

Date: December 16, 2020

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Subject: Former Bishop Tube Property
Additional Soil Investigation - Building 5 Area

On November 5-6, 2020, supplemental soil sampling was conducted by Roux Associates, Inc. (“Roux”) in accordance with the work plan submitted by Roux, on behalf of the Bishop Tube Project Team (“BT Team”), to the Pennsylvania Department of Environmental Protection (“DEP”) on October 23, 2020. The objectives of this supplemental soil sampling are described below.

- Assess the horizontal and vertical extent of volatile organic compounds (“VOCs”) in DEP’s area of concern (“AOC”) AOC-6 (i.e., the Plant 5 “Large Degreaser Area”). This additional soil investigation was conducted in a portion of Building 5 collocated with and proximate to DEP’s 2018 soil boring P5LDA02 to determine whether trichloroethene (“TCE”) was present in shallow soil in this area of the Property at concentrations suggestive of an additional VOC source (i.e., an alleged “large degreaser”).
- Assess whether hexavalent chromium is present in DEP’s AOC-5 (i.e., the Alleged Plant 5 “Railing Spill Area”). This additional soil investigation, which included analyses for hexavalent chromium, was conducted to the north of Building 5 collocated with DEP’s 2018 soil borings P5RSA01 and P5RSA02 (which were analyzed for total chromium but not hexavalent chromium).

The data developed as part of this additional soil investigation, as described herein, is also used to assess the preliminary areal extents for AOCs 5 and 6 as depicted in the November 10, 2020 Technology Assessment Memorandum (“Technical Assessment Memo”) prepared by Groundwater & Environmental Services, Inc. (“GES”) for DEP. As described in the Technical Assessment Memo these AOCs were defined by GES based on soils exceeding the DEP’s most stringent default Medium Specific Concentrations (“MSCs”)^{1,2}.

Details regarding the prior samples assessed, the samples collected, and the analytical results are presented in the subsections below.

¹ Reference to DEP’s MSCs herein is solely for purposes of placing the analytical results in context. DEP’s most stringent default MSCs are not to be presumed to be applicable remediation standards.

² Although GES and DEP have preliminarily and conservatively used the DEP’s most stringent default MSCs to describe the areal extent of AOCs, in its Technical Assessment Memo GES acknowledges that it anticipates that “a site-specific standard via pathway elimination will be used to attain a residential standard.” (GES, November 10, 2020, pg. 1).

Plant 5 Alleged “Large Degreaser Area” Additional Soil Investigation

Roux installed twelve (12) soil borings collocated with and proximate to DEP’s 2018 soil boring P5LDA02, which contained TCE at concentrations of 21 milligrams per kilogram (“mg/kg”) and 18.9 mg/kg in DEP’s and Roux’s split samples, respectively. Nine soil samples (from eight soil borings: P5LDA02R, P5LDA02-N, -E, -S, -W, -SE, SW, and S-1) were analyzed for VOCs in accordance with the October 23, 2020 work plan.

Soil boring locations were selected to delineate DEP’s previously advanced soil boring – P5LDA02. Soil borings were drilled to 10 feet (“ft”) below ground surface (“bgs”)³. Soils were sampled continuously in the field using macrocores for logging⁴. Field screening was conducted by Roux personnel using a calibrated 11.7 electron-volts (“eV”) bulb photoionization detector (“PID”). Soil boring logs are provided in **Attachment A**.

Twelve (12) soil borings were advanced to 10 ft bgs in conformance with the submitted work plan.⁵ Two unsaturated soil samples were collected from each boring at 6.0-6.5 and 9.5-10.0 ft bgs to characterize overall soil conditions in this area⁶. Since there were no notable physical observations (staining, odor or elevated PID readings) to guide sample depths, the default depths proposed in the work plan were used for sample collection. The 6.0-6.5 ft bgs interval was targeted to replicate the interval of soil sample P5LDA02 for horizontal delineation. The 9.5-10.0 ft bgs interval was targeted for vertical delineation, where deemed appropriate. Soil samples were analyzed for Target Compound List (“TCL”) VOCs⁷. Soil boring locations and soil sample analytical results for TCE are presented on **Figure 1**. **Figure 1** also depicts TCE results for three (3) previous soil samples⁸ proximate to and south of soil boring P5LDA02-S-1. New data are presented in **Table 1**⁹. The analytical laboratory reports for VOCs in soil are provided in **Attachment B**.

The findings of the soil investigation proximate to and surrounding soil boring P5LDA02 are below.

- Nine (9) soil samples were analyzed from eight (8) soil borings as depicted on Figure 1.
- Seven of the samples analyzed were shallow (6.0 - 6.5 ft bgs); two were deep (9.5 - 10.0 ft bgs) for vertical delineation.
- All samples were collected from the unsaturated zone.

³ Boring locations were advanced using non-mechanical tools (i.e., a hand auger) to at least 5 feet bgs. Drilling beyond 5 feet bgs was conducted using direct-push drilling methods supplied by Subsurface Environmental Technologies, LLC, a Pennsylvania-licensed driller. Direct-push drilling was conducted using a track-mounted Geoprobe® rig.

⁴ Field observations noted included, but were not limited to, soil type and color, grain size, presence of water, staining and odors, and PID readings.

⁵ Seven of these soils borings were installed for collection of contingency soil samples to be released depending upon the results of soil samples from the five primary soil borings. Based on the results of samples analyzed during this additional soil investigation, soil samples were not analyzed from four of the contingency soil borings.

⁶ Except for the soil boring collocated with the original P5LDA02 soil boring location which just had one sample collected from 9.5-10.0 ft bgs for vertical delineation.

⁷ Soils were collected for VOC laboratory analysis using three 5-gram Encore® samplers and placed on ice. All samples were kept under proper chain-of-custody procedures and submitted to Alpha Analytical Laboratories for TCL VOCs analysis by USEPA Method 8260C.

⁸ These analytical results are located in the June 10, 2019 Draft Remedial Investigation Report, Appendix A, Table A-1B. Historical Subsurface Soil Results.

⁹ For the reader’s convenience, the analytical results of original sample P5LDA02 (6) are included in this table.

- No soil borings had any notable PID readings (i.e., all PID readings ranged from 0.0 parts per million ["ppm"] to 0.8 ppm).
- None of the nine soil samples analyzed for VOCs reported concentrations above the most stringent Residential Direct Contact ("RDC") and/or Non-Residential Direct Contact ("NRDC") MSCs.
- Two shallow soil samples [P5LDA02-S (6-6.5) and P5LDA02-S-1 (6-6.5)] reported VOC concentrations above the most stringent Residential Used Aquifer ("RUA") Soil-to-Groundwater ("SGW") MSC for TCE only.

The physical observations, PID readings, and analytical results from this investigation, coupled with prior data from this area, do not demonstrate conditions suggestive of an additional VOC source (i.e., an alleged "large degreaser") in this area of the Property. This additional soil investigation demonstrates that the horizontal and vertical extent in AOC-6 in Building 5, as described in the GES Technology Assessment Memo, are significantly overestimated, overly conservative and not supported by the data.

Plant 5 Alleged "Railing Spill Area" Additional Soil Investigation

Roux installed two soil borings (P5RSA01R and P5RSA02R) and collected one soil sample from each boring at 1.0-1.5 ft bgs in conformance with the October 23, 2020 work plan. The soil borings were collocated with DEP's previously advanced soil borings (P5RSA01 and P5RSA02) and the soil samples were analyzed for total chromium and hexavalent chromium¹⁰.

Soil borings were advanced with a hand auger to 2.0 ft bgs; soils were logged and screened by Roux personnel as previously described. One unsaturated soil sample was collected from each boring at 1.0-1.5 ft bgs. Soil boring logs are provided in **Attachment A**. Soil boring locations and soil sample analytical results are presented on **Figure 2** and **Table 2**¹¹, respectively. The analytical laboratory reports for total chromium and hexavalent chromium in soil are provided in **Attachment B**.

The findings of the Alleged Plant 5 "Railing Spill Area" Additional Soil Investigation (i.e., soil investigation collocated with DEP's previously advanced soil borings P5RSA01 and P5RSA02) are below.

- Hexavalent chromium was not detected in either sample with laboratory reporting limits below the RDC.
- In accordance with Chapter 250, Section 10(b), for metals in soil, analyses shall be performed on total metals, except for hexavalent and trivalent chromium, which analyses shall be performed individually. For this reason, DEP has not assigned an MSC for total chromium. Hexavalent chromium results are compared to their respective MSCs: RDC (4 mg/kg), NRDC (220 mg/kg), and RUA/NRUA SGW MSCs (190 mg/kg) for soil.

¹⁰ Soils were collected for total chromium and hexavalent chromium laboratory analysis using laboratory-supplied bottleware and placed on ice. All samples were kept under proper chain-of-custody procedures and submitted to Alpha Analytical Laboratories for total metals analysis by USEPA Method 6010D and for hexavalent chromium analysis by USEPA Method 7196A.

¹¹ For the reader's convenience, the analytical results of original samples P5RSA01 and P5RSA02 are included in this table.

- Because hexavalent chromium was not detected in these speciated samples, the total chromium soil results were compared to the MSCs for trivalent chromium: RDC (190,000 mg/kg), NRDC (190,000 mg/kg), and RUA/NRUA SGW MSCs (190,000 mg/kg) for soil.
- Total chromium results for these two soil samples were 24.7 mg/kg and 34.2 mg/kg, both well below all trivalent chromium MSCs.

The analytical results from this additional soil investigation indicate the absence of a hexavalent chromium source in shallow soil in the Plant 5 Alleged "Railing Spill Area" north of Building 5. Based on these data, AOC-5, depicted as an AOC in the GES Technology Assessment Memo without the benefit of hexavalent chromium speciation data, should be eliminated as an AOC since it is not supported by the data.

Conclusions

Assessment of the findings from this additional soil investigation leads to the conclusions provided below, by constituents of concern ("COCs").

VOCs

1. Horizontal and vertical delineation of the prior VOC detection in sample P5LDA02 (6) was achieved.
2. Vertical delineation was achieved entirely within the unsaturated zone and the deepest samples did not exceed the RUA/NRUA SGW MSCs, indicating that soil impact in this area is not reaching the water table.
3. Only TCE was detected at concentrations above the default RUA/NRUA SGW MSC and, in all cases, the concentrations of TCE were below 38 mg/kg (the default soil RDC MSC). No soil borings had any notable PID readings or other field indications of substantial impact. As a result, no evident source area has been identified.
4. These supplemental data demonstrate that conditions suggestive of an additional VOC source (i.e., an alleged "large degreaser") in this area of the Property do not exist.
5. This additional soil investigation demonstrates that both the horizontal and vertical extent of VOCs in AOC-6 in Building 5, as depicted in the GES Technology Assessment Memo, are significantly overestimated, overly conservative and not supported by the data.

Total Chromium and Hexavalent Chromium

1. Samples collected from soil borings collocated with DEP's 2018 soil borings P5RSA01 and P5RSA02 did not contain detectable concentrations of hexavalent chromium.
2. The total chromium data collected were therefore compared to the trivalent chromium soil MSCs and do not exceed the most stringent criteria.
3. These supplemental data demonstrate that conditions suggestive of a hexavalent chromium source in this area of the Property do not exist.

4. AOC-5, presumptively depicted in the GES Technology Assessment Memo as an AOC without the benefit of hexavalent chromium speciation data, should be eliminated as an AOC since it is not supported by the supplemental data.

Attachments:

Table 1 – Soil Analytical Results for P5LDA02 Area

Table 2 – Soil Analytical Results for P5RSA Area

Figure 1 - TCE in Soil Proximate to Sample P5LDA02

Figure 2 - Total and Hexavalent Chromium in Soil Proximate to P5RSA01 and P5RSA02

Attachment A - Soil Boring Logs

Attachment B - Analytical Laboratory Reports

Additional Soil Investigation - Building 5 Area
Former Bishop Tube Property

TABLES

1. Soil Analytical Results for P5LDA02 Area
2. Soil Analytical Results for P5RSA Area

Table 1. Soil Analytical Results for P5LDA02 Area. Bishop Tube Project Team; East Whiteland, Pennsylvania.

Sample ID	PADEP			P5LDA02	P5LDA02	P5LDA02R	P5LDA02-E	P5LDA02-N	P5LDA02-W	P5LDA02-S	P5LDA02-S	P5LDA02-S-1	P5LDA02-SE	P5LDA02-SW
Sample Depth (ft bgs)	MSCs			6	6	9.5 - 10	6 - 6.5	6 - 6.5	6 - 6.5	6 - 6.5	9.5 - 10	6 - 6.5	6 - 6.5	6 - 6.5
Lab Sample ID	RUA	RDC	NRDC	3	JC77880-3	L2048777-08	L2049324-03	L2048777-03	L2048777-11	L2048777-09	L2048777-10	L2048777-15	L2048777-17	L2048777-13
Sample Date	SGW	0-15'	2-15'	11/13/2018	11/13/2018	11/5/2020	11/6/2020	11/5/2020	11/5/2020	11/5/2020	11/5/2020	11/5/2020	11/5/2020	11/5/2020
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
1,1,1,2-Tetrachloroethane	18	60	340	0.0722 U	—	—	—	—	—	—	—	—	—	—
1,1,1-Trichloroethane	20	10000	10000	0.0722 U	0.00083 J	0.00068 U	0.00068 U	0.00065 U	0.00075 U	0.00033 J	0.00064 U	0.05	0.00081 U	0.00087 U
1,1,2,2,-Tetrachloroethane	0.08	7.7	44	0.0722 U	0.0027 U	0.00068 U	0.00068 U	0.00065 U	0.00075 U	0.034 U	0.00064 U	0.044 U	0.00081 U	0.00087 U
1,1,2-Trichloro-1,2,2-trifluoroethane	10000	10000	10000	—	0.0068 U	0.0055 U	0.0054 U	0.0052 U	0.006 U	0.27 U	0.0051 U	0.12 J	0.0065 U	0.007 U
1,1,2-Trichloroethane	0.5	4	18	0.0722 U	0.0015 J	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.067 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
1,1,-Dichloroethene	0.7	3800	10000	0.0722 U	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
1,1-Dichloroethane	3.1	280	1600	0.0722 U	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
1,1-Dichloropropene	NS	NS	NS	0.0722 U	—	—	—	—	—	—	—	—	—	—
1,2,3-Trichlorobenzene	NS	NS	NS	0.0722 U	0.0068 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.13 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
1,2,3-Trichloropropane	4	0.14	28	0.0722 U	—	—	—	—	—	—	—	—	—	—
1,2,4-Trichlorobenzene	27	640	10000	0.0722 U	0.0068 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.13 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
1,2,4-Trimethylbenzene	8.4	130	640	0.0722 U	—	—	—	—	—	—	—	—	—	—
1,2-Dibromo-3-chloropropane	0.02	0.029	0.43	0.0722 U'	0.0027 U	0.0041 U	0.0041 U	0.0039 U	0.0045 U	0.2 U'	0.0038 U	0.26 U'	0.0049 U	0.0052 U
1,2-Dibromoethane	0.005	0.74	4.3	0.0722 U'	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.067 U'	0.0013 U	0.088 U'	0.0016 U	0.0017 U
1,2-Dichlorobenzene	60	3800	10000	0.0722 U	0.0014 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.13 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
1,2-Dichloroethane	0.5	17	98	0.0722 U	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
1,2-Dichloroethene, Total	NS	NS	NS	—	—	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.00033 J	0.0013 U	0.088 U	0.0016 U	0.0017 U
1,2-Dichloropropane	0.5	45	260	0.0722 U	0.0027 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.067 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
1,3,5-Trimethylbenzene	74	2200	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
1,3-Dichlorobenzene	61	10000	10000	0.0722 U	0.0014 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.0034 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
1,3-Dichloropropane	NS	NS	NS	0.0722 U	—	—	—	—	—	—	—	—	—	—
1,3-Dichloropropene, Total	0.73	110	640	—	—	0.00068 U	0.00068 U	0.00065 U	0.00075 U	0.00084 U	0.00064 U	0.044 U	0.00081 U	0.00087 U
1,4-Dichlorobenzene	10	40	230	0.0722 U	0.0014 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.0034 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
1,4-Dioxane	0.64	58	330	—	0.17 U	0.11 U	0.11 U	0.1 U	0.12 U	5.4 U'	0.1 U	7 U'	0.13 U	0.14 U
2,2-Dichloropropane	NS	NS	NS	0.0722 U	—	—	—	—	—	—	—	—	—	—
2-Butanone	400	10000	10000	0.361 U	0.014 U	0.014 U	0.014 U	0.013 U	0.015 U	0.017 U	0.013 U	0.88 U	0.016 U	0.017 U
2-Hexanone	6.3	570	2800	0.361 U	0.0068 U	0.014 U	0.014 U	0.013 U	0.015 U	0.017 U	0.013 U	0.88 U	0.016 U	0.017 U
4-Isopropyltoluene	NS	NS	NS	0.0722 U	—	—	—	—	—	—	—	—	—	—
4-Methyl-2-Pentanone	330	10000	10000	0.361 U	0.0068 U	0.014 U	0.014 U	0.013 U	0.015 U	0.017 U	0.013 U	0.88 U	0.016 U	0.017 U
Acetone	3800	10000	10000	0.361 U	0.014 U	0.034 U	0.014 J	0.032 U	0.015 J	0.67 U	0.032 U	0.88 U	0.04 U	0.044 U
Benzene	0.5	57	330	0.0722 U	0.00068 U	0.00068 U	0.00068 U	0.00065 U	0.00075 U	0.00084 U	0.00064 U	0.044 U	0.00081 U	0.00087 U
Bromobenzene	NS	NS	NS	0.0722 U	—	—	—	—	—	—	—	—	—	—
Bromochloromethane	9	770	3600	0.0722 U	0.0068 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.0034 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
Bromodichloromethane	8	12	69	0.0722 U	0.0027 U	0.00068 U	0.00068 U	0.00065 U	0.00075 U	0.00084 U	0.00064 U	0.044 U	0.00081 U	0.00087 U
Bromoform	8	410	2300	0.0722 U	0.0068 U	0.0055 U	0.0054 U	0.0052 U	0.006 U	0.0067 U	0.0051 U	0.35 U	0.0065 U	0.007 U
Bromomethane	1	96	460	0.0722 U	0.0068 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.0034 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
Carbon disulfide	150	10000	10000	0.0722 U	0.0027 U	0.014 U	0.014 U	0.013 U	0.015 U	0.67 U	0.013 U	0.88 U	0.016 U	0.017 U
Carbon tetrachloride	0.5	74	430	0.0722 U	0.0027 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
Chlorobenzene	10	960	4600	0.144 U	0.0027 U	0.00068 U	0.00068 U	0.00065 U	0.00075 U	0.00084 U	0.00064 U	0.044 U	0.00081 U	0.00087 U
Chloroethane	25	6400	10000	0.0722 U	0.0068 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.0034 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
Chloroform	8	19	110	0.0722 U	0.0014 J	0.002 U	0.002 U	0.0019 U	0.0022 U	0.00072 J	0.0019 U	0.13 U	0.0024 U	0.0026 U
Chloromethane	3	250	1400	0.0722 U	0.0068 U	0.0055 U	0.0054 U	0.0052 U	0.006 U	0.0067 U	0.0051 U	0.35 U	0.0065 U	0.007 U
cis-1,2-Dichloroethene	7	440	10000	0.0722 U	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.00033 J	0.0013 U	0.088 U	0.0016 U	0.0017 U
cis-1,3-Dichloropropene	NS	NS	NS	0.0722 U	0.0027 U	0.00068 U	0.00068 U	0.00065 U	0.00075 U	0.00084 U	0.00064 U	0.044 U	0.00081 U	0.00087 U
Cyclohexane	1700	10000	10000	—	0.0027 U	0.014 U	0.014 U	0.013 U	0.015 U	0.017 U	0.013 U	0.88 U	0.016 U	0.017 U
Dibromochloromethane	8	17	95	0.0722 U	0.0027 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
Dibromomethane	0.84	77	370	0.0722 U	—	—	—	—	—	—	—	—	—	—
Dichlorodifluoromethane	100	1900	9100	0.0722 U	0.0068 U	0.014 U	0.014 U	0.013 U	0.015 U	0.67 U	0.013 U	0.88 U	0.016 U	0.017 U

Table 1. Soil Analytical Results for P5LDA02 Area. Bishop Tube Project Team; East Whiteland, Pennsylvania.

Sample ID	PADEP MSCs			P5LDA02	P5LDA02	P5LDA02R	P5LDA02-E	P5LDA02-N	P5LDA02-W	P5LDA02-S	P5LDA02-S	P5LDA02-S-1	P5LDA02-SE	P5LDA02-SW
Sample Depth (ft bgs)				6	6	9.5 - 10	6 - 6.5	6 - 6.5	6 - 6.5	6 - 6.5	9.5 - 10	6 - 6.5	6 - 6.5	6 - 6.5
Lab Sample ID	RUA	RDC	NRDC	3	JC77880-3	L2048777-08	L2049324-03	L2048777-03	L2048777-11	L2048777-09	L2048777-10	L2048777-15	L2048777-17	L2048777-13
Sample Date	SGW	0-15'	2-15'	11/13/2018	11/13/2018	11/5/2020	11/6/2020	11/5/2020	11/5/2020	11/5/2020	11/5/2020	11/5/2020	11/5/2020	11/5/2020
Ethylbenzene	70	180	1000	0.0722 U	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
Hexachlorobutadiene	11	220	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
Isopropylbenzene	600	7700	10000	0.0722 U	0.0027 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.067 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
Methyl Acetate	4200	10000	10000	—	0.0068 U	0.0055 U	0.0066	0.0052 U	0.006 U	0.0067 U	0.0051 U	0.35 U	0.0065 U	0.007 U
Methyl cyclohexane	NS	NS	NS	—	0.0027 U	0.0055 U	0.0054 U	0.0052 U	0.006 U	0.0067 U	0.0051 U	0.27 J	0.0065 U	0.007 U
Methyl tertiary butyl ether (MTBE)	2	1700	9900	0.0722 U	0.0014 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.13 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
Methylene chloride	0.5	1300	10000	0.0722 U	0.0068 U	0.0068 U	0.0068 U	0.0065 U	0.0075 U	0.34 U	0.0064 U	0.44 U	0.0081 U	0.0087 U
Naphthalene	25	160	190000	0.0722 U	—	—	—	—	—	—	—	—	—	—
n-Butylbenzene	1300	10000	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
n-Propylbenzene	400	10000	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
o-Chlorotoluene	20	4400	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
p-Chlorotoluene	10	4400	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
PCTFB	NS	NS	NS	0.0722 U	—	—	—	—	—	—	—	—	—	—
Sec-Butylbenzene	980	10000	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
Styrene	24	10000	10000	0.0722 U	0.0027 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
t-Butyl alcohol	NS	NS	NS	0.722 U	—	—	—	—	—	—	—	—	—	—
tert-Butyl Acetate	0.5	100	100	0.361 U	—	—	—	—	—	—	—	—	—	—
Tert-Butylbenzene	760	10000	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
Tetrachloroethene	0.5	770	3600	0.0932	0.0021 J	0.00068 U	0.00068 U	0.00065 U	0.00031 J	0.00065 J	0.00064 U	0.096	0.00081 U	0.00087 U
Tetrahydrofuran	2.6	240	1400	0.144 U	—	—	—	—	—	—	—	—	—	—
Toluene	100	10000	10000	0.0722 U	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
trans-1,2-Dichloroethene	10	1100	5500	0.0722 U	0.0014 U	0.002 U	0.002 U	0.0019 U	0.0022 U	0.0025 U	0.0019 U	0.13 U	0.0024 U	0.0026 U
trans-1,3-Dichloropropene	NS	NS	NS	0.0722 U	0.0027 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
Trichloroethene	0.5	38	180	21 †	18.9 †	0.058	0.00054 J	0.00028 J	0.21	4.3 †	0.00064 U	29 †	0.013	0.066
Trichlorofluoromethane	200	10000	10000	0.0722 U	0.0068 U	0.0055 U	0.0054 U	0.0052 U	0.006 U	0.0067 U	0.0051 U	0.35 U	0.0065 U	0.007 U
Vinyl Acetate	42	3900	10000	0.0722 U	—	—	—	—	—	—	—	—	—	—
Vinyl chloride	0.2	0.9	280	0.0722 U	0.0027 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.067 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
Xylene (m&p)	NS	NS	NS	0.144 U	0.0014 U	0.0027 U	0.0027 U	0.0026 U	0.003 U	0.0034 U	0.0026 U	0.18 U	0.0032 U	0.0035 U
Xylene (o)	NS	NS	NS	0.0722 U	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U
Xylenes (Total)	1000	1900	9100	ND	0.0014 U	0.0014 U	0.0014 U	0.0013 U	0.0015 U	0.0017 U	0.0013 U	0.088 U	0.0016 U	0.0017 U

Notes:

PADEP = Pennsylvania Department of Environmental Protection.

