

Bristol Integrated Solid Waste  
Management Facility  
Solid Waste Permit #588  
Southwest Regional Office

# 2022 Annual Groundwater Monitoring Report

Presented to:

**City of Bristol**  
2125 Shakesville Road  
Bristol, Virginia 24201

**SCS ENGINEERS**

02218208.07, Task 2 | April 28, 2023

296 Victory Road  
Winchester, VA 22602

## Signature/Certification Sheet

Author:

Name: Logan A. Howard, Sr. Project Professional

Signature:



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Date: April 28, 2023

### Reviewer and Qualified Groundwater Scientist Certification:

I certify that I have prepared or supervised the preparation of this report, that it has been prepared in accordance with industry standards and practices, and that the information contained herein is truthful and accurate to the best of my knowledge.

Name: Jennifer S. Robb, Vice President/Project Director

Signature:



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Date: April 28, 2023

## Annual Report QA/QC Submission Checklist

INCLUDED WITHIN ANNUAL REPORT?	YES	NO
Signature of a qualified groundwater professional	✓	
Solid waste facility permit number & facility name	✓	
Name of current owner/operator & type of facility	✓	
Dates LF began operations and was deemed closed (If applicable)	✓	
Date of last waste receipt (if applicable) [2.b]	✓	
Identified if site is lined or unlined [2.b]	✓	
Identified waste disposal method (trench fill/area fill/etc.) [2.b]	✓	
Total site acreage, and acreage used for waste disposal [2.b]	✓	
Adjoining land use described including any aquifer users [2.c]	✓	
Topographic map included as Figure 1 [2.a]	✓	
Figure 1 shows facility location, includes a bar scale, and north arrow	✓	
Discuss the type, name & age of the geologic unit(s) on site [2.d]	✓	
Description of general site topography [2.d]	✓	
Name of nearest permanent water body, perennial stream, etc. [2.d]	✓	
Description of the uppermost aquifer [2.d]	✓	
Description of the aquifer type (confined vs unconfined) [2.d]	✓	
Date facility entered detection or phase I monitoring [2.b]	✓	
Date facility entered assessment or phase II monitoring [2.b]	✓	
Identified if the facility monitors groundwater under a variance	✓	
Identified the dates of any groundwater variance approvals	✓	
Approval date for wetlands demonstration (if applicable)	✓	
Identified all upgradient and downgradient monitoring wells [2.e]	✓	
Identified if all monitoring wells were sampled during the year [2.e]	✓	
Identified reasons for failure to sample (if applicable) [2.e]	✓	
Identified if any monitoring wells have been abandoned [2 e]	✓	
Identified if any wells require replacement [2.e]	✓	
Included network performance certification statement [2.e]	✓	
Identified groundwater sampling dates during past year [2.f]	✓	
Included site plan drawing as Figure 2 [2.h]	✓	
Figure 2 contains current topographic contours	✓	
Figure 2 contains facility and waste mgmt unit boundaries	✓	
Figure 2 includes all monitoring wells	✓	
Figure 2 includes potentiometric surface contours	✓	
Figure 2 includes groundwater flow direction arrows	✓	
Figure 2 includes all surface water bodies	✓	

<b>INCLUDED WITHIN ANNUAL REPORT?</b>	<b>YES</b>	<b>NO</b>
Figure 2 includes all structures on site, a bar scale, and north arrow	✓	
Listing of groundwater elevation readings in past year [2.h]	✓	
Table of historical groundwater elevation data as Appendix A	✓	
Calculated rate of groundwater flow (distance/year) [2.h]	✓	
Flow rate calculations included as Appendix B	✓	
Identified the name of the analytical laboratory [2.h]	✓	
Identified whether the lab is DCLS Certified	✓	
Identified type of analytical methods used [2.h]	✓	
Identified those constituents found above the LOD and LOQ	✓	
Identified if verification sampling was used during any event	✓	
Identified statistical methods used to analyze groundwater data	✓	
Identified any SSI's noted during prior year of monitoring	✓	
Table of prior detected constituent concentrations in each well [2.g]	✓	
Field data sheet copies included as Appendix C	✓	
Laboratory results & certificates of analysis as CDROM in Appendix D	✓	
Included historical, summary of laboratory results in Appendix E	✓	
Full list of References	✓	
Copy of this QA/QC checklist	✓	

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## List of Acronyms

ACL	Alternate Concentration Limit
DAA	Draper Aden Associates
EPA	Environmental Protection Agency
ft/yr	feet per year
ft/day	feet per day
GMP	Groundwater Monitoring Plan
LCS	Laboratory Control Sample
LOD	Limit of Detection
LOQ	Limit of Quantitation
MS/MSD	Matrix Spike/Matrix Spike Duplicate
PVC	Poly Vinyl Chloride
QA/QC	Quality Assurance/Quality Control
SCS	Stearns Conrad & Schmidt Consulting Engineers, Inc. (SCS Engineers)
SW	Solid Waste
SWP	Solid Waste Permit
ug/L	micrograms per liter
UPL	Upper Prediction Limit
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound

## 1.0 EXECUTIVE SUMMARY

This Annual Groundwater Monitoring Report documents detection groundwater monitoring activities conducted during 2022 for the Bristol Integrated Solid Waste Management Facility's inactive landfill under Solid Waste Permit (SWP) #588 located in Bristol, Virginia. The contents of this report provide the results of the groundwater sampling and laboratory analyses conducted during 2022 and documents the results of the evaluation of groundwater data for each 2022 semi-annual monitoring event. The report was prepared in accordance with Virginia Administrative Code (VAC) Title 9, Agency 20, Chapter 81, Section 250 E 2 a, applicable Virginia Department of Environmental Quality (VDEQ) Submission Instructions (VDEQ, 2011), the Landfill's SWP (VDEQ, As Updated) and the Landfill's Groundwater Monitoring Plan (GMP) (Draper Aden Associates (DAA), 2020).

Groundwater levels were measured at the site's groundwater wells semi-annually (May and December 2022) to assess the groundwater flow direction, estimate groundwater flow rates, and evaluate the effectiveness of the monitoring well network to characterize groundwater quality within the upper-most aquifer. The average groundwater flow rate for 2022 was 22 feet per year (ft/yr) in the Lenoir Mosheim geologic unit and 40 ft/yr in the Knox geologic unit. Based on the 2022 assessment of groundwater flow direction presented below and current knowledge of the site's hydrogeologic conditions, the current groundwater monitoring network effectively monitors the upper-most aquifer as required by 9 VAC 20-81-250 A 3 with the addition of a compliance well (MW-9) in 2023.

- The direction of groundwater flow in the vicinity of the Permit #588 Landfill is controlled by the gradient control underdrain system.
- Groundwater within the Lenoir-Mosheim and Knox Group aquifer systems flows towards the Permit #588 Landfill.
- Background wells MW-106A and MW-106B are upgradient of the Permit #588 Landfill, downgradient of the Permit #498 Landfill, and not hydraulically connected to groundwater flowing beneath the Permit #221 Landfill.
- Background wells MW-205B, MW-206A, and MW-206B are upgradient of the Permit #588 Landfill and not hydraulically connected to groundwater flowing beneath the Permit #221 and #498 Landfills.
- Compliance wells MW-210A, MW-210B, MW-211A, and MW-211B are upgradient of the Permit #588 Landfill potentially due to the effects of the Permit #588 gradient control system.

Groundwater samples were collected semi-annually (May and December) from the monitoring well network during 2022. The 2022 samples were analyzed for the parameters listed on Table 3.1 Column A of 9 VAC 20-81-250. In summary, the 2022 semi-annual validated parameter detections consisted of nine metals and one volatile organic compound (VOC).

Various data evaluation techniques were performed for validated Table 3.1 parameter detections including but not limited to inter-well statistical analysis. No verified inter-well exceedances were identified; thus, groundwater monitoring will continue to be conducted in accordance with the Detection Monitoring Program.



## 2.0 INTRODUCTION

This report documents groundwater monitoring activities and data evaluations conducted for the 2022 calendar year for the City of Bristol Permit #588 Landfill. During 2022, groundwater monitoring was performed in accordance with the Detection Monitoring Program. This report was prepared in accordance with 9 VAC 20-81-250 E 2 a, applicable VDEQ Submission Instructions, and the Landfill's SWP and GMP. The following activities were completed during 2022 and are documented in this report.

- Measurement of groundwater levels in groundwater monitoring wells associated with the landfill.
- Interpretation and mapping of groundwater elevation data.
- Calculation of the estimated groundwater flow rate.
- Semi-annual sampling of five background and four compliance monitoring wells.
- Laboratory analysis of the semi-annual 2022 groundwater samples for Column A parameters.
- Summary of data evaluation results.

The following subsections also present the following site information.

- Summary of the background information for the landfill.
- Description of the physical and geologic setting of the landfill.
- Description of the upper-most aquifer in the vicinity of the landfill.
- History of groundwater monitoring, investigation, and reporting activities.
- Summary of variance petitions and other VDEQ approval for the landfill.
- The applicability of the landfill to comply with House Bill 2471 requirements.
- Description of the landfill's groundwater monitoring well network.

## 2.1 SITE BACKGROUND

The City of Bristol Integrated Solid Waste Management Facility is owned and operated by the City of Bristol (City) and includes three landfills with the following SWP numbers: 221, 498, and 588. Permit #221 Landfill is a closed unlined capped 14-acre landfill located northeast of the Permit #588 Landfill. As the Facility's original waste management unit, the Permit #221 Landfill operated prior to the establishment of the Virginia Solid Waste Management Regulations from the mid 1970's until 1988. The final cover was installed in 1986-1988 and the cover thickness ranges from one to four feet thick based on the boring logs for the landfill gas (LFG) extraction wells. An active LFG collection and control system was installed within the Permit #221 Landfill in July 2000 and currently includes 15 vertical LFG extraction wells. In addition, liquids have been periodically removed from a select number of the LFG extraction wells.

Permit #588 Landfill is an inactive lined 20-acre landfill constructed within a former limestone quarry. The City began accepting waste in March 1998 as a bail-fill landfill and later transitioned to an area fill landfill. The City ceased accepting waste prior to September 12, 2022. Prior to October 10, 2022, the City installed a 12-inch-thick intermediate cover across the entire Permit #588 Landfill

(aka quarry landfill) in accordance with 9 VAC 20-81-140 (B) (1) (d). Permit #588 Landfill contains active LFG and leachate collection systems. A gradient control underdrain system is in place beneath the secondary liner for the purpose of controlling the water level to a maximum elevation of 1,557 feet above mean sea level. The gradient control water currently discharges to a publicly owned treatment works (POTW).

The eastern portion of the 12-acre Permit #498 landfill is equipped with a compacted clay liner and leachate collection system, while the western portion is unlined. The area-fill Permit #498 Landfill began receiving municipal solid waste in 1988 and ceased accepting waste in 2000. A portion of the Permit #498 Landfill was mined for usable cover and recyclables and potential future use as a construction and demolition debris landfill in 2021. Mining operations ceased in September 2022. As of March 2022, City staff estimate that intermediate cover has been placed on more than 85 percent of the Permit #498 Landfill.

The active LFG collection and control system for the Permit #498 Landfill currently includes three in-waste vertical LFG extraction wells and four perimeter soil gas extraction wells. Leachate is extracted from the Permit #498 Landfill via a combination of the blanket drain collection system located in the southeastern portion of the landfill and from two of the LFG extraction wells located around the west and south perimeters of the landfill. Liquid is also extracted from the condensate drip-leg located in the southeast corner of the landfill. Leachate collected from the three landfills currently discharges to a POTW.

## 2.2 PHYSICAL SETTING

The location of the Facility is illustrated on a portion of the Bristol TN, VA, United States Geologic Society 7.5-minute topographic quadrangle map presented as **Figure 1**. The permitted facility boundary encompasses approximately 138. The Site is located approximately two miles northeast of the City of Bristol, Virginia at the southern end of Shakesville Road. The Permit #498 Landfill is surrounded by the Permit #588 and #221 Landfills, undeveloped acreage, and residential areas. Area residences are served by public water supply. Several unnamed tributaries of Sinking Creek are intermittent streams located east of the Permit #498 Landfill. Sinking Creek is the nearest permanent water body and is located east/southeast of the Permit #498 Landfill.

## 2.3 GEOLOGIC SETTING

The geologic setting of the facility is within the Middle Ordovician Age Limestones of the Valley and Ridge Physiographic Province. The structural geology of the facility is complex as indicated by the successive folding and thrust faulting in the area. The lower formations encountered within the quarry are located on the northwest limb of a syncline which has an axis located approximately 3,000 feet southeast of the facility. The axis of the syncline trends in a northeast to southwest direction. The formation bedding in the northern portion of the facility is flat lying, however the structural dip increases to a maximum of approximately 20° toward the southern end of the quarry landfill. The upper portion of the bedrock exposed in the quarry landfill consists of the Chepultepec Formation which has been thrust over the Lenoir Formation. The thrust plane dips toward the south-southeast at 15° to 20°. This thrust plane occurred because of displacement associated with a secondary thrust fault which occurs adjacent to the Bristol Fault located western of the quarry landfill. The Bristol Fault has brought the Honaker Formation into a position where it unconformably overlies the limestones in the area west of the quarry landfill. Below are descriptions of the bedrock formations that underly the facility. The overburden soils within the area of the facility consist of silty to sandy clays and vary in thickness across the facility. (STS, 1992)

- The **Honaker Formation** is the oldest bedrock unit which outcrops near the facility. It is the upper-most bedrock in the western portion of the property and is bounded to the east by the trace of the Bristol Fault. The Bristol Fault has caused the Honaker Formation to partially overlie the Chepultepec and Lenoir Mosheim Formations. The Honaker is a gray to light gray, very fine-grained, medium-bedded, partly cherty dolomite with interbeds of dark gray limestone. Near the quarry landfill the Honaker Formation thickness ranges from a few feet to no more than a few tens of feet due to the shallow dip of the Bristol Fault, which defines its base.
- The **Chepultepec Formation** occurs at the bedrock surface in the central part of the facility and is the upper-most formation exposed in the quarry landfill. It is contained within the thrust block formed by the secondary thrust fault, and its base in the quarry is defined by the thrust fault plane. The Chepultepec is a dark gray, fine-grained, thickly bedded limestone. Within the upper 30 feet, the Chepultepec is moderately-to-severely weathered, and the remainder of the formation is slightly to moderately weathered.

The thickness of the Chepultepec is variable in the vicinity of the quarry landfill. It ranges from a few feet at the northern end of the landfill, where the secondary thrust surface intersects the quarry wall just below the rim, to about 200 feet at the south end of the quarry, where the secondary thrust surface intersects the lower bench. The formation is estimated to be as much as 300 feet thick at the southern edge of the facility.

- The **Knox Group** is a light gray, fine-grained, medium-to-thick-bedded dolomite exposed on the lower portion of the quarry walls and forms the bedrock surface within the secondary thrust block southeast of the quarry landfill. Zones of lithified collapse breccia, typically less than one foot in thickness, but ranging up to five feet, were present in each of the borings performed as part of the Permit #588 Landfill's Part A investigation. The top of the Knox Group is formed by a regional, erosional unconformity which appears as a subtle thin, clay-filled bedding plane with little relief.
- The **Lenoir and Mosheim Formations** are composed of limestone. They are exposed on the quarry walls below the Chepultepec (below the secondary thrust plane) and above the Knox Group. The Lenoir Limestone forms the bedrock surface to the north of the quarry landfill, where it has not been overridden by the secondary thrust. The Lenoir Formation is a dark gray, fine-grained, soft-to-medium-hard, thick-bedded limestone with some pyrite crystals within the argillaceous layers. The Mosheim Formation is a light-to-medium-gray, fine-grained, medium-hard, medium-bedded limestone.
- The **Athens Formation** forms the bedrock surface east of the quarry landfill and beneath most of the Permit #221 and #498 Landfills. The Athens Formation consists of a dark gray, soft to very soft fissile shale.

## 2.4 AQUIFER RECOGNITION

Groundwater in the upper-most unconfined aquifer beneath the landfill lies within the upper portions of the Knox Group. The Athens, Chepultepec, and Lenoir-Mosheim Formations lie above and are hydraulically connected to the Knox Group. A small unnamed creek serves as a local groundwater recharge source for the groundwater flow system, while the quarry serves as the local groundwater discharge area/sink. The surface water that infiltrates from the stream flows westward toward the quarry through a system of interconnected joints. Groundwater coming from the Permit #221 and

#498 Landfills is captured in the gradient control system of the Permit #588 Landfill and does not reach the regional flow system. In addition, the flow from the deeper portions of the Know Group discharge to the quarry landfill gradient control system.

## 2.5 MONITORING HISTORY

**September 22, 1994:** A GMP was developed for the Landfill.

**March 1998:** Groundwater monitoring was initiated in accordance with the Detection Monitoring Program.

**March 23, 2002:** An alternate source demonstration (ASD) was submitted to VDEQ to address statistically significant increases (SSIs) in the gradient control monitoring points. An addendum to the ASD was submitted to the VDEQ on October 23, 2002. The ASD and addendum were approved by the VDEQ on December 12, 2002.

**2007 - 2009:** Multiple ASD's were submitted to the VDEQ to address SSIs for inorganic parameters.

**September 10, 2013:** Draper Aden associates met with the VDEQ to discuss the installation of a well cluster on the west side of the Permit #588 Landfill and modify the groundwater networks for the Permit #588 and Permit #498 Landfills. The VDEQ requested an additional well pair to the west-southwest side of the Permit #588 Landfill along with the submission of a Groundwater Monitoring Program Work Plan (Work Plan).

**November 13, 2013:** The Work Plan was submitted to VDEQ to address VDEQ's concerns with groundwater monitoring for the Permit #588 Landfill. The work plan proposed modifications to the groundwater monitoring well networks for both the Permit #498 and #588 Landfills.

**February 18, 2014:** The Work Plan was approved by the VDEQ and incorporated into the Facility's SWPs (Module XIV – Permit #588). Monitoring under the new work plan began in 2014.

**January 6, 2016 and February 11, 2016:** MW-210A and MW-210B were installed, respectively, in accordance with the February 18, 2014 Work Plan.

**January 10, 2018:** MW-211A and MW-211B were installed respectively in accordance with the February 18, 2014 Work Plan.

**January 20 – February 21, 2022:** Groundwater monitoring wells MW-5, MW-6, MW-7, MW-8, and MW-9 were installed as part of an underground storage tank investigation associated with the Bristol Public Works garage.

**June 10, 2022:** VDEQ requested a well installation summary and hydrologic evaluation for the groundwater monitoring wells installed in January/February 2022. A letter was submitted to VDEQ summarizing the well installation and hydrologic evaluation for MW-5, MW-6, MW-7, MW-8, and MW-9. Based on an evaluation of the hydrologic evaluation and at the suggestion of VDEQ, MW-9 was a proposed compliance well for the Permit #588 Landfill and a proposed sentinel well for the Permit #498 Landfill. MW-5, MW-6, MW-7, and MW-8 may be maintained as additional wells for groundwater level measurements.

## 2.6 VARIANCES OR OTHER DIRECTOR APPROVALS

There are no groundwater related variances in place for this landfill. Other director approvals are discussed in the previous subsection.

## 2.7 HOUSE BILL 2471 REQUIREMENTS

As described in 9 VAC 20-81-250 B 1 e (4), sanitary landfills that accepted waste after June 30, 1999 must perform quarterly groundwater monitoring consistent with the requirements of the special provisions regarding wetlands in Code of Virginia 10.1-1408.5. Landfills that accepted municipal solid waste after June 30, 1999 must increase groundwater-monitoring frequency to a quarterly basis if one of the following wetland criteria is applicable:

- The landfill was constructed on a wetland,
- The landfill has a potential hydrologic connection to a wetland in the event of an escape of liquids from the facility, or
- The landfill is located within one mile of such a wetland.

The above criteria do not apply to the subject site; therefore, groundwater monitoring is conducted on a semi-annual basis.

## 2.8 MONITORING WELL NETWORK

In accordance with 9 VAC 20-81-250 A 3 a, the assessment groundwater monitoring network was installed to monitor the Lenoir-Mosheim (shallow) and Knox Group (deep) aquifer systems, is capable of yielding groundwater samples from the upper-most aquifer that represent the quality of background groundwater that has not been affected by a release from the waste management unit, and represents the quality of groundwater downgradient of the waste management unit boundary. The detection groundwater-monitoring network for the Permit #588 Landfill consists of five background monitoring wells and three compliance wells as listed on **Table 1**. The groundwater monitoring well network also consists of 20 additional wells (see **Table 1**) utilized to help describe groundwater flow. **Table 1** also indicates the aquifer system for which each well is screened. The well locations are shown on **Figure 2**.

Table 1. Groundwater Monitoring Well Network

Well Classification	Screened Geologic Unit	Well ID
Background	Lenoir Mosheim	MW-106A and MW-206A
	Knox Group	MW-106B, MW-205B, and MW-206B
Compliance	Chepultepec	MW-211A
	Lenoir Mosheim	MW-211B
	Secondary Thrust Fault/Lenoir	MW-210A
	Knox Group	MW-210B

Table 1. Groundwater Monitoring Well Network

Well Classification	Screened Geologic Unit	Well ID
Additional	Athens Shale	MW-101, MW-104B, PZ-2, and PZ-3
	Chepultepec	MW-206
	Knox Group	GC Outfall*, MW-5, MW-9**, MW-103, MW-105B, and MW-107B
	Lenoir Mosheim	MW-6, MW-7, MW-8, MW-104A, MW-105A, MW-107A, MW-108, MW-109, and MW-110,

\*Discharge point to POTW of gradient control system for the Permit #588 Landfill.

\*\*MW-9 was proposed to be incorporated into the Permit #588 Landfill groundwater monitoring well network as a compliance well in a letter submitted to the VDEQ on July 24, 2022. This letter documented the installation of MW-5, MW-6, MW-7, MW-8, and MW9.

## 3.0 HYDROLOGIC EVALUATION

In accordance with the VDEQ guidance for annual reporting (VDEQ, 2011), the hydrologic evaluation consists of:

- An assessment of the current well network to effectively monitor the upper-most aquifer (as required by 9 VAC 20-81-250 A 3)
- An assessment of groundwater flow direction
- A calculation of the flow rate for the upper-most aquifer in the vicinity of the landfill

### 3.1 ANNUAL REVIEW OF MONITORING NETWORK

For each semi-annual monitoring event, static water level measurements were obtained from the groundwater monitoring wells associated with the landfill within the same day and prior to purging and sampling procedures. Static water level measurements were made using an electronic water level probe and measured from the top of the PVC casing to  $\pm 0.01$  foot. The static water level measurements of each groundwater monitoring well were used to calculate the elevation of the groundwater which is then used to create a groundwater contour map and establish groundwater flow direction. As included in the following subsections, groundwater elevations were also utilized to calculate groundwater flow velocity.

Groundwater level measurement logs for May 24 and December 5, 2022 are included in **Appendix C**. Historical groundwater elevations dating back to May 2011 are included in **Appendix A**. In addition, a time-series plot is provided in **Appendix A** illustrating the variability of groundwater elevations over time in the background and compliance monitoring wells.

Groundwater contour maps based on the May and December 2022 measurements are included as **Figures 3 - 6**. Groundwater contours were generated using the Surfer™ (Golden Software Vers. 7.04) surface mapping system software using the Kriging gridding method and altered utilizing professional judgement. Based on the 2022 assessment of groundwater flow direction presented below and current knowledge of the site's hydrogeologic conditions, the current groundwater monitoring network effectively monitors the upper-most aquifer as required by 9 VAC 20-81-250 A 3 with the addition of a compliance well (MW-9) in 2023.

- The direction of groundwater flow in the vicinity of the Permit #588 Landfill is controlled by the gradient control underdrain system.
- Groundwater within the Lenoir-Mosheim and Knox Group aquifer systems flows towards the Permit #588 Landfill.
- Background wells MW-106A and MW-106B are upgradient of the Permit #588 Landfill, downgradient of the Permit #498 Landfill, and not hydraulically connected to groundwater flowing beneath the Permit #221 Landfill.
- Background wells MW-205B, MW-206A, and MW-206B are upgradient of the Permit #588 Landfill and not hydraulically connected to groundwater flowing beneath the Permit #221 and #498 Landfills.

