97	104	105	101	101	3.1	4.23	3.4942
5	13	Acetone	------	------	------	126	100	94	97	97	94	94	7.4	12.15	3.5189
	14	1,1-Dichloroethene	99	96	89	98	98	95	106	108	105	106	4.9	5.98	3.6803
25	15	tert-Butyl alcohol	91	100	91	100	100	91	100	100	100	100	2.7	3.92	3.8131
	16	Methyl acetate	------	------	------	109	100	99	96	98	97	99	2.8	4.46	4.1930
	17	Iodomethane	98	103	98	103	96	96	99	102	99	106	2.6	3.19	4.1322
10	18	Acetonitrile	106	102	94	100	100	96	102	104	102	104	3.1	3.84	4.2330
	19	Methylene chloride	118	108	95	99	96	92	97	99	96	99	5.2	7.48	4.4229
	20	Carbon disulfide	------	92	101	93	100	100	103	103	103	104	3.3	4.44	4.4017
5	21	Acrylonitrile	------	91	91	96	98	98	102	107	102	107	4.8	6.52	4.6532
	22	tert-Butyl methyl ether (MTBE)	97	98	93	101	100	97	102	106	102	103	2.8	3.56	4.6930
	23	trans-1,2-Dichloroethene	102	98	90	99	99	97	104	105	102	106	3.6	4.61	4.9121
	24	Isopropyl ether (DIPE)	102	103	94	102	99	95	100	103	100	102	2.4	3.11	5.5635
	25	1,1-Dichloroethane	100	100	93	101	99	96	103	103	101	105	2.5	3.55	5.7505
	26	Vinyl acetate	91	99	103	99	97	98	102	104	99	108	3.3	4.45	5.8045
25	27	2-Butanol	------	100	100	100	111	111	111	111	100	111	6.2	4.80	6.2857
	28	tert-Butyl ethyl ether (ETBE)	98	101	94	104	101	96	101	103	100	101	2.2	2.97	6.4763
5	29	2-Butanone	------	85	85	100	100	100	108	108	108	108	6.8	7.77	6.7515
	30	2,2-Dichloropropane	119	104	97	102	99	95	102	97	92	91	5.6	8.03	7.0386
	31	cis-1,2-Dichloroethene	99	98	92	100	99	97	103	105	103	106	3.3	4.27	7.1496
	32	Chloroform	99	96	95	103	100	96	103	104	101	104	2.8	3.40	7.5323
	33	Bromochloromethane	96	96	92	99	100	97	104	107	104	106	4.1	4.96	7.8996
5	34	tert-Amyl alcohol	------	------	89	100	100	100	100	100	100	100	1.4	5.02	7.9978
	35	Dibromofluoromethane	87	91	92	101	102	107	104	108	102	106	5.9	7.33	8.0413
	36	Tetrahydrofuran	------	97	97	100	100	100	100	100	97	97	1.3	1.34	7.9919
	37	1,1,1-Trichloroethane	102	101	92	100	99	96	102	104	101	103	2.6	3.60	8.4283
	38	Cyclohexane	82	80	97	99	105	106	107	106	105	112	8.3	10.83	8.4137
	39	2,2,4-Trimethylpentane	------	88	98	99	104	105	101	101	100	104	3.4	5.11	8.5940
	40	1,1-Dichloropropene	98	94	89	101	101	97	105	106	104	107	4.4	5.50	8.7759
	41	Carbon tetrachloride	100	100	90	100	100	97	104	104	101	103	2.6	4.00	8.9512
	42	tert-Amyl methyl ether (TAME)	94	100	93	102	101	98	103	106	101	102	2.8	3.90	9.1002
	43	1,2-Dichloroethane-d4	89	94	93	104	101	106	102	106	100	104	4.7	5.86	9.1426
	44	1,2-Dichloroethane	98	101	95	101	99	97	103	104	100	103	2.3	2.93	9.3441
	45	Benzene	103	99	92	100	99	96	104	106	105	96	3.7	4.63	9.3222
	46	Trichloroethene	102	98	89	97	97	96	102	105	103	111	4.5	5.88	10.5855
	47	Methylcyclohexane	89	84	95	98	103	103	104	105	105	114	6.9	8.78	10.6629
	48	1,2-Dichloropropane	98	97	92	100	99	96	102	105	103	107	3.6	4.61	10.9390

For ≥ 260 C

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	49	Bromodichloromethane	96	98	93	100	99	96	103	105	103	106	3.5	4.30	11.3771
20	50	1,4-Dioxane	------	100	100	100	100	100	100	100	100	100	0	3.76	11.4680
	51	Dibromomethane	97	95	93	99	99	97	104	105	102	105	3.5	4.21	11.4604
	52	2-Chloroethyl vinyl ether	------	------	------	------	------	------	------	------	------	------	0.000	0.00	0.0000
5	53	4-Methyl-2-pentanone	92	97	91	97	98	97	103	109	105	109	5.5	6.59	12.1001
	54	cis-1,3-Dichloropropene	98	96	90	98	98	96	104	106	105	110	4.9	5.89	12.4301
	55	CHLOROBENZENE-D5	1	1	1	1	1	1	1	1	1	1	1	0	15.4534
	56	Toluene-d8	88	92	92	101	102	109	106	110	107	93	6.9	8.00	12.8274
	57	Toluene	101	99	92	98	98	95	104	106	106	------	3.7	4.61	12.9675
	58	Ethyl methacrylate	91	95	93	98	98	97	104	109	106	111	5.6	6.68	13.3824
	59	trans-1,3-Dichloropropene	93	95	91	98	99	96	104	107	105	110	5.6	6.53	13.3503
	60	1,1,2-Trichloroethane	99	99	93	99	98	96	102	105	102	107	3.3	4.12	13.6015
5	61	2-Hexanone	95	98	95	99	99	98	102	107	103	105	3.3	4.26	13.6701
	62	1,3-Dichloropropane	95	96	93	97	99	96	103	106	104	110	4.7	5.55	14.0499
	63	Tetrachloroethene	101	97	89	95	96	94	102	105	105	116	5.8	7.60	14.1010
	64	Dibromochloromethane	93	99	93	98	99	97	104	107	103	108	4.3	5.36	14.4573
	65	1,2-Dibromoethane	90	97	96	100	100	97	103	107	103	106	3.8	4.99	14.7962
	66	1-Chlorohexane	99	96	90	97	98	95	103	105	105	112	5	6.26	15.1350
	67	Chlorobenzene	100	98	92	99	98	95	104	106	106	101	3.5	4.55	15.5162
	68	1,1,1,2-Tetrachloroethane	93	98	90	96	97	94	103	106	108	114	6.3	7.64	15.6053
	69	Ethylbenzene	101	99	91	98	98	96	106	109	101	------	3.8	5.21	15.6224
2	70	m-Xylene & p-Xylene	101	99	90	98	98	97	109	108	------	------	4.5	6.11	15.7496
	71	o-Xylene	99	97	93	99	99	96	104	107	106	------	3.9	4.86	16.4793
	72	Styrene	103	99	91	99	98	97	103	105	105	99	3.3	4.33	16.5488
	73	Isopropylbenzene	99	97	90	98	100	97	106	110	103	------	4.2	5.78	17.0894
	74	1,2-DICHLOROBENZENE-D4	1	1	1	1	1	1	1	1	1	1	1	0	19.3807
	75	Bromoform	91	95	93	97	98	98	106	110	113	------	6.5	7.82	17.0910
	76	1,1,2,2-Tetrachloroethane	102	102	96	100	98	96	101	102	99	104	2	2.50	17.3769
	77	4-Bromofluorobenzene	98	94	98	99	98	103	99	102	99	111	3.1	4.49	17.4733
	78	1,2,3-Trichloropropane	90	103	99	106	99	98	102	104	100	102	3	4.41	17.5887
	79	trans-1,4-Dichloro-2-butene	------	102	94	98	98	96	102	103	101	104	2.9	3.52	17.1916
	80	n-Propylbenzene	105	100	92	99	98	96	105	105	------	------	3.7	4.72	17.6885
	81	Bromobenzene	101	96	93	96	96	94	101	103	105	115	5.1	6.72	17.7391
	82	1,3,5-Trimethylbenzene	105	99	92	97	97	95	104	107	104	------	4.4	5.18	17.9089
	83	2-Chlorotoluene	101	96	91	95	93	99	108	108	109	------	5.8	6.86	17.9219
	84	4-Chlorotoluene	111	105	96	100	100	88	97	100	102	------	4.1	6.18	17.9933
	85	tert-Butylbenzene	103	97	90	98	97	94	101	102	105	114	4.9	6.51	18.3657
	86	1,2,4-Trimethylbenzene	108	100	94	99	97	95	102	103	102	------	3.4	4.44	18.4071
	87	sec-Butylbenzene	106	101	93	98	98	95	104	104	------	------	3.9	4.75	18.6214
	88	p-Isopropyltoluene	106	99	93	100	98	97	105	106	96	------	3.8	4.69	18.7820
	89	1,3-Dichlorobenzene	104	99	91	98	96	94	102	104	105	107	4.5	5.32	18.8856
	90	1,4-Dichlorobenzene	101	98	92	98	97	94	102	105	107	105	4	4.84	19.0068
	91	n-Butylbenzene	108	99	93	100	99	98	106	106	91	------	4.5	5.87	19.2283
	92	1,2-Dichlorobenzene	106	99	93	98	97	95	101	102	102	108	3.7	4.72	19.4070
	93	1,2-Dibromo-3-chloropropane	81	97	88	101	103	103	108	110	104	104	6.5	8.92	20.1840
	94	1,2,4-Trichlorobenzene	111	100	92	99	97	96	101	102	101	101	3.2	4.94	21.0223
	95	Hexachlorobutadiene	114	102	95	100	98	96	100	99	98	99	3.2	5.28	21.1479
	96	Naphthalene	104	98	95	100	99	100	102	105	100	97	2.3	3.05	21.2940
	97	1,2,3-Trichlorobenzene	108	99	92	101	99	99	101	103	100	98	2.7	4.16	21.5423

For 8260C

SU

11/4/20

Compound List Report 67

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
Total Cpnds : 97

PK#		Compound Name	QIon	Exp_RT	Rel_RT	Cal	#Qual	A/H	ID
1	I	1,4-DIFLUOROBENZENE	114	10.00	1.000	A	1	A	B
2	T	Dichlorodifluoromethane	85	1.84	0.184	A	1	A	B
3	T	Dichlorotetrafluoroethane	85	0.00	0.000	A	2	A	B
4	T	Chloromethane	50	2.11	0.211	A	1	A	B
5	T	Vinyl chloride	62	2.23	0.223	A	1	A	B
6	T	Bromomethane	94	2.62	0.262	A	1	A	B
7	T	Chloroethane	64	2.64	0.264	A	1	A	B
8	T	Dichlorofluoromethane	67	2.72	0.272	A	1	A	B
9	T	Trichlorofluoromethane	101	2.91	0.291	A	1	A	B
10	T	sec-Propyl alcohol	45	0.00	0.000	A	1	A	B
11	T	Acrolein	56	3.44	0.344	A	1	A	B
12	T	1,1,2-Trichloro-1,2,2-trifluor	151	3.50	0.350	A	1	A	B
13	T	Acetone	43	3.52	0.352	A	1	A	B
14	T	1,1-Dichloroethene	61	3.68	0.368	A	2	A	B
15	T	tert-Butyl alcohol	59	3.81	0.381	A	1	A	B
16	T	Methyl acetate	43	4.19	0.419	A	1	A	B
17	T	Iodomethane	142	4.13	0.413	A	1	A	B
18	T	Acetonitrile	41	4.23	0.423	A	1	A	B
19	T	Methylene chloride	49	4.42	0.442	A	2	A	B
20	T	Carbon disulfide	76	4.41	0.441	A	1	A	B
21	T	Acrylonitrile	53	4.66	0.466	A	2	A	B
22	T	tert-Butyl methyl ether (MTBE)	73	4.69	0.469	A	1	A	B
23	T	trans-1,2-Dichloroethene	96	4.92	0.492	A	1	A	B
24	T	Isopropyl ether (DIPE)	45	5.56	0.556	A	1	A	B
25	T	1,1-Dichloroethane	63	5.75	0.575	A	2	A	B
26	T	Vinyl acetate	43	5.81	0.581	A	1	A	B
27	T	2-Butanol	45	6.28	0.628	A	1	A	B
28	T	tert-Butyl ethyl ether (ETBE)	59	6.47	0.647	A	1	A	B
29	T	2-Butanone	72	6.75	0.674	A	1	A	B
30	T	2,2-Dichloropropane	77	7.04	0.704	A	2	A	B
31	T	cis-1,2-Dichloroethene	96	7.16	0.715	A	1	A	B
32	T	Chloroform	83	7.54	0.753	A	2	A	B
33	T	Bromochloromethane	130	7.90	0.790	A	1	A	B
34	T	tert-Amyl alcohol	59	7.99	0.799	A	1	A	B
35	S	Dibromofluoromethane	111	8.03	0.803	A	1	A	B
36	T	Tetrahydrofuran	42	7.99	0.799	A	2	A	B
37	T	1,1,1-Trichloroethane	97	8.43	0.842	A	2	A	B
38	T	Cyclohexane	84	8.41	0.841	A	1	A	B
39	T	2,2,4-Trimethylpentane	57	8.59	0.858	A	1	A	B
40	T	1,1-Dichloropropene	110	8.78	0.877	A	1	A	B
41	T	Carbon tetrachloride	119	8.95	0.895	A	1	A	B
42	T	tert-Amyl methyl ether (TAME)	87	9.10	0.909	A	1	A	B
43	S	1,2-Dichloroethane-d4	65	9.14	0.914	A	1	A	B
44	T	1,2-Dichloroethane	62	9.35	0.934	A	1	A	B
45	T	Benzene	78	9.32	0.931	A	2	A	B
46	T	Trichloroethene	130	10.59	1.058	A	3	A	B
47	T	Methylcyclohexane	83	10.66	1.066	A	2	A	B
48	T	1,2-Dichloropropane	63	10.94	1.093	A	1	A	B
49	T	Bromodichloromethane	83	11.38	1.137	A	1	A	B
50	T	1,4-Dioxane	88	11.46	1.146	A	1	A	B
51	T	Dibromomethane	93	11.46	1.146	A	2	A	B
52	T	2-Chloroethyl vinyl ether	63	12.05	1.204	A	1	A	B
53	T	4-Methyl-2-pentanone	43	12.09	1.209	A	3	A	B

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54	T	cis-1,3-Dichloropropene	75	12.43	1.242	A	3	A	B
55	I	CHLOROBENZENE-D5	117	15.45	1.000	A	2	A	B
56	S	Toluene-d8	98	12.82	0.830	A	1	A	B
57	T	Toluene	91	12.97	0.839	A	1	A	B
58	T	Ethyl methacrylate	69	13.38	0.866	A	1	A	B
59	T	trans-1,3-Dichloropropene	75	13.35	0.864	A	1	A	B
60	T	1,1,2-Trichloroethane	97	13.60	0.880	A	2	A	B
61	T	2-Hexanone	43	13.67	0.885	A	1	A	B
62	T	1,3-Dichloropropane	76	14.05	0.909	A	1	A	B
63	T	Tetrachloroethene	164	14.11	0.913	A	3	A	B
64	T	Dibromochloromethane	129	14.46	0.936	A	1	A	B
65	T	1,2-Dibromoethane	107	14.79	0.957	A	1	A	B
66	T	1-Chlorohexane	91	15.13	0.979	A	1	A	B
67	P,M	Chlorobenzene	112	15.51	1.004	A	1	A	B
68	T	1,1,1,2-Tetrachloroethane	131	15.61	1.010	A	1	A	B
69	T	Ethylbenzene	91	15.63	1.011	A	1	A	B
70	T	m-Xylene & p-Xylene	91	15.76	1.020	A	1	A	B
71	T	o-Xylene	91	16.47	1.066	A	1	A	B
72	T	Styrene	104	16.55	1.071	A	2	A	B
73	T	Isopropylbenzene	105	17.09	1.106	A	3	A	B
74	I	1,2-DICHLOROBENZENE-D4	152	19.38	1.000	A	1	A	B
75	T	Bromoform	173	17.09	0.882	A	2	A	B
76	T	1,1,2,2-Tetrachloroethane	83	17.38	0.897	A	1	A	B
77	S	4-Bromofluorobenzene	95	17.47	0.901	A	2	A	B
78	T	1,2,3-Trichloropropane	110	17.58	0.907	A	1	A	B
79	T	trans-1,4-Dichloro-2-butene	53	17.19	0.887	A	1	A	B
80	T	n-Propylbenzene	91	17.69	0.913	A	2	A	B
81	T	Bromobenzene	156	17.74	0.916	A	1	A	B
82	T	1,3,5-Trimethylbenzene	105	17.91	0.924	A	2	A	B
83	T	2-Chlorotoluene	91	17.92	0.925	A	1	A	B
84	T	4-Chlorotoluene	91	17.99	0.928	A	1	A	B
85	T	tert-Butylbenzene	134	18.37	0.948	A	1	A	B
86	T	1,2,4-Trimethylbenzene	105	18.40	0.950	A	1	A	B
87	T	sec-Butylbenzene	105	18.62	0.961	A	1	A	B
88	T	p-Isopropyltoluene	119	18.78	0.969	A	2	A	B
89	T	1,3-Dichlorobenzene	146	18.88	0.974	A	2	A	B
90	T	1,4-Dichlorobenzene	146	19.00	0.980	A	2	A	B
91	T	n-Butylbenzene	91	19.23	0.992	A	2	A	B
92	T	1,2-Dichlorobenzene	146	19.41	1.002	A	1	A	B
93	T	1,2-Dibromo-3-chloropropane	157	20.18	1.041	A	1	A	B
94	T	1,2,4-Trichlorobenzene	180	21.02	1.084	A	2	A	B
95	T	Hexachlorobutadiene	225	21.15	1.091	A	2	A	B
96	T	Naphthalene	128	21.29	1.099	A	1	A	B
97	T	1,2,3-Trichlorobenzene	180	21.54	1.112	A	2	A	B

Cal A = Average L = Linear LO = Linear w/origin Q = Quad QO = Quad w/origin
#Qual = number of qualifiers
A/H = Area or Height
ID R = R.T. B = R.T. & Q Q = Qvalue L = Largest A = All

VO67J30.M Mon Nov 02 18:53:51 2020

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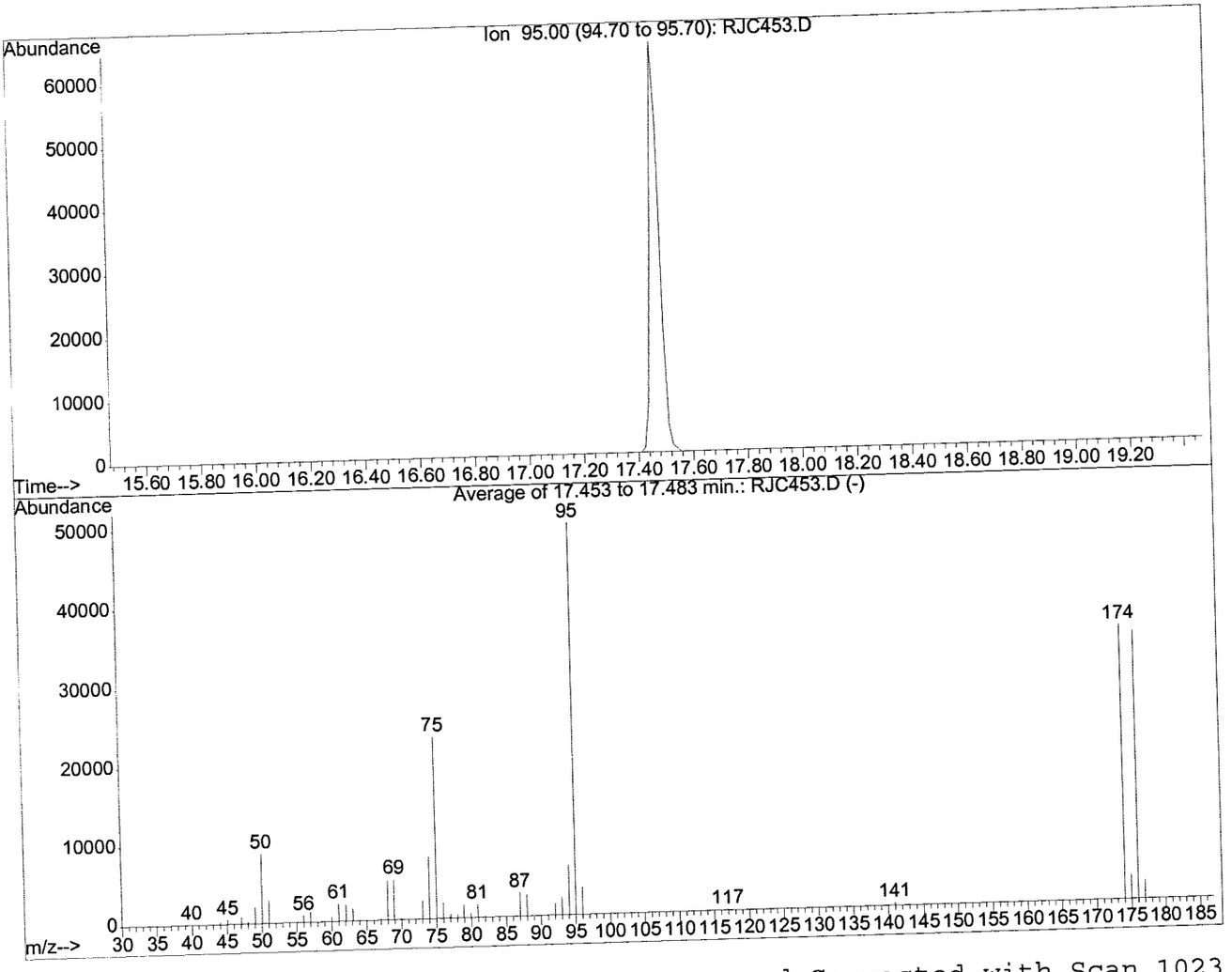
BFB

Data File : D:\HPCHEM\1\DATA\20J30\RJC453.D
Acq On : 30 Oct 2020 10:46 am
Sample : BFB67J20
Misc : T/CHK
MS Integration Params: RTE.P
Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B

Vial: 1
Operator: VLu
Inst : 67
Multiplr: 1.00



AutoFind: Scans 1028, 1029, 1030; Background Corrected with Scan 1023

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	17.7	8807	PASS
75	95	30	60	46.5	23099	PASS
95	95	100	100	100.0	49672	PASS
96	95	5	9	6.9	3438	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	70.0	34792	PASS
175	174	5	9	8.8	3063	PASS
176	174	95	101	97.7	33996	PASS
177	176	5	9	6.8	2323	PASS

RJC453.D VO67J30.M Mon Nov 02 11:19:27 2020 SU 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC454.D Vial: 2
Acq On : 30 Oct 2020 11:33 am Operator: VLu
Sample : VO67J301 Inst : 67
Misc : 0.3ppb 8260/1.5ppb KET-AA/7.5ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 17:51 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	9.99	114	2538415	10.00	ug/l	-0.01
55) CHLOROBENZENE-D5	15.45	117	1867023	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	566233	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.03	111	21746	0.26	ug/l	0.00
Spiked Amount 10.000			Recovery =	2.60%		
43) 1,2-Dichloroethane-d4	9.13	65	14243	0.27	ug/l	-0.01
Spiked Amount 10.000			Recovery =	2.70%		
56) Toluene-d8	12.82	98	74898	0.26	ug/l	0.00
Spiked Amount 10.000			Recovery =	2.60%		
77) 4-Bromofluorobenzene	17.47	95	22587	0.29	ug/l	0.00
Spiked Amount 10.000			Recovery =	2.90%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	24688	0.28	ug/l	88
4) Chloromethane	2.11	50	47396	0.35	ug/l	86
5) Vinyl chloride	2.23	62	31170	0.25	ug/l	78
6) Bromomethane	2.64	94	26933	0.24	ug/l	99
7) Chloroethane	2.64	64	25647	0.28	ug/l	87
8) Dichlorofluoromethane	2.72	67	63057	0.32	ug/l	87
9) Trichlorofluoromethane	2.90	101	31026	0.24	ug/l	99
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	21292	0.31	ug/l	99
13) Acetone	3.50	43	31840	4.07	ug/l	75
14) 1,1-Dichloroethene	3.66	61	46813	0.30	ug/l	99
17) Iodomethane	4.13	142	41741	0.29	ug/l	99
18) Acetonitrile	4.22	41	39435	3.14	ug/l	96
19) Methylene chloride	4.41	49	39253	0.35	ug/l	99
20) Carbon disulfide	4.39	76	89999	0.23	ug/l	98
21) Acrylonitrile	4.64	53	14657	1.27	ug/l	93
22) tert-Butyl methyl ether (M	4.69	73	36999	0.29	ug/l	99
23) trans-1,2-Dichloroethene	4.89	96	34165	0.30	ug/l	98
24) Isopropyl ether (DIPE)	5.55	45	73220	0.31	ug/l	96
25) 1,1-Dichloroethane	5.72	63	51937	0.30	ug/l	98
26) Vinyl acetate	5.78	43	23664	0.27	ug/l #	70
28) tert-Butyl ethyl ether (ET	6.45	59	54193	0.29	ug/l	97
30) 2,2-Dichloropropane	7.02	77	42647	0.36	ug/l	90
31) cis-1,2-Dichloroethene	7.13	96	32372	0.30	ug/l	98
32) Chloroform	7.51	83	48041	0.30	ug/l	98
33) Bromochloromethane	7.89	130	13778	0.29	ug/l	97
37) 1,1,1-Trichloroethane	8.41	97	40592	0.31	ug/l	97
38) Cyclohexane	8.40	84	37696	0.25	ug/l	98

(#) = qualifier out of range (m) = manual integration
RJC454.D VO67J30.M Mon Nov 02 18:51:35 2020 Page 1

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Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC454.D
Acq On : 30 Oct 2020 11:33 am
Sample : VO67J301
Misc : 0.3ppb 8260/1.5ppb KET-AA/7.5ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 17:51 2020

Vial: 2
Operator: VLu
Inst : 67
Multiplr: 1.00

Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Compound	R.T.	QIon	Response	Conc Unit		Qvalue
39) 2,2,4-Trimethylpentane	8.56	57	69718	0.16 ug/l		95
40) 1,1-Dichloropropene	8.76	110	14830	0.29 ug/l		100
41) Carbon tetrachloride	8.94	119	32392	0.30 ug/l		99
42) tert-Amyl methyl ether (TA	9.08	87	9119	0.28 ug/l		98
44) 1,2-Dichloroethane	9.32	62	19306	0.29 ug/l		95
45) Benzene	9.32	78	114331	0.31 ug/l		96
46) Trichloroethene	10.57	130	30034	0.31 ug/l		97
47) Methylcyclohexane	10.65	83	46342	0.27 ug/l		99
48) 1,2-Dichloropropane	10.92	63	24125	0.30 ug/l		92
49) Bromodichloromethane	11.36	83	28391	0.29 ug/l		99
51) Dibromomethane	11.45	93	11022	0.29 ug/l		95
53) 4-Methyl-2-pentanone	12.09	43	41534	1.37 ug/l		97
54) cis-1,3-Dichloropropene	12.43	75	34910	0.29 ug/l		94
57) Toluene	12.95	91	111452	0.30 ug/l		100
58) Ethyl methacrylate	13.38	69	14577	0.27 ug/l		86
59) trans-1,3-Dichloropropene	13.35	75	23683	0.28 ug/l		96
60) 1,1,2-Trichloroethane	13.60	97	13256	0.30 ug/l		96
61) 2-Hexanone	13.67	43	26296	1.42 ug/l		96
62) 1,3-Dichloropropane	14.05	76	23363	0.29 ug/l		96
63) Tetrachloroethene	14.09	164	22287	0.30 ug/l		99
64) Dibromochloromethane	14.44	129	15051	0.28 ug/l		99
65) 1,2-Dibromoethane	14.80	107	11486	0.27 ug/l		98
66) 1-Chlorohexane	15.13	91	43434	0.30 ug/l		99
67) Chlorobenzene	15.51	112	62203	0.30 ug/l		100
68) 1,1,1,2-Tetrachloroethane	15.60	131	17986	0.28 ug/l	#	66
69) Ethylbenzene	15.61	91	123907	0.30 ug/l		99
70) m-Xylene & p-Xylene	15.74	91	181727	0.61 ug/l		99
71) o-Xylene	16.47	91	84177	0.30 ug/l		98
72) Styrene	16.55	104	68457	0.31 ug/l		99
73) Isopropylbenzene	17.09	105	109115	0.30 ug/l		100
75) Bromoform	17.09	173	6957	0.27 ug/l		99
76) 1,1,2,2-Tetrachloroethane	17.38	83	12716	0.31 ug/l		99
78) 1,2,3-Trichloropropane	17.58	110	2714	0.27 ug/l		84
79) trans-1,4-Dichloro-2-buten	17.19	53	2442	0.24 ug/l		98
80) n-Propylbenzene	17.69	91	138415	0.31 ug/l		99
81) Bromobenzene	17.73	156	18911	0.30 ug/l		99
82) 1,3,5-Trimethylbenzene	17.91	105	82715	0.32 ug/l		99
83) 2-Chlorotoluene	17.92	91	81990	0.30 ug/l		95
84) 4-Chlorotoluene	17.99	91	75280	0.33 ug/l		93
85) tert-Butylbenzene	18.36	134	17743	0.31 ug/l		92
86) 1,2,4-Trimethylbenzene	18.40	105	79696	0.32 ug/l		97

(#) = qualifier out of range (m) = manual integration SH 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC454.D Vial: 2
Acq On : 30 Oct 2020 11:33 am Operator: VLu
Sample : VO67J301 Inst : 67
Misc : 0.3ppb 8260/1.5ppb KET-AA/7.5ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 17:51 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
87)	sec-Butylbenzene	18.62	105	117887	0.32 ug/l	99
88)	p-Isopropyltoluene	18.78	119	88851	0.32 ug/l	99
89)	1,3-Dichlorobenzene	18.88	146	39914	0.31 ug/l	99
90)	1,4-Dichlorobenzene	19.00	146	37910	0.30 ug/l	97
91)	n-Butylbenzene	19.24	91	93411	0.32 ug/l	99
92)	1,2-Dichlorobenzene	19.41	146	32448	0.32 ug/l	93
94)	1,2,4-Trichlorobenzene	21.03	180	16031	0.33 ug/l	95
95)	Hexachlorobutadiene	21.15	225	13545	0.34 ug/l	95
96)	Naphthalene	21.29	128	17924	0.31 ug/l	96
97)	1,2,3-Trichlorobenzene	21.54	180	10665	0.33 ug/l	94

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(#) = qualifier out of range (m) = manual integration

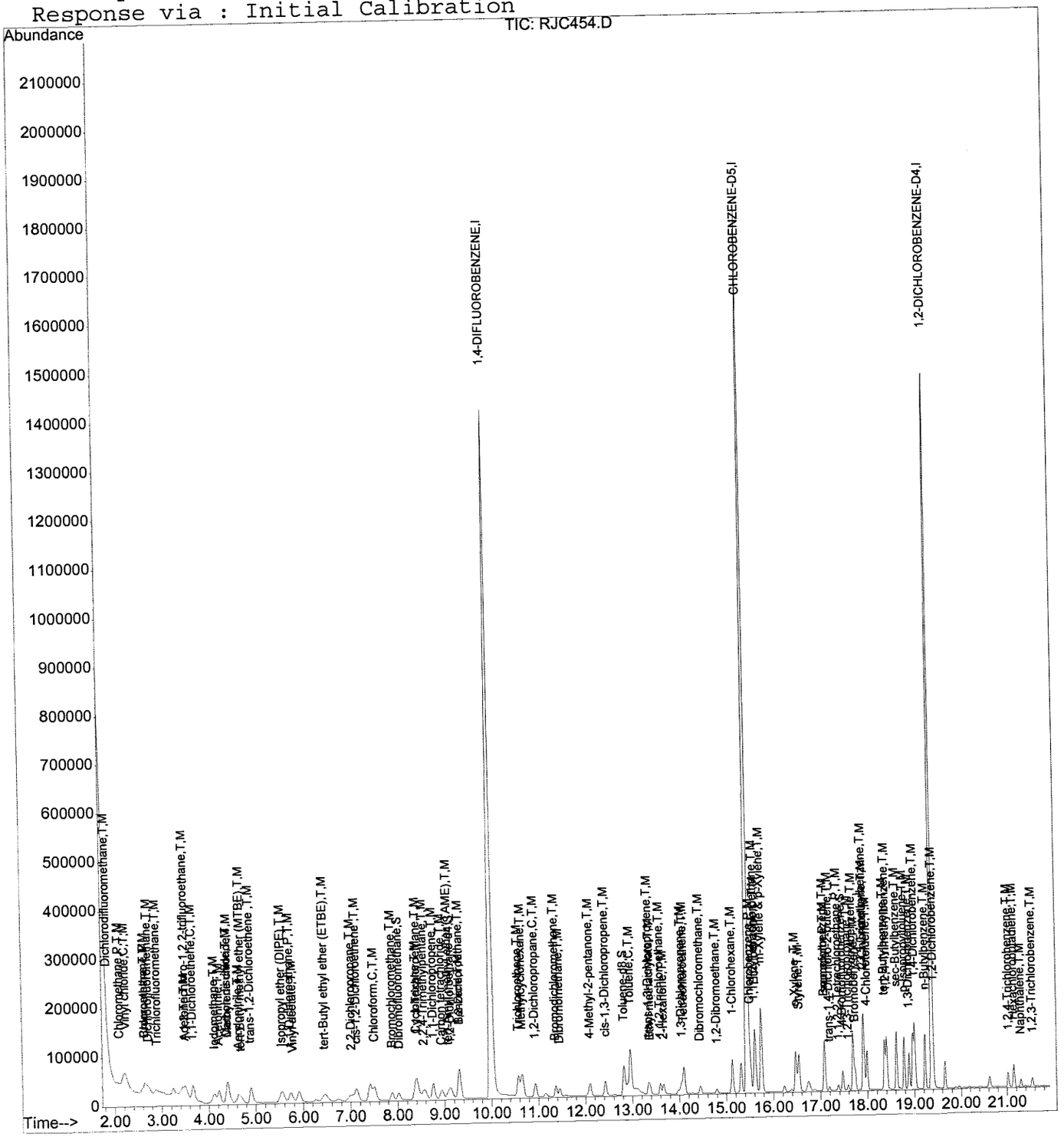
Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC454.D
Acq On : 30 Oct 2020 11:33 am
Sample : VO67J301
Misc : 0.3ppb 8260/1.5ppb KET-AA/7.5ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 17:51 2020

Vial: 2
Operator: VLu
Inst : 67
Multiplr: 1.00

Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



RJC454.D VO67J30.M Mon Nov 02 18:51:38 2020

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Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC455.D Vial: 3
Acq On : 30 Oct 2020 11:59 am Operator: VLu
Sample : VO67J302 Inst : 67
Misc : 0.5ppb 8260/2.5ppb KET-AA/12.5ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:46 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2547933	10.00	ug/l		0.00
55) CHLOROBENZENE-D5	15.45	117	1859780	10.00	ug/l		0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	579038	10.00	ug/l		0.00
System Monitoring Compounds							
35) Dibromofluoromethane	8.05	111	37874	0.46	ug/l		0.02
Spiked Amount 10.000			Recovery =	4.60%			
43) 1,2-Dichloroethane-d4	9.14	65	25152	0.47	ug/l		0.00
Spiked Amount 10.000			Recovery =	4.70%			
56) Toluene-d8	12.82	98	131093	0.46	ug/l		0.00
Spiked Amount 10.000			Recovery =	4.60%			
77) 4-Bromofluorobenzene	17.47	95	36998	0.47	ug/l		0.00
Spiked Amount 10.000			Recovery =	4.70%			
Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.85	85	47542	0.54	ug/l		90
4) Chloromethane	2.11	50	72422	0.54	ug/l		99
5) Vinyl chloride	2.21	62	62415	0.49	ug/l		70
6) Bromomethane	2.62	94	48282	0.44	ug/l		93
7) Chloroethane	2.64	64	45622	0.49	ug/l		96
8) Dichlorofluoromethane	2.70	67	102754	0.52	ug/l		92
9) Trichlorofluoromethane	2.91	101	60660	0.46	ug/l		100
11) Acrolein	3.44	56	17181	3.11	ug/l		74
12) 1,1,2-Trichloro-1,2,2-trif	3.48	151	35548	0.51	ug/l		97
13) Acetone	3.52	43	39936	5.08	ug/l		82
14) 1,1-Dichloroethene	3.69	61	75944	0.48	ug/l		98
15) tert-Butyl alcohol	3.81	59	33866	12.44	ug/l		93
16) Methyl acetate	4.19	43	12810	0.49	ug/l		77
17) Iodomethane	4.13	142	73091	0.51	ug/l		99
18) Acetonitrile	4.23	41	63113	5.01	ug/l		100
19) Methylene chloride	4.42	49	60339	0.54	ug/l		99
20) Carbon disulfide	4.41	76	177683	0.46	ug/l		97
21) Acrylonitrile	4.66	53	26540	2.29	ug/l		94
22) tert-Butyl methyl ether (M	4.70	73	62676	0.49	ug/l		98
23) trans-1,2-Dichloroethene	4.92	96	55279	0.49	ug/l		99
24) Isopropyl ether (DIPE)	5.56	45	123057	0.51	ug/l		96
25) 1,1-Dichloroethane	5.75	63	87026	0.50	ug/l		100
26) Vinyl acetate	5.81	43	42830	0.49	ug/l		91
27) 2-Butanol	6.31	45	27126	11.28	ug/l	#	1
28) tert-Butyl ethyl ether (ET	6.47	59	93641	0.51	ug/l		95
29) 2-Butanone	6.75	72	7120	2.16	ug/l		77
30) 2,2-Dichloropropane	7.04	77	62391	0.52	ug/l		96

(#) = qualifier out of range (m) = manual integration
RJC455.D VO67J30.M Mon Nov 02 18:52:52 2020 Page 1

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Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC455.D Vial: 3
Acq On : 30 Oct 2020 11:59 am Operator: VLu
Sample : VO67J302 Inst : 67
Misc : 0.5ppb 8260/2.5ppb KET-AA/12.5ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:46 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,2-Dichloroethene	7.15	96	53648	0.49 ug/l	99
32)	Chloroform	7.53	83	78241	0.48 ug/l	99
33)	Bromochloromethane	7.90	130	23093	0.48 ug/l	100
34)	tert-Amyl alcohol	8.00	59	4534	2.00 ug/l	82
36)	Tetrahydrofuran	8.02	42	4057	0.49 ug/l	77
37)	1,1,1-Trichloroethane	8.43	97	67050	0.51 ug/l	99
38)	Cyclohexane	8.41	84	61598	0.40 ug/l	100
39)	2,2,4-Trimethylpentane	8.59	57	194623	0.44 ug/l	99
40)	1,1-Dichloropropene	8.78	110	23886	0.47 ug/l	98
41)	Carbon tetrachloride	8.95	119	54346	0.50 ug/l	100
42)	tert-Amyl methyl ether (TA	9.10	87	16180	0.50 ug/l	91
44)	1,2-Dichloroethane	9.35	62	33141	0.50 ug/l	98
45)	Benzene	9.32	78	184572	0.49 ug/l	96
46)	Trichloroethene	10.59	130	48274	0.49 ug/l	99
47)	Methylcyclohexane	10.66	83	72596	0.42 ug/l	98
48)	1,2-Dichloropropane	10.94	63	39738	0.48 ug/l	97
49)	Bromodichloromethane	11.38	83	48174	0.49 ug/l	99
50)	1,4-Dioxane	11.47	88	2812	9.40 ug/l	80
51)	Dibromomethane	11.45	93	18258	0.48 ug/l	98
53)	4-Methyl-2-pentanone	12.11	43	73406	2.42 ug/l	98
54)	cis-1,3-Dichloropropene	12.43	75	57469	0.48 ug/l	94
57)	Toluene	12.97	91	182122	0.50 ug/l	100
58)	Ethyl methacrylate	13.38	69	25245	0.48 ug/l	93
59)	trans-1,3-Dichloropropene	13.35	75	40040	0.47 ug/l	95
60)	1,1,2-Trichloroethane	13.60	97	22006	0.49 ug/l	98
61)	2-Hexanone	13.67	43	45010	2.44 ug/l	95
62)	1,3-Dichloropropane	14.05	76	39081	0.48 ug/l	95
63)	Tetrachloroethene	14.09	164	35405	0.48 ug/l	99
64)	Dibromochloromethane	14.46	129	26684	0.50 ug/l	98
65)	1,2-Dibromoethane	14.80	107	20570	0.49 ug/l	99
66)	1-Chlorohexane	15.13	91	69611	0.48 ug/l	99
67)	Chlorobenzene	15.51	112	101196	0.49 ug/l	99
68)	1,1,1,2-Tetrachloroethane	15.60	131	31646	0.49 ug/l	88
69)	Ethylbenzene	15.63	91	202474	0.50 ug/l	99
70)	m-Xylene & p-Xylene	15.74	91	294627	0.99 ug/l	100
71)	o-Xylene	16.47	91	137261	0.49 ug/l	98
72)	Styrene	16.55	104	109387	0.50 ug/l	80
73)	Isopropylbenzene	17.09	105	178229	0.49 ug/l	100
75)	Bromoform	17.09	173	12440	0.48 ug/l	98
76)	1,1,2,2-Tetrachloroethane	17.37	83	21540	0.51 ug/l	100
78)	1,2,3-Trichloropropane	17.58	110	5284	0.51 ug/l	92

(#) = qualifier out of range (m) = manual integration
RJC455.D VO67J30.M Mon Nov 02 18:52:53 2020 Page 2

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Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC455.D Vial: 3
Acq On : 30 Oct 2020 11:59 am Operator: VLu
Sample : VO67J302 Inst : 67
Misc : 0.5ppb 8260/2.5ppb KET-AA/12.5ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:46 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
79)	trans-1,4-Dichloro-2-buten	17.19	53	5373	0.51	ug/l	88
80)	n-Propylbenzene	17.69	91	224220	0.50	ug/l	99
81)	Bromobenzene	17.73	156	30535	0.48	ug/l	100
82)	1,3,5-Trimethylbenzene	17.91	105	132446	0.49	ug/l	99
83)	2-Chlorotoluene	17.92	91	132375	0.48	ug/l	95
84)	4-Chlorotoluene	17.99	91	121259	0.52	ug/l	94
85)	tert-Butylbenzene	18.36	134	28494	0.48	ug/l	93
86)	1,2,4-Trimethylbenzene	18.40	105	125708	0.50	ug/l	100
87)	sec-Butylbenzene	18.62	105	191230	0.50	ug/l	99
88)	p-Isopropyltoluene	18.78	119	142119	0.50	ug/l	97
89)	1,3-Dichlorobenzene	18.88	146	64544	0.49	ug/l	100
90)	1,4-Dichlorobenzene	19.00	146	62794	0.49	ug/l	100
91)	n-Butylbenzene	19.22	91	146353	0.50	ug/l	99
92)	1,2-Dichlorobenzene	19.41	146	51646	0.50	ug/l	93
93)	1,2-Dibromo-3-chloropropan	20.18	157	2200	0.49	ug/l	84
94)	1,2,4-Trichlorobenzene	21.02	180	24732	0.50	ug/l	99
95)	Hexachlorobutadiene	21.15	225	20680	0.51	ug/l	98
96)	Naphthalene	21.29	128	28690	0.49	ug/l	97
97)	1,2,3-Trichlorobenzene	21.54	180	16644	0.50	ug/l	99

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(#) = qualifier out of range (m) = manual integration

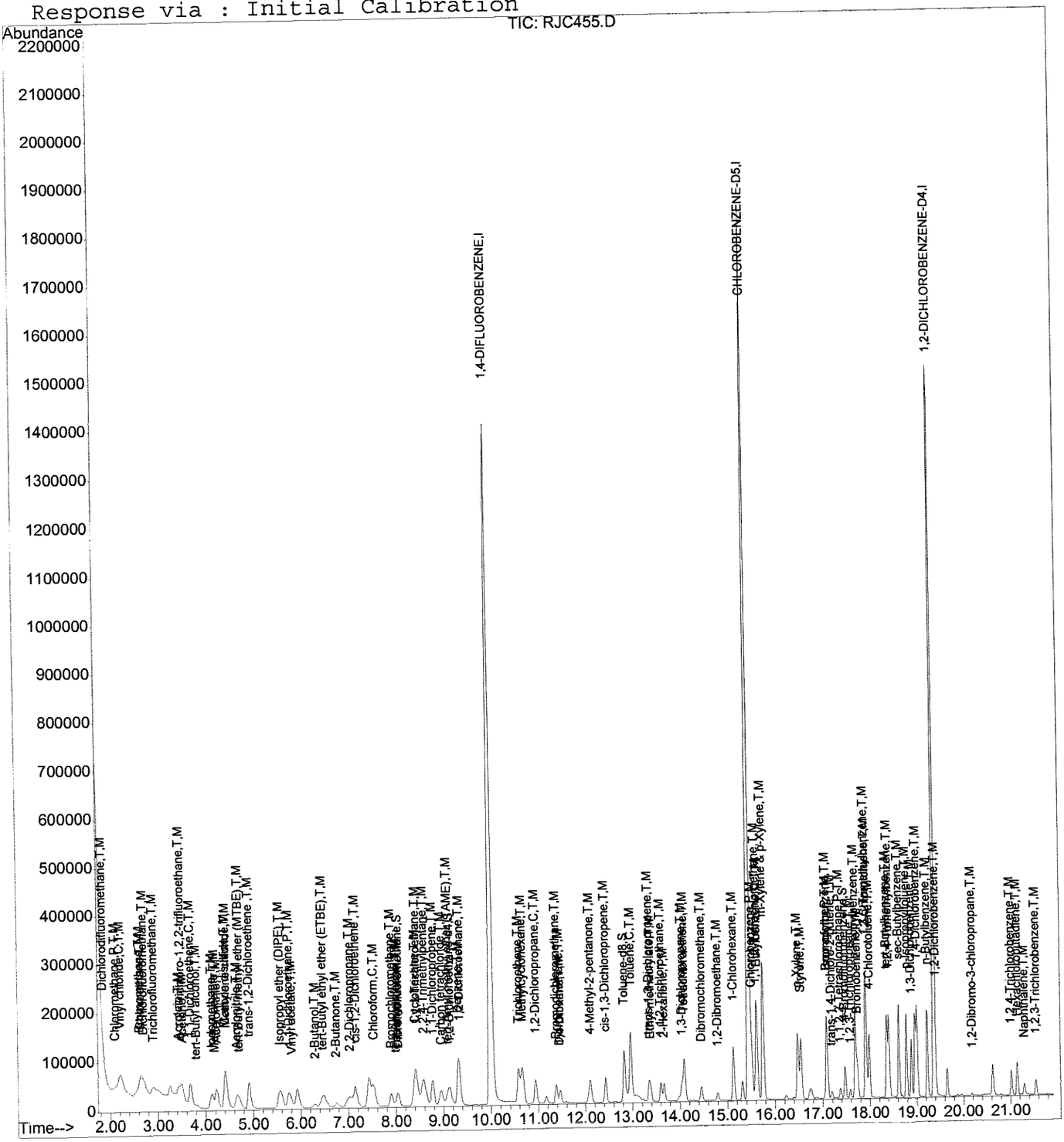
Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC455.D
Acq On : 30 Oct 2020 11:59 am
Sample : VO67J302
Misc : 0.5ppb 8260/2.5ppb KET-AA/12.5ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 16:46 2020