MSCs = Medium Specific Concentrations.

SGW = Soil-to-Groundwater.

RUA = Residential Used Aquifer.

RDC = Residential Direct Contact.

NRDC = Residential Direct Contact.

ft bgs = Feet below ground surface.

mg/kg = Milligrams per kilogram.

— = Sample not analyzed.

ND = Not detected.

NS = No standard currently established.

U = Not detected above laboratory detection limit.

U' = Laboratory reporting limit exceeds the applicable regulatory standard or criteria being utilized.

J = Result below the reporting limit (estimated value).

Bold = Detected concentration.

Boxed concentrations exceed the PADEP RDC 0-15 ft bgs Soil MSCs.

+ = Concentrations exceed the PADEP NRDC 2-15 ft bgs Soil MSCs.

† = Concentrations exceed the PADEP RUA SGW MSCs.

Table 2. Soil Analytical Results for P5RSA Area. Bishop Tube Project Team; East Whiteland, Pennsylvania.

Sample ID	PADEP			P5RSA01	P5RSA01	P5RSA01R	P5RSA02	P5RSA02	P5RSA02R
Sample Depth (ft bgs)	MSCs			1	1	1 - 1.5	0.5	0.5	1 - 1.5
Lab Sample ID	RUA	RDC	NRDC	59/60/61	JC79900-1/ JC79900-2	L2049324-07	62/63/64	JC79900-3/ JC79900-4	L2049324-08
Sample Date	SGW	0-15'	0-2'	12/17/2018	12/17/2018	11/6/2020	12/17/2018	12/17/2018	11/6/2020
METALS (mg/kg)									
Chromium	190000	190000	190000	387	202	24.7	436	410	34.2
Chromium, Hexavalent	190	4	220	—	—	0.99 U	—	—	0.979 U

Notes:

PADEP = Pennsylvania Department of Environmental Protection.

MSCs = Medium Specific Concentrations.

SGW = Soil-to-Groundwater.

RUA = Residential Used Aquifer.

RDC = Residential Direct Contact.

NRDC = Residential Direct Contact.

ft bgs = Feet below ground surface.

mg/kg = Milligrams per kilogram.

Boxed concentrations exceed the PADEP RDC 0-15 ft bgs Soil MSCs.

+ = Concentrations exceed the PADEP NRDC 0-2 ft bgs Soil MSCs.

† = Concentrations exceed the PADEP RUA SGW MSCs.

— = Sample not analyzed.

U = Not detected above laboratory detection limit.

U' = Laboratory reporting limit exceeds the applicable regulatory standard or criteria being utilized.

Bold = Detected concentration.

Additional Soil Investigation - Building 5 Area
Former Bishop Tube Property

FIGURES

1. TCE in Soil Proximate to Sample P5LDA02
2. Total and Hexavalent Chromium in Soil Proximate to P5RSA01 and P5RSA02



LEGEND

Trichloroethene Concentration in Soil (mg/kg)

●	ND - 0.5 (Residential Used Aquifer Soil to Groundwater MSC)
●	0.5 - 38 (Residential Direct Contact 0-15' MSC)
●	38 - 160 (Non-Residential Direct Contact 0-2' MSC)
●	160 - 180 (Non-Residential Direct Contact 2-15' MSC)
●	180+
○	Not Analyzed for Trichloroethene

Notes:

1. Service Layer Credits: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Layer Access Date: 12/2/2020.
2. The dot depicted at borings with multiple soil samples represents the highest concentration identified in the soil boring at that location.
3. mg/kg = milligram per kilogram., PADEP = Pennsylvania Department of Environmental Protection.
RUA = Residential Used Aquifer., SGW = Soil to groundwater., MSC = Medium Specific Concentration.
4. U = Not detected above laboratory detection limit., J = Result below the reporting limit (estimated value), ND = Not detected.
5. The dot depicted at locations where borings coincide represents the most recent laboratory analytical result. Where laboratory analytical results exist, mobile lab data is not depicted.
6. Results are compared to PADEP Soil MSCs.
7. Select soil boring locations are based on historical documents available to Roux Associates, Inc. Boring locations are therefore approximate.
8. Soil data are not contemporaneous.
9. **BOLD** = Detected concentration.
10. **RED** concentrations exceed the PADEP RUA SGW MSCs.

Title: **TCE IN SOIL PROXIMATE TO SAMPLE P5LDA02**

FORMER BISHOP TUBE FACILITY
CHESTER COUNTY, PENNSYLVANIA

Prepared for:
BISHOP TUBE PROJECT TEAM

Compiled by: S.S.P.R.	Date: 12/02/20	FIGURE 1
Prepared by: C.A.R.	Scale: AS SHOWN	
Project Mgr: J.A.K.	Project: 0539.0003J000	
File: F1(CP)		



G:\PROJECTS\080659 - SAUL LEWING - SX0003\PROJECT DATA\BASEGIBS\2020 ACTIVITIES\F1\CLTCE_RESULTS.MXD

G:\PROJECTS\0539 - SAUL LEWING - SX0003\PROJECT DATABASE\GIS\2020 ACTIVITIES\F1\CL\CHROMIUM_RESULTS.MXD



P5RSA01	DEP	Roux	Roux
	1	1	1 - 1.5
	12/17/2018	12/17/2018	11/6/2020
Chromium*	387	202	24.7
Chromium, Hexavalent	NA	NA	0.99 U

P5RSA02	DEP	Roux	Roux
	0.5	0.5	1 - 1.5
	12/17/2018	12/17/2018	11/6/2020
Chromium*	436	410	34.2
Chromium, Hexavalent	NA	NA	0.979 U

LEGEND

● Soil Sampling Location

PADEP MSCs	RUA SGW	RDC 0-15'	NRDC 0-2'
Chromium, Trivalent	190000	190000	190000
Chromium, Hexavalent	190	4	220

Sample ID	Sampler			Sample Depth (ft bgs)	Sample Date
	DEP	Roux	Roux		
P5RSA01	1	1	1 - 1.5		
	12/17/2018	12/17/2018	11/6/2020		
	Chromium*	387	202		
Chromium, Hexavalent	NA	NA	0.99 U	Concentration (mg/kg)	

Notes:

- Service Layer Credits: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Layer Access Date: 12/2/2020.
- PADEP = Pennsylvania Department of Environmental Protection.
- RDC = Residential Direct Contact., NRDC = Non-Residential Direct Contact., RUA = Residential Used Aquifer., SGW = Soil to groundwater., MSC = Medium Specific Concentration.
- All sample results are reported in milligrams per kilogram (mg/kg)
- U = Not detected above laboratory detection limit., NA = Not analyzed.
- Results are compared to PADEP Soil MSCs.
- ft bgs = feet below ground surface.
- * = Total Chromium results are compared to Trivalent Chromium MSCs based on November 6, 2020 hexavalent chromium speciation results.



Title:

TOTAL AND HEXAVALENT CHROMIUM IN SOIL PROXIMATE TO P5RSA01 AND P5RSA02

FORMER BISHOP TUBE FACILITY
CHESTER COUNTY, PENNSYLVANIA

Prepared for:

BISHOP TUBE PROJECT TEAM

ROUX	Compiled by: S.S.P.R.	Date: 12/02/20	FIGURE 2
	Prepared by: C.A.R.	Scale: AS SHOWN	
	Project Mgr: J.A.K.	Project: 0539.0003J000	
	File: F2(CP)		

Additional Soil Investigation - Building 5 Area
Former Bishop Tube Property

ATTACHMENTS

- A. Soil Boring Logs
- B. Analytical Laboratory Reports

Additional Soil Investigation - Building 5 Area
Former Bishop Tube Property

ATTACHMENT A

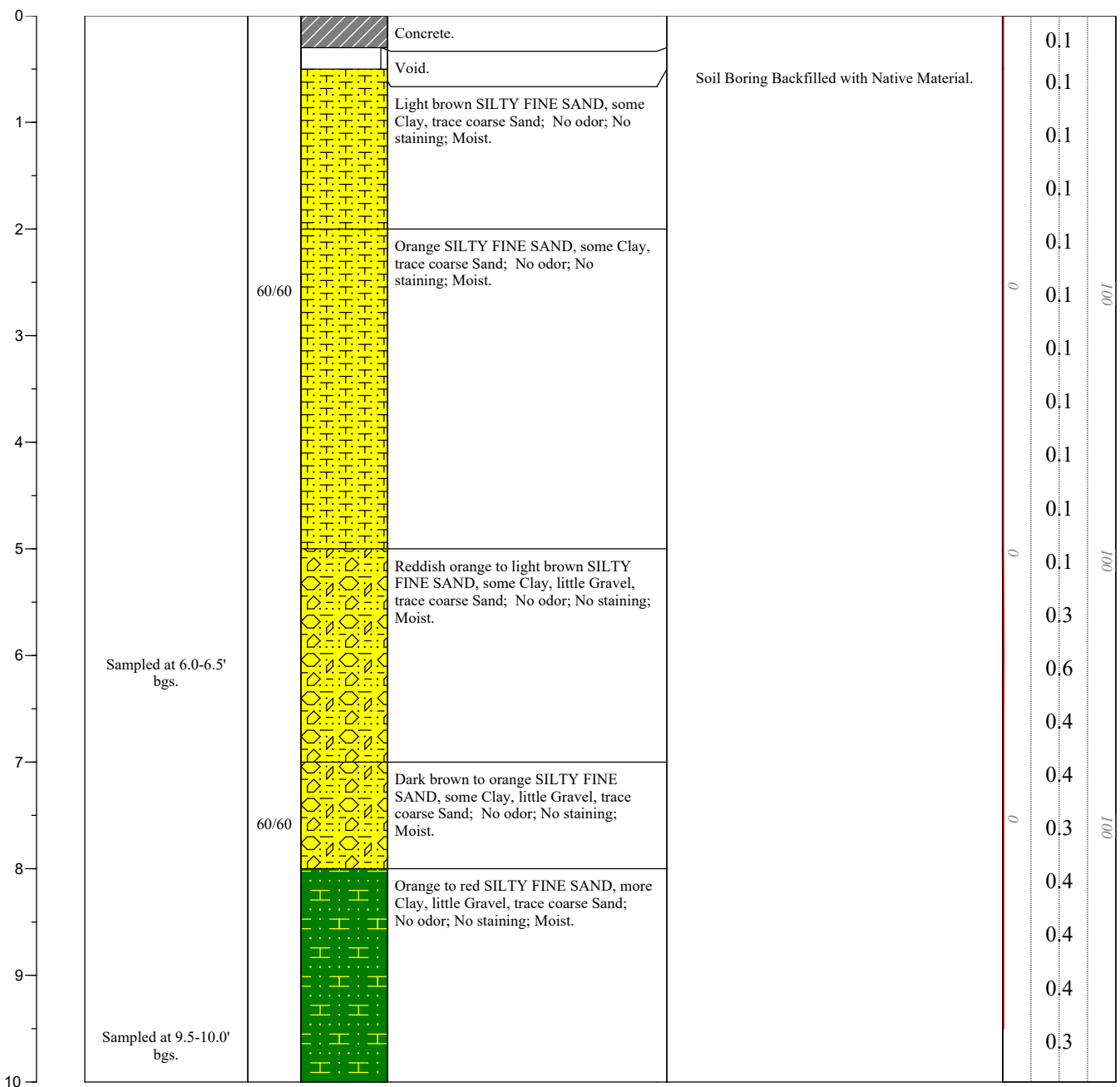
Soil Boring Logs



Log of Boring P5LDA02R

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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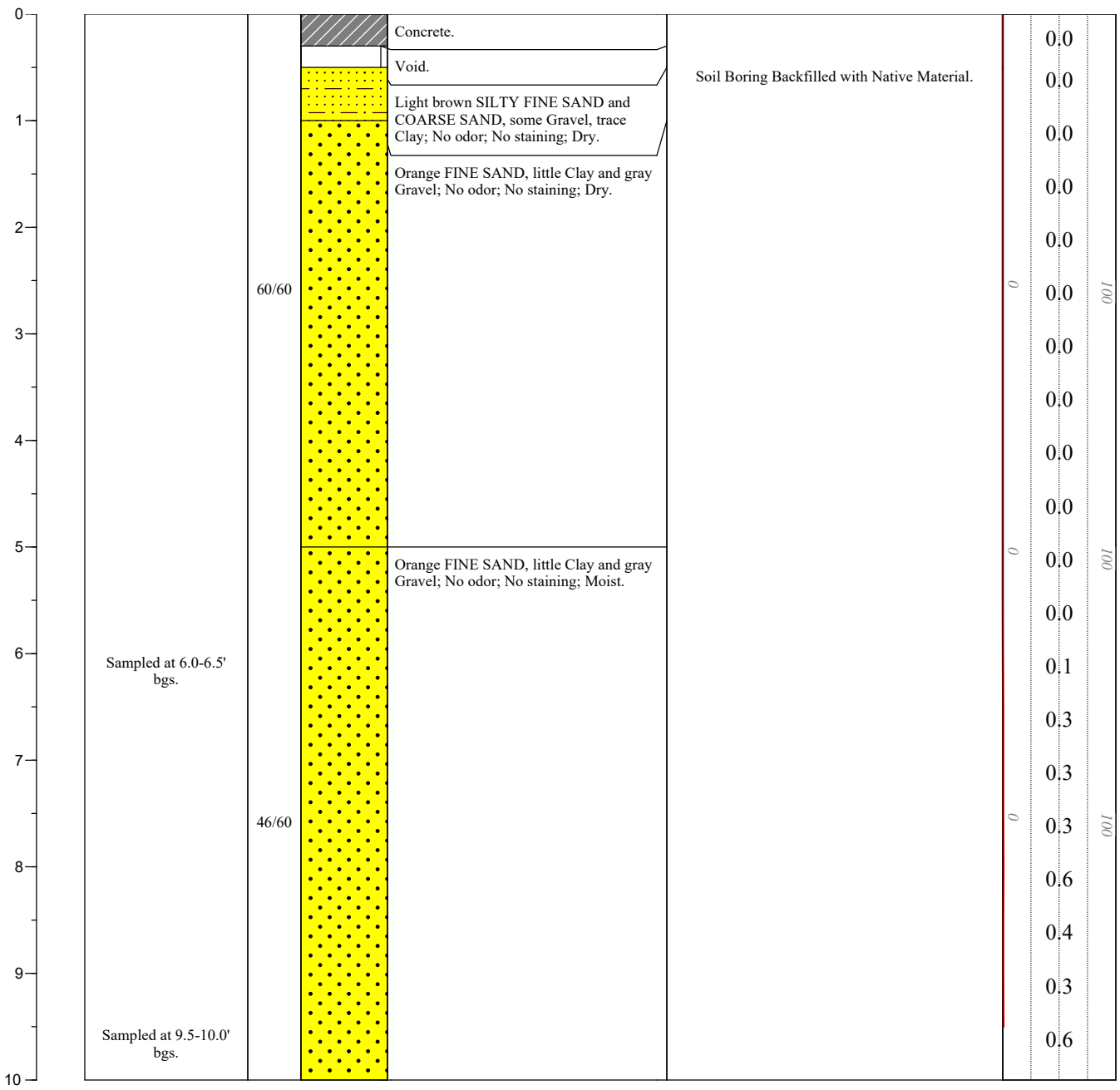




Log of Boring P5LDA02-E

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/6/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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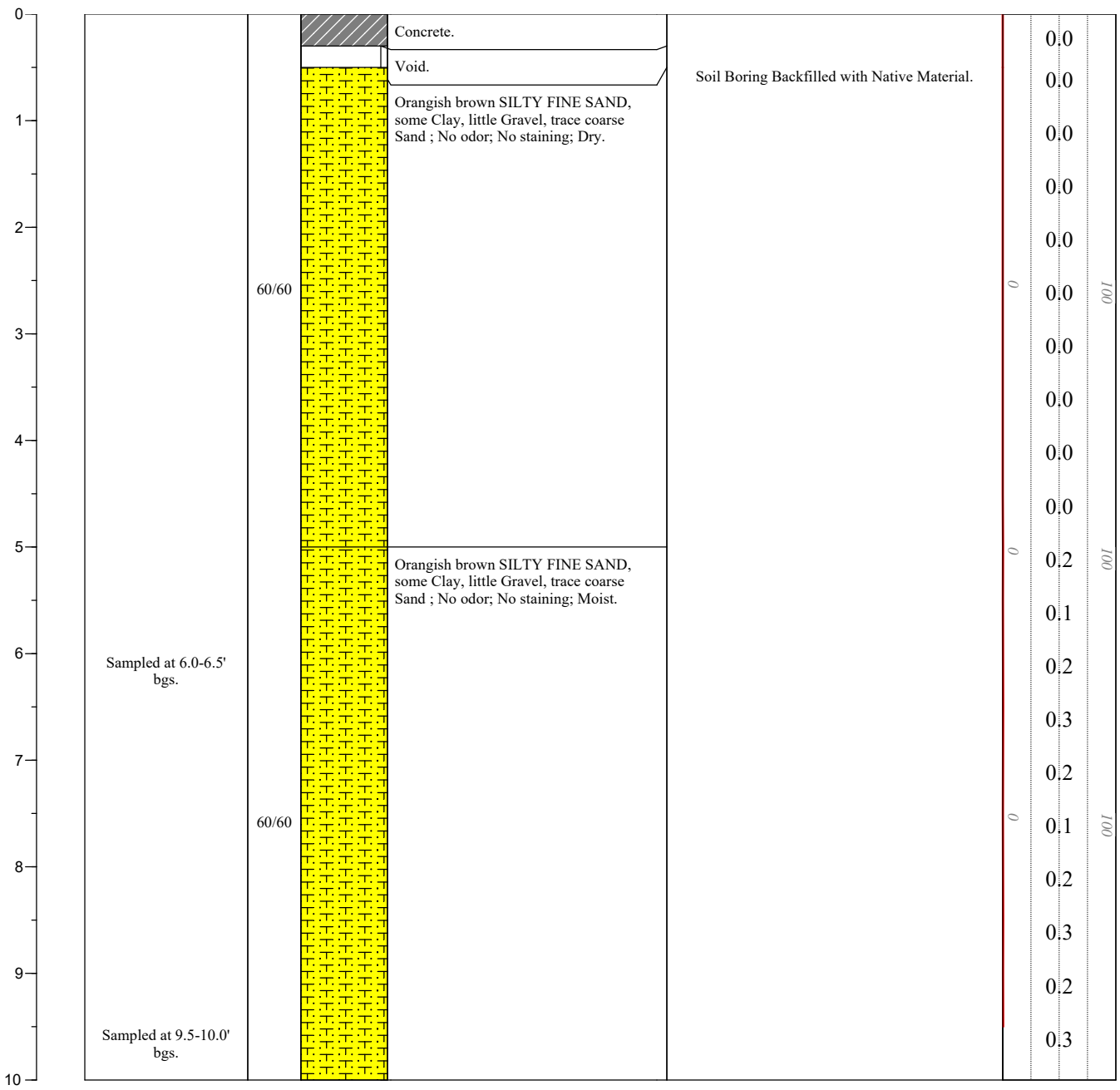




Log of Boring P5LDA02-E-1

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/6/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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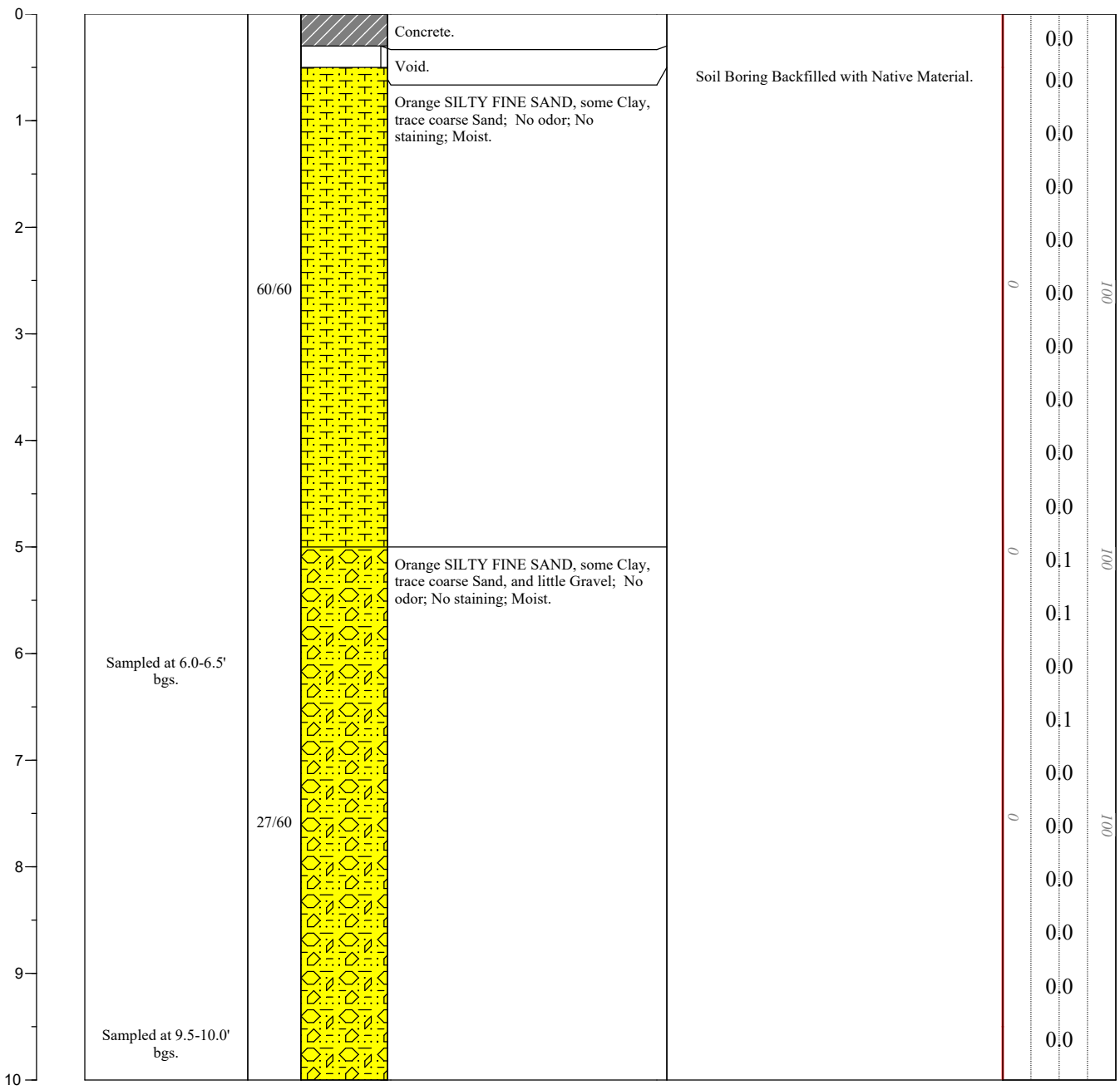