- Compliance wells MW-210A, MW-210B, MW-211A, and MW-211B are upgradient of the Permit #588 Landfill potentially due to the effects of the Permit #588 gradient control system.

## 3.2 GROUNDWATER FLOW RATE

An aquifer's flow rate is influenced by the hydraulic gradient, hydraulic conductivity, and porosity of the aquifer. Details regarding each component of the flow rate calculation and groundwater flow rate calculations for the upper-most aquifer in the vicinity of the Landfill are presented in the following sub-sections.

### 3.2.1 Hydraulic Gradient

The horizontal hydraulic gradient ( $i$ ) is the change in head ( $dH$ ) per unit of distance ( $dL$ ) in the direction of groundwater flow. Hydraulic gradient is the one factor for groundwater velocity calculations that may change over time. Horizontal hydraulic gradients were calculated using the difference between various groundwater contour lines as shown on the May and December 2022 Groundwater Contour Maps included as **Figures 3 - 6**. The 2022 hydraulic gradient calculations are included in **Appendix B**. The hydraulic gradients for the Lenoir Mosheim Limestone geologic unit in 2022 ranged from 0.226 to 0.453 feet per foot (ft/ft), with an average of 0.335 ft/ft. The hydraulic gradients for the Knox geologic unit in 2022 ranged from 0.134 to 0.295 feet per foot (ft/ft), with an average of 0.236 ft/ft.

### 3.2.2 Hydraulic Conductivity

Hydraulic conductivity ( $K$ ) is the measure of a specific geological unit's ability to transmit water and is necessary to calculate groundwater rate. It is expressed as the volume of water that will move in a unit time under unit hydraulic gradient through a unit area measured at right angles to the direction of flow. Values for hydraulic conductivity are necessary to calculate groundwater flow rates. Based on the previous analysis of aquifer test data, hydraulic conductivities of 13 ft/yr for the Lenoir geologic unit and 17 ft/yr for the Knox geologic unit were calculated (STS, 1998 GVAR).

### 3.2.3 Porosity

Porosity ( $n_e$ ) is the measure of a material's pore space through which water can flow. The porosity of the Lenoir-Mosheim aquifer is 20% (DAA, 2021). The porosity of the Knox Group aquifer is 10% (STS, 1999).

### 3.2.4 Groundwater Flow Velocity

Groundwater flow rates for the Lenoir-Mosheim and Knox Group aquifers were calculated using the Darcy equation (Fetter, 1994):

$$v_x = \frac{Ki}{n_e}$$

where:

$v_x$	=	groundwater flow rate
$K$	=	hydraulic conductivity
$i$	=	horizontal hydraulic gradient



$n_e$  = effective porosity of the aquifer

As shown in **Appendix B**, groundwater flow rates were calculated utilizing the following:

- Horizontal hydraulic gradients between various groundwater contour lines as shown on the May and December 2022 Groundwater Contour Maps
- Hydraulic conductivity of 13 ft/yr for Lenoir-Mosheim aquifer. Hydraulic conductivity of 17 ft/yr for Knox Group aquifer.
- Porosity of 20% for Lenoir-Mosheim aquifer. Porosity of 10% for Knox Group aquifer.

The estimated groundwater flow rates for 2022 in the Lenoir geologic unit ranged from 15 feet per year (ft/yr) to 29 ft/yr with an average of 22 ft/yr. The estimated groundwater flow rates for 2022 in the Knox geologic unit ranged from 23 ft/yr to 50 ft/yr with an average of 40 ft/yr. Regulated chemical constituents may travel through the subsurface at rates that may be more or less than the groundwater flow velocity due to natural physical, chemical, and biological factors (e.g., dispersion, soil adsorption, chemical degradation, oxidation, and biodegradation).

## 4.0 GROUNDWATER EVALUATION

The following subsections document the performance of the 2022 semi-annual groundwater monitoring events. Subsections include groundwater sample collection, laboratory procedures, laboratory analytical results, and a review of prior detections.

### 4.1 GROUNDWATER SAMPLING BACKGROUND

On May 24 - 26 and December 5 - 7, 2022 SCS collected samples for the 1<sup>st</sup> and 2<sup>nd</sup> semi-annual 2022 monitoring event, respectively, from the five background wells and three compliance wells. Daily field logs and well sampling logs for the 2022 monitoring events are included in **Appendix C**.

Each well was purged and sampled in accordance with low flow purging/sampling protocol presented in the Landfill's GMP. Groundwater was extracted from the wells using a portable pump. During purging the following indicator parameters were periodically measured and recorded: dissolved oxygen, oxidation-reduction potential, pH, specific conductance, temperature, and turbidity. Purging was performed until three consecutive measurements of the below indicator parameters met the stabilization criteria shown on **Table 2**.

Table 2. Indicator Parameter Stabilization Criteria

Indicator Parameter	Stabilization Range
Dissolved Oxygen	10%
pH	10%
Specific Conductivity	10%
Turbidity	10%

mV = millivolt  
s.u. = standard unit

Clean nitrile gloves were worn during purging and sampling procedures and during the handling of equipment that encountered the monitoring wells. Nitrile gloves were changed between each monitoring well. In accordance with the Landfill's GMP, non-dedicated equipment was decontaminated before and after entry into a well using a soapy distilled/deionized water rinse followed by a thorough rinse with plain distilled/deionized water.

The samples were collected in laboratory-provided sampling containers and were stored in a clean, iced cooler for delivery to the contract laboratory. A chain-of-custody form was maintained and submitted with the samples to the laboratory to document sample custody (see **Appendix C**). Upon receipt at the laboratory, the sample containers were inspected for integrity and consistency with the information entered on the chain-of-custody form. The laboratory's sample preservation logs and sample checklists are included in **Appendix D**.

### 4.2 LABORATORY PROCEDURES

The 2022 samples were delivered to Enthalpy Analytical in Richmond, Virginia for analysis. The laboratory's Virginia Division of Consolidated Laboratory Services certifications are provided in **Appendix D**. The following subsections present the analytical methods utilized by the laboratory, a review of data quality assurance and quality control measures, and a review of the data validation.

## 4.2.1 Laboratory Analysis

The May and December 2022 samples were analyzed for parameters listed in Table 3.1 Column A of 9 VAC 20-81-250 D. A summary of the specific analytical parameters and appropriate laboratory analytical methods for each 2022 semi-annual monitoring event is shown on **Table 3** (Environmental Protection Agency (EPA), 2014).

Table 3. Analytical Parameter Groups and Laboratory Analytical Methods

Parameters	Analytical Method
Metals	SW-846 6020B
Volatile Organic Compounds	SW-846 8011 & 8260D

## 4.2.2 Data Quality Review

Field quality control involved the collection and analysis of trip and field blanks to verify the sample collection and handling processes did not impair the quality of the samples.

- **Trip Blank** – Trip blanks were prepared for VOC analysis via SW-846 Methods 8011 and 8260. Laboratory personnel filled one of each type of sample bottle with distilled/deionized water and shipped them to SCS. Trip blanks were prepared immediately prior to the sampling event and transported with the empty bottle kits. Field personnel handled the trip blanks like a sample; they remained un-opened, were transported in the sample cooler, and were returned to the laboratory for analysis. A trip blank is used to indicate potential contamination due to migration of VOCs from the air on the site or in the sample shipping containers through the septum or around the lid of the sampling vials and into the sample.
- **Field Blank** – The field blank is a sample of distilled/deionized water, which was taken to the field and used as rinse water for sampling equipment. The field blank was prepared like the actual samples and returned to the laboratory for identical analysis. A field blank is used to assess whether certain field sampling or cleaning procedures could result in cross-contamination of site samples or if atmospheric contamination has potentially occurred.

Laboratory quality assurance/quality control (QA/QC) involves the routine collection and analysis of method reagent blanks, matrix spike (MS) and matrix spike duplicate (MSD) samples, and laboratory control samples (LCS). A summary of each of these is presented below:

- **Method Reagent Blank** – The method reagent blank is deionized water subjected to the same reagents and manipulations to which site samples are subjected. Positive results in the method reagent blank may indicate either contamination of the chemical reagents or the glassware and implements used to store or prepare the sample and resulting solutions.
- **MS/MSD** – A MS is an aliquot of a field sample with a known concentration of target parameter added to it. An MSD is an intra-laboratory split sample spiked with a known concentration of target parameter. Spiking for each occurs prior to sample analysis. MS/MSD samples are collected for every batch of twenty or fewer samples. Matrix spike

recoveries are used to indicate what effect the sample matrix may have on the reported concentration and/or the performance of the sample preparation and analysis.

- **LCS** – These samples consist of deionized water injected with the parameters of interest for single parameter methods and selected parameters for multi-parameter methods according to the appropriate analytical method. LCS samples are prepared and analyzed for each batch containing twenty or fewer samples. LCS recoveries are used to monitor analytical accuracy.

**Table 4** summarizes the parameters detected in the 2022 QC blanks. The laboratory’s certificates of analysis for the 2022 field, trip, and method blanks and duplicate samples are included in **Appendix D**. The laboratory QA/QC reports, including the method blank results, for the 2022 semi-annual monitoring events are included in **Appendix G**.

Table 4. Quality Control Blank Detects Summary

Blank ID	Parameter	Concentration (ug/L)	LOD (ug/L)	LOQ (ug/L)
<b>May 2022</b>				
Trip Blank	Acetone	7.21 J	7	10
Field Blank	Acetone	12.1	7	10
<b>December 2022</b>				
Field Blank	Acetone	11.5	7	10

J = Qualifier used if reported concentration is less than the LOQ but greater than the LOD. The concentration is estimated and not validated.

LOD = Limit of Detection

LOQ = Limit of Quantitation

ug/L = micrograms per liter

### 4.2.3 Data Validation

To identify analytical data that may not represent valid results, data from the 2022 monitoring events were validated by the laboratory and SCS. In accordance with United States Environmental Protection Agency (EPA) guidance (EPA, 1992 and 2017), data validation was performed in the following manner. Data flagged with a “J” qualifier indicates the quantitation of the parameter is less than the laboratory’s limit of quantitation (LOQ) but greater than the laboratory’s limit of detection (LOD); thus, the concentration is considered estimated. Samples with parameter detections less than five times that of the trip blank, field blank, and/or method blank detection but greater than the laboratory’s LOD are flagged with a “B” qualifier. Samples with common lab contaminant parameter detections less than 10 times that of the trip blank, field blank, and/or method/laboratory blank detection but greater than the laboratory’s LOD are flagged with a “B” qualifier. B qualified detections are considered not validated as the detection may be anomalous due to sampling, laboratory, or transportation errors.

Non-detect data and data flagged with a “J” or “B” qualifier were not subjected to inter-well statistical analysis for compliance purposes. Background data flagged with a “B” qualifier may not be included in the inter-well statistical analysis to preserve the power of the test to detect a potential release from the facility. The 2022 data flagged with a “J” and/or “B” qualifier are shown on **Tables 5 and 6**.

### 4.3 INORGANIC CONSTITUENTS

Table 5 summarizes the Table 3.1 inorganic parameters detected above the laboratory's LOD in the background and compliance monitoring wells for each 2022 semi-annual monitoring event. The laboratory's certificates of analysis for the 2022 semi-annual monitoring events are included in Appendix D.

Table 5. Detected Inorganic Parameters

Well Classification		Background					Compliance				LOD	LOQ
Well ID		MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Parameter	Monitoring Event	Concentration (ug/L)										
<b>COLUMN A METALS</b>												
Arsenic	May-2022	<b>3.2</b>	<b>1</b>	<b>0.56 J</b>	<b>1.5</b>	<b>0.61 J</b>	<b>6.5</b>	ND	ND	ND	0.5	1
	December-2022	<b>3.4</b>	ND	ND	ND	<b>0.53 J</b>	<b>8.2</b>	ND	ND	ND	0.5	1
Barium	May-2022	---	<b>108</b>	<b>93.3</b>	<b>84.5</b>	<b>136</b>	<b>35.7</b>	<b>68.7</b>	<b>47.5</b>	<b>88.8</b>	1	5
	December-2022	---	<b>92.2</b>	<b>103</b>	<b>80.3</b>	<b>170</b>	<b>35.3</b>	<b>70.3</b>	<b>47.6</b>	<b>97.6</b>	1	5
Cadmium	May-2022	ND	ND	ND	<b>0.108 J</b>	ND	ND	ND	ND	ND	0.1	1
	December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	1
Chromium	May-2022	ND	ND	ND	<b>2.34</b>	<b>0.961 J</b>	ND	ND	ND	<b>0.459 J</b>	0.4	1
	December-2022	ND	ND	ND	<b>3.66</b>	ND	ND	<b>0.677 J</b>	ND	ND	0.6	1
Cobalt	May-2022	<b>5.43</b>	<b>0.472 J</b>	ND	<b>1.65</b>	<b>1.43</b>	ND	<b>0.231 J</b>	<b>0.316 J</b>	ND	0.2	1
	December-2022	<b>5.44</b>	<b>0.264 J</b>	ND	<b>0.895 J</b>	<b>1.13</b>	ND	ND	ND	ND	0.2	1
Copper	May-2022	ND	<b>0.725 J</b>	ND	<b>2.06</b>	<b>1.31</b>	ND	<b>0.636 J</b>	ND	ND	0.3	1
	December-2022	ND	ND	ND	<b>0.969 J</b>	<b>0.634 J</b>	ND	ND	<b>0.39 J</b>	ND	0.3	1
Lead	May-2022	ND	ND	ND	<b>2</b>	ND	ND	ND	ND	ND	1	1
	December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1
Nickel	May-2022	<b>7.323</b>	ND	ND	<b>14.93</b>	<b>18.9</b>	ND	<b>2.323</b>	ND	ND	1	1
	December-2022	<b>7.568</b>	ND	ND	<b>26.62</b>	<b>2.544</b>	<b>2.794</b>	<b>2.629</b>	ND	ND	1	1
Silver	May-2022	ND	ND	ND	<b>1.79</b>	<b>0.136 J</b>	ND	ND	ND	<b>0.0632 J</b>	0.06	1
	December-2022	ND	ND	ND	<b>0.394 J</b>	ND	<b>0.19 J</b>	ND	<b>0.107 J</b>	<b>0.0722 J</b>	0.06	1
Zinc	May-2022	ND	<b>2.58 J</b>	<b>3.43 J</b>	<b>11.8</b>	<b>15.7</b>	<b>3.69 J</b>	ND	ND	<b>3.52 J</b>	2.5	5
	December-2022	ND	ND	ND	<b>6.52</b>	<b>5.07</b>	ND	ND	ND	<b>6.51</b>	2.5	5

--- = not applicable

J = Qualifier used if reported concentration is less than the LOQ but greater than the LOD. The concentration is estimated and not validated.

LOD = laboratory's Limit of Detection

LOQ = laboratory's Limit of Quantitation

ND = Not Detected

ug/L = micrograms per liter

### 4.4 ORGANIC CONSTITUENTS

Table 6 summarizes the Table 3.1 organic parameters detected above the laboratory's LOD in the background and compliance monitoring wells for each 2022 semi-annual monitoring event. The laboratory's certificates of analysis for the 2022 semi-annual monitoring events are included in Appendix D.

Table 6. Detected Organic Parameters

Well Classification		Background					Compliance				LOD (ug/L)	LOQ (ug/L)
Well ID		MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B		
Parameter	Monitoring Event	Concentration (ug/L)										
<b>COLUMN A VOLATILE ORGANIC COMPOUNDS</b>												
1,1-Dichloroethane	May-2022	<b>1.02</b>	<b>1.11</b>	ND	ND	ND	ND	ND	ND	ND	0.6	1
	December-2022	<b>1.02</b>	ND	ND	ND	ND	ND	ND	ND	ND	0.6	1
Acetone	May-2022	ND	ND	ND	<b>8.56 J,B</b>	ND	ND	<b>7.41 J,B</b>	ND	ND	7	10
	December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	10
cis-1,2-Dichloroethene	May-2022	<b>0.56 J</b>	ND	ND	ND	ND	ND	ND	ND	ND	0.4	1
	December-2022	<b>0.67 J</b>	ND	ND	ND	ND	ND	ND	ND	ND	0.4	1

--- = not applicable  
 B = Parameter was detected at a concentration less than 10 times the concentration detected in the QC blank; thus, the detection is not validated  
 J = Qualifier used if reported concentration is less than the LOQ but greater than the LOD. The concentration is estimated and not validated.  
 LOD = laboratory's Limit of Detection  
 LOQ = laboratory's Limit of Quantitation  
 ND = Not Detected  
 ug/L = micrograms per liter

#### 4.5 VERIFICATION EVENTS

No verification events were performed in 2022.

#### 4.6 REVIEW OF PRIOR DETECTIONS

A summary of historical analytical results for Column A parameters detected above the laboratory's LOD in the assessment monitoring wells is included in **Appendix E**. Historically detected parameters consist of 15 metals and 11 VOCs.

## 5.0 STATISTICAL EVALUATION

The following data evaluations were performed for selected Table 3.1 Column A parameters detected in the monitoring wells for 2022: data screening, inter-well statistical analysis, and trend analysis. Statistical analysis procedures were performed using the ChemStat (Starpoint Vers. 6.2.1.0) statistical software and Microsoft Excel with significance levels of 95% or 99% (i.e. a false positive rate of 5% or 1%) as described in the following subsections. Parameter concentrations shown on the statistical reports produced by ChemStat are shown in ug/L. The data utilized for the following statistical analyses are provided in **Appendix E**.

### 5.1 DATA SCREENING

Prior to the performance of the inter-well and trend analyses, each data set was screened for outliers and assessments were made as to the treatment of non-detects and duplicate samples. Duplicates were averaged with the original sample to form an independent data point before statistical analyses were performed. The following subsections describe the data adjustments applied for non-detects and outliers.

#### 5.1.1 Treatment of Non-Detects in Background Data

In accordance with VDEQ guidance (VDEQ, 2008), non-detect data were adjusted accordingly for data sets in which statistical analysis was performed. If the laboratory's LOD was unknown but the laboratory's LOQ was known, the laboratory's LOQ was utilized as the laboratory's LOD for statistical evaluation purposes.

- If 25% or fewer of the values were “not detected”, the non-detect results were replaced with the laboratory's LOD divided by two.
- If more than 25%, but less than 50% of the values were reported as “not detected”, the non-detect results were adjusted using the Aitchison's Method.
- If 50% or greater of the data were reported as “not detected”, the non-detect results were replaced with the laboratory's LOD and a non-parametric statistical method was utilized.

#### 5.1.2 Outlier Analysis

Outlier analyses were performed to identify reported values that may be anomalous and, therefore, bias various statistical analyses. The identification of an outlier may be the result of fluctuations in aquifer geochemistry, a release from the landfill, changes in laboratory analytical method or LOD/LOQ, errors during sampling or laboratory analysis, etc.

Outlier analyses were completed for data from upgradient wells MW-106A, MW-106B, MW-205B, MW-206A, and MW-206B for parameters in which inter-well statistical analysis was performed. Outlier analyses were also completed for parameters and wells exhibiting an inter-well exceedance.

The test for outliers consisted of comparing the historical analytical results for each parameter within each well. The Dixon's test was performed for data sets containing 25 or fewer results. The Rosner's test was performed for data sets containing greater than 25 results. Detailed outlier assessments are provided in **Appendix F**.

## 5.2 INTER-WELL STATISTICAL ANALYSIS

In accordance with 9 VAC 20-81-250 B, inter-well statistical analysis was performed to evaluate if parameter detections are potentially due to the waste management unit and assess if the landfill will remain in the detection monitoring program for the detection monitoring well subset. The inter-well statistical analysis process for the 2022 monitoring events involved:

- Establishing Upgradient/Background Data Sets for Upper Prediction Limit (UPL) Calculations
- Assessing Data Distribution of Upgradient/Background Data Sets
- Calculating UPLs
- Comparing 2022 semi-annual compliance monitoring well results to UPLs

### 5.2.1 Establishing the Upgradient/Background Data Sets

Inter-well statistical analysis was performed for validated Table 3.1 parameter detections identified in the compliance wells for the 2022 semi-annual monitoring events. To compare the 2022 semi-annual compliance well parameter detections to the UPLs, a UPL was calculated for each parameter utilizing historical data from upgradient wells MW-106A, MW-106B, MW-205B, MW-206A, and MW-206B.

The upgradient/background data sets must contain at least eight results for the calculation of a parametric UPL and at least 13 results for the calculation of a non-parametric UPL. In accordance with VDEQ guidance (VDEQ, 2008), select data from MW-106A, MW-106B, MW-205B, MW-206A, and MW-206B identified as outliers were not included in the data sets as results may not be representative of upgradient/background aquifer conditions as discussed in Section 5.2.2. In addition, parameter results from MW-106A, MW-106B, MW-205B, MW-206A, and MW-206B flagged with a “B” qualifier were not included in the data sets as results may not be representative of upgradient/background aquifer conditions as discussed in Section 4.2.3.

The dates utilized for the upgradient data sets for the 1<sup>st</sup> semi-annual 2022 monitoring period included sampling events between January 1999 and May 2022. The dates utilized for the upgradient/background data sets for the 2<sup>nd</sup> semi-annual 2022 monitoring period included sampling events between January 1999 and December 2022. Each data set contained 93 to 199 results which was sufficient for the calculation of a parametric or non-parametric UPL. A detailed basic statistics report for each upgradient/background data set is included in **Appendix F**.

### 5.2.2 Assessing Data Distribution

The distribution of each upgradient/background data set with less than 50% non-detects was established to select the appropriate UPL calculation method. The barium and nickel data sets contained more than 50 results; thus, the Shapiro-Francia test was performed to establish data distribution. The data distribution of barium and nickel was non-normal. The detailed Shapiro-Francia reports are included in **Appendix F**. The data set for arsenic and zinc contained greater than 50% non-detects; thus, data distribution was not assessed.



### 5.2.3 Calculating Upper Prediction Limits

A parametric UPL was calculated for upgradient/background data sets in which the distribution of the data was normal and there were less than 50% non-detects in the data set. A non-parametric UPL was calculated for upgradient/background data sets in which the distribution of the data was non-normal or there were greater than 50% non-detects in the data set. If the calculated UPL was less than the laboratory's current LOQ, the UPL was set to the laboratory's current LOQ for comparison purposes. Each UPL was calculated utilizing the non-parametric prediction limit method. Detailed statistical reports for the prediction limit calculations are included in **Appendix F**.

### 5.2.4 Upper Prediction Limit Comparisons

Validated Table 3.1 parameter detections identified in the compliance monitoring wells for the 2022 semi-annual monitoring events were directly compared to the UPL. The UPL comparisons are shown on **Table 7**.

Table 7. Upper Prediction Limit Comparisons - 1st Semi 2022

Well ID	Parameter	Concentration (ug/L)	UPL (ug/L)	Concentration > UPL?
<b>MAY 2022</b>				
MW-210A	Arsenic	6.5	17.2	no
	Barium	35.7	364	no
MW-210B	Barium	68.7	364	no
	Nickel	2.323	65.9	no
MW-211A	Barium	47.5	364	no
MW-211B	Barium	88.8	364	no
<b>COMPLIANCE WELLS</b>				
MW-210A	Arsenic	8.2	17.2	no
	Barium	35.3	364	no
	Nickel	2.794	65.9	no
MW-210B	Barium	70.3	364	no
	Nickel	2.629	65.9	no
MW-211A	Barium	47.6	364	no
MW-211B	Barium	97.6	364	no
	Zinc	6.51	22.2	no

ug/L = micrograms per liter  
UPL = Upper Prediction Limit

## 5.3 TREND ANALYSIS

Trend analysis was performed for 2022 validated parameter detections (not identified as outliers) in the compliance wells to assess if concentrations are increasing or decreasing. Trend analysis involved the performance of the Mann-Kendall trend test and the construction of time-series plots.

Data points identified as outliers were not included in the data sets as results may not be representative of the aquifer conditions as discussed in Section 5.2.2. In addition, parameter results

flagged with a “B” qualifier were not included in the data sets as results may not be representative of the aquifer conditions as discussed in Section 4.2.3.

The Mann-Kendall trend analysis results and time-series plot trends are summarized on **Table 8**. The statistical trend test reports and time-series plots are included in **Appendix F**.