Vial: 3
Operator: VLu
Inst : 67
Multiplr: 1.00

Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



RJC455.D VO67J30.M Mon Nov 02 18:52:55 2020 Su 11/4/20 Page 4

Quantitation Report (Not Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC456.D Vial: 4
Acq On : 30 Oct 2020 12:24 pm Operator: VLu
Sample : VO67J303 Inst : 67
Misc : 1.0ppb 8260/5.0ppb KET-AA/25ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:46 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2591758	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1876998	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	585378	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.03	111	77634	0.92	ug/l	0.00
Spiked Amount 10.000			Recovery =	9.20%		
43) 1,2-Dichloroethane-d4	9.14	65	50192	0.93	ug/l	0.00
Spiked Amount 10.000			Recovery =	9.30%		
56) Toluene-d8	12.82	98	264721	0.92	ug/l	0.00
Spiked Amount 10.000			Recovery =	9.20%		
77) 4-Bromofluorobenzene	17.47	95	78048	0.98	ug/l	0.00
Spiked Amount 10.000			Recovery =	9.80%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	85560	0.96	ug/l	90
4) Chloromethane	2.13	50	154576	1.13	ug/l	99
5) Vinyl chloride	2.23	62	139197	1.08	ug/l	95
6) Bromomethane	2.64	94	109474	0.97	ug/l	94
7) Chloroethane	2.66	64	101327	1.07	ug/l	96
8) Dichlorofluoromethane	2.72	67	186097	0.93	ug/l	95
9) Trichlorofluoromethane	2.90	101	138025	1.03	ug/l	98
11) Acrolein	3.44	56	30532	5.44	ug/l	68
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	63854	0.90	ug/l	100
13) Acetone	3.52	43	60745	7.60	ug/l	85
14) 1,1-Dichloroethene	3.68	61	143078	0.89	ug/l	99
15) tert-Butyl alcohol	3.82	59	65065	23.49	ug/l	97
16) Methyl acetate	4.20	43	46162	1.75	ug/l	68
17) Iodomethane	4.13	142	142622	0.98	ug/l	100
18) Acetonitrile	4.23	41	118677	9.26	ug/l	97
19) Methylene chloride	4.42	49	107822	0.95	ug/l	99
20) Carbon disulfide	4.41	76	397173	1.01	ug/l	96
21) Acrylonitrile	4.66	53	54102	4.58	ug/l	96
22) tert-Butyl methyl ether (M	4.70	73	121245	0.93	ug/l	100
23) trans-1,2-Dichloroethene	4.92	96	103333	0.90	ug/l	100
24) Isopropyl ether (DIPE)	5.56	45	229923	0.94	ug/l	99
25) 1,1-Dichloroethane	5.75	63	163909	0.93	ug/l	100
26) Vinyl acetate	5.81	43	91313	1.03	ug/l	93
27) 2-Butanol	6.29	45	57564	23.53	ug/l	98
28) tert-Butyl ethyl ether (ET	6.48	59	177197	0.94	ug/l	99
29) 2-Butanone	6.76	72	14888	4.45	ug/l	93
30) 2,2-Dichloropropane	7.04	77	118293	0.97	ug/l	98

(#) = qualifier out of range (m) = manual integration
RJC456.D VO67J30.M Mon Nov 02 18:53:25 2020 Su 11/4/20 Page 1

Quantitation Report (Not Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC456.D Vial: 4
Acq On : 30 Oct 2020 12:24 pm Operator: VLu
Sample : VO67J303 Inst : 67
Misc : 1.0ppb 8260/5.0ppb KET-AA/25ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:46 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,2-Dichloroethene	7.15	96	102426	0.92 ug/l	100
32) Chloroform	7.53	83	157042	0.95 ug/l	96
33) Bromochloromethane	7.90	130	44863	0.92 ug/l	97
34) tert-Amyl alcohol	8.00	59	10368	4.51 ug/l	97
36) Tetrahydrofuran	7.99	42	8419	1.00 ug/l	88
37) 1,1,1-Trichloroethane	8.43	97	123792	0.92 ug/l	98
38) Cyclohexane	8.41	84	152271	0.97 ug/l	100
39) 2,2,4-Trimethylpentane	8.59	57	441868	0.98 ug/l	100
40) 1,1-Dichloropropene	8.78	110	46190	0.89 ug/l	98
41) Carbon tetrachloride	8.95	119	100137	0.91 ug/l	99
42) tert-Amyl methyl ether (TA	9.10	87	30537	0.93 ug/l	96
44) 1,2-Dichloroethane	9.35	62	63259	0.95 ug/l	98
45) Benzene	9.32	78	348459	0.92 ug/l	98
46) Trichloroethene	10.59	130	89513	0.89 ug/l	99
47) Methylcyclohexane	10.66	83	167887	0.95 ug/l	97
48) 1,2-Dichloropropane	10.94	63	76359	0.92 ug/l	99
49) Bromodichloromethane	11.38	83	93175	0.93 ug/l	98
50) 1,4-Dioxane	11.48	88	6122	20.12 ug/l	98
51) Dibromomethane	11.47	93	36169	0.93 ug/l	99
53) 4-Methyl-2-pentanone	12.11	43	140502	4.56 ug/l	99
54) cis-1,3-Dichloropropene	12.43	75	109857	0.90 ug/l	95
57) Toluene	12.97	91	341568	0.92 ug/l	100
58) Ethyl methacrylate	13.38	69	49714	0.93 ug/l	97
59) trans-1,3-Dichloropropene	13.35	75	78137	0.92 ug/l	96
60) 1,1,2-Trichloroethane	13.60	97	42065	0.93 ug/l	99
61) 2-Hexanone	13.67	43	87929	4.73 ug/l	95
62) 1,3-Dichloropropane	14.05	76	76457	0.93 ug/l	99
63) Tetrachloroethene	14.09	164	65525	0.89 ug/l	99
64) Dibromochloromethane	14.46	129	50405	0.93 ug/l	98
65) 1,2-Dibromoethane	14.80	107	41024	0.96 ug/l	98
66) 1-Chlorohexane	15.13	91	132435	0.90 ug/l	99
67) Chlorobenzene	15.51	112	190941	0.92 ug/l	100
68) 1,1,1,2-Tetrachloroethane	15.60	131	58389	0.90 ug/l	91
69) Ethylbenzene	15.61	91	374784	0.91 ug/l	100
70) m-Xylene & p-Xylene	15.74	91	541619	1.80 ug/l	99
71) o-Xylene	16.48	91	264277	0.93 ug/l	98
72) Styrene	16.55	104	201603	0.91 ug/l	79
73) Isopropylbenzene	17.09	105	334693	0.90 ug/l	100
75) Bromoform	17.09	173	24517	0.93 ug/l	100
76) 1,1,2,2-Tetrachloroethane	17.38	83	41357	0.96 ug/l	99
78) 1,2,3-Trichloropropane	17.59	110	10327	0.99 ug/l	97

(#) = qualifier out of range (m) = manual integration
RJC456.D VO67J30.M Mon Nov 02 18:53:26 2020 Page 2

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Quantitation Report (Not Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC456.D Vial: 4
Acq On : 30 Oct 2020 12:24 pm Operator: VLu
Sample : VO67J303 Inst : 67
Misc : 1.0ppb 8260/5.0ppb KET-AA/25ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:46 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
79)	trans-1,4-Dichloro-2-buten	17.19	53	10015	0.94 ug/l	96
80)	n-Propylbenzene	17.69	91	419538	0.92 ug/l	100
81)	Bromobenzene	17.73	156	59899	0.93 ug/l	100
82)	1,3,5-Trimethylbenzene	17.91	105	249227	0.92 ug/l	99
83)	2-Chlorotoluene	17.92	91	254402	0.91 ug/l	99
84)	4-Chlorotoluene	17.99	91	224857	0.96 ug/l	100
85)	tert-Butylbenzene	18.36	134	53717	0.90 ug/l	93
86)	1,2,4-Trimethylbenzene	18.40	105	237886	0.94 ug/l	98
87)	sec-Butylbenzene	18.62	105	354756	0.93 ug/l	99
88)	p-Isopropyltoluene	18.78	119	269783	0.93 ug/l	99
89)	1,3-Dichlorobenzene	18.88	146	120460	0.91 ug/l	100
90)	1,4-Dichlorobenzene	19.00	146	119195	0.92 ug/l	99
91)	n-Butylbenzene	19.22	91	276410	0.93 ug/l	99
92)	1,2-Dichlorobenzene	19.40	146	97854	0.93 ug/l	96
93)	1,2-Dibromo-3-chloropropan	20.18	157	4041	0.89 ug/l	82
94)	1,2,4-Trichlorobenzene	21.02	180	45642	0.92 ug/l	99
95)	Hexachlorobutadiene	21.15	225	38813	0.95 ug/l	99
96)	Naphthalene	21.29	128	56691	0.95 ug/l	99
97)	1,2,3-Trichlorobenzene	21.54	180	31076	0.92 ug/l	99

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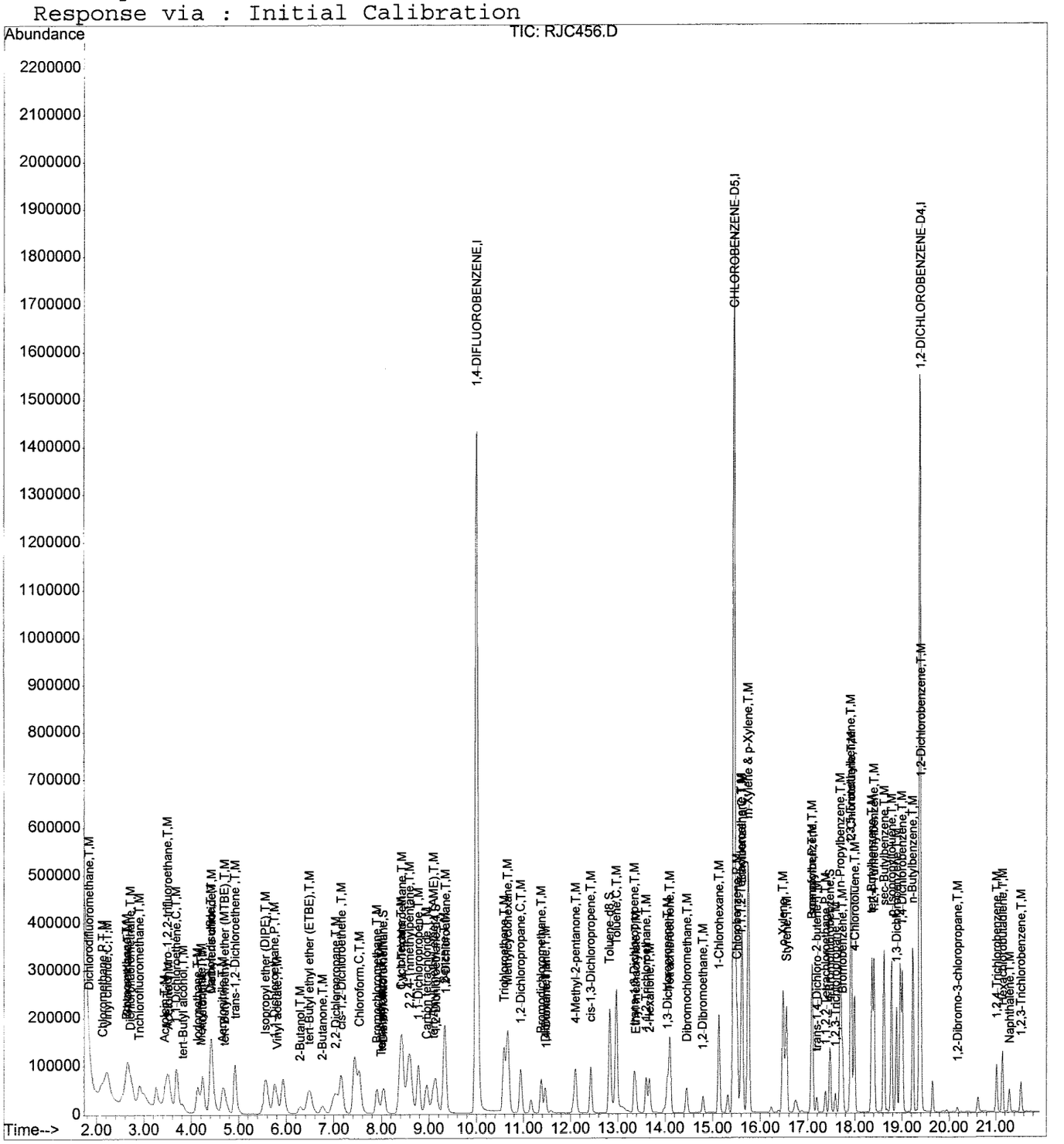
(#) = qualifier out of range (m) = manual integration
RJC456.D VO67J30.M Mon Nov 02 18:53:26 2020 Page 3

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC456.D Vial: 4
Acq On : 30 Oct 2020 12:24 pm Operator: VLu
Sample : VO67J303 Inst : 67
Misc : 1.0ppb 8260/5.0ppb KET-AA/25ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:46 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC457.D Vial: 5
Acq On : 30 Oct 2020 12:50 pm Operator: VLu
Sample : VO67J304 Inst : 67
Misc : 2.0ppb 8260/10ppb KET-AA/50ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2504411	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1857262	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	600494	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	165144	2.02	ug/l	0.02
Spiked Amount 10.000			Recovery = 20.20%			
43) 1,2-Dichloroethane-d4	9.14	65	108722	2.08	ug/l	0.00
Spiked Amount 10.000			Recovery = 20.80%			
56) Toluene-d8	12.82	98	573410	2.02	ug/l	0.00
Spiked Amount 10.000			Recovery = 20.20%			
77) 4-Bromofluorobenzene	17.47	95	161385	1.98	ug/l	0.00
Spiked Amount 10.000			Recovery = 19.80%			
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	168957	1.95	ug/l	99
4) Chloromethane	2.13	50	275240	2.08	ug/l	100
5) Vinyl chloride	2.23	62	257153	2.06	ug/l	97
6) Bromomethane	2.64	94	209725	1.93	ug/l	97
7) Chloroethane	2.64	64	182567	1.99	ug/l	99
8) Dichlorofluoromethane	2.72	67	388846	2.00	ug/l	97
9) Trichlorofluoromethane	2.90	101	255323	1.98	ug/l	100
11) Acrolein	3.43	56	58515	10.79	ug/l	86
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	134972	1.96	ug/l	98
13) Acetone	3.52	43	97911	12.68	ug/l	93
14) 1,1-Dichloroethene	3.68	61	303420	1.95	ug/l	99
15) tert-Butyl alcohol	3.82	59	132262	49.42	ug/l	100
16) Methyl acetate	4.20	43	55820	2.19	ug/l	88
17) Iodomethane	4.13	142	287514	2.05	ug/l	100
18) Acetonitrile	4.23	41	246373	19.89	ug/l	99
19) Methylene chloride	4.42	49	216383	1.97	ug/l	100
20) Carbon disulfide	4.41	76	709975	1.87	ug/l	98
21) Acrylonitrile	4.66	53	109599	9.60	ug/l	97
22) tert-Butyl methyl ether (M	4.69	73	253453	2.02	ug/l	100
23) trans-1,2-Dichloroethene	4.92	96	218546	1.97	ug/l	100
24) Isopropyl ether (DIPE)	5.56	45	479134	2.03	ug/l	98
25) 1,1-Dichloroethane	5.75	63	345548	2.02	ug/l	100
26) Vinyl acetate	5.81	43	169755	1.99	ug/l	98
27) 2-Butanol	6.28	45	118958	50.32	ug/l	96
28) tert-Butyl ethyl ether (ET	6.48	59	376886	2.07	ug/l	99
29) 2-Butanone	6.75	72	31814	9.84	ug/l	97
30) 2,2-Dichloropropane	7.04	77	239968	2.04	ug/l	99

(#) = qualifier out of range (m) = manual integration SU 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC457.D Vial: 5
Acq On : 30 Oct 2020 12:50 pm Operator: VLu
Sample : VO67J304 Inst : 67
Misc : 2.0ppb 8260/10ppb KET-AA/50ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,2-Dichloroethene	7.15	96	215312	1.99 ug/l	100
32)	Chloroform	7.53	83	328206	2.05 ug/l	99
33)	Bromochloromethane	7.90	130	94409	1.99 ug/l	98
34)	tert-Amyl alcohol	8.00	59	21538	9.69 ug/l	99
36)	Tetrahydrofuran	7.99	42	16499	2.03 ug/l	98
37)	1,1,1-Trichloroethane	8.43	97	259756	2.00 ug/l	100
38)	Cyclohexane	8.41	84	298419	1.97 ug/l	99
39)	2,2,4-Trimethylpentane	8.59	57	862530	1.98 ug/l	100
40)	1,1-Dichloropropene	8.78	110	100590	2.01 ug/l	97
41)	Carbon tetrachloride	8.95	119	214329	2.00 ug/l	99
42)	tert-Amyl methyl ether (TA	9.10	87	65167	2.05 ug/l	98
44)	1,2-Dichloroethane	9.35	62	130248	2.01 ug/l	98
45)	Benzene	9.32	78	734451	2.00 ug/l	100
46)	Trichloroethene	10.57	130	189020	1.95 ug/l	99
47)	Methylcyclohexane	10.66	83	333388	1.95 ug/l	100
48)	1,2-Dichloropropane	10.94	63	161740	2.01 ug/l	99
49)	Bromodichloromethane	11.38	83	193202	1.99 ug/l	100
50)	1,4-Dioxane	11.47	88	11315	38.49 ug/l	92
51)	Dibromomethane	11.45	93	74057	1.98 ug/l	99
53)	4-Methyl-2-pentanone	12.09	43	289204	9.70 ug/l	99
54)	cis-1,3-Dichloropropene	12.43	75	229593	1.95 ug/l	98
57)	Toluene	12.97	91	720301	1.97 ug/l	100
58)	Ethyl methacrylate	13.38	69	103079	1.94 ug/l	97
59)	trans-1,3-Dichloropropene	13.35	75	164990	1.95 ug/l	98
60)	1,1,2-Trichloroethane	13.60	97	88372	1.98 ug/l	100
61)	2-Hexanone	13.67	43	181972	9.89 ug/l	97
62)	1,3-Dichloropropane	14.05	76	158621	1.95 ug/l	99
63)	Tetrachloroethene	14.09	164	138422	1.90 ug/l	99
64)	Dibromochloromethane	14.46	129	105838	1.97 ug/l	99
65)	1,2-Dibromoethane	14.80	107	83962	1.99 ug/l	98
66)	1-Chlorohexane	15.13	91	281755	1.94 ug/l	99
67)	Chlorobenzene	15.51	112	407503	1.98 ug/l	100
68)	1,1,1,2-Tetrachloroethane	15.60	131	123195	1.92 ug/l	96
69)	Ethylbenzene	15.61	91	801466	1.97 ug/l	100
70)	m-Xylene & p-Xylene	15.74	91	1171853	3.93 ug/l	99
71)	o-Xylene	16.47	91	558884	1.98 ug/l	100
72)	Styrene	16.55	104	433967	1.98 ug/l	80
73)	Isopropylbenzene	17.09	105	721598	1.97 ug/l	100
75)	Bromoform	17.09	173	52407	1.93 ug/l	99
76)	1,1,2,2-Tetrachloroethane	17.37	83	88055	2.00 ug/l	99
78)	1,2,3-Trichloropropane	17.58	110	22610	2.11 ug/l	99

(#) = qualifier out of range (m) = manual integration
RJC457.D VO67J30.M Mon Nov 02 18:55:02 2020 Page 2

11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC457.D
Acq On : 30 Oct 2020 12:50 pm
Sample : VO67J304
Misc : 2.0ppb 8260/10ppb KET-AA/50ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020

Vial: 5
Operator: VLu
Inst : 67
Multiplr: 1.00
Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
79) trans-1,4-Dichloro-2-buten	17.19	53	21468	1.97 ug/l	98
80) n-Propylbenzene	17.69	91	927536	1.99 ug/l	100
81) Bromobenzene	17.73	156	127337	1.93 ug/l	100
82) 1,3,5-Trimethylbenzene	17.91	105	541374	1.95 ug/l	100
83) 2-Chlorotoluene	17.92	91	546331	1.91 ug/l	100
84) 4-Chlorotoluene	17.99	91	482130	2.01 ug/l	100
85) tert-Butylbenzene	18.36	134	119157	1.95 ug/l	95
86) 1,2,4-Trimethylbenzene	18.40	105	515535	1.98 ug/l	99
87) sec-Butylbenzene	18.62	105	773526	1.97 ug/l	100
88) p-Isopropyltoluene	18.78	119	596549	2.00 ug/l	99
89) 1,3-Dichlorobenzene	18.88	146	264423	1.95 ug/l	100
90) 1,4-Dichlorobenzene	19.00	146	261014	1.97 ug/l	100
91) n-Butylbenzene	19.22	91	611006	2.00 ug/l	100
92) 1,2-Dichlorobenzene	19.40	146	211130	1.95 ug/l	99
93) 1,2-Dibromo-3-chloropropan	20.18	157	9435	2.02 ug/l	96
94) 1,2,4-Trichlorobenzene	21.02	180	101214	1.98 ug/l	99
95) Hexachlorobutadiene	21.15	225	84368	2.00 ug/l	100
96) Naphthalene	21.29	128	121505	1.99 ug/l	99
97) 1,2,3-Trichlorobenzene	21.54	180	70243	2.02 ug/l	98

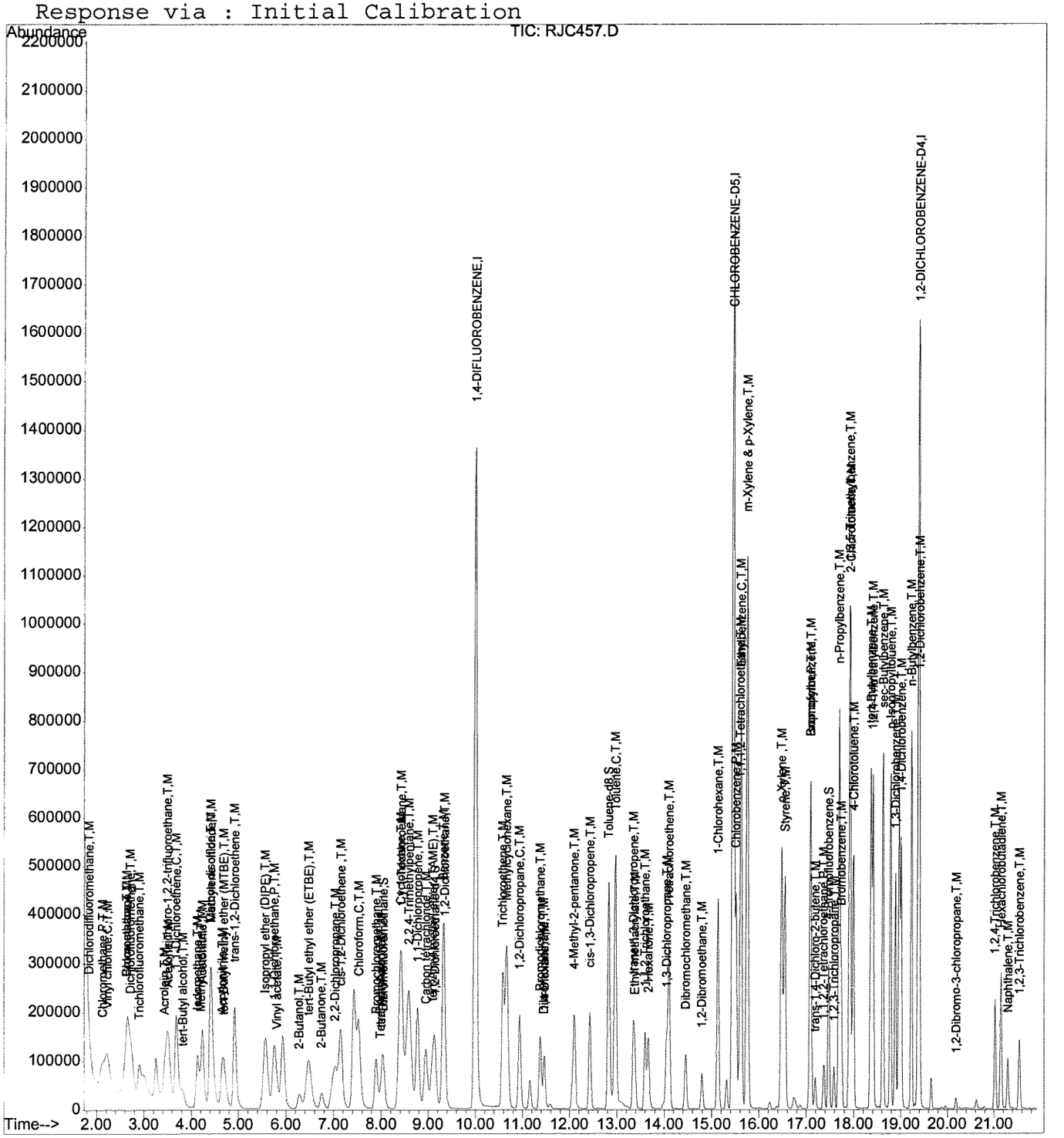
Su 11/4/20

(#) = qualifier out of range (m) = manual integration
RJC457.D VO67J30.M Mon Nov 02 18:55:02 2020 Page 3

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC457.D Vial: 5
Acq On : 30 Oct 2020 12:50 pm Operator: VLu
Sample : VO67J304 Inst : 67
Misc : 2.0ppb 8260/10ppb KET-AA/50ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



RJC457.D VO67J30.M Mon Nov 02 18:55:05 2020 Page 4

SC 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC458.D Vial: 6
Acq On : 30 Oct 2020 1:16 pm Operator: VLu
Sample : VO67J305 Inst : 67
Misc : 5.0ppb 8260/25ppb KET-AA/125ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2469907	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1828509	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	603772	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.03	111	410475	5.09	ug/l	0.00
Spiked Amount 10.000			Recovery =	50.90%		
43) 1,2-Dichloroethane-d4	9.14	65	260489	5.05	ug/l	0.00
Spiked Amount 10.000			Recovery =	50.50%		
56) Toluene-d8	12.82	98	1422242	5.10	ug/l	0.00
Spiked Amount 10.000			Recovery =	51.00%		
77) 4-Bromofluorobenzene	17.47	95	402349	4.90	ug/l	0.00
Spiked Amount 10.000			Recovery =	49.00%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	439761	5.15	ug/l	100
4) Chloromethane	2.11	50	683395	5.23	ug/l	100
5) Vinyl chloride	2.23	62	691058	5.61	ug/l	99
6) Bromomethane	2.64	94	567866	5.30	ug/l	100
7) Chloroethane	2.64	64	482780	5.34	ug/l	99
8) Dichlorofluoromethane	2.72	67	950336	4.97	ug/l	99
9) Trichlorofluoromethane	2.90	101	661903	5.19	ug/l	96
11) Acrolein	3.44	56	136007	25.44	ug/l	96
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	340960	5.03	ug/l	100
13) Acetone	3.52	43	190873	25.06	ug/l	99
14) 1,1-Dichloroethene	3.68	61	752641	4.91	ug/l	100
15) tert-Butyl alcohol	3.80	59	338973	128.43	ug/l	99
16) Methyl acetate	4.19	43	126334	5.03	ug/l	93
17) Iodomethane	4.13	142	663249	4.81	ug/l	99
18) Acetonitrile	4.24	41	600346	49.14	ug/l	99
19) Methylene chloride	4.43	49	518693	4.80	ug/l	100
20) Carbon disulfide	4.40	76	1867137	4.98	ug/l	99
21) Acrylonitrile	4.64	53	276273	24.54	ug/l	99
22) tert-Butyl methyl ether (M	4.69	73	619771	5.01	ug/l	100
23) trans-1,2-Dichloroethene	4.91	96	540677	4.95	ug/l	100
24) Isopropyl ether (DIPE)	5.56	45	1148003	4.94	ug/l	97
25) 1,1-Dichloroethane	5.75	63	837778	4.96	ug/l	100
26) Vinyl acetate	5.80	43	410422	4.87	ug/l	99
27) 2-Butanol	6.28	45	297149	127.46	ug/l	99
28) tert-Butyl ethyl ether (ET	6.47	59	907331	5.06	ug/l	99
29) 2-Butanone	6.75	72	80459	25.22	ug/l	99
30) 2,2-Dichloropropane	7.04	77	575898	4.97	ug/l	100

(#) = qualifier out of range (m) = manual integration
RJC458.D VO67J30.M Mon Nov 02 18:55:21 2020 Page 1

SM 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC458.D Vial: 6
Acq On : 30 Oct 2020 1:16 pm Operator: VLu
Sample : VO67J305 Inst : 67
Misc : 5.0ppb 8260/25ppb KET-AA/125ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,2-Dichloroethene	7.14	96	527469	4.95 ug/l	100
32)	Chloroform	7.52	83	787770	5.00 ug/l	100
33)	Bromochloromethane	7.90	130	233224	4.99 ug/l	99
34)	tert-Amyl alcohol	7.99	59	55131	25.14 ug/l	99
36)	Tetrahydrofuran	7.99	42	40171	5.00 ug/l	99
37)	1,1,1-Trichloroethane	8.43	97	636005	4.95 ug/l	99
38)	Cyclohexane	8.41	84	783948	5.26 ug/l	99
39)	2,2,4-Trimethylpentane	8.59	57	2224554	5.18 ug/l	100
40)	1,1-Dichloropropene	8.78	110	247180	5.02 ug/l	99
41)	Carbon tetrachloride	8.95	119	529707	5.02 ug/l	100
42)	tert-Amyl methyl ether (TA	9.10	87	157703	5.03 ug/l	98
44)	1,2-Dichloroethane	9.35	62	315223	4.94 ug/l	99
45)	Benzene	9.32	78	1789127	4.95 ug/l	100
46)	Trichloroethene	10.59	130	466210	4.87 ug/l	99
47)	Methylcyclohexane	10.66	83	865023	5.14 ug/l	100
48)	1,2-Dichloropropane	10.94	63	392252	4.94 ug/l	99
49)	Bromodichloromethane	11.38	83	473595	4.96 ug/l	100
50)	1,4-Dioxane	11.47	88	28093	96.90 ug/l	99
51)	Dibromomethane	11.47	93	184454	4.99 ug/l	99
53)	4-Methyl-2-pentanone	12.09	43	720546	24.51 ug/l	99
54)	cis-1,3-Dichloropropene	12.43	75	568069	4.90 ug/l	99
57)	Toluene	12.97	91	1759659	4.89 ug/l	99
58)	Ethyl methacrylate	13.38	69	255774	4.90 ug/l	100
59)	trans-1,3-Dichloropropene	13.35	75	411095	4.95 ug/l	99
60)	1,1,2-Trichloroethane	13.60	97	213869	4.87 ug/l	99
61)	2-Hexanone	13.67	43	448485	24.76 ug/l	99
62)	1,3-Dichloropropane	14.05	76	395346	4.94 ug/l	100
63)	Tetrachloroethene	14.09	164	346173	4.82 ug/l	99
64)	Dibromochloromethane	14.46	129	261992	4.94 ug/l	100
65)	1,2-Dibromoethane	14.80	107	207798	5.01 ug/l	100
66)	1-Chlorohexane	15.13	91	703854	4.91 ug/l	100
67)	Chlorobenzene	15.51	112	992986	4.90 ug/l	100
68)	1,1,1,2-Tetrachloroethane	15.60	131	306625	4.85 ug/l	99
69)	Ethylbenzene	15.63	91	1967804	4.91 ug/l	99
70)	m-Xylene & p-Xylene	15.74	91	2883100	9.82 ug/l	100
71)	o-Xylene	16.47	91	1369082	4.93 ug/l	100
72)	Styrene	16.55	104	1062149	4.92 ug/l	100
73)	Isopropylbenzene	17.09	105	1795687	4.98 ug/l	100
75)	Bromoform	17.09	173	133032	4.88 ug/l	100
76)	1,1,2,2-Tetrachloroethane	17.38	83	216454	4.89 ug/l	100
78)	1,2,3-Trichloropropane	17.58	110	53431	4.96 ug/l	99

(#) = qualifier out of range (m) = manual integration

SG 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC458.D Vial: 6
Acq On : 30 Oct 2020 1:16 pm Operator: VLu
Sample : VO67J305 Inst : 67
Misc : 5.0ppb 8260/25ppb KET-AA/125ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
79)	trans-1,4-Dichloro-2-buten	17.19	53	53974	4.92 ug/l	98
80)	n-Propylbenzene	17.69	91	2307651	4.91 ug/l	100
81)	Bromobenzene	17.75	156	318526	4.79 ug/l	100
82)	1,3,5-Trimethylbenzene	17.91	105	1353397	4.84 ug/l	100
83)	2-Chlorotoluene	17.92	91	1340304	4.65 ug/l	94
84)	4-Chlorotoluene	17.99	91	1213621	5.02 ug/l	93
85)	tert-Butylbenzene	18.36	134	296089	4.83 ug/l	96
86)	1,2,4-Trimethylbenzene	18.40	105	1272319	4.86 ug/l	100
87)	sec-Butylbenzene	18.62	105	1930466	4.89 ug/l	100
88)	p-Isopropyltoluene	18.78	119	1461317	4.88 ug/l	99
89)	1,3-Dichlorobenzene	18.88	146	651778	4.79 ug/l	100
90)	1,4-Dichlorobenzene	19.00	146	643777	4.83 ug/l	100
91)	n-Butylbenzene	19.22	91	1521316	4.94 ug/l	100
92)	1,2-Dichlorobenzene	19.41	146	528511	4.86 ug/l	99
93)	1,2-Dibromo-3-chloropropan	20.18	157	24220	5.16 ug/l	99
94)	1,2,4-Trichlorobenzene	21.02	180	249580	4.86 ug/l	99
95)	Hexachlorobutadiene	21.15	225	207717	4.91 ug/l	99
96)	Naphthalene	21.29	128	304386	4.96 ug/l	100
97)	1,2,3-Trichlorobenzene	21.54	180	172518	4.94 ug/l	100

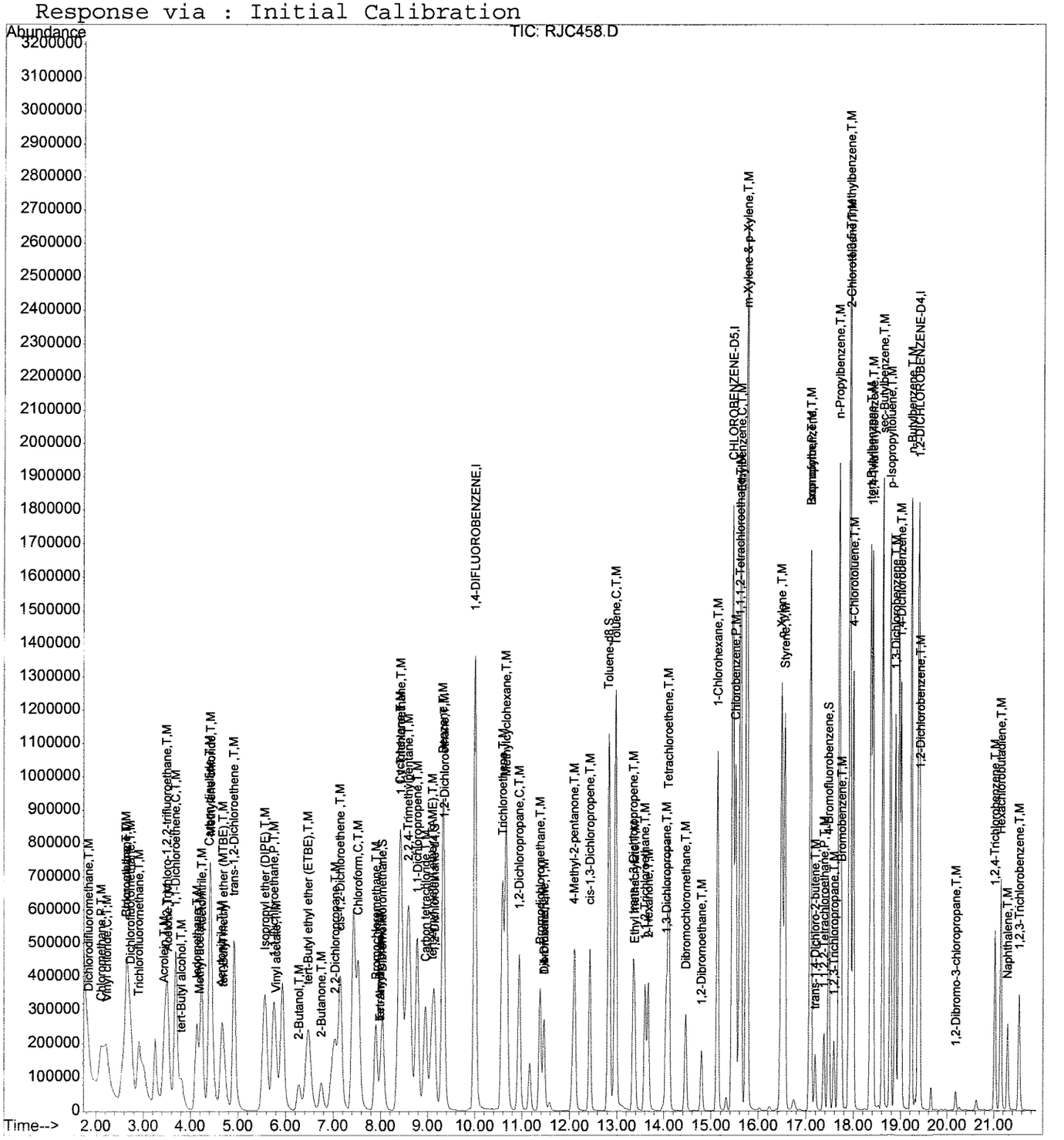
(#) = qualifier out of range (m) = manual integration
RJC458.D VO67J30.M Mon Nov 02 18:55:22 2020 Page 3

11/4/20

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC458.D Vial: 6
Acq On : 30 Oct 2020 1:16 pm Operator: VLu
Sample : VO67J305 Inst : 67
Misc : 5.0ppb 8260/25ppb KET-AA/125ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



RJC458.D VO67J30.M Mon Nov 02 18:55:24 2020 Page 4

11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC459.D
Acq On : 30 Oct 2020 1:41 pm
Sample : VO67J306
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020

Vial: 7
Operator: VLu
Inst : 67
Multiplr: 1.00
Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2484539	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1854704	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	612676	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.03	111	871140	10.74	ug/l	0.00
Spiked Amount 10.000			Recovery =	107.40%		
43) 1,2-Dichloroethane-d4	9.14	65	551928	10.63	ug/l	0.00
Spiked Amount 10.000			Recovery =	106.30%		
56) Toluene-d8	12.82	98	3077049	10.87	ug/l	0.00
Spiked Amount 10.000			Recovery =	108.70%		
77) 4-Bromofluorobenzene	17.47	95	859025	10.32	ug/l	0.00
Spiked Amount 10.000			Recovery =	103.20%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	864860	10.07	ug/l	100
4) Chloromethane	2.11	50	1339060	10.18	ug/l	100
5) Vinyl chloride	2.23	62	1359809	10.97	ug/l	100
6) Bromomethane	2.62	94	1125147	10.44	ug/l	100
7) Chloroethane	2.64	64	921172	10.14	ug/l	100
8) Dichlorofluoromethane	2.72	67	1824113	9.48	ug/l	100
9) Trichlorofluoromethane	2.91	101	1318218	10.28	ug/l	100
11) Acrolein	3.44	56	252879	47.02	ug/l	100
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	661586	9.70	ug/l	100
13) Acetone	3.52	43	357543	46.66	ug/l	100
14) 1,1-Dichloroethene	3.68	61	1470648	9.54	ug/l	100
15) tert-Butyl alcohol	3.81	59	647555	243.89	ug/l	100
16) Methyl acetate	4.19	43	251186	9.93	ug/l	100
17) Iodomethane	4.13	142	1326205	9.55	ug/l	100
18) Acetonitrile	4.23	41	1172204	95.38	ug/l	100
19) Methylene chloride	4.42	49	1004181	9.23	ug/l	100
20) Carbon disulfide	4.41	76	3783442	10.04	ug/l	100
21) Acrylonitrile	4.66	53	553984	48.93	ug/l	100
22) tert-Butyl methyl ether (M	4.69	73	1207663	9.71	ug/l	100
23) trans-1,2-Dichloroethene	4.92	96	1060946	9.65	ug/l	100
24) Isopropyl ether (DIPE)	5.56	45	2214406	9.48	ug/l	100
25) 1,1-Dichloroethane	5.75	63	1627506	9.59	ug/l	100
26) Vinyl acetate	5.81	43	832217	9.82	ug/l	100
27) 2-Butanol	6.28	45	606198	258.49	ug/l	100
28) tert-Butyl ethyl ether (ET	6.47	59	1733632	9.62	ug/l	100
29) 2-Butanone	6.75	72	160108	49.90	ug/l	100
30) 2,2-Dichloropropane	7.04	77	1107482	9.50	ug/l	100

(#) = qualifier out of range (m) = manual integration
RJC459.D VO67J30.M Mon Nov 02 18:55:33 2020

SA 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC459.D Vial: 7
Acq On : 30 Oct 2020 1:41 pm Operator: VLu
Sample : VO67J306 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,2-Dichloroethene	7.16	96	1036251	9.67	ug/l	100
32)	Chloroform	7.54	83	1522086	9.60	ug/l	100
33)	Bromochloromethane	7.90	130	457936	9.74	ug/l	100
34)	tert-Amyl alcohol	7.99	59	115273	52.26	ug/l	100
36)	Tetrahydrofuran	7.99	42	80901	10.01	ug/l	100
37)	1,1,1-Trichloroethane	8.43	97	1242169	9.62	ug/l	100
38)	Cyclohexane	8.41	84	1588144	10.59	ug/l	100
39)	2,2,4-Trimethylpentane	8.59	57	4518615	10.46	ug/l	100
40)	1,1-Dichloropropene	8.78	110	482428	9.74	ug/l	100
41)	Carbon tetrachloride	8.95	119	1026153	9.68	ug/l	100
42)	tert-Amyl methyl ether (TA	9.10	87	311724	9.88	ug/l	100
44)	1,2-Dichloroethane	9.35	62	621479	9.69	ug/l	100
45)	Benzene	9.32	78	3499564	9.62	ug/l	100
46)	Trichloroethene	10.59	130	924026	9.59	ug/l	100
47)	Methylcyclohexane	10.66	83	1750950	10.34	ug/l	100
48)	1,2-Dichloropropane	10.94	63	767908	9.61	ug/l	100
49)	Bromodichloromethane	11.38	83	927367	9.65	ug/l	100
50)	1,4-Dioxane	11.46	88	58214	199.61	ug/l	100
51)	Dibromomethane	11.46	93	363892	9.79	ug/l	100
53)	4-Methyl-2-pentanone	12.09	43	1446041	48.91	ug/l	100
54)	cis-1,3-Dichloropropene	12.43	75	1117330	9.58	ug/l	100
57)	Toluene	12.97	91	3486966	9.55	ug/l	100
58)	Ethyl methacrylate	13.38	69	514155	9.71	ug/l	100
59)	trans-1,3-Dichloropropene	13.35	75	811310	9.62	ug/l	100
60)	1,1,2-Trichloroethane	13.60	97	429243	9.64	ug/l	100
61)	2-Hexanone	13.67	43	896971	48.81	ug/l	100
62)	1,3-Dichloropropane	14.05	76	780116	9.61	ug/l	100
63)	Tetrachloroethene	14.11	164	681988	9.36	ug/l	100
64)	Dibromochloromethane	14.46	129	518695	9.65	ug/l	100
65)	1,2-Dibromoethane	14.79	107	409112	9.72	ug/l	100
66)	1-Chlorohexane	15.13	91	1383571	9.52	ug/l	100
67)	Chlorobenzene	15.51	112	1958231	9.54	ug/l	100
68)	1,1,1,2-Tetrachloroethane	15.61	131	604596	9.43	ug/l	100
69)	Ethylbenzene	15.63	91	3892605	9.58	ug/l	100
70)	m-Xylene & p-Xylene	15.76	91	5774124	19.40	ug/l	100
71)	o-Xylene	16.47	91	2691866	9.56	ug/l	100
72)	Styrene	16.55	104	2121322	9.68	ug/l	100
73)	Isopropylbenzene	17.09	105	3530704	9.65	ug/l	100
75)	Bromoform	17.09	173	269549	9.75	ug/l	100
76)	1,1,2,2-Tetrachloroethane	17.38	83	433400	9.65	ug/l	100
78)	1,2,3-Trichloropropane	17.58	110	106461	9.74	ug/l	100

(#) = qualifier out of range (m) = manual integration

SU 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC459.D Vial: 7
Acq On : 30 Oct 2020 1:41 pm Operator: VLu
Sample : VO67J306 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
79) trans-1,4-Dichloro-2-buten	17.19	53	106382	9.56 ug/l	100
80) n-Propylbenzene	17.69	91	4566315	9.58 ug/l	100
81) Bromobenzene	17.74	156	631455	9.37 ug/l	100
82) 1,3,5-Trimethylbenzene	17.91	105	2689741	9.49 ug/l	100
83) 2-Chlorotoluene	17.92	91	2890950	9.89 ug/l	100
84) 4-Chlorotoluene	17.99	91	2162562	8.81 ug/l	100
85) tert-Butylbenzene	18.37	134	587277	9.43 ug/l	100
86) 1,2,4-Trimethylbenzene	18.40	105	2528257	9.51 ug/l	100
87) sec-Butylbenzene	18.62	105	3824943	9.54 ug/l	100
88) p-Isopropyltoluene	18.78	119	2937300	9.67 ug/l	100
89) 1,3-Dichlorobenzene	18.88	146	1295344	9.38 ug/l	100
90) 1,4-Dichlorobenzene	19.00	146	1276141	9.43 ug/l	100
91) n-Butylbenzene	19.23	91	3065647	9.82 ug/l	100
92) 1,2-Dichlorobenzene	19.41	146	1043939	9.46 ug/l	100
93) 1,2-Dibromo-3-chloropropan	20.18	157	48889	10.25 ug/l	100
94) 1,2,4-Trichlorobenzene	21.02	180	501862	9.62 ug/l	100
95) Hexachlorobutadiene	21.15	225	411131	9.57 ug/l	100
96) Naphthalene	21.29	128	624796	10.04 ug/l	100
97) 1,2,3-Trichlorobenzene	21.54	180	349857	9.86 ug/l	100

SA 11/4/20

(#) = qualifier out of range (m) = manual integration
RJC459.D VO67J30.M Mon Nov 02 18:55:34 2020 Page 3