Log of Boring P5LDA02-N

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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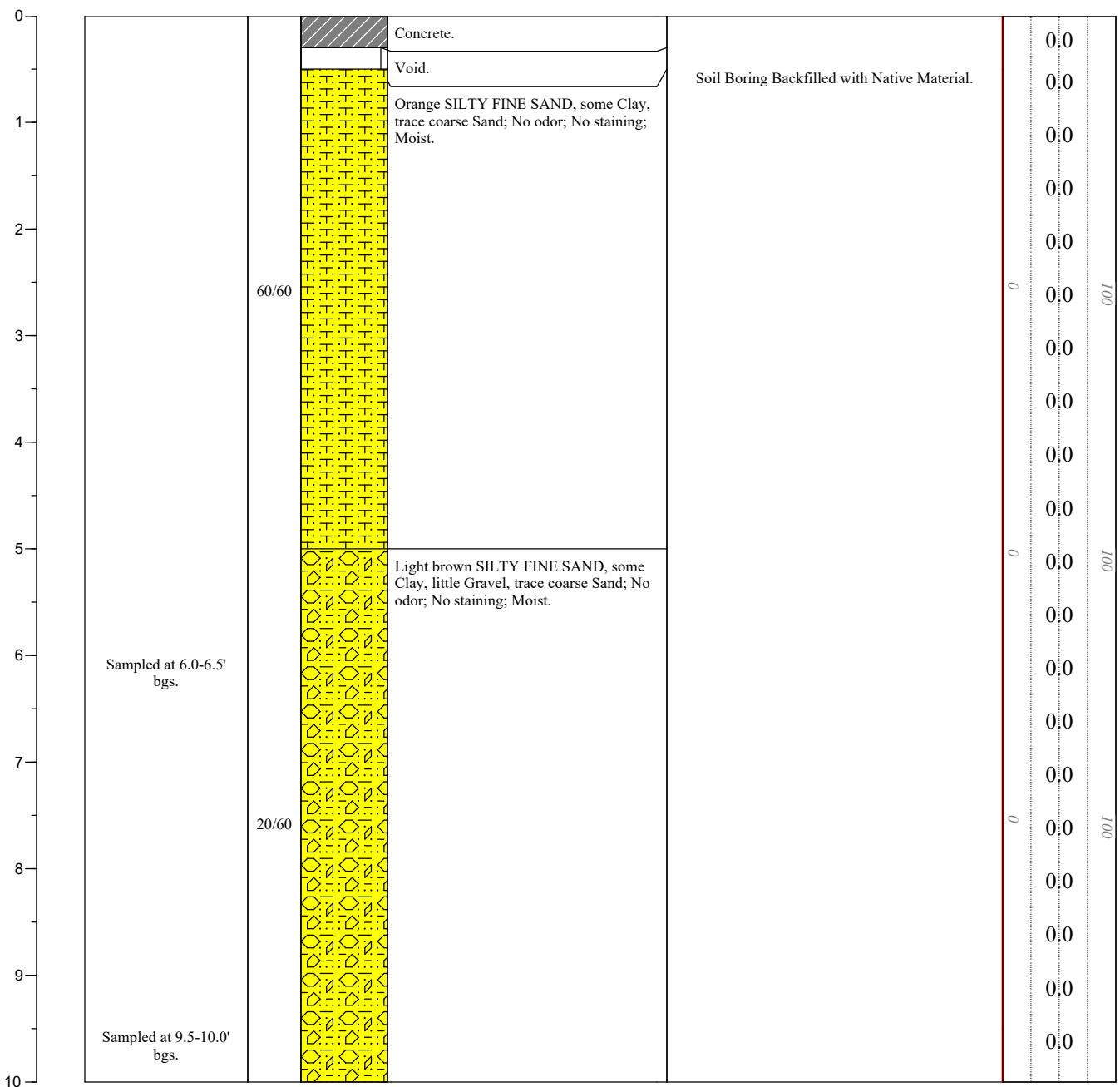




Log of Boring P5LDA02-NE

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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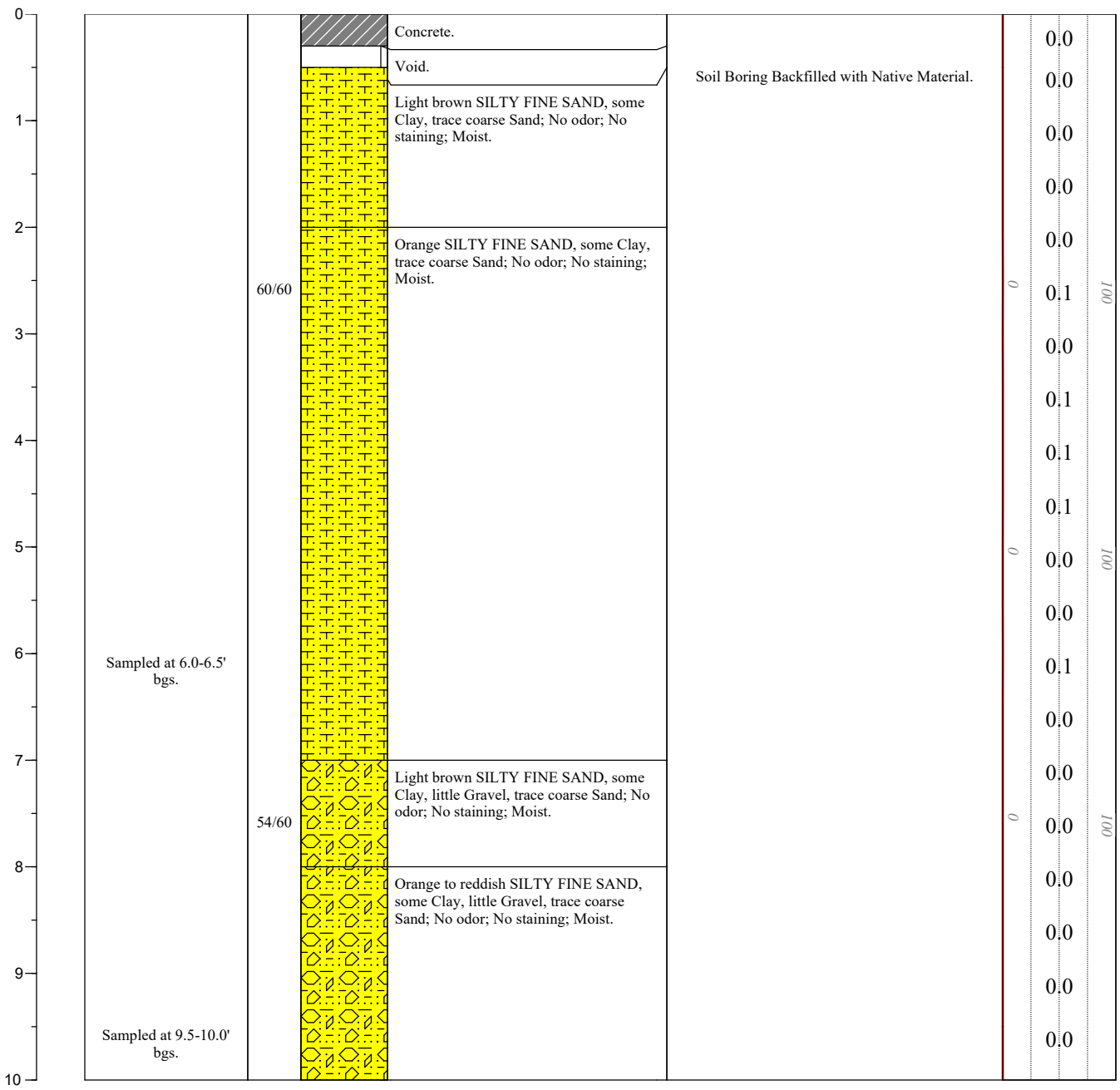




Log of Boring P5LDA02-NW

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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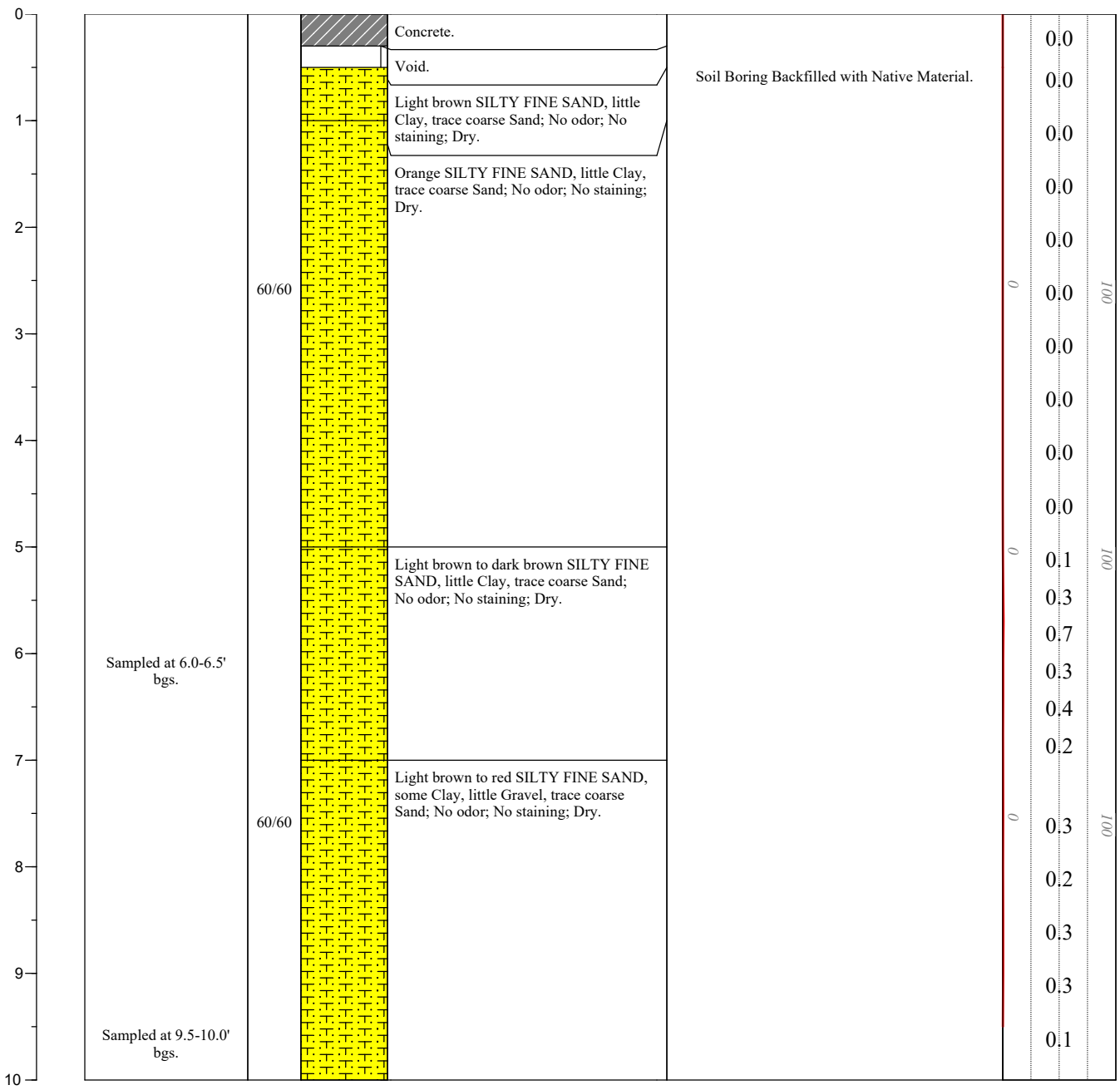




Log of Boring P5LDA02-S

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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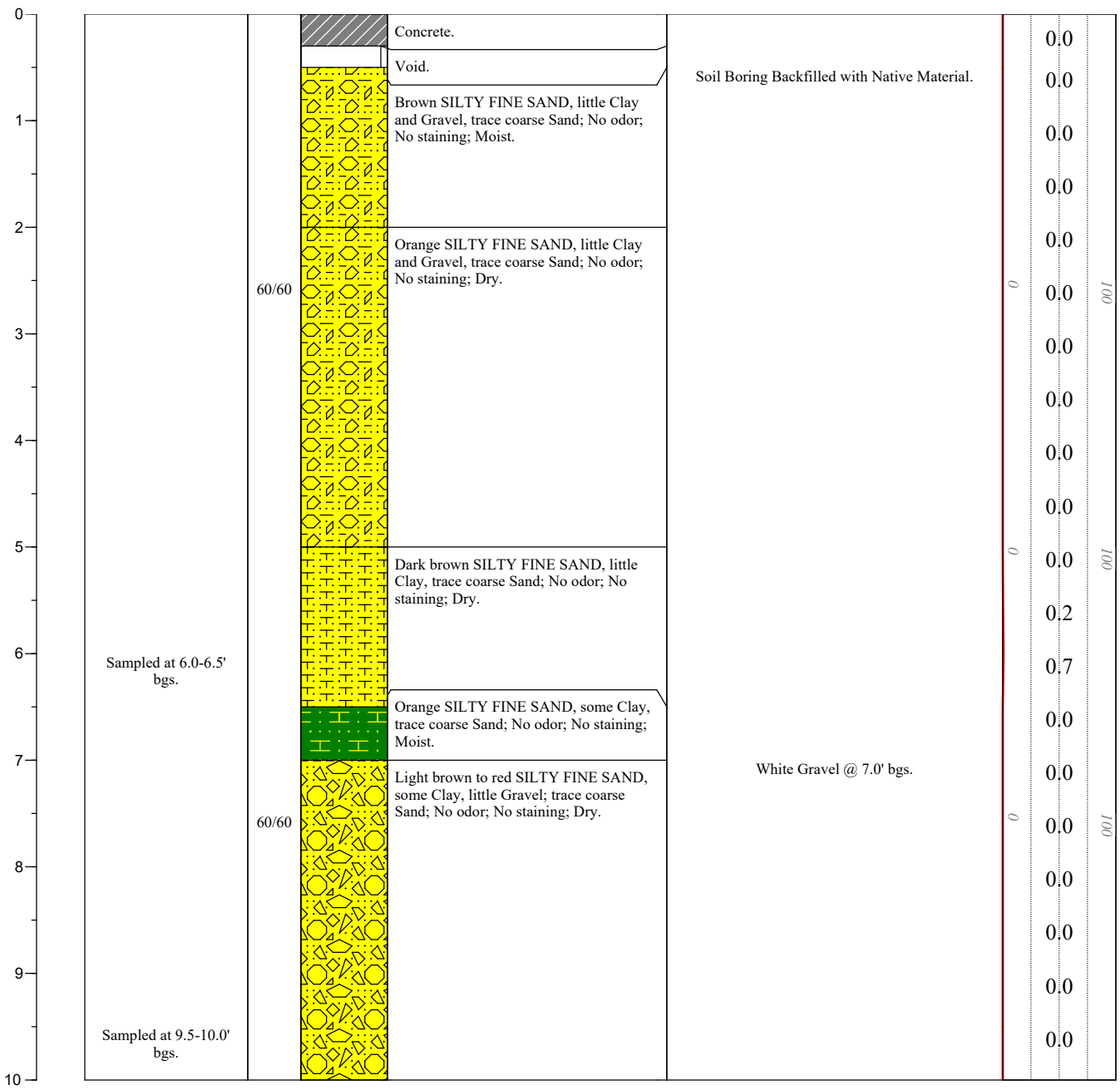




Log of Boring P5LDA02-S-1

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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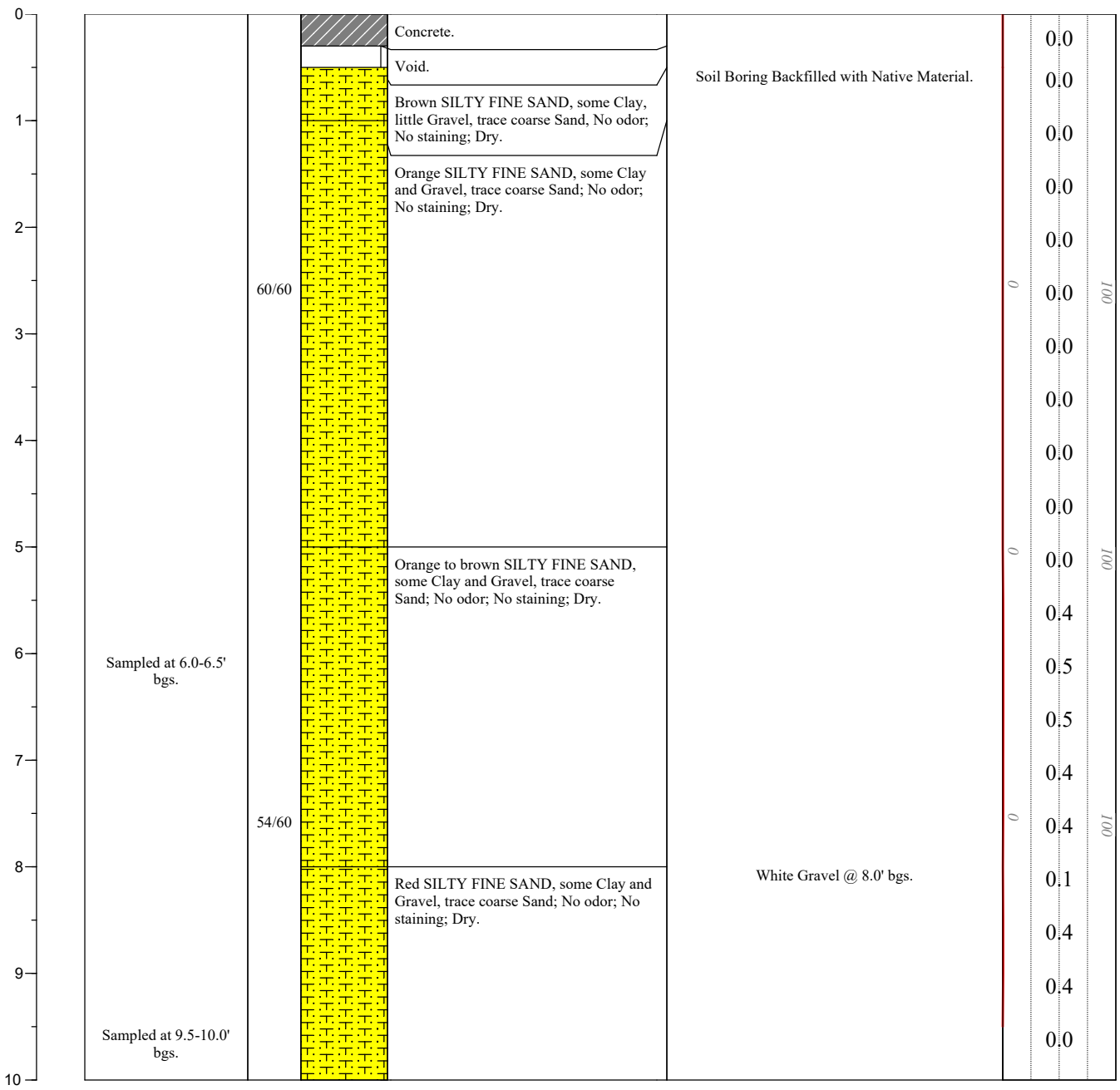




Log of Boring P5LDA02-SE

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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Soil Boring Backfilled with Native Material.

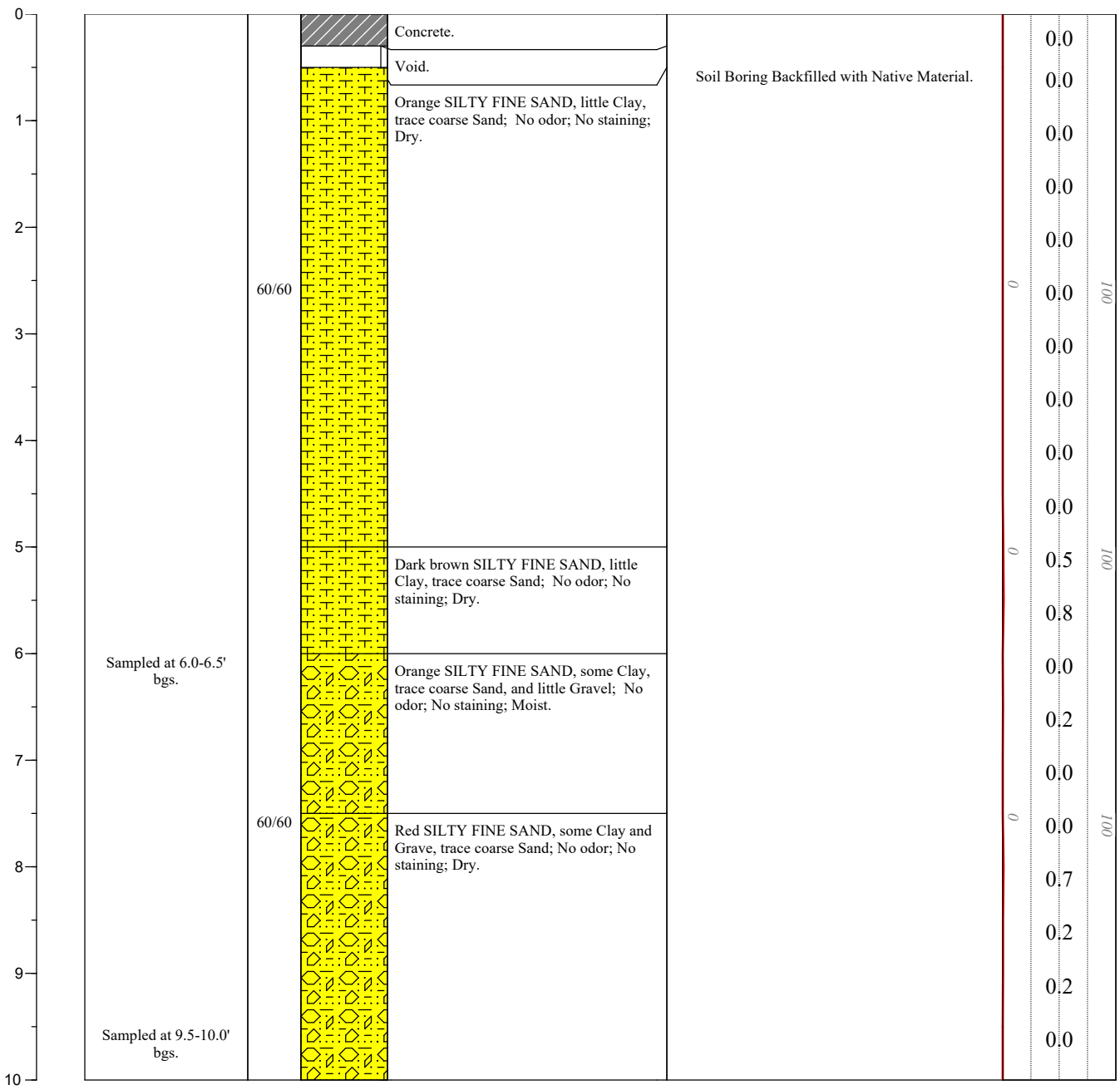
White Gravel @ 8.0' bgs.