Table 8. Trend Analysis Summary

Well ID	Parameter	Mann-Kendall Trend Test Result	Time-Series Plot Trend
MW-210A	Arsenic	No-Trend	Downward
	Barium	No-Trend	Downward
	Nickel	No-Trend	Upward
MW-210B	Barium	Upward	Upward
	Nickel	No-Trend	Downward
MW-211A	Barium	Downward	Downward
MW-211B	Barium	Downward	Downward
	Zinc	No-Trend	Downward

## 5.4 VERIFIED EXCEEDANCES

No verified inter-well exceedances were identified in 2022, thus groundwater monitoring will continue to be conducted in accordance with the Detection Monitoring Program.

## 6.0 SUMMARY AND CONCLUSIONS

In accordance with the Virginia Solid Waste Management Regulations and the facility's SWP and GMP, the following data evaluations were performed for each 2022 semi-annual groundwater monitoring event. Selected data evaluation results are discussed below.

- **Groundwater elevation measurements** were obtained to assess the groundwater flow direction and calculate the groundwater flow rate at the Landfill. The flow direction and locations of each upgradient and compliance well were used to assess if the well network is appropriately monitoring the potential migration of regulated constituents from the landfill within the upper-most aquifer as required by 9 VAC 20-81-250 A 3.
- **Outlier analysis** was performed to identify potential extreme values that may be due to sampling, laboratory, transportation, or transcription errors or that the elevated concentration may be attributed to the waste management unit.
- **Inter-well statistical analysis** was conducted to evaluate if parameter detections are potentially due to the waste management unit and assess if the facility can stay in, or revert to, the detection monitoring program.
- **Trend analysis** was performed to evaluate if parameter concentrations are increasing or decreasing.

## 6.1 SUMMARY OF FINDINGS

Groundwater levels were measured at the site's groundwater wells semi-annually (May and December 2022) to assess the groundwater flow direction, estimate groundwater flow rates, and evaluate the effectiveness of the monitoring well network to characterize groundwater quality within the upper-most aquifer. The average groundwater flow rate for 2022 was 22 ft/yr in the Lenoir Mosheim geologic unit and 40 ft/yr in the Knox geologic unit. Based on the 2022 assessment of groundwater flow direction presented below and current knowledge of the site's hydrogeologic conditions, the current groundwater monitoring network effectively monitors the upper-most aquifer as required by 9 VAC 20-81-250 A 3 with the addition of a compliance well (MW-9) in 2023.

- The direction of groundwater flow in the vicinity of the Permit #588 Landfill is controlled by the gradient control underdrain system.
- Groundwater within the Lenoir-Mosheim and Knox Group aquifer systems flows towards the Permit #588 Landfill.
- Background wells MW-106A and MW-106B are upgradient of the Permit #588 Landfill, downgradient of the Permit #498 Landfill, and not hydraulically connected to groundwater flowing beneath the Permit #221 Landfill.
- Background wells MW-205B, MW-206A, and MW-206B are upgradient of the Permit #588 Landfill and not hydraulically connected to groundwater flowing beneath the Permit #221 and #498 Landfills.

- Compliance wells MW-210A, MW-210B, MW-211A, and MW-211B are upgradient of the Permit #588 Landfill potentially due to the effects of the Permit #588 gradient control system.

Groundwater samples were collected semi-annually (May and December) from the monitoring well network during 2022. The 2022 samples were analyzed for the parameters listed on Table 3.1 Column A of 9 VAC 20-81-250. In summary, the 2022 semi-annual validated parameter detections consisted of nine metals and one VOC.

Various data evaluation techniques were performed for validated Table 3.1 parameter detections including but not limited to inter-well statistical analysis. No verified inter-well exceedances were identified.

## 6.2 RECOMMENDED ACTIONS

Groundwater monitoring and reporting will be conducted in accordance with the Detection Monitoring Program (9 VAC 20-81-250 B 2) and the Landfill's GMP (DAA, 2020). Semi-annual groundwater samples are projected to be collected in June and December 2023. The 2023 samples will be analyzed for Table 3.1 Column A parameters. Submittal deadlines for each groundwater monitoring report are shown below:

- **1<sup>st</sup> Semi-Annual Groundwater Monitoring Report** - 120 days from issuance of the final 1<sup>st</sup> semi-annual 2023 lab report
- **2023 Annual Groundwater Monitoring Report** - 120 Days from issuance of the final 2<sup>nd</sup> semi-annual 2023 lab report.

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- Test Methods for Evaluating Solid Waste: Physical/Chemical Methods Compendium (SW-846)*. July 2014.

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Virginia Solid Waste Management Regulations, Code of Virginia §§ 9 VAC 20-81-250-260. As updated.

## Figures

Figure 1 - Topographic Quadrangle Map

Figure 2 - Site Map

Figure 3 - Groundwater Contour Map (Lenoir) – May 24, 2022

Figure 4 - Groundwater Contour Map (Knox) – May 24, 2022

Figure 5 - Groundwater Contour Map (Lenoir) – December 5, 2022

Figure 6 - Groundwater Contour Map (Knox) – December 5, 2022

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BRISTOL INTEGRATED SOLID WASTE  
MANAGEMENT FACILITY  
BRISTOL, VIRGINIA  
SOLID WASTE PERMIT #588

LEGEND

- LIMIT OF WASTE
- COUNTY PROPERTY BOUNDARY

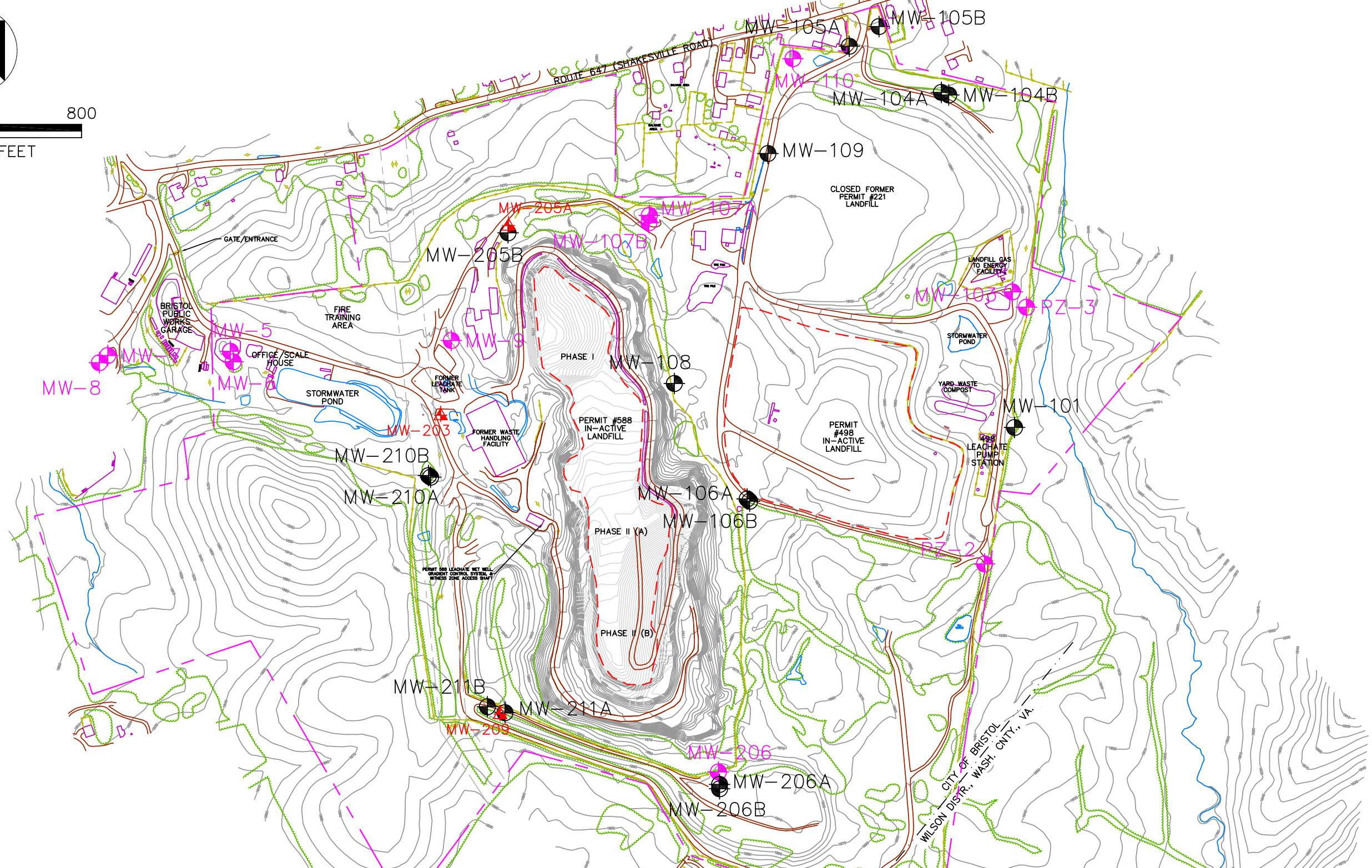
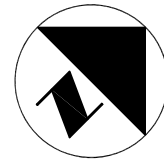
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SOURCE: BRISTOL TN, VA, USGS 7.5-MIN TOPOGRAPHIC QUADRANGLE 2022

**SCS ENGINEERS**

FIGURE 1 - TOPOGRAPHIC QUADRANGLE MAP





**LEGEND**

- TOPOGRAPHIC CONTOUR (FT, AMSL)
- - - - FACILITY BOUNDARY
- - - - LIMIT OF WASTE
- PERMITTED GROUNDWATER MONITORING WELL
- ⊕ ADDITIONAL GROUNDWATER MONITORING WELL
- ▲ PIEZOMETER

FT, AMSL = FEET, ABOVE MEAN SEA LEVEL

**NOTES:**

1. SITE MAP PROVIDED BY DRAPER ADEN AND ASSOCIATES.
2. GROUNDWATER MONITORING WELL NETWORKS FOR THE PERMIT #588 AND #498 LANDFILLS ARE PROVIDED BELOW.
  - PERMIT #498 BACKGROUND: MW-101, MW-104A, AND MW-104B
  - PERMIT #588 BACKGROUND: MW-106B AND MW-206A
  - PERMIT #588 BACKGROUND AND PERMIT #498 SENTINEL: MW-206B
  - PERMIT #588 BACKGROUND AND PERMIT #498 COMPLIANCE: MW-106A
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  - PERMIT #588 COMPLIANCE AND PERMIT #498 SENTINEL: MW-210A, MW210B, MW211A, AND MW-211B
  - PERMIT #498 PERFORMANCE: GC OUTFALL (AKA. GRADIENT CONTROL SYSTEM)
  - PERMIT #498 SENTINEL: MW-105A, MW-105B, AND MW-109

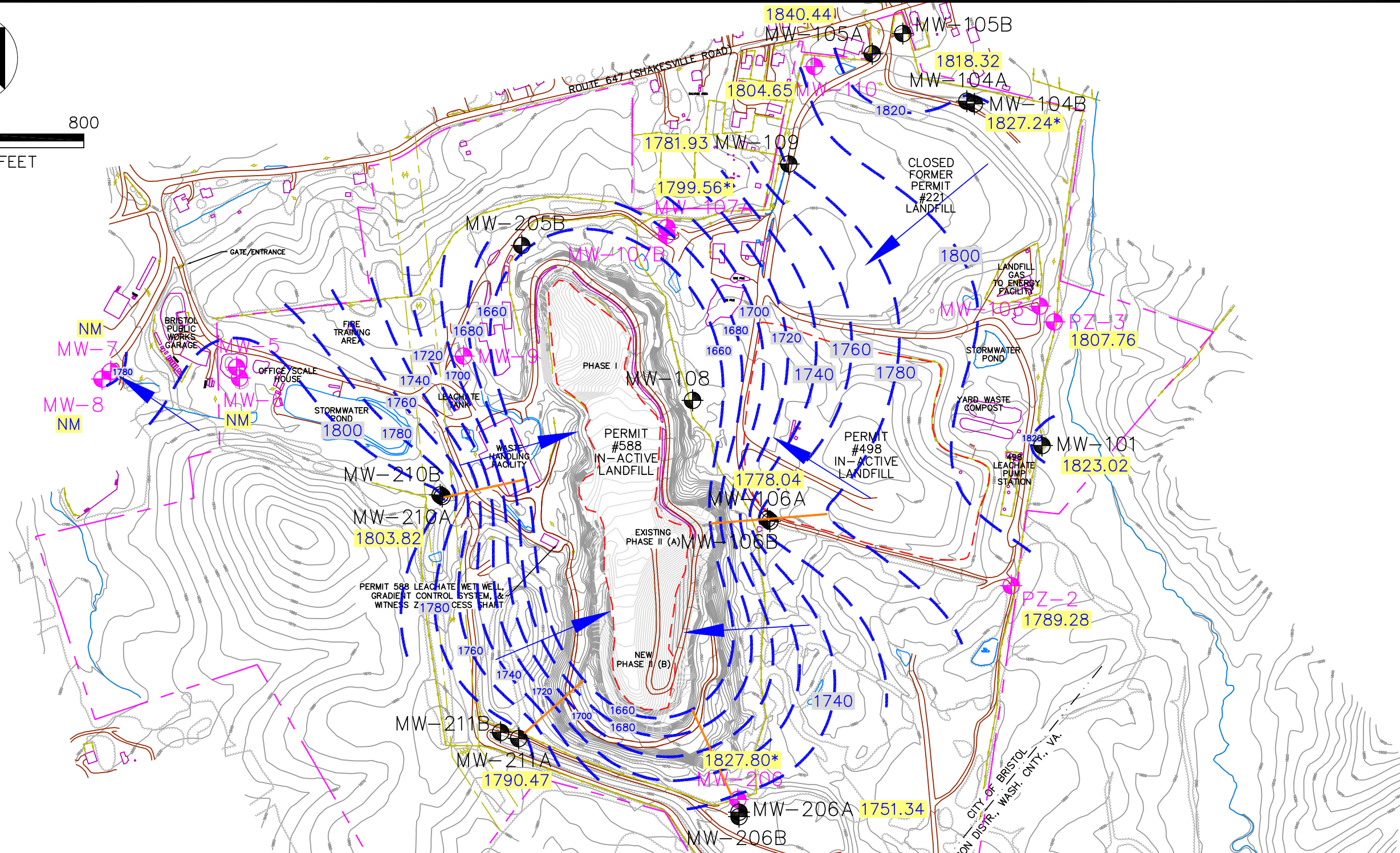
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PROJECT TITLE	<b>2022 ANNUAL GROUNDWATER MONITORING REPORT</b>

CLIENT	<b>CITY OF BRISTOL SANITARY LANDFILL BRISTOL, VA SOLID WASTE PERMIT #588</b>
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SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC. 11260 ROGER BACON DRIVE - RESTON, VA 20190 PH. (703) 471-6150 FAX. (703) 471-4876	DATE: 04/10/23
SCALE: AS SHOWN	DRAWING NO. <b>2</b> of 6

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**LEGEND**

	TOPOGRAPHIC CONTOUR (FT, AMSL)
	FACILITY BOUNDARY
	LIMIT OF WASTE
	PERMITTED GROUNDWATER MONITORING WELL
	ADDITIONAL GROUNDWATER MONITORING WELL
	GROUNDWATER ELEVATION (FT, AMSL)
	GROUNDWATER CONTOUR (FT, AMSL)
	GROUNDWATER FLOW DIRECTION
	HYDRAULIC GRADIENT

\*GROUNDWATER ELEVATIONS WERE NOT USED IN THE CREATION OF THE GROUNDWATER CONTOURS. FT, AMSL = FEET, ABOVE MEAN SEA LEVEL

**NOTES:**

1. BASE MAP PROVIDED BY DRAPER ADEN AND ASSOCIATES.
2. GROUNDWATER CONTOURS WERE GENERATED USING THE SURFER SURFACE MAPPING SYSTEM SOFTWARE VIA THE KRIGING GRIDDING METHOD AND ALTERED UTILIZING PROFESSIONAL JUDGEMENT.
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  - PERMIT #498 PERFORMANCE: GC OUTFALL (AKA. PERMIT #588 GRADIENT CONTROL SYSTEM)
  - PERMIT #498 SENTINEL: MW-105A, MW-105B, AND MW-109

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NO.	REVISION	DATE

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PROJECT TITLE: ANNUAL GROUNDWATER MONITORING REPORT

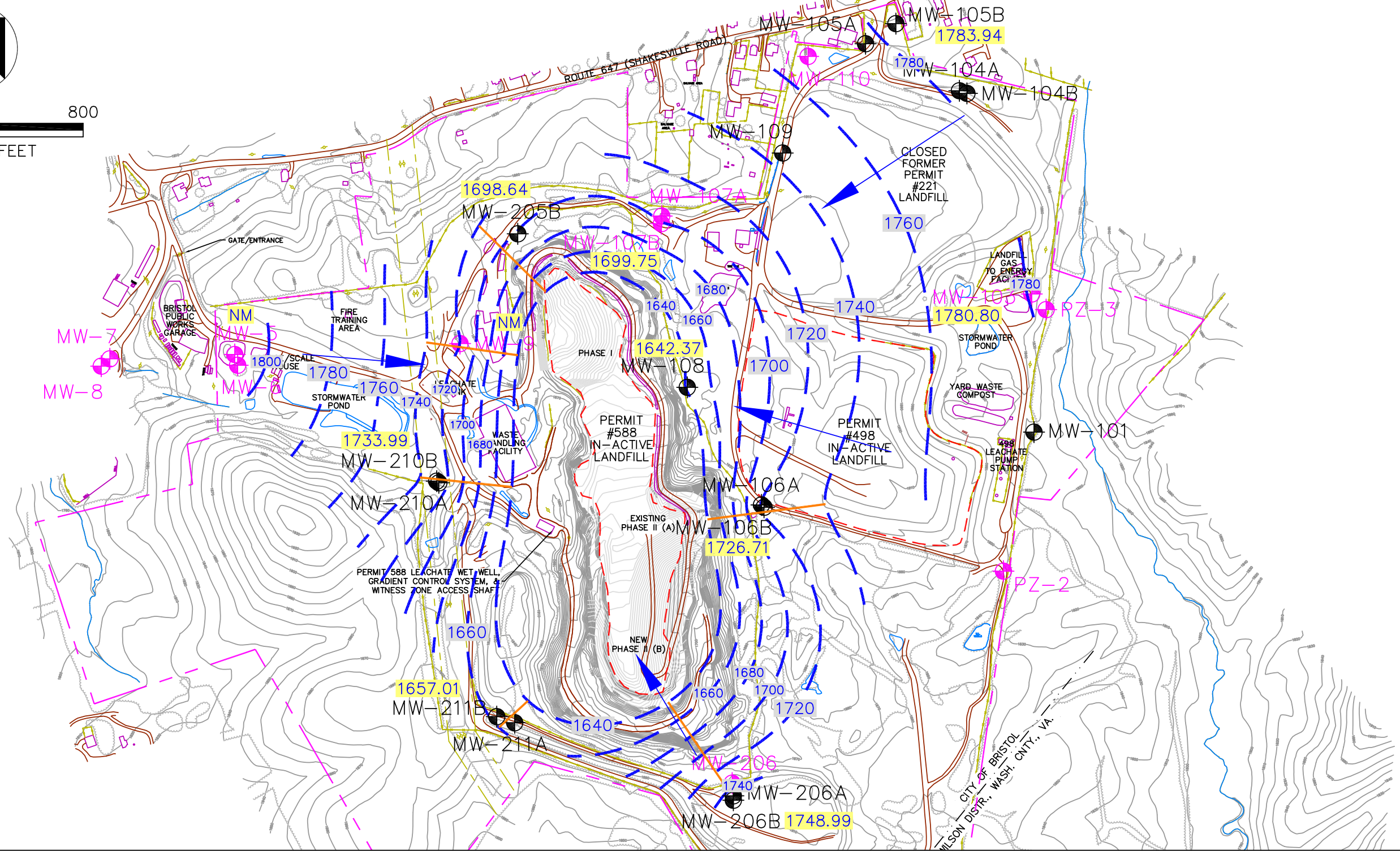
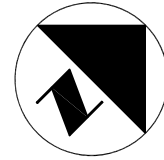
CLIENT: CITY OF BRISTOL  
SANITARY LANDFILL  
BRISTOL, VA  
SOLID WASTE PERMIT #588

SCS ENGINEERS  
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CONSULTING ENGINEERS, INC.  
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PH. (703) 471-6150 FAX. (703) 471-4876

DATE: 04/27/23

SCALE: AS SHOWN

DRAWING NO. 3 of 6



**LEGEND**

	TOPOGRAPHIC CONTOUR (FT, AMSL)
	FACILITY BOUNDARY
	LIMIT OF WASTE
	PERMITTED GROUNDWATER MONITORING WELL
	ADDITIONAL GROUNDWATER MONITORING WELL
	GROUNDWATER ELEVATION (FT, AMSL)
	GROUNDWATER CONTOUR (FT, AMSL)
	GROUNDWATER FLOW DIRECTION
	HYDRAULIC GRADIENT

FT, AMSL = FEET, ABOVE MEAN SEA LEVEL

**NOTES:**

1. BASE MAP PROVIDED BY DRAPER ADEN AND ASSOCIATES.
2. GROUNDWATER ELEVATIONS WERE MEASURED ON MAY 24, 2022.
3. GROUNDWATER CONTOURS WERE GENERATED USING THE SURFER SURFACE MAPPING SYSTEM SOFTWARE VIA THE KRIGING GRIDDING METHOD AND ALTERED UTILIZING PROFESSIONAL JUDGEMENT.
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  - PERMIT #498 SENTINEL: MW-105A, MW-105B, AND MW-109

NO.	REVISION	DATE

SHEET TITLE: GROUNDWATER CONTOUR MAP (KNOX) - MAY 24, 2022

PROJECT TITLE: ANNUAL GROUNDWATER MONITORING REPORT

CLIENT: CITY OF BRISTOL  
SANITARY LANDFILL  
BRISTOL, VA  
SOLID WASTE PERMIT #588

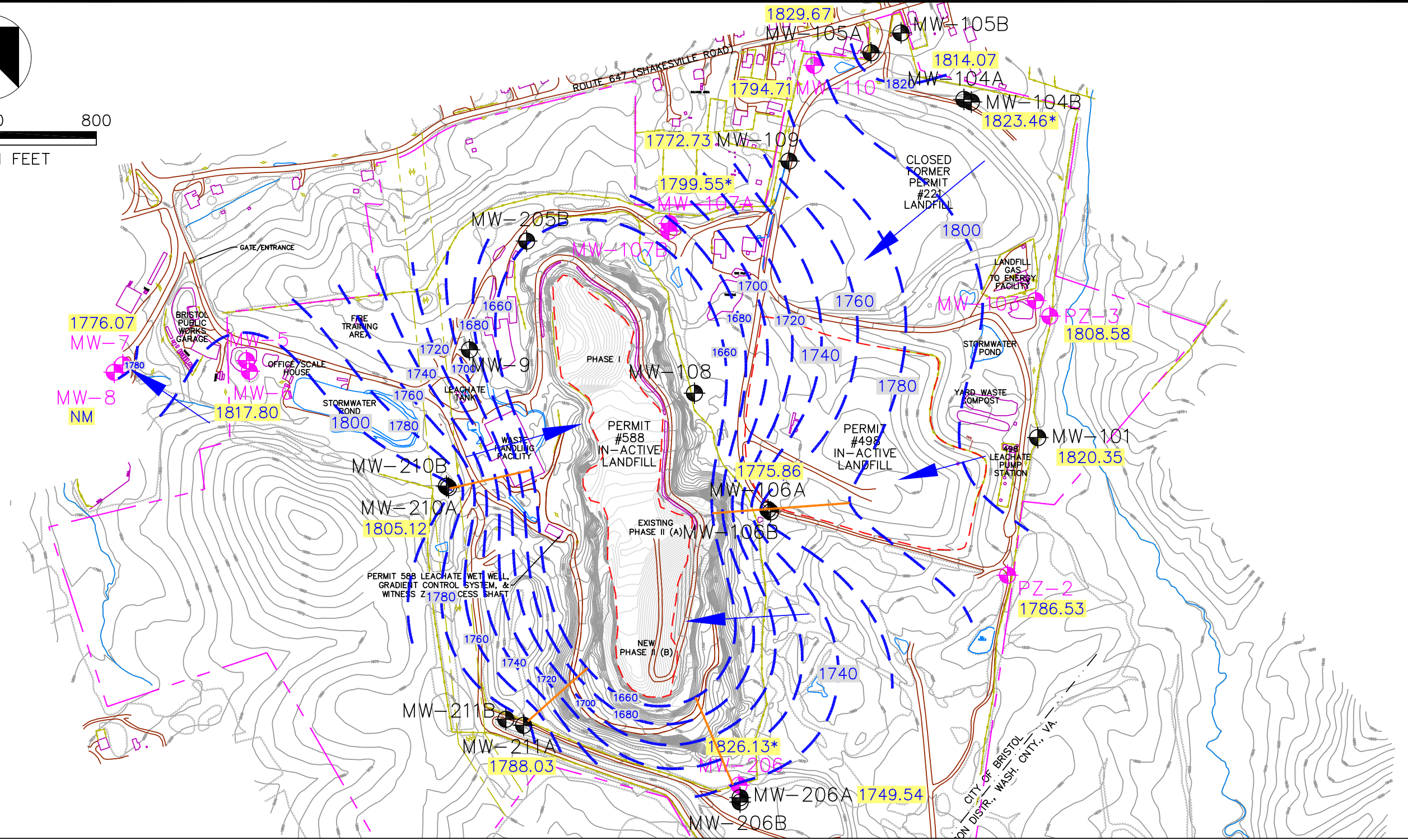
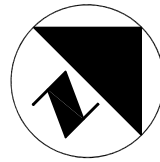
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CONSULTING ENGINEERS, INC.  
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DATE: 04/27/23