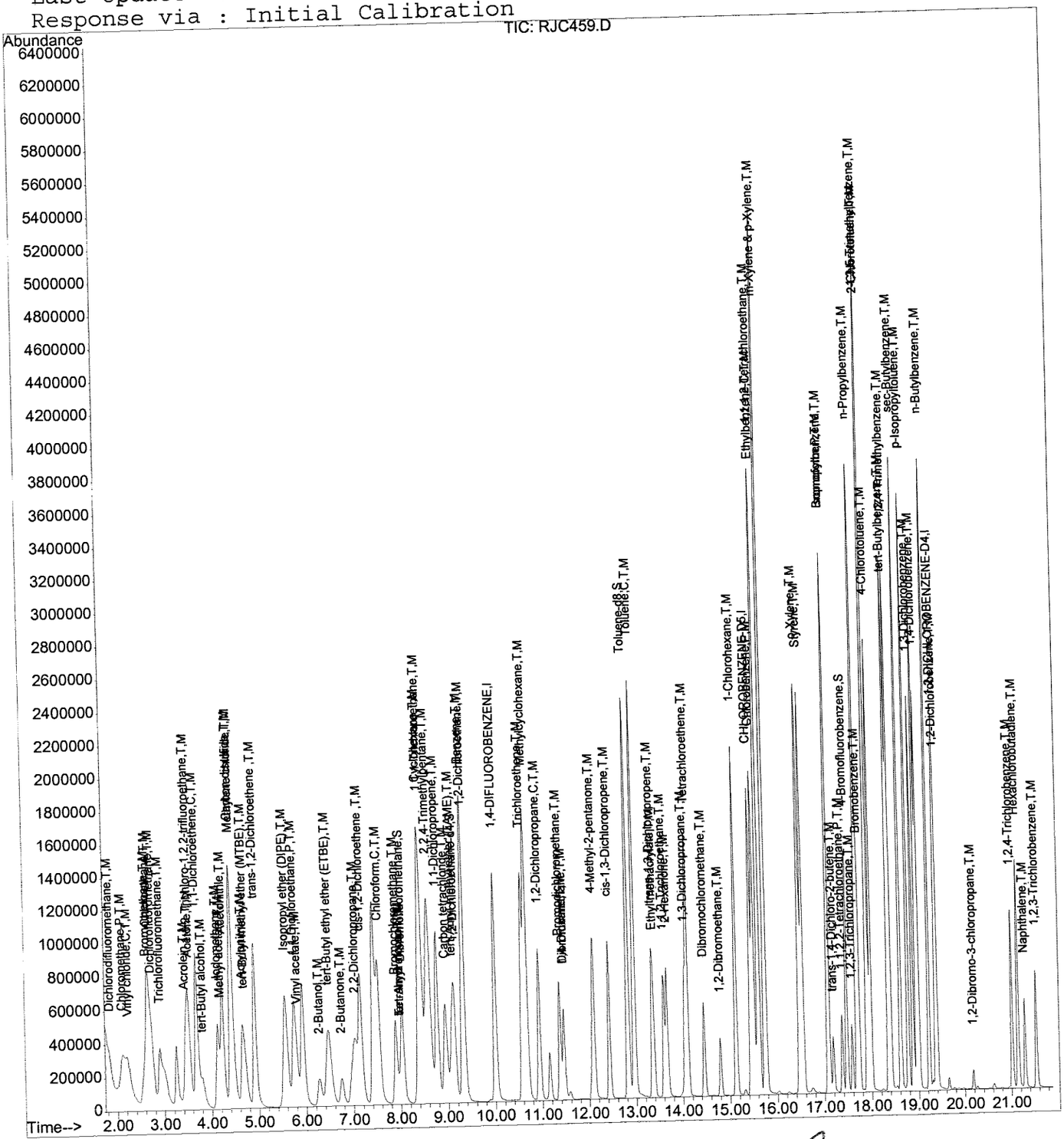
Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC459.D
Acq On : 30 Oct 2020 1:41 pm
Sample : VO67J306
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020

Vial: 7
Operator: VLu
Inst : 67
Multiplr: 1.00

Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



SU 11/4/20

Quantitation Report (Not Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC461.D Vial: 9
Acq On : 30 Oct 2020 2:07 pm Operator: VLu
Sample : VO67J307 Inst : 67
Misc : 20ppb 8260/100ppb KET-AA/500ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2393433	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1789811	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	600078	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	1620905	20.74	ug/l	0.01
Spiked Amount 10.000			Recovery =	207.40%		
43) 1,2-Dichloroethane-d4	9.14	65	1022657	20.45	ug/l	0.00
Spiked Amount 10.000			Recovery =	204.50%		
56) Toluene-d8	12.82	98	5764380	21.10	ug/l	0.00
Spiked Amount 10.000			Recovery =	211.00%		
77) 4-Bromofluorobenzene	17.48	95	1611039	19.75	ug/l	0.01
Spiked Amount 10.000			Recovery =	197.50%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	1685434	20.38	ug/l	99
4) Chloromethane	2.11	50	2457473	19.39	ug/l	100
5) Vinyl chloride	2.23	62	2523227	21.13	ug/l	100
6) Bromomethane	2.62	94	2197105	21.15	ug/l	100
7) Chloroethane	2.64	64	1797094	20.53	ug/l	100
8) Dichlorofluoromethane	2.70	67	3787360	20.43	ug/l	99
9) Trichlorofluoromethane	2.91	101	2583423	20.92	ug/l	100
11) Acrolein	3.44	56	513613	99.13	ug/l	100
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	1360073	20.71	ug/l	100
13) Acetone	3.52	43	706811	95.76	ug/l	100
14) 1,1-Dichloroethene	3.68	61	3160070	21.28	ug/l	99
15) tert-Butyl alcohol	3.80	59	1296061	506.73	ug/l	99
16) Methyl acetate	4.19	43	467481	19.19	ug/l	97
17) Iodomethane	4.13	142	2655813	19.86	ug/l	98
18) Acetonitrile	4.24	41	2399227	202.64	ug/l	99
19) Methylene chloride	4.43	49	2045841	19.52	ug/l	99
20) Carbon disulfide	4.40	76	7493978	20.64	ug/l	100
21) Acrylonitrile	4.64	53	1135559	104.11	ug/l	99
22) tert-Butyl methyl ether (M	4.69	73	2450048	20.45	ug/l	99
23) trans-1,2-Dichloroethene	4.91	96	2190210	20.69	ug/l	99
24) Isopropyl ether (DIPE)	5.56	45	4518468	20.08	ug/l	100
25) 1,1-Dichloroethane	5.75	63	3354263	20.51	ug/l	100
26) Vinyl acetate	5.80	43	1661049	20.36	ug/l	99
27) 2-Butanol	6.28	45	1141724	505.37	ug/l	98
28) tert-Butyl ethyl ether (ET	6.47	59	3509621	20.21	ug/l	99
29) 2-Butanone	6.75	72	327462	105.94	ug/l	96
30) 2,2-Dichloropropane	7.04	77	2281819	20.33	ug/l	99

(#) = qualifier out of range (m) = manual integration

Su 11/4/20

Quantitation Report (Not Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC461.D Vial: 9
Acq On : 30 Oct 2020 2:07 pm Operator: VLu
Sample : VO67J307 Inst : 67
Misc : 20ppb 8260/100ppb KET-AA/500ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,2-Dichloroethene	7.14	96	2132109	20.66 ug/l	99
32) Chloroform	7.54	83	3134822	20.52 ug/l	100
33) Bromochloromethane	7.90	130	943465	20.84 ug/l	100
34) tert-Amyl alcohol	7.99	59	210199	98.92 ug/l	99
36) Tetrahydrofuran	7.99	42	155721	20.01 ug/l	97
37) 1,1,1-Trichloroethane	8.43	97	2544961	20.45 ug/l	99
38) Cyclohexane	8.41	84	3090170	21.39 ug/l	100
39) 2,2,4-Trimethylpentane	8.59	57	8431974	20.26 ug/l	100
40) 1,1-Dichloropropene	8.78	110	994671	20.85 ug/l	99
41) Carbon tetrachloride	8.95	119	2120451	20.76 ug/l	99
42) tert-Amyl methyl ether (TA	9.10	87	627665	20.65 ug/l	100
44) 1,2-Dichloroethane	9.35	62	1266564	20.50 ug/l	100
45) Benzene	9.32	78	7286706	20.80 ug/l	99
46) Trichloroethene	10.59	130	1886335	20.33 ug/l	100
47) Methylcyclohexane	10.66	83	3402751	20.85 ug/l	100
48) 1,2-Dichloropropane	10.94	63	1577966	20.50 ug/l	100
49) Bromodichloromethane	11.38	83	1914196	20.68 ug/l	100
50) 1,4-Dioxane	11.46	88	118248	420.88 ug/l	98
51) Dibromomethane	11.46	93	747657	20.89 ug/l	100
53) 4-Methyl-2-pentanone	12.09	43	2955733	103.77 ug/l	99
54) cis-1,3-Dichloropropene	12.43	75	2328630	20.73 ug/l	100
57) Toluene	12.97	91	7315921	20.76 ug/l	100
58) Ethyl methacrylate	13.38	69	1061044	20.77 ug/l	99
59) trans-1,3-Dichloropropene	13.35	75	1700269	20.90 ug/l	99
60) 1,1,2-Trichloroethane	13.60	97	880384	20.49 ug/l	99
61) 2-Hexanone	13.67	43	1810946	102.12 ug/l	99
62) 1,3-Dichloropropane	14.05	76	1609986	20.55 ug/l	99
63) Tetrachloroethene	14.11	164	1438363	20.46 ug/l	99
64) Dibromochloromethane	14.46	129	1077258	20.77 ug/l	100
65) 1,2-Dibromoethane	14.79	107	837014	20.60 ug/l	100
66) 1-Chlorohexane	15.13	91	2900802	20.69 ug/l	100
67) Chlorobenzene	15.52	112	4111601	20.75 ug/l	100
68) 1,1,1,2-Tetrachloroethane	15.61	131	1272414	20.57 ug/l	100
69) Ethylbenzene	15.63	91	8281616	21.12 ug/l	100
70) m-Xylene & p-Xylene	15.76	91	12489339	43.48 ug/l	99
71) o-Xylene	16.49	91	5677055	20.90 ug/l	99
72) Styrene	16.55	104	4343860	20.54 ug/l	98
73) Isopropylbenzene	17.09	105	7507004	21.26 ug/l	100
75) Bromoform	17.09	173	573810	21.20 ug/l	100
76) 1,1,2,2-Tetrachloroethane	17.38	83	886296	20.14 ug/l	100
78) 1,2,3-Trichloropropane	17.58	110	216866	20.26 ug/l	100

(#) = qualifier out of range (m) = manual integration
RJC461.D VO67J30.M Mon Nov 02 18:55:43 2020 Page 2

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Quantitation Report (Not Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC461.D Vial: 9
Acq On : 30 Oct 2020 2:07 pm Operator: VLu
Sample : VO67J307 Inst : 67
Misc : 20ppb 8260/100ppb KET-AA/500ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
79)	trans-1,4-Dichloro-2-buten	17.19	53	223469	20.51 ug/l	99
80)	n-Propylbenzene	17.69	91	9830146	21.06 ug/l	99
81)	Bromobenzene	17.74	156	1335055	20.22 ug/l	100
82)	1,3,5-Trimethylbenzene	17.91	105	5761496	20.75 ug/l	99
83)	2-Chlorotoluene	17.92	91	6160728	21.51 ug/l	100
84)	4-Chlorotoluene	17.99	91	4678888	19.47 ug/l	100
85)	tert-Butylbenzene	18.37	134	1233022	20.22 ug/l	98
86)	1,2,4-Trimethylbenzene	18.42	105	5332944	20.48 ug/l	100
87)	sec-Butylbenzene	18.62	105	8188325	20.86 ug/l	99
88)	p-Isopropyltoluene	18.78	119	6239859	20.98 ug/l	99
89)	1,3-Dichlorobenzene	18.88	146	2772788	20.49 ug/l	99
90)	1,4-Dichlorobenzene	19.02	146	2713415	20.48 ug/l	99
91)	n-Butylbenzene	19.23	91	6495798	21.24 ug/l	99
92)	1,2-Dichlorobenzene	19.41	146	2176476	20.14 ug/l	98
93)	1,2-Dibromo-3-chloropropan	20.18	157	100290	21.48 ug/l	99
94)	1,2,4-Trichlorobenzene	21.02	180	1035588	20.27 ug/l	100
95)	Hexachlorobutadiene	21.15	225	842820	20.03 ug/l	99
96)	Naphthalene	21.29	128	1246400	20.45 ug/l	100
97)	1,2,3-Trichlorobenzene	21.54	180	703280	20.24 ug/l	99

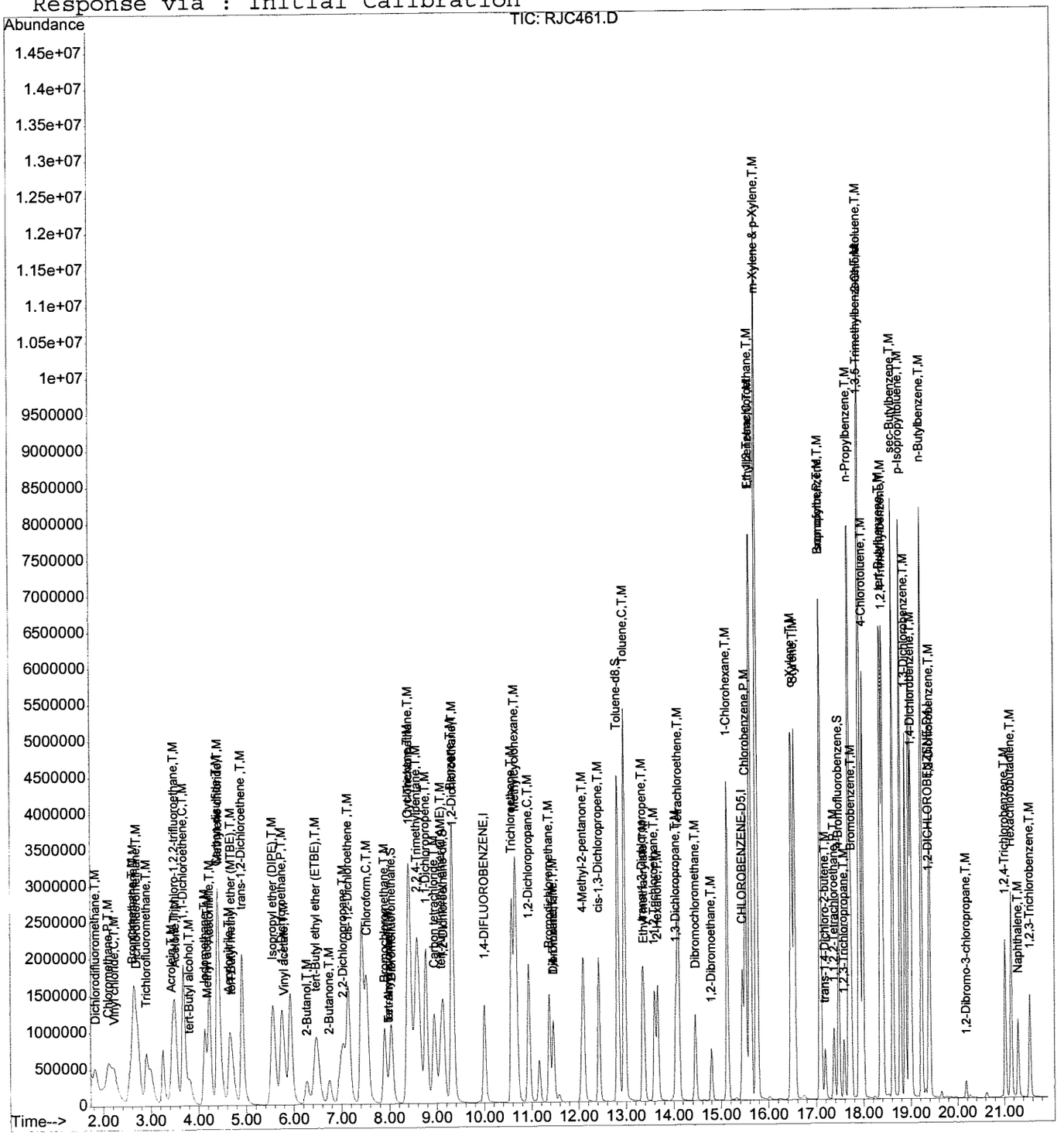
Sa 11/4/20

(#) = qualifier out of range (m) = manual integration
RJC461.D VO67J30.M Mon Nov 02 18:55:43 2020 Page 3

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC461.D Vial: 9
Acq On : 30 Oct 2020 2:07 pm Operator: VLu
Sample : VO67J307 Inst : 67
Misc : 20ppb 8260/100ppb KET-AA/500ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



SG 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC462.D Vial: 10
Acq On : 30 Oct 2020 2:33 pm Operator: VLu
Sample : VO67J308 Inst : 67
Misc : 30ppb 8260/150ppb KET-AA/750ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2430537	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1826539	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	621291	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	2564147	32.31	ug/l	0.01
Spiked Amount 10.000			Recovery = 323.10%			
43) 1,2-Dichloroethane-d4	9.14	65	1618650	31.88	ug/l	0.00
Spiked Amount 10.000			Recovery = 318.80%			
56) Toluene-d8	12.84	98	9233072	33.11	ug/l	0.01
Spiked Amount 10.000			Recovery = 331.10%			
77) 4-Bromofluorobenzene	17.48	95	2580726	30.56	ug/l	0.01
Spiked Amount 10.000			Recovery = 305.60%			
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	2473734	29.45	ug/l	99
4) Chloromethane	2.11	50	3453384	26.83	ug/l	99
5) Vinyl chloride	2.21	62	3481437	28.71	ug/l	99
6) Bromomethane	2.62	94	3240622	30.72	ug/l	99
7) Chloroethane	2.64	64	2636462	29.66	ug/l	100
8) Dichlorofluoromethane	2.70	67	5780313	30.71	ug/l	99
9) Trichlorofluoromethane	2.91	101	3714380	29.61	ug/l	99
11) Acrolein	3.44	56	796579	151.39	ug/l	99
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	2094299	31.40	ug/l	100
13) Acetone	3.52	43	1106024	147.55	ug/l	100
14) 1,1-Dichloroethene	3.68	61	4872158	32.31	ug/l	99
15) tert-Butyl alcohol	3.80	59	2084424	802.52	ug/l	100
16) Methyl acetate	4.19	43	728607	29.45	ug/l	97
17) Iodomethane	4.13	142	4160706	30.64	ug/l	98
18) Acetonitrile	4.23	41	3740158	311.08	ug/l	99
19) Methylene chloride	4.42	49	3161116	29.71	ug/l	99
20) Carbon disulfide	4.39	76	11340770	30.76	ug/l	100
21) Acrylonitrile	4.64	53	1802684	162.75	ug/l	100
22) tert-Butyl methyl ether (M	4.69	73	3855083	31.68	ug/l	100
23) trans-1,2-Dichloroethene	4.91	96	3382785	31.46	ug/l	100
24) Isopropyl ether (DIPE)	5.56	45	7025974	30.74	ug/l	98
25) 1,1-Dichloroethane	5.75	63	5147230	30.99	ug/l	100
26) Vinyl acetate	5.80	43	2573747	31.06	ug/l	99
27) 2-Butanol	6.28	45	1795946	782.82	ug/l	99
28) tert-Butyl ethyl ether (ET	6.48	59	5450180	30.91	ug/l	100
29) 2-Butanone	6.75	72	515771	164.31	ug/l	92
30) 2,2-Dichloropropane	7.04	77	3320547	29.13	ug/l	99

(#) = qualifier out of range (m) = manual integration
RJC462.D VO67J30.M Mon Nov 02 18:57:56 2020 Page 1

SU 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC462.D
Acq On : 30 Oct 2020 2:33 pm
Sample : VO67J308
Misc : 30ppb 8260/150ppb KET-AA/750ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020

Vial: 10
Operator: VLu
Inst : 67
Multiplr: 1.00
Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,2-Dichloroethene	7.16	96	3310183	31.58 ug/l	99
32) Chloroform	7.54	83	4831648	31.14 ug/l	100
33) Bromochloromethane	7.90	130	1470481	31.98 ug/l	100
34) tert-Amyl alcohol	7.99	59	345018	159.88 ug/l	100
36) Tetrahydrofuran	7.99	42	242935	30.74 ug/l	95
37) 1,1,1-Trichloroethane	8.43	97	3929756	31.10 ug/l	100
38) Cyclohexane	8.41	84	4691286	31.98 ug/l	100
39) 2,2,4-Trimethylpentane	8.60	57	12831005	30.36 ug/l	100
40) 1,1-Dichloropropene	8.78	110	1534886	31.68 ug/l	99
41) Carbon tetrachloride	8.95	119	3245543	31.28 ug/l	99
42) tert-Amyl methyl ether (TA	9.10	87	977681	31.67 ug/l	100
44) 1,2-Dichloroethane	9.35	62	1959636	31.23 ug/l	99
45) Benzene	9.33	78	11352428	31.90 ug/l	99
46) Trichloroethene	10.59	130	2968051	31.50 ug/l	99
47) Methylcyclohexane	10.66	83	5225730	31.54 ug/l	99
48) 1,2-Dichloropropane	10.94	63	2459178	31.46 ug/l	99
49) Bromodichloromethane	11.38	83	2974836	31.64 ug/l	100
50) 1,4-Dioxane	11.46	88	177875	623.45 ug/l	98
51) Dibromomethane	11.46	93	1149675	31.63 ug/l	98
53) 4-Methyl-2-pentanone	12.11	43	4731524	163.58 ug/l	100
54) cis-1,3-Dichloropropene	12.43	75	3630151	31.82 ug/l	100
57) Toluene	12.97	91	11443878	31.81 ug/l	100
58) Ethyl methacrylate	13.39	69	1699608	32.61 ug/l	99
59) trans-1,3-Dichloropropene	13.35	75	2681106	32.29 ug/l	99
60) 1,1,2-Trichloroethane	13.61	97	1384595	31.57 ug/l	99
61) 2-Hexanone	13.67	43	2911471	160.88 ug/l	99
62) 1,3-Dichloropropane	14.05	76	2546423	31.85 ug/l	100
63) Tetrachloroethene	14.11	164	2252823	31.40 ug/l	99
64) Dibromochloromethane	14.46	129	1695922	32.04 ug/l	100
65) 1,2-Dibromoethane	14.79	107	1329340	32.06 ug/l	99
66) 1-Chlorohexane	15.14	91	4509681	31.52 ug/l	100
67) Chlorobenzene	15.52	112	6439375	31.84 ug/l	99
68) 1,1,1,2-Tetrachloroethane	15.61	131	2018646	31.97 ug/l	98
69) Ethylbenzene	15.63	91	13088003	32.71 ug/l	99
70) m-Xylene & p-Xylene	15.76	91	19017849	64.87 ug/l	98
71) o-Xylene	16.49	91	8881127	32.03 ug/l	99
72) Styrene	16.55	104	6814548	31.57 ug/l	98
73) Isopropylbenzene	17.09	105	11911780	33.06 ug/l	99
75) Bromoform	17.10	173	926534	33.06 ug/l	99
76) 1,1,2,2-Tetrachloroethane	17.38	83	1396071	30.65 ug/l	99
78) 1,2,3-Trichloropropane	17.60	110	346379	31.26 ug/l	99

(#) = qualifier out of range (m) = manual integration

SU 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC462.D
Acq On : 30 Oct 2020 2:33 pm
Sample : VO67J308
Misc : 30ppb 8260/150ppb KET-AA/750ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020

Vial: 10
Operator: VLu
Inst : 67
Multiplr: 1.00
Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
79)	trans-1,4-Dichloro-2-buten	17.19	53	348107	30.85	ug/l	98
80)	n-Propylbenzene	17.70	91	15183018	31.42	ug/l	100
81)	Bromobenzene	17.74	156	2112787	30.90	ug/l	100
82)	1,3,5-Trimethylbenzene	17.92	105	9239857	32.14	ug/l	100
83)	2-Chlorotoluene	17.92	91	9629153	32.48	ug/l	99
84)	4-Chlorotoluene	17.99	91	7481359	30.07	ug/l	100
85)	tert-Butylbenzene	18.37	134	1928183	30.54	ug/l	96
86)	1,2,4-Trimethylbenzene	18.42	105	8341401	30.93	ug/l	100
87)	sec-Butylbenzene	18.62	105	12729349	31.32	ug/l	99
88)	p-Isopropyltoluene	18.78	119	9832273	31.94	ug/l	99
89)	1,3-Dichlorobenzene	18.88	146	4358265	31.11	ug/l	99
90)	1,4-Dichlorobenzene	19.01	146	4330460	31.57	ug/l	99
91)	n-Butylbenzene	19.23	91	10067039	31.80	ug/l	100
92)	1,2-Dichlorobenzene	19.41	146	3426704	30.62	ug/l	98
93)	1,2-Dibromo-3-chloropropan	20.18	157	160470	33.19	ug/l	99
94)	1,2,4-Trichlorobenzene	21.03	180	1619511	30.62	ug/l	100
95)	Hexachlorobutadiene	21.15	225	1293959	29.71	ug/l	99
96)	Naphthalene	21.29	128	1987525	31.50	ug/l	100
97)	1,2,3-Trichlorobenzene	21.54	180	1107056	30.78	ug/l	100

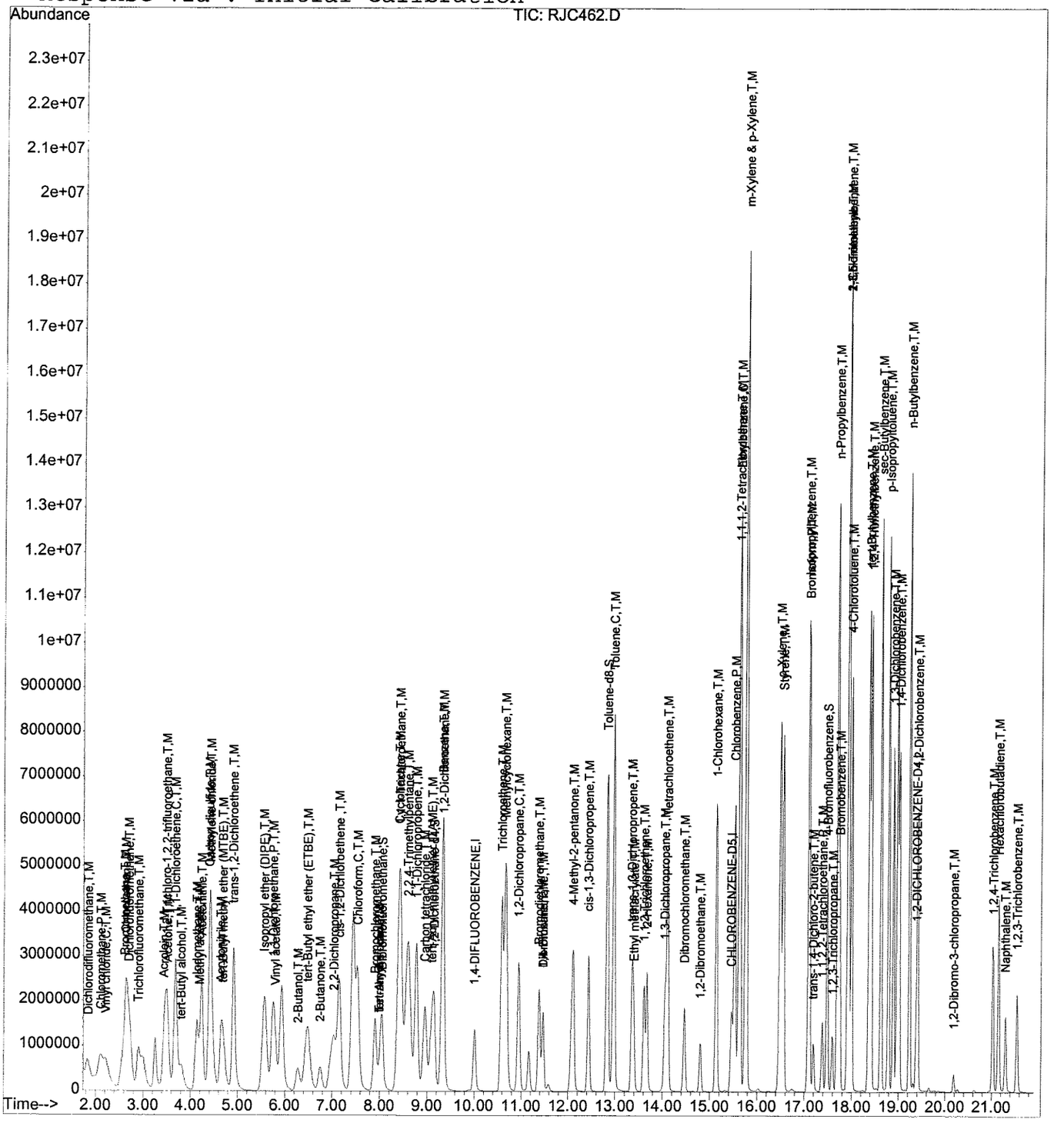
5-6-11/1/20

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC462.D Vial: 10
Acq On : 30 Oct 2020 2:33 pm Operator: VLu
Sample : VO67J308 Inst : 67
Misc : 30ppb 8260/150ppb KET-AA/750ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:47 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC463.D
Acq On : 30 Oct 2020 2:59 pm
Sample : VO67J309
Misc : 50ppb 8260/250ppb KET-AA/1250ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 16:48 2020

Vial: 11
Operator: VLu
Inst : 67
Multiplr: 1.00
Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2521775	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	1898899	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	630417	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	4187506	50.85	ug/l	0.01
Spiked Amount 10.000			Recovery =	508.50%		
43) 1,2-Dichloroethane-d4	9.14	65	2624947	49.83	ug/l	0.00
Spiked Amount 10.000			Recovery =	498.30%		
56) Toluene-d8	12.84	98	15459405	53.33	ug/l	0.01
Spiked Amount 10.000			Recovery =	533.30%		
77) 4-Bromofluorobenzene	17.48	95	4225272	49.31	ug/l	0.01
Spiked Amount 10.000			Recovery =	493.10%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	4313577	49.50	ug/l	99
4) Chloromethane	2.11	50	5574563	41.75	ug/l	99
5) Vinyl chloride	2.23	62	5412407	43.02	ug/l	100
6) Bromomethane	2.62	94	5445155	49.76	ug/l	99
7) Chloroethane	2.64	64	4455704	48.31	ug/l	100
8) Dichlorofluoromethane	2.72	67	9682216	49.57	ug/l	99
9) Trichlorofluoromethane	2.90	101	6235516	47.91	ug/l	100
11) Acrolein	3.44	56	1270643	232.75	ug/l	99
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	3500474	50.58	ug/l	100
13) Acetone	3.52	43	1804591	232.04	ug/l	100
14) 1,1-Dichloroethene	3.68	61	8195599	52.39	ug/l	98
15) tert-Butyl alcohol	3.82	59	3463416	1285.19	ug/l	99
16) Methyl acetate	4.19	43	1246481	48.56	ug/l	98
17) Iodomethane	4.13	142	6996865	49.66	ug/l	97
18) Acetonitrile	4.24	41	6279459	503.38	ug/l	99
19) Methylene chloride	4.42	49	5319649	48.18	ug/l	99
20) Carbon disulfide	4.40	76	19767416	51.67	ug/l	100
21) Acrylonitrile	4.66	53	2991128	260.27	ug/l	99
22) tert-Butyl methyl ether (M	4.70	73	6451780	51.10	ug/l	99
23) trans-1,2-Dichloroethene	4.92	96	5696216	51.06	ug/l	100
24) Isopropyl ether (DIPE)	5.56	45	11895297	50.16	ug/l	98
25) 1,1-Dichloroethane	5.75	63	8714950	50.58	ug/l	99
26) Vinyl acetate	5.81	43	4244236	49.37	ug/l	99
27) 2-Butanol	6.28	45	2974285	1249.53	ug/l	100
28) tert-Butyl ethyl ether (ET	6.48	59	9184788	50.20	ug/l	100
29) 2-Butanone	6.76	72	852741	261.83	ug/l	97
30) 2,2-Dichloropropane	7.04	77	5462358	46.18	ug/l	98

(#) = qualifier out of range (m) = manual integration

SU 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC463.D Vial: 11
Acq On : 30 Oct 2020 2:59 pm Operator: VLu
Sample : VO67J309 Inst : 67
Misc : 50ppb 8260/250ppb KET-AA/1250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:48 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,2-Dichloroethene	7.16	96	5579090	51.31 ug/l	100
32)	Chloroform	7.54	83	8125611	50.48 ug/l	99
33)	Bromochloromethane	7.90	130	2472891	51.84 ug/l	99
34)	tert-Amyl alcohol	8.00	59	562903	251.41 ug/l	100
36)	Tetrahydrofuran	7.99	42	403831	49.25 ug/l	95
37)	1,1,1-Trichloroethane	8.44	97	6593697	50.30 ug/l	99
38)	Cyclohexane	8.43	84	7998845	52.55 ug/l	100
39)	2,2,4-Trimethylpentane	8.60	57	21912115	49.97 ug/l	100
40)	1,1-Dichloropropene	8.78	110	2600461	51.73 ug/l	99
41)	Carbon tetrachloride	8.95	119	5454932	50.68 ug/l	99
42)	tert-Amyl methyl ether (TA	9.11	87	1615243	50.43 ug/l	99
44)	1,2-Dichloroethane	9.35	62	3262222	50.12 ug/l	100
45)	Benzene	9.33	78	19445686	52.67 ug/l	99
46)	Trichloroethene	10.59	130	5062088	51.78 ug/l	99
47)	Methylcyclohexane	10.68	83	9051510	52.65 ug/l	99
48)	1,2-Dichloropropane	10.94	63	4173560	51.46 ug/l	99
49)	Bromodichloromethane	11.38	83	5008264	51.34 ug/l	100
50)	1,4-Dioxane	11.46	88	296126	1000.37 ug/l	98
51)	Dibromomethane	11.46	93	1928444	51.14 ug/l	98
53)	4-Methyl-2-pentanone	12.11	43	7880495	262.59 ug/l	99
54)	cis-1,3-Dichloropropene	12.43	75	6193103	52.33 ug/l	99
57)	Toluene	12.97	91	19750587	52.81 ug/l	100
58)	Ethyl methacrylate	13.39	69	2855973	52.70 ug/l	98
59)	trans-1,3-Dichloropropene	13.35	75	4545432	52.66 ug/l	97
60)	1,1,2-Trichloroethane	13.61	97	2329066	51.08 ug/l	99
61)	2-Hexanone	13.67	43	4826970	256.57 ug/l	99
62)	1,3-Dichloropropane	14.05	76	4315162	51.92 ug/l	99
63)	Tetrachloroethene	14.11	164	3918313	52.54 ug/l	99
64)	Dibromochloromethane	14.46	129	2838840	51.59 ug/l	100
65)	1,2-Dibromoethane	14.79	107	2218739	51.48 ug/l	99
66)	1-Chlorohexane	15.15	91	7787171	52.35 ug/l	99
67)	Chlorobenzene	15.52	112	11170981	53.13 ug/l	99
68)	1,1,1,2-Tetrachloroethane	15.61	131	3535896	53.87 ug/l	98
69)	Ethylbenzene	15.63	91	21065862	50.64 ug/l	95
70)	m-Xylene & p-Xylene	15.76	91	24432286	80.17 ug/l	70
71)	o-Xylene	16.49	91	15328222	53.18 ug/l	99
72)	Styrene	16.55	104	11774638	52.47 ug/l	98
73)	Isopropylbenzene	17.10	105	19210223	51.29 ug/l	98
75)	Bromoform	17.10	173	1606542	56.49 ug/l	99
76)	1,1,2,2-Tetrachloroethane	17.38	83	2294559	49.64 ug/l	99
78)	1,2,3-Trichloropropane	17.60	110	562008	49.98 ug/l	100

(#) = qualifier out of range (m) = manual integration
RJC463.D VO67J30.M Mon Nov 02 18:58:16 2020 Page 2

SA
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Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC463.D
Acq On : 30 Oct 2020 2:59 pm
Sample : VO67J309
Misc : 50ppb 8260/250ppb KET-AA/1250ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 16:48 2020

Vial: 11
Operator: VLu
Inst : 67
Multiplr: 1.00

Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
79) trans-1,4-Dichloro-2-buten	17.19	53	579007	50.58 ug/l	99
80) n-Propylbenzene	17.70	91	20135889	41.07 ug/l	89
81) Bromobenzene	17.74	156	3627207	52.29 ug/l	100
82) 1,3,5-Trimethylbenzene	17.92	105	15145942	51.92 ug/l	95
83) 2-Chlorotoluene	17.93	91	16392046	54.48 ug/l	100
84) 4-Chlorotoluene	17.99	91	12924116	51.20 ug/l	100
85) tert-Butylbenzene	18.37	134	3352098	52.33 ug/l	93
86) 1,2,4-Trimethylbenzene	18.42	105	13903010	50.81 ug/l	96
87) sec-Butylbenzene	18.62	105	17504184	42.44 ug/l	91
88) p-Isopropyltoluene	18.78	119	15049129	48.17 ug/l	96
89) 1,3-Dichlorobenzene	18.88	146	7499414	52.76 ug/l	98
90) 1,4-Dichlorobenzene	19.02	146	7420647	53.32 ug/l	98
91) n-Butylbenzene	19.23	91	14627067	45.53 ug/l	89
92) 1,2-Dichlorobenzene	19.41	146	5801565	51.10 ug/l	98
93) 1,2-Dibromo-3-chloropropan	20.18	157	255921	52.17 ug/l	99
94) 1,2,4-Trichlorobenzene	21.03	180	2702023	50.35 ug/l	99
95) Hexachlorobutadiene	21.15	225	2160287	48.88 ug/l	99
96) Naphthalene	21.29	128	3190264	49.84 ug/l	99
97) 1,2,3-Trichlorobenzene	21.54	180	1822412	49.93 ug/l	100

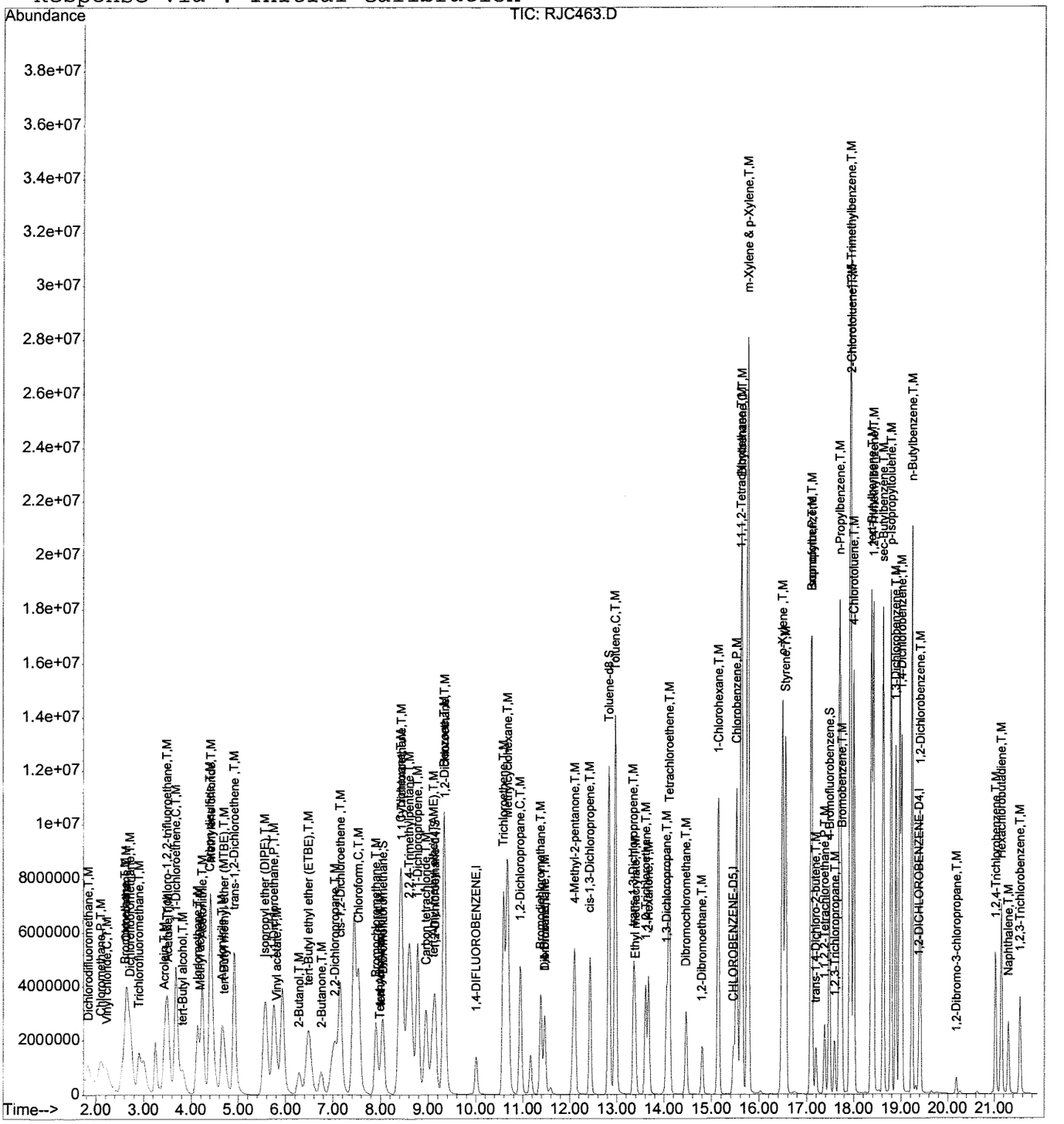
SA 11/4/20

(#) = qualifier out of range (m) = manual integration
RJC463.D VO67J30.M Mon Nov 02 18:58:16 2020 Page 3

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC463.D Vial: 11
Acq On : 30 Oct 2020 2:59 pm Operator: VLu
Sample : VO67J309 Inst : 67
Misc : 50ppb 8260/250ppb KET-AA/1250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:48 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



RJC463.D VO67J30.M Mon Nov 02 18:58:18 2020 Page 4

SA 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC464.D
Acq On : 30 Oct 2020 3:24 pm
Sample : VO67J3010
Misc : 100ppb 8260/500ppb KET-AA/2500ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 17:58 2020

Vial: 12
Operator: VLu
Inst : 67
Multiplr: 1.00
Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.00	114	2527431	10.00 ug/l	0.00
55) CHLOROBENZENE-D5	15.47	117	1874376	10.00 ug/l	0.01
74) 1,2-DICHLOROBENZENE-D4	19.38	152	593895	10.00 ug/l	0.00
System Monitoring Compounds					
35) Dibromofluoromethane	8.05	111	8793189	106.54 ug/l	0.01
Spiked Amount 10.000			Recovery	= 1065.40%	
43) 1,2-Dichloroethane-d4	9.16	65	5484038	103.87 ug/l	0.01
Spiked Amount 10.000			Recovery	= 1038.70%	
56) Toluene-d8	12.84	98	26722977	93.40 ug/l	0.01
Spiked Amount 10.000			Recovery	= 934.00%	
77) 4-Bromofluorobenzene	17.48	95	8939992	110.75 ug/l	0.01
Spiked Amount 10.000			Recovery	= 1107.50%	
Target Compounds					Qvalue
2) Dichlorodifluoromethane	1.85	85	8928459	102.23 ug/l	100
4) Chloromethane	2.09	50	10479034	78.31 ug/l	98
5) Vinyl chloride	2.21	62	8413047	66.72 ug/l	80
6) Bromomethane	2.60	94	11061015	100.85 ug/l	99
7) Chloroethane	2.62	64	8968531	97.03 ug/l	98
8) Dichlorofluoromethane	2.71	67	19216996	98.17 ug/l	98
9) Trichlorofluoromethane	2.89	101	13039952	99.98 ug/l	100
11) Acrolein	3.44	56	2579765	471.50 ug/l	99
12) 1,1,2-Trichloro-1,2,2-trif	3.48	151	7037620	101.47 ug/l	100
13) Acetone	3.52	43	3614105	463.67 ug/l	99
14) 1,1-Dichloroethene	3.69	61	16558803	105.61 ug/l	98
15) tert-Butyl alcohol	3.83	59	6844914	2534.31 ug/l	99
16) Methyl acetate	4.19	43	2558540	99.45 ug/l	98
17) Iodomethane	4.13	142	14904346	105.55 ug/l	96
18) Acetonitrile	4.23	41	12982142	1038.35 ug/l	100
19) Methylene chloride	4.42	49	10966835	99.11 ug/l	99
20) Carbon disulfide	4.39	76	40069011	104.50 ug/l	100
21) Acrylonitrile	4.66	53	6230045	540.90 ug/l	100
22) tert-Butyl methyl ether (M	4.70	73	13013992	102.84 ug/l	99
23) trans-1,2-Dichloroethene	4.91	96	11823460	105.76 ug/l	100
24) Isopropyl ether (DIPE)	5.58	45	24270340	102.12 ug/l	98
25) 1,1-Dichloroethane	5.75	63	18052478	104.53 ug/l	99
26) Vinyl acetate	5.81	43	9282970	107.73 ug/l	100
27) 2-Butanol	6.29	45	6216303	2605.70 ug/l	100
28) tert-Butyl ethyl ether (ET	6.50	59	18470234	100.73 ug/l	99
29) 2-Butanone	6.76	72	1717374	526.14 ug/l	99
30) 2,2-Dichloropropane	7.05	77	10801623	91.12 ug/l	98

(#) = qualifier out of range (m) = manual integration

SK 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC464.D
Acq On : 30 Oct 2020 3:24 pm
Sample : VO67J3010
Misc : 100ppb 8260/500ppb KET-AA/2500ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 17:58 2020

Vial: 12
Operator: VLu
Inst : 67
Multiplr: 1.00

Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,2-Dichloroethene	7.16	96	11494146	105.47 ug/l	100
32) Chloroform	7.55	83	16799688	104.13 ug/l	100
33) Bromochloromethane	7.90	130	5048679	105.60 ug/l	100
34) tert-Amyl alcohol	8.02	59	1143171	509.43 ug/l	100
36) Tetrahydrofuran	7.99	42	818717	99.63 ug/l	94
37) 1,1,1-Trichloroethane	8.44	97	13512651	102.84 ug/l	99
38) Cyclohexane	8.43	84	17109863	112.15 ug/l	100
39) 2,2,4-Trimethylpentane	8.62	57	45890383	104.42 ug/l	100
40) 1,1-Dichloropropene	8.78	110	5395162	107.07 ug/l	99
41) Carbon tetrachloride	8.95	119	11110791	102.99 ug/l	99
42) tert-Amyl methyl ether (TA	9.11	87	3256261	101.45 ug/l	98
44) 1,2-Dichloroethane	9.35	62	6723897	103.06 ug/l	100
45) Benzene	9.33	78	35391088	95.65 ug/l	95
46) Trichloroethene	10.59	130	10841424	110.64 ug/l	99
47) Methylcyclohexane	10.68	83	19592819	113.71 ug/l	98
48) 1,2-Dichloropropane	10.95	63	8725483	107.34 ug/l	97
49) Bromodichloromethane	11.39	83	10366886	106.04 ug/l	99
50) 1,4-Dioxane	11.48	88	612809	2065.55 ug/l	97
51) Dibromomethane	11.46	93	3976858	105.22 ug/l	97
53) 4-Methyl-2-pentanone	12.11	43	16489976	548.23 ug/l	99
54) cis-1,3-Dichloropropene	12.44	75	13044608	109.97 ug/l	98
57) Toluene	12.97	91	28921390	78.35 ug/l	75
58) Ethyl methacrylate	13.39	69	5909558	110.48 ug/l	96
59) trans-1,3-Dichloropropene	13.36	75	9408517	110.42 ug/l	95
60) 1,1,2-Trichloroethane	13.61	97	4805091	106.77 ug/l	99
61) 2-Hexanone	13.67	43	9787382	527.03 ug/l	97
62) 1,3-Dichloropropane	14.05	76	9055883	110.38 ug/l	99
63) Tetrachloroethene	14.11	164	8529691	115.87 ug/l	99
64) Dibromochloromethane	14.46	129	5863044	107.95 ug/l	100
65) 1,2-Dibromoethane	14.81	107	4515215	106.13 ug/l	99
66) 1-Chlorohexane	15.14	91	16411161	111.78 ug/l	99
67) Chlorobenzene	15.52	112	20926248	100.84 ug/l	94
68) 1,1,1,2-Tetrachloroethane	15.61	131	7405021	114.28 ug/l	98
69) Ethylbenzene	15.63	91	27565384	67.13 ug/l	57
71) o-Xylene	16.49	91	24453099	85.95 ug/l	79
72) Styrene	16.56	104	21998435	99.32 ug/l	91
73) Isopropylbenzene	17.10	105	25857553	69.94 ug/l	74
75) Bromoform	17.10	173	3334888	124.48 ug/l	99
76) 1,1,2,2-Tetrachloroethane	17.38	83	4513533	103.65 ug/l	100
78) 1,2,3-Trichloropropane	17.60	110	1075433	101.52 ug/l	99
79) trans-1,4-Dichloro-2-buten	17.20	53	1127545	104.55 ug/l	100