Log of Boring P5LDA02-SW

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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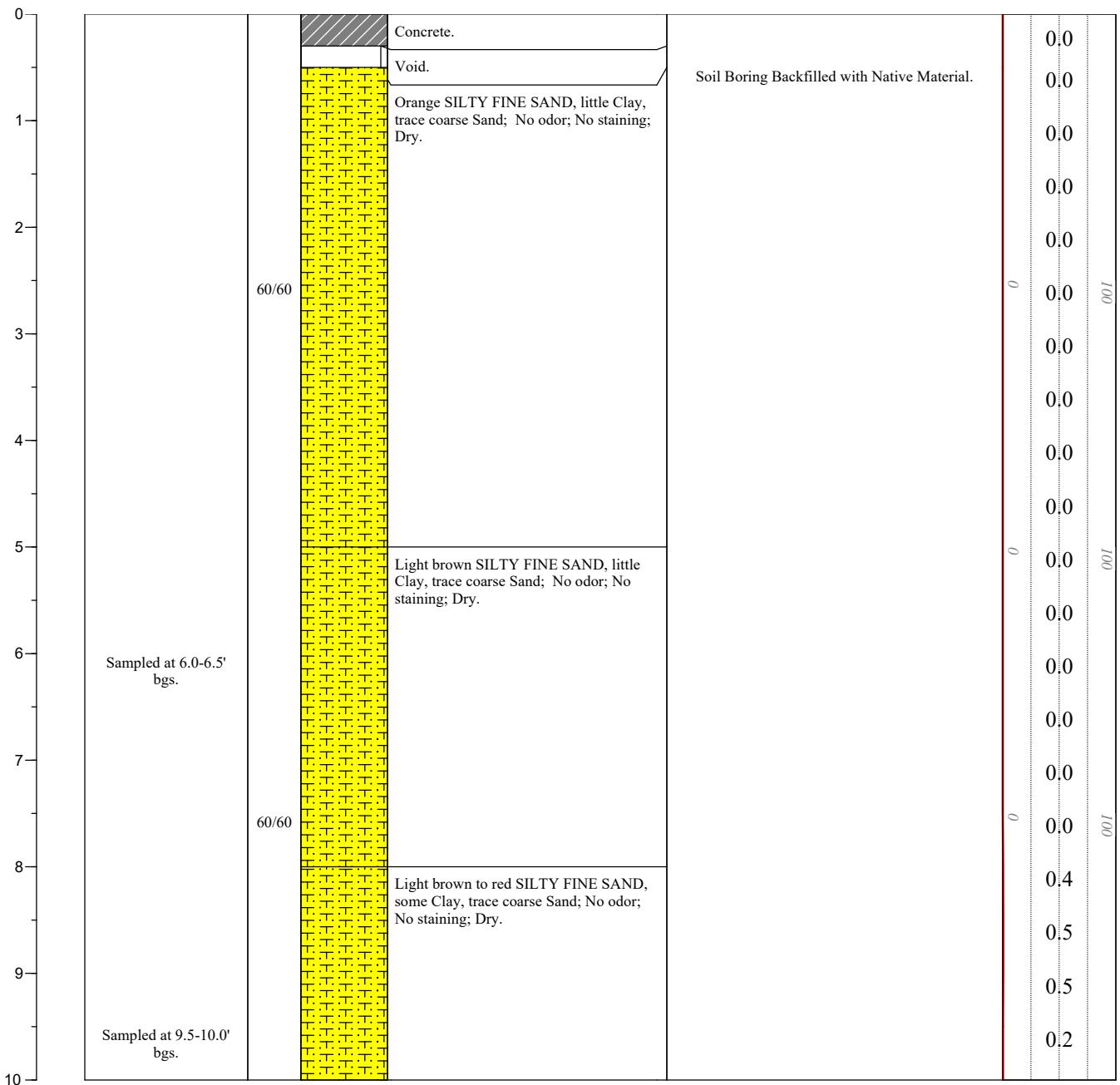




Log of Boring P5LDA02-W

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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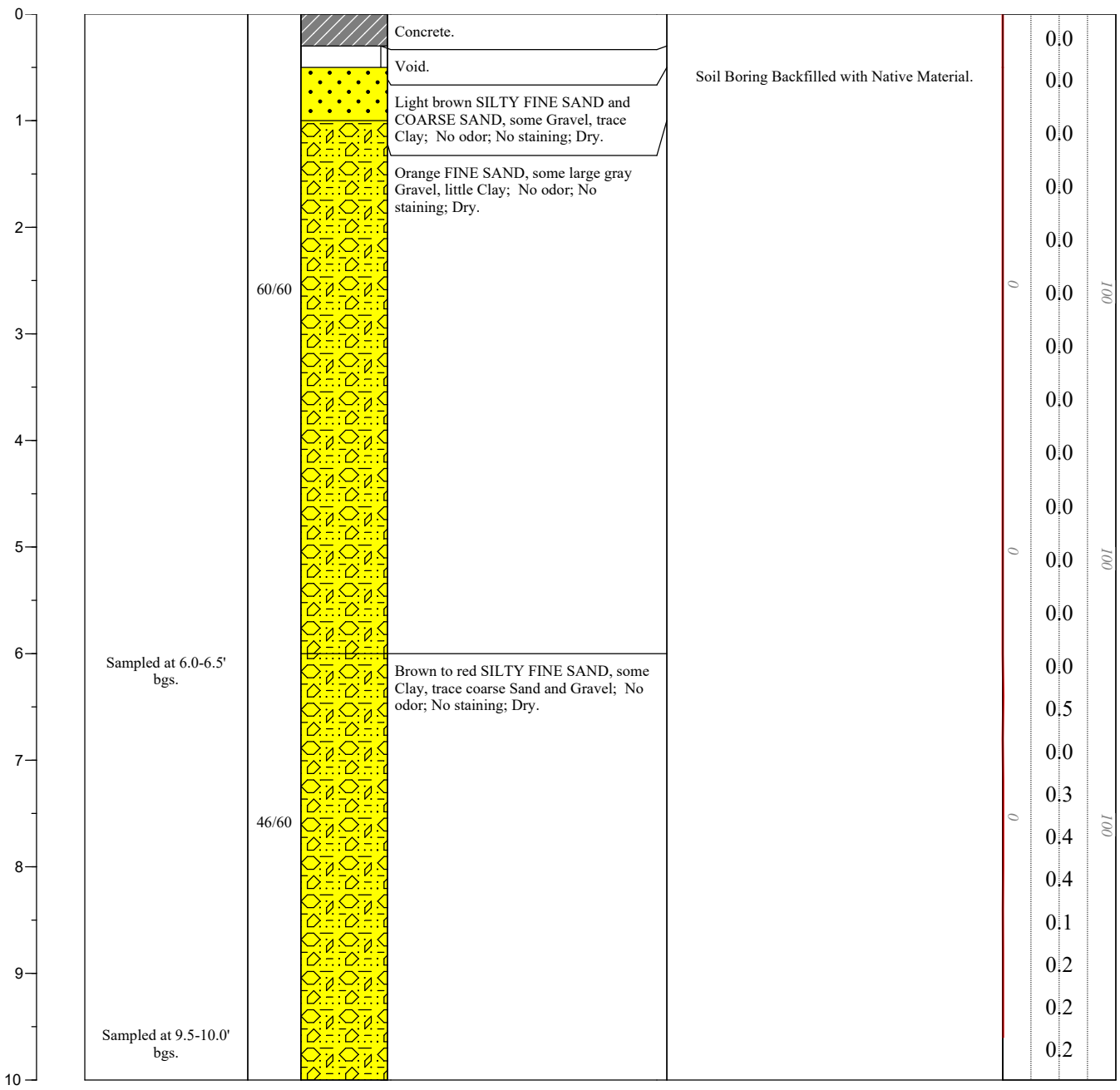




Log of Boring P5LDA02-W-1

Project:	Former Bishop Tube Property	Logged By:	Courtney Rempfer
Site Location:	East Whiteland Township, PA	Drilling Company:	Subsurface Environmental Technologies, LLC
Project Number:	0539.0003J000	Drilling Method:	Geoprobe
Project Manager:	Justin Kowalkoski	Date Completed:	11/5/2020
Date Started:	11/5/2020		

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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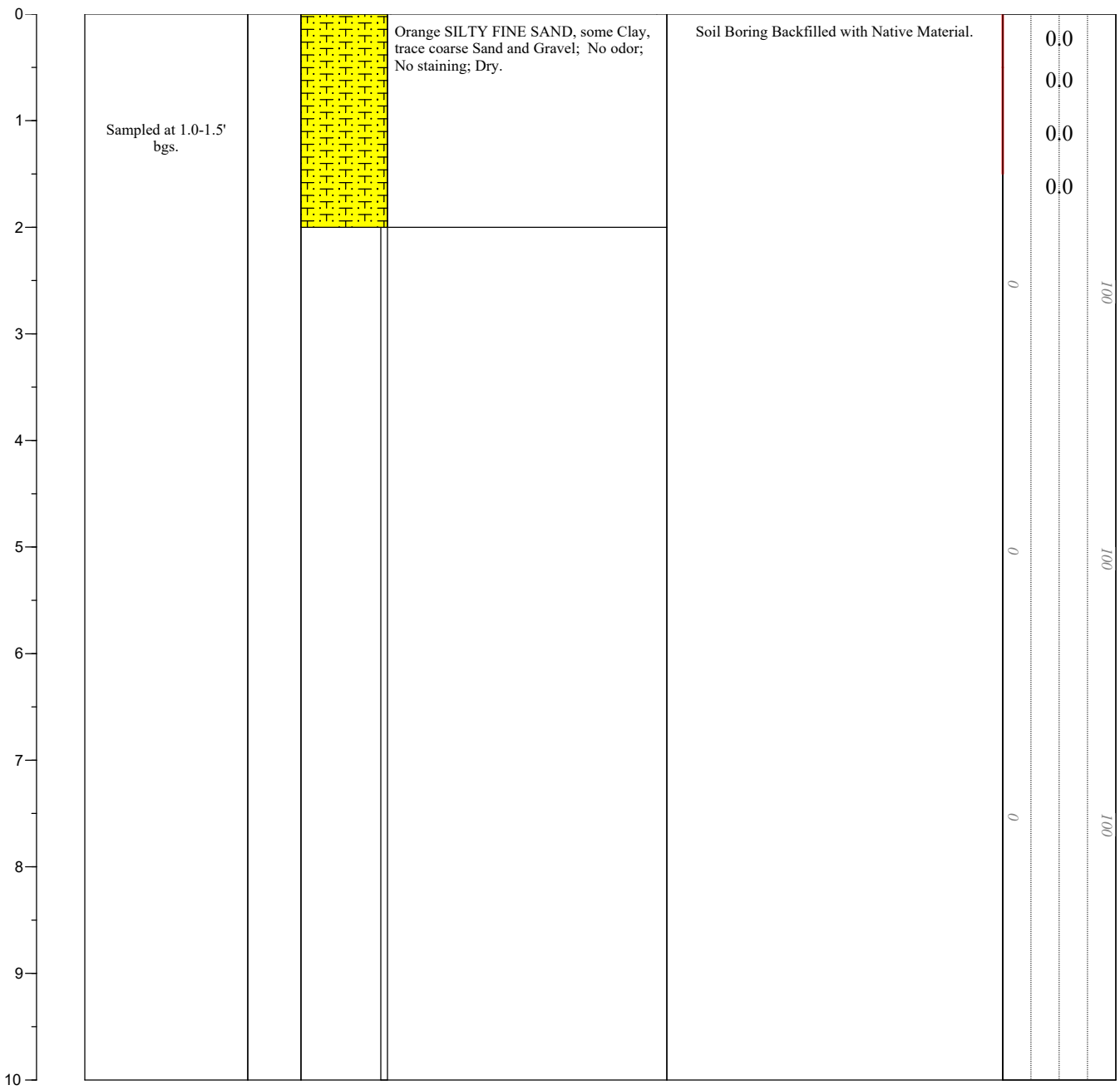




Log of Boring P5RSA01R

Project: Former Bishop Tube Property
Site Location: East Whiteland Township, PA
Project Number: 0539.0003J000
Project Manager: Justin Kowalkoski
Date Started: 11/6/2020
Logged By: Courtney Rempfer
Drilling Company: Subsurface Environmental Technologies, LLC
Drilling Method: Hand Auger
Date Completed: 11/6/2020

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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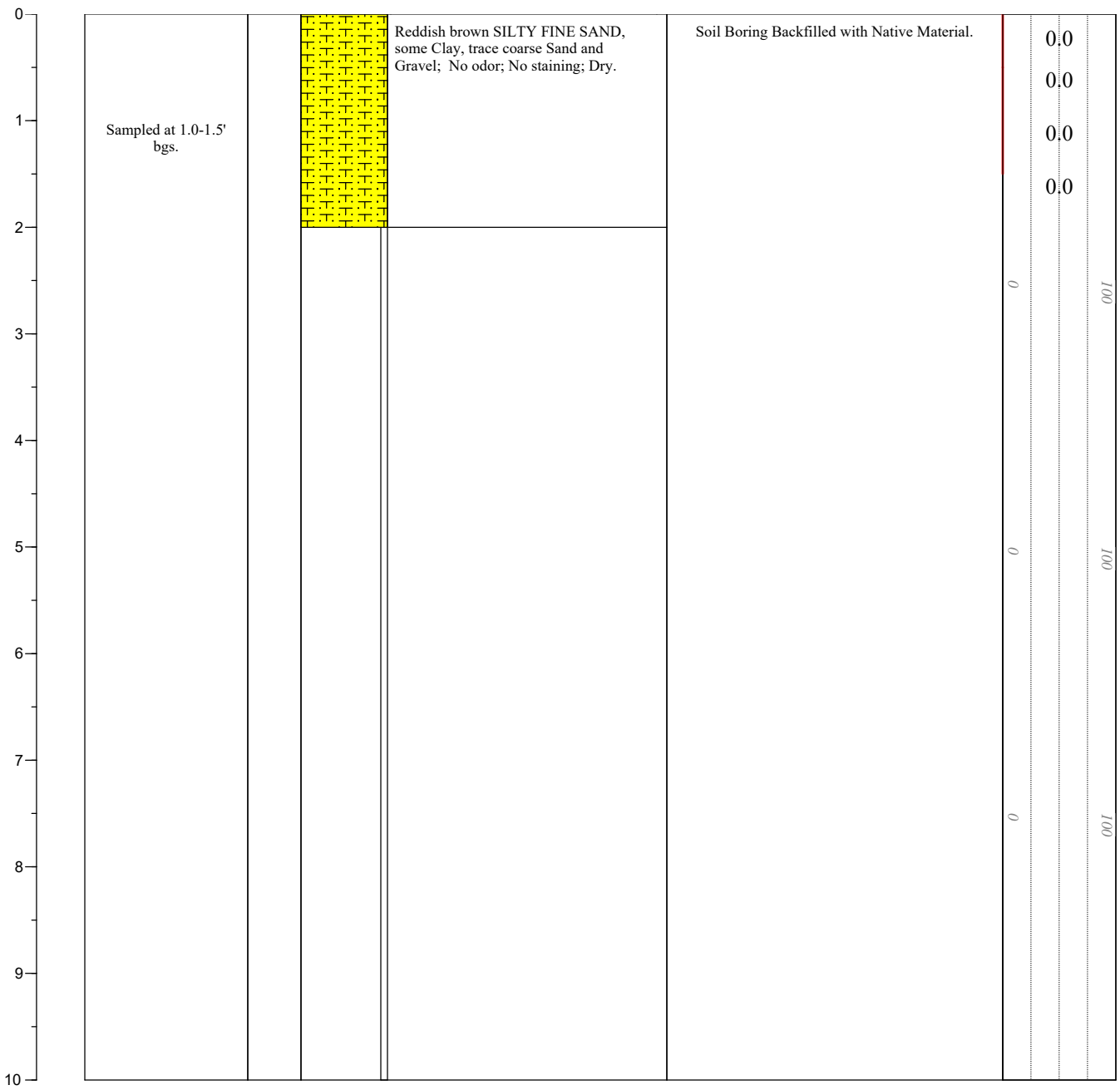




Log of Boring P5RSA02R

Project: Former Bishop Tube Property
Site Location: East Whiteland Township, PA
Project Number: 0539.0003J000
Project Manager: Justin Kowalkoski
Date Started: 11/6/2020
Logged By: Courtney Rempfer
Drilling Company: Subsurface Environmental Technologies, LLC
Drilling Method: Hand Auger
Date Completed: 11/6/2020

Depth (ft BGS)	Sample Interval (ft bgs)	Recovery (in)	Profile	Lithology	Remarks	PID (ppm)
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Additional Soil Investigation - Building 5 Area
Former Bishop Tube Property

ATTACHMENT B

Analytical Laboratory Reports



ANALYTICAL REPORT

Lab Number:	L2048777
Client:	Roux Associates 402 Heron Drive Logan Township, NJ 08085
ATTN:	Sara Redding
Phone:	(856) 423-8800
Project Name:	BISHOP TUBE
Project Number:	0539.0003J000
Report Date:	11/13/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2048777-01	P5LDA02-NW (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 09:55	11/05/20
L2048777-02	P5LDA02-NW (9.5-10)	SOIL	MALVERN, PA	11/05/20 10:05	11/05/20
L2048777-03	P5LDA02-N (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 10:20	11/05/20
L2048777-04	P5LDA02-N (9.5-10)	SOIL	MALVERN, PA	11/05/20 10:30	11/05/20
L2048777-05	P5LDA02-NE (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 10:45	11/05/20
L2048777-06	P5LDA02-NE (9.5-10)	SOIL	MALVERN, PA	11/05/20 10:55	11/05/20
L2048777-07	P5LDA02R (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 11:35	11/05/20
L2048777-08	P5LDA02R (9.5-10)	SOIL	MALVERN, PA	11/05/20 11:45	11/05/20
L2048777-09	P5LDA02-S (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 12:10	11/05/20
L2048777-10	P5LDA02-S (9.5-10)	SOIL	MALVERN, PA	11/05/20 12:20	11/05/20
L2048777-11	P5LDA02-W (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 12:35	11/05/20
L2048777-12	P5LDA02-W (9.5-10)	SOIL	MALVERN, PA	11/05/20 12:45	11/05/20
L2048777-13	P5LDA02-SW (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 13:00	11/05/20
L2048777-14	P5LDA02-SW (9.5-10)	SOIL	MALVERN, PA	11/05/20 13:10	11/05/20
L2048777-15	P5LDA02-S-1 (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 13:30	11/05/20
L2048777-16	P5LDA02-S-1 (9.5-10)	SOIL	MALVERN, PA	11/05/20 13:40	11/05/20
L2048777-17	P5LDA02-SE (6.0-6.5)	SOIL	MALVERN, PA	11/05/20 14:05	11/05/20
L2048777-18	P5LDA02-SE (9.5-10)	SOIL	MALVERN, PA	11/05/20 14:15	11/05/20
L2048777-19	FB-20201105	WATER	MALVERN, PA	11/05/20 15:20	11/05/20
L2048777-20	TB-20201105	WATER	MALVERN, PA	11/05/20 00:00	11/05/20

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Case Narrative (continued)

Report Submission

November 13, 2020: This final report includes the results of all requested analyses.

November 12, 2020: This preliminary report includes the results of the Volatile Organics analysis performed on L2048777-10, -13, -15, -17, -19 and -20.

November 09, 2020: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2048777-04, -10, and -12 were placed on hold at the client's request.

Volatile Organics

L2048777-09: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to sample non-homogeneity.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative

Date: 11/13/20

ORGANICS

VOLATILES

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-03
 Client ID: P5LDA02-N (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 10:20
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/07/20 16:46
 Analyst: AD
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.013	0.0012	1
Chloromethane	ND		mg/kg	0.0052	0.0012	1
Vinyl chloride	ND		mg/kg	0.0013	0.00043	1
Bromomethane	ND		mg/kg	0.0026	0.00075	1
Chloroethane	ND		mg/kg	0.0026	0.00059	1
Trichlorofluoromethane	ND		mg/kg	0.0052	0.00090	1
1,1-Dichloroethene	ND		mg/kg	0.0013	0.00031	1
Carbon disulfide	ND		mg/kg	0.013	0.0059	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0052	0.00090	1
Methylene chloride	ND		mg/kg	0.0065	0.0030	1
Acetone	ND		mg/kg	0.032	0.013	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0019	0.00018	1
Methyl Acetate	ND		mg/kg	0.0052	0.0012	1
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
1,1-Dichloroethane	ND		mg/kg	0.0013	0.00019	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0013	0.00023	1
1,2-Dichloroethene, Total	ND		mg/kg	0.0013	0.00018	1
Cyclohexane	ND		mg/kg	0.013	0.00070	1
Bromochloromethane	ND		mg/kg	0.0026	0.00026	1
Chloroform	ND		mg/kg	0.0019	0.00018	1
Carbon tetrachloride	ND		mg/kg	0.0013	0.00030	1
1,1,1-Trichloroethane	ND		mg/kg	0.00065	0.00022	1
2-Butanone	ND		mg/kg	0.013	0.0029	1
Benzene	ND		mg/kg	0.00065	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Methyl cyclohexane	ND		mg/kg	0.0052	0.00078	1
Trichloroethene	0.00028	J	mg/kg	0.00065	0.00018	1
1,2-Dichloropropane	ND		mg/kg	0.0013	0.00016	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-03
 Client ID: P5LDA02-N (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 10:20
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.00065	0.00014	1
1,4-Dioxane	ND		mg/kg	0.10	0.046	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00065	0.00020	1
Toluene	ND		mg/kg	0.0013	0.00070	1
4-Methyl-2-pentanone	ND		mg/kg	0.013	0.0016	1
Tetrachloroethene	ND		mg/kg	0.00065	0.00025	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0013	0.00035	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00065	0.00020	1
1,1,2-Trichloroethane	ND		mg/kg	0.0013	0.00035	1
Dibromochloromethane	ND		mg/kg	0.0013	0.00018	1
1,2-Dibromoethane	ND		mg/kg	0.0013	0.00036	1
2-Hexanone	ND		mg/kg	0.013	0.0015	1
Chlorobenzene	ND		mg/kg	0.00065	0.00016	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00073	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Styrene	ND		mg/kg	0.0013	0.00025	1
Bromoform	ND		mg/kg	0.0052	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00065	0.00022	1
1,3-Dichlorobenzene	ND		mg/kg	0.0026	0.00019	1
1,4-Dichlorobenzene	ND		mg/kg	0.0026	0.00022	1
1,2-Dichlorobenzene	ND		mg/kg	0.0026	0.00019	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0039	0.0013	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0026	0.00035	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0026	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-08
 Client ID: P5LDA02R (9.5-10)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 11:45
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/07/20 17:12
 Analyst: AD
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.014	0.0012	1
Chloromethane	ND		mg/kg	0.0055	0.0013	1
Vinyl chloride	ND		mg/kg	0.0014	0.00046	1
Bromomethane	ND		mg/kg	0.0027	0.00079	1
Chloroethane	ND		mg/kg	0.0027	0.00062	1
Trichlorofluoromethane	ND		mg/kg	0.0055	0.00095	1
1,1-Dichloroethene	ND		mg/kg	0.0014	0.00032	1
Carbon disulfide	ND		mg/kg	0.014	0.0062	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0055	0.00095	1
Methylene chloride	ND		mg/kg	0.0068	0.0031	1
Acetone	ND		mg/kg	0.034	0.014	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0020	0.00019	1
Methyl Acetate	ND		mg/kg	0.0055	0.0013	1
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00028	1
1,1-Dichloroethane	ND		mg/kg	0.0014	0.00020	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0014	0.00024	1
1,2-Dichloroethene, Total	ND		mg/kg	0.0014	0.00019	1
Cyclohexane	ND		mg/kg	0.014	0.00074	1
Bromochloromethane	ND		mg/kg	0.0027	0.00028	1
Chloroform	ND		mg/kg	0.0020	0.00019	1
Carbon tetrachloride	ND		mg/kg	0.0014	0.00031	1
1,1,1-Trichloroethane	ND		mg/kg	0.00068	0.00023	1
2-Butanone	ND		mg/kg	0.014	0.0030	1
Benzene	ND		mg/kg	0.00068	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Methyl cyclohexane	ND		mg/kg	0.0055	0.00082	1
Trichloroethene	0.058		mg/kg	0.00068	0.00019	1
1,2-Dichloropropane	ND		mg/kg	0.0014	0.00017	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-08
 Client ID: P5LDA02R (9.5-10)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 11:45
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.00068	0.00015	1
1,4-Dioxane	ND		mg/kg	0.11	0.048	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00068	0.00022	1
Toluene	ND		mg/kg	0.0014	0.00074	1
4-Methyl-2-pentanone	ND		mg/kg	0.014	0.0018	1
Tetrachloroethene	ND		mg/kg	0.00068	0.00027	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0014	0.00037	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00068	0.00022	1
1,1,2-Trichloroethane	ND		mg/kg	0.0014	0.00036	1
Dibromochloromethane	ND		mg/kg	0.0014	0.00019	1
1,2-Dibromoethane	ND		mg/kg	0.0014	0.00038	1
2-Hexanone	ND		mg/kg	0.014	0.0016	1
Chlorobenzene	ND		mg/kg	0.00068	0.00017	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00077	1
o-Xylene	ND		mg/kg	0.0014	0.00040	1
Xylenes, Total	ND		mg/kg	0.0014	0.00040	1
Styrene	ND		mg/kg	0.0014	0.00027	1
Bromoform	ND		mg/kg	0.0055	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00068	0.00023	1
1,3-Dichlorobenzene	ND		mg/kg	0.0027	0.00020	1
1,4-Dichlorobenzene	ND		mg/kg	0.0027	0.00023	1
1,2-Dichlorobenzene	ND		mg/kg	0.0027	0.00020	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0041	0.0014	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0027	0.00037	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0027	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	106		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-09
 Client ID: P5LDA02-S (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:10
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/07/20 17:37
 Analyst: AD
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.017	0.0015	1
Chloromethane	ND		mg/kg	0.0067	0.0016	1
Vinyl chloride	ND		mg/kg	0.0017	0.00056	1
Bromomethane	ND		mg/kg	0.0034	0.00097	1
Chloroethane	ND		mg/kg	0.0034	0.00076	1
Trichlorofluoromethane	ND		mg/kg	0.0067	0.0012	1
1,1-Dichloroethene	ND		mg/kg	0.0017	0.00040	1
Carbon disulfide	ND		mg/kg	0.017	0.0076	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0067	0.0012	1
Methylene chloride	ND		mg/kg	0.0084	0.0038	1
Acetone	ND		mg/kg	0.042	0.017	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0025	0.00023	1
Methyl Acetate	ND		mg/kg	0.0067	0.0016	1
Methyl tert butyl ether	ND		mg/kg	0.0034	0.00034	1
1,1-Dichloroethane	ND		mg/kg	0.0017	0.00024	1
cis-1,2-Dichloroethene	0.00033	J	mg/kg	0.0017	0.00029	1
1,2-Dichloroethene, Total	0.00033	J	mg/kg	0.0017	0.00023	1
Cyclohexane	ND		mg/kg	0.017	0.00091	1
Bromochloromethane	ND		mg/kg	0.0034	0.00034	1
Chloroform	0.00072	J	mg/kg	0.0025	0.00023	1
Carbon tetrachloride	ND		mg/kg	0.0017	0.00038	1
1,1,1-Trichloroethane	0.00033	J	mg/kg	0.00084	0.00028	1
2-Butanone	ND		mg/kg	0.017	0.0037	1
Benzene	ND		mg/kg	0.00084	0.00028	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00043	1
Methyl cyclohexane	ND		mg/kg	0.0067	0.0010	1
Trichloroethene	0.55	E	mg/kg	0.00084	0.00023	1
1,2-Dichloropropane	ND		mg/kg	0.0017	0.00021	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-09
 Client ID: P5LDA02-S (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:10
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.00084	0.00018	1
1,4-Dioxane	ND		mg/kg	0.13	0.059	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00084	0.00026	1
Toluene	ND		mg/kg	0.0017	0.00091	1
4-Methyl-2-pentanone	ND		mg/kg	0.017	0.0021	1
Tetrachloroethene	0.00065	J	mg/kg	0.00084	0.00033	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0017	0.00046	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00084	0.00026	1
1,1,2-Trichloroethane	0.00084	J	mg/kg	0.0017	0.00045	1
Dibromochloromethane	ND		mg/kg	0.0017	0.00023	1
1,2-Dibromoethane	ND		mg/kg	0.0017	0.00047	1
2-Hexanone	ND		mg/kg	0.017	0.0020	1
Chlorobenzene	ND		mg/kg	0.00084	0.00021	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0034	0.00094	1
o-Xylene	ND		mg/kg	0.0017	0.00049	1
Xylenes, Total	ND		mg/kg	0.0017	0.00049	1
Styrene	ND		mg/kg	0.0017	0.00033	1
Bromoform	ND		mg/kg	0.0067	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00018	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00084	0.00028	1
1,3-Dichlorobenzene	ND		mg/kg	0.0034	0.00025	1
1,4-Dichlorobenzene	ND		mg/kg	0.0034	0.00029	1
1,2-Dichlorobenzene	ND		mg/kg	0.0034	0.00024	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0050	0.0017	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0034	0.00046	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0034	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	107		70-130