SCALE: AS SHOWN

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**LEGEND**

	TOPOGRAPHIC CONTOUR (FT, AMSL)
	FACILITY BOUNDARY
	LIMIT OF WASTE
	PERMITTED GROUNDWATER MONITORING WELL
	ADDITIONAL GROUNDWATER MONITORING WELL
	GROUNDWATER ELEVATION (FT, AMSL)
	GROUNDWATER CONTOUR (FT, AMSL)
	GROUNDWATER FLOW DIRECTION
	HYDRAULIC GRADIENT

\*GROUNDWATER ELEVATIONS WERE NOT USED IN THE CREATION OF THE GROUNDWATER CONTOURS. FT, AMSL = FEET, ABOVE MEAN SEA LEVEL

- NOTES:**
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 PERMIT #498 SENTINEL: MW-105A, MW-105B, AND MW-109

NO.	REVISION	DATE

SHEET TITLE	GROUNDWATER CONTOUR MAP (LENOIR) - DECEMBER 5, 2022
PROJECT TITLE	ANNUAL GROUNDWATER MONITORING REPORT

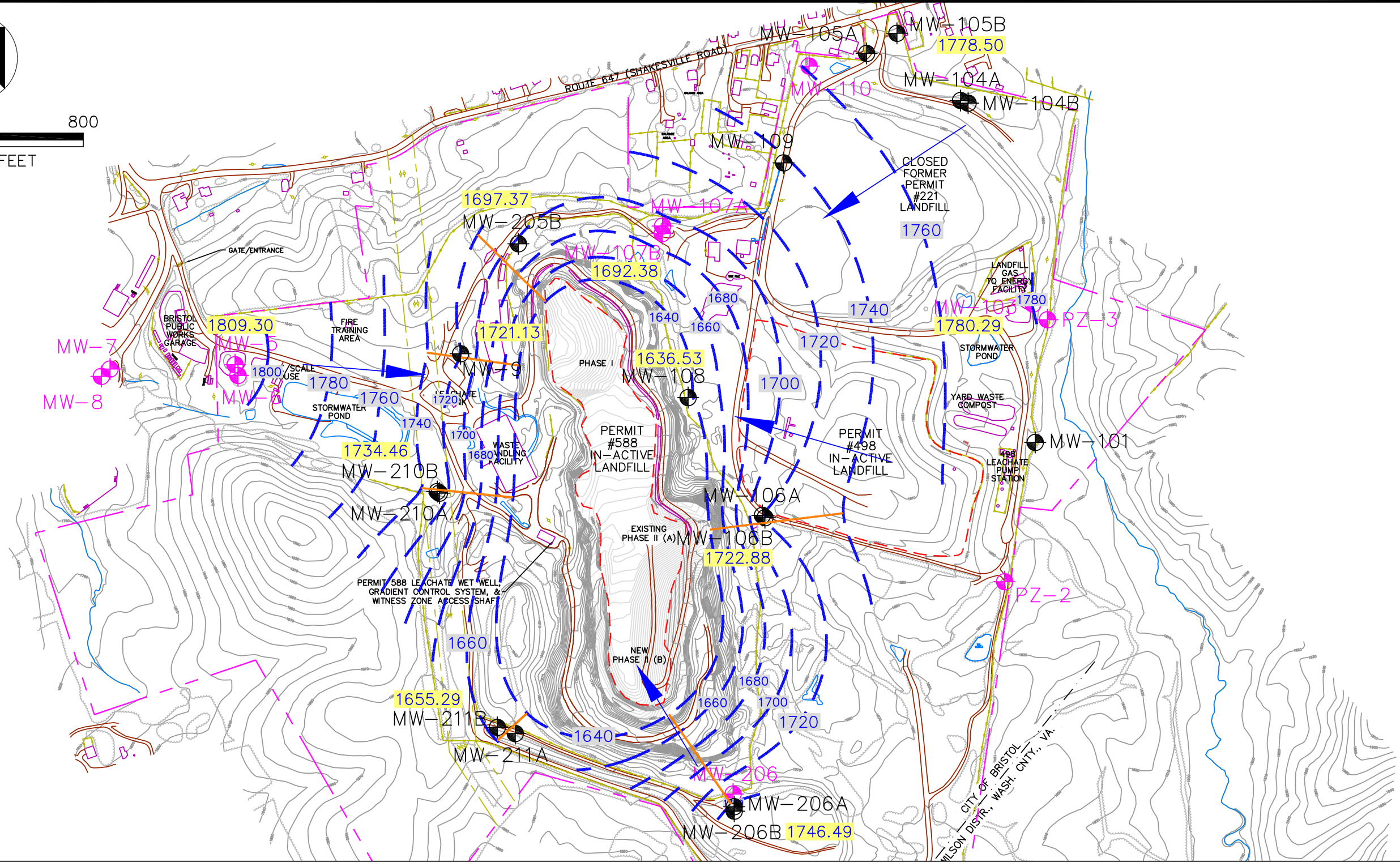
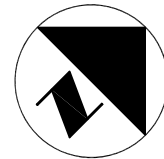
CLIENT  
**CITY OF BRISTOL  
 SANITARY LANDFILL  
 BRISTOL, VA  
 SOLID WASTE PERMIT #588**

**SCS ENGINEERS**  
 STEARNS, CONRAD AND SCHMIDT  
 CONSULTING ENGINEERS, INC.  
 11260 ROGER BACON DRIVE - RESTON, VA 20190  
 PH. (703) 471-6150 FAX. (703) 471-4876

PROJ. NO. 02219208.07  
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 C/C: GCS

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**LEGEND**

	TOPOGRAPHIC CONTOUR (FT, AMSL)
	FACILITY BOUNDARY
	LIMIT OF WASTE
	PERMITTED GROUNDWATER MONITORING WELL
	ADDITIONAL GROUNDWATER MONITORING WELL
	GROUNDWATER ELEVATION (FT, AMSL)
	GROUNDWATER CONTOUR (FT, AMSL)
	GROUNDWATER FLOW DIRECTION
	HYDRAULIC GRADIENT

FT, AMSL = FEET, ABOVE MEAN SEA LEVEL

**NOTES:**

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NO.	REVISION	DATE

SHEET TITLE	GROUNDWATER CONTOUR MAP (KNOX) - DECEMBER 5, 2022
PROJECT TITLE	ANNUAL GROUNDWATER MONITORING REPORT


CLIENT

**CITY OF BRISTOL**  
**SANITARY LANDFILL**  
 BRISTOL, VA  
 SOLID WASTE PERMIT #588

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PROJ. NO. 02218208.07  
 DATE: 04/27/23  
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 CHK. BY: CSS  
 APP. BY:

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DATE:	04/27/23
SCALE:	AS SHOWN
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Appendix A  
Historical Groundwater Elevation Data

### Historical Groundwater Elevations

Date	MW-101	MW-103	MW-104A	MW-104B	MW-105A	MW-105B	MW-106A
5/2/2011	1819.92	1793.22	1824.57	1831.2	1839.65	1799.83	1771.35
11/9/2011	1816.75	1780.59	1812.67	1821.12	1826.29	1775.82	1768.64
5/16/2012	1820.49	1785.67	1820.15	1828.44	1835.01	1786.18	1770
11/13/2012	1818.64	1782.54	1814.9	1823.81	1828.97	1776.6	1767.92
5/13/2013	1819.87	1786.9	1824.32	1831.28	1839.1	1794.91	1770.15
11/4/2013	1814.98	1780.07	1815.74	1824.81	1830.63	1777.86	1768.16
5/5/2014	1819.45	1783.35	1819.25	1828.14	1833.92	1783.13	1769.99
10/28/2014	1819.64	1784.06	1814.5	1822.69	1829.21	1780.66	1767.89
4/27/2015	1821.32	1788.88	1824.03	1831.11	1840.7	1797.94	1771.56
10/26/2015	1821.02	1781.95	1815.12	1824.19	1830.97	1777.13	1770.32
5/2/2016	1822.47	1784.08	1820.64	1828.83	1834.67	1786.01	1772.86
11/1/2016	1814.79	1778.8	1812.19	1821.38	1825.92	1771.4	1771.04
5/2/2017	1822.73	1785.68	1820.82	1829.15	1837.23	1794.78	1765.21
10/31/2017	1822.32	1804.45	1813.69	1822.71	1827.96	1777.39	1772.3
5/1/2018	1821.97	1802.04	1823.28	1831.03	1839.24	1797.14	1772.14
10/30/2018	1822.64	1783.41	1820.16	1828.55	1835.6	1787.59	1774.1
4/29/2019	1822.36	1801.34	1828.34	1834.44	1841.08	1803.56	1777.17
10/28/2019	1822.15	1779.49	1814.25	1823.52	1828.61	1779.62	1775.24
5/4/2020	1822.24	1809.14	1831.37	1836.77	1846.28	1807.75	1781.3
11/17/2020	1823.09	1784.93	1818.21	1827.5	1834.81	1788.21	1780.25
5/17/2021	1820.31	1783.17	1823.52	1830.8	1838.14	1792.74	1781.81
11/8/2021	1822.61	1781.46	1813.25	1822.55	1836.55	1778.26	1775.54
5/24/2022	1823.02	1780.8	1818.32	1827.24	1840.44	1783.94	1778.04
7/18/2022	1819.96	1780.04	1815.7	1825.3	1835.55	1780.75	1774.04
12/5/2022	1820.35	1780.29	1814.07	1823.46	1829.67	1778.5	1775.86

### Historical Groundwater Elevations

Date	MW-106B	MW-107A	MW-107B	MW-108	MW-109	MW-110	MW-205B
5/2/2011	1731.38	1807.08	1715.07	1640.05	1800.07	1828.87	1704.23
11/9/2011	1714.98	1799.08	1688.98	1609.86	1768.51	1788.51	1689.89
5/16/2012	1721.96	1800.04	1700.83	1638.57	1786.17	1804.25	1693.2
11/13/2012	1717.82	1799.12	1691.68	1613.15	1772.64	1788.45	1690.56
5/13/2013	1727.01	1802.52	1709.48	1640.84	1795.55	1818.39	1696.57
11/4/2013	1720.91	1799.32	1694.02	1628.14	1774.98	1787.94	1689.25
5/5/2014	1721.11	1799.46	1698.44	1635.42	1782.87	1798.52	1692.88
10/28/2014	1724.52	1800.14	1693.3	1618.21	1777.03	1795.93	1692.68
4/27/2015	1732.49	1810	1713.33	1642.14	1798.21	1825.23	1706.34
10/26/2015	1718.32	1799.21	1691.27	1619.47	1775.28	1788.24	1688.01
5/2/2016	1721.81	1799.38	1698.71	1639.86	1784.04	1804.59	1693.64
11/1/2016	1715.48	1799.14	1687.75	1639.86	1765.41	1778.76	1688.42
5/2/2017	1730.69	1804.05	1707.49	1639.38	1791.19	1822.42	1716.35
10/31/2017	1721.9	1799.22	1689.55	1630.08	1769.83	1793.39	1692.17
5/1/2018	1733.3	1807.29	1713.62	1643.98	1796.66	1823.21	1708.74
10/30/2018	1728.4	1799.98	1700.72	1634.64	1786.96	1809.04	1697.57
4/29/2019	1735.08	1814.44	1720.75	1646.86	1799.09	1834.95	1716.7
10/28/2019	1723.2	1798.65	1691.44	1637.55	1773.64	1803.07	1695.19
5/4/2020	1737.42	1815.19	1720.96	1646.93	1806.13	1845.19	1719.94
11/17/2020	1730.78	1808.88	1716.86	1644.39	1785.47	1810.41	1705.49
5/17/2021	1733.58	1800.3	1719.99	1643.5	1792.63	1814.34	1699.7
11/8/2021	1723.27	1799.6	1720.9	1644.24	1774.24	1811.53	1695.59
5/24/2022	1726.71	1799.56	1699.75	1642.37	1781.93	1804.65	1698.64
7/18/2022	1724.99	1799.61	1695.99	1641.54	1778.62	1797.67	1697.91
12/5/2022	1722.88	1799.55	1692.38	1636.53	1772.73	1794.71	1697.37



### Historical Groundwater Elevations

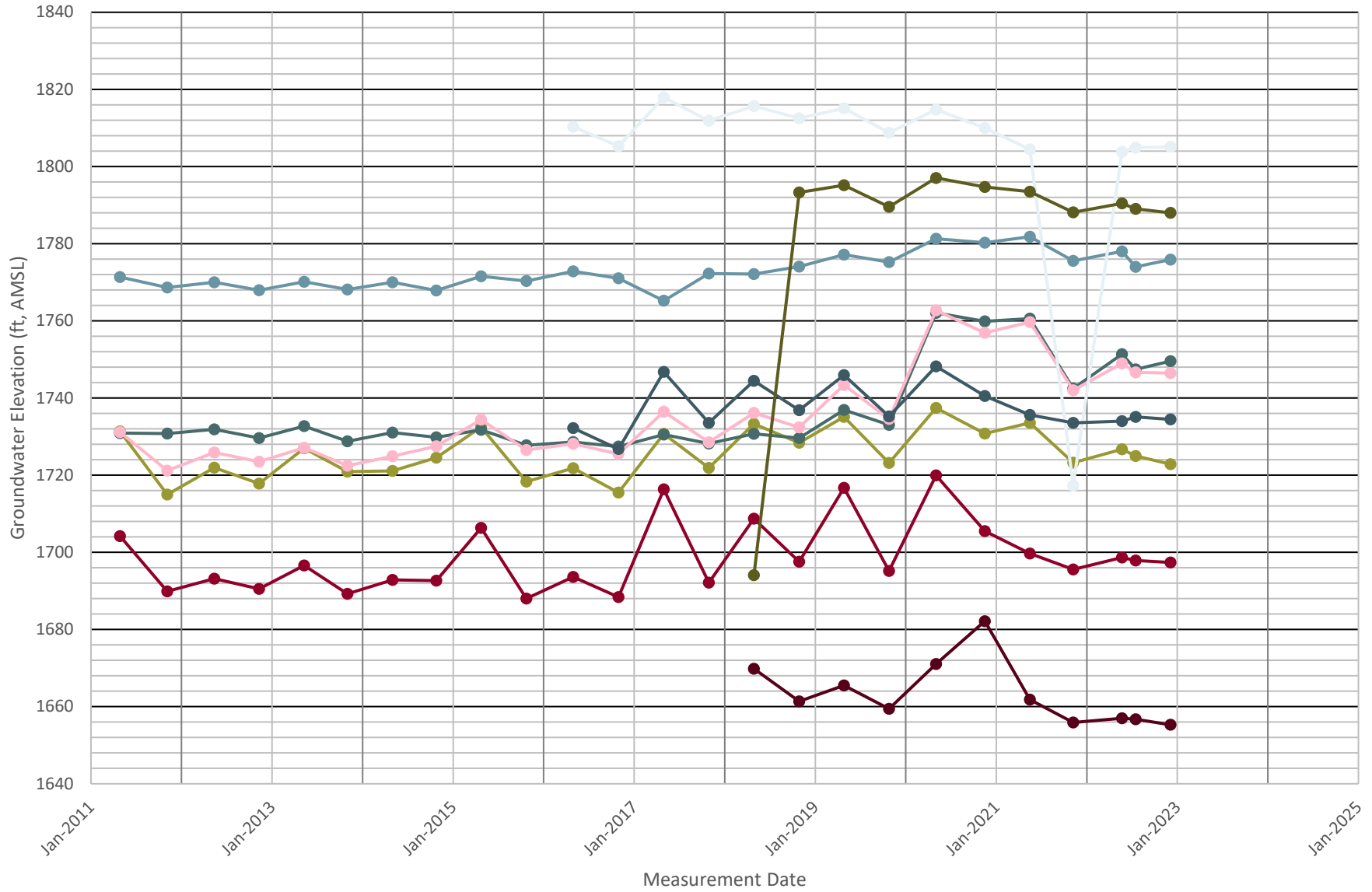
Date	MW-206	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B
5/2/2011	1827.54	1730.92	1731.16	---	---	---	---
11/9/2011	1827.5	1730.79	1721.19	---	---	---	---
5/16/2012	1827.46	1731.9	1725.88	---	---	---	---
11/13/2012	1827.54	1729.64	1723.5	---	---	---	---
5/13/2013	1827.61	1732.74	1727.11	---	---	---	---
11/4/2013	1821.55	1728.81	1722.48	---	---	---	---
5/5/2014	1827.3	1731.05	1724.94	---	---	---	---
10/28/2014	1827.23	1729.85	1727.49	---	---	---	---
4/27/2015	1827.59	1731.77	1734.42	---	---	---	---
10/26/2015	1826.96	1727.78	1726.54	---	---	---	---
5/2/2016	---	1728.6	1728.14	1810.33	1732.2	---	---
11/1/2016	1823.57	1727.41	1725.5	1805.33	1726.76	---	---
5/2/2017	1828.05	1730.54	1736.47	1817.93	1746.77	---	---
10/31/2017	1827.26	1728.2	1728.5	1811.9	1733.56	---	---
5/1/2018	---	1730.72	1736.11	1815.66	1744.49	1694.07	1669.84
10/30/2018	1827.55	1729.63	1732.4	1812.55	1736.86	1793.31	1661.35
4/29/2019	1827.64	1736.93	1743.36	1815.1	1745.95	1795.18	1665.48
10/28/2019	1827.72	1733.03	1734.59	1808.77	1735.23	1789.58	1659.46
5/4/2020	1827.78	1762.08	1762.69	1814.81	1748.22	1797.07	1671.04
11/17/2020	1827.34	1759.87	1756.93	1809.98	1740.51	1794.7	1682.17
5/17/2021	1827.17	1760.62	1759.66	1804.48	1735.62	1793.48	1661.85
11/8/2021	1827.05	1742.48	1742.04	1717.3	1733.54	1788.15	1655.87
5/24/2022	1827.8	1751.34	1748.99	1803.82	1733.99	1790.47	1657.01
7/18/2022	1827.01	1747.46	1746.64	1804.88	1735.14	1789.02	1656.73
12/5/2022	1826.13	1749.54	1746.49	1805.12	1734.46	1788.03	1655.29


### Historical Groundwater Elevations

Date	MW-5	MW-6	MW-7	MW-8	MW-9	PZ-2	PZ-3
5/2/2011	---	---	---	---	---	1793.78	1812
11/9/2011	---	---	---	---	---	1781.21	1803.59
5/16/2012	---	---	---	---	---	1787.7	1807.36
11/13/2012	---	---	---	---	---	1783.41	1806.02
5/13/2013	---	---	---	---	---	1792.11	1812.3
11/4/2013	---	---	---	---	---	1786.52	1804.57
5/5/2014	---	---	---	---	---	1787.45	1807.38
10/28/2014	---	---	---	---	---	1785.79	1806.99
4/27/2015	---	---	---	---	---	1792.57	1811.3
10/26/2015	---	---	---	---	---	1786.37	1807.34
5/2/2016	---	---	---	---	---	1790.08	1809.11
11/1/2016	---	---	---	---	---	1781.56	1804.31
5/2/2017	---	---	---	---	---	1791.79	---
10/31/2017	---	---	---	---	---	1787.14	1805.07
5/1/2018	---	---	---	---	---	1792.39	1810.81
10/30/2018	---	---	---	---	---	1791.91	1809.43
4/29/2019	---	---	---	---	---	1798.62	1806.58
10/28/2019	---	---	---	---	---	1790.93	1806.03
5/4/2020	---	---	---	---	---	1800.47	1813.39
11/17/2020	---	---	---	---	---	1794.89	1809.83
5/17/2021	---	---	---	---	---	1795.02	1807.94
11/8/2021	---	---	---	---	---	1788.91	1807.8
5/24/2022	---	---	---	---	---	1789.28	1807.76
7/18/2022	1809.73	1817.93	1775.71	1774.85	1721.04	1788.1	1806.84
12/5/2022	1809.3	1817.8	1776.07	1774.85	1721.13	1786.53	1808.58

# Permit # 588 Groundwater Elevations (Compliance Wells)

MW-106A MW-106B MW-205B MW-206A MW-206B MW-210A MW-210B MW-211A MW-211B





## Appendix B

### Groundwater Flow Rate Calculations

## Groundwater Flow Rate Calculations

Lenoir Mosheim Limestone			
Porosity (unitless)			20%
Average Hydraulic Conductivity (ft/yr)			13
Contour Intervals (dH = 5 ft)	dL (ft)	Horizontal Hydraulic Gradient (ft/ft)	Groundwater Flow Rate (ft/yr)
<b>May-2022</b>			
1800 - 1660	309	0.453	29
1780 - 1660	293	0.410	27
1780 - 1660	429	0.280	18
1740 - 1660	349	0.229	15
<b>December-2022</b>			
1800 - 1660	311	0.450	29
1780 - 1660	299	0.401	26
1780 - 1660	513	0.234	15
1740 - 1660	355	0.226	15
<b>Minimum</b>		0.226	15
<b>Maximum</b>		0.453	29
<b>Average</b>		0.335	22
<b>Knox</b>			
Porosity (unitless)			10%
Average Hydraulic Conductivity (ft/yr)			17
Contour Intervals (dH = 5 ft)	dL (ft)	Horizontal Hydraulic Gradient (ft/ft)	Groundwater Flow Rate (ft/yr)
<b>May-2022</b>			
1740 - 1640	438	0.228	39
1740 - 1640	396	0.253	43
1660 - 1640	145	0.138	23
1740 - 1640	341	0.293	50
1740 - 1640	341	0.293	50
1720 - 1640	346	0.231	39
<b>December-2022</b>			
1740 - 1640	495	0.202	34
1740 - 1640	402	0.248	42
1660 - 1640	149	0.134	23
1740 - 1640	339	0.295	50
1740 - 1640	341	0.293	50
1720 - 1640	352	0.227	39
<b>Minimum</b>		0.134	23
<b>Maximum</b>		0.295	50
<b>Average</b>		0.236	40

dH = change in head (see groundwater contour lines shown on the Groundwater Contour Map)

dL = change in distance (see hydraulic gradient lines shown on the Groundwater Contour Map)

ft = feet

ft/ft = feet per foot

ft/yr = feet per year

## Appendix C

### Field Sheets and Chains-of-Custody

# SCS ENGINEERS DAILY FIELD REPORT

<b>Project Name:</b> City of Bristol Sanitary Landfill	<b>Project Number:</b> 02218208.07	
	<b>Task:</b> 1	<b>Labor Code:</b> 99000