(#) = qualifier out of range (m) = manual integration

SU 11/4/20

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC464.D Vial: 12
Acq On : 30 Oct 2020 3:24 pm Operator: VLu
Sample : VO67J3010 Inst : 67
Misc : 100ppb 8260/500ppb KET-AA/2500ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 17:58 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
80)	n-Propylbenzene	17.69	91	24395613	52.82	ug/l	54
81)	Bromobenzene	17.74	156	7542578	115.41	ug/l	100
82)	1,3,5-Trimethylbenzene	17.92	105	20703081	75.34	ug/l	68
83)	2-Chlorotoluene	17.92	91	21550470	76.03	ug/l	71
84)	4-Chlorotoluene	17.99	91	18717433	78.71	ug/l	74
85)	tert-Butylbenzene	18.37	134	6874461	113.92	ug/l	100
86)	1,2,4-Trimethylbenzene	18.42	105	19656401	76.26	ug/l	65
87)	sec-Butylbenzene	18.62	105	22434424	57.74	ug/l	61
88)	p-Isopropyltoluene	18.78	119	19064669	64.78	ug/l	67
89)	1,3-Dichlorobenzene	18.90	146	14303443	106.81	ug/l	97
90)	1,4-Dichlorobenzene	19.01	146	13733780	104.75	ug/l	95
91)	n-Butylbenzene	19.23	91	19344129	63.92	ug/l	67
92)	1,2-Dichlorobenzene	19.41	146	11515039	107.66	ug/l	97
93)	1,2-Dibromo-3-chloropropan	20.18	157	479470	103.75	ug/l	100
94)	1,2,4-Trichlorobenzene	21.03	180	5091068	100.70	ug/l	100
95)	Hexachlorobutadiene	21.15	225	4115584	98.84	ug/l	99
96)	Naphthalene	21.29	128	5839670	96.83	ug/l	100
97)	1,2,3-Trichlorobenzene	21.54	180	3386865	98.51	ug/l	99

SU 11/4/20

(#) = qualifier out of range (m) = manual integration

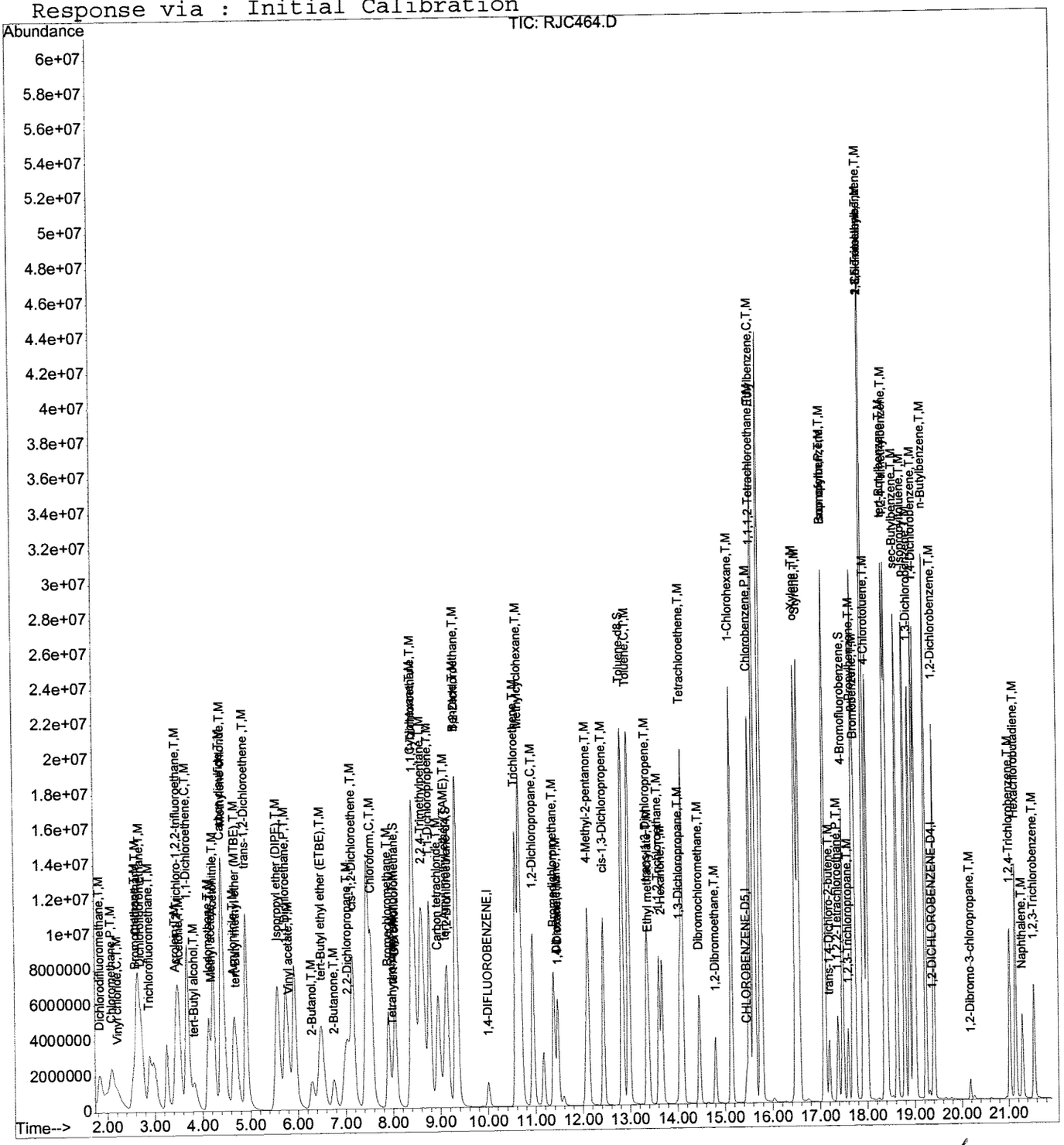
Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC464.D
Acq On : 30 Oct 2020 3:24 pm
Sample : VO67J3010
Misc : 100ppb 8260/500ppb KET-AA/2500ppb TBA
MS Integration Params: RTE.P
Quant Time: Nov 2 17:58 2020

Vial: 12
Operator: VLu
Inst : 67
Multiplr: 1.00

Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



RJC464.D VO67J30.M Mon Nov 02 18:59:07 2020 Page 4

11/4/20

SECOND SOURCE VERIFICATION

CONTINUE_CALIBRATION - CALIBRATION VERIFICATION

Instrument ID :67
IC Beginning DateTime :10/30/20 11:33
Spike Amount :10 PPB
CC/CV File :RJC467
IC File :RJC459

Column Spec :RTX502.2 ID :0.25MM
IC Ending DateTime :10/30/20 15:24
HPChem Method :V067J30
Date_Time :10/30/20 16:41

M	IDX	Parameters	CC Con	CC% D	CC Resp	CCRRF	AVRRF	CC Rtm	AVRtm	% RSD	Co X0	Co X1	Co X2	Co Cor
	1	1,4-DIFLUOROBENZENE	10.000	0	2673175	1	1	10.005	10.003	0				
	2	Dichlorodifluoromethane	8.886	-11.1	820888	0.307	0.346	1.841	1.843	4.09				
	3	Dichlorotetrafluoroethane												
	4	Chloromethane	10.128	1.3	1433471	0.536	0.529	2.106	2.113	9.60				
	5	Vinyl chloride	10.643	6.4	1419504	0.531	0.499	2.229	2.226	10.49				
	6	Bromomethane	10.020	0.2	1162402	0.435	0.434	2.638	2.624	5.86				
	7	Chloroethane	11.002	10.0	1075560	0.402	0.366	2.638	2.640	4.63				
	8	Dichlorofluoromethane	10.183	1.8	2108128	0.789	0.774	2.720	2.713	4.22				
	9	Trichlorofluoromethane	11.423	14.2	1575813	0.589	0.516	2.904	2.904	4.10				
	10	sec-Propyl alcohol												
5	11	Acrolein	44.650	-10.7	258386	0.019	0.022	3.435	3.437	6.11				
	12	1,1,2-Trichloro-1,2,2-trifluoroethane	9.977	-0.2	731893	0.274	0.274	3.497	3.494	4.23				
5	13	Acetone	42.005	-16.0	346288	0.026	0.031	3.517	3.519	12.15				
	14	1,1-Dichloroethene	9.859	-1.4	1634976	0.612	0.620	3.681	3.680	5.98				
25	15	tert-Butyl alcohol	242.085	-3.2	691551	0.010	0.011	3.824	3.813	3.92				
	16	Methyl acetate	9.337	-6.6	254061	0.095	0.102	4.205	4.193	4.46				
	17	Iodomethane	10.668	6.7	1593302	0.596	0.559	4.132	4.132	3.19				
10	18	Acetonitrile	109.625	9.6	1449639	0.054	0.049	4.234	4.233	3.84				
	19	Methylene chloride	9.534	-4.7	1115789	0.417	0.438	4.424	4.423	7.48				
	20	Carbon disulfide	10.400	4.0	4217344	1.578	1.517	4.409	4.402	4.44				
5	21	Acrylonitrile	45.563	-8.9	555056	0.042	0.046	4.658	4.653	6.52				
	22	tert-Butyl methyl ether (MTBE)	9.535	-4.6	1276178	0.477	0.501	4.701	4.693	3.56				
	23	trans-1,2-Dichloroethene	9.969	-0.3	1178794	0.441	0.442	4.921	4.912	4.61				
	24	Isopropyl ether (DIPE)	10.023	0.2	2519285	0.942	0.940	5.578	5.563	3.11				
	25	1,1-Dichloroethane	9.816	-1.8	1792856	0.671	0.683	5.753	5.751	3.55				
	26	Vinyl acetate	10.588	5.9	964988	0.361	0.341	5.811	5.805	4.45				
25	27	2-Butanol	238.357	-4.7	601428	0.009	0.009	6.293	6.286	4.80				
	28	tert-Butyl ethyl ether (ETBE)	9.804	-2.0	1901481	0.711	0.726	6.483	6.476	2.97				
5	29	2-Butanone	46.092	-7.8	159124	0.012	0.013	6.761	6.752	7.77				
	30	2,2-Dichloropropane	9.824	-1.8	1231699	0.461	0.469	7.053	7.039	8.03				
	31	cis-1,2-Dichloroethene	9.665	-3.3	1114144	0.417	0.431	7.155	7.150	4.27				
	32	Chloroform	9.986	-0.1	1704070	0.637	0.638	7.535	7.532	3.40				
	33	Bromochloromethane	9.903	-1.0	500726	0.187	0.189	7.917	7.900	4.96				
5	34	tert-Amyl alcohol	49.006	-2.0	116312	0.009	0.009	7.990	7.998	5.02				
	35	Dibromofluoromethane	10.758	7.6	939086	0.351	0.327	8.048	8.041	7.33				
	36	Tetrahydrofuran	9.646	-3.5	83841	0.031	0.033	7.990	7.992	1.34				
	37	1,1,1-Trichloroethane	9.937	-0.6	1380937	0.517	0.520	8.442	8.428	3.60				
	38	Cyclohexane	10.200	2.0	1645761	0.616	0.604	8.413	8.414	10.83				
	39	2,2,4-Trimethylpentane	9.555	-4.4	4441472	1.661	1.739	8.603	8.594	5.11				
	40	1,1-Dichloropropene	9.952	-0.5	530384	0.198	0.199	8.778	8.776	5.50				
	41	Carbon tetrachloride	10.143	1.4	1157384	0.433	0.427	8.955	8.951	4.00				
	42	tert-Amyl methyl ether (TAME)	9.786	-2.1	332229	0.124	0.127	9.114	9.100	3.90				
	43	1,2-Dichloroethane-d4	10.282	2.8	574184	0.215	0.209	9.158	9.143	5.86				
	44	1,2-Dichloroethane	9.592	-4.1	661857	0.248	0.258	9.348	9.344	2.93				
	45	Benzene	9.938	-0.6	3889243	1.455	1.464	9.333	9.322	4.63				
	46	Trichloroethene	9.956	-0.4	1031839	0.386	0.388	10.589	10.585	5.88				
	47	Methylcyclohexane	11.598	16.0	2113650	0.791	0.682	10.677	10.663	8.78				
	48	1,2-Dichloropropane	9.770	-2.3	839948	0.314	0.322	10.955	10.939	4.61				
	49	Bromodichloromethane	9.880	-1.2	1021576	0.382	0.387	11.378	11.377	4.30				
20	50	1,4-Dioxane	182.993	-8.5	57421	0.001	0.001	11.480	11.468	3.76				
	51	Dibromomethane	9.257	-7.4	370067	0.138	0.150	11.466	11.460	4.21				
	52	2-Chloroethyl vinyl ether												
5	53	4-Methyl-2-pentanone	46.330	-7.3	1473898	0.110	0.119	12.108	12.100	6.59				
	54	cis-1,3-Dichloropropene	9.855	-1.5	1236297	0.462	0.469	12.430	12.430	5.89				
	55	CHLOROBENZENE-D5	10.000	0	2007201	1	1	15.453	15.453	0				
	56	Toluene-d8	10.973	9.7	3362053	1.675	1.526	12.839	12.827	8.00				
	57	Toluene	9.914	-0.9	3918855	1.952	1.969	12.970	12.967	4.61				
	58	Ethyl methacrylate	9.552	-4.5	547127	0.273	0.285	13.394	13.382	6.68				
	59	trans-1,3-Dichloropropene	9.591	-4.1	875112	0.436	0.455	13.350	13.350	6.53				
	60	1,1,2-Trichloroethane	8.968	-10.3	432175	0.215	0.240	13.613	13.601	4.12				
5	61	2-Hexanone	45.152	-9.7	897913	0.089	0.099	13.671	13.670	4.26				
	62	1,3-Dichloropropane	9.255	-7.5	813060	0.405	0.438	14.051	14.050	5.55				
	63	Tetrachloroethene	9.639	-3.6	759854	0.379	0.393	14.109	14.101	7.60				
	64	Dibromochloromethane	9.640	-3.6	560689	0.279	0.290	14.460	14.457	5.36				
	65	1,2-Dibromoethane	9.374	-6.3	427082	0.213	0.227	14.810	14.796	4.99				
	66	Chlorohexane	10.344	3.4	1626382	0.810	0.783	15.146	15.135	6.26				
	67	Chlorobenzene	9.605	-3.9	2134642	1.063	1.107	15.526	15.516	4.55				
	68	1,1,1,2-Tetrachloroethane	9.737	-2.6	675645	0.337	0.346	15.613	15.605	7.64				
	69	Ethylbenzene	9.814	-1.9	4315485	2.150	2.191	15.628	15.622	5.21				
2	70	m-Xylene & p-Xylene	20.116	0.6	6480339	1.614	1.605	15.759	15.750	6.11				
	71	o-Xylene	9.741	-2.6	2967943	1.479	1.518	16.490	16.479	4.86				
	72	Styrene	9.509	-4.9	2255634	1.124	1.182	16.548	16.549	4.33				
	73	Isopropylbenzene	10.101	1.0	3999250	1.992	1.973	17.089	17.089	5.78				
	74	1,2-DICHLOROBENZENE-D4	10.000	0	662078	1	1	19.382	19.381	0				
	75	Bromoform	9.174	-8.3	274002	0.414	0.451	17.103	17.091	7.82				
	76	1,1,2,2-Tetrachloroethane	9.173	-8.3	445281	0.673	0.733	17.381	17.377	2.50				
	77	4-Bromofluorobenzene	10.492	4.9	944226	1.426	1.359	17.483	17.473	4.49				
	78	1,2,3-Trichloropropane	9.317	-6.8	110025	0.166	0.178	17.600	17.589	4.41				
	79	trans-1,4-Dichloro-2-butene	9.592	-4.1	115324	0.174	0.182	17.191	17.192	3.52				
	80	n-Propylbenzene	9.942	-0.6	5119204	7.732	7.777	17.702	17.688	4.72				
	81	Bromobenzene	9.796	-2.0	713700	1.078	1.100	17.746	17.739	6.72				
	82	1,3,5-Trimethylbenzene	9.995	-0.1	3062097	4.625	4.627	17.921	17.909	5.18				
	83	2-Chlorotoluene	9.509	-4.9	3004757	4.538	4.772	17.921	17.922	6.86				
	84	4-Chlorotoluene	9.227	-7.7	2446303	3.695	4.004	17.994	17.993	6.18				
	85	tert-Butylbenzene	9.608	-3.9	646383	0.976	1.016	18.374	18.366	6.51				
	86	1,2,4-Trimethylbenzene	10.073	0.7	2894538	4.372	4.340	18.418	18.407	4.44				
	87	sec-Butylbenzene	10.047	0.5	4351814	6.573	6.542	18.622	18.621	4.75				
	88	p-Isopropyltoluene	10.538	5.4	3457451	5.222	4.955	18.783	18.782	4.69				
	89	1,3-Dichlorobenzene	9.398	-6.0	1402953	2.119	2.255	18.885	18.886	5.32				
	90	1,4-Dichlorobenzene	9.177	-8.2	1341325	2.026	2.208	19.017	19.007	4.84				
	91	n-Butylbenzene	10.368	3.7	3497676	5.283	5.096	19.236	19.228	5.87				
	92	1,2-Dichlorobenzene	8.986	-10.1	1071440	1.618	1.801	19.411	19.407	4.72				
	93	1,2-Dibromo-3-chloropropane	9.983	-0.2	51430	0.078	0.078	20.185	20.184	8.92				
	94	1,2,4-Trichlorobenzene	10.129	1.3	570859	0.862	0.851	21.032	21.022	4.94				
	95	Hexachlorobutadiene	9.939	-0.6	461380	0.697	0.701	21.149	21.148	5.28				
	96	Naphthalene	9.885	-1.1	664613	1.004	1.015	21.295	21.294	3.05				
	97	1,2,3-Trichlorobenzene	10.180	1.8	390205	0.589	0.579	21.543	21.542	4.16				

Spike Amount = Nominal Amount * M

SA 11/4/20

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D
Acq On : 30 Oct 2020 4:41 pm
Sample : IVO67J3001
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA
MS Integration Params: RTE.P

Vial: 15
Operator: VLu
Inst : 67
Multiplr: 1.00

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	10.000	10.000	0.0	108	0.00
2	T,M	Dichlorodifluoromethane	10.000	8.886	11.1	95	0.00
3	T,M	Dichlorotetrafluoroethane	-1.000	0.000	0.0	0	0.00
4	P,T,M	Chloromethane	10.000	10.128	-1.3	107	0.00
5	C,T,M	Vinyl chloride	10.000	10.643	-6.4	104	0.00
6	T,M	Bromomethane	10.000	10.020	-0.2	103	0.02
7	T,M	Chloroethane	10.000	11.001	-10.0	117	0.00
8	T,M	Dichlorofluoromethane	10.000	10.183	-1.8	116	0.00
9	T,M	Trichlorofluoromethane	10.000	11.423	-14.2	120	0.00
10	T,M	sec-Propyl alcohol	-1.000	0.000	0.0	0	0.00
11	T,M	Acrolein	50.000	44.650	10.7	102	0.00
12	T,M	1,1,2-Trichloro-1,2,2-trifl	10.000	9.977	0.2	111	0.00
13	T,M	Acetone	50.000	42.004	16.0	97	0.00
14	C,T,M	1,1-Dichloroethene	10.000	9.859	1.4	111	0.00
15	T,M	tert-Butyl alcohol	250.000	242.085	3.2	107	0.02
16	T,M	Methyl acetate	10.000	9.337	6.6	101	0.01
17	T,M	Iodomethane	10.000	10.668	-6.7	120	0.00
18	T,M	Acetonitrile	100.000	109.625	-9.6	124	0.00
19	T,M	Methylene chloride	10.000	9.534	4.7	111	0.00
20	T,M	Carbon disulfide	10.000	10.400	-4.0	111	0.00
21	T,M	Acrylonitrile	50.000	45.563	8.9	100	0.00
22	T,M	tert-Butyl methyl ether (MT	10.000	9.535	4.6	106	0.01
23	T,M	trans-1,2-Dichloroethene	10.000	9.969	0.3	111	0.00
24	T,M	Isopropyl ether (DIPE)	10.000	10.022	-0.2	114	0.01
25	P,T,M	1,1-Dichloroethane	10.000	9.815	1.9	110	0.00
26	T,M	Vinyl acetate	10.000	10.588	-5.9	116	0.00
27	T,M	2-Butanol	250.000	238.357	4.7	99	0.01
28	T,M	tert-Butyl ethyl ether (ETB	10.000	9.804	2.0	110	0.01
29	T,M	2-Butanone	50.000	46.092	7.8	99	0.01
30	T,M	2,2-Dichloropropane	10.000	9.824	1.8	111	0.01
31	T,M	cis-1,2-Dichloroethene	10.000	9.666	3.3	108	0.00
32	C,T,M	Chloroform	10.000	9.986	0.1	112	0.00
33	T,M	Bromochloromethane	10.000	9.903	1.0	109	0.02
34	T,M	tert-Amyl alcohol	50.000	49.006	2.0	101	0.00
35	S	Dibromofluoromethane	10.000	10.758	-7.6	108	0.02
36	T,M	Tetrahydrofuran	10.000	9.646	3.5	104	0.00
37	T,M	1,1,1-Trichloroethane	10.000	9.937	0.6	111	0.02
38	T,M	Cyclohexane	10.000	10.200	-2.0	104	0.00
39	T,M	2,2,4-Trimethylpentane	10.000	9.555	4.5	98	0.02
40	T,M	1,1-Dichloropropene	10.000	9.952	0.5	110	0.00
41	T,M	Carbon tetrachloride	10.000	10.143	-1.4	113	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D
Acq On : 30 Oct 2020 4:41 pm
Sample : IVO67J3001
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA
MS Integration Params: RTE.P

Vial: 15
Operator: VLu
Inst : 67
Multiplr: 1.00

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
42	T,M	tert-Amyl methyl ether (TAM	10.000	9.786	2.1	107	0.02
43	S	1,2-Dichloroethane-d4	10.000	10.282	-2.8	104	0.02
44	T,M	1,2-Dichloroethane	10.000	9.592	4.1	106	0.00
45	T,M	Benzene	10.000	9.938	0.6	111	0.02
46	T,M	Trichloroethene	10.000	9.956	0.4	112	0.00
47	T,M	Methylcyclohexane	10.000	11.598	-16.0	121	0.02
48	C,T,M	1,2-Dichloropropane	10.000	9.770	2.3	109	0.02
49	T,M	Bromodichloromethane	10.000	9.880	1.2	110	0.00
50	T,M	1,4-Dioxane	200.000	182.993	8.5	99	0.02
51	T,M	Dibromomethane	10.000	9.257	7.4	102	0.00
52	T,M	2-Chloroethyl vinyl ether	10.000	0.000	100.0#	0	0.02
53	T,M	4-Methyl-2-pentanone	50.000	46.330	7.3	102	0.02
54	T,M	cis-1,3-Dichloropropene	10.000	9.855	1.4	111	0.00
55	I	CHLOROBENZENE-D5	10.000	10.000	0.0	108	0.00
56	S	Toluene-d8	10.000	10.973	-9.7	109	0.02
57	C,T,M	Toluene	10.000	9.914	0.9	112	0.00
58	T,M	Ethyl methacrylate	10.000	9.552	4.5	106	0.02
59	T,M	trans-1,3-Dichloropropene	10.000	9.591	4.1	108	0.00
60	T,M	1,1,2-Trichloroethane	10.000	8.968	10.3	101	0.02
61	T,M	2-Hexanone	50.000	45.152	9.7	100	0.00
62	T,M	1,3-Dichloropropane	10.000	9.255	7.4	104	0.00
63	T,M	Tetrachloroethene	10.000	9.639	3.6	111	0.00
64	T,M	Dibromochloromethane	10.000	9.640	3.6	108	0.00
65	T,M	1,2-Dibromoethane	10.000	9.374	6.3	104	0.02
66	T,M	1-Chlorohexane	10.000	10.344	-3.4	118	0.02
67	P,M	Chlorobenzene	10.000	9.605	3.9	109	0.02
68	T,M	1,1,1,2-Tetrachloroethane	10.000	9.737	2.6	112	0.00
69	C,T,M	Ethylbenzene	10.000	9.814	1.9	111	0.00
70	T,M	m-Xylene & p-Xylene	20.000	20.116	-0.6	112	0.00
71	T,M	o-Xylene	10.000	9.741	2.6	110	0.02
72	T,M	Styrene	10.000	9.509	4.9	106	0.00
73	T,M	Isopropylbenzene	10.000	10.101	-1.0	113	0.00
74	I	1,2-DICHLOROBENZENE-D4	10.000	10.000	0.0	108	0.00
75	P,T,M	Bromoform	10.000	9.174	8.3	102	0.02
76	P,T,M	1,1,2,2-Tetrachloroethane	10.000	9.173	8.3	103	0.00
77	S	4-Bromofluorobenzene	10.000	10.492	-4.9	110	0.02
78	T,M	1,2,3-Trichloropropane	10.000	9.317	6.8	103	0.02
79	T,M	trans-1,4-Dichloro-2-butene	10.000	9.592	4.1	108	0.00
80	T,M	n-Propylbenzene	10.000	9.942	0.6	112	0.02

SA
11/4/20

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D Vial: 15
Acq On : 30 Oct 2020 4:41 pm Operator: VLu
Sample : IVO67J3001 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
81	T,M	Bromobenzene	10.000	9.796	2.0	113	0.00
82	T,M	1,3,5-Trimethylbenzene	10.000	9.995	0.1	114	0.02
83	T,M	2-Chlorotoluene	10.000	9.510	4.9	104	0.00
84	T,M	4-Chlorotoluene	10.000	9.227	7.7	113	0.00
85	T,M	tert-Butylbenzene	10.000	9.609	3.9	110	0.00
86	T,M	1,2,4-Trimethylbenzene	10.000	10.073	-0.7	114	0.02
87	T,M	sec-Butylbenzene	10.000	10.047	-0.5	114	0.00
88	T,M	p-Isopropyltoluene	10.000	10.538	-5.4	118	0.00
89	T,M	1,3-Dichlorobenzene	10.000	9.398	6.0	108	0.00
90	T,M	1,4-Dichlorobenzene	10.000	9.177	8.2	105	0.02
91	T,M	n-Butylbenzene	10.000	10.367	-3.7	114	0.00
92	T,M	1,2-Dichlorobenzene	10.000	8.986	10.1	103	0.00
93	T,M	1,2-Dibromo-3-chloropropane	10.000	9.983	0.2	105	0.00
94	T,M	1,2,4-Trichlorobenzene	10.000	10.129	-1.3	114	0.02
95	T,M	Hexachlorobutadiene	10.000	9.939	0.6	112	0.00
96	T,M	Naphthalene	10.000	9.885	1.2	106	0.00
97	T,M	1,2,3-Trichlorobenzene	10.000	10.180	-1.8	112	0.00

SV 11/4/20

(#) = Out of Range SPCC's out = 0 CCC's out = 0
RJC467.D VO67J30.M Mon Nov 02 19:00:18 2020 Page 3

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D Vial: 15
Acq On : 30 Oct 2020 4:41 pm Operator: VLu
Sample : IVO67J3001 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	108	0.00
2	T,M	Dichlorodifluoromethane	0.346	0.307	11.3	95	0.00
3	T,M	Dichlorotetrafluoroethane	0.000	0.000	0.0	0#	0.00
4	P,T,M	Chloromethane	0.529	0.536	-1.3	107	0.00
5	C,T,M	Vinyl chloride	0.499	0.531	-6.4	104	0.00
6	T,M	Bromomethane	0.434	0.435	-0.2	103	0.02
7	T,M	Chloroethane	0.366	0.402	-9.8	117	0.00
8	T,M	Dichlorofluoromethane	0.774	0.789	-1.9	116	0.00
9	T,M	Trichlorofluoromethane	0.516	0.589	-14.1	120	0.00
10	T,M	sec-Propyl alcohol	0.000	0.000	0.0	0#	0.00
11	T,M	Acrolein	0.022	0.019	13.6	102	0.00
12	T,M	1,1,2-Trichloro-1,2,2-trifl	0.274	0.274	0.0	111	0.00
13	T,M	Acetone	0.031	0.026	16.1	97	0.00
14	C,T,M	1,1-Dichloroethene	0.620	0.612	1.3	111	0.00
15	T,M	tert-Butyl alcohol	0.011	0.010	9.1	107	0.02
16	T,M	Methyl acetate	0.102	0.095	6.9	101	0.01
17	T,M	Iodomethane	0.559	0.596	-6.6	120	0.00
18	T,M	Acetonitrile	0.049	0.054	-10.2	124	0.00
19	T,M	Methylene chloride	0.438	0.417	4.8	111	0.00
20	T,M	Carbon disulfide	1.517	1.578	-4.0	111	0.00
21	T,M	Acrylonitrile	0.046	0.042	8.7	100	0.00
22	T,M	tert-Butyl methyl ether (MT	0.501	0.477	4.8	106	0.01
23	T,M	trans-1,2-Dichloroethene	0.442	0.441	0.2	111	0.00
24	T,M	Isopropyl ether (DIPE)	0.940	0.942	-0.2	114	0.01
25	P,T,M	1,1-Dichloroethane	0.683	0.671	1.8	110	0.00
26	T,M	Vinyl acetate	0.341	0.361	-5.9	116	0.00
27	T,M	2-Butanol	0.009	0.009	0.0	99	0.01
28	T,M	tert-Butyl ethyl ether (ETB	0.726	0.711	2.1	110	0.01
29	T,M	2-Butanone	0.013	0.012	7.7	99	0.01
30	T,M	2,2-Dichloropropane	0.469	0.461	1.7	111	0.01
31	T,M	cis-1,2-Dichloroethene	0.431	0.417	3.2	108	0.00
32	C,T,M	Chloroform	0.638	0.637	0.2	112	0.00
33	T,M	Bromochloromethane	0.189	0.187	1.1	109	0.02
34	T,M	tert-Amyl alcohol	0.009	0.009	0.0	101	0.00
35	S	Dibromofluoromethane	0.327	0.351	-7.3	108	0.02
36	T,M	Tetrahydrofuran	0.033	0.031	6.1	104	0.00
37	T,M	1,1,1-Trichloroethane	0.520	0.517	0.6	111	0.02
38	T,M	Cyclohexane	0.604	0.616	-2.0	104	0.00
39	T,M	2,2,4-Trimethylpentane	1.739	1.661	4.5	98	0.02
40	T,M	1,1-Dichloropropene	0.199	0.198	0.5	110	0.00
41	T,M	Carbon tetrachloride	0.427	0.433	-1.4	113	0.00

(#) = Out of Range
RJC467.D VO67J30.M Mon Nov 02 19:00:22 2020 Su 11/4/20 Page 1

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D Vial: 15
Acq On : 30 Oct 2020 4:41 pm Operator: VLu
Sample : IVO67J3001 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
42	T,M	tert-Amyl methyl ether (TAM	0.127	0.124	2.4	107	0.02
43	S	1,2-Dichloroethane-d4	0.209	0.215	-2.9	104	0.02
44	T,M	1,2-Dichloroethane	0.258	0.248	3.9	106	0.00
45	T,M	Benzene	1.464	1.455	0.6	111	0.02
46	T,M	Trichloroethene	0.388	0.386	0.5	112	0.00
47	T,M	Methylcyclohexane	0.682	0.791	-16.0	121	0.02
48	C,T,M	1,2-Dichloropropane	0.322	0.314	2.5	109	0.02
49	T,M	Bromodichloromethane	0.387	0.382	1.3	110	0.00
50	T,M	1,4-Dioxane	0.001	0.001	0.0	99	0.02
51	T,M	Dibromomethane	0.150	0.138	8.0	102	0.00
52	T,M	2-Chloroethyl vinyl ether	0.000	0.077	0.0	0#	0.02
53	T,M	4-Methyl-2-pentanone	0.119	0.110	7.6	102	0.02
54	T,M	cis-1,3-Dichloropropene	0.469	0.462	1.5	111	0.00
55	I	CHLOROBENZENE-D5	1.000	1.000	0.0	108	0.00
56	S	Toluene-d8	1.526	1.675	-9.8	109	0.02
57	C,T,M	Toluene	1.969	1.952	0.9	112	0.00
58	T,M	Ethyl methacrylate	0.285	0.273	4.2	106	0.02
59	T,M	trans-1,3-Dichloropropene	0.455	0.436	4.2	108	0.00
60	T,M	1,1,2-Trichloroethane	0.240	0.215	10.4	101	0.02
61	T,M	2-Hexanone	0.099	0.089	10.1	100	0.00
62	T,M	1,3-Dichloropropane	0.438	0.405	7.5	104	0.00
63	T,M	Tetrachloroethene	0.393	0.379	3.6	111	0.00
64	T,M	Dibromochloromethane	0.290	0.279	3.8	108	0.00
65	T,M	1,2-Dibromoethane	0.227	0.213	6.2	104	0.02
66	T,M	1-Chlorohexane	0.783	0.810	-3.4	118	0.02
67	P,M	Chlorobenzene	1.107	1.063	4.0	109	0.02
68	T,M	1,1,1,2-Tetrachloroethane	0.346	0.337	2.6	112	0.00
69	C,T,M	Ethylbenzene	2.191	2.150	1.9	111	0.00
70	T,M	m-Xylene & p-Xylene	1.605	1.614	-0.6	112	0.00
71	T,M	o-Xylene	1.518	1.479	2.6	110	0.02
72	T,M	Styrene	1.182	1.124	4.9	106	0.00
73	T,M	Isopropylbenzene	1.973	1.992	-1.0	113	0.00
74	I	1,2-DICHLOROBENZENE-D4	1.000	1.000	0.0	108	0.00
75	P,T,M	Bromoform	0.451	0.414	8.2	102	0.02
76	P,T,M	1,1,2,2-Tetrachloroethane	0.733	0.673	8.2	103	0.00
77	S	4-Bromofluorobenzene	1.359	1.426	-4.9	110	0.02
78	T,M	1,2,3-Trichloropropane	0.178	0.166	6.7	103	0.02
79	T,M	trans-1,4-Dichloro-2-butene	0.182	0.174	4.4	108	0.00
80	T,M	n-Propylbenzene	7.777	7.732	0.6	112	0.02

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D
Acq On : 30 Oct 2020 4:41 pm
Sample : IVO67J3001
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA
MS Integration Params: RTE.P

Vial: 15
Operator: VLu
Inst : 67
Multiplr: 1.00

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
81	T,M	Bromobenzene	1.100	1.078	2.0	113	0.00
82	T,M	1,3,5-Trimethylbenzene	4.627	4.625	0.0	114	0.02
83	T,M	2-Chlorotoluene	4.772	4.538	4.9	104	0.00
84	T,M	4-Chlorotoluene	4.004	3.695	7.7	113	0.00
85	T,M	tert-Butylbenzene	1.016	0.976	3.9	110	0.00
86	T,M	1,2,4-Trimethylbenzene	4.340	4.372	-0.7	114	0.02
87	T,M	sec-Butylbenzene	6.542	6.573	-0.5	114	0.00
88	T,M	p-Isopropyltoluene	4.955	5.222	-5.4	118	0.00
89	T,M	1,3-Dichlorobenzene	2.255	2.119	6.0	108	0.00
90	T,M	1,4-Dichlorobenzene	2.208	2.026	8.2	105	0.02
91	T,M	n-Butylbenzene	5.096	5.283	-3.7	114	0.00
92	T,M	1,2-Dichlorobenzene	1.801	1.618	10.2	103	0.00
93	T,M	1,2-Dibromo-3-chloropropane	0.078	0.078	0.0	105	0.00
94	T,M	1,2,4-Trichlorobenzene	0.851	0.862	-1.3	114	0.02
95	T,M	Hexachlorobutadiene	0.701	0.697	0.6	112	0.00
96	T,M	Naphthalene	1.015	1.004	1.1	106	0.00
97	T,M	1,2,3-Trichlorobenzene	0.579	0.589	-1.7	112	0.00

11/4/20

(#) = Out of Range SPCC's out = 0 CCC's out = 0
RJC467.D VO67J30.M Mon Nov 02 19:00:25 2020 Page 3

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D Vial: 15
Acq On : 30 Oct 2020 4:41 pm Operator: VLu
Sample : IVO67J3001 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:49 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	10.01	114	2673175	10.00	ug/l	0.00
55) CHLOROBENZENE-D5	15.45	117	2007201	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	662078	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.05	111	939086	10.76	ug/l	0.02
Spiked Amount 10.000			Recovery =	107.60%		
43) 1,2-Dichloroethane-d4	9.16	65	574184	10.28	ug/l	0.02
Spiked Amount 10.000			Recovery =	102.80%		
56) Toluene-d8	12.84	98	3362053	10.97	ug/l	0.02
Spiked Amount 10.000			Recovery =	109.70%		
77) 4-Bromofluorobenzene	17.48	95	944226	10.49	ug/l	0.02
Spiked Amount 10.000			Recovery =	104.90%		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	820888	8.89	ug/l	100
4) Chloromethane	2.11	50	1433471	10.13	ug/l	100
5) Vinyl chloride	2.23	62	1419504	10.64	ug/l	100
6) Bromomethane	2.64	94	1162402	10.02	ug/l	100
7) Chloroethane	2.64	64	1075560	11.00	ug/l	100
8) Dichlorofluoromethane	2.72	67	2108128	10.18	ug/l	100
9) Trichlorofluoromethane	2.90	101	1575813	11.42	ug/l	100
11) Acrolein	3.44	56	258386	44.65	ug/l	99
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	731893	9.98	ug/l	99
13) Acetone	3.52	43	346288	42.00	ug/l	100
14) 1,1-Dichloroethene	3.68	61	1634976	9.86	ug/l	99
15) tert-Butyl alcohol	3.82	59	691551	242.08	ug/l	99
16) Methyl acetate	4.20	43	254061	9.34	ug/l	94
17) Iodomethane	4.13	142	1593302	10.67	ug/l	99
18) Acetonitrile	4.23	41	1449639	109.63	ug/l	99
19) Methylene chloride	4.42	49	1115789	9.53	ug/l	99
20) Carbon disulfide	4.41	76	4217344	10.40	ug/l	100
21) Acrylonitrile	4.66	53	555056	45.56	ug/l	100
22) tert-Butyl methyl ether (M	4.70	73	1276178	9.54	ug/l	100
23) trans-1,2-Dichloroethene	4.92	96	1178794	9.97	ug/l	100
24) Isopropyl ether (DIPE)	5.58	45	2519285	10.02	ug/l	99
25) 1,1-Dichloroethane	5.75	63	1792856	9.82	ug/l	100
26) Vinyl acetate	5.81	43	964988	10.59	ug/l	100
27) 2-Butanol	6.29	45	601428	238.36	ug/l	100
28) tert-Butyl ethyl ether (ET	6.48	59	1901481	9.80	ug/l	100
29) 2-Butanone	6.76	72	159124	46.09	ug/l	94
30) 2,2-Dichloropropane	7.05	77	1231699	9.82	ug/l	100

(#) = qualifier out of range (m) = manual integration
RJC467.D VO67J30.M Mon Nov 02 19:00:30 2020 11/4/20 Page 1

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D Vial: 15
Acq On : 30 Oct 2020 4:41 pm Operator: VLu
Sample : IVO67J3001 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:49 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,2-Dichloroethene	7.16	96	1114144	9.67 ug/l	100
32)	Chloroform	7.53	83	1704070	9.99 ug/l	99
33)	Bromochloromethane	7.92	130	500726	9.90 ug/l	100
34)	tert-Amyl alcohol	7.99	59	116312	49.01 ug/l	100
36)	Tetrahydrofuran	7.99	42	83841	9.65 ug/l	98
37)	1,1,1-Trichloroethane	8.44	97	1380937	9.94 ug/l	100
38)	Cyclohexane	8.41	84	1645761	10.20 ug/l	99
39)	2,2,4-Trimethylpentane	8.60	57	4441472	9.56 ug/l	100
40)	1,1-Dichloropropene	8.78	110	530384	9.95 ug/l	100
41)	Carbon tetrachloride	8.95	119	1157384	10.14 ug/l	100
42)	tert-Amyl methyl ether (TA	9.11	87	332229	9.79 ug/l	98
44)	1,2-Dichloroethane	9.35	62	661857	9.59 ug/l	100
45)	Benzene	9.33	78	3889243	9.94 ug/l	100
46)	Trichloroethene	10.59	130	1031839	9.96 ug/l	100
47)	Methylcyclohexane	10.68	83	2113650	11.60 ug/l	99
48)	1,2-Dichloropropane	10.95	63	839948	9.77 ug/l	100
49)	Bromodichloromethane	11.38	83	1021576	9.88 ug/l	100
50)	1,4-Dioxane	11.48	88	57421	182.99 ug/l	100
51)	Dibromomethane	11.47	93	370067	9.26 ug/l	99
53)	4-Methyl-2-pentanone	12.11	43	1473898	46.33 ug/l	99
54)	cis-1,3-Dichloropropene	12.43	75	1236297	9.85 ug/l	99
57)	Toluene	12.97	91	3918855	9.91 ug/l	100
58)	Ethyl methacrylate	13.39	69	547127	9.55 ug/l	99
59)	trans-1,3-Dichloropropene	13.35	75	875112	9.59 ug/l	100
60)	1,1,2-Trichloroethane	13.61	97	432175	8.97 ug/l	99
61)	2-Hexanone	13.67	43	897913	45.15 ug/l	99
62)	1,3-Dichloropropane	14.05	76	813060	9.25 ug/l	100
63)	Tetrachloroethene	14.11	164	759854	9.64 ug/l	100
64)	Dibromochloromethane	14.46	129	560689	9.64 ug/l	99
65)	1,2-Dibromoethane	14.81	107	427082	9.37 ug/l	99
66)	1-Chlorohexane	15.15	91	1626382	10.34 ug/l	100
67)	Chlorobenzene	15.53	112	2134642	9.61 ug/l	99
68)	1,1,1,2-Tetrachloroethane	15.61	131	675645	9.74 ug/l	99
69)	Ethylbenzene	15.63	91	4315485	9.81 ug/l	100
70)	m-Xylene & p-Xylene	15.76	91	6480339	20.12 ug/l	99
71)	o-Xylene	16.49	91	2967943	9.74 ug/l	99
72)	Styrene	16.55	104	2255634	9.51 ug/l	97
73)	Isopropylbenzene	17.09	105	3999250	10.10 ug/l	100
75)	Bromoform	17.10	173	274002	9.17 ug/l	99
76)	1,1,2,2-Tetrachloroethane	17.38	83	445281	9.17 ug/l	100
78)	1,2,3-Trichloropropane	17.60	110	110025	9.32 ug/l	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D Vial: 15
Acq On : 30 Oct 2020 4:41 pm Operator: VLu
Sample : IVO67J3001 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:49 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
79)	trans-1,4-Dichloro-2-buten	17.19	53	115324	9.59	ug/l	100
80)	n-Propylbenzene	17.70	91	5119204	9.94	ug/l	100
81)	Bromobenzene	17.75	156	713700	9.80	ug/l	99
82)	1,3,5-Trimethylbenzene	17.92	105	3062097	10.00	ug/l	100
83)	2-Chlorotoluene	17.92	91	3004757	9.51	ug/l	100
84)	4-Chlorotoluene	17.99	91	2446303	9.23	ug/l	98
85)	tert-Butylbenzene	18.37	134	646383	9.61	ug/l	98
86)	1,2,4-Trimethylbenzene	18.42	105	2894538	10.07	ug/l	100
87)	sec-Butylbenzene	18.62	105	4351814	10.05	ug/l	99
88)	p-Isopropyltoluene	18.78	119	3457451	10.54	ug/l	100
89)	1,3-Dichlorobenzene	18.89	146	1402953	9.40	ug/l	99
90)	1,4-Dichlorobenzene	19.02	146	1341325	9.18	ug/l	100
91)	n-Butylbenzene	19.24	91	3497676	10.37	ug/l	100
92)	1,2-Dichlorobenzene	19.41	146	1071440	8.99	ug/l	99
93)	1,2-Dibromo-3-chloropropan	20.18	157	51430	9.98	ug/l	99
94)	1,2,4-Trichlorobenzene	21.03	180	570859	10.13	ug/l	100
95)	Hexachlorobutadiene	21.15	225	461380	9.94	ug/l	100
96)	Naphthalene	21.29	128	664613	9.89	ug/l	100
97)	1,2,3-Trichlorobenzene	21.54	180	390205	10.18	ug/l	100