Project Name: BISHOP TUBE**Lab Number:** L2048777**Project Number:** 0539.0003J000**Report Date:** 11/13/20**SAMPLE RESULTS**

Lab ID: L2048777-09
 Client ID: P5LDA02-S (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:10
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/08/20 15:04
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.67	0.061	1
Chloromethane	ND		mg/kg	0.27	0.062	1
Vinyl chloride	ND		mg/kg	0.067	0.022	1
Bromomethane	ND		mg/kg	0.13	0.039	1
Chloroethane	ND		mg/kg	0.13	0.030	1
Trichlorofluoromethane	ND		mg/kg	0.27	0.047	1
1,1-Dichloroethene	ND		mg/kg	0.067	0.016	1
Carbon disulfide	ND		mg/kg	0.67	0.30	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.27	0.046	1
Methylene chloride	ND		mg/kg	0.34	0.15	1
Acetone	ND		mg/kg	0.67	0.32	1
trans-1,2-Dichloroethene	ND		mg/kg	0.10	0.0092	1
Methyl Acetate	ND		mg/kg	0.27	0.064	1
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
1,1-Dichloroethane	ND		mg/kg	0.067	0.0097	1
cis-1,2-Dichloroethene	ND		mg/kg	0.067	0.012	1
1,2-Dichloroethene, Total	ND		mg/kg	0.067	0.0092	1
Cyclohexane	ND		mg/kg	0.67	0.036	1
Bromochloromethane	ND		mg/kg	0.13	0.014	1
Chloroform	ND		mg/kg	0.10	0.0094	1
Carbon tetrachloride	ND		mg/kg	0.067	0.015	1
1,1,1-Trichloroethane	ND		mg/kg	0.034	0.011	1
2-Butanone	ND		mg/kg	0.67	0.15	1
Benzene	ND		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.067	0.017	1
Methyl cyclohexane	ND		mg/kg	0.27	0.040	1
Trichloroethene	4.3		mg/kg	0.034	0.0092	1
1,2-Dichloropropane	ND		mg/kg	0.067	0.0084	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-09
 Client ID: P5LDA02-S (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:10
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.034	0.0073	1
1,4-Dioxane	ND		mg/kg	5.4	2.4	1
cis-1,3-Dichloropropene	ND		mg/kg	0.034	0.011	1
Toluene	ND		mg/kg	0.067	0.036	1
4-Methyl-2-pentanone	ND		mg/kg	0.67	0.086	1
Tetrachloroethene	ND		mg/kg	0.034	0.013	1
trans-1,3-Dichloropropene	ND		mg/kg	0.067	0.018	1
1,3-Dichloropropene, Total	ND		mg/kg	0.034	0.011	1
1,1,2-Trichloroethane	ND		mg/kg	0.067	0.018	1
Dibromochloromethane	ND		mg/kg	0.067	0.0094	1
1,2-Dibromoethane	ND		mg/kg	0.067	0.019	1
2-Hexanone	ND		mg/kg	0.67	0.079	1
Chlorobenzene	ND		mg/kg	0.034	0.0085	1
Ethylbenzene	ND		mg/kg	0.067	0.0095	1
p/m-Xylene	ND		mg/kg	0.13	0.038	1
o-Xylene	ND		mg/kg	0.067	0.020	1
Xylenes, Total	ND		mg/kg	0.067	0.020	1
Styrene	ND		mg/kg	0.067	0.013	1
Bromoform	ND		mg/kg	0.27	0.016	1
Isopropylbenzene	ND		mg/kg	0.067	0.0073	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.034	0.011	1
1,3-Dichlorobenzene	ND		mg/kg	0.13	0.0099	1
1,4-Dichlorobenzene	ND		mg/kg	0.13	0.011	1
1,2-Dichlorobenzene	ND		mg/kg	0.13	0.0097	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.20	0.067	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.13	0.018	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	99		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-10
 Client ID: P5LDA02-S (9.5-10)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:20
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/11/20 18:42
 Analyst: AD
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.013	0.0012	1
Chloromethane	ND		mg/kg	0.0051	0.0012	1
Vinyl chloride	ND		mg/kg	0.0013	0.00043	1
Bromomethane	ND		mg/kg	0.0026	0.00074	1
Chloroethane	ND		mg/kg	0.0026	0.00058	1
Trichlorofluoromethane	ND		mg/kg	0.0051	0.00089	1
1,1-Dichloroethene	ND		mg/kg	0.0013	0.00030	1
Carbon disulfide	ND		mg/kg	0.013	0.0058	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0051	0.00088	1
Methylene chloride	ND		mg/kg	0.0064	0.0029	1
Acetone	ND		mg/kg	0.032	0.013	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0019	0.00017	1
Methyl Acetate	ND		mg/kg	0.0051	0.0012	1
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
1,1-Dichloroethane	ND		mg/kg	0.0013	0.00018	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0013	0.00022	1
1,2-Dichloroethene, Total	ND		mg/kg	0.0013	0.00017	1
Cyclohexane	ND		mg/kg	0.013	0.00069	1
Bromochloromethane	ND		mg/kg	0.0026	0.00026	1
Chloroform	ND		mg/kg	0.0019	0.00018	1
Carbon tetrachloride	ND		mg/kg	0.0013	0.00029	1
1,1,1-Trichloroethane	ND		mg/kg	0.00064	0.00021	1
2-Butanone	ND		mg/kg	0.013	0.0028	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Methyl cyclohexane	ND		mg/kg	0.0051	0.00077	1
Trichloroethene	ND		mg/kg	0.00064	0.00017	1
1,2-Dichloropropane	ND		mg/kg	0.0013	0.00016	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-10
 Client ID: P5LDA02-S (9.5-10)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:20
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.00064	0.00014	1
1,4-Dioxane	ND		mg/kg	0.10	0.045	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00064	0.00020	1
Toluene	ND		mg/kg	0.0013	0.00069	1
4-Methyl-2-pentanone	ND		mg/kg	0.013	0.0016	1
Tetrachloroethene	ND		mg/kg	0.00064	0.00025	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0013	0.00035	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00064	0.00020	1
1,1,2-Trichloroethane	ND		mg/kg	0.0013	0.00034	1
Dibromochloromethane	ND		mg/kg	0.0013	0.00018	1
1,2-Dibromoethane	ND		mg/kg	0.0013	0.00036	1
2-Hexanone	ND		mg/kg	0.013	0.0015	1
Chlorobenzene	ND		mg/kg	0.00064	0.00016	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Styrene	ND		mg/kg	0.0013	0.00025	1
Bromoform	ND		mg/kg	0.0051	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00064	0.00021	1
1,3-Dichlorobenzene	ND		mg/kg	0.0026	0.00019	1
1,4-Dichlorobenzene	ND		mg/kg	0.0026	0.00022	1
1,2-Dichlorobenzene	ND		mg/kg	0.0026	0.00018	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0038	0.0013	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0026	0.00035	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0026	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-11
 Client ID: P5LDA02-W (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:35
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/07/20 18:28
 Analyst: AD
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.015	0.0014	1
Chloromethane	ND		mg/kg	0.0060	0.0014	1
Vinyl chloride	ND		mg/kg	0.0015	0.00050	1
Bromomethane	ND		mg/kg	0.0030	0.00087	1
Chloroethane	ND		mg/kg	0.0030	0.00068	1
Trichlorofluoromethane	ND		mg/kg	0.0060	0.0010	1
1,1-Dichloroethene	ND		mg/kg	0.0015	0.00036	1
Carbon disulfide	ND		mg/kg	0.015	0.0068	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0060	0.0010	1
Methylene chloride	ND		mg/kg	0.0075	0.0034	1
Acetone	0.015	J	mg/kg	0.037	0.015	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0022	0.00020	1
Methyl Acetate	ND		mg/kg	0.0060	0.0014	1
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
1,1-Dichloroethane	ND		mg/kg	0.0015	0.00022	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00026	1
1,2-Dichloroethene, Total	ND		mg/kg	0.0015	0.00020	1
Cyclohexane	ND		mg/kg	0.015	0.00081	1
Bromochloromethane	ND		mg/kg	0.0030	0.00031	1
Chloroform	ND		mg/kg	0.0022	0.00021	1
Carbon tetrachloride	ND		mg/kg	0.0015	0.00034	1
1,1,1-Trichloroethane	ND		mg/kg	0.00075	0.00025	1
2-Butanone	ND		mg/kg	0.015	0.0033	1
Benzene	ND		mg/kg	0.00075	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Methyl cyclohexane	ND		mg/kg	0.0060	0.00090	1
Trichloroethene	0.21		mg/kg	0.00075	0.00020	1
1,2-Dichloropropane	ND		mg/kg	0.0015	0.00019	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-11
 Client ID: P5LDA02-W (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:35
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.00075	0.00016	1
1,4-Dioxane	ND		mg/kg	0.12	0.052	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00075	0.00024	1
Toluene	ND		mg/kg	0.0015	0.00081	1
4-Methyl-2-pentanone	ND		mg/kg	0.015	0.0019	1
Tetrachloroethene	0.00031	J	mg/kg	0.00075	0.00029	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0015	0.00041	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00075	0.00024	1
1,1,2-Trichloroethane	ND		mg/kg	0.0015	0.00040	1
Dibromochloromethane	ND		mg/kg	0.0015	0.00021	1
1,2-Dibromoethane	ND		mg/kg	0.0015	0.00042	1
2-Hexanone	ND		mg/kg	0.015	0.0018	1
Chlorobenzene	ND		mg/kg	0.00075	0.00019	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00084	1
o-Xylene	ND		mg/kg	0.0015	0.00043	1
Xylenes, Total	ND		mg/kg	0.0015	0.00043	1
Styrene	ND		mg/kg	0.0015	0.00029	1
Bromoform	ND		mg/kg	0.0060	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00075	0.00025	1
1,3-Dichlorobenzene	ND		mg/kg	0.0030	0.00022	1
1,4-Dichlorobenzene	ND		mg/kg	0.0030	0.00026	1
1,2-Dichlorobenzene	ND		mg/kg	0.0030	0.00022	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0045	0.0015	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0030	0.00041	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0030	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	107		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-13
 Client ID: P5LDA02-SW (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 13:00
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/11/20 19:08
 Analyst: AD
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.017	0.0016	1
Chloromethane	ND		mg/kg	0.0070	0.0016	1
Vinyl chloride	ND		mg/kg	0.0017	0.00058	1
Bromomethane	ND		mg/kg	0.0035	0.0010	1
Chloroethane	ND		mg/kg	0.0035	0.00079	1
Trichlorofluoromethane	ND		mg/kg	0.0070	0.0012	1
1,1-Dichloroethene	ND		mg/kg	0.0017	0.00042	1
Carbon disulfide	ND		mg/kg	0.017	0.0080	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0070	0.0012	1
Methylene chloride	ND		mg/kg	0.0087	0.0040	1
Acetone	ND		mg/kg	0.044	0.017	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0026	0.00024	1
Methyl Acetate	ND		mg/kg	0.0070	0.0017	1
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
1,1-Dichloroethane	ND		mg/kg	0.0017	0.00025	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0017	0.00031	1
1,2-Dichloroethene, Total	ND		mg/kg	0.0017	0.00024	1
Cyclohexane	ND		mg/kg	0.017	0.00095	1
Bromochloromethane	ND		mg/kg	0.0035	0.00036	1
Chloroform	ND		mg/kg	0.0026	0.00024	1
Carbon tetrachloride	ND		mg/kg	0.0017	0.00040	1
1,1,1-Trichloroethane	ND		mg/kg	0.00087	0.00029	1
2-Butanone	ND		mg/kg	0.017	0.0039	1
Benzene	ND		mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00045	1
Methyl cyclohexane	ND		mg/kg	0.0070	0.0010	1
Trichloroethene	0.066		mg/kg	0.00087	0.00024	1
1,2-Dichloropropane	ND		mg/kg	0.0017	0.00022	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-13
 Client ID: P5LDA02-SW (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 13:00
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.00087	0.00019	1
1,4-Dioxane	ND		mg/kg	0.14	0.061	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00087	0.00028	1
Toluene	ND		mg/kg	0.0017	0.00095	1
4-Methyl-2-pentanone	ND		mg/kg	0.017	0.0022	1
Tetrachloroethene	ND		mg/kg	0.00087	0.00034	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0017	0.00048	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00087	0.00028	1
1,1,2-Trichloroethane	ND		mg/kg	0.0017	0.00047	1
Dibromochloromethane	ND		mg/kg	0.0017	0.00024	1
1,2-Dibromoethane	ND		mg/kg	0.0017	0.00049	1
2-Hexanone	ND		mg/kg	0.017	0.0021	1
Chlorobenzene	ND		mg/kg	0.00087	0.00022	1
Ethylbenzene	ND		mg/kg	0.0017	0.00025	1
p/m-Xylene	ND		mg/kg	0.0035	0.00098	1
o-Xylene	ND		mg/kg	0.0017	0.00051	1
Xylenes, Total	ND		mg/kg	0.0017	0.00051	1
Styrene	ND		mg/kg	0.0017	0.00034	1
Bromoform	ND		mg/kg	0.0070	0.00043	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00087	0.00029	1
1,3-Dichlorobenzene	ND		mg/kg	0.0035	0.00026	1
1,4-Dichlorobenzene	ND		mg/kg	0.0035	0.00030	1
1,2-Dichlorobenzene	ND		mg/kg	0.0035	0.00025	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0052	0.0017	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0035	0.00048	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0035	0.00056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-15
 Client ID: P5LDA02-S-1 (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 13:30
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/11/20 19:59
 Analyst: AD
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.88	0.080	1
Chloromethane	ND		mg/kg	0.35	0.082	1
Vinyl chloride	ND		mg/kg	0.088	0.029	1
Bromomethane	ND		mg/kg	0.18	0.051	1
Chloroethane	ND		mg/kg	0.18	0.040	1
Trichlorofluoromethane	ND		mg/kg	0.35	0.061	1
1,1-Dichloroethene	ND		mg/kg	0.088	0.021	1
Carbon disulfide	ND		mg/kg	0.88	0.40	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.12	J	mg/kg	0.35	0.061	1
Methylene chloride	ND		mg/kg	0.44	0.20	1
Acetone	ND		mg/kg	0.88	0.42	1
trans-1,2-Dichloroethene	ND		mg/kg	0.13	0.012	1
Methyl Acetate	ND		mg/kg	0.35	0.084	1
Methyl tert butyl ether	ND		mg/kg	0.18	0.018	1
1,1-Dichloroethane	ND		mg/kg	0.088	0.013	1
cis-1,2-Dichloroethene	ND		mg/kg	0.088	0.015	1
1,2-Dichloroethene, Total	ND		mg/kg	0.088	0.012	1
Cyclohexane	ND		mg/kg	0.88	0.048	1
Bromochloromethane	ND		mg/kg	0.18	0.018	1
Chloroform	ND		mg/kg	0.13	0.012	1
Carbon tetrachloride	ND		mg/kg	0.088	0.020	1
1,1,1-Trichloroethane	0.050		mg/kg	0.044	0.015	1
2-Butanone	ND		mg/kg	0.88	0.20	1
Benzene	ND		mg/kg	0.044	0.015	1
1,2-Dichloroethane	ND		mg/kg	0.088	0.023	1
Methyl cyclohexane	0.27	J	mg/kg	0.35	0.053	1
Trichloroethene	31.	E	mg/kg	0.044	0.012	1
1,2-Dichloropropane	ND		mg/kg	0.088	0.011	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-15
 Client ID: P5LDA02-S-1 (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 13:30
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.044	0.0096	1
1,4-Dioxane	ND		mg/kg	7.0	3.1	1
cis-1,3-Dichloropropene	ND		mg/kg	0.044	0.014	1
Toluene	ND		mg/kg	0.088	0.048	1
4-Methyl-2-pentanone	ND		mg/kg	0.88	0.11	1
Tetrachloroethene	0.096		mg/kg	0.044	0.017	1
trans-1,3-Dichloropropene	ND		mg/kg	0.088	0.024	1
1,3-Dichloropropene, Total	ND		mg/kg	0.044	0.014	1
1,1,2-Trichloroethane	ND		mg/kg	0.088	0.023	1
Dibromochloromethane	ND		mg/kg	0.088	0.012	1
1,2-Dibromoethane	ND		mg/kg	0.088	0.024	1
2-Hexanone	ND		mg/kg	0.88	0.10	1
Chlorobenzene	ND		mg/kg	0.044	0.011	1
Ethylbenzene	ND		mg/kg	0.088	0.012	1
p/m-Xylene	ND		mg/kg	0.18	0.049	1
o-Xylene	ND		mg/kg	0.088	0.026	1
Xylenes, Total	ND		mg/kg	0.088	0.026	1
Styrene	ND		mg/kg	0.088	0.017	1
Bromoform	ND		mg/kg	0.35	0.022	1
Isopropylbenzene	ND		mg/kg	0.088	0.0096	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.044	0.015	1
1,3-Dichlorobenzene	ND		mg/kg	0.18	0.013	1
1,4-Dichlorobenzene	ND		mg/kg	0.18	0.015	1
1,2-Dichlorobenzene	ND		mg/kg	0.18	0.013	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.26	0.088	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.18	0.024	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.18	0.028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-15 D
 Client ID: P5LDA02-S-1 (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 13:30
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/11/20 20:25
 Analyst: AD
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Trichloroethene	29.		mg/kg	0.18	0.048	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-17
 Client ID: P5LDA02-SE (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 14:05
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/11/20 19:33
 Analyst: AD
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.016	0.0015	1
Chloromethane	ND		mg/kg	0.0065	0.0015	1
Vinyl chloride	ND		mg/kg	0.0016	0.00054	1
Bromomethane	ND		mg/kg	0.0032	0.00094	1
Chloroethane	ND		mg/kg	0.0032	0.00073	1
Trichlorofluoromethane	ND		mg/kg	0.0065	0.0011	1
1,1-Dichloroethene	ND		mg/kg	0.0016	0.00038	1
Carbon disulfide	ND		mg/kg	0.016	0.0074	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0065	0.0011	1
Methylene chloride	ND		mg/kg	0.0081	0.0037	1
Acetone	ND		mg/kg	0.040	0.016	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0024	0.00022	1
Methyl Acetate	ND		mg/kg	0.0065	0.0015	1
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
1,1-Dichloroethane	ND		mg/kg	0.0016	0.00024	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0016	0.00028	1
1,2-Dichloroethene, Total	ND		mg/kg	0.0016	0.00022	1
Cyclohexane	ND		mg/kg	0.016	0.00088	1
Bromochloromethane	ND		mg/kg	0.0032	0.00033	1
Chloroform	ND		mg/kg	0.0024	0.00023	1
Carbon tetrachloride	ND		mg/kg	0.0016	0.00037	1
1,1,1-Trichloroethane	ND		mg/kg	0.00081	0.00027	1
2-Butanone	ND		mg/kg	0.016	0.0036	1
Benzene	ND		mg/kg	0.00081	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00042	1
Methyl cyclohexane	ND		mg/kg	0.0065	0.00098	1
Trichloroethene	0.013		mg/kg	0.00081	0.00022	1
1,2-Dichloropropane	ND		mg/kg	0.0016	0.00020	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-17
 Client ID: P5LDA02-SE (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 14:05
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.00081	0.00018	1
1,4-Dioxane	ND		mg/kg	0.13	0.057	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00081	0.00026	1
Toluene	ND		mg/kg	0.0016	0.00088	1
4-Methyl-2-pentanone	ND		mg/kg	0.016	0.0021	1
Tetrachloroethene	ND		mg/kg	0.00081	0.00032	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0016	0.00044	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00081	0.00026	1
1,1,2-Trichloroethane	ND		mg/kg	0.0016	0.00043	1
Dibromochloromethane	ND		mg/kg	0.0016	0.00023	1
1,2-Dibromoethane	ND		mg/kg	0.0016	0.00045	1
2-Hexanone	ND		mg/kg	0.016	0.0019	1
Chlorobenzene	ND		mg/kg	0.00081	0.00020	1
Ethylbenzene	ND		mg/kg	0.0016	0.00023	1
p/m-Xylene	ND		mg/kg	0.0032	0.00091	1
o-Xylene	ND		mg/kg	0.0016	0.00047	1
Xylenes, Total	ND		mg/kg	0.0016	0.00047	1
Styrene	ND		mg/kg	0.0016	0.00032	1
Bromoform	ND		mg/kg	0.0065	0.00040	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00018	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00081	0.00027	1
1,3-Dichlorobenzene	ND		mg/kg	0.0032	0.00024	1
1,4-Dichlorobenzene	ND		mg/kg	0.0032	0.00028	1
1,2-Dichlorobenzene	ND		mg/kg	0.0032	0.00023	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0049	0.0016	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0032	0.00044	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0032	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-19
 Client ID: FB-20201105
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 15:20
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 11/06/20 21:28
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Chloromethane	ND		ug/l	2.5	0.20	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Bromomethane	ND		ug/l	1.0	0.26	1
Chloroethane	ND		ug/l	1.0	0.13	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15	1
Methylene chloride	ND		ug/l	2.5	0.68	1
Acetone	ND		ug/l	5.0	1.5	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Cyclohexane	ND		ug/l	10	0.27	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Chloroform	ND		ug/l	0.75	0.22	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
2-Butanone	ND		ug/l	5.0	1.9	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Methyl cyclohexane	ND		ug/l	10	0.40	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-19
 Client ID: FB-20201105
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 15:20
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Bromodichloromethane	ND		ug/l	0.50	0.19	1
1,4-Dioxane	ND		ug/l	250	61.	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Toluene	ND		ug/l	0.75	0.20	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Styrene	ND		ug/l	1.0	0.36	1
Bromoform	ND		ug/l	2.0	0.25	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	107		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-20
 Client ID: TB-20201105
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 00:00
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 11/06/20 21:49
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Chloromethane	ND		ug/l	2.5	0.20	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Bromomethane	ND		ug/l	1.0	0.26	1
Chloroethane	ND		ug/l	1.0	0.13	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15	1
Methylene chloride	ND		ug/l	2.5	0.68	1
Acetone	ND		ug/l	5.0	1.5	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Cyclohexane	ND		ug/l	10	0.27	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Chloroform	ND		ug/l	0.75	0.22	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
2-Butanone	ND		ug/l	5.0	1.9	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Methyl cyclohexane	ND		ug/l	10	0.40	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-20
 Client ID: TB-20201105
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 00:00
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Bromodichloromethane	ND		ug/l	0.50	0.19	1
1,4-Dioxane	ND		ug/l	250	61.	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Toluene	ND		ug/l	0.75	0.20	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Styrene	ND		ug/l	1.0	0.36	1
Bromoform	ND		ug/l	2.0	0.25	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	113		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/07/20 10:21
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 03,08-09,11 Batch: WG1431829-5					
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00092
Chloromethane	ND		mg/kg	0.0040	0.00093
Vinyl chloride	ND		mg/kg	0.0010	0.00034
Bromomethane	ND		mg/kg	0.0020	0.00058
Chloroethane	ND		mg/kg	0.0020	0.00045
Trichlorofluoromethane	ND		mg/kg	0.0040	0.00070
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00024
Carbon disulfide	ND		mg/kg	0.010	0.0046
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0040	0.00069
Methylene chloride	ND		mg/kg	0.0050	0.0023
Acetone	ND		mg/kg	0.025	0.010
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00014
Methyl Acetate	ND		mg/kg	0.0040	0.00095
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
1,1-Dichloroethane	ND		mg/kg	0.0010	0.00014
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00018
1,2-Dichloroethene, Total	ND		mg/kg	0.0010	0.00014
Cyclohexane	ND		mg/kg	0.010	0.00054
Bromochloromethane	ND		mg/kg	0.0020	0.00020
Chloroform	ND		mg/kg	0.0015	0.00014
Carbon tetrachloride	ND		mg/kg	0.0010	0.00023
1,1,1-Trichloroethane	ND		mg/kg	0.00050	0.00017
2-Butanone	ND		mg/kg	0.010	0.0022
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Methyl cyclohexane	ND		mg/kg	0.0040	0.00060
Trichloroethene	ND		mg/kg	0.00050	0.00014
1,2-Dichloropropane	ND		mg/kg	0.0010	0.00012
Bromodichloromethane	ND		mg/kg	0.00050	0.00011