<b>Project Manager:</b> J. Robb	<b>Field Personnel:</b> M. Nguyen, L. Howard
---------------------------------	--

<b>Date:</b> 5/24/2022	<b>Vehicle:</b> 15 & 21-F150	<b>Miles Billed:</b> --	<b>Travel Time:</b> --
------------------------	------------------------------	-------------------------	------------------------

**Weather:** Overcast, mid 50's-70's

Labor	Hours	Equipment	Materials
1st Semi Groundwater Sampling	13.00	QED Controllers_Low & High Pressure, Coolers, Buckets, Spray Bottles, YSI Multi Meters+Flow Cells, Turbidity Meters, 300' & 500' Water Level Indicators, Heron Camera 500', Sample Pro Pump, Tubing, Generator, Tools	CO <sub>2</sub> Tanks, Nitrogen Tanks, Paper towels, DI Water, Ice, Nitrile Gloves

**Work Completed:**

- 6:35 - Meet Logan, left Hotel, picked up breakfast
- 6:45 - 7:00 - Get ice
- 7:15 - Arrived at site, went to office meet Mike, drove around with Logan, picked up GW well key
- 7:50 - 11:30 - Water level measurements
- 12:27 - 13:05 - Minh\_purged and sampled MW-206A
- 13:16 - 14:32 - Logan\_purged and sampled MW-105A
- 14:15 - 15:05 - Minh\_purged and sampled MW-104B
- 15:23 - 16:49 - Logan\_purged and sampled MW-104A
- 16:16 - 17:06 - Minh\_purged and sampled MW-210A
- 17:47 - 18:45 - Logan\_purged and sampled MW-109
- 17:53 - 18:33 - Minh\_purged and sampled MW-210B
- 19:37 - Left site
- 
- 
- 
- 
- 
- 

<b>Prepared By:</b> M. Nguyen	<b>Review By:</b> J. Robb
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**SCS ENGINEERS  
DAILY FIELD REPORT**

<b>Project Name:</b> City of Bristol Sanitary Landfill		<b>Project Number:</b> 02218208.07	
		<b>Task:</b> 1	<b>Labor Code:</b> 99000
<b>Project Manager:</b> J. Robb		<b>Field Personnel:</b> M. Nguyen, L. Howard	
<b>Date:</b> 5/25/2022	<b>Vehicle:</b> 15 & 21-F150	<b>Miles Billed:</b> --	<b>Travel Time:</b> --
<b>Weather:</b> Sunny in the morning, overcast in the afternoon, mid 80's			
<b>Labor</b>	<b>Hours</b>	<b>Equipment</b>	<b>Materials</b>
1st Semi Groundwater Sampling	13.50	QED Controllers_Low & High Pressure, Coolers, Buckets, Spray Bottles, YSI Multi Meters+Flow Cells, Turbidity Meters, 300' & 500' Water Level Indicators, Heron Camera 500', Sample Pro Pump, Tubing, Generator, Tools	CO <sub>2</sub> Tanks, Nitrogen Tanks, Paper towels, DI Water, Ice, Nitrile Gloves
<b>Work Completed:</b>			
6:33 - Meet Logan, left Hotel			
6:40 - 6:55 - Bought ice, left Walmart, picked up breakfast, stopped for gas			
7:15 - Arrived at site			
7:38 - 8:53 - Minh_purged and sampled MW-105B			
7:35 - 8:41 - Logan_purged and sampled MW-101			
10:14 - 11:41 - Minh_purged and sampled MW-106B			
10:10 - 11:16 - Logan_purged and sampled MW-106A			
packaged samples coolers, Logan meet the courier, left site to Hotel picked up MP10H/HU			
tested high pressure controller at MW-108, ran out of Nitrogen gas in 20 min			
stopped purging			
13:29 - 14:24 - Minh_purged and sampled MW-205B/MS/MSD			
Done at 17:30, went to MW-206B, attempted to purged well, need high pressure controller			
14:30-16:00 -Logan attempt to sample condensate at Flare, document flare station (			
17:18 - 18:09 - Logan_purged and sampled MW-211A			
18:15 - Wet Well Sampling: 2 hrs 02218208.05 T6			
19:10 - Minh & Logan _ grab Leachate sample			
19:25 - Minh & Logan _grab Leachate #2 sample			
cleaned equipment			
20:16 - Left site - dinner			
21:10 - 21:30 - Bought ice at Walmart pack sample coolers			
<b>Prepared By:</b> M. Nguyen		<b>Review By:</b> J. Robb	



**SCS ENGINEERS  
DAILY FIELD REPORT**

<b>Project Name:</b> City of Bristol Sanitary Landfill		<b>Project Number:</b> 02218208.07	
		<b>Task:</b> 1	<b>Labor Code:</b> 99000
<b>Project Manager:</b> J. Robb		<b>Field Personnel:</b> M. Nguyen, L. Howard	
<b>Date:</b> 5/26/2022	<b>Vehicle:</b> 15 & 21-F150	<b>Miles Billed:</b> --	<b>Travel Time:</b> 4.50
<b>Weather:</b> Cloudy in the morning, heavy rain in the afternoon			
<b>Labor</b>	<b>Hours</b>	<b>Equipment</b>	<b>Materials</b>
1st Semi Groundwater Sampling	12.50	QED Controllers_Low & High Pressure, Coolers, Buckets, Spray Bottles, YSI Multi Meters+Flow Cells, Turbidity Meters, 300' & 500' Water Level Indicators, Heron Camera 500', Sample Pro Pump, Tubing, Generator, Tools	CO <sub>2</sub> Tanks, Nitrogen Tanks, Paper towels, DI Water, Ice, Nitrile Gloves
<b>Work Completed:</b>			
6:10 Logan checked out Hotel, went to Home Depot for well cap high pressure adaptor			
went to Air Gas in Bristol rented the 330 CU FT Nitrogen tank			
7:05 - 7:20 - Minh, get ice at Walmart			
8:15 - 8:30 - Meet Logan at Tractor supply, look for adaptor			
8:45 - Arrived at site, went to MW-108			
8:51 - 9:16 - MW-108 heavy sediment, clogged check valve every few pumps, water draining back to the inside. Bladder also collapsed, temporary fixed bladder			
9:30 - 11:30 - Trouble shoot MW-108, pump is not working, left to MW-206B			
11:55 - 12:25 - Minh_purged and sampled MW-206B			
Logan went to meet Mike for GC Outfall			
help Logan finished up GC Outfall sampling			
14:55 - left site, Logan exchanged 330CU FT nitrogen tank (tank was empty after MW-206B sampling)			
14:55 - Minh went out picked up lunch			
15:30 - 17:20 - Trouble shoot pump again, heavy sediment, pulled pump 10ft from the bottom			
17:25 - 19:10 - Purged and sampled MW-108 / DUPLICATE			
Logan went to camera & took DTB of some of the wells			
21:05 - Logan & Minh_Left site, stopped for gas, picked up dinner			
01:30 - Minh_Arrived home			
<b>Prepared By:</b> M. Nguyen		<b>Review By:</b> J. Robb	

## Groundwater Level Measurement Log

**SCS Engineers**  
**296 Victory Road**  
**Winchester, Virginia 22602**  
**(540) 662-7097**

Project Name: City of Bristol Sanitary Landfill Project Numl 02218208.07

Date : 5/24/22 Task: 1

Well ID	Time	Depth to Water (ft)	Depth to Bottom Measured 052422 (ft)	Depth to Bottom Before (ft)	Water Column Thickness (ft)	Top of Casing Elevation (ft, AMSL)	Groundwater Elevation (ft, AMSL)	P V C	Remarks
MW-101	9:16	3.15	--	110.50	107.35	1826.17	1823.02	6"	
MW-103	9:23	70.45	322.40	321.00	251.95	1851.25	1780.80	4"	
MW-104A	10:19	40.25	104.65	104.50	64.40	1858.57	1818.32	4"	
MW-104B	10:16	29.39	78.28	78.50	48.89	1856.63	1827.24	4"	
MW-105A	10:00	42.06	134.15	134.20	92.09	1882.50	1840.44	4"	
MW-105B	10:05	106.56	383.10	382.70	276.54	1890.50	1783.94	4"	
MW-106A	8:24	146.24	199.50	199.50	53.26	1924.28	1778.04	4"	
MW-106B	8:26	197.60	419.13	418.20	221.53	1924.31	1726.71	2"	
MW-107A	8:06	113.94	121.60	119.80	7.66	1913.50	1799.56	4"	
MW-107B	8:14	216.07	382.00	374.40	165.93	1915.82	1699.75	6"	
MW-108	8:39	303.13	388.50	388.20	85.37	1945.50	1642.37	4"	
MW-109	9:36	129.06	248.25	246.80	119.19	1910.99	1781.93	6"	
MW-110	9:46	77.18	206.23	--	129.05	1881.83	1804.65	2"	
MW-205B	7:58	181.76	345.30	343.00	163.54	1880.40	1698.64	6"	
MW-206	8:56	81.40	--	165.00	83.60	1909.20	1827.80	6"	
MW-206A	9:02	159.35	--	240.30	80.95	1910.69	1751.34	4"	
MW-206B	8:57	160.61	353.18	357.80	192.57	1909.60	1748.99	4"	
MW-210A	10:58	37.96	149.47	150.00	111.51	1841.78	1803.82	2"	
MW-210B	10:49	107.09	362.18	360.00	255.09	1841.08	1733.99	4"	
MW-211A	11:03	122.16	218.91	215.00	96.75	1912.63	1790.47	4"	
MW-211B	11:20	247.28	448.61	447.00	201.33	1904.29	1657.01	4"	
PZ-2	9:12	60.53	105.38	108.80	44.85	1849.81	1789.28	4"	
PZ-3	9:27	24.09	104.03	105.00	79.94	1831.85	1807.76	4"	

Field Personnel M. Nguyen, L. Howard Checked By: K. Starks/J. Robb

# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07
Well Number:	MW-106A	Date:	052522
Well Diameter (in):	4"	1 Well Volume (gal) = (?gal x 3.7854):	34.78 gal = 131.6 L
Total Well Depth (ft):	199.50 ✓	QED Controller Settings:	—
Depth to Pump (ft):	—	Purging Time Initiated:	1010
Depth to Water (ft):	146.24	Purging Time Completed:	1115
Water Column Thickness (ft):	53.26	Total Gallons Purged:	6.5 L

## WELL PURGING RECORD

Time	Volume Purged (Liters)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1015	0.5	17.1	7.45	687	39.2	7.68	21.28	clear
1020	1.0	16.9	7.38	728	40.7	7.17	1.50	no odor
1025	1.5	16.8	6.46	—	—	—	0.58	meter dead
1030	2.0	16.8	6.27	1139	-0.7	2.64	0.58	3.55
1035	2.5	16.7	6.26	1155	-10.1	1.67	1.72	
1040	3.0	17.2	6.62	—	—	—	—	Flow cell
1045	3.5	17.3	6.27	1159	-17.7	1.30	4.36	Proved
1050	4.0	17.1	6.25	1157	-19.2	1.19	2.25	
1055	4.5	17.0	6.25	1157	-20.2	1.13	1.85	
1100	5.0	17.0	6.18	1156	-20.8	1.05	1.31	
1105	5.5	16.9	6.25	1157	-22.0	0.94	1.02	
1110	6.0	16.9	6.25	1156	-22.4	0.92	1.56	
1115	6.5	16.7.0	6.21	1156	-22.8	1.90	0.83	
Stabilization Range		±10%	±10%	±10%	--	± 10%	--	Purge Rate < 100 mL/min

## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-106A	1116	T 3.1 Col B VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col B VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col B Cyanide	1 - 250 mL plastic	NaOH
		T 3.1 Col B Herbicide, PCB	2A - 1L Amber	None
		T 3.1 Col B Pesticide, SVOCs	2 - 1L Amber	None
		T 3.1 Col B Sulfide	1 - 250m L plastic	NaOH + ZnAC
		T 3.1 Col B Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): L. Howard Checked By: J. Robb

# Well Sampling / MicroPurge Log

SCS ENGINEERS  
296 Victory Road  
Winchester, Virginia 22602  
(540) 662-7097

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07
Well Number:	MW-106B	Date:	052522
Well Diameter (in):	2"	1 Well Volume (gal) = (?gal x 3.7854) :	35.95 / 835.06
Total Well Depth (ft):	418.20	QED Controller Settings:	236-240 10PM
Depth to Pump (ft):	N/A	Purging Time Initiated:	10/4 42/18
Depth to Water (ft):	197.60	Purging Time Completed:	1136
Water Column Thickness (ft):	220.6	Total Gallons Purged:	4.0

## WELL PURGING RECORD

Time	Volume Purged (Litters)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1021	.25	17.7	7.78	449.1	-12.0	6.34	1.43	CLEAR NO
1026	.50	17.7	7.66	506.9	-7.2	5.90	0.94	FROTHY SMOOTH
1031	.75	17.8	7.59	527.8	-5.6	85.93	9.24	BLACK + ORANGE
1036	1.0	17.8	7.53	531.2	-11.7	5.84	1.57	
1041	1.25	18.2	7.46	538.2	-23.4	4.77	0.90	
1046	1.5	18.2	7.40	552.0	-20.3	4.2	0.52	
1051	1.75	18.1	7.36	558.4	-33.8	3.90	0.62	
1056	2.0	18.0	7.32	560.7	-37.4	3.40	0.57	
1101	2.25	18.1	7.29	561.0	-40.6	3.12	0.48	
1106	2.50	18.1	7.26	562.5	-40.9	3.15	0.54	
1111	2.75	18.1	7.24	564.0	-51.3	2.60	0.57	
<del>1116</del>	3.0	17.9	7.21	562.8	-60.6	2.12	.43	
1121	3.25	17.5	7.21	562.8	-65.7	2.02	.49	
1126	3.5	17.5	7.21	563.2	-70.5	1.50	.39	
1131	3.75	17.6	7.22	564.4	-73.3	1.46	.77	
1136	4.0	17.7	7.22	563.3	-74.6	1.49	0.62	
1141	4.3							
1146								
Stabilization Range		±10%	±10%	±10%	--	±10%	--	Purge Rate < 100 mL/min

## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-106 B	1141	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col A Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): MW Checked By: J. Robb

# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07
Well Number:	MW-205B	Date:	052522
Well Diameter (in):	6"	1 Well Volume (gal) = (?gal x 3.7854):	237.02 / 897.23
Total Well Depth (ft):	343.00	QED Controller Settings:	255' 1CPM 44/16
Depth to Pump (ft):	N/A	Purging Time Initiated:	1329
Depth to Water (ft):	181.76	Purging Time Completed:	1419
Water Column Thickness (ft):	161.24 x 1.47	Total Gallons Purged:	5 LITERS:

## WELL PURGING RECORD

Time	Volume Purged (Liters)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1334	.5	17.0	7.96	498.3	-47.2	7.58	0.32	CLEAR NO ODO
1339	1.0	17.4	7.78	513.9	-47.2	6.01	0.73	
1344	1.5	17.4	7.32	605.6	-49.9	3.70	0.82	
1349	2.0	17.4	7.25	651	-57.6	3.31	0.56	
1354	2.5	17.4	7.16	688	-68.6	2.34	0.39	
1359	3.0	17.3	7.12	718	-76.1	1.90	1.26	
1404	3.5	17.1	7.10	726	-81.1	1.50	3.22	
1409	4.0	17.1	7.08	730	-84.5	1.33	7.74	cloudy NO
1414	4.5	17.0	7.07	733	-86.1	1.28	8.51	ODOR
1419	5.0	17.1	7.07	734	-89.1	1.23	8.62	
		✓	✓	✓		✓		

Ferrous Iron = 1.51 mg/L @ (Time) = 1430  
 Stabilization Range ±10% ±10% ±10% -- ±10% -- Purge Rate < 100 mL/min

## GROUNDWATER SAMPLING RECORD/QA/QC/DUPLICATE MS/MSD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-205B  MS/MSD DUPLICATE	1424	T 3.1 Col B VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col B VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col B Cyanide	1 - 250 mL plastic	NaOH
		T 3.1 Col B Herbicide, PCB Pesticide, SVOCs	4 - 1L Amber	None
		T 3.1 Col B Sulfide	1 - 250m L plastic	NaOH + ZnAC
		Alkalinity & Chloride	1 - 500mL plastic	None
		Methane/Ethane/Ethene	3 - 40 mL Voa	HCl
		T 3.1 Col B Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): MW Checked By: J. Robb

# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07
Well Number:	MW-206A	Date:	052822
Well Diameter (in):	4"	1 Well Volume (gal) = (?gal x 3.7854):	52.86 / 200.09
Total Well Depth (ft):	240.30	QED Controller Settings:	275F ICOM 48/17
Depth to Pump (ft):	~ 220 ~ 240.25	Purging Time Initiated:	1227
Depth to Water (ft):	159.25	Purging Time Completed:	1302
Water Column Thickness (ft):	88.95	Total Gallons Purged:	1.75 LITERS

## WELL PURGING RECORD

Time	Volume Purged (Liters)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1232	.25	15.9	5.42	746	79.1	1.23	21.34	Floating small
1237	.5	15.9	5.45	744	74.4	0.65	22.11	orange particles
1242	.75	15.8	5.40	745	69.7	0.41	22.70	+ WHITE
1247	1.0	15.9	5.36	744	68.9	0.39	15.86	PARTICLES
1252	1.25	15.7	5.36	748	66.7	0.33	13.89	
1257	1.5	15.8	5.36	746	66.9	0.30	12.99	
1302	1.75	15.9	5.34	747	66.4	0.30	13.30	
		✓	✓	✓		✓		
SAMPLE PRO SET ON TOP OF GROUNDWATER PUMP								
Stabilization Range		±10%	±10%	±10%	--	±10%	--	Purge Rate < 100 mL/min

## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-206A	1305	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col A Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): MW Checked By: J. Robb

# Well Sampling / MicroPurge Log

MP10 H/1H

SCS ENGINEERS  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

Project Name: City of Bristol Sanitary Landfill	Job Number: 02218208.07
Well Number: MW-206B	Date: 05.26.22
Well Diameter (in): 4"	1 Well Volume (gal) = (?gal x 3.7854): 128.76 / 487.43
Total Well Depth (ft): 357.80	QED Controller Settings: 155PSI 10PM 27/33
Depth to Pump (ft): 345.2 N/A	Purging Time Initiated: 1155
Depth to Water (ft): 160.61	Purging Time Completed: 1220
Water Column Thickness (ft): 97.19	Total Gallons Purged: LITERS: 2.5

## WELL PURGING RECORD

Time	Volume Purged (Liters)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1200	.5	16.9	7.26	582	-31.1	5.11	2.97	CLEAR NO
1205	1.0	16.3	7.16	640	-20	5.24	2.35	ODOR
1210	1.5	16.4	7.10	651	-13.9	5.67	2.16	
1215	2.0	16.5	7.09	664	-11.6	5.88	2.81	
1220	2.5	16.5	7.08	657	-14.8	6.22	2.32	

Ferrous Iron = 0.24 mg/L @ (Time) = 1238  
 Stabilization Range ±10% ±10% ±10% -- ±10% -- Purge Rate < 100 mL/min

## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-206B	1225	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		Alkalinity & Chloride	1 - 500mL plastic	None
		Methane/Ethane/Ethene	3 - 40 mL Voa	HCl
		T 3.1 Col A Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): MP/1H Checked By: J. Robb

# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07
Well Number:	MW-210A	Date:	052422
Well Diameter (in):	2"	1 Well Volume (gal) = (?gal x 3.7854):	73.16 / 276.95
Total Well Depth (ft):	150.00	QED Controller Settings:	100FT 2LPM 20/10
Depth to Pump (ft):	N/A	Purging Time Initiated:	1616
Depth to Water (ft):	37.96	Purging Time Completed:	1701
Water Column Thickness (ft):	112.04	Total Gallons Purged:	3.95 LITERS

### WELL PURGING RECORD

Time	Volume Purged (Liters)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1621	.45	16.5	7.43	1704	-132.5	0.57	2.31	CLEAR NO
1626	.90	16.5	7.48	1755	-152.7	0.37	0.58	ODOR
1631	1.35	16.4	7.50	1733	-156.0	.28	0.63	
1636	1.70	16.3	7.49	1693	-158.3	.23	0.61	
1641	2.15	16.5	7.51	1663	-159.8	.21	0.95	
1646	2.60	16.5	7.49	1654	-156.7	.20	6.49	
1651	3.05	16.7	7.49	1616	-155.5	.18	0.50	
1656	3.50	16.5	7.51	1592	-155.3	.18	.53	
1701	3.95	16.5	7.48	1580	-155.6	.17	.52	
1706	4.40							
		✓	✓	✓		✓		

Ferrous Iron = **0.16** mg/L @ (Time) = **1715**

Stabilization Range	±10%	±10%	±10%	--	±10%	--	Purge Rate < 100 mL/min
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### GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-210A	1706	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		SVOC: Bis (2-ethylhexyl) phthalate	1 - 1L Amber	None
		Alkalinity & Chloride	1 - 500mL plastic	None
		Methane/Ethane/Ethene	3 - 40 mL Voa	HCl
		T 3.1 Col A Metals + Mercury	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): MW Checked By: J. Robb



# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
296 Victory Road  
Winchester, Virginia 22602  
(540) 662-7097

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07
Well Number:	MW-210B	Date:	052422
Well Diameter (in):	4"	1 Well Volume (gal) = (?gal x 3.7854):	166.57 / 608.55
Total Well Depth (ft):	<del>360.00</del> 362.18	QED Controller Settings:	150 FT 2CPM 20110
Depth to Pump (ft):	N/A	Purging Time Initiated:	1753
Depth to Water (ft):	107.09	Purging Time Completed:	1828
Water Column Thickness (ft):	255.09	Total Gallons Purged:	3.5 LITERS

## WELL PURGING RECORD

Time	Volume Purged (Liters)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1758	.5	17.4	6.90	878	-97.1	0.86	0.75	clear NO
1803	1.0	17.0	6.95	879	-100.6	0.70	0.47	ODOR
1808	1.5	16.7	6.97	880	-118.8	.61	0.53	
1813	2.0	16.6	6.98	881	-125.3	.56	3.80	
1818	2.5	16.8	6.98	878	-134.0	.47	5.47	
1823	3.0	16.8	6.99	881	-134.6	.47	9.02	
1828	3.5	16.6	7.080	880	-133.9	.46	11.92	
1833	4.0							
1838	4.5	✓	✓	✓		✓		PUMP SLOW LEAKS

Ferrous Iron = 0.80 mg/L @ (Time) = 1844	Stabilization Range	±10%	±10%	±10%	--	±10%	--	Purge Rate < 100 mL/min
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## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-210B	1833	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		SVOC: Bis (2-ethylhexyl) phthalate	1 - 1L Amber	None
		Alkalinity & Chloride	1 - 500mL plastic	None
		Methane/Ethane/Ethene	3 - 40 mL Voa	HCl
		T 3.1 Col A Metals + Mercury	1 - 500 mL plastic	HNO3

Samples Shipped By: \_\_\_\_\_ Courier \_\_\_\_\_ Laboratory: \_\_\_\_\_ Enthalpy Analytical  
Sampler(s):     MN     Checked By: \_\_\_\_\_ J. Robb



# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

*MPIGH / LH*

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07
Well Number:	MW-211B	Date:	<i>052622</i>
Well Diameter (in):	4"	1 Well Volume (gal) = (?gal x 3.7854):	<i>131.47 / 497.66</i>
Total Well Depth (ft):	<del>447.00</del> <i>448.61</i>	QED Controller Settings:	<i>130PSI 1CPM 40120</i>
Depth to Pump (ft):	<i>N/A</i>	Purging Time Initiated:	<i>1305 39121</i>
Depth to Water (ft):	<i>247.28</i>	Purging Time Completed:	<i>1350</i>
Water Column Thickness (ft):	<i>201.33</i>	Total Gallons Purged:	<i>4.5</i>