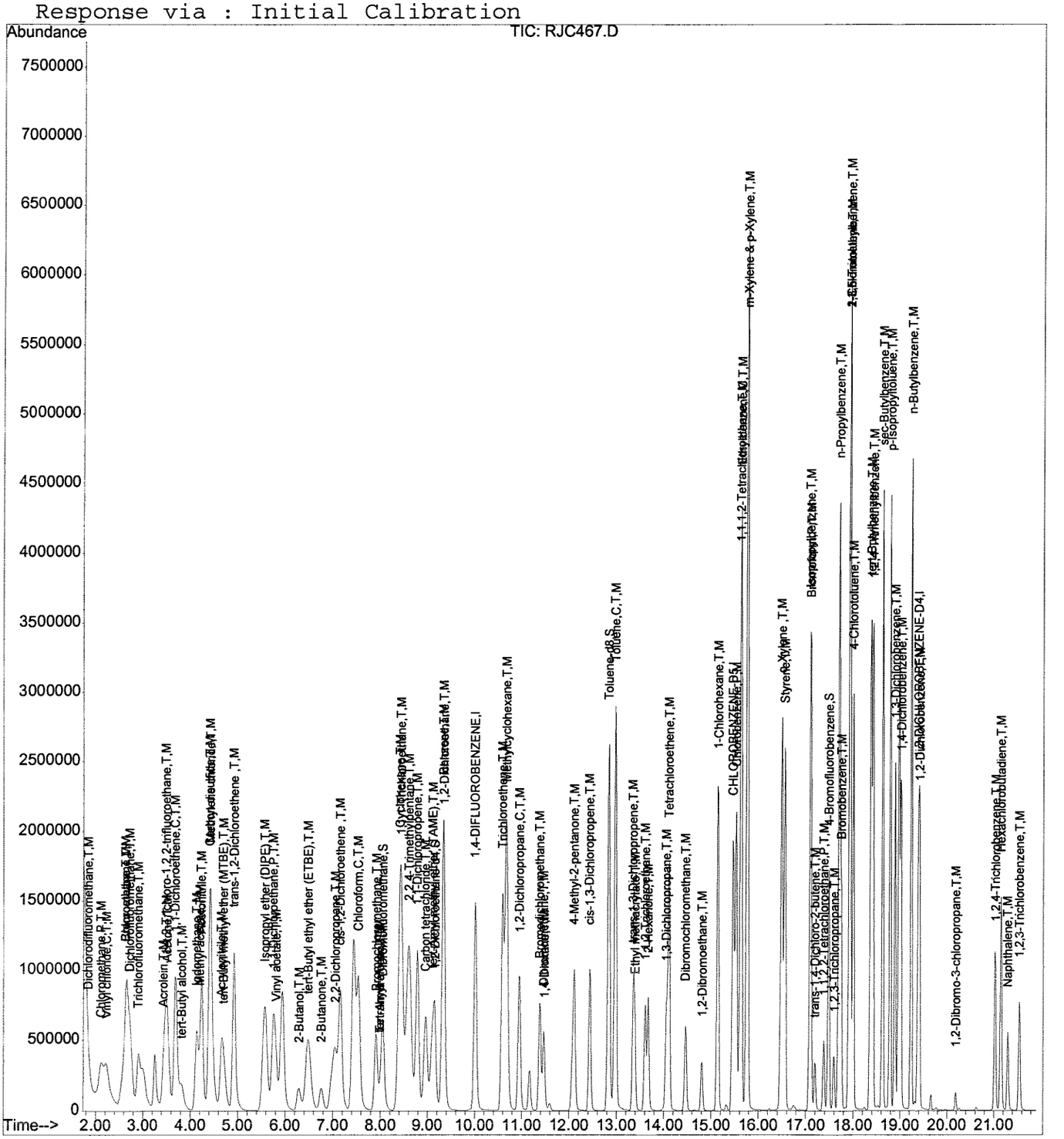
Su 11/4/20

(#) = qualifier out of range (m) = manual integration
RJC467.D VO67J30.M Mon Nov 02 19:00:31 2020 Page 3

Quantitation Report

Data File : D:\HPCHEM\1\DATA\20J30\RJC467.D Vial: 15
Acq On : 30 Oct 2020 4:41 pm Operator: VLu
Sample : IVO67J3001 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 2 16:49 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



RJC467.D VO67J30.M Mon Nov 02 19:00:34 2020 11/4/20 Page 4

DAILY CALIBRATIONS

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMAX Inc Contract: VA SALT LAKE CITY
Lab Code: EMXT Case No.: SAS No.: SDG No.: 20K141
Lab File ID: RKC267 BFB Injection Date : 11/16/20
Instrument ID: 67 BFB Injection Time : 11:34
GC Column:RTX502.2ID:0.25mm (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.81
75	30.0 - 60.0% of mass 95	47.53
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.36
173	Less than 2.0% of mass 174	0.00(0.0)1
174	Greater than 50% of mass 95	74.58
175	5.0 - 9.0% of mass 174	6.60(8.8)1
176	95.0 - 101.0% of mass 174	71.21(95.5)1
177	5.0 - 9.0% of mass 176	4.79(6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD,BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	VSTD010	CV067J3009	RKC26B	11/16/20	12:21
2	MBLK1W	V067K15B	RKC272	11/16/20	14:03
3	LCS1W	V067K15L	RKC269	11/16/20	12:46
4	LCD1W	V067K15C	RKC270	11/16/20	13:12
5	TB56-GW111220	K141-02	RKC273	11/16/20	14:29
6	EB49-GW111220	K141-03	RKC274	11/16/20	14:54
7	MW37-GW111220-30	K141-01	RKC275	11/16/20	15:20
8	MW37-GW111320-70	K141-04	RKC276	11/16/20	15:45

FORM 8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

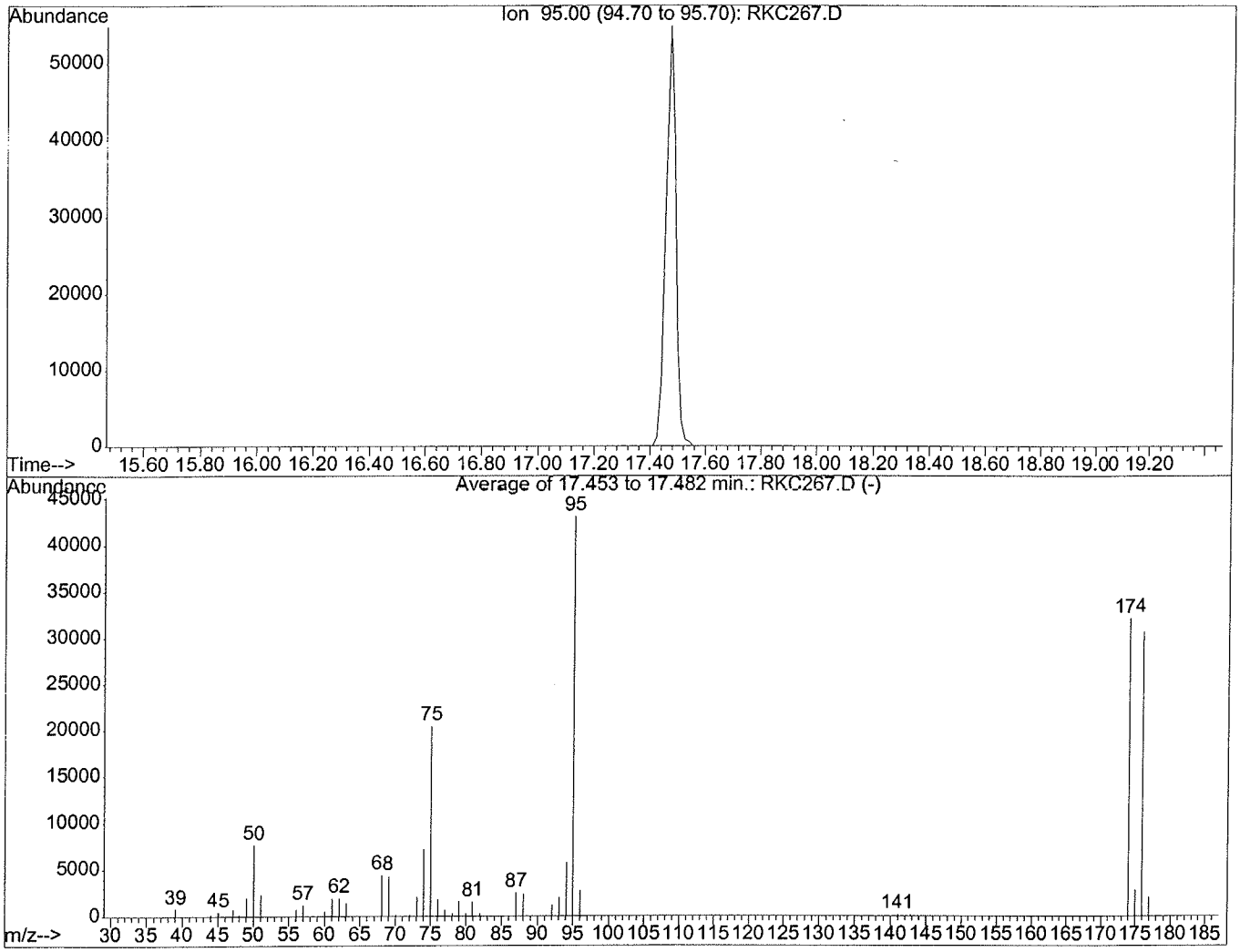
Lab Name : EMAX Inc
Lab Code : EMXT
Lab File ID : RJC459
Instrument ID: 67
GC Column : RTX502.2ID:0.25mm (mm)

Project: VA SALT LAKE CITY
SDG No: 20K141
Date Analyzed: 10/30/2020
Time Analyzed: 13:41
Heated Purge (Y/N): N

		1,4-DIFLUOROBENZENE		CHLOROBENZENE-D5		1,2-DICHLOROBENZENE-D4	
		AREA #	RT(min)	AREA #	RT(min)	AREA #	RT(min)
	12 HOUR STD	2484539	10.00	1854704	15.45	612676	19.38
	UPPER LIMIT	4969078	10.17	3709408	15.62	1225352	19.55
	LOWER LIMIT	1242270	9.83	927352	15.28	306338	19.21
	SAMPLE ID						
1	VSTD010	2623167	9.99	2000935	15.45	661377	19.38
2	MBLK1W	2240564	10.00	1703768	15.45	513415	19.38
3	LCS1W	2512984	10.00	1954554	15.45	639218	19.38
4	LCD1W	2473525	10.00	1933406	15.45	623404	19.38
5	TB56-GW111220	2528704	10.00	1924036	15.45	563240	19.38
6	EB49-GW111220	2503499	10.00	1885585	15.45	552814	19.38
7	MW37-GW111220-30	2340059	10.00	1769078	15.45	557734	19.38
8	MW37-GW111320-70	2212184	10.00	1686588	15.45	535275	19.38

Area Upper Limit = + 100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 0.167 min. (10 sec.) of internal standard RT
RT Lower Limit = - 0.167 min. (10 sec.) of internal standard RT

Data File : D:\HPCHEM\1\DATA\20K16\RKC267.D Vial: 1
Acq On : 16 Nov 2020 11:34 am Operator: VLu
Sample : BFB67K15 Inst : 67
Misc : T/CHK Multiplr: 1.00
MS Integration Params: RTE.P
Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B



AutoFind: Scans 1028, 1029, 1030; Background Corrected with Scan 1023

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	17.8	7675	PASS
75	95	30	60	47.5	20480	PASS
95	95	100	100	100.0	43085	PASS
96	95	5	9	6.4	2742	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	74.6	32131	PASS
175	174	5	9	8.8	2843	PASS
176	174	95	101	95.5	30683	PASS
177	176	5	9	6.7	2065	PASS

RKC267.D VO67J30.M Tue Nov 17 10:41:13 2020

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	10.000	10.000	0.0	106	-0.01
2	T,M	Dichlorodifluoromethane	10.000	9.909	0.9	104	0.00
3	T,M	Dichlorotetrafluoroethane	-1.000	0.000	0.0	0	0.00
4	P,T,M	Chloromethane	10.000	9.305	7.0	97	0.00
5	C,T,M	Vinyl chloride	10.000	9.944	0.6	96	0.00
6	T,M	Bromomethane	10.000	10.162	-1.6	103	0.02
7	T,M	Chloroethane	10.000	9.770	2.3	102	0.00
8	T,M	Dichlorofluoromethane	10.000	9.343	6.6	104	0.00
9	T,M	Trichlorofluoromethane	10.000	9.817	1.8	101	-0.02
10	T,M	sec-Propyl alcohol	-1.000	0.000	0.0	0	0.00
11	T,M	Acrolein	50.000	40.451	19.1	91	-0.02
12	T,M	1,1,2-Trichloro-1,2,2-trifl	10.000	10.019	-0.2	109	0.00
13	T,M	Acetone	50.000	47.212	5.6	107	-0.02
14	C,T,M	1,1-Dichloroethene	10.000	9.319	6.8	103	-0.02
15	T,M	tert-Butyl alcohol	250.000	249.604	0.2	108	0.00
16	T,M	Methyl acetate	10.000	9.130	8.7	97	-0.01
17	T,M	Iodomethane	10.000	8.775	12.2	97	0.00
18	T,M	Acetonitrile	100.000	80.751	19.2	89	-0.01
19	T,M	Methylene chloride	10.000	9.148	8.5	105	-0.03
20	T,M	Carbon disulfide	10.000	10.192	-1.9	107	-0.03
21	T,M	Acrylonitrile	50.000	46.575	6.8	101	-0.03
22	T,M	tert-Butyl methyl ether (MT	10.000	10.052	-0.5	109	-0.01
23	T,M	trans-1,2-Dichloroethene	10.000	9.608	3.9	105	-0.03
24	T,M	Isopropyl ether (DIPE)	10.000	9.560	4.4	106	-0.01
25	P,T,M	1,1-Dichloroethane	10.000	9.315	6.9	103	-0.03
26	T,M	Vinyl acetate	10.000	9.941	0.6	107	-0.03
27	T,M	2-Butanol	250.000	254.804	-1.9	104	-0.03
28	T,M	tert-Butyl ethyl ether (ETB	10.000	9.879	1.2	108	-0.01
29	T,M	2-Butanone	50.000	48.626	2.7	103	-0.01
30	T,M	2,2-Dichloropropane	10.000	9.606	3.9	107	-0.03
31	T,M	cis-1,2-Dichloroethene	10.000	9.695	3.0	106	-0.03
32	C,T,M	Chloroform	10.000	9.589	4.1	105	-0.03
33	T,M	Bromochloromethane	10.000	9.782	2.2	106	-0.03
34	T,M	tert-Amyl alcohol	50.000	0.000	100.0#	0	-7.99#
35	S	Dibromofluoromethane	10.000	10.075	-0.7	99	-0.01
36	T,M	Tetrahydrofuran	10.000	8.985	10.2	95	-0.03
37	T,M	1,1,1-Trichloroethane	10.000	9.363	6.4	103	-0.01
38	T,M	Cyclohexane	10.000	9.611	3.9	96	-0.01
39	T,M	2,2,4-Trimethylpentane	10.000	0.000	100.0#	0	-8.59#
40	T,M	1,1-Dichloropropene	10.000	9.475	5.3	103	-0.03
41	T,M	Carbon tetrachloride	10.000	9.571	4.3	104	-0.01

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
42	T,M	tert-Amyl methyl ether (TAM	10.000	10.069	-0.7	108	-0.01
43	S	1,2-Dichloroethane-d4	10.000	9.619	3.8	96	-0.01
44	T,M	1,2-Dichloroethane	10.000	9.630	3.7	105	-0.03
45	T,M	Benzene	10.000	9.454	5.5	104	-0.01
46	T,M	Trichloroethene	10.000	9.391	6.1	103	-0.01
47	T,M	Methylcyclohexane	10.000	9.292	7.1	95	-0.01
48	C,T,M	1,2-Dichloropropane	10.000	9.296	7.0	102	-0.01
49	T,M	Bromodichloromethane	10.000	9.445	5.5	103	-0.01
50	T,M	1,4-Dioxane	200.000	193.496	3.3	102	-0.01
51	T,M	Dibromomethane	10.000	9.600	4.0	103	-0.01
52	T,M	2-Chloroethyl vinyl ether	10.000	0.000	100.0#	0	0.00
53	T,M	4-Methyl-2-pentanone	50.000	45.837	8.3	99	0.00
54	T,M	cis-1,3-Dichloropropene	10.000	9.326	6.7	103	-0.01
55	I	CHLOROBENZENE-D5	10.000	10.000	0.0	108	0.00
56	S	Toluene-d8	10.000	9.556	4.4	95	0.00
57	C,T,M	Toluene	10.000	8.990	10.1	102	-0.01
58	T,M	Ethyl methacrylate	10.000	9.684	3.2	108	0.00
59	T,M	trans-1,3-Dichloropropene	10.000	9.241	7.6	104	-0.01
60	T,M	1,1,2-Trichloroethane	10.000	9.193	8.1	103	0.00
61	T,M	2-Hexanone	50.000	45.449	9.1	100	-0.01
62	T,M	1,3-Dichloropropane	10.000	9.158	8.4	103	-0.01
63	T,M	Tetrachloroethene	10.000	8.875	11.3	102	-0.01
64	T,M	Dibromochloromethane	10.000	9.572	4.3	107	-0.01
65	T,M	1,2-Dibromoethane	10.000	9.486	5.1	105	0.00
66	T,M	1-Chlorohexane	10.000	9.048	9.5	102	0.00
67	P,M	Chlorobenzene	10.000	9.412	5.9	106	0.00
68	T,M	1,1,1,2-Tetrachloroethane	10.000	9.571	4.3	109	-0.01
69	C,T,M	Ethylbenzene	10.000	8.957	10.4	101	-0.01
70	T,M	m-Xylene & p-Xylene	20.000	18.371	8.1	102	-0.01
71	T,M	o-Xylene	10.000	9.022	9.8	102	0.00
72	T,M	Styrene	10.000	9.291	7.1	104	0.00
73	T,M	Isopropylbenzene	10.000	9.363	6.4	105	0.00
74	I	1,2-DICHLOROBENZENE-D4	10.000	10.000	0.0	108	0.00
75	P,T,M	Bromoform	10.000	9.420	5.8	104	0.00
76	P,T,M	1,1,2,2-Tetrachloroethane	10.000	9.293	7.1	104	0.00
77	S	4-Bromofluorobenzene	10.000	9.243	7.6	97	0.00
78	T,M	1,2,3-Trichloropropane	10.000	9.750	2.5	108	0.00
79	T,M	trans-1,4-Dichloro-2-butene	10.000	9.082	9.2	103	0.00
80	T,M	n-Propylbenzene	10.000	9.130	8.7	103	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
81	T,M	Bromobenzene	10.000	9.342	6.6	108	-0.01
82	T,M	1,3,5-Trimethylbenzene	10.000	9.459	5.4	108	0.00
83	T,M	2-Chlorotoluene	10.000	8.687	13.1	95	0.00
84	T,M	4-Chlorotoluene	10.000	9.193	8.1	113	0.00
85	T,M	tert-Butylbenzene	10.000	9.305	7.0	106	-0.01
86	T,M	1,2,4-Trimethylbenzene	10.000	9.401	6.0	107	0.00
87	T,M	sec-Butylbenzene	10.000	9.273	7.3	105	0.00
88	T,M	p-Isopropyltoluene	10.000	9.656	3.4	108	0.00
89	T,M	1,3-Dichlorobenzene	10.000	9.441	5.6	109	0.00
90	T,M	1,4-Dichlorobenzene	10.000	9.300	7.0	106	0.00
91	T,M	n-Butylbenzene	10.000	9.336	6.6	103	0.00
92	T,M	1,2-Dichlorobenzene	10.000	9.442	5.6	108	0.00
93	T,M	1,2-Dibromo-3-chloropropane	10.000	10.557	-5.6	111	0.00
94	T,M	1,2,4-Trichlorobenzene	10.000	9.692	3.1	109	0.02
95	T,M	Hexachlorobutadiene	10.000	9.733	2.7	110	0.02
96	T,M	Naphthalene	10.000	9.784	2.2	105	0.02
97	T,M	1,2,3-Trichlorobenzene	10.000	9.893	1.1	108	0.01

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	106	-0.01
2	T,M	Dichlorodifluoromethane	0.346	0.342	1.2	104	0.00
3	T,M	Dichlorotetrafluoroethane	0.000	0.000	0.0	0#	0.00
4	P,T,M	Chloromethane	0.529	0.493	6.8	97	0.00
5	C,T,M	Vinyl chloride	0.499	0.496	0.6	96	0.00
6	T,M	Bromomethane	0.434	0.441	-1.6	103	0.02
7	T,M	Chloroethane	0.366	0.357	2.5	102	0.00
8	T,M	Dichlorofluoromethane	0.774	0.724	6.5	104	0.00
9	T,M	Trichlorofluoromethane	0.516	0.507	1.7	101	-0.02
10	T,M	sec-Propyl alcohol	0.000	0.000	0.0	0#	0.00
11	T,M	Acrolein	0.022	0.018	18.2	91	-0.02
12	T,M	1,1,2-Trichloro-1,2,2-trifl	0.274	0.275	-0.4	109	0.00
13	T,M	Acetone	0.031	0.029	6.5	107	-0.02
14	C,T,M	1,1-Dichloroethene	0.620	0.578	6.8	103	-0.02
15	T,M	tert-Butyl alcohol	0.011	0.011	0.0	108	0.00
16	T,M	Methyl acetate	0.102	0.093	8.8	97	-0.01
17	T,M	Iodomethane	0.559	0.490	12.3	97	0.00
18	T,M	Acetonitrile	0.049	0.040	18.4	89	-0.01
19	T,M	Methylene chloride	0.438	0.401	8.4	105	-0.03
20	T,M	Carbon disulfide	1.517	1.546	-1.9	107	-0.03
21	T,M	Acrylonitrile	0.046	0.042	8.7	101	-0.03
22	T,M	tert-Butyl methyl ether (MT	0.501	0.503	-0.4	109	-0.01
23	T,M	trans-1,2-Dichloroethene	0.442	0.425	3.8	105	-0.03
24	T,M	Isopropyl ether (DIPE)	0.940	0.899	4.4	106	-0.01
25	P,T,M	1,1-Dichloroethane	0.683	0.636	6.9	103	-0.03
26	T,M	Vinyl acetate	0.341	0.339	0.6	107	-0.03
27	T,M	2-Butanol	0.009	0.010	-11.1	104	-0.03
28	T,M	tert-Butyl ethyl ether (ETB	0.726	0.717	1.2	108	-0.01
29	T,M	2-Butanone	0.013	0.013	0.0	103	-0.01
30	T,M	2,2-Dichloropropane	0.469	0.451	3.8	107	-0.03
31	T,M	cis-1,2-Dichloroethene	0.431	0.418	3.0	106	-0.03
32	C,T,M	Chloroform	0.638	0.612	4.1	105	-0.03
33	T,M	Bromochloromethane	0.189	0.185	2.1	106	-0.03
34	T,M	tert-Amyl alcohol	0.009	0.000	100.0#	0#	-7.99#
35	S	Dibromofluoromethane	0.327	0.329	-0.6	99	-0.01
36	T,M	Tetrahydrofuran	0.033	0.029	12.1	95	-0.03
37	T,M	1,1,1-Trichloroethane	0.520	0.487	6.3	103	-0.01
38	T,M	Cyclohexane	0.604	0.580	4.0	96	-0.01
39	T,M	2,2,4-Trimethylpentane	1.739	0.000	100.0#	0#	-8.59#
40	T,M	1,1-Dichloropropene	0.199	0.189	5.0	103	-0.03
41	T,M	Carbon tetrachloride	0.427	0.409	4.2	104	-0.01

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
42	T,M	tert-Amyl methyl ether (TAM	0.127	0.128	-0.8	108	-0.01
43	S	1,2-Dichloroethane-d4	0.209	0.201	3.8	96	-0.01
44	T,M	1,2-Dichloroethane	0.258	0.249	3.5	105	-0.03
45	T,M	Benzene	1.464	1.384	5.5	104	-0.01
46	T,M	Trichloroethene	0.388	0.364	6.2	103	-0.01
47	T,M	Methylcyclohexane	0.682	0.634	7.0	95	-0.01
48	C,T,M	1,2-Dichloropropane	0.322	0.299	7.1	102	-0.01
49	T,M	Bromodichloromethane	0.387	0.365	5.7	103	-0.01
50	T,M	1,4-Dioxane	0.001	0.001	0.0	102	-0.01
51	T,M	Dibromomethane	0.150	0.144	4.0	103	-0.01
52	T,M	2-Chloroethyl vinyl ether	0.000	0.061	0.0	0#	0.00
53	T,M	4-Methyl-2-pentanone	0.119	0.109	8.4	99	0.00
54	T,M	cis-1,3-Dichloropropene	0.469	0.438	6.6	103	-0.01
55	I	CHLOROBENZENE-D5	1.000	1.000	0.0	108	0.00
56	S	Toluene-d8	1.526	1.459	4.4	95	0.00
57	C,T,M	Toluene	1.969	1.770	10.1	102	-0.01
58	T,M	Ethyl methacrylate	0.285	0.276	3.2	108	0.00
59	T,M	trans-1,3-Dichloropropene	0.455	0.420	7.7	104	-0.01
60	T,M	1,1,2-Trichloroethane	0.240	0.221	7.9	103	0.00
61	T,M	2-Hexanone	0.099	0.090	9.1	100	-0.01
62	T,M	1,3-Dichloropropane	0.438	0.401	8.4	103	-0.01
63	T,M	Tetrachloroethene	0.393	0.349	11.2	102	-0.01
64	T,M	Dibromochloromethane	0.290	0.277	4.5	107	-0.01
65	T,M	1,2-Dibromoethane	0.227	0.215	5.3	105	0.00
66	T,M	1-Chlorohexane	0.783	0.709	9.5	102	0.00
67	P,M	Chlorobenzene	1.107	1.042	5.9	106	0.00
68	T,M	1,1,1,2-Tetrachloroethane	0.346	0.331	4.3	109	-0.01
69	C,T,M	Ethylbenzene	2.191	1.962	10.5	101	-0.01
70	T,M	m-Xylene & p-Xylene	1.605	1.474	8.2	102	-0.01
71	T,M	o-Xylene	1.518	1.369	9.8	102	0.00
72	T,M	Styrene	1.182	1.098	7.1	104	0.00
73	T,M	Isopropylbenzene	1.973	1.847	6.4	105	0.00
74	I	1,2-DICHLOROBENZENE-D4	1.000	1.000	0.0	108	0.00
75	P,T,M	Bromoform	0.451	0.425	5.8	104	0.00
76	P,T,M	1,1,2,2-Tetrachloroethane	0.733	0.681	7.1	104	0.00
77	S	4-Bromofluorobenzene	1.359	1.256	7.6	97	0.00
78	T,M	1,2,3-Trichloropropane	0.178	0.174	2.2	108	0.00
79	T,M	trans-1,4-Dichloro-2-butene	0.182	0.165	9.3	103	0.00
80	T,M	n-Propylbenzene	7.777	7.101	8.7	103	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.16min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
81	T,M	Bromobenzene	1.100	1.028	6.5	108	-0.01
82	T,M	1,3,5-Trimethylbenzene	4.627	4.377	5.4	108	0.00
83	T,M	2-Chlorotoluene	4.772	4.146	13.1	95	0.00
84	T,M	4-Chlorotoluene	4.004	3.681	8.1	113	0.00
85	T,M	tert-Butylbenzene	1.016	0.945	7.0	106	-0.01
86	T,M	1,2,4-Trimethylbenzene	4.340	4.080	6.0	107	0.00
87	T,M	sec-Butylbenzene	6.542	6.067	7.3	105	0.00
88	T,M	p-Isopropyltoluene	4.955	4.785	3.4	108	0.00
89	T,M	1,3-Dichlorobenzene	2.255	2.129	5.6	109	0.00
90	T,M	1,4-Dichlorobenzene	2.208	2.053	7.0	106	0.00
91	T,M	n-Butylbenzene	5.096	4.757	6.7	103	0.00
92	T,M	1,2-Dichlorobenzene	1.801	1.701	5.6	108	0.00
93	T,M	1,2-Dibromo-3-chloropropane	0.078	0.082	-5.1	111	0.00
94	T,M	1,2,4-Trichlorobenzene	0.851	0.825	3.1	109	0.02
95	T,M	Hexachlorobutadiene	0.701	0.682	2.7	110	0.02
96	T,M	Naphthalene	1.015	0.994	2.1	105	0.02
97	T,M	1,2,3-Trichlorobenzene	0.579	0.573	1.0	108	0.01

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:43 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-DIFLUOROBENZENE	9.99	114	2623167	10.00	ug/l	-0.01
55) CHLOROBENZENE-D5	15.45	117	2000935	10.00	ug/l	0.00
74) 1,2-DICHLOROBENZENE-D4	19.38	152	661377	10.00	ug/l	0.00
System Monitoring Compounds						
35) Dibromofluoromethane	8.02	111	862962	10.07	ug/l	-0.01
Spiked Amount 10.000			Recovery = 100.70%			
43) 1,2-Dichloroethane-d4	9.13	65	527110	9.62	ug/l	-0.01
Spiked Amount 10.000			Recovery = 96.20%			
56) Toluene-d8	12.82	98	2918700	9.56	ug/l	0.00
Spiked Amount 10.000			Recovery = 95.60%			
77) 4-Bromofluorobenzene	17.47	95	830901	9.24	ug/l	0.00
Spiked Amount 10.000			Recovery = 92.40%			
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.84	85	898217	9.91	ug/l	100
4) Chloromethane	2.11	50	1292404	9.31	ug/l	100
5) Vinyl chloride	2.23	62	1301443	9.94	ug/l	100
6) Bromomethane	2.64	94	1156827	10.16	ug/l	98
7) Chloroethane	2.64	64	937251	9.77	ug/l	99
8) Dichlorofluoromethane	2.72	67	1898202	9.34	ug/l	99
9) Trichlorofluoromethane	2.88	101	1328880	9.82	ug/l	100
11) Acrolein	3.42	56	229710	40.45	ug/l	96
12) 1,1,2-Trichloro-1,2,2-trif	3.50	151	721214	10.02	ug/l	100
13) Acetone	3.50	43	381939	47.21	ug/l	99
14) 1,1-Dichloroethene	3.66	61	1516491	9.32	ug/l	98
15) tert-Butyl alcohol	3.80	59	699692	249.60	ug/l	99
16) Methyl acetate	4.18	43	243770	9.13	ug/l	95
17) Iodomethane	4.13	142	1286113	8.78	ug/l	99
18) Acetonitrile	4.22	41	1047840	80.75	ug/l	98
19) Methylene chloride	4.40	49	1050593	9.15	ug/l	97
20) Carbon disulfide	4.38	76	4055882	10.19	ug/l	100
21) Acrylonitrile	4.63	53	556770	46.57	ug/l	100
22) tert-Butyl methyl ether (M	4.67	73	1320207	10.05	ug/l	99
23) trans-1,2-Dichloroethene	4.89	96	1114833	9.61	ug/l	98
24) Isopropyl ether (DIPE)	5.55	45	2358077	9.56	ug/l	95
25) 1,1-Dichloroethane	5.72	63	1669578	9.31	ug/l	100
26) Vinyl acetate	5.78	43	889013	9.94	ug/l	97
27) 2-Butanol	6.25	45	630899	254.80	ug/l	99
28) tert-Butyl ethyl ether (ET	6.45	59	1880119	9.88	ug/l	98
29) 2-Butanone	6.73	72	164733	48.63	ug/l	98
30) 2,2-Dichloropropane	7.01	77	1181747	9.61	ug/l	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:43 2020 Quant Results File: VO67J30.RES

Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,2-Dichloroethene	7.13	96	1096640	9.70	ug/l	99
32)	Chloroform	7.51	83	1605631	9.59	ug/l	100
33)	Bromochloromethane	7.87	130	485359	9.78	ug/l	99
36)	Tetrahydrofuran	7.96	42	76636	8.99	ug/l	96
37)	1,1,1-Trichloroethane	8.41	97	1276810	9.36	ug/l	100
38)	Cyclohexane	8.40	84	1521804	9.61	ug/l	96
40)	1,1-Dichloropropene	8.75	110	495516	9.48	ug/l	99
41)	Carbon tetrachloride	8.94	119	1071706	9.57	ug/l	100
42)	tert-Amyl methyl ether (TA	9.08	87	335448	10.07	ug/l	100
44)	1,2-Dichloroethane	9.32	62	652024	9.63	ug/l	98
45)	Benzene	9.30	78	3630468	9.45	ug/l	100
46)	Trichloroethene	10.57	130	955046	9.39	ug/l	98
47)	Methylcyclohexane	10.65	83	1661777	9.29	ug/l	99
48)	1,2-Dichloropropane	10.92	63	784236	9.30	ug/l	97
49)	Bromodichloromethane	11.36	83	958331	9.44	ug/l	100
50)	1,4-Dioxane	11.45	88	59581	193.50	ug/l	98
51)	Dibromomethane	11.45	93	376601	9.60	ug/l	98
53)	4-Methyl-2-pentanone	12.09	43	1430927	45.84	ug/l	98
54)	cis-1,3-Dichloropropene	12.41	75	1148144	9.33	ug/l	100
57)	Toluene	12.95	91	3542589	8.99	ug/l	100
58)	Ethyl methacrylate	13.38	69	552985	9.68	ug/l	97
59)	trans-1,3-Dichloropropene	13.33	75	840599	9.24	ug/l	100
60)	1,1,2-Trichloroethane	13.60	97	441630	9.19	ug/l	99
61)	2-Hexanone	13.66	43	901010	45.45	ug/l	97
62)	1,3-Dichloropropane	14.04	76	802008	9.16	ug/l	100
63)	Tetrachloroethene	14.09	164	697443	8.87	ug/l	99
64)	Dibromochloromethane	14.44	129	554999	9.57	ug/l	100
65)	1,2-Dibromoethane	14.79	107	430815	9.49	ug/l	100
66)	1-Chlorohexane	15.13	91	1418147	9.05	ug/l	99
67)	Chlorobenzene	15.51	112	2085075	9.41	ug/l	100
68)	1,1,1,2-Tetrachloroethane	15.60	131	662004	9.57	ug/l	100
69)	Ethylbenzene	15.61	91	3926271	8.96	ug/l	98
70)	m-Xylene & p-Xylene	15.74	91	5899710	18.37	ug/l	98
71)	o-Xylene	16.47	91	2740195	9.02	ug/l	98
72)	Styrene	16.55	104	2196940	9.29	ug/l	80
73)	Isopropylbenzene	17.09	105	3695302	9.36	ug/l	99
75)	Bromoform	17.09	173	281047	9.42	ug/l	100
76)	1,1,2,2-Tetrachloroethane	17.38	83	450622	9.29	ug/l	99
78)	1,2,3-Trichloropropane	17.58	110	115010	9.75	ug/l	99
79)	trans-1,4-Dichloro-2-buten	17.19	53	109082	9.08	ug/l	96
80)	n-Propylbenzene	17.69	91	4696202	9.13	ug/l	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:43 2020 Quant Results File: VO67J30.RES

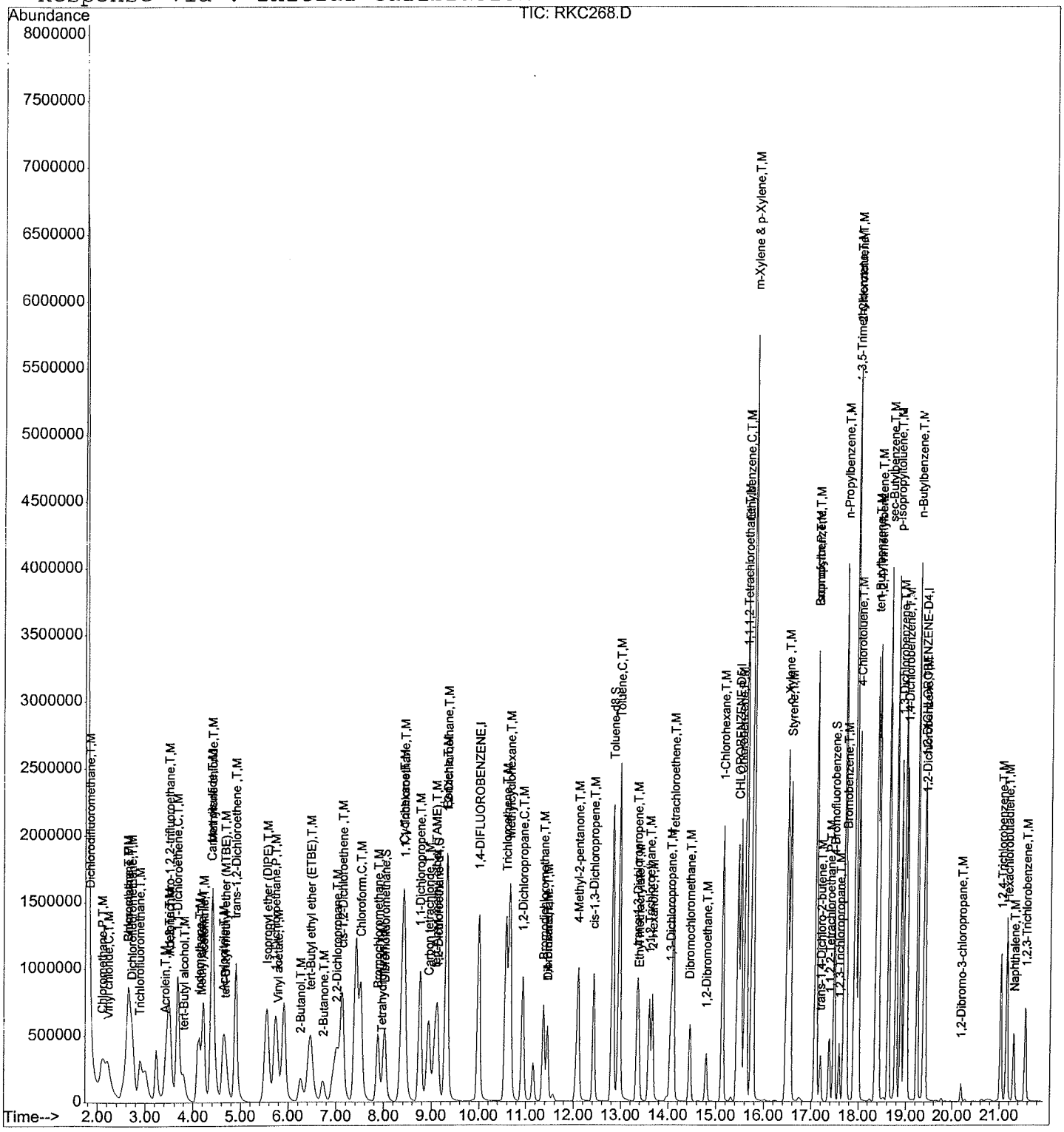
Quant Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration
DataAcq Meth : VO67J30

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
81)	Bromobenzene	17.73	156	679893	9.34 ug/l	98
82)	1,3,5-Trimethylbenzene	17.91	105	2894780	9.46 ug/l	100
83)	2-Chlorotoluene	17.92	91	2741808	8.69 ug/l	94
84)	4-Chlorotoluene	17.99	91	2434652	9.19 ug/l	96
85)	tert-Butylbenzene	18.36	134	625282	9.30 ug/l	98
86)	1,2,4-Trimethylbenzene	18.40	105	2698491	9.40 ug/l	99
87)	sec-Butylbenzene	18.62	105	4012342	9.27 ug/l	100
88)	p-Isopropyltoluene	18.78	119	3164527	9.66 ug/l	99
89)	1,3-Dichlorobenzene	18.88	146	1407924	9.44 ug/l	99
90)	1,4-Dichlorobenzene	19.00	146	1357857	9.30 ug/l	99
91)	n-Butylbenzene	19.23	91	3146207	9.34 ug/l	99
92)	1,2-Dichlorobenzene	19.41	146	1124707	9.44 ug/l	100
93)	1,2-Dibromo-3-chloropropan	20.18	157	54327	10.56 ug/l	100
94)	1,2,4-Trichlorobenzene	21.03	180	545636	9.69 ug/l	99
95)	Hexachlorobutadiene	21.16	225	451339	9.73 ug/l	99
96)	Naphthalene	21.31	128	657128	9.78 ug/l	99
97)	1,2,3-Trichlorobenzene	21.56	180	378814	9.89 ug/l	98

(#) = qualifier out of range (m) = manual integration
RKC268.D VO67J30.M Tue Nov 17 10:43:24 2020 Page 3

Data File : D:\HPCHEM\1\DATA\20K16\RKC268.D Vial: 2
Acq On : 16 Nov 2020 12:21 pm Operator: VLu
Sample : CVO67J3009 Inst : 67
Misc : 10ppb 8260/50ppb KET-AA/250ppb TBA Multiplr: 1.00
MS Integration Params: RTE.P
Quant Time: Nov 17 10:43 2020 Quant Results File: VO67J30.RES

Method : D:\HPCHEM\1\METHODS\VO67J30.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Nov 02 17:45:37 2020
Response via : Initial Calibration



ANALYTICAL LOG(S)

EMAX LABORATORIES, INC.

ANALYSIS LOG FOR VOLATILES

SOP ☑ EMAX-8260 Rev.No. 10 ☑ EMAX-8260C Rev. No. 1 ☐ EMAX-8260SIM Rev.No. 1 ☐ EMAX-M8260SIM Rev.No. 0 ☐ EMAX-TCPSIM Rev.No. 2 ☐ EMAX-624 Rev.No. 5 ☐ EMAX-624.1 Rev.No. 0

Start Date: 10/30/20 ☐ 5-mL Purge ☐ 10-mL Purge ☑ 25-mL Purge

Book #: A67-071

BATCH V067J306

	Sample Prep ID	Data File Name	Lab Sample ID	(*) Sample Amount (mL)	DF	Matrix W pH <2	Matrix W Cl_2 <5ppm	Matrix S	Notes
01	RJC453	BFB67J20 ✓	A / B	NA	NA	NA		8260 ket-AA TBA 10:46
02	54	V067J301 ✓						0.3 1.5 7.5 ppb
03	55	2 ✓						0.5 2.5 12.5
04	56	3 ✓						1.0 5.0 25
05	57	4 ✓						2.0 10 50
06	58	5 ✓						5.0 25 125
07	59	6 ✓						10 50 250
08	61	7 ✓						20 100 500
09	62	8 ✓						30 150 750
10	63	9 ✓						50 250 1250
11	64	10 ✓						100 500 2500 ppb
12	65	RINSE						
13	66	↓						
14	67	IV067J3001 ✓						10 50 250 ppb
15	68	RINSE						17:32
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								VL 11/2/20

Instrument No.	67
INITIAL CALIBRATION REFERENCE	
DATE	10/30/20
ICAL ID	V067J30

STANDARDS

	NAME	ID	Amount (µl)	Conc. (mg/L)
DCC	8260 ket-AA	SV1-35-33-01 -32-01	*	50/1250 250
DCC	4add	-03-02		250/6250
DCC	GAS CS2	-33-03 -29-03		250 250
DCC	TAA-224	-35-02		250/1250
BFB		SV1-34-99-01	1	50
IS/SURR.	IS SS	-34-55-01 -35-16-01	5 5	50 250
ICV/LCS	8260 ket-AA	SV1-35-19-01 -08-02	5 5	50/1250 250
ICV/LCS	3add 2but	-07-01 -34-01	5 12.5	50 500
ICV/LCS	GAS CS2	-16-02 -21-03	1 1	250 250
ICV/LCS	TAA 224TMP	SV1-34-78-03 -35-11-02	5 5	250 50

Data File Folder	20J30	
	LOT #	Syringe Lot #
pH strip		MSV-02-01-07-5
Chlorine strip		-02-01-08-2
Methanol		-01-04-16
$NaHSO_4$		-01-05-08
Reagent Water	RWS-20-001	-02-01-02
Sand		N01-C5916
Electronic Data Archival Location		Date
HPCHEM_VOA/TO67		

Comments:

Analyzed By: VL

Date Disposed: 11/2/20 Disposed By: VL

EMAX LABORATORIES, INC.

ANALYSIS LOG FOR VOLATILES

SOP ☑ EMAX-8260 Rev.No. 10 ☑ EMAX-8260C Rev. No. 1 ☐ EMAX-8260SIM Rev.No. 1 ☐ EMAX-M8260SIM Rev.No. 0 ☐ EMAX-TCPSIM Rev.No. 2 ☐ EMAX-624 Rev.No. 5 ☐ EMAX-624.1 Rev.No. 0

Start Date: 11/16/20 ☐ 5-mL Purge ☐ 10-mL Purge ☑ 25-mL Purge Book #: A67-071

BATCH CV067J3009

	Sample Prep ID	Data File Name	Lab Sample ID	Sample Amount	DF	Matrix W pH <2	Matrix W Cl_2 <5ppm	Matrix S	Notes
01		RKL267	BFB67K15 ✓						11:34
02		68	CV067J3009 ✓						
03		69	V067K15L ✓						
04		70	↓ C ✓						
05		71	RINSE						
06		72	V0 67K15B ✓	25mL					
07		73	20K141-02 ✓		1.0	✓	✓		TB-005-02-22
08		74	-03 ✓			✓	✓		
09		75	-01 ✓			✓	✓		
10		76	↓ -04 ✓			✓	✓		
11		77	20K096-01N			✓	✓		Confirmation only
12		78	20K131-01 ✓			✓	✓		
13		79	-02 ✓			✓	✓		
14		80	-03 ✓			✓	✓		
15		81	-04 ✓			✓	✓		
16		82	-05 ✓			✓	✓		
17		83	-06 ✓			✓	✓		
18		84	-07 ✓			✓	✓		
19		85	-08 ✓			✓	✓		
20		86	-09 ✓			✓	✓		
21		87	-10 ✓			✓	✓		
22		88	-11 ✓			✓	✓		
23		89	-12 ✓			✓	✓		
24		90	-13 ✓			✓	✓		
25		91	-14 ✓			✓	✓		
26		92	↓ -15 ✓			✓	✓		
27		93	EV067J3009 ✓						23:00
28		94	A						
29		95	↓ B						
30		96-98	RINSE						

Instrument No.	67
INITIAL CALIBRATION REFERENCE	
DATE	10/30/20
ICAL ID	V067J30

STANDARDS

NAME	ID	Amount (ul)	Conc. (mg/L)
DCC 8260 Ket-AA	SVI-35-48-03 -32-01	5 5	
DCC 4add	-03-02	1	
DCC GAS	-44-01	1	
DCC CS_2	-21-01	1	
BFB	SVI-34-99-01	1	50/250
IS/SURR.	SVI-35-40-01	5	1250
ICV/LCS 8260 Ket-AA	-19-02 -38-02	5 5	
ICV/LCS 3add	-07-01	5	
ICV/LCS GAS	-16-02	1	
ICV/LCS CS_2	-21-03	1	
Data File Folder	20K16		

	LOT #	Syringe Lot #
pH strip	HC904495	MSV-02-01-07-5
Chlorine strip	014802B	-02-01-08-2
Methanol		-01-04-16
$NaHSO_4$		
Reagent Water	RW5-20-001	
Sand		

Electronic Data Archival Location	Date
HPCHEM_VOA/TO67	

Comments:

Analyzed By: VL

Date Disposed: 11/17/20 Disposed By: VL

VA Salt Lake City
Salt Lake City, Utah
Groundwater Validation Report

Sample Delivery Group (SDG) Number: 20K141
Laboratory: EMAX Laboratories, Inc.

Matrix: Groundwater
Collection date: 11/12/2020, 11/13/2020
Analysis/Methods:

Volatile Organic Compounds SW 846 8260C

Samples in SDG:

Lab ID	Sample Number
JK141-01	MW37-GW111220-30
JK141-02	TB56-GW111220
JK141-03	EB49-GW111220
JK141-04	MW37-GW111320-70

Data validation was performed in accordance with the specific analytical methods and the National Functional Guidelines for Organic Superfund Methods Data Review (EPA January 2017).