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/07/20 10:21
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 03,08-09,11 Batch: WG1431829-5					
1,4-Dioxane	ND		mg/kg	0.080	0.035
cis-1,3-Dichloropropene	ND		mg/kg	0.00050	0.00016
Toluene	ND		mg/kg	0.0010	0.00054
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.0013
Tetrachloroethene	ND		mg/kg	0.00050	0.00020
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00027
1,3-Dichloropropene, Total	ND		mg/kg	0.00050	0.00016
1,1,2-Trichloroethane	ND		mg/kg	0.0010	0.00027
Dibromochloromethane	ND		mg/kg	0.0010	0.00014
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00028
2-Hexanone	ND		mg/kg	0.010	0.0012
Chlorobenzene	ND		mg/kg	0.00050	0.00013
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Styrene	0.00029	J	mg/kg	0.0010	0.00020
Bromoform	ND		mg/kg	0.0040	0.00025
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00050	0.00017
1,3-Dichlorobenzene	ND		mg/kg	0.0020	0.00015
1,4-Dichlorobenzene	ND		mg/kg	0.0020	0.00017
1,2-Dichlorobenzene	ND		mg/kg	0.0020	0.00014
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0030	0.0010
1,2,4-Trichlorobenzene	ND		mg/kg	0.0020	0.00027
1,2,3-Trichlorobenzene	ND		mg/kg	0.0020	0.00032

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/07/20 10:21
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 03,08-09,11 Batch: WG1431829-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/06/20 19:29
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1431881-5					
Dichlorodifluoromethane	ND		ug/l	5.0	0.24
Chloromethane	ND		ug/l	2.5	0.20
Vinyl chloride	ND		ug/l	1.0	0.07
Bromomethane	ND		ug/l	1.0	0.26
Chloroethane	ND		ug/l	1.0	0.13
Trichlorofluoromethane	ND		ug/l	2.5	0.16
1,1-Dichloroethene	ND		ug/l	0.50	0.17
Carbon disulfide	ND		ug/l	5.0	0.30
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15
Methylene chloride	ND		ug/l	2.5	0.68
Acetone	ND		ug/l	5.0	1.5
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16
Methyl Acetate	ND		ug/l	2.0	0.23
Methyl tert butyl ether	ND		ug/l	1.0	0.17
1,1-Dichloroethane	ND		ug/l	0.75	0.21
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16
Cyclohexane	ND		ug/l	10	0.27
Bromochloromethane	ND		ug/l	2.5	0.15
Chloroform	ND		ug/l	0.75	0.22
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
2-Butanone	ND		ug/l	5.0	1.9
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Methyl cyclohexane	ND		ug/l	10	0.40
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Bromodichloromethane	ND		ug/l	0.50	0.19

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/06/20 19:29
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1431881-5					
1,4-Dioxane	ND		ug/l	250	61.
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Toluene	ND		ug/l	0.75	0.20
Tetrachloroethene	ND		ug/l	0.50	0.18
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,2-Dibromoethane	ND		ug/l	2.0	0.19
2-Hexanone	ND		ug/l	5.0	0.52
Chlorobenzene	ND		ug/l	0.50	0.18
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Styrene	ND		ug/l	1.0	0.36
Bromoform	ND		ug/l	2.0	0.25
Isopropylbenzene	ND		ug/l	0.50	0.19
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/06/20 19:29
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1431881-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	108		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/08/20 14:34
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1431975-5					
Dichlorodifluoromethane	ND		mg/kg	0.50	0.046
Chloromethane	ND		mg/kg	0.20	0.047
Vinyl chloride	ND		mg/kg	0.050	0.017
Bromomethane	ND		mg/kg	0.10	0.029
Chloroethane	ND		mg/kg	0.10	0.023
Trichlorofluoromethane	ND		mg/kg	0.20	0.035
1,1-Dichloroethene	ND		mg/kg	0.050	0.012
Carbon disulfide	ND		mg/kg	0.50	0.23
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.20	0.035
Methylene chloride	ND		mg/kg	0.25	0.11
Acetone	ND		mg/kg	0.50	0.24
trans-1,2-Dichloroethene	ND		mg/kg	0.075	0.0068
Methyl Acetate	ND		mg/kg	0.20	0.048
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
1,1-Dichloroethane	ND		mg/kg	0.050	0.0072
cis-1,2-Dichloroethene	ND		mg/kg	0.050	0.0088
1,2-Dichloroethene, Total	ND		mg/kg	0.050	0.0068
Cyclohexane	ND		mg/kg	0.50	0.027
Bromochloromethane	ND		mg/kg	0.10	0.010
Chloroform	ND		mg/kg	0.075	0.0070
Carbon tetrachloride	ND		mg/kg	0.050	0.012
1,1,1-Trichloroethane	ND		mg/kg	0.025	0.0084
2-Butanone	ND		mg/kg	0.50	0.11
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Methyl cyclohexane	ND		mg/kg	0.20	0.030
Trichloroethene	ND		mg/kg	0.025	0.0068
1,2-Dichloropropane	ND		mg/kg	0.050	0.0062
Bromodichloromethane	ND		mg/kg	0.025	0.0054

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/08/20 14:34
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1431975-5					
1,4-Dioxane	ND		mg/kg	4.0	1.8
cis-1,3-Dichloropropene	ND		mg/kg	0.025	0.0079
Toluene	ND		mg/kg	0.050	0.027
4-Methyl-2-pentanone	ND		mg/kg	0.50	0.064
Tetrachloroethene	ND		mg/kg	0.025	0.0098
trans-1,3-Dichloropropene	ND		mg/kg	0.050	0.014
1,3-Dichloropropene, Total	ND		mg/kg	0.025	0.0079
1,1,2-Trichloroethane	ND		mg/kg	0.050	0.013
Dibromochloromethane	ND		mg/kg	0.050	0.0070
1,2-Dibromoethane	ND		mg/kg	0.050	0.014
2-Hexanone	ND		mg/kg	0.50	0.059
Chlorobenzene	ND		mg/kg	0.025	0.0064
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Styrene	ND		mg/kg	0.050	0.0098
Bromoform	ND		mg/kg	0.20	0.012
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.025	0.0083
1,3-Dichlorobenzene	ND		mg/kg	0.10	0.0074
1,4-Dichlorobenzene	ND		mg/kg	0.10	0.0086
1,2-Dichlorobenzene	ND		mg/kg	0.10	0.0072
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.15	0.050
1,2,4-Trichlorobenzene	ND		mg/kg	0.10	0.014
1,2,3-Trichlorobenzene	ND		mg/kg	0.10	0.016

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/08/20 14:34
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1431975-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	98		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 18:16
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 10,13,17 Batch: WG1433277-5					
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00092
Chloromethane	ND		mg/kg	0.0040	0.00093
Vinyl chloride	ND		mg/kg	0.0010	0.00034
Bromomethane	ND		mg/kg	0.0020	0.00058
Chloroethane	ND		mg/kg	0.0020	0.00045
Trichlorofluoromethane	ND		mg/kg	0.0040	0.00070
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00024
Carbon disulfide	ND		mg/kg	0.010	0.0046
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0040	0.00069
Methylene chloride	ND		mg/kg	0.0050	0.0023
Acetone	ND		mg/kg	0.025	0.010
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00014
Methyl Acetate	ND		mg/kg	0.0040	0.00095
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
1,1-Dichloroethane	ND		mg/kg	0.0010	0.00014
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00018
1,2-Dichloroethene, Total	ND		mg/kg	0.0010	0.00014
Cyclohexane	ND		mg/kg	0.010	0.00054
Bromochloromethane	ND		mg/kg	0.0020	0.00020
Chloroform	ND		mg/kg	0.0015	0.00014
Carbon tetrachloride	ND		mg/kg	0.0010	0.00023
1,1,1-Trichloroethane	ND		mg/kg	0.00050	0.00017
2-Butanone	ND		mg/kg	0.010	0.0022
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Methyl cyclohexane	ND		mg/kg	0.0040	0.00060
Trichloroethene	ND		mg/kg	0.00050	0.00014
1,2-Dichloropropane	ND		mg/kg	0.0010	0.00012
Bromodichloromethane	ND		mg/kg	0.00050	0.00011

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 18:16
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 10,13,17 Batch: WG1433277-5					
1,4-Dioxane	ND		mg/kg	0.080	0.035
cis-1,3-Dichloropropene	ND		mg/kg	0.00050	0.00016
Toluene	ND		mg/kg	0.0010	0.00054
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.0013
Tetrachloroethene	ND		mg/kg	0.00050	0.00020
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00027
1,3-Dichloropropene, Total	ND		mg/kg	0.00050	0.00016
1,1,2-Trichloroethane	ND		mg/kg	0.0010	0.00027
Dibromochloromethane	ND		mg/kg	0.0010	0.00014
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00028
2-Hexanone	ND		mg/kg	0.010	0.0012
Chlorobenzene	ND		mg/kg	0.00050	0.00013
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Styrene	ND		mg/kg	0.0010	0.00020
Bromoform	ND		mg/kg	0.0040	0.00025
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00050	0.00017
1,3-Dichlorobenzene	ND		mg/kg	0.0020	0.00015
1,4-Dichlorobenzene	ND		mg/kg	0.0020	0.00017
1,2-Dichlorobenzene	ND		mg/kg	0.0020	0.00014
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0030	0.0010
1,2,4-Trichlorobenzene	ND		mg/kg	0.0020	0.00027
1,2,3-Trichlorobenzene	ND		mg/kg	0.0020	0.00032

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 18:16
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 10,13,17 Batch: WG1433277-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 18:16
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15 Batch: WG1433278-5					
Dichlorodifluoromethane	ND		mg/kg	0.50	0.046
Chloromethane	ND		mg/kg	0.20	0.047
Vinyl chloride	ND		mg/kg	0.050	0.017
Bromomethane	ND		mg/kg	0.10	0.029
Chloroethane	ND		mg/kg	0.10	0.023
Trichlorofluoromethane	ND		mg/kg	0.20	0.035
1,1-Dichloroethene	ND		mg/kg	0.050	0.012
Carbon disulfide	ND		mg/kg	0.50	0.23
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.20	0.035
Methylene chloride	ND		mg/kg	0.25	0.11
Acetone	ND		mg/kg	0.50	0.24
trans-1,2-Dichloroethene	ND		mg/kg	0.075	0.0068
Methyl Acetate	ND		mg/kg	0.20	0.048
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
1,1-Dichloroethane	ND		mg/kg	0.050	0.0072
cis-1,2-Dichloroethene	ND		mg/kg	0.050	0.0088
1,2-Dichloroethene, Total	ND		mg/kg	0.050	0.0068
Cyclohexane	ND		mg/kg	0.50	0.027
Bromochloromethane	ND		mg/kg	0.10	0.010
Chloroform	ND		mg/kg	0.075	0.0070
Carbon tetrachloride	ND		mg/kg	0.050	0.012
1,1,1-Trichloroethane	ND		mg/kg	0.025	0.0084
2-Butanone	ND		mg/kg	0.50	0.11
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Methyl cyclohexane	ND		mg/kg	0.20	0.030
Trichloroethene	ND		mg/kg	0.025	0.0068
1,2-Dichloropropane	ND		mg/kg	0.050	0.0062
Bromodichloromethane	ND		mg/kg	0.025	0.0054

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 18:16
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15 Batch: WG1433278-5					
1,4-Dioxane	ND		mg/kg	4.0	1.8
cis-1,3-Dichloropropene	ND		mg/kg	0.025	0.0079
Toluene	ND		mg/kg	0.050	0.027
4-Methyl-2-pentanone	ND		mg/kg	0.50	0.064
Tetrachloroethene	ND		mg/kg	0.025	0.0098
trans-1,3-Dichloropropene	ND		mg/kg	0.050	0.014
1,3-Dichloropropene, Total	ND		mg/kg	0.025	0.0079
1,1,2-Trichloroethane	ND		mg/kg	0.050	0.013
Dibromochloromethane	ND		mg/kg	0.050	0.0070
1,2-Dibromoethane	ND		mg/kg	0.050	0.014
2-Hexanone	ND		mg/kg	0.50	0.059
Chlorobenzene	ND		mg/kg	0.025	0.0064
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Styrene	ND		mg/kg	0.050	0.0098
Bromoform	ND		mg/kg	0.20	0.012
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.025	0.0083
1,3-Dichlorobenzene	ND		mg/kg	0.10	0.0074
1,4-Dichlorobenzene	ND		mg/kg	0.10	0.0086
1,2-Dichlorobenzene	ND		mg/kg	0.10	0.0072
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.15	0.050
1,2,4-Trichlorobenzene	ND		mg/kg	0.10	0.014
1,2,3-Trichlorobenzene	ND		mg/kg	0.10	0.016