## WELL PURGING RECORD

Time	Volume Purged (Liters)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
<i>1310</i>	<i>.5</i>	<i>14.8</i>	<i>7.20</i>	<i>722</i>	<i>-29.1</i>	<i>5.22</i>	<i>1.21</i>	<i>CLEAR NO</i>
<i>1315</i>	<i>1.0</i>	<i>15.4</i>	<i>7.18</i>	<i>724</i>	<i>-27.7</i>	<i>4.20</i>	<i>0.46</i>	<i>ODOR</i>
<i>1320</i>	<i>1.5</i>	<i>15.2</i>	<i>7.16</i>	<i>722</i>	<i>-36.9</i>	<i>2.07</i>	<i>0.94</i>	
<i>1325</i>	<i>2.0</i>	<i>15.1</i>	<i>7.15</i>	<i>715</i>	<i>-42.6</i>	<i>1.27</i>	<i>0.74</i>	
<i>1330</i>	<i>2.5</i>	<i>15.2</i>	<i>7.13</i>	<i>707</i>	<i>-54.0</i>	<i>1.07</i>	<i>1.10</i>	
<i>1335</i>	<i>3.0</i>	<i>15.4</i>	<i>7.14</i>	<i>704</i>	<i>-66.6</i>	<i>0.82</i>	<i>.96</i>	
<i>1340</i>	<i>3.5</i>	<i>15.5</i>	<i>7.14</i>	<i>698</i>	<i>-75.8</i>	<i>0.64</i>	<i>3.23</i>	
<i>1345</i>	<i>4.0</i>	<i>15.6</i>	<i>7.13</i>	<i>695</i>	<i>-79.1</i>	<i>0.60</i>	<i>1.64</i>	
<i>1350</i>	<i>4.5</i>	<i>15.6</i>	<i>7.14</i>	<i>694</i>	<i>-81.7</i>	<i>0.60</i>	<i>1.65</i>	
<i>1355</i>	<i>5.0</i>							
<i>1400</i>	<i>5.5</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>		<i>✓</i>		

Ferrous Iron = *0.04* mg/L @ (Time) = *1400*

Stabilization Range	±10%	±10%	±10%	--	±10%	--	Purge Rate < 100 mL/min
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## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
<i>MW-211B</i>	<i>1355</i>	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		SVOC: Bis (2-ethylhexyl) phthalate	1 - 1L Amber	None
		Alkalinity & Chloride	1 - 500mL plastic	None
		Methane/Ethane/Ethene	3 - 40 mL Voa	HCl
		T 3.1 Col A Metals + Mercury	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): *MW / LH* Checked By: J. Robb

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 022182768.07 TI
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? **YES** Va      Is sample from a chlorinated supply? YES **NO**      PWS I.D. #:

SAMPLER NAME (PRINT): **L. HOWARD**  
**M. NGUYEN**      SAMPLER SIGNATURE: *[Signature]*      Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS	
											VSWMR Table 3.1 B	VOC Table 3.1 B /EDB 8011	MEE	Chloride	Alkalinity	VSWMR TABLE 3.1 A		
1) MW-206 A	X				052422	1305			GW	6								
2) MW-104 B	X				↓	1505			GW	12	X							
3) MW-104 A	X				↓	1649			GW	12	X							
4) MW-101	X				052522	841			GW	12	X							
5) MW-106 B	X				↓	1141			GW	6					X			5.2°C
6) MW-106 A	X				↓	1116			GW	12	X							271
7)																		on ice
8)																		sealed
9)																		
10) TRIP BLANK	X				051922	1220			DI	6	X	X						

RECEIVED: <i>[Signature]</i> DATE / TIME: 1335	RECEIVED: <i>[Signature]</i> DATE / TIME: LCN	QC Data Package	LAB USE ONLY	COOLER TEMP _____ °C
RECEIVED: <i>[Signature]</i> DATE / TIME: 052522 1202	RECEIVED: <i>[Signature]</i> DATE / TIME: 5/26/22 0800	Level I <input type="checkbox"/>	SCS-W	22E1388
RECEIVED: LCN		Level II <input checked="" type="checkbox"/>	1st Semi-Annual 2022	
		Level III <input type="checkbox"/>	Recd: 05/26/2022	Due: 06/10/2022
		Level IV <input type="checkbox"/>		

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**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? YES <input checked="" type="checkbox"/> No	Is sample from a chlorinated supply? YES <input checked="" type="checkbox"/> NO	PWS I.D. #:
SAMPLER NAME (PRINT): L. HOWARD M. NGUYEN	SAMPLER SIGNATURE: <i>[Signature]</i>	Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)							COMMENTS
											As and Co 6020	Hg	Bis (2-ethylhexyl) phthalate	1,1-Dichloroethane, Benzene, and Vinyl Chloride	MEE	Chloride	Alkalinity	
1) MW-105 A	X				052422	1432		GW	10	X	X	X	X	X	X	X		
2) MW-210 A	X				↓	1706		GW	12		X	X		X	X	X		
3) MW-210 B	X				↓	1833		GW	12		X	X		X	X	X		
4) MW-109 109	X				↓	1845		GW	10	X	X	X	X	X	X	X		
5) MW-105 B	X				052522	853		GW	10	X	X	X	X	X	X	X		
6)																		
7)																	5.2°C	
8)																	271	
9)																	on ice	
10)																	sealed	

QC Data Package	LAB USE ONLY	COOLER TEMP
Level I <input type="checkbox"/>	SCS-W	22E1388
Level II <input checked="" type="checkbox"/>	1st Semi-Annual 2022	
Level III <input type="checkbox"/>	Recd: 05/26/2022 Due: 06/10/2022	
Level IV <input type="checkbox"/>		v130325002

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# Sample Preservation Log

Order ID: 22E1388

Date Performed: 5/27/22

Analyst Performing Check: Mrs An DLJ

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/804/808) PCB DW only		BYOG (323/270/825)		CrVI * **		Pest/PCB (808)/BYOG(825)									
		pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	Received Res. Cl	Final + Dr.	Received Res. Cl	Final + Dr.	Received pH	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH				
		< 2	Other	> 12	Other	> 8	Other	< 1	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	+	.	+	.			< 1	Other	Other	Other	Other					
08	A			✓																													
08	F	✓																															
08	F																																
08	H					✓																											
09	A			✓																													
09	E	✓																															
09	F																																
09	H			✓																													
10	C	✓																															
11	A			✓																													
11	E	✓																															
11	F																																
11	H			✓																													

NaOH ID: \_\_\_\_\_ HNO3 ID: 2E01121  
 H2SO4 ID: \_\_\_\_\_ Na2S2O3 ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na2SO3 ID: \_\_\_\_\_

CrVI preserved date/time: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 Buffer Soft ID: \_\_\_\_\_  
 1N NaOH ID: \_\_\_\_\_

Metals were received with pH = 3. HNO3 was added at 1105 on 27 May 2022 by DLJ in the Log-In room to bring pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR138 for waste water.

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Laboratory Order ID: 22E1388

### Sample Conditions Checklist

Samples Received at:	5.20°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes



**CHAIN OF CUSTODY**

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COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07 TI
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: Jrobb@scsengineers.com	Pretreatment Program:
Is sample for compliance reporting? YES Va	Is sample from a chlorinated supply? YES NO	PWS I.D. #:
SAMPLER NAME (PRINT): L. HOWARD M. NGUYEN	SAMPLER SIGNATURE: <i>[Signature]</i>	Turn Around Time: 10 Day(s)
Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other		COMMENTS

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)								
											VSWMR Table 3.1A	VOC Table 3.1A/EEDB 8011	Chloride	Alkalinity	MEE	Hg	Bis (2-ethylhexyl) phthalate	VSWMR TABLE 3.1B	
1) TRIP BLANK	X					051922	1220		DI	6		X							
2) MW-205 B/M/S/MSIX						052522	1424		GW	51			X	X	X			X	
3) FIELD BLANK	X					↓	1500		DI	17			X	X	X			X	
4) MW-211 A	X					↓	1819		GW	12	X		X	X	X	X	X		
5) MW-206 B	X					052622	1225		GW	11	X		X	X	X				
6) MW-211 B	X					↓	1355		GW	12	X		X	X	X	X	X		
7) MW-108	X					↓	1810		GW	17			X	X	X			X	
8) MW-108 DUPLICATE						↓	1910		GW	17			X	X	X			X	
9)																			
10)																			

RECEIVED: DATE / TIME	RECEIVED: DATE / TIME	QC Data Package	LAB USE ONLY	COOLER TEMP 3.0 °C
052722 1500 LCN	5/27/22 LCN	Level I <input type="checkbox"/>	271 Sealed Ice	
LCN	mm 5/27/22 1630	Level II <input checked="" type="checkbox"/>		SCS-W 22E1463
		Level III <input type="checkbox"/>		1st Semi-Annual 2022
		Level IV <input type="checkbox"/>		Recd: 05/27/2022 Due: 06/13/2022

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**INITIALS**  
 formerly Air, Water & Soil Laboratories

**CHAIN OF CUSTODY**

PAGE | OF |

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218708.07 T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? **YES** Va      Is sample from a chlorinated supply? YES **NO**      PWS I.D. #:

SAMPLER NAME (PRINT): *L. HOWARD*      SAMPLER SIGNATURE: *[Signature]*      Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)							COMMENTS				
											VSWMR Table 3.1A	VOC Table 3.1A/EEDB 8011	Chloride	Alkalinity	MEE	Hg	Bis (2-ethylhexyl) phthalate					
																	VSWMR TABLE 3.1B					
1) TRIP BLANK	X					5/19/22	270		DI	6		X										
2) MW-205 B/MS/H/OK	X					052522	1424		GW	5			X	X	X							
3) FIELD BLANK	X					↓	1500		DI	7			X	X	X							
4) MW-211A	X					↓	1719	1809	GW	12	X		X	X	X	X					(MN) 052722	
5) MW-200 B	X					052622	1225		GW	11	X		X	X	X							01310
6) MW-211 B	X					↓	1355		GW	12	X		X	X	X	X						
7) MW-108	X					↓	1810		GW	7			X	X	X							X
8) MW-108 Duplicates	X					↓	1910		GW	7			X	X	X							X
9)																						

Page 179 of 183	INQUIRED: <i>[Signature]</i> DATE / TIME: <i>052722 @ 1500</i>	RECEIVED: <i>LCN</i> DATE / TIME: <i>5/27/22 1630</i>	QC Data Package	LAB USE ONLY	COOLER TEMP <i>3.0</i> °C	
	INQUIRED: <i>LCN</i> DATE / TIME: <i>5/27/22 1630</i>	RECEIVED: <i>mm</i> DATE / TIME: <i>5/27/22 1630</i>	Level I <input type="checkbox"/>	271 Sealed ice	SCS-W 1st Semi-Annual 2022 Recd: 05/27/2022 Due: 06/13/2022	
	INQUIRED: DATE / TIME:	RECEIVED: DATE / TIME:	Level II <input checked="" type="checkbox"/>			22E1463
	INQUIRED: DATE / TIME:	RECEIVED: DATE / TIME:	Level III <input type="checkbox"/>			
INQUIRED: DATE / TIME:	RECEIVED: DATE / TIME:	Level IV <input type="checkbox"/>				



# Sample Preservation Log

Order ID: 22E1463

Date Performed: 5/31/22

Analyst Performing Check: MNM

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/808) PCB DW only		SVOC (824/827/828)			CrVI * **		Pass/POB (808) / SVOC(825)						
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received	Received	Received	Final	Final	Final	Final	Final	Final	Final	Final	Final
		< 2	Other	> 12	Other	> 8	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	+	-	+	-	+	-	+	-	< 1	Other	Other	Other
2	G			/																											
2	D	/																													
2	T																														
2	W					/																									
2	AD			/																											
2	AE			/																											
2	AF			/																											
2	AG			/																											
2	AL	/																													
2	AM	/																													
3	C			/																											
3	H	/																													
3	K			/																											
3	L																														
4	E	/																													

NaOH ID: \_\_\_\_\_ HNO<sub>3</sub> ID: \_\_\_\_\_ GrVI preserved date/time: \_\_\_\_\_ Analyst Init: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 H<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub> ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na<sub>2</sub>SO<sub>3</sub> ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 8N NaOH: \_\_\_\_\_

Metals were received with pH = 4. HNO<sub>3</sub> was added at 1029 on 31 May 2022 by MNM in the Log-In room to bring pH = < 2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.



# Sample Preservation Log

Order ID: 22E1463

Date Performed: 5/31/22

Analyst Performing Check: MNM

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/808) PGB DW only		BVOG (824/827 & 825)			CrVI * **		PseVPOB (808) / BVOG(825)		pH as Received		pH as Received		pH as Received			
		pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	Received Ras. Cl	final + Dr.	Received Ras. Cl	final + Dr.	Received pH	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH			
		<2	Other	> 13	Other	> 9	Other	<2	Other	<2	Other	<2	Other	<2	Other	<2	Other	+	.	+	.			<2	Other			<2	Other			<2	Other	
4	I																																	
5	H																																	
6	E																																	
6	I																																	
7	C																																	
7	J		4 <2																															
7	M																																	
7	N																																	
8	C																																	
8	J		4 <2																															
8	M																																	
8	N																																	

NaOH ID: \_\_\_\_\_ HNO<sub>3</sub> ID: \_\_\_\_\_ CrVI preserved date/time: \_\_\_\_\_ Analyst: \_\_\_\_\_  
H<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
HCL ID: \_\_\_\_\_ Na<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 8N NaOH

\* pH must be adjusted between 9.3 - 9.7

Metals were received with pH = 4. HNO<sub>3</sub> was added at 1029 on 31 May 2022 by MNM in the Log-In room to bring pH = <2.

\*W.Va only certifies DIS3 CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Laboratory Order ID: 22E1463

### Sample Conditions Checklist

Samples Received at:	3.00°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

**SCS ENGINEERS  
DAILY FIELD REPORT**

<b>Project Name:</b> City of Bristol Sanitary Landfill	<b>Project Number:</b> 02218208.07
	<b>Task:</b> 1
	<b>Labor Code:</b> 99000

<b>Project Manager:</b> J. Robb	<b>Field Personnel:</b> M. Nguyen, A. Minnick
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<b>Date:</b> 12/5/2022	<b>Vehicle:</b> 15&21-F150	<b>Miles Billed:</b> --	<b>Travel Time:</b> --
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**Weather:** High 20's to Low 50's, Cloudy

Labor	Hours	Equipment	Materials
2nd Semi Groundwater Sampling	9.5	QED Controllers_Low & High Pressure, Coolers, Buckets, Spray Bottles, YSI Multi Meters+Flow Cells, Turbidity Meters, 300' & 500' Water Level Indicators, Heron Camera 500', Sample Pro Pump, Tubing, Generator, Tools	CO <sub>2</sub> Tanks, Nitrogen Tanks, Paper towels, DI Water, Ice, Nitrile Gloves

**Work Completed:**

**Anthony Tasks:**

- 7:00 - Arrived on site
- 7:15 - 9:50 - Conducted water levels onsite with Minh
- 10:18 - 10:49 - Purged and sampled MW-206A
- 11:20 - 12:21 - Purged and sampled MW-104A
- 12:35 - 13:45 - Replaced bladder pump on MW-108 with Minh
- 13:50 - 14:56 - Purged and sampled MW-104B
- 15:35 - 16:25 - Setup grundfos within MW-9 with Minh
- 16:30 - Left site

**Minh Tasks:**

- 6:45 - Meet Tony, went to Walmart, bought ice
- 7:20 - 9:50 - Arrived at site, meet Tony, conducted water level measurements  
went to MW-206B, trouble shoot the air line quick connect, QED air line quick connect is leaking  
find parts, made air line adaptor for MP10H/HU to pump air line
- 11:05 - 11:50 - Purged and sampled MW-206B
- 12:10 - 13:45 - Trouble shoot MW-108, called Tony, pulled pump, pump check vale filled with particles  
making it not working properly, cleaned check vale and replaced pump's bladder
- 13:50 - 14:35 - Purged and sampled MW-108 / MS / MSD  
set up MW-9 grundfos pump with Tony for well development in the morning 120622
- 16:30 - Left site

<b>Prepared By:</b> M. Nguyen, A. Minnick	<b>Review By:</b> J. Robb
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**SCS ENGINEERS  
DAILY FIELD REPORT**

<b>Project Name:</b> City of Bristol Sanitary Landfill	<b>Project Number:</b> 02218208.07
	<b>Task:</b> 1 <b>Labor Code:</b> 99000

<b>Project Manager:</b> J. Robb	<b>Field Personnel:</b> M. Nguyen, A. Minnick
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<b>Date:</b> 12/6/2022	<b>Vehicle:</b> 15&21-F150	<b>Miles Billed:</b> --	<b>Travel Time:</b> --
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**Weather:** High 40's to High 50's, Rain showers

Labor	Hours	Equipment	Materials
2nd Semi Groundwater Sampling	T 8.0 M 8.5	QED Controllers_Low & High Pressure, Coolers, Buckets, Spray Bottles, YSI Multi Meters+Flow Cells, Turbidity Meters, 300' & 500' Water Level Indicators, Heron Camera 500', Sample Pro Pump, Tubing, Generator, Tools	CO <sub>2</sub> Tanks, Nitrogen Tanks, Paper towels, DI Water, Ice, Nitrile Gloves

**Work Completed:**

**Anthony Tasks:**

7:18 - Arrived on site  
7:30 - 10:00 - Completed well development on MW-9 with Minh  
10:30 - Sampled Gradient Control with Minh  
10:45 - Sampled Gradient Control Duplicate with Minh  
11:02 - 11:33 - Purged and sampled MW-211A  
12:10 - 12:46 - Purged and sampled MW-106A  
13:27 - 14:02 - Purged and sampled MW-101  
14:43 - Packed up truck, left site to grab ice for samples  
15:15 - Grabbed ice at Bristol Walmart, left for hotel

**Minh Tasks:**

6:45 - Left to Home Depot, bought clamps for MW-9 grundfos pump safety cable  
7:30 - 10:00 - MW-9 Well Development  
well goes dry, recharge rate 10min/ft  
10:00 - 11:00 - Sampled GC Outfall & DUPLICATE with Tony  
11:09 - 11:49 - Purged and sampled MW-211B  
12:20 - 13:15 - Purged and sampled MW-106B  
14:00 - 15:00 - Purged and sampled MW-205B  
15:40 - Left site, meet Tony at Hotel, get ice for coolers

<b>Prepared By:</b> M. Nguyen, A. Minnick	<b>Review By:</b> J. Robb
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**SCS ENGINEERS  
DAILY FIELD REPORT**

<b>Project Name:</b> City of Bristol Sanitary Landfill	<b>Project Number:</b> 02218208.07
	<b>Task:</b> 1 <b>Labor Code:</b> 99000

<b>Project Manager:</b> J. Robb	<b>Field Personnel:</b> M. Nguyen, A. Minnick
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<b>Date:</b> 12/7/2022	<b>Vehicle:</b> 15&21-F150	<b>Miles Billed:</b> --	<b>Travel Time:</b> 5.5
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**Weather:** Low 50's, Raining

Labor	Hours	Equipment	Materials
2nd Semi Groundwater Sampling	3.5	QED Controllers_Low & High Pressure, Coolers, Buckets, Spray Bottles, YSI Multi Meters+Flow Cells, Turbidity Meters, 300' & 500' Water Level Indicators, Heron Camera 500', Sample Pro Pump, Tubing, Generator, Tools	CO <sub>2</sub> Tanks, Nitrogen Tanks, Paper towels, DI Water, Ice, Nitrile Gloves

**Work Completed:**

**Anthony Tasks:**

7:40 - Stopped for additional ice  
 8:00 - Arrived at landfill  
 8:18 - 9:24 - Purged and sampled MW-210A  
 10:00 - 10:26 - Purged and sampled MW-9  
 10:45 - Packed truck, left site headed to office, stuck in traffic near Christiansburg  
 16:10 - Arrived at office, unpacked large equipment  
 16:40 - Left office

**Minh Tasks:**

7:35 - Meet Tony, left hotel to Walmart, bought ice  
 7:55 - Left Walmart to MW-210B  
 trouble shoot & cleaned HP air hose, got dirt and small plants part inside, won't connect to the controller  
 8:44 - 9:39 - Purged and sampled MW-210B  
 Packaged sample coolers  
 10:45 - Left site to Roanoke  
 13:20 - Meet Enthalpy's courier, dropped off sample coolers  
 16:05 - 16:40 - Arrived at office, unloaded truck, set equipment out to air dry

<b>Prepared By:</b> M. Nguyen, A. Minnick	<b>Review By:</b> J. Robb
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## Groundwater Level Measurement Log

Project Name:		City of Bristol Sanitary Landfills				Project Number:		02218208.07	
Date :		12/5/22				Task:		1	
Well ID	Time	Depth to Water (ft)	Depth to Bottom (ft)	Water Column Thickness (ft)	Screen Length (ft)	Top of PVC Casing Elevation (ft, AMSL)	Groundwater Elevation (ft, AMSL)	Well Diameter (in)	Remarks
MW-101	8:36	5.82	110.50	104.68	---	1826.17	1820.35	6	
MW-103	8:40	70.96	322.40	251.44	20	1851.25	1780.29	4	
MW-104A	9:10	44.50	105.30	60.80	15	1858.57	1814.07	4	
MW-104B	9:11	33.17	78.50	45.33	15	1856.63	1823.46	4	
MW-105A	9:02	52.83	136.10	83.27	15	1882.50	1829.67	4	
MW-105B	9:05	112.00	383.10	271.10	20	1890.50	1778.50	4	
MW-106A	8:00	148.42	199.50	51.08	20	1924.28	1775.86	4	
MW-106B	7:59	201.43	419.13	217.70	10	1924.31	1722.88	2	
MW-107A	9:18	113.95	121.60	7.65	25	1913.50	1799.55	4	
MW-107B	9:16	223.44	382.00	158.56	15	1915.82	1692.38	6	
MW-108	7:50	308.97	388.50	79.53	25	1945.50	1636.53	4	
MW-109	8:56	138.26	248.25	109.99	15	1910.99	1772.73	6	
MW-110	9:00	87.12	206.23	119.11	---	1881.83	1794.71	2	
MW-205B	9:23	183.03	345.30	162.27	10	1880.40	1697.37	6	
MW-206	8:17	83.07	139.60	56.53	---	1909.20	1826.13	6	
MW-206A	8:08	161.15	243.00	81.85	15	1910.69	1749.54	4	
MW-206B	8:12	163.11	357.80	194.69	10	1909.60	1746.49	4	
MW-210A	9:34	36.66	150.00	113.34	10	1841.78	1805.12	2	
MW-210B	9:33	106.62	362.18	255.56	10	1841.08	1734.46	4	
MW-211A	9:48	124.60	218.91	94.31	10	1912.63	1788.03	4	
MW-211B	9:44	249.00	448.61	199.61	20	1904.29	1655.29	4	
MW-5	7:21	13.52	275.51	261.99	10	1822.82	1809.30	4	
MW-6	7:19	4.57	195.04	190.47	10	1822.37	1817.80	4	
MW-7	7:33	0.56	86.22	85.66	10	1776.63	1776.07	4	
MW-8	7:35	0.00	135.77	135.77	15	1774.85	1774.85	4	Artesian
MW-9	9:27	130.69	277.20	146.51	15	1851.82	1721.13	4	
PZ-2	8:32	63.28	108.80	45.52	15	1849.81	1786.53	4	
PZ-3	8:48	23.27	105.00	81.73	15	1831.85	1808.58	4	

Field Personnel: M. Nguyen, A. Minnick

Checked By: J. Robb

ft = feet

ft, AMSL = feet, above mean sea level

in = inches

Notes:

1. Depth to bottom and water measured from the top of the PVC casing.
2. Depth to bottom provided in the Groundwater Monitoring Plan dated April 2020 for the following wells: MW-101, MW-104A, MW-104B, MW-105A, MW-206B, MW-210A.
3. Depth to bottom measured on July 18, 2022 for the following wells: MW-5, MW-6, MW-7, MW-206, MW-206A.
4. Depth to bottom measured on May 24, 2022 for the following wells: MW-103, MW-104A, MW-105B, MW-106A, MW-106B, MW-107A, MW-10;
5. Depth to bottom provided on boring log for the following wells: MW-8 and MW-9.

# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07 T1
Well Number:	MW-106A	Date:	120622
Well Diameter (in):	4"	1 Well Volume (gal):	33.35
Total Well Depth (ft):	199.50	QED Controller Settings:	225FT 1CPM 40/20
Depth to Pump (ft):	Dedicated	Purging Time Initiated:	1210
Depth to Water (ft):	148.42	Purging Time Completed:	1245
Water Column Thickness (ft):	51.08	Total Gallons Purged:	2.4

## WELL PURGING RECORD

Time	Volume Purged (Gallons)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1215	0.3	15.9	6.96	1051	45.5	2.86	0.00	clear, no odor
1220	0.6	15.9	6.88	1092	-10.4	1.26	0.32	
1225	1.0	15.7	6.80	1145	-81.8	1.43	0.00	
1230	1.5	15.7	6.79	1139	-75.9	0.81	0.00	
1235	1.9	15.7	6.79	1138	-74.8	0.67	0.00	
1240	2.2	15.6	6.79	1137	-73.6	0.62	0.00	
1245	2.4	15.7	6.79	1138	-71.5	0.64	0.00	
		✓	✓	✓	-	✓	✓	
Stabilization Range		±10%	±10%	±10%	--	±10%	--	

## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-106A	1246	T 3.1 A VOCs 8260 + VOC (Dichlorodifluoromethane)	3 - 40 mL Voa	HCl
		T 3.1 A VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col B Cyanide	1 - 250 mL plastic	NaOH
		Herbicides (2,4-D and 2,4,5-TP)	1 - 1L Amber	None
		SVOCs (Bis(2-ethylhexyl) phthalate, Diethyl phthalate, Di-n-butyl phthalate, and Phenol)	1 - 1L Amber	None
		T 3.1 Col B Sulfide	1 - 250m L plastic	NaOH + ZnAC
		T 3.1 Metals+Mercury and Tin	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): A Mionick Checked By: J. Robb  
 M:\Projects\02218208.07 Data and Calculations\2022-22-12-22-12 Bristol 2nd Semi GW Sample Logs









# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

Project Name:	City of Bristol Sanitary Landfill	Job Number:	02218208.07 T1
Well Number:	MW-210A	Date:	12.07.22
Well Diameter (in):	2"	1 Well Volume (gal):	18.39
Total Well Depth (ft):	149.47	QED Controller Settings:	100FT 2CPM 20/10
Depth to Pump (ft):	Dedicated ~ 145	Purging Time Initiated:	818
Depth to Water (ft):	36.66	Purging Time Completed:	923
Water Column Thickness (ft):	112.81	Total Gallons Purged:	5.0

## WELL PURGING RECORD

Time	Volume Purged (Gallons)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
823	0.5	13.8	5.16	1975	-271.4	0.55	68.96	Clear, no odor
828	1.0	13.8	8.95	2007	-262.2	0.46	28.15	silty sediment
833	1.5	13.8	9.91	2009	-276.1	0.50	10.51	whiteish
838	2.0	13.7	9.47	2008	-246.8	0.67	3.72	
843	2.5	13.7	9.38	2006	-251.8	0.67	3.78	
848	3.0	13.7	9.42	2002	-261.7	0.46	3.56	
853	3.5	13.7	9.40	2002	-266.1	0.39	3.85	
858	3.75	13.7	9.20	2000	-266.5	0.34	3.92	
903	4.0	13.7	9.26	2000	-273.6	0.32	3.72	
908	4.25	13.7	9.44	1995	-288.6	0.30	2.35	
913	4.5	13.7	9.42	1992	-293.2	0.28	1.99	
916	4.75	13.7	9.39	1988	-290.2	0.27	1.87	
923	5.0	13.7	9.44	1985	-292.7	0.28	1.12	
		✓	✓	✓	-	✓	✓	
Stabilization Range		±10%	±10%	±10%	--	± 10%	--	

## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-210A	924	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col A Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): A. Minnich Checked By: J. Robb

<b>Well Sampling / MicroPurge Log</b>	<b>SCS ENGINEERS</b> 296 Victory Road Winchester, Virginia 22602 (540) 662-7097
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Project Name: City of Bristol Sanitary Landfill	Job Number: 02218208.07 T1
Well Number: MW-210B	Date: 170727
Well Diameter (in): 4"	1 Well Volume (gal): 166.88
Total Well Depth (ft): 362.18	QED MP10H/HU Settings: 150FT 2CPM 20/10
Depth to Pump (ft): N/A	Purging Time Initiated: 8:44
Depth to Water (ft): 106.62	Purging Time Completed: 9:34
Water Column Thickness (ft): 255.56	Total Gallons Purged: 4.0

**WELL PURGING RECORD**

Time	Volume Purged (Gallons)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
8:49	.25	13.7	7.68	1298	-82.8	.70	11.46	slightly cloudy
8:54	.5	13.9	7.80	1270	-64.5	.58	53.96	
8:59	.9	13.7	7.68	870	-80.9	.67	96.57	
9:04	1.3	13.7	7.42	833	-99.1	.42	48.23	
9:09	1.7	13.7	7.34	827	-98.5	.25	23.85	
9:14	2.2	13.7	7.31	826	-128.1	.20	11.26	
9:19	2.65	13.7	7.30	825	-130	.20	5.46	
9:24	3.0	13.6	7.30	825	-140.8	.16	6.22	
9:29	3.5	13.7	7.30	825	-142.1	.16	4.86	
9:34	4.0	13.7	7.30	824	-145.2	.16	3.60	
9:39	4.5							
9:44	5.0							
9:49	5.5							
Stabilization Range		±10%	±10%	±10%	--	±10%	--	

**GROUNDWATER SAMPLING RECORD**

Sample Number	Collection Time	Parameter	Container	Preservative
<b>MW-210B</b>	<b>939</b>	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col A Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): MN Checked By: J. Robb



# Well Sampling / MicroPurge Log

**SCS ENGINEERS**  
 296 Victory Road  
 Winchester, Virginia 22602  
 (540) 662-7097

Project Name: City of Bristol Sanitary Landfill	Job Number: 02218208.07 T1
Well Number: MW-211A	Date: <u>120622</u>
Well Diameter (in): 4"	1 Well Volume (gal): <u>61.58</u>
Total Well Depth (ft): 218.91	QED MP10H/HU Settings: 250FT 1CPM 40/20
Depth to Pump (ft): <u>Dedicated ~ 213</u>	Purging Time Initiated: <u>1102</u>
Depth to Water (ft): <u>124.60</u>	Purging Time Completed: <u>1132</u>
Water Column Thickness (ft): <u>94.31</u>	Total Gallons Purged: <u>3.0</u>

## WELL PURGING RECORD

Time	Volume Purged (Gallons)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1107	0.5	13.2	7.53	633.6	-144.0	3.82	0.32	Clear, no odor
1112	1.0	13.2	7.53	631.0	-155.5	5.87	0.00	
1117	1.5	13.2	7.51	630.3	-155.7	1.01	0.00	
1122	2.0	13.2	7.52	630.0	-151.8	9.20	0.00	
1127	2.5	13.2	7.53	630.4	-142.3	9.45	0.92	
1132	3.0	13.2	7.52	630.1	-148.7	8.93	0.00	
1137								
		✓	✓	✓	-	✓	-	
Stabilization Range		±10%	±10%	±10%	--	±10%	--	

## GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
<u>MW-211A</u>	<u>1133</u>	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col A Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: Courier Laboratory: Enthalpy Analytical  
 Sampler(s): A. Minnich Checked By: J. Robb

<h2 style="margin:0;">Well Sampling / MicroPurge Log</h2>	<b>SCS ENGINEERS</b> 296 Victory Road Winchester, Virginia 22602 (540) 662-7097
---	--

Project Name: City of Bristol Sanitary Landfill	Job Number: 02218208.07 T1
Well Number: MW-211B	Date: 120622
Well Diameter (in): 4"	1 Well Volume (gal): 130.35
Total Well Depth (ft): 448.61	QED MP10H/HU Settings: 130 PSI 1CPM 39/21
Depth to Pump (ft): N/A	Purging Time Initiated: 1109
Depth to Water (ft): 249.0	Purging Time Completed: 1144
Water Column Thickness (ft): 199.61	Total Gallons Purged: 1.90

### WELL PURGING RECORD

Time	Volume Purged (Gallons)	Temperature (°C)	pH (s.u.)	Specific Conductance (uS/cm)	ORP (mV)	D.O (mg/L)	Turbidity (NTU)	Comments (water color, odor, sediment, cloudy, etc.)
1114	.25	13.5	7.60	644	56.7	7.03	0.48	CLEAR
1119	.50	13.3	7.42	638.2	24.0	2.75	0.37	
1124	.75	13.3	7.37	641	-8.0	1.16	2.03	
1129	1.0	13.3	7.36	635.9	-40.7	0.65	0.68	
1134	1.3	13.3	7.37	632.1	-50.6	0.5	0.45	
1139	1.6	13.3	7.37	630.6	-63.2	0.5	0.78	
1144	1.9	13.3	7.37	629.8	-73.7	0.47	0.75	
Stabilization Range		±10%	±10%	±10%	--	±10%	--	

### GROUNDWATER SAMPLING RECORD

Sample Number	Collection Time	Parameter	Container	Preservative
MW-211B	1149	T 3.1 Col A VOCs 8260	3 - 40 mL Voa	HCl
		T 3.1 Col A VOCs 8011	2 - 60 mL Voa	HCl
		T 3.1 Col A Metals	1 - 500 mL plastic	HNO3

Samples Shipped By: <u>Courier</u>	Laboratory: <u>Enthalpy Analytical</u>
Sampler(s): <u>MW</u>	Checked By: <u>J. Robb</u>

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 2nd Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07 T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: <a href="mailto:jrobb@scsengineers.com">jrobb@scsengineers.com</a>	Pretreatment Program:

Is sample for compliance reporting? YES  Va Is sample from a chlorinated supply? YES  NO PWS I.D. #:

SAMPLER NAME (PRINT): M. NGUYEN  
Anthony Minarch SAMPLER SIGNATURE: [Signature] Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)							COMMENTS
											VSWMR 3.1A (VOCs, EDB, Metals)	CN SW9012	Herb SW8151 (2,4-D & 2,4,5-TP)	Hg (7470) & Sn (6020)	Sulfide	VOC 3.1B Detects (Dichlorodifluoromethane)	SVOCs (3.1b Detects): (Bis(2-ethylhexyl) phthalate, Diethyl phthalate, Di-n-butyl phthalate, and Phenol)	
1) MW-104 B	X					120522	1456		GW 10	10	X	X	X	X	X	X		
2) MW-104 A	X					120522	1221		GW 10	10	X	X	X	X	X	X		
3) MW-106 A	X					120622	1246		GW 10	10	X	X	X	X	X	X		
4) MW-101	X					↓	1403		GW 10	10	X	X	X	X	X	X		
5) MW-205 B	X					↓	1500		GW 10	10	X	X	X	X	X	X		
6)																		
7)																	277	
8)																	Ice	
9)																	sealed	
10)																	4.0°C	

RELINQUISHED: <u>[Signature]</u>	DATE / TIME: 12/22/2022 0914	RECEIVED: <u>LCN</u>	DATE / TIME: 12/22/2022 0800
RELINQUISHED: <u>LCN</u>	DATE / TIME: 12/22/2022 0800	RECEIVED: <u>mm</u>	DATE / TIME: 12/8/22 0800
RELINQUISHED:	DATE / TIME:	RECEIVED:	DATE / TIME:

**SCS-W** 22L0423  
Solid Waste Permit #498 & 588 Sen  
Recd: 12/08/2022 Due: 12/22/2022

COOLER TEMP \_\_\_\_\_ °C

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 2nd Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07 T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:
Is sample for compliance reporting? YES <input checked="" type="checkbox"/> Va	Is sample from a chlorinated supply? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	PWS I.D. #:

SAMPLER NAME (PRINT): M. NGUYEN  
Anthony Mimick      SAMPLER SIGNATURE: [Signature]      Turn Around Time: 10 Day

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS	
											VSWMR 3.1A (VOCs, EDB, Metals)	VOCs 8260 & 8011						
1) MW-206A	X					120522	1049		GW	6	X							
2) MW-206B	X					↓	1150		GW	6	X							
3) MW-211A	X					120622	1133		GW	6	X							
4) MW-211B	X					↓	1149		GW	6	X							
5) MW-106B	X					↓	1315		GW	6	X							
6) MW-210A	X					120722	924		GW	6	X							277
7) MW-210B	X					↓	9:39		GW	6	X							1ce
8)																		sealed
9)																		4.0°C
10)																		

RELINQUISHED: [Signature] DATE / TIME: 12/07/22 1400 RECEIVED: LCN DATE / TIME: 12/18/22 0500

RELINQUISHED: LCN DATE / TIME: 12/07/22 1400 RECEIVED: MM DATE / TIME: 12/18/22 0500

SCS-W  
Solid Waste Permit #498 & 588 Sen  
Recd: 12/08/2022 Due: 12/22/2022  
22L0423  
TEMP \_\_\_\_\_ °C  
130325002  
Page 195 of 202

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07 T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: <a href="mailto:jrobb@scsengineers.com">jrobb@scsengineers.com</a>	Pretreatment Program:

Is sample for compliance reporting? YES **Va** Is sample from a chlorinated supply? YES **NO** PWS I.D. #:

SAMPLER NAME (PRINT): **A. MINNICK** SAMPLER SIGNATURE: *[Signature]* Turn Around Time: **10 DAYS**

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)									
											VSWMR 3.1A (VOCs, EDB, Metals)	CN SW9012	Herb SW8151 (2,4-D & 2,4,5-TP)	Hg (7470) & Sn (6020)	Sulfide	VOC 3.1B Detects (Dichlorodifluoromethane)	Alkalinity, Chloride 300.0	MEE RSK 175	SVOCs: (Bis(2-ethylhexyl) phthalate, Diethyl phthalate, Di-n-butyl phthalate, and Phenol)	PLEASE NOTE PRES INTERFERENCE CHE RATE (L/m)
1) MW-108 / MS / MSD	X					120522	1435		GW	45	X	X	X	X	X	X	X	X		
2) GC OUTFALL	X					120622	1030		GW	15	X	X	X	X	X	X	X	X		
3) GC OUTFALL DUPLICATE						↓	1045		GW	15	X	X	X	X	X	X	X	X		
4) FIELD BLANK	X					↓	1301		GW	15	X	X	X	X	X	X	X	X		
5) TRIP BLANK	X					112922	1100		DI	6	X				X		X		→ VOCs 8260	
6)																			8011	
7)																			MEE	
8)																			277	
9)																			100	
10)																			sealed	

RELINQUISHED: <i>[Signature]</i>	DATE / TIME: 12/07/22 1400	RECEIVED: LCN	DATE / TIME:
RELINQUISHED: LCN	DATE / TIME:	RECEIVED: mm	DATE / TIME: 12/8/22 0800
RELINQUISHED:	DATE / TIME:	RECEIVED:	DATE / TIME:

QC Data 22L0423

Level I

Level II

Level III

SCS-W 22L0423  
Solid Waste Permit #498 & 588 Sen  
Recd: 12/08/2022 Due: 12/22/2022

TEMP 4.0 °C

v130325002

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# Sample Preservation Log

Order ID 22L0423

Date Performed: 12/9/22

Analyst Performing Check: CSB

Sample ID	Container ID	Metals			Cyanide			Sulfide			Ammonia			TKN			Phos, Tot			NO3+NO2			DRO			Pesticide (8081/808/508) PCB DW only			SVOC (825/8270/825)			CrVI * **		Pest/PCB (508) / SVOC(825)								
		pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	Received Res. Cl	final + or -	Received Res. Cl	final + or -	Received pH	Final pH	pH as Received		Final pH	pH as Received		Final pH					
		<2	Other		>12	Other		>9	Other		<2	Other		<2	Other		<2	Other		<2	Other		<2	Other								<2	Other		<2	Other		<2	Other	<2	Other	Other
01	A			/																																						
01	D																																									
01	E	/																																								
01	F			/																																						
02	A			/																																						
02	D																																									
02	E	/																																								
02	F			/																																						
03	A			/																																						
03	D																																									
03	E	4	<2																																							
03	F			/																																						
04	A			/																																						
04	D																																									
04	E	/																																								

NaOH ID: \_\_\_\_\_ HNO3 ID: 2K02236 CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
 H2SO4 ID: \_\_\_\_\_ Na2S2O3 ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na2SO3 ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 5N NaOH: \_\_\_\_\_

Metals were received with pH = 3,4,5,7  
 HNO3 was added at 1000 on 9 December  
 2022 by ATG in the Log-In room to bring  
 pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.



# Sample Preservation Log

Order ID 22L0423

Date Performed: 12/9/22

Analyst Performing Check: CSB

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/508) PCB DW only			SVOC (525/5270/525)			CrVI * **		Pest/PCB (508) / SVOC(525)												
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received Res. Cl	final + or -	Received Res. Cl	final + or -	Received pH	Final pH	pH as Received		pH as Received		pH as Received								
		< 2	Other	> 12	Other	> 6	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	+	-	+	-	+	-	< 2	Other	Final pH	Other	Final pH	Other	Final pH						
04	F																																					
05	A			/																																		
05	D																																					
05	E	/																																				
05	F			/																																		
06	D	/																																				
07	D		3 42																																			
08	D	/																																				
09	D	/																																				
10	D	/																																				
11	D	/																																				
12	D	/																																				
13	C			/																																		
13	I																																					
13	J		5 42																																			

NaOH ID: \_\_\_\_\_ HNO3 ID: 2K02236 CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 H2SO4 ID: \_\_\_\_\_ Na2S2O3 ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na2SO3 ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 5N NaOH: \_\_\_\_\_

Metals were received with pH = 3,4,5,7  
 HNO3 was added at 1000 on 9 December  
 2022 by ATG in the Log-In room to bring  
 pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.



# Sample Preservation Log

Order ID 22L0423

Date Performed: 12/9/22

Analyst Performing Check: CSR

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/508) PCB DW only			SVOC (525/6270/625)			CrVI * **		Pest/PCB (508) / SVOC(525)									
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received Res. Cl	final + or -	Received Res. Cl	final + or -	Received pH	Final pH	pH as Received		pH as Received		pH as Received					
		<2	Other	>12	Other	>8	Other	<2	Other	<2	Other	<2	Other	<2	Other	<2	Other	<2	Other	+	-	+	-			<2	Other	Other	Final pH	Other	Final pH				
13	K					/																													
13	AJ	5	<2																																
13	AK	5	<2																																
13	AN					/																													
13	AO					/																													
13	AP					/																													
13	AQ					/																													
14	C					/																													
14	I																																		
14	J	7	<2																																
14	K					/																													
15	C					/																													
15	I																																		
15	J	/																																	
15	K					/																													

NaOH ID: \_\_\_\_\_ HNO3 ID: 2KO 2236 CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 H2SO4 ID: \_\_\_\_\_ Na2S2O3 ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na2SO3 ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 5N NaOH: \_\_\_\_\_

Metals were received with pH = 3,4,5,7  
 HNO3 was added at 1000 on 9 December 2022 by ATG in the Log-In room to bring pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR138 for waste water.





# Sample Preservation Log

Order ID 22L0423

Date Performed: 12/9/22

Analyst Performing Check: CSB

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/508) PCB DW only			SVOC (525/8270/625)			CrVI * **		Pest/PCB (508) / SVOC(525)										
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received Res. Cl	final + or -	Received Res. Cl	final + or -	Received pH	Final pH	pH as Received		pH as Received								
		< 2	Other	> 12	Other	> 8	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	+	-	+	-			< 2	Other		Other							
16	C			/																																
16	I																																			
16	J			/																																
16	K					/																														

NaOH ID: \_\_\_\_\_ HNO<sub>3</sub> ID: 2K022 36 CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 H<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na<sub>2</sub>SO<sub>3</sub> ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 5N NaOH: \_\_\_\_\_

Metals were received with pH = 3,4,5,7  
 HNO<sub>3</sub> was added at 1000 on 9 December  
 2022 by ATG in the Log-In room to bring  
 pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.

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## Certificate of Analysis


Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 2nd Semi-Annual  
Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Laboratory Order ID: 22L0423

### Sample Conditions Checklist

Samples Received at:	4.00°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes



Appendix D  
Laboratory Analytical Results



TNI Accredited  
VELAP ID 460021



1941 Reymet Road • Richmond, Virginia 23237 • Tel: (804)-358-8295 Fax: (804)-358-8297

## Certificate of Analysis

*Final Report*

Laboratory Order ID 22E1388

Client Name: SCS Engineers-Winchester  
296 Victory Road  
Winchester, VA 22602

Date Received: May 26, 2022 8:00  
Date Issued: July 12, 2022 14:30  
Project Number: 02218208.07T1  
Purchase Order:

Submitted To: Jennifer Robb

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Enclosed are the results of analyses for samples received by the laboratory on 05/26/2022 08:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars  
Technical Director

**End Notes:**

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Enthalpy Analytical.

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

**Laboratory Sample ID: 22E1388-01**                      **Client Sample ID: MW-105A**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	01	SW6020B	20		0.50	1.0	1	ug/L
Cobalt	01	SW6020B	7.12		0.200	1.00	1	ug/L
1,1-Dichloroethane	01	SW8260D	1.14		0.60	1.00	1	ug/L
Vinyl chloride	01	SW8260D	1.44		0.50	0.50	1	ug/L
bis (2-Ethylhexyl) phthalate	01	SW8270E	6.05		4.67	5.00	1	ug/L
Methane	01	RSK175M	25.4		1.50	5.00	1	ug/L
Alkalinity	01	SM22 2320B-2011	320		5.0	5.0	1	mg/L
Chloride	01	SW9056A	21.7		0.5	1.0	1	mg/L

**Laboratory Sample ID: 22E1388-02**                      **Client Sample ID: MW-210A**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	02	SW6020B	6.5		0.50	1.0	1	ug/L
Barium	02	SW6020B	35.7		1.00	5.00	1	ug/L
Zinc	02	SW6020B	3.69	J	2.50	5.00	1	ug/L
Methane	02	RSK175M	17.1		1.50	5.00	1	ug/L
Alkalinity	02	SM22 2320B-2011	306		5.0	5.0	1	mg/L
Chloride	02	SW9056A	36.4		0.5	1.0	1	mg/L

### Analysis Detects Report

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

**Laboratory Sample ID: 22E1388-03**                      **Client Sample ID: MW-210B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	03	SW6020B	68.7		1.00	5.00	1	ug/L
Cobalt	03	SW6020B	0.231	J	0.200	1.00	1	ug/L
Copper	03	SW6020B	0.636	J	0.300	1.00	1	ug/L
Nickel	03	SW6020B	2.323		1.000	1.000	1	ug/L
Acetone	03	SW8260D	7.41	J	7.00	10.0	1	ug/L
Alkalinity	03	SM22 2320B-2011	330		5.0	5.0	1	mg/L
Chloride	03	SW9056A	14.1		0.5	1.0	1	mg/L

**Laboratory Sample ID: 22E1388-04**                      **Client Sample ID: MW-109**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	04	SW6020B	1.5		0.50	1.0	1	ug/L
Methane	04	RSK175M	27.3		1.50	5.00	1	ug/L
Alkalinity	04	SM22 2320B-2011	242		5.0	5.0	1	mg/L
Chloride	04	SW9056A	1.3		0.5	1.0	1	mg/L

**Laboratory Sample ID: 22E1388-05**                      **Client Sample ID: MW-105B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	05	SW6020B	0.94	J	0.50	1.0	1	ug/L
Methane	05	RSK175M	6.11		1.50	5.00	1	ug/L
Alkalinity	05	SM22 2320B-2011	148		5.0	5.0	1	mg/L
Chloride	05	SW9056A	4.0		0.5	1.0	1	mg/L

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Laboratory Sample ID: 22E1388-06      Client Sample ID: MW-206A

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	06	SW6020B	1.5		0.50	1.0	1	ug/L
Barium	06	SW6020B	84.5		1.00	5.00	1	ug/L
Cadmium	06	SW6020B	0.108	J	0.100	1.00	1	ug/L
Chromium	06	SW6020B	2.34		0.400	1.00	1	ug/L
Cobalt	06	SW6020B	1.65		0.200	1.00	1	ug/L
Copper	06	SW6020B	2.06		0.300	1.00	1	ug/L
Lead	06	SW6020B	2.0		1.0	1.0	1	ug/L
Nickel	06	SW6020B	14.93		1.000	1.000	1	ug/L
Silver	06	SW6020B	1.79		0.0600	1.00	1	ug/L
Zinc	06	SW6020B	11.8		2.50	5.00	1	ug/L
Acetone	06	SW8260D	8.56	J	7.00	10.0	1	ug/L

Laboratory Sample ID: 22E1388-07      Client Sample ID: MW-104B

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	07	SW6020B	51.7		1.00	5.00	1	ug/L
Cobalt	07	SW6020B	0.286	J	0.200	1.00	1	ug/L
Nickel	07	SW6020B	1.095		1.000	1.000	1	ug/L
Tin	07	SW6020B	4.30		1.00	1.00	1	ug/L
Sulfide	07	SW9215	6.23		0.80	1.00	1	mg/L

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Laboratory Sample ID: 22E1388-08      Client Sample ID: MW-104A

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	08	SW6020B	9.0		0.50	1.0	1	ug/L
Barium	08	SW6020B	70.4		1.00	5.00	1	ug/L
Cobalt	08	SW6020B	0.986	J	0.200	1.00	1	ug/L
Copper	08	SW6020B	1.08		0.300	1.00	1	ug/L
Nickel	08	SW6020B	1.468		1.000	1.000	1	ug/L
Zinc	08	SW6020B	9.45		2.50	5.00	1	ug/L

Laboratory Sample ID: 22E1388-09      Client Sample ID: MW-101

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	09	SW6020B	1.7		0.50	1.0	1	ug/L
Barium	09	SW6020B	109		1.00	5.00	1	ug/L
Cadmium	09	SW6020B	0.104	J	0.100	1.00	1	ug/L
Chromium	09	SW6020B	5.38		0.400	1.00	1	ug/L
Cobalt	09	SW6020B	18.2		0.200	1.00	1	ug/L
Copper	09	SW6020B	14.0		0.300	1.00	1	ug/L
Nickel	09	SW6020B	18.48		1.000	1.000	1	ug/L
Zinc	09	SW6020B	16.0		2.50	5.00	1	ug/L



### Analysis Detects Report

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

**Laboratory Sample ID: 22E1388-10**                      **Client Sample ID: MW-106B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	10	SW6020B	1.0		0.50	1.0	1	ug/L
Barium	10	SW6020B	108		1.00	5.00	1	ug/L
Cobalt	10	SW6020B	0.472	J	0.200	1.00	1	ug/L
Copper	10	SW6020B	0.725	J	0.300	1.00	1	ug/L
Zinc	10	SW6020B	2.58	J	2.50	5.00	1	ug/L
1,1-Dichloroethane	10	SW8260D	1.11		0.60	1.00	1	ug/L

**Laboratory Sample ID: 22E1388-11**                      **Client Sample ID: MW-106A**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	11	SW6020B	3.2		0.50	1.0	1	ug/L
Barium	11RE1	SW6020B	290		10.0	50.0	10	ug/L
Cobalt	11	SW6020B	5.43		0.200	1.00	1	ug/L
Nickel	11	SW6020B	7.323		1.000	1.000	1	ug/L
1,1-Dichloroethane	11	SW8260D	1.02		0.60	1.00	1	ug/L
cis-1,2-Dichloroethylene	11	SW8260D	0.56	J	0.40	1.00	1	ug/L

**Laboratory Sample ID: 22E1388-12**                      **Client Sample ID: Trip Blank**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Acetone	12RE1	SW8260D	7.21	J	7.00	10.0	1	ug/L

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the "Certificate of Analysis".