Volatile Organic Compounds 8260C

Precision:	Yes	No	N/A
Are the field duplicate relative percent differences (RPD) ≤50% (soils), <30% (water) or within CRQL criteria?			N/A
Were the Matrix Spike Duplicate RPDs ≤ 20%? (Or lab defined limits)			N/A
Laboratory Control Spike Duplicates RPD within limits?	Yes		

Comments (note deviations):

Field Duplicates	8260C	Sample	Duplicate	%RPD	Qualifiers	Associated Samples
N/A						

MS/MSD	8260C	%RPD	Limit	Qualifiers	Associated Samples
N/A					

LCS/LCSD	8260C	%RPD	Limits	Qualifiers	Associated Samples
LCS1W / LCSD1W		Acceptable			

Accuracy:	Yes	No	N/A
Was the Matrix Spike/Matrix Spike Duplicate criteria met? (frequency ≥ 5% and laboratory determined control limits)			N/A
Laboratory Control Sample criteria met?	Yes		
Were the Laboratory Method Blank results all < RL?	Yes		
Were the Field Blanks results all < RL?		No	
Was the ICAL criteria met?	Yes		
Was the CCV criteria met?	Yes		
Was the Tuning criteria met?	Yes		
Were the Surrogate % recoveries within laboratory determined control limits?	Yes		
Were the Internal Standard areas within ± 50 - 150%?	Yes		

Comments (note deviations):

Blanks	8260C	Concentration (ug/L)	MDL /RL	Qualifiers	Associated Samples
MBLK1W		Nondetect			

Field Blank	8260C	Concentration	MDL /RL	Qualifiers	Associated Samples
TB56-GW111220	Acetone	3.3 J	2.5 / 20	U - RL	K141-01, K141-04
	Bromodichloromethane	0.23 J	0.1 / 1.0	None	Sample results nondetect
	Bromoform	0.17 J	0.15 / 1.0	None	Sample results nondetect
	Chloroform	0.1 J	0.1 / 1.0	U - RL	K141-04
	Dibromochloromethane	0.38 J	0.1 / 1.0	None	Sample results nondetect
EB49-GW111220	Acetone	3.7 J	2.5 / 20	U - RL	K141-01, K141-04

Surrogates	8260C	%R	Limit	Qualifiers	Associated Samples
		Acceptable			

MS/MSD	8260C	%R	Limit	Qualifiers	Associated Samples
N/A					

LCS/LCSD	8260C	%R	Limits	Qualifiers	Associated Samples
LCS1W / LCSD1W		Acceptable			

ICAL	8260C	RRF	%RSD	Qualifiers	Associated Samples
10/30/2020 11:33		Acceptable	Acceptable		

CCV	8260C	RRF	%D	Limits	Qualifiers	Associated Samples
11/16/20 12:21		Acceptable	Acceptable			

Tune	8260C
	Acceptable

Internal Standards	8260C	Area	Area Lower / Upper Limit	Qualifiers	Associated Samples
		Acceptable			

Representativeness:	Yes	No	N/A
Were sampling procedures and design criteria met?	Yes		
Were holding times met?	Yes		
Was preservation criteria met? (0° C - 6° C)	Yes		
Were Chain-of-Custody records complete and provided in data package?	Yes		

Comments (note

The cooler temperature was 3.6 °C

Preservation	Cooler Temperature (Degrees C)	Preservation Criteria	Qualifier	Associated Samples
	Acceptable			

Holding Times	Analyte	Days to Extraction	HT Criteria	Qualifier	Associated Samples
		Acceptable			

Comparability:	Yes	No	N/A
Were analytical procedures and methods followed as defined in the QAPP or field change documentation?	Yes		

Comments (note deviations):

Completeness (90%):	Yes	No	N/A
Are all data in this SDG usable?	Yes		

Comments (note deviations):

Sensitivity:	Yes	No	N/A
Are MDLs present and reported?	Yes		
Do the reporting limits meet project requirements?	Yes		

Comments (note deviations):

Comment:

Data is usable with appropriate qualifiers applied.

Data Validator: Kristine Molloy Date: 11/19/2020

Data Reviewer: Cherie Zakowski Date: 11/20/2020

Appendix J

Survey Data

1/1

VA PLUME 1/21/21

PT #	MH #	CODE	CUT
121600	30R	℄ MW-30R	
121601		NO MW-30R	
121602		MW-30R A	.24
121603		MW-30R B	.44
121604	36	℄ MW-36	
121605		NO MW-36	
121606		MW-36	.54
121607		℄ MW-37	
121608		NO MW-37	
121609		MW-37 S	.36
121610		MW-37 D	.41
121611		℄ MW-38	
121612		NO MW-38	
121613		MW-38 S	.88
121614		MW-38 D	.73
121615		℄ MW-13L	
121616		NO MW-13L	
121617		MW-13L	.61

Point	Northing	Easting	Elevation	ID
121600	7445055.62	1545425.12	4722.89	CL MW-30R
121601	7445056.12	1545425.09	4722.95	NO MW-30R
121602	7445055.90	1545425.16	4722.60	MW-30RA
121603	7445055.64	1545425.20	4722.36	MW-30RB
121604	7440955.06	1541547.17	4429.01	CL MW-36
121605	7440955.57	1541547.14	4428.96	NO MW-36
121606	7440955.13	1541547.30	4428.49	MW-36
121607	7443160.46	1539938.63	4348.36	CL MW-37
121608	7443160.98	1539938.61	4348.36	NO MW-37
121609	7443160.41	1539938.84	4348.00	MW-37 S
121610	7443160.68	1539938.71	4347.97	MW-37 D
121611	7443931.79	1541593.58	4498.56	CL MW-38
121612	7443932.26	1541593.53	4498.55	NO MW-38
121613	7443931.72	1541593.35	4497.64	MW-38 S
121614	7443931.93	1541593.53	4497.80	MW-38 D
121615	7442106.30	1541851.01	4483.67	CL MW-13L
121616	7442106.64	1541851.07	4483.66	NO MW-13L
121617	7442106.40	1541851.05	4483.23	MW-13L

Appendix K

Well Development Purge Logs

BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Airlifting procedure:

***A: Assembling the diverter*:**

1. Measure out length of airlift line (nylon tubing) that will be inside the well. It should be set 3-5 feet above the well screen. BE SURE THE AIRLIFT WEIGHT DOES NOT HANG WITHIN THE WELL SCREEN. MAKE SURE IT IS IN THE BLANK CASING, AS PRESSURIZING INSIDE THE WELL SCREEN CAN DAMAGE THE SCREEN AND COMPROMISE THE INTEGRITY OF THE CASING ALLOWING SEDIMENT OR SAND INVASION AND RUINING THE WELL.
2. Thread the uphole or surface end of the nylon tube through the bored through fitting at the top of the plastic diverter and tighten it down.
3. Attach the airlift weight (stainless steel weight with fitting on top) to the nylon tube with the Swagelok connection.
4. Tighten down the airlift weight connection and diverter gas-line connection (on top of the diverter).
5. Feed airlift weight and nylon tube into well, thread diverter piece onto threads at the top of the well casing.
6. Attach a garden hose to the fitting on the diverter piece. Put the other end of the hose into discharge vessel.
7. Attach the loose nylon tube to nitrogen tank regulator.

***B: Development*:**

1. Calculate needed lift pressure with the following equation:
   depth of the airlift weight/2.31x1.1=airlift pressure (in psi)
   NEVER EXCEED 150 PSI WHICH IS THE WORKING PRESSURE OF 1" SCHED 80 THREADED PVC PIPE OR THE WELL THREADS AND WELL SCREEN COULD BE DAMAGED.
2. In order for this procedure to work about 25% of the casing above the airlift weight needs to be full of water. If static conditions aren't such that there is enough head above the screen and the airlift device then water needs to be added for each slug. 1" Schedule 80 pvc holds about **.35gal/10ft** so you can plan accordingly with the volume that will need to be added.
3. When all connections are tight and discharge tube is securely in discharge vessel, dial in the nitrogen to the pressure calculated above.
4. Let the nitrogen gas flow in until a slug of water comes into the diverter, turn off the pressure, let the water flow out of the diverter.
5. Repeat this process, giving enough time for recharge between cycles, until water either (A)is clear or (B)is no longer changing in its sediment load with each volume purged.
6. For example, at the beginning it may look like mud, ten cycles later it may look like chocolate milk, and five cycles after that it may look like murky water, but ten cycles later it still looks like murky water, then murky water is what the well is going to produce and the well is developed.

Appendix A.3. Well Development Log

Monitoring Point: MW-26A Date: 11/10/20 Sampler: E Rott, A Fiorni

Weather: Visitors:

Boring Dia. Casing Dia. 1" DTW: 190.98 TD: 217 Pump Intake Depth: Pump Top Depth:

Purge/Sampling Method: Vial pH: Depth to Water @Sampling:

Calculated Purge Volume[1] (Method 1) _____ (Water added during construction (gal)) x 2 = _____ (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [Casing and Annular Volume: (217 (TD (ft)) - 190.98 (DTW (ft)) x (~~+~~ (CF) ~~+~~ (BF))] + [Vol. Above Filter Pack: (~~x~~ (Casing Leng. (ft)) ~~x~~ * (CF)) = ~~3.72~~ 1.07 x 5 + _____ (Water added during construction (gal)) = 5.33 (Purge Volume (gal) (0.0))

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: PPE Disposal: Disposition of Purge Water: 90% Recharge Level: ft

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
1400	Attempt to start bailing - bailer getting stuck.						
1430	After pulling up and trying again, bailer is stuck while pulling up.						
1500	Able to retrieve bailer. Measured rope from location where bailer was getting stuck. At approx. 206' btoc						206'.

Appendix A.3. Well Development Log

Monitoring Point: MW-30RA Date: 12/1/2020 Sampler: T. Vrtan / K. Murphy

Weather: SUNNY LOW 21°F HIGH 40°F Visitors: None

Boring Dia. 8in Casing Dia. 2 inches DTW: 227.34 TD: 252.3 Pump Intake Depth: 247.3 Pump Top Depth: 244.3

Purge/Sampling Method: N/A Vial pH: N/A Depth to Water @Sampling: N/A

Calculated Purge Volume[1] (Method 1): N/A (Water added during construction (gal)) x 2 = N/A (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater

Calculated Purge Volume[1] (Method 2): Casing and Annular Volume [(252.3 (TD (ft)) - 227.34 (DTW (ft))) x (0.17 (CF) + 0.71 (BF))] + Vol. Above Filter Pack (16 (Casing Leng. (ft)) x 0.71 (CF)) = 24.7 x 5 + 0 (Water added during construction (gal)) = 123.4 (Purge Volume (gal) (0.0))

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: ________ PPE Disposal: ________ Disposition of Purge Water: ________ 90% Recharge Level: ________ ft

Time	Purge Vol specify ml or gal (circled: gal)	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP) ~~ORP~~	ORP (mV)	Comments (Color/Odor)
1615	7	9.17	7.70	3.12	232.56	227.23	~~23~~ 107.9	[illegible]
1625	7	6.83	8.25	2.34	189.27	227.23	105.9	
1630	7	7.47	8.11	2.36	150.20	227.23	105.2	
1640	7.5	3.52	5.45	2.36	110.33	227.23	111.2	
1645	8	7.34	5.35	2.36	93.25	227.23	117.2	
1650	8	7.21	5.34	2.35	98.07	227.23	113.3	
1655	8.5	6.13	8.15	2.37	67.50	227.23	120.4	
1705	9.5	6.43	9.04	2.36	42.13	227.23	127.0	
1710	10	6.70	9.20	2.36	36.03	227.23	122.5	pH=6.24 aspen reading
1715	10.5	6.42	9.29	2.37	36.49	227.23	122.2	pH=6.54 aspen reading
1720	11	6.43	9.41	2.37	24.17	227.23	122.5	pH=6.85 aspen reading
1725	11.5	6.41	9.82	2.38	24.89	227.23	122.1	pH=6.97 aspen reading
1730	12	6.58	9.82	2.37	16.58	227.23	120.9	pH=7.02 aspen reading. stopped development
	14.5 total purged (2.5 gallons in the tubing)							

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
Field parameters stable?		(Y) N	(Y) N	(Y) N	(Y) N	Total Purge Volume (mL or (gallons)) = 14.5	

Flow-through Cell Calibration ★ Meter:

Parameter	Calibration	Check	Date	Time	Calibration Standards	Initial Reading	Final Reading	Calibration within Specifications
pH								
Turbidity								
Spec Cond								

General Notes: ★ RECORDED ON EQUIPMENT CALIBRATION LOG

Appendix A.3. Well Development Log

Monitoring Point: MW-30RB Date: 12/2/20 Sampler: T. [illegible] / K. [illegible]

Weather: Sunny, Hi 41°F, Low 19°F Visitors: None

Boring Dia. 8" Casing Dia. 2 DTW: 229.35 TD: 243.30 Pump Intake Depth: 237.30 Pump Top Depth: 234.30

Purge/Sampling Method: Bail / Pump Vial pH: N/A Depth to Water @Sampling: N/A

Calculated Purge Volume[1] (Method 1) N/A (Water added during construction (gal)) x 2 = N/A (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [(243.3 (TD (ft)) - 229.35 (DTW (ft))) x (0.17 (CF) + 0.71 (BF))] (Casing and Annular Volume) + (16 (Casing Leng. (ft)) x 0.17 (CF)) (Vol. Above Filter Pack) = 54 x 5 + 24 [illegible] N/A (Water added during construction (gal)) = 295 (Purge Volume (gal) (0.0))

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: ______ PPE Disposal: ______ Disposition of Purge Water: ______ 90% Recharge Level: ______ ft

Time	Purge Vol specify ml or (gal)	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	ORP mV	Apera pH measurement	Comments (Color/Odor)
1335	31	11.87	12.16	1.51	106.56	229.35	25.4	6.61	
1345	32	12.34	12.09	1.52	68.44	229.35	22.8	7.11	
1355	33	12.40	12.09	1.51	34.73	229.35	36.3	7.11	
1400	33.5	12.27	12.09	1.51	31.98	229.35	35.9	7.15	
1405	34	12.08	12.12	1.51	24.68	229.35	41.2	7.19	
1410	35	12.17	12.10	1.51	21.83	229.35	36.5	7.23	
1415	35.5	12.13	12.08	1.51	17.06	229.35	36.3	7.17	
1420	36	12.21	12.07	1.51	16.11	229.35	38.9	7.18	
1425	36.5	11.97	12.09	1.51	17.86	229.35	30.1	7.22	
1430	37.0	STOPPING DEVELOPMENT							

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
Field parameters stable?		(Y) N	(Y) N	(Y) N	(Y) N	Total Purge Volume (mL or gallons) = 57	

Flow-through Cell Calibration ★ Meter:

Parameter	Calibration	Check	Date	Time	Calibration Standards	Initial Reading	Final Reading	Calibration within Specifications
pH								
Turbidity								
Spec Cond								

General Notes: ★ RECORDED ON EQUIPMENT CALIBRATION LOG

Appendix A.3. Well Development Log

Monitoring Point: MW-36 Date: 12/3/20 Sampler: T. VRTLAK / K MURPHY

Weather: Sunny Visitors: None

Boring Dia. 8 Casing Dia. 2 DTW: 44.60 TD: 52.05 Pump Intake Depth: 51 Pump Top Depth: 48

Purge/Sampling Method: Bail / Pump Vial pH: N/A Depth to Water @Sampling: N/A

Calculated Purge Volume[1] (Method 1): N/A (Water added during construction (gal)) x 2 = N/A (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2): Casing and Annular Volume [(52.05 (TD (ft)) - 44.60 (DTW (ft))) x (0.17 (CF) + 0.71 (BF))] + Vol. Above Filter Pack (3 (Casing Leng. (ft)) x 0.17 (CF)) = 11.4 x 5 + N/A (Water added during construction (gal)) = 57 (Purge Volume (gal) (0.0))

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: ______ PPE Disposal: ______ Disposition of Purge Water: ______ 90% Recharge Level: ______ ft

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	ORP	Apera pH	Comments (Color/Odor)
1310	12.5	11.10	10.49	1.39	56.48	44.54	52.6	6.66	
1315	13.5	11.01	10.48	1.39	33.33	44.54	44.5	7.10	
1320	14	10.99	10.43	1.39	30.52	44.54	43.6	7.20	
1330	17	11.04	10.43	1.39	7.31	44.54	67.2	7.30	
1340	19.5	11.10	10.12	1.33	0.07	44.54	66.6	7.30	
1350	21	11.07	10.07	1.39	0.00	44.54	62.1	7.31	Stopped development

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
Field parameters stable?		(Y) N	(Y) N	(Y) N	(Y) N	Total Purge Volume (mL or gallons) = 25	

Flow-through Cell Calibration * Meter:

Parameter	Calibration	Check	Date	Time	Calibration Standards	Initial Reading	Final Reading	Calibration within Specifications
pH								
Turbidity								
Spec Cond								

General Notes: * RECORDED ON EQUIPMENT CALIBRATION LOG

Appendix A.3. Well Development Log

Monitoring Point: MW-37S Date: 12/5/20 Sampler: T. VRTILEK / K. MURRAY / J. MILLER

Weather: SUNNY LOW 24°F, HIGH 41°F Visitors: None

Boring Dia. 8" Casing Dia. 2" DTW: 18.32 TD: 34.55 Pump Intake Depth: 28.55 Pump Top Depth: 25.55

Purge/Sampling Method: Bail / Pump Vial pH: N/A Depth to Water @Sampling: N/A

Calculated Purge Volume[1] (Method 1) N/A (Water added during construction (gal)) x 2 = N/A (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [Casing and Annular Volume: (34.55 (TD (ft)) - 18.32 (DTW (ft))) x (0.17 (CF) + 0.71 (BF))] + [Vol. Above Filter Pack: (17 (Casing Leng. (ft)) x 0.17 (CF))] = 17.2 x 5 + N/A (Water added during construction (gal)) = 89.9 (Purge Volume (gal) (0.0))

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: _____ PPE Disposal: _____ Disposition of Purge Water: _____ 90% Recharge Level: _____ ft

Time	Purge Vol specify ml or (gal)	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	ORP (mV)	Apem pH	Comments (Color/Odor)
1510	23	16.20	6.19	2.32	92.6	20.47	220.0	7.41	Bailed 16 gal prior to pumping
1520	25	14.86	5.79	2.36	47.25	20.31	231.3	7.42	
1530	27	13.88	5.99	2.36	43.02	20.43	237.3	7.40	
1540	29	13.73	5.94	2.36	38.54	20.45	245.1	7.37	
1550	31	13.27	6.43	2.36	40.59	20.40	246.7	7.37	
1600	33	13.07	6.71	2.37	46.12	20.46	248.6	7.35	
1610	36	13.50	6.77	2.37	49.04	20.40	248.5	7.38	
1620	39	13.22	6.95	2.36	46.81	20.43	248.5	7.32	
1630	42	12.92	6.91	2.36	47.68	20.44	249.3	7.30	
1640	45	13.09	6.49	2.36	48.15	20.30	249.7	7.29	
1645	48	13.13	6.80	2.36	47.74	20.29	249.6	7.40	Stop purge Kayla says Okay

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
Field parameters stable?		(Y) N	(Y) N	(Y) N	(Y) N	Total Purge Volume (mL or (gallons)) = 48	

Flow-through Cell Calibration ★ Meter:

Parameter	Calibration	Check	Date	Time	Calibration Standards	Initial Reading	Final Reading	Calibration within Specifications
pH								
Turbidity								
Spec Cond								

General Notes: ★ RECORDED IN EQUIPMENT CALIBRATION LOG

Appendix A.3. Well Development Log

Monitoring Point: MW-37D Date: 12/6/20 Sampler: EVERETT J. MILLER

Weather: SUNNY, LOW 23°F, HIGH 46°F Visitors: NONE

Boring Dia. 8" Casing Dia. 2" DTW: 42.25 TD: 63.84 Pump Intake Depth: 63.84 Pump Top Depth: 60 ~~63~~

Purge/Sampling Method: BAIL/PUMP Vial pH: N/A Depth to Water @Sampling: N/A

Calculated Purge Volume[1] (Method 1) N/A (Water added during construction (gal)) x 2 = N/A (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [Casing and Annular Volume: [(63.84 (TD (ft)) - 42.25 (DTW (ft))) x (0.17 (CF) + 0.71 (BF))]] + [Vol. Above Filter Pack: (13 (Casing Leng. (ft)) x 4/12 (CF))] = 25 x 5 + N/A (Water added during construction (gal)) = 125 (Purge Volume (gal) (0.0))

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: _____ PPE Disposal: _____ Disposition of Purge Water: _____ 90% Recharge Level: _____ ft

Time	Purge Vol specify ml or (gal)	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	ORP (mV)	Comments (Color/Odor)
1330	35	14.6	7.04	1.702	~~42.5~~ 18.8	42.31	107.1	
1335	37	14.8	7.00	1.700	17.7	42.25	105.1	
1340	38	14.8	6.96	1.699	19.6	42.26	99.4	
1345	39	14.7	6.96	1.693	19.5	42.26	97.2	
1355	42	14.4	6.96	1.694	22.3	42.26	92.1	
1405	44	14.6	6.96	1.696	19.6	42.26	84.5	
1410	45.5	14.4	6.97	1.688	25.3	42.26	87.0	
1415	46.5	14.4	6.96	1.692	25.8	42.26	87.1	
1420	47	14.5	6.96	1.693	22.9	42.26	86.4	
1425	48	14.5	6.96	1.691	21.3	42.28	86.6	STOPPING DEVELOPMENT

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
Field parameters stable?		(Y) N	(Y) N	(Y) N	(Y) N	Total Purge Volume (mL or (gallons)) = 4.8	

Flow-through Cell Calibration ~~A~~ Meter:

Parameter	Calibration	Check	Date	Time	Calibration Standards	Initial Reading	Final Reading	Calibration within Specifications
pH								
Turbidity								
Spec Cond								

General Notes: ARE LOGGED ON EQUIPMENT CALIBRATION LOG

Appendix A.3. Well Development Log

Monitoring Point: MW-38S Date: 12/14/20 Sampler: T. Wynne / K. Murphy

Weather: SUNNY, LOW 21° HIGH 40°F Visitors: None

Boring Dia. 8" Casing Dia. 2 DTW: 19.70 TD: 36.68 Pump Intake Depth: 32 ft BTOC Pump Top Depth: 24 ft BTOC

Purge/Sampling Method: Bail/Pump Vial pH: N/A Depth to Water @Sampling: N/A

Calculated Purge Volume[1] (Method 1) N/A (Water added during construction (gal)) x 2 = N/A (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [(36.68 (TD (ft)) - 19.70 (DTW (ft))) x (0.17 (CF) + 0.71 (BF))] + (16 (Casing Leng. (ft)) x 0.17 (CF)) = 17.7 x 5 + N/A (Water added during construction (gal)) = 33.3 (Purge Volume (gal) (0.0))

Casing and Annular Volume | Vol. Above Filter Pack

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: _____ PPE Disposal: _____ Disposition of Purge Water: _____ 90% Recharge Level: _____ ft

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Apx pH	Comments (Color/Odor)
1340	26.5	12.35	4.62	1.46	39.43	19.76	6.82	
1350	28.5	11.85	4.73	1.46	22.90	19.76	7.11	
1400	31	11.45	4.69	1.46	6.45	19.74	7.22	
1405	33	11.20	4.68	1.46	0.84	19.74	7.29	
1410	35	11.12	4.46	1.46	0.00	19.74	7.30	ORP = 216.4 mV
1415	Stopped development, purged a total of 36 gallons							

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
Field parameters stable?		(Y) N	(Y) N	(Y) N	(Y) N	Total Purge Volume (mL or gallons) = 36	

Flow-through Cell Calibration ★ Meter:

Parameter	Calibration	Check	Date	Time	Calibration Standards	Initial Reading	Final Reading	Calibration within Specifications
pH								
Turbidity								
Spec Cond								

General Notes: ★ RECORDED ON EQUIPMENT CALIBRATION LOG

Appendix A.3. Well Development Log

Monitoring Point: MW-38D Date: 12/4/20 & 12/5/20 Sampler: T. VRTLAR / K. MURPHY

Weather: SUNNY, LOW 21F, HIGH 40F Visitors: None

Boring Dia. 8 Casing Dia. 2 DTW: 13.66 TD: 70.34 Pump Intake Depth: 65.34 Pump Top Depth: 62.34

Purge/Sampling Method: Bail/Pump Vial pH: N/A Depth to Water @Sampling: N/A

Calculated Purge Volume[1] (Method 1) N/A (Water added during construction (gal)) x 2 = N/A (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [(70.34 (TD (ft)) - 13.66 (DTW (ft))) x (0.17 (CF) + 0.71 (BF))] + (16 (Casing Leng. (ft)) x 0.17 (CF)) = 48.2 x 5 + N/A (Water added during construction (gal)) = 241 (Purge Volume (gal) (0.0))

Casing and Annular Volume | Vol. Above Filter Pack

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: _____ PPE Disposal: _____ Disposition of Purge Water: _____ 90% Recharge Level: _____ ft

Time	Purge Vol specify ml or (gal)	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	ORP (mV)	Appx. pH	Comments (Color/Odor)
1655	38	9.6	5.26	1.28	832.43	19.16	216.7	7.70	12/4/20
1705	39	8.82	5.48	1.27	933.46	19.38	224.7	7.58	
1710	40	8.76	5.45	1.27	1314.8	19.21	230.6	7.54	Will pause for today and continue tomorrow 12/5/20
1155	76 (gallons) 81	11.62	7.11	1.17	90.52	18.71	209.3	7.00	12/5/20
1205	835	12.17	6.88	1.25	49.91	18.70	216.2	7.38	
1215	87	12.44	6.91	1.25	44.17	18.70	217.6	7.51	
1225	91	12.54	6.96	1.25	28.11	18.70	218.1	7.43	
1235	95.5	12.64	6.71	1.25	18.90	18.70	220.8	7.58	
1245	97.5	12.71	6.63	1.25	17.44	18.70	222.6	7.45	
1255	102.5	12.86	6.53	1.25	12.58	18.70	225.0	7.40	
1305	106	12.74	6.54	1.25	6.52	18.70	221	7.32	
1315	112.5	12.70	6.62	1.25	3.13	18.70	229.4	7.37	
1320	115	12.63	6.64	1.25	2.77	18.70	227.4	7.40	
1325	116	12.33	6.62	1.25	0.00	18.68	225.2	7.43	stopped development

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
Field parameters stable?		(Y) N	(Y) N	(Y) N	(Y) N	Total Purge Volume (mL or (gallons)) = 116 gallons	

Flow-through Cell Calibration ★ Meter:

Parameter	Calibration	Check	Date	Time	Calibration Standards	Initial Reading	Final Reading	Calibration within Specifications
pH								
Turbidity								
Spec Cond								

General Notes: ★ RECORDED ON EQUIPMENT CALIBRATION LOG

Appendix A.3. Well Development Log

T. VRTIAC / K. MURPHY (12/7)

Monitoring Point: MW-34A   Date: 12/7/20 & 12/8/20   Sampler: T. VRTIAC / K. MURPHY / E. POTTS (12/7)

Weather: SUNNY, LOW 21°F, HIGH 43°F   Visitors: B. CAMPOS / C. KELLY

Boring Dia. 6   Casing Dia. 1   DTW: 130.45   TD: 152.64   Pump Intake Depth: 150   Pump Top Depth: 149.6

Purge/Sampling Method: ______   Vial pH: ______   Depth to Water @Sampling: ______

Calculated Purge Volume[1] (Method 1) ______ Water added during construction (gal) x 2 = ______ Purge Volume (gal) (0.0)

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [(152.64 TD (ft) - 130.45 DTW (ft)) x (______ CF + ______ BF)] + (______ Casing Leng. (ft) x ______ CF) = ______ x 5 + ______ Water added during construction (gal) = ______ Purge Volume (gal) (0.0)

(Casing and Annular Volume; Vol. Above Filter Pack)

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95   Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: ______ PPE Disposal: ______ Disposition of Purge Water: ______ 90% Recharge Level: ______ ft

Time	Purge Vol specify ml or gal (circled)	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	ORP (mV)	Comments (Color/Odor)
1630	10	9.5	7.30	0.924	N/A	N/A	172.2	turbidity too high, can't get NL meter 12/7/20
1640	12	9.2	7.08	0.906	N/A	N/A	152.8	turbidity too high, can't get NL meter
1645	stopped	purge	total	of 15 gallons	purged			
1250	23	7.4	7.26	0.946	76?1.4	N/A (150.4)	128.7	12/8/20, DTW at 130.45 at the beginning of the day
1255	23.5	~~7.18~~ 10.18	7.18	0.958	~~750~~ 7?50.2	N/A	129.0	
1300	30	~~9.55~~ [illegible]	7.16	0.0143	6054.4	N/A	125.3	specific conductivity likely wrong, taking good measurement
1400	61	12.0	7.30	1.032	324.2	N/A	47.2	
1405	62.5	11.5	7.21	1.022	242.85	N/A	44.4	
1415	64.5	11.4	7.16	1.029	463.41	N/A	105.4	
1535	85	11.2	7.13	1.034	97.63	N/A	97.0	
1540	86.5	10.6	7.12	1.022	92.11	N/A	96.5	
1545	88	10.7	7.12	1.020	53.61	N/A	95.8	Flowrate is 1100 mL/min, Karla says it [illegible]
1547	stopped	development	purged	a total of	88.5		gallons.	

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	GW Level (ft below MP)	Comments (Color/Odor)
Field parameters stable?		(Y) N	(Y) N	(Y) N	Y (N) KLAMATH	Total Purge Volume (mL or (gallons) = 88.5	

Flow-through Cell Calibration ★ Meter:

Parameter	Calibration	Check	Date	Time	Calibration Standards	Initial Reading	Final Reading	Calibration within Specifications
pH								
Turbidity								
Spec Cond								

General Notes: ★ RECORDED IN EQUIPMENT CALIBRATION LOG

Appendix A.3. Well Development Log

Monitoring Point: MW-26D Date: 11/10/20 Sampler: E. RITT

Weather: _____ Visitors: _____

Boring Dia. _____ Casing Dia. 1" DTW: 218.50 TD: 360 Pump Intake Depth: _____ Pump Top Depth: _____

Purge/Sampling Method: _____ Vial pH: _____ Depth to Water @Sampling: _____

Calculated Purge Volume[1] (Method 1) _____ (Water added during construction (gal)) x 2 = _____ (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [Casing and Annular Volume: (360 (TD (ft)) - 218.50 (DTW (ft)) x 0.041 (CF) + ~~BF~~)] + [Vol. Above Filter Pack: (~~Casing Leng. (ft) x CF~~)*] = 5.80 x 5 + _____ (Water added during construction (gal)) = 29 C (Purge Volume (gal) (0.0))

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: _____ PPE Disposal: _____ Disposition of Purge Water: _____ 90% Recharge Level: _____ ft

Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	~~GW Level (ft below MP)~~ ORP (mV)	Comments (Color/Odor)
1049		12.32	8.06	1.035	32.5	-31.7	Sulfur smell
1056		12.50	8.26	0.995	107.7	-98.2	
1111		12.45	8.32	1.012	698.7	-93.2	
1133	~30 gal	12.48	8.30	0.987	176.9	8.4	Minimum purge met
1137							Switch gas
1148	40 gal	12.61	8.37	0.998	124.2	-0.1	
1153		12.43	8.36	0.997	832.7	-45.5	
1202	50 gal	12.45	8.32	0.998	232.7	-61.3	
1207	55 gal	12.16	8.35	0.988	254.1	-80.1	Visibly more clear
1212	60 gal	12.04	8.33	0.990	167.1	-76.7	Purged 10x well volume
1220	70 gal	end	purge				

* ZIST completion, not applicable

Appendix A.3. Well Development Log

11/10/20

Monitoring Point: MW-26C Date: ~~11/10/20~~ ER Sampler: E. Rott A. Forni

Weather: Visitors:

Boring Dia. Casing Dia. 1" DTW: 219.67' TD: 315 Pump Intake Depth: Pump Top Depth:

Purge/Sampling Method: Vial pH: Depth to Water @Sampling:

Calculated Purge Volume[1] (Method 1) ____ (Water added during construction (gal)) x 2 = ____ (Purge Volume (gal) (0.0))

[1] = Calculate the purge volume using both methods. Purge the well to whichever volume is greater.

Calculated Purge Volume[1] (Method 2) [Casing and Annular Volume: [(315 (TD (ft)) - 219.67 (DTW (ft)) x 0.041 (CF) + ~~0~~ (BF)] + Vol. Above Filter Pack: (____ (Casing Leng. (ft)) x ____ (CF))] = 4.4 x 5 + ____ (Water added during construction (gal)) = 22 (Purge Volume (gal) (0.0))

Casing Volume Factors (gal/ft): 2"= 0.17; 4"=0.66; 5"=0.95 Borehole Factor Vols. (Cas.Dia/Bor.Dia.)(in): 2/8"= 0.71 gal/ft; 4/10"= 0.98 gal/ft; 4/12"= 1.18 gal/ft; 5"/12"= 1.38 gal/ft

Site Safety: PPE Disposal: Disposition of Purge Water: 90% Recharge Level: ft

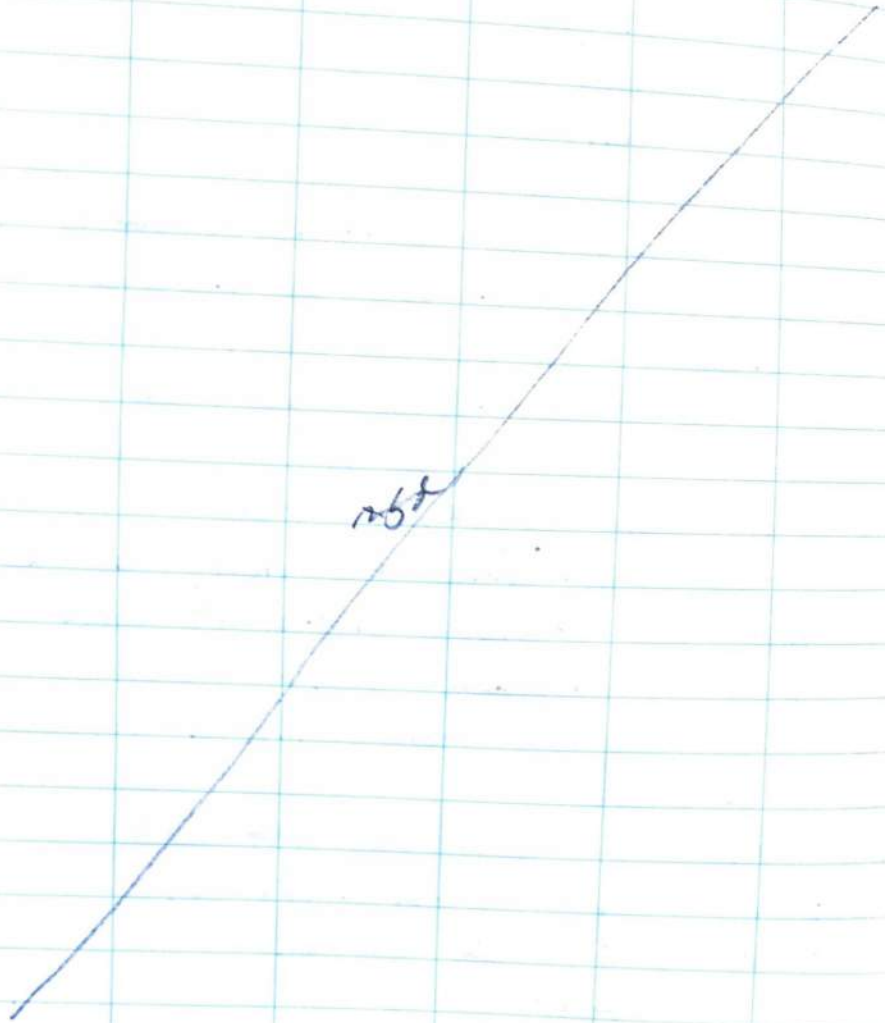
Time	Purge Vol specify ml or gal	Temp (C) (0.0)	pH (0.0)	Specific Cond. (mS/cm) (0.000)	Turbidity (NTU) (0.0)	~~GW Level (ft below MP)~~ ORP (mV)	Comments (Color/Odor)
1316	2gal in	purge,	set stinger at			268' bgs, 80 psi	
1332		13.10	8.30	1.043	604.7	-191.2	
1344		12.95	7.11	1.029	74.2	-236.0	
1359		13.90	8.67	0.967		-156.9	turb. out of range extreme amt. of sediment
1409		13.39	8.57	0.874		-145.5	~10g. purged, turb. out of range
1430							switch cals
1437		13.05	8.51	0.826		-120.4	turb. out of range
1505		12.53	8.35	0.900	1761.1	-37.6	visibly less turbid
1514		12.99	8.41	0.895	1640.6	-27.9	
1525		13.17	8.33	0.873	1722.4	-26.5	switch gas
1555	~30 gal	13.09	8.32	0.893	1766.0	-29.5	switch gas
1615	→	12.97	8.28	0.882	1633.6	-26.2	↓
1630							
1645		12.94	8.38	0.900	1545.7	-34.8	
1657	~40 gal	12.32	8.25	0.903	994.0	-17.5	
11/11/2020	DTW: 218.42						Started at 1100, very turbid
1121		11.54	7.53	973.67	734.02	89.0	
1138		12.73	7.63	934.99	472.05	0.1	visible decrease in turbidity, met 10x well volume
1154		12.43	7.75	958.04	1335.21	6.0	
1208		12.95	7.80	953.76	1078.1	24.7	
1230	~20 gal	12.82	7.77	922.52	1231.6	32.6	Total purged between days (11/10 + 11/11) is 60 gallons

Location SLC VA

Project / Client VA 700 S 1600 E PCE Plume

Date 10/1

shipped samples.
Disposed of empty used core boxes at landfill.
organized conex buildings
1930 COM offsite.



Location SLC VA

Project / Client VA 700S 1600E PCE Plume

Date 11/10/20

Weather: Cloudy, 30°F
Task: GW well development
PPE: Level D
Personell: E. Rott (Author), A. Forni (Wasatch)

0700 E. Rott onsite. Calibrate PID.
Begin loading equiptment
0900 A. Forni onsite. Calibrate YSI.
H+S meeting.
0900 Team to MW-26. Plan to develop all 4- intervals.
1000
1040 Begin Development at MW-26D by airlift. Set stinger @ 289 ft btoc.
1115 E. Rott to connex for airgas dropoff
1130 E. Rott back to MW-26D.
1220 End development at MW-26D. Did not reach parameter stability. Saw visible decrease in turbidity. Purged a total of approx. 70 gal
1230 To connex to empty purge water and switch nitrogen tanks.
1245 Return to MW-26. Begin development at MW-26C. Set stinger at 268 ft btoc.

Location SLC VA

Project / Client 700S 1600E PCE Plume

Date 11/10/20

1400 Attempt development at MW-26A with 3/4" stainless steel bailer.

1415 Evident bailer is getting stuck in casing. Pulled up bailer and no water, hadn't dropped far enough.

1430 Attempt bailer in MW-26A again able to get it slightly further than previously. Stuck on way up.

1500 Able to get bailer out of MW-26A. Called Joe Miller (COM Smith) to discuss issues. Assumes casing is slightly crooked and won't be able to get to water column. Decision to not develop at MW-26A.

1700 End development at MW-26C for the day. Purged approx. 38 gallons. Water still very turbid, but decreasing. Will return tomorrow to continue.

1800 Field team offsite.

Emma Rott
11/10/20

Location SLC VA

Project / Client 700S 1600E PCE Plume

Date 11/11/20

Weather: Snow/Rain, 30-40°F
Task: Well Development
PPE: Level D
Personell: E. Rott (Author), A. Forni (Wasatch)

0715 Field team onsite.
0730 H+S meeting
0735 Calibrate PID. YSI was dropped. No longer calibrating correctly.
0750 Anna to Wasatch to get functioning water quality meter.
0830 E. Rott to MW-34A to see if bailer will work for development.
0840 Bailer getting stuck at around 130' btoc at MW-34A.
0850 E. Rott back to connexs, Meets A. Forni and loads equipment.
0930 Team to MW-26. Setup on MW-26B.
1005 Begin airlift at MW-26B. Set stinger at 222' btoc.
1015 No water present. Lower stinger approx. 8'.
1030 No water. Determine not enough water column to use airlifting for development.

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/11/20

1045 E. Rott called Miles Kheeler (BESST) to discuss using ZIST pump w/o filter for development. He states we can attempt, but likely too coarse of material for the pump to function.

1100 Team Continues development at MW-2 looks clear at first.

1115 E. Rott Attempts to use ZIST pump at MW-26B w/o filter.

1130 Slug of water comes out of MW-26B, assumed to be water remaing in tubing from last sampling.

1140 No more water from MW-26B. Team pulls pump and cleans out. No visible sediment within pump.

1150 Re-deploy pump at MW-26B.

1200 No water present. Determined pump will not work for development. Team pulls pump and brings it to connex.

1220 Complete development at MW-26C. Purged >60 gallons total. Saw slight increase in turbidity towards the end. Stopped based on volume metrics.

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/11/20

1230 Attempted bailer at MW-26B.

1245 Unable to get bailer past 114' btoc.

1300 Team to connex to prep transducers for deployment at MW-34.

1500 Team to MW-34.

1515 WL = 131.0' @ MW-34B. Install pump + transducer attachment by removing filter and threading on intellipump.

1535 WL = 130.41 @ MW-34D. Install pump + transducer attachment

1557 WL = 130.72' @ MW-34C. Install pump + transducer attachment

1615 Team to connex. E. Rott spoke with K. Lesue + N. Smith to determine not to install transducer at MW-34A until it can be developed.

1645 E. Rott to MW-6 and MW-17 to make determinations for tamper-proof bolts

1730 Field team offsite.

Emma Rott
11/11/20

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/12/20

Weather: Sunny, 30-50°F
Task: Well development
PPE: Level D
Personnel: E. Rott (author), Anna Fiorni, Joe Miller (COM Smith)

0700 Field team onsite. Calibrate PID. Begin packing vehicles. H+S meeting.
0720 E. Rott to Hose & Rubber to purchase tubing (½" OD) for grundfos pump use.
0730 A. Fiorni calibrates YSI.
0940 E. Rott onsite.
1000 Team to ~~MW-26~~ OR MW-30RA/B.
1005 WL = 229.75' btoc @ MW-30RB
TD = ~~293.0' btoc~~ OR 290.92' btoc
1010 Team to use 2" poly bailer to surge/collect sediment.
1020 Bailer doesn't weigh enough. Team to attempt using stainless bailer (3/4") to see rope depth.
1045 Stainless bailer comes up full of sludge. E. Rott to connex to find weight to add to poly bailer. Stainless is too small to be effective.

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/12/20

1115 Send poly bailer down w/ weight. Comes up partially full with sludgy water.
1145 Continued to bail, but kept pulling up empty bailer. Team assumes the ball can't sit well b/c sediment. Anything that does fill leaks out by the time it's brought to the surface.
1200 Begin setting up Grundfos Redi flo 2.
1220 Deploy @ 250' btoc (max length on pump cord). Using Wasatch's generator (3150 Watt champion)
1230 Begin pumping. Gradually increasing Hz.
1245 Controller faults at approx 300Hz
1300 After restarting, controller faults again at 336 Hz. Spoke with Joe Miller, decided to attempt renting new larger capacity generator.
1315 Team pulls pump.
1400 Team to Sunburst Rentals. Rented Honda EU7000IS, 6500 watt

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/12/20

1430 Field team onsite. To MW-30RB.

1445 Team deploys pump. Error when plugged into new generator. (Fault → under voltage).

1530 Team continues to encounter fault. Pulls pump.

1545 To connex. ~~Or~~ Plan to try pump in 5-gallon bucket of water to see if the pump was the issue.

1620 Pump not functioning with either generator. E. Rott calls Pine Environmental.

1630 Remove bottom of pump. Dirty water comes out. Rinsed multiple times.

1640 Re-run pump, working this time. Likely clogged. Pine representative stated that running pump at max (400 Hz) is risky for very long.

1700 A. Fiorni offsite.

1740 J. Miller, E. Rott to MW-30. WL = 227.40 @ MW-30RA.

1745 Team notes water in well vault at MW-30C. Team offsite.

Location VA SLC

Project / Client 700S 1600E PCE Plume

Date 11/13/20

Weather:

Task: Well development

PPE: Level D

Personnel: E. Rott (Author), A. Fiorni (Wasatch)

0700 E. Rott onsite. A. Fiorni to Sunbelt rentals to drop off rented generator.

0715 Calibrate PID.

0730 E. Rott to get ice for drilling crew.

0800 E. Rott onsite.

0900 A. Fiorni onsite.

0915 Team to ~~MW-20R~~ MW-30RA. Plan to attempt using Grundfos pump for development. TD = 250.6' btoc.

0925 Deployed Grundfos Redi Flow 2 at approx 240' btoc. Using Wasatchs generator.

0940 Pump faulted at approx. 300 Hz. Team to pull pump.

0950 Pulled pump and saw sludge water leave it when cleaning. Assumed to have clogged with sediment.

1000 Team to drilling crew at MW-37. Packed push ahead sample.

1030 Team to fedex to ship samples

Location VA Plume

Project / Client 700S 1600E PCE Plume

Date 11/13/20

1030 Shupped Sounst controller and YSI back.

1100 Team to Wasatch to pickup tubing for sounst pump install.

1120 Pine shupped 4x 250' rolls, only will be able to install at MW 30RA

1140 Team onsite to connex to load equiptment to use for sounst pump deployment and purging.

1215 Deployed sounst pump in MW 30RA at 240' btoc. Hung on 1/16" wire cable. 1/4" x 1/4" bonded tubing.

1220 Begin purge to attempt development.

1240 Water at surface. Very turbid, filled with sediment.

1245 Water stopped flowing. Team turned off controller. Assume it clogged.

1315 Pulled pump. Ball valves filled with sediment.
Team cleared line and cleaned pump. Brought back to connex.

1400 Pulled MW-30C and took TD
TD = 325.8' btoc.
difficult to guage with skinny dipper. No sign of grout.

Location VA Plume

Project / Client 700S 1600E PCE Plume

Date 11/13/20

1415 Placed pump back in MW 30C.

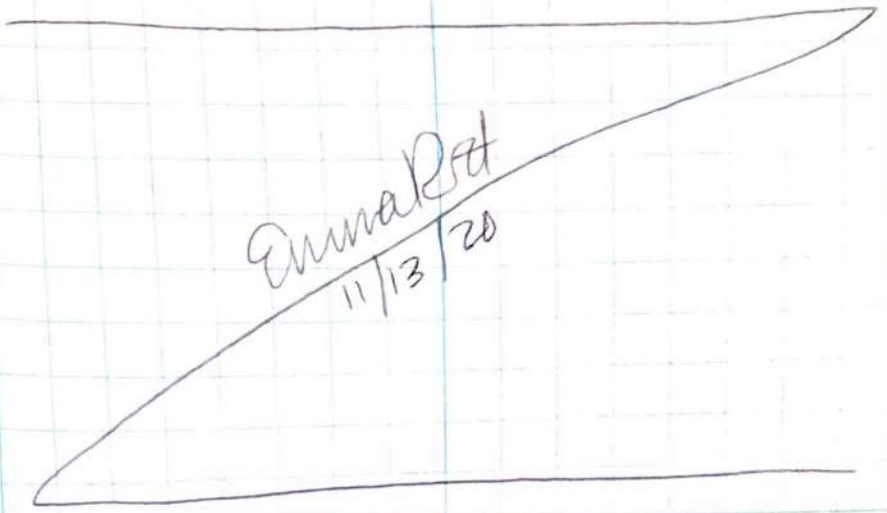
1430 Team to connex to unload vehicles. Take inventory on sampling bottles

1530 Team to MW-17D to tap well cap. Need larger tap wrench. Team to ACE.

1600 Return to MW-17D. Tap well cap. Tamper proof bolts now sitting properly. Return to connex.

1630 Pack remaining equiptment to ship

1700 Team offsite.



Location SLC VA Date 12/01/2020

Project / Client 700 S 1600 E PCE PLUME

WEATHER: SUNNY, LOW 21°F, HIGH 40°F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: T. VRTLOK (CDM SMITH AUTHOR)

KEVIN MURPHY (WASATCH ENVIRONMENTAL)

0650 TEV ONSITE

0720 KEVIN AND TEV MEETING DRILLING TEAM FOR HEALTH AND SAFETY MEETING AT MW-30

0730 BACK AT CONNEX CALIBRATING YSI AND PID CHECKING BOXES WITH EQUIPMENT. LOADING GAS CYLINDERS. IDENTIFYING MISSING EQUIPMENT.