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 18:16
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15 Batch: WG1433278-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03,08-09,11 Batch: WG1431829-3 WG1431829-4								
Dichlorodifluoromethane	84		83		30-146	1		30
Chloromethane	100		98		52-130	2		30
Vinyl chloride	117		116		67-130	1		30
Bromomethane	126		124		57-147	2		30
Chloroethane	119		115		50-151	3		30
Trichlorofluoromethane	112		111		70-139	1		30
1,1-Dichloroethene	112		111		65-135	1		30
Carbon disulfide	103		103		59-130	0		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	117		115		50-139	2		30
Methylene chloride	106		105		70-130	1		30
Acetone	130		127		54-140	2		30
trans-1,2-Dichloroethene	114		114		70-130	0		30
Methyl Acetate	130		133		51-146	2		30
Methyl tert butyl ether	109		110		66-130	1		30
1,1-Dichloroethane	125		124		70-130	1		30
cis-1,2-Dichloroethene	110		110		70-130	0		30
Cyclohexane	135		135		59-142	0		30
Bromochloromethane	113		113		70-130	0		30
Chloroform	109		110		70-130	1		30
Carbon tetrachloride	119		120		70-130	1		30
1,1,1-Trichloroethane	115		114		70-130	1		30
2-Butanone	126		125		70-130	1		30
Benzene	108		107		70-130	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03,08-09,11 Batch: WG1431829-3 WG1431829-4								
1,2-Dichloroethane	126		125		70-130	1		30
Methyl cyclohexane	116		114		70-130	2		30
Trichloroethene	109		108		70-130	1		30
1,2-Dichloropropane	123		121		70-130	2		30
Bromodichloromethane	107		106		70-130	1		30
cis-1,3-Dichloropropene	109		108		70-130	1		30
Toluene	92		90		70-130	2		30
4-Methyl-2-pentanone	99		99		70-130	0		30
Tetrachloroethene	90		87		70-130	3		30
trans-1,3-Dichloropropene	92		91		70-130	1		30
1,1,2-Trichloroethane	88		87		70-130	1		30
Dibromochloromethane	93		92		70-130	1		30
1,2-Dibromoethane	86		86		70-130	0		30
2-Hexanone	94		95		70-130	1		30
Chlorobenzene	89		88		70-130	1		30
Ethylbenzene	93		92		70-130	1		30
p/m-Xylene	90		88		70-130	2		30
o-Xylene	88		87		70-130	1		30
Styrene	86		86		70-130	0		30
Bromoform	85		85		70-130	0		30
Isopropylbenzene	85		86		70-130	1		30
1,1,1,2-Tetrachloroethane	79		79		70-130	0		30
1,3-Dichlorobenzene	83		83		70-130	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03,08-09,11 Batch: WG1431829-3 WG1431829-4								
1,4-Dichlorobenzene	83		83		70-130	0		30
1,2-Dichlorobenzene	82		82		70-130	0		30
1,2-Dibromo-3-chloropropane	85		85		68-130	0		30
1,2,4-Trichlorobenzene	88		88		70-130	0		30
1,2,3-Trichlorobenzene	86		86		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	110		108		70-130
Toluene-d8	92		90		70-130
4-Bromofluorobenzene	95		96		70-130
Dibromofluoromethane	107		106		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1431881-3 WG1431881-4								
Dichlorodifluoromethane	96		97		36-147	1		20
Chloromethane	96		100		64-130	4		20
Vinyl chloride	94		97		55-140	3		20
Bromomethane	94		97		39-139	3		20
Chloroethane	130		130		55-138	0		20
Trichlorofluoromethane	110		120		62-150	9		20
1,1-Dichloroethene	95		100		61-145	5		20
Carbon disulfide	94		99		51-130	5		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	100		110		70-130	10		20
Methylene chloride	98		98		70-130	0		20
Acetone	88		90		58-148	2		20
trans-1,2-Dichloroethene	91		97		70-130	6		20
Methyl Acetate	86		92		70-130	7		20
Methyl tert butyl ether	84		93		63-130	10		20
1,1-Dichloroethane	98		110		70-130	12		20
cis-1,2-Dichloroethene	90		98		70-130	9		20
Cyclohexane	95		110		70-130	15		20
Bromochloromethane	92		100		70-130	8		20
Chloroform	96		100		70-130	4		20
Carbon tetrachloride	98		110		63-132	12		20
1,1,1-Trichloroethane	99		110		67-130	11		20
2-Butanone	88		100		63-138	13		20
Benzene	92		100		70-130	8		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1431881-3 WG1431881-4								
1,2-Dichloroethane	99		110		70-130	11		20
Methyl cyclohexane	95		110		70-130	15		20
Trichloroethene	96		100		70-130	4		20
1,2-Dichloropropane	91		100		70-130	9		20
Bromodichloromethane	92		100		67-130	8		20
1,4-Dioxane	72		80		56-162	11		20
cis-1,3-Dichloropropene	88		98		70-130	11		20
Toluene	95		100		70-130	5		20
Tetrachloroethene	92		99		70-130	7		20
4-Methyl-2-pentanone	79		93		59-130	16		20
trans-1,3-Dichloropropene	89		100		70-130	12		20
1,1,2-Trichloroethane	91		98		70-130	7		20
Dibromochloromethane	91		100		63-130	9		20
1,2-Dibromoethane	90		99		70-130	10		20
2-Hexanone	80		89		57-130	11		20
Chlorobenzene	100		100		75-130	0		20
Ethylbenzene	100		110		70-130	10		20
p/m-Xylene	105		110		70-130	5		20
o-Xylene	100		110		70-130	10		20
Styrene	105		110		70-130	5		20
Bromoform	87		97		54-136	11		20
Isopropylbenzene	110		110		70-130	0		20
1,1,2,2-Tetrachloroethane	90		100		67-130	11		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1431881-3 WG1431881-4								
1,3-Dichlorobenzene	100		110		70-130	10		20
1,4-Dichlorobenzene	96		100		70-130	4		20
1,2-Dichlorobenzene	95		100		70-130	5		20
1,2-Dibromo-3-chloropropane	65		80		41-144	21	Q	20
1,2,4-Trichlorobenzene	74		83		70-130	11		20
1,2,3-Trichlorobenzene	62	Q	68	Q	70-130	9		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	106		105		70-130
Toluene-d8	103		97		70-130
4-Bromofluorobenzene	105		105		70-130
Dibromofluoromethane	99		102		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1431975-3 WG1431975-4								
Dichlorodifluoromethane	88		80		30-146	10		30
Chloromethane	108		100		52-130	8		30
Vinyl chloride	112		103		67-130	8		30
Bromomethane	108		97		57-147	11		30
Chloroethane	124		114		50-151	8		30
Trichlorofluoromethane	105		95		70-139	10		30
1,1-Dichloroethene	112		104		65-135	7		30
Carbon disulfide	107		98		59-130	9		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	108		99		50-139	9		30
Methylene chloride	105		102		70-130	3		30
Acetone	104		100		54-140	4		30
trans-1,2-Dichloroethene	115		108		70-130	6		30
Methyl Acetate	110		110		51-146	0		30
Methyl tert butyl ether	102		102		66-130	0		30
1,1-Dichloroethane	115		108		70-130	6		30
cis-1,2-Dichloroethene	112		106		70-130	6		30
Cyclohexane	108		100		59-142	8		30
Bromochloromethane	107		105		70-130	2		30
Chloroform	113		107		70-130	5		30
Carbon tetrachloride	115		107		70-130	7		30
1,1,1-Trichloroethane	124		114		70-130	8		30
2-Butanone	106		104		70-130	2		30
Benzene	116		110		70-130	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1431975-3 WG1431975-4								
1,2-Dichloroethane	106		103		70-130	3		30
Methyl cyclohexane	106		99		70-130	7		30
Trichloroethene	123		115		70-130	7		30
1,2-Dichloropropane	111		107		70-130	4		30
Bromodichloromethane	115		113		70-130	2		30
cis-1,3-Dichloropropene	98		97		70-130	1		30
Toluene	110		103		70-130	7		30
4-Methyl-2-pentanone	90		89		70-130	1		30
Tetrachloroethene	121		113		70-130	7		30
trans-1,3-Dichloropropene	110		107		70-130	3		30
1,1,2-Trichloroethane	107		104		70-130	3		30
Dibromochloromethane	98		96		70-130	2		30
1,2-Dibromoethane	108		106		70-130	2		30
2-Hexanone	100		99		70-130	1		30
Chlorobenzene	109		104		70-130	5		30
Ethylbenzene	114		106		70-130	7		30
p/m-Xylene	120		112		70-130	7		30
o-Xylene	118		111		70-130	6		30
Styrene	105		101		70-130	4		30
Bromoform	102		102		70-130	0		30
Isopropylbenzene	107		103		70-130	4		30
1,1,1,2-Tetrachloroethane	104		105		70-130	1		30
1,3-Dichlorobenzene	104		102		70-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1431975-3 WG1431975-4								
1,4-Dichlorobenzene	101		99		70-130	2		30
1,2-Dichlorobenzene	101		99		70-130	2		30
1,2-Dibromo-3-chloropropane	91		90		68-130	1		30
1,2,4-Trichlorobenzene	101		102		70-130	1		30
1,2,3-Trichlorobenzene	102		103		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		101		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	93		96		70-130
Dibromofluoromethane	102		102		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10,13,17 Batch: WG1433277-3 WG1433277-4								
Dichlorodifluoromethane	36		43		30-146	18		30
Chloromethane	58		57		52-130	2		30
Vinyl chloride	67		67		67-130	0		30
Bromomethane	94		94		57-147	0		30
Chloroethane	83		79		50-151	5		30
Trichlorofluoromethane	72		72		70-139	0		30
1,1-Dichloroethene	81		79		65-135	3		30
Carbon disulfide	76		74		59-130	3		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	78		77		50-139	1		30
Methylene chloride	90		84		70-130	7		30
Acetone	90		85		54-140	6		30
trans-1,2-Dichloroethene	90		86		70-130	5		30
Methyl Acetate	79		77		51-146	3		30
Methyl tert butyl ether	94		88		66-130	7		30
1,1-Dichloroethane	96		90		70-130	6		30
cis-1,2-Dichloroethene	93		88		70-130	6		30
Cyclohexane	81		82		59-142	1		30
Bromochloromethane	89		84		70-130	6		30
Chloroform	93		85		70-130	9		30
Carbon tetrachloride	84		81		70-130	4		30
1,1,1-Trichloroethane	87		84		70-130	4		30
2-Butanone	84		93		70-130	10		30
Benzene	95		90		70-130	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10,13,17 Batch: WG1433277-3 WG1433277-4								
1,2-Dichloroethane	95		90		70-130	5		30
Methyl cyclohexane	83		84		70-130	1		30
Trichloroethene	90		86		70-130	5		30
1,2-Dichloropropane	100		93		70-130	7		30
Bromodichloromethane	93		86		70-130	8		30
cis-1,3-Dichloropropene	98		92		70-130	6		30
Toluene	94		90		70-130	4		30
4-Methyl-2-pentanone	91		90		70-130	1		30
Tetrachloroethene	84		81		70-130	4		30
trans-1,3-Dichloropropene	99		93		70-130	6		30
1,1,2-Trichloroethane	98		92		70-130	6		30
Dibromochloromethane	89		84		70-130	6		30
1,2-Dibromoethane	94		89		70-130	5		30
2-Hexanone	84		86		70-130	2		30
Chlorobenzene	90		86		70-130	5		30
Ethylbenzene	94		90		70-130	4		30
p/m-Xylene	92		89		70-130	3		30
o-Xylene	92		88		70-130	4		30
Styrene	93		89		70-130	4		30
Bromoform	92		86		70-130	7		30
Isopropylbenzene	98		93		70-130	5		30
1,1,2,2-Tetrachloroethane	97		95		70-130	2		30
1,3-Dichlorobenzene	94		89		70-130	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10,13,17 Batch: WG1433277-3 WG1433277-4								
1,4-Dichlorobenzene	93		88		70-130	6		30
1,2-Dichlorobenzene	92		86		70-130	7		30
1,2-Dibromo-3-chloropropane	85		81		68-130	5		30
1,2,4-Trichlorobenzene	95		89		70-130	7		30
1,2,3-Trichlorobenzene	92		86		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		104		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	110		109		70-130
Dibromofluoromethane	99		99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15 Batch: WG1433278-3 WG1433278-4								
Dichlorodifluoromethane	36		43		30-146	18		30
Chloromethane	58		57		52-130	2		30
Vinyl chloride	67		67		67-130	0		30
Bromomethane	94		94		57-147	0		30
Chloroethane	83		79		50-151	5		30
Trichlorofluoromethane	72		72		70-139	0		30
1,1-Dichloroethene	81		79		65-135	3		30
Carbon disulfide	76		74		59-130	3		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	78		77		50-139	1		30
Methylene chloride	90		84		70-130	7		30
Acetone	90		85		54-140	6		30
trans-1,2-Dichloroethene	90		86		70-130	5		30
Methyl Acetate	79		77		51-146	3		30
Methyl tert butyl ether	94		88		66-130	7		30
1,1-Dichloroethane	96		90		70-130	6		30
cis-1,2-Dichloroethene	93		88		70-130	6		30
Cyclohexane	81		82		59-142	1		30
Bromochloromethane	89		84		70-130	6		30
Chloroform	93		85		70-130	9		30
Carbon tetrachloride	84		81		70-130	4		30
1,1,1-Trichloroethane	87		84		70-130	4		30
2-Butanone	84		93		70-130	10		30
Benzene	95		90		70-130	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15 Batch: WG1433278-3 WG1433278-4								
1,2-Dichloroethane	95		90		70-130	5		30
Methyl cyclohexane	83		84		70-130	1		30
Trichloroethene	90		86		70-130	5		30
1,2-Dichloropropane	100		93		70-130	7		30
Bromodichloromethane	93		86		70-130	8		30
cis-1,3-Dichloropropene	98		92		70-130	6		30
Toluene	94		90		70-130	4		30
4-Methyl-2-pentanone	91		90		70-130	1		30
Tetrachloroethene	84		81		70-130	4		30
trans-1,3-Dichloropropene	99		93		70-130	6		30
1,1,2-Trichloroethane	98		92		70-130	6		30
Dibromochloromethane	89		84		70-130	6		30
1,2-Dibromoethane	94		89		70-130	5		30
2-Hexanone	84		86		70-130	2		30
Chlorobenzene	90		86		70-130	5		30
Ethylbenzene	94		90		70-130	4		30
p/m-Xylene	92		89		70-130	3		30
o-Xylene	92		88		70-130	4		30
Styrene	93		89		70-130	4		30
Bromoform	92		86		70-130	7		30
Isopropylbenzene	98		93		70-130	5		30
1,1,2,2-Tetrachloroethane	97		95		70-130	2		30
1,3-Dichlorobenzene	94		89		70-130	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15 Batch: WG1433278-3 WG1433278-4								
1,4-Dichlorobenzene	93		88		70-130	6		30
1,2-Dichlorobenzene	92		86		70-130	7		30
1,2-Dibromo-3-chloropropane	85		81		68-130	5		30
1,2,4-Trichlorobenzene	95		89		70-130	7		30
1,2,3-Trichlorobenzene	92		86		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	104		104		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	110		108		70-130
Dibromofluoromethane	99		100		70-130

INORGANICS & MISCELLANEOUS

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-03
Client ID: P5LDA02-N (6.0-6.5)
Sample Location: MALVERN, PA

Date Collected: 11/05/20 10:20
Date Received: 11/05/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.0		%	0.100	NA	1	-	11/06/20 10:00	121,2540G	RI



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-08
Client ID: P5LDA02R (9.5-10)
Sample Location: MALVERN, PA

Date Collected: 11/05/20 11:45
Date Received: 11/05/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	11/06/20 10:00	121,2540G	RI



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-09
Client ID: P5LDA02-S (6.0-6.5)
Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:10
Date Received: 11/05/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	11/06/20 10:00	121,2540G	RI



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-10
 Client ID: P5LDA02-S (9.5-10)
 Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:20
 Date Received: 11/05/20
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	11/11/20 16:19	121,2540G	TR



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-11
Client ID: P5LDA02-W (6.0-6.5)
Sample Location: MALVERN, PA

Date Collected: 11/05/20 12:35
Date Received: 11/05/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.1		%	0.100	NA	1	-	11/06/20 10:00	121,2540G	RI



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-13
Client ID: P5LDA02-SW (6.0-6.5)
Sample Location: MALVERN, PA

Date Collected: 11/05/20 13:00
Date Received: 11/05/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	11/11/20 16:19	121,2540G	TR



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-15
Client ID: P5LDA02-S-1 (6.0-6.5)
Sample Location: MALVERN, PA

Date Collected: 11/05/20 13:30
Date Received: 11/05/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.1		%	0.100	NA	1	-	11/11/20 16:19	121,2540G	TR



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2048777-17
Client ID: P5LDA02-SE (6.0-6.5)
Sample Location: MALVERN, PA

Date Collected: 11/05/20 14:05
Date Received: 11/05/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	11/11/20 16:19	121,2540G	TR



Lab Duplicate Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Project Number: 0539.0003J000

Lab Number: L2048777

Report Date: 11/13/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 03,08-09,11 QC Batch ID: WG1431169-1 QC Sample: L2048681-04 Client ID: DUP Sample						
Solids, Total	79.8	80.2	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 10,13,15,17 QC Batch ID: WG1433203-1 QC Sample: L2049473-01 Client ID: DUP Sample						
Solids, Total	44.3	46.4	%	5		20

Project Name: BISHOP TUBE**Lab Number:** L2048777**Project Number:** 0539.0003J000**Report Date:** 11/13/20**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2048777-01A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-01B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-01C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-01D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-01X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-01Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-01Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-02A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-02B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-02C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-02D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-02X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-02Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-02Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-03A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-03B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-03C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-03D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2048777-03X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-03Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-03Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-04A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-04B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)

Project Name: BISHOP TUBE**Lab Number:** L2048777**Project Number:** 0539.0003J000**Report Date:** 11/13/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2048777-04C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-04D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-04X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-04Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-04Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-05A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-05B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-05C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-05D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-05X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-05Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-05Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-06A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-06B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-06C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-06D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-06X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-06Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-06Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-07A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-07B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-07C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-07D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-07X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-07Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-07Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-08A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-08B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Serial_No:11132014:26
Lab Number: L2048777
Report Date: 11/13/20

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2048777-08C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-08D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2048777-08X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-08Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-08Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-09A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2048777-09B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2048777-09C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2048777-09D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2048777-09X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2048777-09Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260H(14),PA-8260HLW(14)
L2048777-09Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260H(14),PA-8260HLW(14)
L2048777-10A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-10B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-10C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-10D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2048777-10X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-10Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-10Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-11A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-11B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-11C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-11D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2048777-11X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-11Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-11Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-12A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-12B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)

*Values in parentheses indicate holding time in days



Project Name: BISHOP TUBE

Lab Number: L2048777

Project Number: 0539.0003J000

Report Date: 11/13/20

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2048777-12C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-12D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-12X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-12Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-12Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-13A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-13B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-13C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-13D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2048777-13X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-13Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-13Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-14A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-14B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-14C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-14D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-14X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-14Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-14Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-15A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-15B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-15C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-15D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2048777-15X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-15Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-15Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-16A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-16B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Serial_No:11132014:26
Lab Number: L2048777
Report Date: 11/13/20

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2048777-16C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-16D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-16X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-16Y	Vial Water preserved split	A	NA		4.2	Y	Absent	09-NOV-20 14:12	HOLD-8260HLW(14)
L2048777-16Z	Vial Water preserved split	A	NA		4.2	Y	Absent	09-NOV-20 14:12	HOLD-8260HLW(14)
L2048777-17A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-17B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-17C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-17D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2048777-17X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2048777-17Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-17Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	PA-8260HLW(14)
L2048777-18A	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-18B	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-18C	5 gram Encore Sampler	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-18D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2048777-18X	Vial MeOH preserved split	A	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L2048777-18Y	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-18Z	Vial Water preserved split	A	NA		4.2	Y	Absent	06-NOV-20 14:10	HOLD-8260HLW(14)
L2048777-19A	Vial HCl preserved	A	NA		4.2	Y	Absent		PA-8260(14)
L2048777-19B	Vial HCl preserved	A	NA		4.2	Y	Absent		PA-8260(14)
L2048777-19C	Vial HCl preserved	A	NA		4.2	Y	Absent		PA-8260(14)
L2048777-20A	Vial HCl preserved	A	NA		4.2	Y	Absent		PA-8260(14)
L2048777-20B	Vial HCl preserved	A	NA		4.2	Y	Absent		PA-8260(14)

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: BISHOP TUBE
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Lab Number: L2048777
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: DU Report with 'J' Qualifiers



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Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2048777
Report Date: 11/13/20

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

EPA TO-12 Non-methane organics

EPA 3C Fixed gases

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3286

Service Centers

Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

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of 2

Date Rec'd in Lab 11/06/20

ALPHA Job # 2048777

Client Information

Client: Rowx Associates
Address: 402 Heron Dr
Logan Twp NJ 08055
Phone: 856-423-8800
Fax:
Email: sredding@rowxinc.com

Project Information

Project Name: Rishop Tube
Project Location: Malmora, PA
Project # 0539.0003.000
(Use Project name as Project #)

Project Manager: Sam Redding
ALPHAQuote #:
Turn-Around Time:

Standard except Due Date:
Rush (only if pre approved) where noted # of Days:

Deliverables

NJ Full / Reduced
 EQUS (1 File) EQUS (4 File)
 Other DA reduced / Rowx NJ Dase

Regulatory Requirement

SRS Residential/Non Residential
 SRS Impact to Groundwater
 NJ Ground Water Quality Standards
 NJ IGW SPLP Leachate Criteria
 Other PA MSCs

Billing Information

Same as Client Info
PO #

Site Information

Is this site impacted by Petroleum? Yes
Petroleum Product:

These samples have been previously analyzed by Alpha

For EPH, selection is REQUIRED:

- Category 1
- Category 2

For VOC, selection is REQUIRED:

- 1,4-Dioxane
- 8011

Other project specific requirements/comments:

X = run E = extract + hold
h = hold
Please specify Metals or TAL.

ANALYSIS

Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs	TS	Other	Other	Other	Other	Other	Other	Other	Other	Other
4877-01	11/5/20	0955	SO	ROUX	E	H									
-02		1005			E	H									
-03		1020			X	X									
-04		1030			X	X									
-05		1045			E	H									
-06		1055			E	H									
-07		1135			X	X									
-08		1145			X	X									
-09		1210			X	X									
-10		1220			X	X									

Sample Filtration

- Done
- Lab to do
- Preservation**
- Lab to do

(Please Specify below)

Sample Specific Comments

2-day TAT
2-day TAT
2-day TAT
2-day TAT
2-day TAT
2-day TAT
2-day TAT

ALPHA Lab ID (Lab Use Only)

Sample ID

Collection

Sample Matrix

Sampler's Initials

Preservative Code:

- A = None
- B = HCl
- C = HNO₃
- D = H₂SO₄
- E = NaOH
- F = MeOH
- G = NaHSO₄
- H = Na₂S₂O₃
- K/E = Zn Ac/NaOH
- O = Other

Container Code

- P = Plastic
- A = Amber Glass
- V = Vial
- G = Glass
- B = Bacteria Cup
- C = Cube
- O = Other
- E = Encore
- D = BOD Bottle

Westboro: Certification No: MA935

Mansfield: Certification No: MA015

Container Type

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Out Mill</u>	11/5/20 1545	<u>[Signature]</u>	11/5/20 15:45
<u>[Signature]</u>	11-5-20 1720	<u>[Signature]</u>	11-5-20 1720
<u>[Signature]</u>	11-5-20 1941	<u>[Signature]</u>	11/5/20 2000
<u>[Signature]</u>	11/6/20 0040	<u>[Signature]</u>	11/6/20 00:40

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)



ANALYTICAL REPORT

Lab Number:	L2049324
Client:	Roux Associates 402 Heron Drive Logan Township, NJ 08085
ATTN:	Sara Redding
Phone:	(856) 423-8800
Project Name:	BISHOP TUBE
Project Number:	0539.0003J000
Report Date:	11/13/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2049324-01	PSLDA02-E-1(6.0-6.5)	SOIL	MALVERN, PA	11/06/20 08:45	11/09/20
L2049324-02	PSLDA02-E-1(9.5-10)	SOIL	MALVERN, PA	11/06/20 08:55	11/09/20
L2049324-03	PSLDA02-E (6.0-6.5)	SOIL	MALVERN, PA	11/06/20 09:20	11/09/20
L2049324-04	PSLDA02-E (9.5-10)	SOIL	MALVERN, PA	11/06/20 09:30	11/09/20
L2049324-05	PSLDA02-W-1 (6.0-6.5)	SOIL	MALVERN, PA	11/06/20 09:45	11/09/20
L2049324-06	PSLDA02-W-1 (9.5-10)	SOIL	MALVERN, PA	11/06/20 09:55	11/09/20
L2049324-07	P5RSA01R (1.0-1.5)	SOIL	MALVERN, PA	11/06/20 10:30	11/09/20
L2049324-08	P5RSA02R (1.0-1.5)	SOIL	MALVERN, PA	11/06/20 10:20	11/09/20
L2049324-09	FB-20201106	WATER	MALVERN, PA	11/06/20 10:15	11/09/20
L2049324-10	TB-20201105	WATER	MALVERN, PA	11/06/20 00:00	11/09/20

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Case Narrative (continued)

Report Submission

November 13, 2020: This final report includes the results of all requested analyses.

November 10, 2020: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The encores for Volatile Organics analysis were received beyond the required 48 hour holding time for extrusion. The client was notified and the results of the analysis are reported.

Total Metals

The WG1433169-3 MS recovery, performed on L2049324-07, is outside the acceptance criteria for chromium (141%). A post digestion spike was performed and was within acceptance criteria.

The WG1433169-4 Laboratory Duplicate RPD for chromium (84%), performed on L2049324-07, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

Solids, Total

WG1434054: A Laboratory Duplicate could not be performed due to insufficient sample volume available for analysis.

Hexavalent Chromium

L2049324-09 was analyzed with the method required holding time exceeded.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Tiffani Morrissey

Title: Technical Director/Representative

Date: 11/13/20

ORGANICS

VOLATILES

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-03
 Client ID: PSLDA02-E (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/06/20 09:20
 Date Received: 11/09/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 11/10/20 08:50
 Analyst: MV
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Dichlorodifluoromethane	ND		mg/kg	0.014	0.0012	1
Chloromethane	ND		mg/kg	0.0054	0.0013	1
Vinyl chloride	ND		mg/kg	0.0014	0.00045	1
Bromomethane	ND		mg/kg	0.0027	0.00079	1
Chloroethane	ND		mg/kg	0.0027	0.00061	1
Trichlorofluoromethane	ND		mg/kg	0.0054	0.00094	1
1,1-Dichloroethene	ND		mg/kg	0.0014	0.00032	1
Carbon disulfide	ND		mg/kg	0.014	0.0062	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0054	0.00094	1
Methylene chloride	ND		mg/kg	0.0068	0.0031	1
Acetone	0.014	J	mg/kg	0.034	0.014	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0020	0.00018	1
Methyl Acetate	0.0066		mg/kg	0.0054	0.0013	1
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
1,1-Dichloroethane	ND		mg/kg	0.0014	0.00020	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0014	0.00024	1
1,2-Dichloroethene, Total	ND		mg/kg	0.0014	0.00018	1
Cyclohexane	ND		mg/kg	0.014	0.00074	1
Bromochloromethane	ND		mg/kg	0.0027	0.00028	1
Chloroform	ND		mg/kg	0.0020	0.00019	1
Carbon tetrachloride	ND		mg/kg	0.0014	0.00031	1
1,1,1-Trichloroethane	ND		mg/kg	0.00068	0.00023	1
2-Butanone	ND		mg/kg	0.014	0.0030	1
Benzene	ND		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Methyl cyclohexane	ND		mg/kg	0.0054	0.00082	1
Trichloroethene	0.00054	J	mg/kg	0.00068	0.00018	1
1,2-Dichloropropane	ND		mg/kg	0.0014	0.00017	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-03
 Client ID: PSLDA02-E (6.0-6.5)
 Sample Location: MALVERN, PA

Date Collected: 11/06/20 09:20
 Date Received: 11/09/20
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Bromodichloromethane	ND		mg/kg	0.00068	0.00015	1
1,4-Dioxane	ND		mg/kg	0.11	0.048	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00068	0.00021	1
Toluene	ND		mg/kg	0.0014	0.00074	1
4-Methyl-2-pentanone	ND		mg/kg	0.014	0.0017	1
Tetrachloroethene	ND		mg/kg	0.00068	0.00026	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0014	0.00037	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00068	0.00021	1
1,1,2-Trichloroethane	ND		mg/kg	0.0014	0.00036	1
Dibromochloromethane	ND		mg/kg	0.0014	0.00019	1
1,2-Dibromoethane	ND		mg/kg	0.0014	0.00038	1
2-Hexanone	ND		mg/kg	0.014	0.0016	1
Chlorobenzene	ND		mg/kg	0.00068	0.00017	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00076	1
o-Xylene	ND		mg/kg	0.0014	0.00039	1
Xylenes, Total	ND		mg/kg	0.0014	0.00039	1
Styrene	ND		mg/kg	0.0014	0.00026	1
Bromoform	ND		mg/kg	0.0054	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00068	0.00022	1
1,3-Dichlorobenzene	ND		mg/kg	0.0027	0.00020	1
1,4-Dichlorobenzene	ND		mg/kg	0.0027	0.00023	1
1,2-Dichlorobenzene	ND		mg/kg	0.0027	0.00020	1
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0041	0.0014	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0027	0.00037	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0027	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	100		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-09
 Client ID: FB-20201106
 Sample Location: MALVERN, PA

Date Collected: 11/06/20 10:15
 Date Received: 11/09/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 11/11/20 14:49
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Chloromethane	ND		ug/l	2.5	0.20	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Bromomethane	ND		ug/l	1.0	0.26	1
Chloroethane	ND		ug/l	1.0	0.13	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15	1
Methylene chloride	ND		ug/l	2.5	0.68	1
Acetone	ND		ug/l	5.0	1.5	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Cyclohexane	ND		ug/l	10	0.27	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Chloroform	ND		ug/l	0.75	0.22	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
2-Butanone	ND		ug/l	5.0	1.9	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Methyl cyclohexane	ND		ug/l	10	0.40	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-09
Client ID: FB-20201106
Sample Location: MALVERN, PA