0815 KEVIN TO MW 30 TO HELP DRILLING CREW WITH GENERATOR ISSUES

0820 RESOLVING ISSUE WITH NO ELECTRICITY AT THE CONNEX

0845 KEVIN TO WASATCH ENV OFFICE TO PICK UP THE REST OF THE EQUIPMENT

0915 YSI HASN'T ARRIVED YET. KEVIN BRINGING YSI OWNED BY WASATCH

0930 CONDUCTING INVENTORY FOR GW MONITORING TEAM

1000 KEVIN BACK AT CONNEX

1015 CALIBRATION SOLUTIONS ON SITE ARE FROZEN. WAITING ON UNFREEZING THEM. TROUBLESHOOTING ISSUES WITH PH CALIBRATION (NOT STABILIZING, NOT ALLOWING ACCEPTANCE OF THE CALIBRATION POINT)

Project / Client 700 S 1600 E PCE PLUME

1300 MOBILIZE TO MW-30RA

1315 TAKING DEPTH TO WATER AND TOTAL DEPTH MEASUREMENTS. TOC IS AT ~3in FROM THE MONUMENT

1330 DEPLOYED SOLINST PUMP. ADDED EXCESS OF 75 FT OF TUBING. LIFTED PUMP 5 FT FROM THE BOTTOM OF THE WELL

1345 STARTED DEVELOPMENT

1405 WATER PRESENT

1410 WATER FLOW TO [illegible] AIR IN THE DISCHARGE TUBE. TURNED OFF CONTROLLER, PULLED OUT THE PUMP, NO CLOGGING. PLACED THE PUMP INTO THE WELL AGAIN. TRIED BUILDING UP WATER COLUMN MORE SLOWLY A FEW TIMES.

1730 DEVELOPED 12 GALLONS. TURBIDITY <50 [illegible] [illegible] APPROVED COMPLETION OF WELL DEVELOPMENT. SETTINGS USED WERE:

1.25 PSI

.5 seconds DISCHARGE

4.5 seconds RECHARGE (MANUAL [illegible])

1.5 GAS CYLINDERS USED

FLOWRATE 300 mL/min

Used [illegible] FOR pH MEASUREMENTS 3 POINT CALIBRATED, SEE THE [illegible]

1830 TEAM OFFSITE. GETTING SUPPLIES AND CHECKING ON EQUIPMENT

Location SLC VA Date 12/2/20

Project / Client 700 S 1600 E PCE PLUME

WEATHER	SUNNY, HIGH 41°F, LOW 19°F
TASK	GW WELL DEVELOPMENT
PPE	LEVEL D
PERSONNEL	T. VRBAR (CDM SMITH, AUTHOR), KEVIN MURPHY (WASATCH ENVIRONMENTAL
0700	FIELD TEAM ONSITE
0705	FIELD TEAM TO STAGING AREA TO JOIN DRILLING TEAM IN H&S MEETING
0715	FIELD TEAM BACK TO CONNEX TO CALIBRATE EQUIPMENT. ELECTRICITY OUT AGAIN. PH MEASUREMENTS ON YSI NOT WITHIN RANGE, CALIBRATED APERA PH MEASURING TOOL TO USE IN SYNC WITH YSI IF THE MEASUREMENTS ARE NOT GOOD.
0850	FIELD TEAM TO MW-30RB. TOC TO MONUMENT IS -8.5in
0935	STARTED DEVELOPMENT AT WELL MW-30RB
0951	GROUNDWATER APPEARS PICKUP ... FLOWRATE ~ 1300 mL/min
1200	BOTH GAS CYLINDERS EMPTY. PAUSED DEVELOPMENT TO GET NEW GAS CYLINDERS
1230	RESUMING WITH NEW GAS CYLINDERS AT REDUCED PRESSURE. FLOWRATE NOW IS 450 mL/min
1315	KEVIN TO CONNEX TO GET DEDICATED PUMP FOR MW-30RA AND GET BAGGING DONE
1345	FEDEX RUN FOR DRILLING TEAM (TEA SHIPPED THE SAMPLE...
1430	WATER QUALITY PARAMETERS STABLE, PURGE VOLUME 37 GAL...

Location SLC UT Date 12/12/20
Project / Client 700 S 1600 E PCE PLUME

TIME OF PURGING WAS 4 hrs. CONTROLLER PARAMETERS ARE 20 DISCHARGE, 10 RECHARGE, 150 PSI, FLOW RATE ~~4~~ ~150 mL/min. USED APERA FOR PH MEASUREMENTS.

1445 DEPLOYED DEDICATED PUMP TO MW-30RA

1500 ~~DECO~~ DECONTAMINATED GEOTECH RECLAIMER PUMP, PACKED EVERYTHING TO GO BACK TO CONNEX

1600 ORDERED GAS CYLINDER ~~REPLACE~~ TV 12/12 RESUPPLY AND PICK UP OF EMPTY GAS CYLINDERS. PARTS FOR DEDICATED PUMP DEPLOYMENT AT MW-30RB WERE GATHERED MISSING PARTS WERE IDENTIFIED TO BE PURCHASED. NO ELECTRICITY AT THE CONNEX.

1700 FIELD TEAM OFFSITE. KEVIN STOPPING BY THE OFFICE TO PICK UP SUPPLIES. PEA TO HARDWARE STORE TO PICK UP MISSING DEDICATED PUMP PARTS.

[signature] 12/12/20

Location SLC VA Date 12/13/2?

Project / Client 700 S 1600 E PCE PLUME

WEATHER:	SUNNY LOW 19°F, HIGH 40°F
TASK:	GW WELL DEVELOPMENT
PPE:	LEVEL D
PERSONNEL:	T. VRBAR (CDM SMITH, AUTHOR)
	KEVIN MURPHY (WASATCH ENVIRONMENTAL)
0700	FIELD TEAM ONSITE
0710	FIELD TEAM TO STAGING AREA FOR HEALTH AND
	SAFETY MEETING WITH DRILLING TEAM
0725	FIELD TEAM TO CONEX TO CALIBRATE EQUIPMENT. ISSUES
	WITH EVERYTHING FREEZING. NO ELECTRICITY AT CONEX.
0900	~~AT~~ 0915 TEAM TO MW-36, TD=52.05 DTW= TOC=-7ft
0930	TEAM STARTED BAILING MW-36. BAILED ~25 gallons
1200	DEPLOYED SOLINST PUMP @ 51ft INTAKE, 43ft SET PUMP TO DEPTH
1240	WATER FLOWING AT 400 mL/min, settings ARE 10 DISCHARGE, 20 RECHARGE AT 50 PSI. SIDENOTE: THERE IS 2.5 GALLONS OF WATER FROM THE TUBING PREVIOUSLY DEPLOYED AT MW-30i(B. DTW AT THE MOMENT IS 44.53ft BTOC
1300	STARTED TAKING WATER QUALITY PARAMETERS
1350	PURGING STOPPED AT 21 GALLONS. WATER QUALITY PARAMETERS STABLE, TURBIDITY IS 0. TOTAL VOLUME BAILED AND PURGED TODAY IS 46 GALLONS. ALL DETAILS ARE ON THE WELL DEVELOPMENT LOG. SETTINGS ARE THE SAME AS ONES RECORDED AT 1240, FLOWRATE STILL 400 mL/min.

SLC VA

Location

Project / Client 700

1400	BACK TO
	FROM THE
	WITH (ACK
	FROM CARR
	THE BREA
	IDW AREA
	BEEN T
	OFF AND D
	FIELD
	ON BAC
	AGAIN,
	HE WILL
1500	ASSEMBLE
	DEPLOYIN
	K. LESLIE
	FITTIN
	FITTING
1530	FIELD
	DEDIC
1645	DEDICA
	AT
	OF
	CASING
	LOCKS
1700	

1400 BACK TO CONNER TO TRANSFER PURGED WATER FROM THE DRUM. ATTEMPTED TO RESOLVE ISSUE WITH LACK OF ELECTRICITY BY REQUESTING HELP FROM LARRY (OFFICE NEAR THE GATES). HE CHECKED THE BREAKERS IN THE SHOP ACROSS FROM THE IDW AREA AND SAID BREAKERS HAVE NOT BEEN TRIPPED. HE TRIED TURNING THEM OFF AND ON AGAIN, NO ELECTRICITY AT CONNER. FIELD TEAM ATTEMPTED FLIPPING SWITCHES ON BREAKERS BEHIND CONNER OFF AND ON AGAIN, NO LUCK. REACHED OUT TO NEIL, HE WILL CONTACT SHANNON TO RESOLVE THE ISSUE.

1500 ASSEMBLED NECESSARY EQUIPMENT FOR DEPLOYMENT OF PUMP AT MW-30RB. K. LESLIE CONFIRMED TO USE SWAGELOK FITTINGS ON MW-30RB AND BARB FITTINGS ON MW-36/37/38.

1530 FIELD TEAM TO MW-30RB TO DEPLOY DEDICATED PUMP.

1645 DEDICATED PUMP DEPLOYED AT MW-30RB AT THE DEPTH OF 285 FEET BELOW TOP OF CASING. SANITARY CAP COULDN'T BE ADDED AS CASING FOR MW-30RA IS TOO CLOSE TO MW-30RB. LOCKS WERE ADDED TO MW-36 AND MW-30RA.

1700 FIELD TEAM OFFSITE.

Location SLC VA Date 12/9/20

Project / Client 700 S 1600 E PCE PLUME

WEATHER: SUNNY, LOW 21°F, HIGH 40°F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: TEA VETLAR (COLT SMITH, AUTHOR)
KEVIN MURRAY (WASATCH ENVIRONMENTAL)

0700 EQUIPMENT CALIBRATED AT HOTEL TO AVOID FREEZING ISSUES.

0810 FIELD TEAM MEETING GW DRILLING TEAM ONSITE FOR HEALTH AND SAFETY MEETING. HELD TEAM MEETING

0825 FIELD TEAM TO CONTINUE TO LOAD UP EQUIPMENT FOR IN ITU DRILLING ACTIVITIES

0845 FIELD TEAM TO MW-38S AND MW-38D. MEASURED WATER LEVEL AND DTW AS WELL AS DISTANCE FROM TOP OF CASING TO THE MONUMENT

WELL:	DTW IN ITU	TD	TOC TO MONUMENT	LOCATION
MW-38S	~~38~~ 19.70	36.68	0.98 FT	W
MW-38D	18.66	70.34	0.83 FT	E

0930 BAILED 10 GALLONS FROM MW-38S.

1000 ~~COMMENCED~~ IN ITU DEPLOYED SAMPLE PUMP AT 32 FT BTOC

1015 WATER APPEARS AT 450 mL/min RATE, SETTINGS USED ARE 10 SECONDS, 5 DISCHARGE, 35 PSI

1130 STARTED BAILING MW-38D

1200 OUT OF GAS, AIRGAS HASN'T DELIVERED THEIR GAS CYLINDERS. KEVIN TO AIRGAS TO PICK UP ADDITIONAL

Location SLC VA Date 12/4/20

Project / Client 700 S 1600 E PCE PLUME

CONT FROM PAGE 115

ARE RUNNING OUT OF DAYLIGHT, WILL PAUSE FOR TODAY AND CONTINUE TOMORROW, 12/5/20

TOTAL VOLUME PURGED TODAY IS 40 GALLONS

WITH BAILING, WE REMOVED 58 GALLONS.

CONTINUE TOMORROW WITH SETTINGS FROM 1515 INLET TODAY

1730 FIELD TEAM TO CONNEX

1805 FIELD TEAM OFFSITE. TEA TO STORE TO GRAB FIELD SUPPLIES.

[signature] 12/4/20

WEATHER: SUNNY, LOW 24°F, HIGH 41°F
TASK: GW WELL DEVELOPMENT
PPE: LEVEL D
PERSONNEL: TEA VARIAN, JOE MILLER (COH SAFETY), KEVIN MURPHY (CHASTITY)
0700 EQUIPMENT CALIBRATED AT THE HOTEL
0800 FIELD TEAM ONSITE
0815 HEALTH AND SAFETY MEETING.
0845 TEA AND LEV TO MW-350, JOE TO MW-375
0915 AIRLINE HAS WATER, PUMP RETRIEVED FROM MW-350 AND REDEPLOYED AGAIN (FIRST TIME DEPLOYED AT 0900).
1000 WELLED WITH WITNESSPIC TO MW TO ~~MAXIMIZE~~ MAXIMIZE FLOW RATE. GOT UP TO 40 RECHARGE, 20 DISCHARGE, 100 PSI BEFORE BLOWTHROUGH OCCURRED AT 110 PSI. DECIDED TO CUT THE 300' TUBE INTO 200 AND 100 FT INTERVAL. CONTINUING TO USE 100 FT SECTION AT MW-350. FINAL SETTINGS WE HAVE SETTLED AT ARE 20 RECHARGE, 10 DISCHARGE, 5.5 PSI FLOWRATE IS 1300 mL/min.
1155 TURBIDITY SUBSTANTIALLY DECREASED. STARTED TO TAKE READINGS RECORDED IN WELL DEVELOPMENT LOG.
1230 JOE COMPLETED PULLING AT MW-375 (16 GALLONS) AND MW-370 (20 GALLONS) AND JOINS KEVIN AND COUNTING SUPPLIES

Location SLC VA Date 12/5/25

Project / Client 700 S 1600 E PCE PLUME

CONT. FROM PAGE 117

TBA AT MW-38D. JOE COLLECTED FOLLOWING
~~PARAMET~~ TV 1405 MEASUREMENTS FOR MW-37 S/D

WELL ID	(ft BTOC) DTW	TD (ft BTOC)	TOC TO TOP OF MONUMENT (ft)
MW-37S	18.32	33.55	0.35
MW-37D	42.3	69.29	0.55

1325 WATER QUALITY PARAMETERS AT MW-38D MET, ~~RE~~ TV 1415 TOTAL VOLUME PURGED DURING DEVELOPMENT IS 116 GALLONS. DEVELOPMENT COMPLETED.

1345 TEAM TO MW-37S

1405 DEVELOPMENT OF MW-37S STARTED PUMP DEPLOYED AT 28.55 ft BTOC. SETTINGS AT THE CONTROLLER ARE 10s RECHARGE, 5s DISCHARGE, 30 PSI. FLOWRATE IS 1400 mL/min.

1410 KEVIN TO WASATCH ENVIRONMENTAL OFFICE TO PICK UP SUPPLIES.

1515 TEA AND KEVIN TO MW-36 TO DEPLOY THE DEDICATED PUMP.

1630 DEDICATED PUMP DEPLOYED AT 49.5 FT BTOC AT MW-36. TEA AND KEVIN BACK TO MW-37S

1645 WATER QUALITY PARAMETERS MET AT MW-37S. TOTAL VOLUME PURGED IS 48 GALLONS.

1700 TEAM TO CONNEX. UNPACKING RECEIVED BOXES.

1805 FIELD TEAM OFFSITE. TEA TO ACE TO GET SUPPLIES FOR DEPLOYING THE REST OF THE DEDICATED PUMPS.

Location SCC VA Date 12/6/20

Project / Client 703 S 1600 E PCE PLUME

WEATHER SUNNY, LOW 23°F, HIGH 46 F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: TEA VATLAR AND JOE MILLER (COH SMITH)

0745 EQUIPMENT CALIBRATED AT THE HOTEL

0805 FIELD TEAM ONSITE. JM ARRIVED AT 0745

0815 HEALTH AND SAFETY MEETING

0820 PLACING CYLINDERS AND STANDS TO TRUCKS. LOADING EQUIPMENT.

0845 PLACING CONES FOR GW MONITORING EVENT ARMS

0900 FIELD TEAM AT MW-370. DTW = 42.25FT BTOC. TD = 63.84FT BTOC. DEPLOYED AT 63.84FT BTOC. CONTROLLER SETTINGS AT 20s RETRIEVE, 10s DISCHARGE, 40 psi. FLOWRATE APPROXIMATELY 900 mL/min

1040 JOE TO MW-13L TO BAIL IT. WILL CHECK DTW FOR MW-13S AND 13D PRIOR TO COLLECTING DTW, TD AND TOC TO FT BIS MEASUREMENTS.

1320 JOE RETURNS TO MW-370 HE BAILED APPROXIMATELY 8 GALLONS FROM MW-13L AND TOOK THE FOLLOWING WATER LEVEL MEASUREMENTS PRIOR TO BAILING AND DISTURBING THE SYSTEM.

WELL ID	DTW	UNITS
MW-13S	14.16	FT BTOC
MW-13D	13.56	FT BTOC
MW-13L	22.09	FT BTOC

Cont on page 120

Location SLC VA Date 12/6/12

Project / Client 7005 1600 E PCE PLUME

cont from pg 119

J. MILLER ALSO HAS A FIELD NOTEBOOK WHERE ... MEASUREMENTS ARE RECORDED. DISTANCE FROM TOC TO TOP OF MONUMENT IS 0.83 FT

1330 STARTED RECORDING WATER QUALITY PARAMETERS AFTER THE TURBIDITY HAS DECREASED

1425 WELL ~~DEVELOPMENT~~ TV 126 WQ PARAMETERS ARE STABLE AFTER AN HOUR OF TAKING MEASUREMENTS. WELL DEVELOPMENT IS COMPLETE AFTER APPROXIMATELY 48 GALLONS OF GROUNDWATER GOT PURGED. SETTINGS AND FLOWRATE WERE THE SAME AS INPUT RECORDED AT 0900

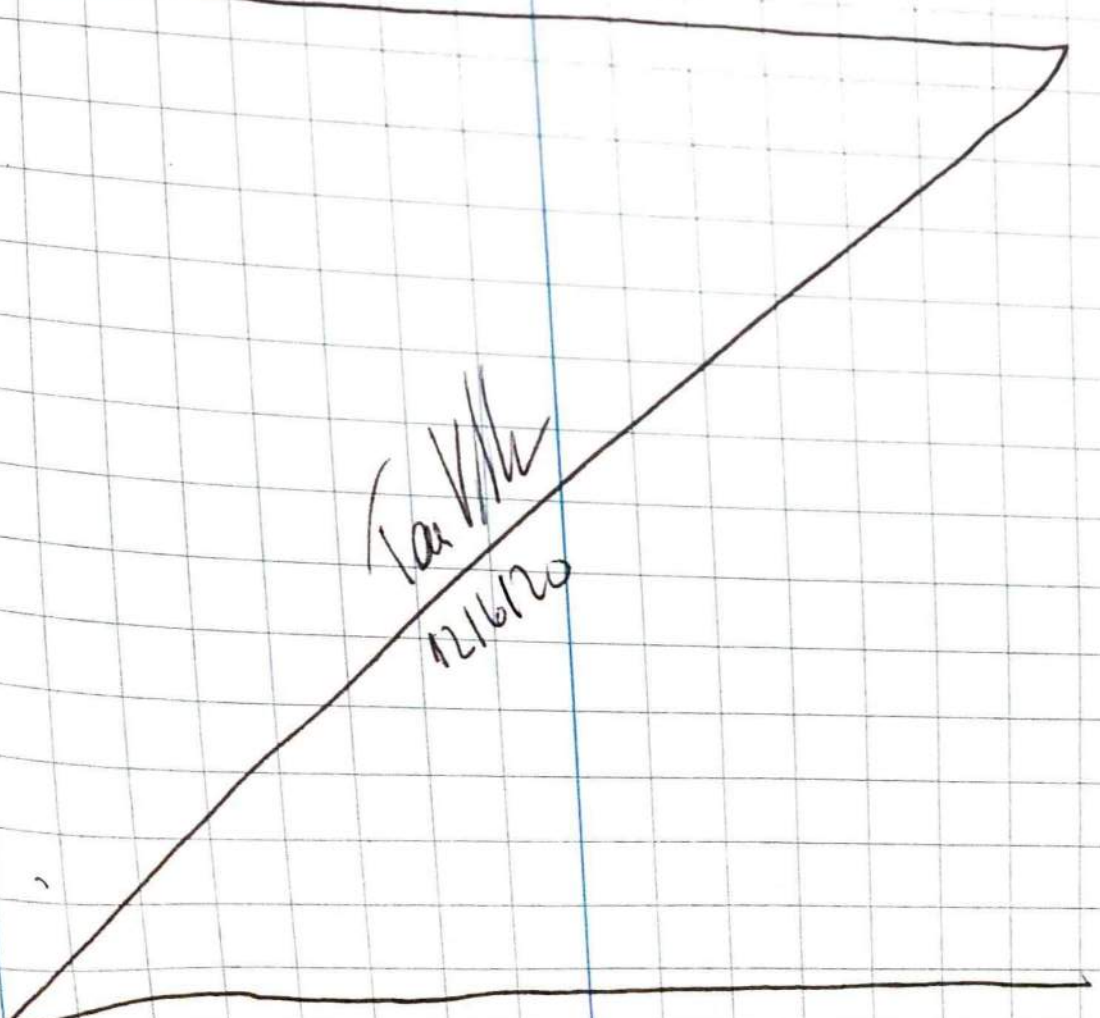
1445 FIELD TEAM TO MW-13L. AFTER BAILING 8 GAL TO MEASURED BY WATER LEVEL METER IS 150 WE KNOW THAT THE WELL SHOULD BE AT -160 FT BTOC TO SO PUMP WAS DEPLOYED AT THE BOTTOM AND LIFTED 1 FT, MEASURED PUMP TOP DEPTH WAS 148.7 FT BTOC, INDICATING THAT PURGING STARTED AT 151.7 FT BTOC. NOTE IS THAT WELL DEVELOPMENT WILL ALLOW FOR FUTURE LOWERING OF THE PUMP, UP TO DESIRED DEPTH OF 154 FT. ONCE DEVELOPMENT AT THAT DEPTH IS MET, THE DEDICATED PUMP WOULD BE DEPLOYED AT ~ 155 FT

1530 GROUNDWATER APPEARS. CONTROLLER SETTINGS ARE 11s RECHARGE, 9s DISCHARGE, 85 PSI. FLOWRATE IS 1500 mL/min.

1630 STOPPED DEVELOPMENT DUE TO LACK OF SUNLIGHT. PURGED A TOTAL OF 17 GALLONS MEASURED TOTAL DEPTH, WHICH IS NOW ~~AT~~ 152 FT BTOC. PUMP APPEARS SEEMS TO BE WORKING MORE EFFICIENTLY THAN BAILING. DEVELOPMENT WILL BE CONTINUED FIRST THING TOMORROW MORNING.

1645 FIELD TEAM TO CONNEX

1740 FIELD TEAM OFFSITE



Location SLC UT Date 12/7/20

Project / Client 700S 1600E PCE PLUME

WEATHER: SUNNY, LOW 21°F, HIGH 43°F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: TEA VRTUAR (CDM SMITH, AUTHOR)
KEVIN MURRAY (WASATCH ENVIRONMENTAL)
JOE MILLER, EMMA MOTT (CDM SMITH)

0630 EQUIPMENT CALIBRATED AT THE HOTEL

0730 TEA AND JOE ONSITE LOADING EQUIPMENT

0800 MEETING GW SAMPLING TEAM AT CONNEX

0815 HEALTH AND SAFETY MEETING WITH GW SAMPLING TEAM

0840 TEA, JOE AND KEVIN @ MW-13L CLEARED OUT LIQUID FROM BOTH TUBINGS PRIOR TO DEPLOYMENT OF PUMP AT 151.7 FT BTOC. JOE ALSO TOOK MEASUREMENTS AND LOGGED THEM IN HIS FIELD NOTEBOOK. DEPLOYED A PUMP, GOT BREAKTHROUGH. SINCE THEN, NO FLOW. TRIED SURGING, UNFREEZING SURFACE PARTS OF TUBING. CONTROLLER ISN'T RELEASING AIR. KEVIN TO CONNEX TO GET A DIFFERENT CONTROLLER. TUBING AND EXISTING CONTROLLER PLACED INTO TRUCK TO HEAT UP USING AIR.

1020 KEVIN AND TEA TO PICK UP GAS CYLINDERS (5) FROM AIRGAS

1100 BACK TO MW-13L. CONTROLLER RELEASING PRESSURE WITH DELAY. TRIED GW MONITORING TEAM'S CONTROLLER. GOT ~300 ML WATER FLOW.

Location SLC VA Date 12/12/23

Project / Client 7905 1600 E PCE PLUME

1215 KEVIN AND TEA DEPLOYING PUMPS AT MW-38
TOOK DTW MEASUREMENTS: MW-38S AT 19.59 FT BTOC,
0.99' FROM TOC TO TOP OF MONUMENT.
MW-38D 18.53 FT BTOC, 0.82' TOC TO TOP OF
MONUMENT.
TD AT MW-38S IS 36.49' BTOC. DEDICATED
PUMP DEPLOYED AT 32 FT BTOC AT MW-38S.
1300 TD AT MW-38D IS 70.3' BTOC. DEPLOYED
DEDICATED PUMP AT 65 FEET BTOC
1330 KEVIN AND TEA TO CONNEX, WHILE BRINGING
DJE MORE GAS. AT MW-13C, OBTAINING
WATERRA PUMP AND TUBING FROM CONNEX,
GETTING SKINNY WATER LEVEL METER FROM GW
SAMPLING TEAM
1420 TEA, EMMA AND KEVIN TO MW-34 TO USE
WATERRA PUMP ON MW-34A TAKE DTW MEASU-
REMENTS: MW-34A 130.15 FT BTOC, 0.53' BTOC
TO MONUMENT AND MW-34B IS 130.60 FT BTOC *
1504 STARTED PUMPING WITH WATERRA PUMP
* WATER LEVEL AT MW-34C IS 129.87 FT BTOC.
WATER LEVEL AT MW-34D IS 130.0 FT BTOC
1521 WATER E MERGES, USING THE SPEED OF THE PUMP NO WATER
ON THE OTHER END. CUT 200 FT OF 500 FT
TUBING

Rite in the Rain

124

Location SLC VA Date 12/7/20

Project / Client 7003 1600 E PCE PLUME

1545	650 mL/min OF WATER PURGE RATE AT MW-34A. EMMA LEFT 34A TO HELP JOE AT MW-13L CONNECTED PUMP TO TEA'S TRUCK. FLOWRATE 800 mL/MIN
1630	STARTED TAKING WATER QUALITY MEASUREMENTS. TURBIDITY STILL TOO HIGH TO READ, WATER LEVEL METER CANNOT BE DEPLOYED ALONGSIDE WATERRA TUBING.
1645	STOPPED PURGING DUE TO SUNSET AND LACK OF SUNLIGHT. PURGED TOTAL OF 15 gallons. DEVELOPMENT WILL CONTINUE IN THE MORNING
1700	KEVIN AND TEA TO CONNER. JOE HAS APPROVED THE DEVELOPMENT AND KEPT TRACK OF ALL THE CHALLENGES ENCOUNTERED TODAY IN HIS FIELD NOTEBOOK. HE WILL CONTINUE DEVELOPMENT AT MW-13L IN THE MORNING. HE ALSO JOE WITH COLLECTION OF IDW SAMPLES.
1835	FIELD TEAM OFFSITE.

12/7/20

Location SLC UT Date 12/8/20

Project / Client 700 S 1600 E PCE PLUME

WEATHER: SUNNY, LOW 23°F, HIGH 44°F

TASK: GW WELL DEVELOPMENT

PPE: LEVEL D

PERSONNEL: TEA VRTLAR (CDM SMITH, AUTHOR)
KEVIN MURPHY (WASATCH ENVIRONMENTAL)
JOE MILLER (CDM SMITH)

0700 EQUIPMENT CALIBRATED AT THE MOTEL

0800 FIELD TEAM ONSITE

0815 HEALTH AND SAFETY MEETING WITH GW SAMPLING TEAM.

0845 TEAM TO MW-34A. MW-13C DEVELOPMENT NO LONGER A PRIORITY SO JOE JOINED THE GW SMPL ~~TD = 138.95 FT BTOC~~ DTW = 131.45, TV 121.6, TD = 152.69 FT BTOC, TOC TO TOP OF MONUMENT IS 0.55 FT.

0920 STARTED WELL DEVELOPMENT, PURGE RATE IS 1500 mL/min

1000 NO WATER SURFACING. GUESSING IT IS DUE TO DRYING OUT THE WELL. LETTING THE WELL RECHARGE FOR 10 MINUTES. NOT WORKING, TRIED PULLING OUT THE TUBING. THERE WERE CLOGGING ISSUES WITH CHECK VALVE. CLEANED OUT CHECK VALVE AND TUBING. GOT 600 mL/min, THEN NO FLOW. TRIED STOPPING AND LETTING RECHARGE, NO LUCK. TRIED POWERING FROM GENERATOR INSTEAD OF INVERTER

CONT ON PAGE 126

Location SLC VA Date 12/8/20

Project / Client 720 S 162 E PW: PLUME

cont from pg 125

DIDN'T WORK. TRIED MEASURING DTW AGAIN, IT'S 130.45 FT BTOC SO NOT A DRAWDOWN ISSUE. TRIED SLOWLY PURGING FOR EXTENDED PERIOD, CHECK VALVE IS 1 FT ABOVE TD. NO FLOW. GOT FLOW WHEN WE LIFTED UP CHECK VALVE 2 FT ABOVE THE BOTTOM OF THE WELL. NOTICED THAT TUBING IS MOVING. REACHED A VICE GRIP ON TOP OF THE PUMP TO HELP WITH HOLDING TUBING. WORKS FOR NOW

1250 STARTED TAKING WATER QUALITY READINGS TURBIDITY > 7000 NTU FLOW IS ~1000 mL/min

1315 STARTED USING N2 READINGS UPPED THE FLOW TO MAX ~ 2400 mL/min. WAITING FOR TURBIDITY TO DROP.

1400 SIGNIFICANT DECREASE IN TURBIDITY OBSERVED REDUCED FLOWRATE TO 800 mL/min, TAKING WATER QUALITY MEASUREMENTS AGAIN

1545 TURBIDITY DROPPED BELOW 100 NTU, OK TO STOP. PURGED A TOTAL OF .885 GALLONS (STOPPED AT 1541) FLOWRATE AT THE END WAS 1100 mL/min

1600 TOOH TO MW-26B.

1630 SET UP AT MW-26B. DTW AT MW-26B IS 195.28 FT BTOC, TD IS ~~245.8 FT~~ 246.32 (12/8/20) BTOC TOC TO TOP OF MONUMENT IS 0.6 FT. DECIDED TO SET PUMP AT APPROXIMATELY 245 FT BTOC.

Location SLC VA Date 12/8/20

Project / Client 700 S 1600 E PCE PLUME

1640 STARTED DEVELOPMENT OF MW-26B. PUMP OPERATED FOR 15 MINS, NO WATER WAS PURGED. PULLED THE TUBING OUT, ABOUT 20 FT OF WATER WITH HIGH TURBIDITY WAS IN THE TUBING. STOPPING DEVELOPMENT FOR THE DAY, KEVIN WILL CONTINUE TOMORROW.

1700 BACK TO CONNEX TO UNLOAD THE TRUCK. ELECTRICITY DISAPPEARED AGAIN. USED GENERATOR FOR REMOVING WATER FROM THE BARRELS.

1805 TEAM OFFSITE. TEA AND JOE LEAVING TOMORROW.

[signature]
12/8/20

Location SLC VA Plume Date 1/18/21

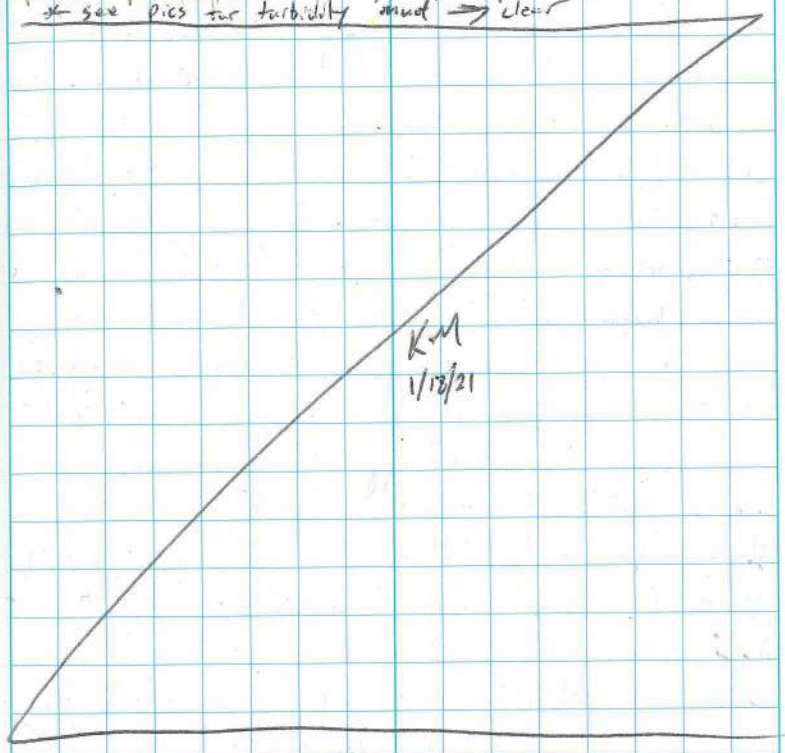
Project / Client

Weather: 30s, some clouds
PPE: modified level 1
Personel onsite: Kevin Murphy (Wasatch)
Planned activities: Well development (~~MW-34C~~) MW-28D
* pickup N tanks prior to arriving @ IDW yard, load equipment & drums, drive to MW-34, one gate open but school is closed for holiday, do not want to risk getting locked in, drive to MW-26D instead
1000 arrive @ MW-26D, deploy ½" airline & airlift setup, air line set 20' above refusal due to not being able to confirm if I'm hitting TD or reciever, IDTW = 217.99' ~~toc~~, ITD = 353.40' ~~toc~~
1032 - begin pressure ramp to 70psi
1048 - Tank 1 empty (N 125), 9.35gal purged
1056 - begin pressure ramp to 70psi
1112 - Tank 2 empty (N 125), 18.7gal purged (total)
1118 - begin pressure ramp to 70psi
1130 - Tank 3 empty (N 125), 28.9gal purged (total)
1134 - begin pressure ramp to 70psi
1149 - Tank 4 empty (N 125), 38.25gal purged (total)
* pull tubing, DTW = 218.36', TD = 358.23'
head to Airgas to swap tanks, 1320 back on site with 5 of N 200s
1335 - Begin pressure ramp to 70psi
1356 - Tank 5 empty (N 200), 50gal purged (total)

Location SLC VA Plume Date 1/18/21

Project / Client

1402 - begin pressure ramp to 70 psi
1421 - Tank 6 empty (N 200), 61.05gal purged (total)
1424 - begin pressure ramp to 70psi
1450 - Tank 7 empty (N 200), 78.43gal purged (total)
1453 - begin pressure ramp to 70psi
1517 - Tank 8 empty (N 200), 94.2gal purged (total)
1520 - pull tubing, DTW = 217.56', TD = 358.28',
pack up, unload @ IDW yard, dump water, leave site
* see pics for turbidity mud → clear



Location SLC VA Plume Date 1/19/21

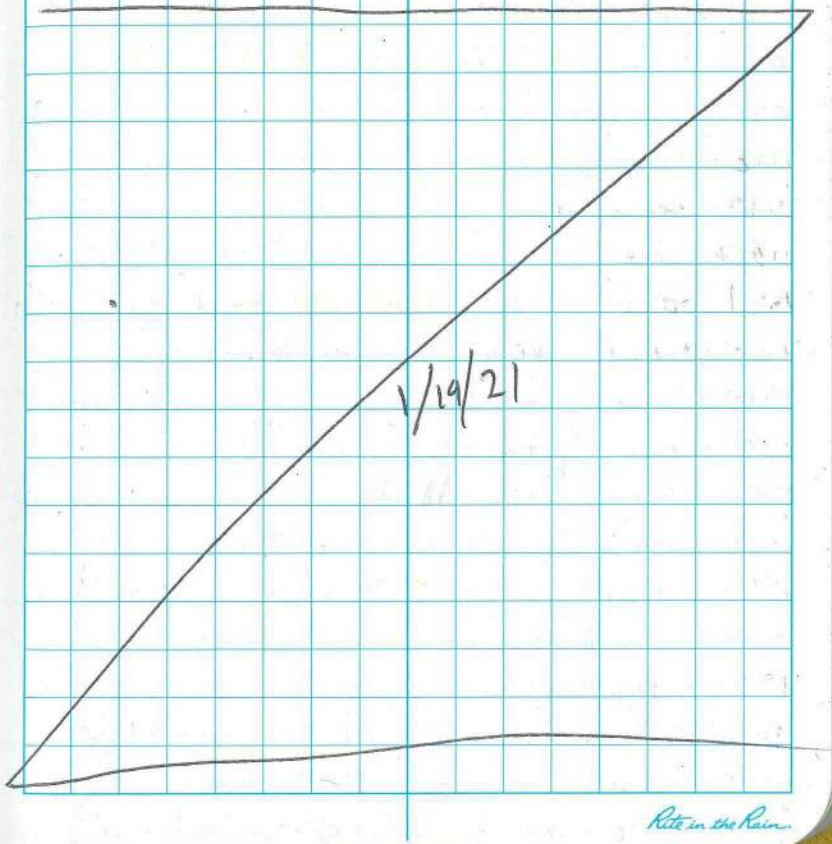
Project / Client

Weather: 40s, clear skies
PPE: modified level 1
Personnel onsite: Kevin Murphy (Wasatch)
Planned activities: Well development @ MW-34
* pickup Nitrogen tanks prior to arriving @ IDW yard, load up equipment & drums, drove to MW-34
0930- on site @ MW-34
0940- remove MW-34C ZIST & transducer, measure TD, DTW
MW-34C IDTW=130.02' ITD=262.56'
deploy air lift setup, air line set 10' above screen
1012- begin pressure ramp to 50 psi
1033- well developed, inital turbidity was mud cleaned up to clear, 1/2 tank (N 200) used, purged 20 gal total, DTW=130.20', final TD=263.05'
1047- Wyant (VA) on site, discussed development of MW-34C and MW-26D, prep to develop MW-34B
* start removing ZIST & transducer from MW-34B, ZIST gets stuck in well after removing ~10 ft, was able to remove ZIST after 15 min of slight pulling, MW-34B IDTW=130.40' FTD=186.92', set air line 10' above screen
1225 check TD = 188.80'
1338- 22.1 gal purged w/ 3.5 tanks, water still turbid, head to Airgas to swap tanks
1500- back on site, continue purging

Location SLC VA Plume Date 1/19/21

Project / Client

1540- redeploy MW-34C ZIST, inspected filter and cleaned water line prior to redeployment
1630- quit purging MW-34B for the day, 30.6 gal (total) removed, very slight improvement in turbidity, five tanks (N 200s) used measured TD @ end of day = 188.80', pack up, unload @ IDW yard, dump water, leave site



Location SLC VA Plume Date 1/20/21

Project / Client

Weather: high 30s, slightly cloudy
PPE: modified level 1
Personnel onsite: Kevin Murphy (Wasatch)
Planned activities: Well Development (MW-26C)
* load up equipment, drums, & tanks, drive to MW-26C
measure IOTW= 212.06', ITD = 320.05', deploy
air lift setup to 20' above retreival
1000 - begin pressure ramp to 50psi
1030 - Tank 1 empty (N 200), 15.3 gal purged
1035 - begin pressure ramp to 50psi
1108 - Tank 2 empty (N 200), 29.75 gal purged (total)
1110 - begin pressure ramp to 50psi
1150 - Tank 3 empty (N 200), 46.75 gal purged (total)
* head to Amigos, swap N tanks
1230 - begin pressure ramp to 50psi
1400 - Tank 4 empty (N 200), 62.9 gal purged (total)
1405 - begin pressure ramp to 50psi
1445 - Tank 5 empty (N 200), 82.5 gal purged (total)
1450 - begin pressure ramp to 50psi
1540 - Tank 6 empty (N 200), 105 gal purged (total)
* walk to IDW yard, carry over 3rd 55gal drum
1550 - begin pressure ramp to 50psi
1630 - Tank 7 empty (N 200), 123 gal purged (total),
water cleared from mud to slightly cloudy, Final
DTW = 217.56', Final TD = 327.57', pack up, unload truck, dump water, leave site

Location SLC VA Plume Date 1/21/21

Project / Client

Weather: high 30s, overcast
PPE: modified level 1
Personnel onsite: Kevin Murphy (Wasatch), Tony (Redox), Jack (Redox)
Planned Activities: Surveying, Well Development
* load up equipment & drums, meet Redox @ 9am
survey MW-30R (mw-30RA & mw-30RB),
MW-13L, MW-36, MW-37 (mw-37S & mw-37D),
and MW-38 (mw-38S & mw-38D), survey
complete ~1030, head to Amigos
1130 - back onsite w/ Redox ~ 300s
MW-34B IOTW = 130.30, ITD = 188.80
set airline 20' off bottom
1210 - begin pressure ramp to 30psi
1300 - Tank 1 (N 300) empty, 16.15 gal purged (total)
1305 - begin pressure ramp to 30psi
1405 - Tank 2 empty (N 300), 39.1 gal purged (total)
1407 - begin pressure ramp to 30psi
1510 - Tank 3 empty (N 300), 68 gal purged (total)
1515 - begin pressure ramp to 30psi
1622 - Tank 4 empty (N 300), 94.35 gal purged (total)
Final measured TD = 188.80, pack up truck,
redeploy MW-34B 1ST & Transducer, pump & Tank,
stuck ~10 above screen, try to redeploy
just pump & pump makes it down w/o
* water cleaned up from turbid to cloudy

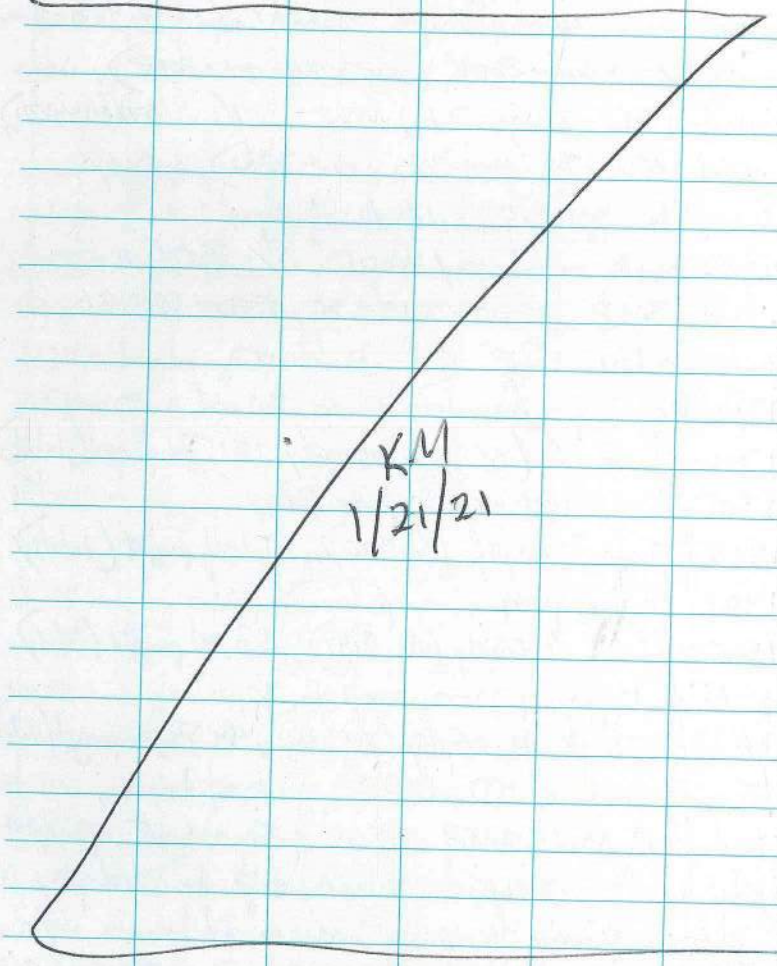
Rite in the Rain

28

Location SLC VA Plume Date 1/21/21

Project / Client

getting stuck, put MW-34B transducer in cover, dump water, will put away equipment & clean yard, return tanks tomorrow, leave site



Location

Project / Client

Location SLC VA Plume Date 12/9/20

Project / Client

Weather: 30s, overcast

PPE: modified level 1

Personel onsite: Kevin Murphy (Wasatch)

Planned activies: Well development (MW-26B)

* A.M. - build modified "barcad" setup, will attempt to use to develop MW-26B, use stinger as seal @ reciever, use air line from air lift setup on water return line, install ball valve on well head assembly to be able to release pressure from well

0930 - deploy barcad setup @ MW-26B, stinger on reciever @ ~235'

* experiment with PSI, remove 18 gal from 1000-1300 using 2 125 N tanks, turbidity decreased from mud to ~3000 NTU

* from 1300 to 1600 use 2 more 125 N tanks @ 130 PSI remove total of 27 gal from MW-26B cleared up from ~3000 NTU to ~900 NTU, however, water looks cleaner than 900 NTU. Pack up equipment and dump water @ IDW yard

KM 12/9/20

Location SLC VA Plume Date 12/17/20

Project / Client

Weather: 30s, overcast, light snow

PPE: modified level 1

Personel onsite: Kevin Murphy (Wasatch), Ceasar Killy (CDM)

Planned activities: Well Development (MW-26C & MW-26D)

0900 - setup on MW-26C, see Connors notes for additional details, grab sample details

Cycle	Tank	PSI	Pressure Pump Starts	Water @ Surface	Breakthrough	Recharge Stop	Vol (gal)	Total Vol (gal)	Turbidity
1	1	150	0922	0925	NA - stopped to fix leaks	NA - stopped to fix leaks	3	3	out of range
2	1	170	1005	1007	1025	1030	3.8	6.8	"
3	1	170	1036	1038	1055	1058	2.5	9.3	"
4	1	170	1102	1104	1124	1130	3.45	12.75	"
5	2	170	1136	1138	1156	1202	2.55	15.3	"

* stop purging, collect grab sample, switch over to MW-26D see Connors notes for additional details

Cycle	Tank	PSI	Pressure Pump Starts	Water @ Surface	Breakthrough	Recharge Stop	Vol (gal)	Total Vol (gal)	Turbidity
1	2	170	1227	1230	1253	1300	4.25	4.25	out of range
2	2	170	1312	1314	1334	1340	4	8.25	"
3	3	170	1435	NA* see notes					

* during 3rd cycle become concerned w/ amount of sand settling out of purge water and the potential for packing sand around stinger, also experience issues w regulator freezing, pull tubing, dump water @ IDW yard

KM

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 11/11/2020	**Prepared by:** Whitney Treadway

Personnel on site, including Contractors:	CDM Smith – Whitney Treadway CDM Smith – Emma Rott Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon Wasatch Env. – Anna Fiorni Wasatch Env. – Kiel Keller Badger – Trevor Kindschy
Visitors/Others:	

Weather	Sunny	Partly Cloudy	Overcast	Rain	**Snow**
Temperature	85+ º F	70 to 85º F	50 to 70 º F	32 to 50 º F	**To 32 º F**
Wind	**Still**	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter • Compressed gas for development

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at MW-30R well site and MW-37 with Badger.

Drilling: (Whitney Treadway, Kiel Keller, and Holt crew)

MW-30R:
Add pea gravel from 8 ft bgs to 2 ft bgs
Completed 12-inch traffic-rated flush-mount well box with concrete from 2 ft bgs.
8-inch casing, core barrels, and drill pipe decontaminated on decontamination pad.

MW-36:
Cleared to 7 ft bgs by vac truck (Kiel oversaw).
Steel plate placed on top of open hole.
Soil offloaded to containment area on VA campus.