Date Collected: 11/06/20 10:15
Date Received: 11/09/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Bromodichloromethane	ND		ug/l	0.50	0.19	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Toluene	ND		ug/l	0.75	0.20	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Styrene	ND		ug/l	1.0	0.36	1
Bromoform	ND		ug/l	2.0	0.25	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	96		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-10
 Client ID: TB-20201105
 Sample Location: MALVERN, PA

Date Collected: 11/06/20 00:00
 Date Received: 11/09/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 11/11/20 15:13
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Chloromethane	ND		ug/l	2.5	0.20	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Bromomethane	ND		ug/l	1.0	0.26	1
Chloroethane	ND		ug/l	1.0	0.13	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15	1
Methylene chloride	ND		ug/l	2.5	0.68	1
Acetone	ND		ug/l	5.0	1.5	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Cyclohexane	ND		ug/l	10	0.27	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Chloroform	ND		ug/l	0.75	0.22	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
2-Butanone	ND		ug/l	5.0	1.9	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Methyl cyclohexane	ND		ug/l	10	0.40	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-10
Client ID: TB-20201105
Sample Location: MALVERN, PA

Date Collected: 11/06/20 00:00
Date Received: 11/09/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Bromodichloromethane	ND		ug/l	0.50	0.19	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Toluene	ND		ug/l	0.75	0.20	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Styrene	ND		ug/l	1.0	0.36	1
Bromoform	ND		ug/l	2.0	0.25	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	122		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	95		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/10/20 07:10
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1432528-5					
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00092
Chloromethane	ND		mg/kg	0.0040	0.00093
Vinyl chloride	ND		mg/kg	0.0010	0.00034
Bromomethane	ND		mg/kg	0.0020	0.00058
Chloroethane	ND		mg/kg	0.0020	0.00045
Trichlorofluoromethane	ND		mg/kg	0.0040	0.00070
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00024
Carbon disulfide	ND		mg/kg	0.010	0.0046
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		mg/kg	0.0040	0.00069
Methylene chloride	ND		mg/kg	0.0050	0.0023
Acetone	ND		mg/kg	0.025	0.010
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00014
Methyl Acetate	ND		mg/kg	0.0040	0.00095
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
1,1-Dichloroethane	ND		mg/kg	0.0010	0.00014
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00018
1,2-Dichloroethene, Total	ND		mg/kg	0.0010	0.00014
Cyclohexane	ND		mg/kg	0.010	0.00054
Bromochloromethane	ND		mg/kg	0.0020	0.00020
Chloroform	ND		mg/kg	0.0015	0.00014
Carbon tetrachloride	ND		mg/kg	0.0010	0.00023
1,1,1-Trichloroethane	ND		mg/kg	0.00050	0.00017
2-Butanone	ND		mg/kg	0.010	0.0022
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Methyl cyclohexane	ND		mg/kg	0.0040	0.00060
Trichloroethene	ND		mg/kg	0.00050	0.00014
1,2-Dichloropropane	ND		mg/kg	0.0010	0.00012
Bromodichloromethane	ND		mg/kg	0.00050	0.00011

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/10/20 07:10
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1432528-5					
1,4-Dioxane	ND		mg/kg	0.080	0.035
cis-1,3-Dichloropropene	ND		mg/kg	0.00050	0.00016
Toluene	ND		mg/kg	0.0010	0.00054
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.0013
Tetrachloroethene	ND		mg/kg	0.00050	0.00020
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00027
1,3-Dichloropropene, Total	ND		mg/kg	0.00050	0.00016
1,1,2-Trichloroethane	ND		mg/kg	0.0010	0.00027
Dibromochloromethane	ND		mg/kg	0.0010	0.00014
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00028
2-Hexanone	ND		mg/kg	0.010	0.0012
Chlorobenzene	ND		mg/kg	0.00050	0.00013
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Styrene	ND		mg/kg	0.0010	0.00020
Bromoform	ND		mg/kg	0.0040	0.00025
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00050	0.00017
1,3-Dichlorobenzene	ND		mg/kg	0.0020	0.00015
1,4-Dichlorobenzene	ND		mg/kg	0.0020	0.00017
1,2-Dichlorobenzene	ND		mg/kg	0.0020	0.00014
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0030	0.0010
1,2,4-Trichlorobenzene	ND		mg/kg	0.0020	0.00027
1,2,3-Trichlorobenzene	ND		mg/kg	0.0020	0.00032

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/10/20 07:10
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1432528-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	100		70-130

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 08:56
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 09-10 Batch: WG1433207-5					
Dichlorodifluoromethane	ND		ug/l	5.0	0.24
Chloromethane	ND		ug/l	2.5	0.20
Vinyl chloride	ND		ug/l	1.0	0.07
Bromomethane	ND		ug/l	1.0	0.26
Chloroethane	ND		ug/l	1.0	0.13
Trichlorofluoromethane	ND		ug/l	2.5	0.16
1,1-Dichloroethene	ND		ug/l	0.50	0.17
Carbon disulfide	ND		ug/l	5.0	0.30
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15
Methylene chloride	ND		ug/l	2.5	0.68
Acetone	ND		ug/l	5.0	1.5
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16
Methyl Acetate	ND		ug/l	2.0	0.23
Methyl tert butyl ether	ND		ug/l	1.0	0.17
1,1-Dichloroethane	ND		ug/l	0.75	0.21
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16
Cyclohexane	ND		ug/l	10	0.27
Bromochloromethane	ND		ug/l	2.5	0.15
Chloroform	ND		ug/l	0.75	0.22
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
2-Butanone	ND		ug/l	5.0	1.9
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Methyl cyclohexane	ND		ug/l	10	0.40
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Bromodichloromethane	ND		ug/l	0.50	0.19

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 08:56
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 09-10 Batch: WG1433207-5					
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Toluene	ND		ug/l	0.75	0.20
Tetrachloroethene	ND		ug/l	0.50	0.18
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,2-Dibromoethane	ND		ug/l	2.0	0.19
2-Hexanone	ND		ug/l	5.0	0.52
Chlorobenzene	ND		ug/l	0.50	0.18
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Styrene	ND		ug/l	1.0	0.36
Bromoform	ND		ug/l	2.0	0.25
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/11/20 08:56
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 09-10 Batch: WG1433207-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	119		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2049324

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1432528-3 WG1432528-4								
Dichlorodifluoromethane	83		89		30-146	7		30
Chloromethane	99		104		52-130	5		30
Vinyl chloride	100		104		67-130	4		30
Bromomethane	101		103		57-147	2		30
Chloroethane	113		116		50-151	3		30
Trichlorofluoromethane	98		103		70-139	5		30
1,1-Dichloroethene	99		107		65-135	8		30
Carbon disulfide	94		100		59-130	6		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	104		108		50-139	4		30
Methylene chloride	103		104		70-130	1		30
Acetone	110		101		54-140	9		30
trans-1,2-Dichloroethene	101		109		70-130	8		30
Methyl Acetate	118		112		51-146	5		30
Methyl tert butyl ether	103		103		66-130	0		30
1,1-Dichloroethane	106		112		70-130	6		30
cis-1,2-Dichloroethene	101		108		70-130	7		30
Cyclohexane	106		114		59-142	7		30
Bromochloromethane	106		107		70-130	1		30
Chloroform	105		110		70-130	5		30
Carbon tetrachloride	102		108		70-130	6		30
1,1,1-Trichloroethane	109		116		70-130	6		30
2-Butanone	113		105		70-130	7		30
Benzene	106		113		70-130	6		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2049324

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1432528-3 WG1432528-4								
1,2-Dichloroethane	106		107		70-130	1		30
Methyl cyclohexane	102		110		70-130	8		30
Trichloroethene	112		116		70-130	4		30
1,2-Dichloropropane	106		111		70-130	5		30
Bromodichloromethane	112		115		70-130	3		30
cis-1,3-Dichloropropene	96		99		70-130	3		30
Toluene	96		104		70-130	8		30
4-Methyl-2-pentanone	88		88		70-130	0		30
Tetrachloroethene	104		112		70-130	7		30
trans-1,3-Dichloropropene	105		109		70-130	4		30
1,1,2-Trichloroethane	105		106		70-130	1		30
Dibromochloromethane	91		95		70-130	4		30
1,2-Dibromoethane	104		104		70-130	0		30
2-Hexanone	102		99		70-130	3		30
Chlorobenzene	98		104		70-130	6		30
Ethylbenzene	99		106		70-130	7		30
p/m-Xylene	104		111		70-130	7		30
o-Xylene	103		110		70-130	7		30
Styrene	95		100		70-130	5		30
Bromoform	97		100		70-130	3		30
Isopropylbenzene	92		102		70-130	10		30
1,1,1,2-Tetrachloroethane	105		103		70-130	2		30
1,3-Dichlorobenzene	95		102		70-130	7		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1432528-3 WG1432528-4								
1,4-Dichlorobenzene	92		98		70-130	6		30
1,2-Dichlorobenzene	93		100		70-130	7		30
1,2-Dibromo-3-chloropropane	90		88		68-130	2		30
1,2,4-Trichlorobenzene	93		100		70-130	7		30
1,2,3-Trichlorobenzene	94		100		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	108		102		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	94		96		70-130
Dibromofluoromethane	102		100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2049324

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 09-10 Batch: WG1433207-3 WG1433207-4								
Dichlorodifluoromethane	93		95		36-147	2		20
Chloromethane	95		94		64-130	1		20
Vinyl chloride	160	Q	160	Q	55-140	0		20
Bromomethane	180	Q	180	Q	39-139	0		20
Chloroethane	230	Q	230	Q	55-138	0		20
Trichlorofluoromethane	110		110		62-150	0		20
1,1-Dichloroethene	97		100		61-145	3		20
Carbon disulfide	100		100		51-130	0		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	110		110		70-130	0		20
Methylene chloride	99		99		70-130	0		20
Acetone	100		100		58-148	0		20
trans-1,2-Dichloroethene	110		110		70-130	0		20
Methyl Acetate	94		89		70-130	5		20
Methyl tert butyl ether	97		97		63-130	0		20
1,1-Dichloroethane	94		94		70-130	0		20
cis-1,2-Dichloroethene	94		95		70-130	1		20
Cyclohexane	92		96		70-130	4		20
Bromochloromethane	110		110		70-130	0		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	100		100		63-132	0		20
1,1,1-Trichloroethane	99		100		67-130	1		20
2-Butanone	100		96		63-138	4		20
Benzene	98		100		70-130	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Lab Number: L2049324

Project Number: 0539.0003J000

Report Date: 11/13/20

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 09-10 Batch: WG1433207-3 WG1433207-4								
1,2-Dichloroethane	81		81		70-130	0		20
Methyl cyclohexane	100		110		70-130	10		20
Trichloroethene	100		100		70-130	0		20
1,2-Dichloropropane	92		95		70-130	3		20
Bromodichloromethane	100		100		67-130	0		20
cis-1,3-Dichloropropene	96		96		70-130	0		20
Toluene	100		100		70-130	0		20
Tetrachloroethene	98		98		70-130	0		20
4-Methyl-2-pentanone	94		88		59-130	7		20
trans-1,3-Dichloropropene	100		96		70-130	4		20
1,1,2-Trichloroethane	100		100		70-130	0		20
Dibromochloromethane	100		100		63-130	0		20
1,2-Dibromoethane	98		99		70-130	1		20
2-Hexanone	87		86		57-130	1		20
Chlorobenzene	100		100		75-130	0		20
Ethylbenzene	98		100		70-130	2		20
p/m-Xylene	100		100		70-130	0		20
o-Xylene	100		100		70-130	0		20
Styrene	100		100		70-130	0		20
Bromoform	110		100		54-136	10		20
Isopropylbenzene	85		89		70-130	5		20
1,3-Dichlorobenzene	45	Q	48	Q	70-130	6		20
1,4-Dichlorobenzene	97		100		70-130	3		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 09-10 Batch: WG1433207-3 WG1433207-4								
1,2-Dichlorobenzene	95		100		70-130	5		20
1,2-Dibromo-3-chloropropane	81		86		41-144	6		20
1,2,4-Trichlorobenzene	85		92		70-130	8		20
1,2,3-Trichlorobenzene	86		88		70-130	2		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	93		91		70-130
Toluene-d8	122		121		70-130
4-Bromofluorobenzene	89		90		70-130
Dibromofluoromethane	97		97		70-130

METALS

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-07
 Client ID: P5RSA01R (1.0-1.5)
 Sample Location: MALVERN, PA

Date Collected: 11/06/20 10:30
 Date Received: 11/09/20
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	24.7		mg/kg	0.470	0.045	1	11/12/20 07:35	11/12/20 13:25	EPA 3050B	1,6010D	PS



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-08
 Client ID: P5RSA02R (1.0-1.5)
 Sample Location: MALVERN, PA

Date Collected: 11/06/20 10:20
 Date Received: 11/09/20
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	34.2		mg/kg	0.465	0.045	1	11/12/20 07:35	11/12/20 23:17	EPA 3050B	1,6010D	BV



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-09
 Client ID: FB-20201106
 Sample Location: MALVERN, PA

Date Collected: 11/06/20 10:15
 Date Received: 11/09/20
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	ND		ug/l	1.000	0.1780	1	11/11/20 01:38	11/11/20 10:39	EPA 3005A	1,6020B	AM



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 09 Batch: WG1432683-1									
Chromium, Total	ND	ug/l	1.000	0.1780	1	11/11/20 01:38	11/11/20 09:55	1,6020B	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 07-08 Batch: WG1433169-1									
Chromium, Total	ND	mg/kg	0.400	0.038	1	11/12/20 07:35	11/12/20 13:16	1,6010D	PS

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 09 Batch: WG1432683-2								
Chromium, Total	98		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 07-08 Batch: WG1433169-2 SRM Lot Number: D109-540								
Chromium, Total	96		-		70-130	-		

Matrix Spike Analysis Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 09 QC Batch ID: WG1432683-3 QC Sample: L2049400-01 Client ID: MS Sample												
Chromium, Total	0.3784J	200	203.3	102		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 07-08 QC Batch ID: WG1433169-3 QC Sample: L2049324-07 Client ID: P5RSA01R (1.0-1.5)												
Chromium, Total	24.7	19.2	51.7	141	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Project Number: 0539.0003J000

Lab Number: L2049324

Report Date: 11/13/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 07-08 QC Batch ID: WG1433169-4 QC Sample: L2049324-07 Client ID: P5RSA01R (1.0-1.5)						
Chromium, Total	24.7	60.7	mg/kg	84	Q	20

INORGANICS & MISCELLANEOUS

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-03
Client ID: PSLDA02-E (6.0-6.5)
Sample Location: MALVERN, PA

Date Collected: 11/06/20 09:20
Date Received: 11/09/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.8		%	0.100	NA	1	-	11/10/20 05:09	121,2540G	PR



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-07
Client ID: P5RSA01R (1.0-1.5)
Sample Location: MALVERN, PA

Date Collected: 11/06/20 10:30
Date Received: 11/09/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	11/10/20 13:59	121,2540G	RI
Chromium, Hexavalent	ND		mg/kg	0.990	0.198	1	11/12/20 16:51	11/12/20 21:00	1,7196A	CM



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-08
Client ID: P5RSA02R (1.0-1.5)
Sample Location: MALVERN, PA

Date Collected: 11/06/20 10:20
Date Received: 11/09/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	11/10/20 13:59	121,2540G	RI
Chromium, Hexavalent	ND		mg/kg	0.979	0.196	1	11/12/20 16:51	11/12/20 21:00	1,7196A	CM



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

SAMPLE RESULTS

Lab ID: L2049324-09
Client ID: FB-20201106
Sample Location: MALVERN, PA

Date Collected: 11/06/20 10:15
Date Received: 11/09/20
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	ND		ug/l	10000	NA	1	-	11/12/20 06:45	121,2540B	DW
Chromium, Hexavalent	ND		ug/l	10.0	3.00	1	11/10/20 07:00	11/10/20 07:23	1,7196A	KP



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Method Blank Analysis
Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 09 Batch: WG1432409-1									
Chromium, Hexavalent	ND	ug/l	10.0	3.00	1	11/10/20 07:00	11/10/20 07:22	1,7196A	KP
General Chemistry - Westborough Lab for sample(s): 07-08 Batch: WG1433642-1									
Chromium, Hexavalent	ND	mg/kg	0.800	0.160	1	11/12/20 16:51	11/12/20 21:00	1,7196A	CM
General Chemistry - Westborough Lab for sample(s): 09 Batch: WG1434054-1									
Solids, Total	ND	ug/l	10000	NA	1	-	11/12/20 06:45	121,2540B	DW

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 09 Batch: WG1432409-2								
Chromium, Hexavalent	105		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 07-08 Batch: WG1433642-2								
Chromium, Hexavalent	95		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 09 Batch: WG1434054-2								
Solids, Total	96		-		80-120	-		

Matrix Spike Analysis Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 09 QC Batch ID: WG1432409-4 QC Sample: L2049324-09 Client ID: FB-20201106												
Chromium, Hexavalent	ND	100	105	105	-	-	-	-	85-115	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 07-08 QC Batch ID: WG1433642-4 QC Sample: L2049324-08 Client ID: P5RSA02R (1.0-1.5)												
Chromium, Hexavalent	ND	783	882	113	-	-	-	-	75-125	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Project Number: 0539.0003J000

Lab Number: L2049324

Report Date: 11/13/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 03 QC Batch ID: WG1432373-1 QC Sample: L2049219-02 Client ID: DUP Sample						
Solids, Total	88.3	88.0	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 09 QC Batch ID: WG1432409-3 QC Sample: L2049324-09 Client ID: FB-20201106						
Chromium, Hexavalent	ND	ND	ug/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 07-08 QC Batch ID: WG1432615-1 QC Sample: L2049373-04 Client ID: DUP Sample						
Solids, Total	78.8	80.4	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 07-08 QC Batch ID: WG1433642-6 QC Sample: L2049324-08 Client ID: P5RSA02R (1.0-1.5)						
Chromium, Hexavalent	ND	ND	mg/kg	NC		20

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Serial_No:11132015:26
Lab Number: L2049324
Report Date: 11/13/20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler **Custody Seal**
 B Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2049324-01A	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-01B	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-01C	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-01D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Present/Intact		HOLD-WETCHEM()
L2049324-01X	Vial MeOH preserved split	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-01Y	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-01Z	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-02A	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-02B	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-02C	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-02D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Present/Intact		HOLD-WETCHEM()
L2049324-02X	Vial MeOH preserved split	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-02Y	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-02Z	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-03A	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		PA-8260HLW(14)
L2049324-03B	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		PA-8260HLW(14)
L2049324-03C	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		PA-8260HLW(14)
L2049324-03D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Present/Intact		TS(7)
L2049324-03X	Vial MeOH preserved split	B	NA		4.7	Y	Present/Intact		PA-8260HLW(14)
L2049324-03Y	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	PA-8260HLW(14)
L2049324-03Z	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	PA-8260HLW(14)
L2049324-04A	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-04B	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)

*Values in parentheses indicate holding time in days



Project Name: BISHOP TUBE**Lab Number:** L2049324**Project Number:** 0539.0003J000**Report Date:** 11/13/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2049324-04C	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-04D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Present/Intact		HOLD-WETCHEM()
L2049324-04X	Vial MeOH preserved split	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-04Y	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-04Z	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-05A	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-05B	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-05C	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-05D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Present/Intact		HOLD-WETCHEM()
L2049324-05X	Vial MeOH preserved split	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-05Y	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-05Z	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-06A	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-06B	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-06C	5 gram Encore Sampler	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-06D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Present/Intact		HOLD-WETCHEM()
L2049324-06X	Vial MeOH preserved split	B	NA		4.7	Y	Present/Intact		HOLD-8260HLW(14)
L2049324-06Y	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-06Z	Vial Water preserved split	B	NA		4.7	Y	Present/Intact	10-NOV-20 06:35	HOLD-8260HLW(14)
L2049324-07A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Present/Intact		CR-TI(180)
L2049324-07B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Present/Intact		TS(7),HEXCR-7196(30)
L2049324-08A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Present/Intact		CR-TI(180)
L2049324-08B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Present/Intact		TS(7),HEXCR-7196(30)
L2049324-09A	Vial HCl preserved	B	NA		4.7	Y	Present/Intact		PA-8260(14)
L2049324-09B	Vial HCl preserved	B	NA		4.7	Y	Present/Intact		PA-8260(14)
L2049324-09C	Vial HCl preserved	B	NA		4.7	Y	Present/Intact		PA-8260(14)
L2049324-09D	Plastic 250ml unpreserved	B	7	7	4.7	Y	Present/Intact		TSC-2540-PPB(7),HEXCR-7196-PPB(1)
L2049324-09E	Plastic 250ml HNO3 preserved	B	<2	<2	4.7	Y	Present/Intact		CR-6020T-PPB(180)

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Serial_No:11132015:26
Lab Number: L2049324
Report Date: 11/13/20

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2049324-10A	Vial HCl preserved	B	NA		4.7	Y	Present/Intact		PA-8260(14)
L2049324-10B	Vial HCl preserved	B	NA		4.7	Y	Present/Intact		PA-8260(14)

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: DU Report with 'J' Qualifiers



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Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2049324
Report Date: 11/13/20

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

EPA TO-12 Non-methane organics

EPA 3C Fixed gases

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

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WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Project Information

Project Name: Bishop Tube
Project Location: Malvern, PA
Project #: 0539.0003J000
Project Manager: Sara Redding
ALPHA Quote #:

Date Rec'd in Lab: 11/9/20

ALPHA Job #: L 2049324

Report Information - Data Deliverables

FAX EMAIL PA reduced
 ADEX Add'l Deliverables PAF base

Billing Information

Same as Client info PO #:

Client Information

Client: Roux Associates
Address: 402 Heran Drive
Logan Twp NJ 08055
Phone: 856 423 8800
Fax:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
Date Due: except where indicated otherwise Time:

Regulatory Requirements/Report Limits

State/Fed Program: PA Criteria: MSLs

Email: sredding@rouxinc.com
 These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

E = Extract + hold H = Hold
X = run

ANALYSIS	VOCs	SAMPLE HANDLING
	Total Solids	
	Total Chromium	
	Hex Chromium	
Filtration _____		TOTAL # BOTTLES
<input type="checkbox"/> Done		
<input type="checkbox"/> Not needed		
<input type="checkbox"/> Lab to do		
Preservation		
<input type="checkbox"/> Lab to do		
(Please specify below)		
Sample Specific Comments		

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS				Sample Specific Comments	
		Date	Time			VOCs	Total Solids	Total Chromium	Hex Chromium		
49324 - 01	PSLDA02 - E-1(6.0-6.5)	11/6/2020	0845	SO	Roux	E	H				
-02	PSLDA02 - E-1(9.5-10)		0855			E	H				
-03	PSLDA02 - E(6.0-6.5)		0920			X	X				2-day TAT
-04	PSLDA02 - E(9.5-10)		0930			E	H				
-05	PSLDA02 - W-1(6.0-6.5)		0945			E	H				
-06	PSLDA02 - W-1(9.5-10)		0955			E	H				
-07	PSRSA01R(1.0-1.5)		1030					X	X		
-08	PSRSA02R(1.0-1.5)		1020					X	X		
-09	FB-20201106		1015	FB	Roux	X	X	X	X		
-10	TB-20201106B			TB	Alpha	X					

Container Type: E P A A
Preservative: A A A A

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time
<u>[Signature]</u>	<u>11/6/2020 1315</u>	<u>[Signature]</u>	<u>11/9/201406</u>
<u>[Signature]</u>	<u>11/9/201730</u>	<u>[Signature]</u>	<u>11/9/201720</u>
<u>[Signature]</u>	<u>11/9/202000</u>	<u>[Signature]</u>	<u>11/9/202015</u>

CUSTODY SEAL
Date 11/19/2020 1315
Signature [Handwritten Signature]

Thermo
SCIENTIFIC
90009

CUSTODY SEAL
Date 11/19/2020 1315
Signature [Handwritten Signature]

Th
SC

Thermo
SCIENTIFIC
90009