MW-37:
Cleared to 7 ft bgs by vac truck (Kiel oversaw).
Mobilized rig, Bobcat, and fencing to site.
Soil offloaded to containment area on VA campus.

MW-38:
Cleared to 5.5 ft bgs by vac truck (Kiel oversaw).
Steel plate placed on top of open hole.
Soil offloaded to containment area on VA campus.

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Development: (Emma Rott and Anna Fiorni)

MW-26C:
Air lifting was used to remove sediment and water. Approximately 60 gallons total of water was removed. Decreasing turbidity values were observed.

MW-26B:
Development using air lifting was attempted, however, there was not enough water column available to produce the lift needed for water to surface. The team then attempted to develop using the ZIST pump (with the filter removed); but they were unable to produce water through this method. Lastly, the team attempted to use a stainless-steel bailer, but was unable to get the bailer past approximately 114 ft below top of casing.

MW-34A:
Attempted development using a stainless-steel bailer but was unable to get the bailer past approximately 130' below top of casing.

MW-34B, MW-34C, and MW-34D:
Transducers were installed at all three zones.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
See issues with development above.

Second forklift was delivered onsite for Holt crew.

There were three VA vehicles blocking the entrance to the containment area onsite for the Badger pre-clearing crew. We were able to find someone who found the keys and was able move the three vehicles.

Projected Work – Near Term:

11/12/2020 – begin drilling at MW-37, begin development at MW-30RA and MW-30RB

Other Activities/Remarks:

Photos:

Date: 11/11/2020

Location: MW-37

Description: Rig, bobcat, and drill rods mobilized at MW-37 with fencing.

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	**Date: 11/11/2020** **Location:** MW-30R/laydown area **Description:** Decontamination of sonic casing and drill rods.
	**Date: 11/11/2020** **Location:** MW-38 **Description:** Installation of steel plate at MW-38 after pre-clearing.

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	**Date: 11/10/2020** **Location:** MW-30R **Description:** Installation of concrete at well box.
	**Date: 11/10/2020** **Location:** MW-34B **Description:** IntelliPump attachment added on to the ZIST pump to house transducer.

Daily Quality Control Report
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Salt Lake City, Utah

DATE: 11/30/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	Ready Made Concrete

Weather	Sunny	**Partly Cloudy**	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	Still	Moderate	**High**		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Ready Made Concrete arrived and Holt installed the Augustyn flush mount vaults at MW-36 and MW-38 boring locations.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
Projected Work – Near Term:

12/1/2020 – Develop MW-30RB with a bailer, develop MW-30RA with a development pump, complete geophysical survey at MW-13L, and mobilize drilling equipment to MW-13L.

Other Activities/Remarks:

Photos:

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	**Date: 11/30/2020** **Location:** MW-36 **Description:** Augustyn vault installed at MW-36
	**Date: 11/30/2020** **Location:** MW-38 **Description:** Augustyn Vault installed at MW-38 location.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/1/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	MP Environmental GPRS – Geophysical survey

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	To 32 º F
Wind	**Still**	Moderate	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID (x2) • Water level meter

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
The Holt crew used a bailer to develop MW-30RB. Approximately 25 gallons of water was bailed from MW-30RB.
CDM Smith and Wasatch developed MW-30RA with a Geotech double valve pump. Approximately 12 gallons was purged.

Drilling at MW-13L:
GPRS performed a geophysical locate at MW-13L. They identified a potential irrigation line south of the proposed boring area. MP Environmental relocated one of the roll-off bins from the VA to the boring location. Holt set up the drill rig, fencing and traffic control at the MW-13L drill location.

The MW-13L boring was hand augured to 5 feet bgs.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

Upon arrival at the IDW area connex there was no electricity. The breakers were checked and had not been tripped. Maintenance shop personnel were contacted, and they had flipped the breaker in the shop across from the IDW area.

Projected Work – Near Term:

12/2/2020 – Develop MW-30RB zone with Geotech double valve pump and install dedicated pumps at MW-30RA/B

12/2/2020 – Drill MW-13L

Other Activities/Remarks:

None.

Photos:

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	**Date: 12/1/2020** **Location:** MW-13L **Description:** GPRS identified potential irrigation lines and estimated less than 1 foot bgs.
	**Date: 12/1/2020** **Location:** MW-30RB **Description:** Silty water from bailer development at MW-30RB.

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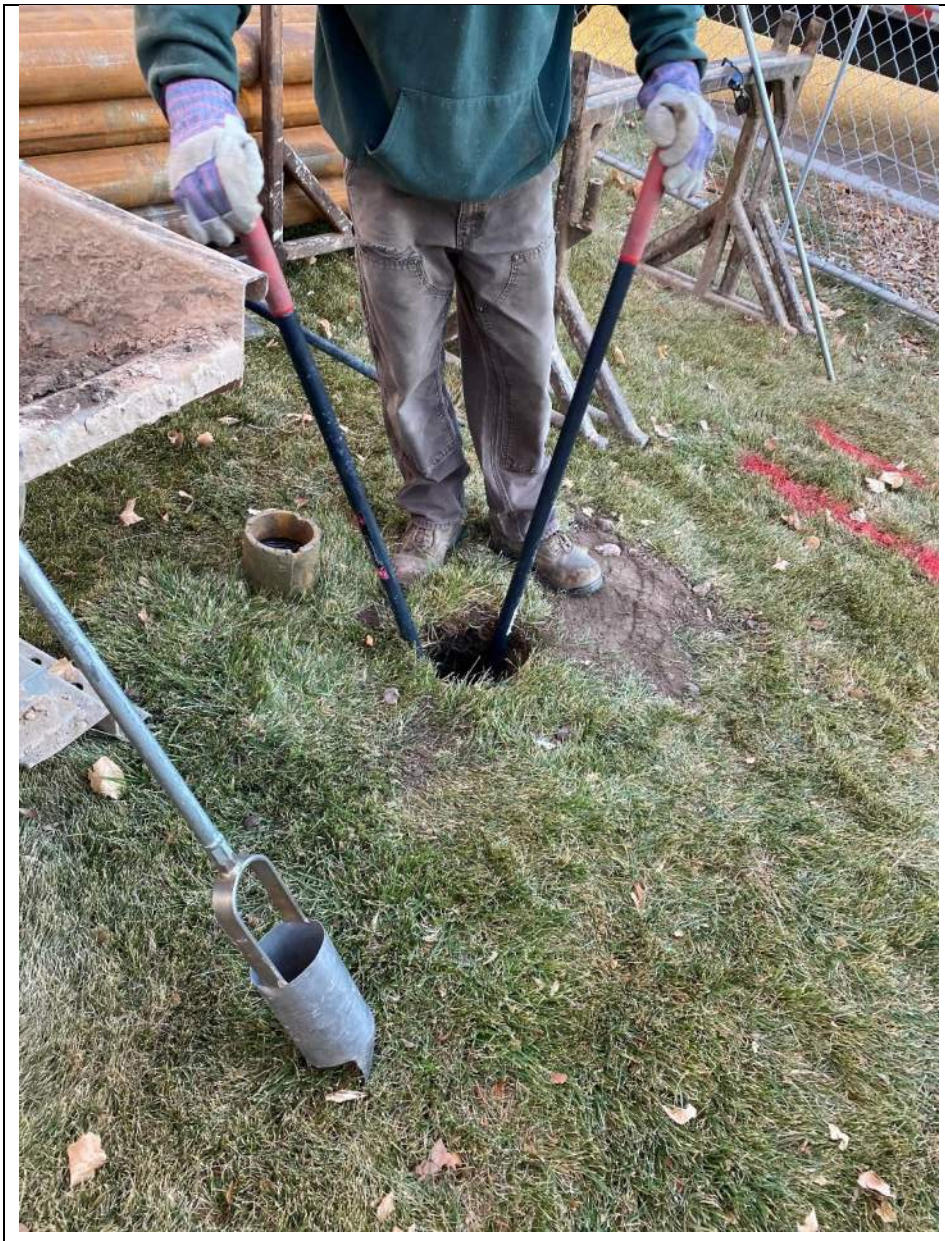

Date: 12/1/2020

Location: MW-13L

Description: Holt hand digging MW-13L to 5 feet bgs.

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Salt Lake City, Utah

DATE: 12/2/2020	**Prepared by:** Joe Miller

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID (x2) • Water level meter • YSI Multiparameter meter • Apera instruments pH60 pH meter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor • Solinst bladder pump

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
CDM Smith and Wasatch developed MW-30RB with the Geotech Reclaimer double valve pump and removed approximately 37 gallons of water. The dedicated Solinst bladder pump was deployed at MW-30RA.

Drilling at MW-13L:
The MW-13L boring was advanced to 150 feet bgs. The 6-inch sonic casing has also been advanced to the bottom of the borehole. The soil cores were screened and logged no samples were collected. Groundwater was first encountered about 23 feet bgs. A clay confining unit was encountered about 104 feet bgs. There were wet sand stringers below the confining unit, but no distinct layer. All PID readings were less than 5 ppm.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

No electricity at connex after attempting to plug in a single heater. The breakers were checked and had not been tripped. Maintenance shop personnel will be attempted to be contacted again tomorrow, they need to flip the breaker again in the shop across from the IDW area.

Projected Work – Near Term:

12/3/2020 – Develop MW-36, MW-38S and potentially MW-38D zone by bailing and pumping with Geotech Reclaimer pump.

12/3/2020 – Drill MW-13L to 160 feet. Discuss well design and begin installation at MW-13L.

Other Activities/Remarks:

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None.

Photos:

	**Date: 12/2/2020** **Location:** MW-13L **Description:** Holt work zone setup at MW-13L. Preparing to resume drilling.
	**Date: 12/2/2020** **Location:** MW-13L **Description:** Soil cuttings from 102.5-105 feet bgs. Encountered clay confining layer.

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Date: 12/2/2020

Location: MW-13L

Description: Soil cuttings from 135-137 feet bgs. Moist to we gravelly sand stringer at ~136 feet bgs.

Date: 12/2/2020

Location: MW-30RB

Description: Pump development discharge water prior to development (final turbidity reading after purging additional 37 gallons was <20NTU).

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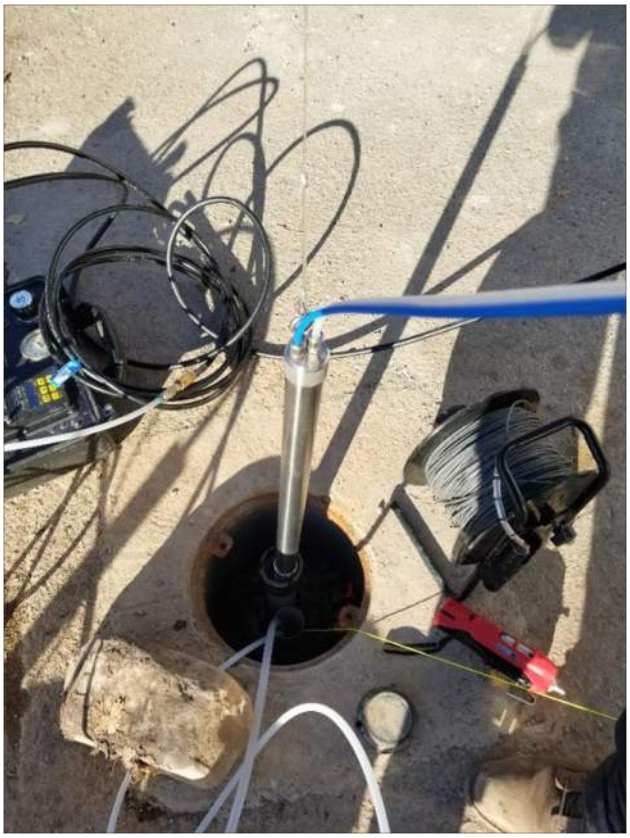	**Date: 12/2/2020** **Location:** MW-30RA **Description:** Deployment of dedicated bladder pump at MW-30RA.
	**Date: 12/2/2020** **Location:** MW-30RA **Description:** Completed deployment of dedicated bladder pump at MW-30RA.

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Salt Lake City, Utah

DATE: 12/3/2020	**Prepared by:** Joe Miller and Tea Vrtlar

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID (x2) • Water level meter • YSI Multiparameter meter • Apera instruments pH60 pH meter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor • Solinst bladder pump

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
CDM Smith and Wasatch developed MW-36: they surged with the bailer, removed approximately 25 gallons by bailing, and removed approximately 21 gallons by pumping. The dedicated Solinst bladder pump was deployed at MW-30RB. Locks were added to MW-30RA and MW-36.

MW-13L:
The MW-13L boring was advanced to 160 feet bgs. The zone from 156-160 feet bgs was a saturated sandy gravel. Following discussion with the VA, the 2-inch PVC well was set with 10 feet of 0.020 slot screen from 150-160 feet bgs. The sand pack was installed from 147-160 feet bgs. Holt completed backfilling and the surface completion at MW-13L. The drill rig and drilling equipment was mobilized back to the VA laydown area. Holt decontaminated the drill steel used for MW-13L.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

No electricity at connex. The breakers behind the connex were checked and had not been tripped. Maintenance shop personnel were contacted. The connex breaker in the shop across from the IDW area was checked and had not been tripped, but the breaker was flipped off and on again to try to resolve the issue. The same procedure was repeated at the breakers behind the connex. Still unable to get electricity to connex.

Casings for MW-30RA and MW-30RB are too close to each other where Solinst well cap assembly couldn't be placed on MW-30RB. No lock was placed on MW-30RB since the lid couldn't be closed.

Projected Work – Near Term:

12/4/2020 – Develop MW-38S/D. Deploy dedicated Solinst bladder pump at MW-36 and potentially MW-38S and D.

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12/4/2020 – Move fencing from MW-13L location back to VA; load equipment and mobilize home.

Other Activities/Remarks:

None.

Photos:

	**Date: 12/3/2020** **Location:** MW-13L **Description:** Soil core from MW-13L from 157-160 feet bgs. Saturated sandy gravel layer.
	**Date: 12/3/2020** **Location:** MW-13L **Description:** Holt preparing to install 2" PVC at MW-13L.

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	**Date: 12/3/2020** **Location:** MW-36 **Description:** Pump discharge water during development.
	**Date: 12/3/2020** **Location:** MW-36 **Description:** Pump discharge water after development.

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Date: 12/3/2020

Location: MW-30RB

Description: Dedicated pump deployment at MW-30RB complete.

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Salt Lake City, Utah

DATE: 12/4/2020	**Prepared by:** Joe Miller and Tea Vrtlar

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy Holt Services – Jeff Jones (Driller) Holt Services – Andrew Mengle Holt Services – Alex Langdon
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Terrasonic 150 mini-sonic drill rig • Skid Steer (Bobcat) • JCB 550-170 forklift • Rig Hauler • HNu PID (x2) • Water level meter • YSI Multiparameter meter • Apera instruments pH60 pH meter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor • Solinst bladder pump

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at laydown area on VA campus.

Development:
CDM Smith and Wasatch developed MW-38S by bailing approximately 10 gallons and pumping (with the Geotech Reclaimer pump) approximately 36 gallons. At MW-38D, 18 gallons were bailed, and 40 gallons were pumped, however, well development was not complete and will continue tomorrow. The dedicated Solinst bladder pump was installed at MW-38S

Drilling Demob:
Holt picked up fencing and remaining equipment from MW-13L. They loaded all their equipment and mobilized from site.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

VA Electricians informed us that the connex boxes have been tripping the breaker at the main circuit. They reset the breaker and asked us to reduce our load on the circuits. All equipment has been unplugged and only minimal equipment will be allowed to be plugged in at the connex boxes (eg printer/copier, battery chargers).

Projected Work – Near Term:

12/5/2020 – Complete development at MW-38D. Develop MW-37S and, if time permits develop MW-37D and deploy dedicated Solinst bladder pumps at MW-36, MW-38S and MW-38D.

Other Activities/Remarks:

None.

Photos:

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	**Date: 12/4/2020** **Location:** MW-13L **Description:** SMW-13L pad near the MW-13 S/D pads. The well was offset due to underground utilities identified during the geophysical survey.
	**Date: 12/4/2020** **Location:** VA laydown area **Description:** Holt has loaded casing, the drill rig and bobcat for demobilization.

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	**Date: 12/4/2020** **Location:** MW-38S **Description:** Pump discharge water during development.
	**Date: 12/4/2020** **Location:** MW-38S **Description:** Pump discharge water after development.

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Salt Lake City, Utah

DATE: 12/5/2020	**Prepared by:** Joe Miller and Tea Vrtlar

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar Wasatch Environmental – Kevin Murphy
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• HNu PID (x2) • Water level meter • YSI Multiparameter meter • Apera instruments pH60 pH meter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor • Solinst bladder pump

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at connex.

Development:
The development at MW-38D was completed; approximately 116 gallons were pumped from the well. CDM Smith and Wasatch developed MW-37S by bailing approximately 16 gallons and pumping approximately 48 gallons. Development was initiated at MW-37D; 20 gallons were bailed. The dedicated Solinst bladder pump was deployed at MW-36. Locks were placed on MW-36 and MW-38S/D.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

None.

Projected Work – Near Term:

12/6/2020 –Complete development at MW-37D, and initiate development at MW-13L. If time permits, deploy dedicated Solinst bladder pumps at MW-38S/D.

Other Activities/Remarks:

None.

Photos:

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	**Date: 12/5/2020** **Location:** MW-37S and MW-37D **Description**: MW-37S (right) and MW-37D (left) wells.
	**Date: 12/5/2020** **Location:** MW-37S **Description:** Pump discharge water prior to development.

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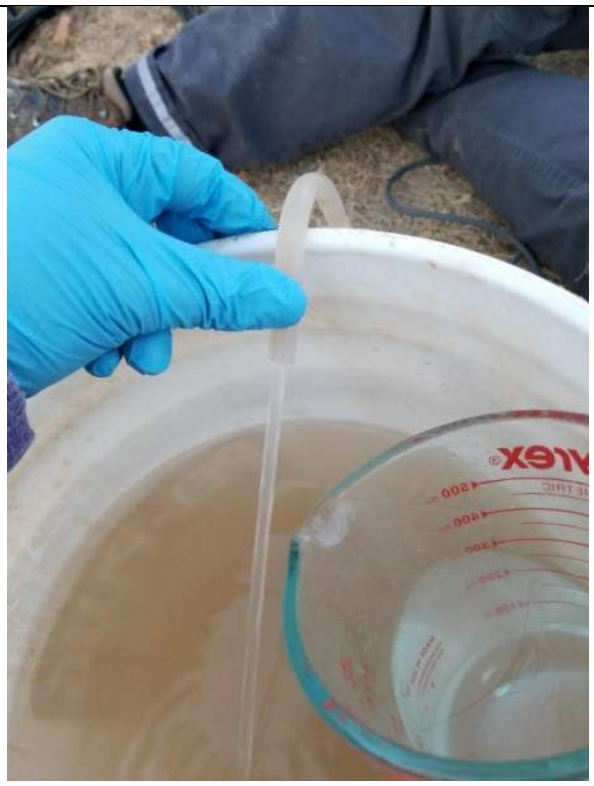	**Date: 12/5/2020** **Location:** MW-37S **Description:** Pump discharge water after development.
	**Date: 12/5/2020** **Location:** MW-36 **Description:** Dedicated pump deployment

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/6/2020	**Prepared by:** Joe Miller and Tea Vrtlar

Personnel on site, including Contractors:	CDM Smith – Joe Miller CDM Smith – Tea Vrtlar
Visitors/Others:	

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**To 32 º F**
Wind	Still	**Moderate**	High		
Humidity	Dry	**Moderate**	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• HNu PID • Water level meter • YSI Multiparameter meter • Hach 2100Q turbiditimeter • Geotech Reclaimer pump • QED Model 3020 Driver Compressor

Description of Field Activities – including borings completed/started (include footages), samples/data collected, etc.:

H&S tailgate was conducted at connex.

Development:
CDM Smith completed development of MW-37D by pumping approximately 48 gallons. Development was initiated at MW-13L by bailing approximately 8 gallons and pumping approximately 17 gallons. The development was paused due to lack of sunlight and will be continued tomorrow.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):
None

Projected Work – Near Term:

Development:
12/7/2020 – Complete development at MW-13L. Initiate development of MW-34A or MW-26B with Waterra pump. If time permits, deploy dedicated Solinst bladder pumps at MW-37S/D and MW-38S/D.

Groundwater Sampling:
12/7/2020 – Complete synoptic water level measurements. Obtain/renew all badges for groundwater sampling team. Confirm receipt of all groundwater sampling equipment.

Other Activities/Remarks:

None.

Photos:

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Salt Lake City, Utah

	**Date: 12/6/2020** **Location:** MW-37D **Description**: Development of MW-37D.
	**Date: 12/6/2020** **Location:** MW-13L **Description:** Bailing of MW-13L.

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Date: 12/6/2020

Location: MW-13L

Description: Development of MW-13L.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/7/2020	**Prepared by:** Ben Carreon

Personnel on site, including Contractors:	CDM Smith – Ben Carreon, Maria Day, Tea Vrtlar, Emma Rott, Joe Miller, Iona Campbell, Connor Kelley Wasatch – Kevin Murphy
Visitors/Others:	None

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**0 To 32 º F**
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development equipment • Water level and low-flow groundwater sampling equipment

Description of Field Activities – including samples/data collected, etc:

- A H&S tailgate was conducted at the IDW yard area.
- Equipment was calibrated.
- Synoptic Water Level Event
  - All water levels were completed except at monitoring wells: MW-08A/B/C, MW-14D, MW-17S, MW-28, MW-29 A/B/C, and MW-32A/B/C. These locations will be completed 12/8/20.
- Groundwater Sampling
  - No groundwater samples were collected.
- Development
  - MW-13L
    - Prior to development, the total depth at MW-13L was 151.06' below top of casing; anticipated depth should be 160' below top of casing. Eight gallons bailed and 17 gallons were pumped on 12/6/20. Depth to bottom was measured at 152.1' below top of casing. Today (12/7/20), surging and pumping with the Geotech reclaimer pump removed approximately 100 gallons and depth to water at the end of the day was 154.15' below top of casing. Depth to bottom will be measured tomorrow (12/8/20), at that time we will assess how to move forward with further development and sampling during this event.
  - MW-34A
    - Development was initiated at MW-34A using the Waterra pump, and 15 gallons were removed. At the end of the day turbidity was still high; development will continue tomorrow.
  - MW-38S/D
    - Dedicated pumps were deployed.
- Samples collected:
  - IDW15-GW120720 – Poly water tank
  - IDW16-GW120720 – Drum with sediment water and hydraulic fluid from phase I of investigation
- Samples to be collected tomorrow:
  - 2x IDW soil samples from remaining roll off bins.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

- MP10H controller solenoid was sticking until the temperature was above 35F. All controllers will be kept in the hotel rooms to prevent any moisture build up and reduce sticking at low temperatures.
- Development at MW-13L (see above).
- The teams were short one water level meter due to a shipping issue with Field Environmental. Everything else shipped for the groundwater sampling event was accounted for except 50' of silicone and a regulator. The missing equipment and supplies are expected to arrive 12/7/20.

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Salt Lake City, Utah

- Salt Lake County has a mandatory mask mandate in effect since Saturday, June 27. Masks are required in public.

Projected Work – Near Term:

- One team will continue development of MW-34A and will begin development of MW-26B. Following development, pumps will be deployed at MW-37S/D (time permitting).
- One team will complete the synoptic water level event and then begin sampling.
- Two teams will begin groundwater sampling.

Other Activities/Remarks:

Photos:

	**Date:** 12/7/2020 **Location:** MW-06 **Description:** Measuring water level
	**Date:** 12/7/2020 **Location:** MW-02 **Description:** Stockpile of salt/gravel near well

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/8/2020	**Prepared by:** Ben Carreon

Personnel on site, including Contractors:	CDM Smith – Ben Carreon, Maria Day, Tea Vrtlar, Emma Rott, Joe Miller, Iona Campbell, Connor Kelley Wasatch – Kevin Murphy
Visitors/Others:	None

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**0 To 32 º F**
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development equipment • Water level and low-flow groundwater sampling equipment

Description of Field Activities – including samples/data collected, etc:

- A H&S tailgate was conducted at the IDW yard area.
- Equipment was calibrated.
- Synoptic Water Level Event
    - The remaining water levels were measured.
- Groundwater Sampling
    - Groundwater samples collected:
        - MW-05R (MW05R-GW120820 and FD05-GW120820)
            - For the following parameters:
                - VOCs
                - Geochemistry
                    - Metals
                    - Dissolved gases
                    - Sulfate, chloride
                    - Nitrate + nitrite (total N)
                    - TOC
                    - Alkalinity
        - MW-24 (MW24-GW120820)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-27 (MW27-GW120820)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-28 (MW28-GW120820)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-30RA (MW30RA-GW120820)
            - For the following parameters:
                - VOCs
                - 1,4-Dioxane

        - Geochemistry
    - MW-30RB (MW30RB-GW120820)
        - For the following parameters:
            - VOCs
            - 1,4-Dioxane
            - Geochemistry
  - No samples were shipped to EMAX Labs.
- Development
  - MW-13L
    - DTB was measured at 153.91' BTOC.
  - MW-34A
    - Development was completed. A total of 88.5 gallons were purged with the Waterra pump.
  - MW-26B
    - Began development however not much progress was made with the limited daylight available.
- Drilling IDW
  - Samples collected:
    - Roll off bin #5843
    - Roll off bin #6030
  - IDW samples collected 12/7 and 12/8 were shipped to the lab.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

- At the beginning of purging MW-30RB, water did not surface at expected pressures. The pump was pulled and rinsed to remove sediment which corrected the issue and the well was sampled.
- MW-12S was dry. Water level was not measured, and samples will not be collected.
- The water level at MW-31A was below the top of the volume booster. As the installation of the volume booster was difficult at this location, the pump was not pulled, and a water level was not measured.
- The water level at MW-29A was below the top of the volume booster. After pulling the pump, the airline was noted to be twisted. Spare swagelok fittings will be purchased should any issues be encountered while sampling. The tubing was straightened however the tubing should be trimmed as preventative maintenance in the near future.
- MP10H controller solenoids were again sticking despite keeping the controllers in hotel rooms overnight.
- One YSI had a pH sensor in need of replacement. A replacement YSI was requested and will arrive 12/9/20.
- Salt Lake County has a mandatory mask mandate in effect since Saturday, June 27. Masks are required in public.

Projected Work – Near Term:

- Continue development of MW-26B. Following development, pumps will be deployed at MW-37S/D.
- Continue groundwater sampling.

Other Activities/Remarks:

- United services picked up the fencing and jobsite toilet.
- Drilling PIDs and Mag Sep meters were packed for shipment.

Photos:

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

	**Date:** 12/8/2020 **Location:** MW-29A **Description:** Twisted tubing
	**Date:** 12/8/2020 **Location:** MW-26B **Description:** Waterra foot valve

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

Date: 12/8/2020

Location: MW-26B

Description: Development setup

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

DATE: 12/9/2020	**Prepared by:** Ben Carreon

Personnel on site, including Contractors:	CDM Smith – Ben Carreon, Maria Day, Emma Rott, Iona Campbell, Connor Kelley Wasatch – Kevin Murphy
Visitors/Others:	None

Weather	**Sunny**	Partly Cloudy	Overcast	Rain	Snow
Temperature	85+ º F	70 to 85º F	50 to 70 º F	**32 to 50 º F**	**0 To 32 º F**
Wind	**Still**	Moderate	High		
Humidity	**Dry**	Moderate	Humid		

Equipment in Use (field instruments, subcontractor equip, etc.)	• Development equipment • Water level and low-flow groundwater sampling equipment

Description of Field Activities – including samples/data collected, etc:

- A H&S tailgate was conducted at the IDW yard area.
- Equipment was calibrated.
- Groundwater Sampling
    - Groundwater samples collected:
        - MW-08A (MW08A-GW120920 and FD03-GW120920)
            - For the following parameters:
                - VOCs
                - Geochemistry
                    - Metals
                    - Dissolved gases
                    - Sulfate, chloride
                    - Nitrate + nitrite (total N)
                    - TOC
                    - Alkalinity
        - MW-08B (MW08B-GW120920)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-08C (MW08C-GW120920)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-12D (MW12D-GW120920)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-15S (MW15S-GW120920)
            - For the following parameters:
                - VOCs
                - Geochemistry
        - MW-15D (MW15D-GW120920)
            - For the following parameters:
                - VOCs

        - Geochemistry
    - MW-23A (MW23A-GW120920)
        - For the following parameters:
            - VOCs
            - Geochemistry
    - MW-23C (MW23C-GW120920)
        - For the following parameters:
            - VOCs
            - Geochemistry
    - MW-25A (MW25A-GW120920)
        - For the following parameters:
            - VOCs
            - Geochemistry
    - MW-30C (MW30C-GW120920)
        - For the following parameters:
            - VOCs
            - Geochemistry
- Difficulties were encountered while purging MW-25B. Breakthrough was experienced despite staying under the maximum allowable volume per discharge cycle. When rebuilding the water column, breakthrough was again experienced. The pump filter will be replaced 12/10/20 in an effort to resolve breakthrough issues.
- The following samples were shipped to EMAX Labs:
    - MW05R-GW120820
    - FD05-GW120820
    - MW08A-GW120920
    - FD03-GW120920
    - MW08B-GW120920
    - MW08C-GW120920
    - MW12D-GW120920
    - MW15S-GW120920
    - MW15D-GW120920
    - MW24-GW120820
    - MW27-GW120820
    - MW28-GW120820
    - MW30RA-GW120820
    - MW30RB-GW120820
    - MW30C-GW120920

- Development
    - MW-26B
        - Development with the Waterra pump was not successful. Instead, development was completed using the air lifting apparatus, but by slightly pressurizing the well casing during air lift. A total of 27 gallons were purged using this method for development, until the water had significantly cleared.

Issues/Problems Encountered/Deficiencies/Deviations from QAPP (and resolutions):

- Breakthrough during purging and during water column building at MW-25B.
- One additional YSI was also displaying erroneous pH measurements. The readings had later normalized however a second replacement YSI was still requested.
- Salt Lake County has a mandatory mask mandate in effect since Saturday, June 27. Masks are required in public.

Projected Work – Near Term:

- Continue groundwater sampling.

Daily Quality Control Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

Other Activities/Remarks:

- None.

Photos:

	**Date:** 12/9/2020 **Location:** MW-23 **Description:** Equipment setup
	**Date:** 12/9/2020 **Location:** MW-26B **Description:** Development setup

Appendix L

Investigation-Derived Waste Manifest

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: UTD 981 548 985

Manifest Document No.: 20112

2. Page 1 of 1

3. Generator's Name and Mailing Address: VETERANS HEALTH ADMINISTRATION
CERCLA PROGRAM, 500 FOOTHILL DR, MAIL CODE 138
BUILDING6, CERCLA PROGRAM, ATTN: S. FAIRCLOUGH
SALT LAKE CITY, UT 84148

4. Generator's Phone: (385) 777-4672

5. Transporter 1 Company Name: MP ENVIRONMENTAL SERVICES

6. US EPA ID Number: CAT 000 624 247

A. State Transporter's ID

B. Transporter 1 Phone: 435-884-0808

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address:
WASATCH REGIONAL LANDFILL
5033 NORTH RAVLEY RD
SKULL VALLEY, UT 84029

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone: 801-924-8450

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NONHAZARDOUS, NON REGULATED (SOIL CUTTINGS FROM DRILLING MONITORING WELLS)	1	CM	10	T
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
APPROVAL NUMBER 4186205538
CONTAINER NUMBER 6030

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Date: Month 02 Day 12 Year 21

Printed/Typed Name: Shannon Smith

Signature: Shannon Smith

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Date: Month 2 Day 12 Year 21

Printed/Typed Name: Chris Gottfried

Signature

18. Transporter 2 Acknowledgement of Receipt of Materials

Date: Month Day Year

Printed/Typed Name

Signature

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Date: Month Day Year

Printed/Typed Name

Signature

NON-HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: UTD 981 548 985

Manifest Document No.: 20119

2. Page 1 of 1

3. Generator's Name and Mailing Address: VETERANS HEALTH ADMINISTRATION
CERCLA PROGRAM, 500 FOOTHILL DR, MAIL CODE 138
BUILDING 6, CERCLA PROGRAM, ATTN: S. FIARCLOUGH

4. Generator's Phone (385)272-4672

5. Transporter 1 Company Name: MP ENVIRONMENTAL SERVICES

6. US EPA ID Number: CAT 000 624 247

A. State Transporter's ID

B. Transporter 1 Phone: 435-884-0805

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address: WASATCH REGIONAL LANDFILL
8833 NORTH RAWLEY RD
SKULL VALLEY, UT 84029

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone: 801-924-8540

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NONHAZARDOUS, NON REGULATED (GROUNDWATER FROM DRILLING MONITORING WELLS)	1	TT	1,500	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above

APPROVAL NUMBER 4186205536

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Tac 3224

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Shannon Smith

Signature

Date: Month 12 Day 4 Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: BARRY HILL

Signature

Date: Month 12 Day 4 Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in Item 19.

Printed/Typed Name

Signature

Date: Month Day Year

NON-HAZARDOUS WASTE

NON-HAZARDOUS WASTE MANIFEST

Please print or type. (Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: UTD 981 548 985

Manifest Document No.: 20111

5. Page 1 of 1

3. Generator's Name and Mailing Address: VETERANS HEALTH ADMINISTRATION
CERCLA PROGRAM, 500 FOOTHILL DR. MAIL CODE 138
BUILDING 6, CERCLA PROGRAM, ATTN: S. FAIRCLOUGH
SALT LAKE CITY, UT 84148

4. Generator's Phone: 385 272-4672

6. Transporter 1 Company Name: MP ENVIRONMENTAL SERVICES

US EPA ID Number: CAT 000 624 247

A. State Transporter's ID

B. Transporter 1 Phone: 435-884-0808

7. Transporter 2 Company Name

US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address:
WASATCH REGIONAL LANDFILL
8833 NORTH RAWLEY RD
SKULL VALLEY, UT 84029

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone: 801-924-8450

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NONHAZARDOUS, NON REGULATED (SOIL CUTTINGS FROM DRILLING MONITORING WELLS)	1	CM	11	T
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above

APPROVAL NUMBER 4186205538

CONTAINER NUMBER 5919

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: shannon Smith — Signature: Shannon Smith — Date: Month 01 Day 12 Year 21

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Richard Orr — Signature: Richard Orr — Date: Month 01 Day 12 Year 21

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name — Signature — Date: Month Day Year

NON-HAZARDOUS WASTE

NON-HAZARDOUS WASTE MANIFEST

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: UTD 981 548 985

Manifest Document No.: 20110

2. Page 1 of 1

3. Generator's Name and Mailing Address: VETERANS HEALTH ADMINISTRATION
CERCLA PROGRAM, 500 FOOTHILL DR., MAIL CODE 138
BUILDING 6, CERCLA PROGRAM, ATTN: S. FAIRCLOUGH
4. Generator's Phone: (385) 272-4672 SALT LAKE CITY UT 84148

5. Transporter 1 Company Name: MP ENVIRONMENTAL SERVICES
6. US EPA ID Number: CAT 000 624 247

A. State Transporter's ID: 435-884-0808
B. Transporter 1 Phone: [redacted]
C. State Transporter's ID:
D. Transporter 2 Phone:

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address:
WASATCH REGIONAL LANDFILL
8833 NORTH RAWLEY RD
SKULL VALLEY, UT 84029
10. US EPA ID Number:

E. State Facility's ID:
F. Facility's Phone: 801-924-8540

11. WASTE DESCRIPTION	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. NONHAZARDOUS, NON REGULATED (SOIL CUTTINGS FROM DRILLING MONITORING WELLS)	1	CM	8	T
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above

APPROVAL NUMBER 4186205538

CONTAINER NUMBER 5483

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

GENERATOR

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Shannon Smith
Signature: [signature]
Date: Month 01 Day 12 Year 21

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: RICHARD ORR
Signature: Richard Orr
Date: Month 01 Day 12 Year 21

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name:
Signature:
Date: Month Day Year

Special Waste Profile

Disposal Facility: 4186 Wasatch Regional Landfill, Inc. UT

Waste Profile #:

Sales Rep #:

I. Generator Information

Generator Name: VETERANS HEALTH ADMINISTRATION CERCLA Program

Generator Site Address: 500 FOOTHILL DRIVE Mail Code 138 Building 6 CERCLA Program

City: SALT LAKE CITY County: SALT LAKE State: Utah Zip: 84148

State ID/Reg No: State Approval/Waste Code: NAICS #:

Generator Mailing Address ☐ (if different) SAME

City: County: State: --Select State-- Zip:

Generator Contact Name: SUSANNE FAIRCLOUGH Email: Susanne.fairclough@va.gov

Phone Number: 385-272-4672 Ext: Fax Number:

II. Billing Information

Bill To: SEACOAST ENVIRONMENTAL SVCS, Contact Name: EUGENE R. STREITER

Billing Address: 37 LONDONBERRY DRIVE Email: streiterseacoast@gmail.com

City: HOLMDEL State: --Select State-- Zip: 07733 Phone: 732-275-1616

III. Waste Stream Information

Name of Waste: SOIL CUTTINGS from drilling Monitoring Wells

Process Generating Waste: Waste soil generated from installation of boring and monitoring wells at area contaminated with chlorinated solvents. Waste is not a listed waste. Source is undetermined.

Type of Waste: --Select Waste Type-- Physical State: --Select Physical Method of Shipment: --Select Shipment M

Estimated Volume: 120 Volume Type: Cubic Yards

Frequency: On-going Waste Stream Disposal Consideration: Landfill

IV. Representative Sample Certification

☐ **No Sample Taken**

☑ **Sample Taken** **Type of Sample** Composite Sample

Is the representative sample collected to prepare this profile and laboratory analysis, collected in accordance with U.S. EPA 40 CFR 261.20(c) guidelines or equivalent? ☑ **Yes** ☐ **No**

Sample Date: 3/26/20

Sample ID Numbers or SDS: IDW02-SB032620

Remember to attach Laboratory Analytical Report (and/or Material Safety Data Sheet) including Chain of Custody and required parameters provided for this profile.

Special Waste Profile

REPUBLIC SERVICES

V. Physical Characteristics of Waste

	Characteristic Components (must equal 100%:)	% By Weight (out of 100% - ranges acceptable):
1.	SOIL	95% - 100
2.	Debris (plastic, concrete, asphalt)	0% - 5%
3.		
4.		
5.		

Color:	Odor (describe):	Does Waste Contain Free Liquids?	% Solids:	pH:	Flash Point:
BROWN	NONE	☐ Yes ☑ No	100	NA	>200 °F

Attach Laboratory Analytical Report (and/or Material Safety Data Sheet) including Chain of Custody and required parameters provided for this profile.

RCRA Regulatory Questions

1.	Does this waste or generating process contain regulated concentrations of the following Pesticides and/ or Herbicides: Chlordane, Endrin, Heptachlor (and its epoxides), Lindane, Methoxychlor, Toxaphene, 2,4-D, or 2,4,5-TP Silvex as defined in 40 CFR 261.33?	☐ Yes ☑ No
2.	Does this waste contain reactive sulfides (greater than 500 ppm) or reactive cyanide (greater than 250 ppm) [reference 40 CFR 261.23(a)(5)]?	☐ Yes ☑ No
3.	Does this waste contain regulated concentrations of Polychlorinated Biphenyls (PCBs) as defined in 40 CFR Part 761?	☐ Yes ☑ No
4.	Does this waste contain concentrations of listed hazardous wastes defined in 40 CFR 261.31, 261.32, 261.33, including RCRA F-Listed Solvents?	☐ Yes ☑ No
5.	Has this waste been delisted under 40 CFR 260.20 and 260.22? If yes, attach the final decision to delist the waste as published in the Federal Register.	☐ Yes ☑ No
6.	Does this waste exhibit a Hazardous Characteristic as defined by Federal and/or State regulations? If Yes, identify the applicable waste code and specify if the waste is hazardous as defined by Federal, State or both?	☐ Yes ☑ No
7.	Does this waste contain regulated concentrations of 2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCDD), or any other dioxin as defined in 40 CFR 261.31?	☐ Yes ☑ No
8.	Is this a regulated Medical or Infectious Waste as defined by Federal and/or State regulations?	☐ Yes ☑ No
9.	Is this a regulated Radioactive Waste as defined by Federal and/or State regulations?	☐ Yes ☑ No
10.	Is this a solid waste that is not a hazardous waste in accordance with 40 CFR 261.4(b)? If yes, please provide the corresponding regulatory citation.	☐ Yes ☑ No

Republic Services Waste Handling Questions

1.	Does this waste generate heat or react when contacted with water/moisture?	☐ Yes ☑ No
2.	Does the waste contain sulfur or sulfur by-products?	☐ Yes ☑ No
3.	Is this waste generated at a State or Federal Superfund cleanup site subject to regulation under CERCLA?	☑ Yes ☐ No
4a.	Is this waste from a TSD facility, TSD-like facility or consolidator (i.e. multiple wastes/multiple generators)?	☐ Yes ☑ No

4b. If yes to the above question, please provide clarification.

Special Waste Profile

REPUBLIC SERVICES

VI. Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. All Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste.

I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue.

I understand that attaching an electronic signature, I am signing this document, consent to complete this transaction and receive all related communication electronically, and agree this document will be binding as though I had physically signed it. A printout of this document may be accepted with the same authority as the original.

If electronic signature is preferred, please submit completed (unsigned) form to your Special Waste Coordinator or Special Waste Sales Executive to initiate signature process.

I further certify that the company has not altered the form or content of this profile sheet as provided by Republic Services.

Susanne M Fairclough	VA CERCLA Contracts Manager	Veterans Health Administration CERCLA Program
Authorized Representative Name (Printed)	Title (Printed)	Company Name
Susanne M Fairclough	040820	
Representative Signature	Date	

Special Waste Profile

REPUBLIC SERVICES

Disposal Facility: 4186 Wasatch Regional Landfill, Inc. UT

Waste Profile #:

Sales Rep #:

I. Generator Information

Generator Name: VETERANS HEALTH ADMINISTRATION CERCLA Program

Generator Site Address: 500 FOOTHILL DRIVE Mail Code 138 Buidling 6 CERCLA Program

City: SALT LAKE CITY County: SALT LAKE State: --Select State-- Zip: 84148

State ID/Reg No: State Approval/Waste Code: NAICS #:

Generator Mailing Address ☐ (if different) SAME

City: County: State: --Select State-- Zip:

Generator Contact Name: SUSANNE FAIRCLOUGH Email: Susanne.fairclough@va.gov

Phone Number: 385-272-4672 Ext: Fax Number:

II. Billing Information

Bill To: SEACOAST ENVIRONMENTAL SVCS, Contact Name: EUGENE R. STREITER

Billing Address: 37 LONDONBERRY DRIVE Email: streiterseacoast@gmail.com

City: HOLMDEL State: New Jersey Zip: 07733 Phone: 732-275-1616

III. Waste Stream Information

Name of Waste: GROUNDWATER from drilling Monitoring Well

Process Generating Waste: Waste water generated from installation of boring and monitoring wells at area contaminated with chlorinated solvents. Waste is not a listed waste. Source is undetermined.

Type of Waste: --Select Waste Type-- Physical State: --Select Physical Method of Shipment: --Select Shipment M

Estimated Volume: 15000-20000 Volume Type: Gallons

Frequency: On-going Waste Stream Disposal Consideration: Landfill

IV. Representative Sample Certification

☐ **No Sample Taken**

☑ **Sample Taken** **Type of Sample** Grab Sample

Is the representative sample collected to prepare this profile and laboratory analysis, collected in accordance with U.S. EPA 40 CFR 261.20(c) guidelines or equivalent? ☑ **Yes** ☐ **No**

Sample Date: 3/24/2020

Sample ID Numbers or SDS: IDW01-GW032420

Remember to attach Laboratory Analytical Report (and/or Material Safety Data Sheet) including Chain of Custody and required parameters provided for this profile.

Special Waste Profile

REPUBLIC SERVICES

V. Physical Characteristics of Waste

Characteristic Components (must equal 100%:)	% By Weight (out of 100% - ranges acceptable):
1. water	95% - 100%
2. sediment (silt)	0% - 5%
3.	
4.	
5.	

Color:	Odor (describe):	Does Waste Contain Free Liquids?	% Solids:	pH:	Flash Point:
Clear/Brown	none	☑ Yes ☐ No	<5%	~7	>200 °F

Attach Laboratory Analytical Report (and/or Material Safety Data Sheet) including Chain of Custody and required parameters provided for this profile.

RCRA Regulatory Questions

1. Does this waste or generating process contain regulated concentrations of the following Pesticides and/ or Herbicides: Chlordane, Endrin, Heptachlor (and its epoxides), Lindane, Methoxychlor, Toxaphene, 2,4-D, or 2,4,5-TP Silvex as defined in 40 CFR 261.33?	☐ Yes ☑ No
2. Does this waste contain reactive sulfides (greater than 500 ppm) or reactive cyanide (greater than 250 ppm) [reference 40 CFR 261.23(a)(5)]?	☐ Yes ☑ No
3. Does this waste contain regulated concentrations of Polychlorinated Biphenyls (PCBs) as defined in 40 CFR Part 761?	☐ Yes ☑ No
4. Does this waste contain concentrations of listed hazardous wastes defined in 40 CFR 261.31, 261.32, 261.33, including RCRA F-Listed Solvents?	☐ Yes ☑ No
5. Has this waste been delisted under 40 CFR 260.20 and 260.22? If yes, attach the final decision to delist the waste as published in the Federal Register.	☐ Yes ☑ No
6. Does this waste exhibit a Hazardous Characteristic as defined by Federal and/or State regulations? If Yes, identify the applicable waste code and specify if the waste is hazardous as defined by Federal, State or both?	☐ Yes ☑ No
7. Does this waste contain regulated concentrations of 2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCDD), or any other dioxin as defined in 40 CFR 261.31?	☐ Yes ☑ No
8. Is this a regulated Medical or Infectious Waste as defined by Federal and/or State regulations?	☐ Yes ☑ No
9. Is this a regulated Radioactive Waste as defined by Federal and/or State regulations?	☐ Yes ☑ No
10. Is this a solid waste that is not a hazardous waste in accordance with 40 CFR 261.4(b)? If yes, please provide the corresponding regulatory citation.	☐ Yes ☑ No

Republic Services Waste Handling Questions

1. Does this waste generate heat or react when contacted with water/moisture?	☐ Yes ☑ No
2. Does the waste contain sulfur or sulfur by-products?	☐ Yes ☑ No
3. Is this waste generated at a State or Federal Superfund cleanup site subject to regulation under CERCLA?	☑ Yes ☐ No
4a. Is this waste from a TSD facility, TSD-like facility or consolidator (i.e. multiple wastes/multiple generators)?	☐ Yes ☑ No

4b. If yes to the above question, please provide clarification.

Special Waste Profile

REPUBLIC SERVICES

VI. Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. All Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste.

I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue.

I understand that attaching an electronic signature, I am signing this document, consent to complete this transaction and receive all related communication electronically, and agree this document will be binding as though I had physically signed it. A printout of this document may be accepted with the same authority as the original.

If electronic signature is preferred, please submit completed (unsigned) form to your Special Waste Coordinator or Special Waste Sales Executive to initiate signature process.

I further certify that the company has not altered the form or content of this profile sheet as provided by Republic Services.

Susanne M Fairclough	VA CERCLA Contracts Manager	Veterans Administration CERCLA Program
Authorized Representative Name (Printed)	Title (Printed)	Company Name
Susanne M Fairclough	04/08/2020	
Representative Signature	Date	