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-105A	22E1388-01	Ground Water	05/24/2022 14:32	05/26/2022 08:00
MW-210A	22E1388-02	Ground Water	05/24/2022 17:06	05/26/2022 08:00
MW-210B	22E1388-03	Ground Water	05/24/2022 18:33	05/26/2022 08:00
MW-109	22E1388-04	Ground Water	05/24/2022 18:45	05/26/2022 08:00
MW-105B	22E1388-05	Ground Water	05/25/2022 08:53	05/26/2022 08:00
MW-206A	22E1388-06	Ground Water	05/24/2022 13:05	05/26/2022 08:00
MW-104B	22E1388-07	Ground Water	05/24/2022 15:05	05/26/2022 08:00
MW-104A	22E1388-08	Ground Water	05/24/2022 16:49	05/26/2022 08:00
MW-101	22E1388-09	Ground Water	05/25/2022 08:41	05/26/2022 08:00
MW-106B	22E1388-10	Ground Water	05/25/2022 11:41	05/26/2022 08:00
MW-106A	22E1388-11	Ground Water	05/25/2022 11:16	05/26/2022 08:00
Trip Blank	22E1388-12	Ground Water	05/19/2022 12:20	05/26/2022 08:00

Final COA reissued on 6/27 to update reportinglist and limits per COC.

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-105A

Laboratory Sample ID: 22E1388-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Arsenic	01	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 14:35	20		0.50	1.0	1	ug/L	RCV
Cobalt	01	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 14:35	7.12		0.200	1.00	1	ug/L	RCV
Mercury	01	7439-97-6	SW7470A	06/07/2022 08:37	06/07/2022 14:00	BLOD		0.00020	0.00020	1	mg/L	MWL
<b>Volatile Organic Compounds by GCMS</b>												
1,1-Dichloroethane	01	75-34-3	SW8260D	05/27/2022 16:41	05/27/2022 16:41	1.14		0.60	1.00	1	ug/L	BMR
Benzene	01	71-43-2	SW8260D	05/27/2022 16:41	05/27/2022 16:41	BLOD		0.40	1.00	1	ug/L	BMR
Vinyl chloride	01	75-01-4	SW8260D	05/27/2022 16:41	05/27/2022 16:41	1.44		0.50	0.50	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	01	100 %	70-120	05/27/2022 16:41	05/27/2022 16:41							
Surr: 4-Bromofluorobenzene (Surr)	01	94.4 %	75-120	05/27/2022 16:41	05/27/2022 16:41							
Surr: Dibromofluoromethane (Surr)	01	95.3 %	70-130	05/27/2022 16:41	05/27/2022 16:41							
Surr: Toluene-d8 (Surr)	01	101 %	70-130	05/27/2022 16:41	05/27/2022 16:41							
<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	01	117-81-7	SW8270E	05/27/2022 10:00	06/03/2022 18:33	6.05		4.67	5.00	1	ug/L	MGG
Surr: 2,4,6-Tribromophenol (Surr)	01	59.6 %	10-86	05/27/2022 10:00	06/03/2022 18:33							
Surr: 2-Fluorobiphenyl (Surr)	01	93.9 %	9-87	05/27/2022 10:00	06/03/2022 18:33							S
Surr: 2-Fluorophenol (Surr)	01	47.5 %	10-52	05/27/2022 10:00	06/03/2022 18:33							
Surr: Nitrobenzene-d5 (Surr)	01	85.4 %	10-98.5	05/27/2022 10:00	06/03/2022 18:33							
Surr: Phenol-d5 (Surr)	01	33.2 %	5-33	05/27/2022 10:00	06/03/2022 18:33							S
Surr: p-Terphenyl-d14 (Surr)	01	75.8 %	27-133	05/27/2022 10:00	06/03/2022 18:33							
<b>Head Space Analysis by GC</b>												
Ethane	01	74-84-0	RSK175M	06/02/2022 11:25	06/02/2022 11:25	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	01	74-85-1	RSK175M	06/02/2022 11:25	06/02/2022 11:25	BLOD		1.50	5.00	1	ug/L	BMR
Methane	01	74-82-8	RSK175M	06/02/2022 11:25	06/02/2022 11:25	25.4		1.50	5.00	1	ug/L	BMR
Surr: Acetylene (Surr)	01	107 %	70-130	06/02/2022 11:25	06/02/2022 11:25							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-105A

Laboratory Sample ID: 22E1388-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	01	NA	SM22 2320B-2011	06/07/2022 09:19	06/07/2022 09:19	320		5.0	5.0	1	mg/L	MKS
Chloride	01	16887-00-6	SW9056A	05/27/2022 22:52	05/27/2022 22:52	21.7		0.5	1.0	1	mg/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-210A

Laboratory Sample ID: 22E1388-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	02	7440-22-4	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	02	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 14:38	6.5		0.50	1.0	1	ug/L	RCV
Barium	02	7440-39-3	SW6020B	05/31/2022 13:00	06/02/2022 14:38	35.7		1.00	5.00	1	ug/L	RCV
Beryllium	02	7440-41-7	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	02	7440-43-9	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	02	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		0.200	1.00	1	ug/L	RCV
Chromium	02	7440-47-3	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		0.400	1.00	1	ug/L	RCV
Copper	02	7440-50-8	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		0.300	1.00	1	ug/L	RCV
Mercury	02	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 14:50	BLOD		0.00020	0.00020	1	mg/L	MWL
Nickel	02	7440-02-0	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		1.000	1.000	1	ug/L	RCV
Lead	02	7439-92-1	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	02	7440-36-0	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	02	7782-49-2	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		0.850	1.00	1	ug/L	RCV
Thallium	02	7440-28-0	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	02	7440-62-2	SW6020B	05/31/2022 13:00	06/02/2022 14:38	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	02	7440-66-6	SW6020B	05/31/2022 13:00	06/02/2022 14:38	3.69	J	2.50	5.00	1	ug/L	RCV

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-210A

Laboratory Sample ID: 22E1388-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	02	630-20-6	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	02	71-55-6	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	02	79-34-5	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	02	79-00-5	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	02	75-34-3	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	02	75-35-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	02	96-18-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	02	95-50-1	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	02	107-06-2	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	02	78-87-5	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	02	106-46-7	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	02	78-93-3	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	02	591-78-6	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	02	108-10-1	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	02	67-64-1	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	02	107-13-1	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	02	71-43-2	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	02	74-97-5	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	02	75-27-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	02	75-25-2	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	02	74-83-9	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	02	75-15-0	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	02	56-23-5	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	02	108-90-7	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-210A

Laboratory Sample ID: 22E1388-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	02	75-00-3	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	02	67-66-3	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	02	74-87-3	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	02	156-59-2	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	02	10061-01-5	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	02	124-48-1	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	02	74-95-3	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	02	100-41-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	02	74-88-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	02	179601-23-1	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	02	75-09-2	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	02	95-47-6	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	02	100-42-5	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	02	127-18-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	02	108-88-3	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	02	156-60-5	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	02	10061-02-6	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	02	110-57-6	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	02	79-01-6	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	02	75-69-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	02	108-05-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	02	75-01-4	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	02	1330-20-7	SW8260D	05/27/2022 16:52	05/27/2022 16:52	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-210A

Laboratory Sample ID: 22E1388-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	02	107 %	70-120	05/27/2022 16:52	05/27/2022 16:52							
Surr: 4-Bromofluorobenzene (Surr)	02	96.2 %	75-120	05/27/2022 16:52	05/27/2022 16:52							
Surr: Dibromofluoromethane (Surr)	02	102 %	70-130	05/27/2022 16:52	05/27/2022 16:52							
Surr: Toluene-d8 (Surr)	02	100 %	70-130	05/27/2022 16:52	05/27/2022 16:52							



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Client Sample ID: MW-210A

Laboratory Sample ID: 22E1388-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	02	117-81-7	SW8270E	05/27/2022 10:00	06/03/2022 19:06	BLOD		4.67	5.00	1	ug/L	MGG
Surr: 2,4,6-Tribromophenol (Surr)	02	57.0 %	10-86	05/27/2022 10:00	06/03/2022 19:06							
Surr: 2-Fluorobiphenyl (Surr)	02	79.5 %	9-87	05/27/2022 10:00	06/03/2022 19:06							
Surr: 2-Fluorophenol (Surr)	02	37.1 %	10-52	05/27/2022 10:00	06/03/2022 19:06							
Surr: Nitrobenzene-d5 (Surr)	02	73.8 %	10-98.5	05/27/2022 10:00	06/03/2022 19:06							
Surr: Phenol-d5 (Surr)	02	29.4 %	5-33	05/27/2022 10:00	06/03/2022 19:06							
Surr: p-Terphenyl-d14 (Surr)	02	87.3 %	27-133	05/27/2022 10:00	06/03/2022 19:06							

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Laboratory Sample ID: 22E1388-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	02	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 07:41	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	02	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 07:41	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	02	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 07:41	BLOD		0.005	0.010	1	ug/L	LBH2

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Client Sample ID: MW-210A

Laboratory Sample ID: 22E1388-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	02	74-84-0	RSK175M	06/02/2022 11:38	06/02/2022 11:38	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	02	74-85-1	RSK175M	06/02/2022 11:38	06/02/2022 11:38	BLOD		1.50	5.00	1	ug/L	BMR
<b>Methane</b>	02	74-82-8	RSK175M	06/02/2022 11:38	06/02/2022 11:38	17.1		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	02	111 %	70-130	06/02/2022 11:38	06/02/2022 11:38							

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Client Sample ID: MW-210A

Laboratory Sample ID: 22E1388-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	02	NA	SM22 2320B-2011	06/07/2022 09:19	06/07/2022 09:19	306		5.0	5.0	1	mg/L	MKS
Chloride	02	16887-00-6	SW9056A	05/28/2022 00:15	05/28/2022 00:15	36.4		0.5	1.0	1	mg/L	MGG

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Client Sample ID: MW-210B

Laboratory Sample ID: 22E1388-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	03	7440-22-4	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	03	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		0.50	1.0	1	ug/L	RCV
<b>Barium</b>	03	7440-39-3	SW6020B	05/31/2022 13:00	06/02/2022 14:41	68.7		1.00	5.00	1	ug/L	RCV
Beryllium	03	7440-41-7	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	03	7440-43-9	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		0.100	1.00	1	ug/L	RCV
<b>Cobalt</b>	03	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 14:41	0.231	J	0.200	1.00	1	ug/L	RCV
Chromium	03	7440-47-3	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		0.400	1.00	1	ug/L	RCV
<b>Copper</b>	03	7440-50-8	SW6020B	05/31/2022 13:00	06/02/2022 14:41	0.636	J	0.300	1.00	1	ug/L	RCV
Mercury	03	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 14:56	BLOD		0.00020	0.00020	1	mg/L	MWL
<b>Nickel</b>	03	7440-02-0	SW6020B	05/31/2022 13:00	06/02/2022 14:41	2.323		1.000	1.000	1	ug/L	RCV
Lead	03	7439-92-1	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	03	7440-36-0	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	03	7782-49-2	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		0.850	1.00	1	ug/L	RCV
Thallium	03	7440-28-0	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	03	7440-62-2	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	03	7440-66-6	SW6020B	05/31/2022 13:00	06/02/2022 14:41	BLOD		2.50	5.00	1	ug/L	RCV

## Certificate of Analysis

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Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-210B

Laboratory Sample ID: 22E1388-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	03	630-20-6	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	03	71-55-6	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	03	79-34-5	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	03	79-00-5	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	03	75-34-3	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	03	75-35-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	03	96-18-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	03	95-50-1	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	03	107-06-2	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	03	78-87-5	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	03	106-46-7	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	03	78-93-3	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	03	591-78-6	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	03	108-10-1	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		1.50	5.00	1	ug/L	BMR
<b>Acetone</b>	03	67-64-1	SW8260D	05/27/2022 17:16	05/27/2022 17:16	7.41	J	7.00	10.0	1	ug/L	BMR
Acrylonitrile	03	107-13-1	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	03	71-43-2	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	03	74-97-5	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	03	75-27-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	03	75-25-2	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	03	74-83-9	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	03	75-15-0	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	03	56-23-5	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	03	108-90-7	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-210B

Laboratory Sample ID: 22E1388-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	03	75-00-3	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	03	67-66-3	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	03	74-87-3	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	03	156-59-2	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	03	10061-01-5	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	03	124-48-1	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	03	74-95-3	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	03	100-41-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	03	74-88-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	03	179601-23-1	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	03	75-09-2	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	03	95-47-6	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	03	100-42-5	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	03	127-18-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	03	108-88-3	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	03	156-60-5	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	03	10061-02-6	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	03	110-57-6	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	03	79-01-6	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	03	75-69-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	03	108-05-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	03	75-01-4	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	03	1330-20-7	SW8260D	05/27/2022 17:16	05/27/2022 17:16	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-210B

Laboratory Sample ID: 22E1388-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	03	100 %	70-120	05/27/2022 17:16	05/27/2022 17:16							
Surr: 4-Bromofluorobenzene (Surr)	03	98.0 %	75-120	05/27/2022 17:16	05/27/2022 17:16							
Surr: Dibromofluoromethane (Surr)	03	102 %	70-130	05/27/2022 17:16	05/27/2022 17:16							
Surr: Toluene-d8 (Surr)	03	100 %	70-130	05/27/2022 17:16	05/27/2022 17:16							



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-210B

Laboratory Sample ID: 22E1388-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	03	117-81-7	SW8270E	05/27/2022 10:00	06/03/2022 19:39	BLOD		4.67	5.00	1	ug/L	MGG
Surr: 2,4,6-Tribromophenol (Surr)	03	59.9 %	10-86	05/27/2022 10:00	06/03/2022 19:39							
Surr: 2-Fluorobiphenyl (Surr)	03	99.0 %	9-87	05/27/2022 10:00	06/03/2022 19:39							S
Surr: 2-Fluorophenol (Surr)	03	46.4 %	10-52	05/27/2022 10:00	06/03/2022 19:39							
Surr: Nitrobenzene-d5 (Surr)	03	90.8 %	10-98.5	05/27/2022 10:00	06/03/2022 19:39							
Surr: Phenol-d5 (Surr)	03	35.5 %	5-33	05/27/2022 10:00	06/03/2022 19:39							S
Surr: p-Terphenyl-d14 (Surr)	03	81.4 %	27-133	05/27/2022 10:00	06/03/2022 19:39							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-210B

Laboratory Sample ID: 22E1388-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	03	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 08:03	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	03	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 08:03	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	03	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 08:03	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-210B

Laboratory Sample ID: 22E1388-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	03	74-84-0	RSK175M	06/02/2022 11:51	06/02/2022 11:51	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	03	74-85-1	RSK175M	06/02/2022 11:51	06/02/2022 11:51	BLOD		1.50	5.00	1	ug/L	BMR
Methane	03	74-82-8	RSK175M	06/02/2022 11:51	06/02/2022 11:51	BLOD		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	03	118 %	70-130	06/02/2022 11:51	06/02/2022 11:51							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-210B

Laboratory Sample ID: 22E1388-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	03	NA	SM22 2320B-2011	06/07/2022 09:19	06/07/2022 09:19	330		5.0	5.0	1	mg/L	MKS
Chloride	03	16887-00-6	SW9056A	05/28/2022 00:43	05/28/2022 00:43	14.1		0.5	1.0	1	mg/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-109

Laboratory Sample ID: 22E1388-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Arsenic	04	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 14:43	1.5		0.50	1.0	1	ug/L	RCV
Cobalt	04	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 14:43	BLOD		0.200	1.00	1	ug/L	RCV
Mercury	04	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 14:58	BLOD		0.00020	0.00020	1	mg/L	MWL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-109

Laboratory Sample ID: 22E1388-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1-Dichloroethane	04	75-34-3	SW8260D	05/27/2022 17:05	05/27/2022 17:05	BLOD		0.60	1.00	1	ug/L	BMR
Benzene	04	71-43-2	SW8260D	05/27/2022 17:05	05/27/2022 17:05	BLOD		0.40	1.00	1	ug/L	BMR
Vinyl chloride	04	75-01-4	SW8260D	05/27/2022 17:05	05/27/2022 17:05	BLOD		0.50	0.50	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	04	94.6 %	70-120	05/27/2022 17:05	05/27/2022 17:05							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	04	93.3 %	75-120	05/27/2022 17:05	05/27/2022 17:05							
<i>Surr: Dibromofluoromethane (Surr)</i>	04	93.9 %	70-130	05/27/2022 17:05	05/27/2022 17:05							
<i>Surr: Toluene-d8 (Surr)</i>	04	101 %	70-130	05/27/2022 17:05	05/27/2022 17:05							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-109

Laboratory Sample ID: 22E1388-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	04	117-81-7	SW8270E	05/27/2022 10:00	06/03/2022 20:12	BLOD		4.67	5.00	1	ug/L	MGG
Surr: 2,4,6-Tribromophenol (Surr)	04	58.2 %	10-86	05/27/2022 10:00	06/03/2022 20:12							
Surr: 2-Fluorobiphenyl (Surr)	04	80.4 %	9-87	05/27/2022 10:00	06/03/2022 20:12							
Surr: 2-Fluorophenol (Surr)	04	39.1 %	10-52	05/27/2022 10:00	06/03/2022 20:12							
Surr: Nitrobenzene-d5 (Surr)	04	75.0 %	10-98.5	05/27/2022 10:00	06/03/2022 20:12							
Surr: Phenol-d5 (Surr)	04	30.2 %	5-33	05/27/2022 10:00	06/03/2022 20:12							
Surr: p-Terphenyl-d14 (Surr)	04	81.8 %	27-133	05/27/2022 10:00	06/03/2022 20:12							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-109

Laboratory Sample ID: 22E1388-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	04	74-84-0	RSK175M	06/02/2022 12:04	06/02/2022 12:04	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	04	74-85-1	RSK175M	06/02/2022 12:04	06/02/2022 12:04	BLOD		1.50	5.00	1	ug/L	BMR
<b>Methane</b>	04	74-82-8	RSK175M	06/02/2022 12:04	06/02/2022 12:04	27.3		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	04	124 %	70-130	06/02/2022 12:04	06/02/2022 12:04							



## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-109

Laboratory Sample ID: 22E1388-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	04	NA	SM22 2320B-2011	06/07/2022 09:19	06/07/2022 09:19	242		5.0	5.0	1	mg/L	MKS
Chloride	04	16887-00-6	SW9056A	05/28/2022 02:07	05/28/2022 02:07	1.3		0.5	1.0	1	mg/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-105B

Laboratory Sample ID: 22E1388-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Arsenic	05	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 14:46	0.94	J	0.50	1.0	1	ug/L	RCV
Cobalt	05	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 14:46	BLOD		0.200	1.00	1	ug/L	RCV
Mercury	05	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 14:59	BLOD		0.00020	0.00020	1	mg/L	MWL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-105B

Laboratory Sample ID: 22E1388-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1-Dichloroethane	05	75-34-3	SW8260D	05/27/2022 17:30	05/27/2022 17:30	BLOD		0.60	1.00	1	ug/L	BMR
Benzene	05	71-43-2	SW8260D	05/27/2022 17:30	05/27/2022 17:30	BLOD		0.40	1.00	1	ug/L	BMR
Vinyl chloride	05	75-01-4	SW8260D	05/27/2022 17:30	05/27/2022 17:30	BLOD		0.50	0.50	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>05</i>	<i>100 %</i>	<i>70-120</i>	<i>05/27/2022 17:30</i>	<i>05/27/2022 17:30</i>							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>05</i>	<i>94.2 %</i>	<i>75-120</i>	<i>05/27/2022 17:30</i>	<i>05/27/2022 17:30</i>							
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>05</i>	<i>95.2 %</i>	<i>70-130</i>	<i>05/27/2022 17:30</i>	<i>05/27/2022 17:30</i>							
<i>Surr: Toluene-d8 (Surr)</i>	<i>05</i>	<i>100 %</i>	<i>70-130</i>	<i>05/27/2022 17:30</i>	<i>05/27/2022 17:30</i>							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-105B

Laboratory Sample ID: 22E1388-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	05	117-81-7	SW8270E	05/27/2022 10:00	06/03/2022 20:45	BLOD		4.67	5.00	1	ug/L	MGG
Surr: 2,4,6-Tribromophenol (Surr)	05	68.1 %	10-86	05/27/2022 10:00	06/03/2022 20:45							
Surr: 2-Fluorobiphenyl (Surr)	05	105 %	9-87	05/27/2022 10:00	06/03/2022 20:45							S
Surr: 2-Fluorophenol (Surr)	05	47.9 %	10-52	05/27/2022 10:00	06/03/2022 20:45							
Surr: Nitrobenzene-d5 (Surr)	05	90.4 %	10-98.5	05/27/2022 10:00	06/03/2022 20:45							
Surr: Phenol-d5 (Surr)	05	37.0 %	5-33	05/27/2022 10:00	06/03/2022 20:45							S
Surr: p-Terphenyl-d14 (Surr)	05	86.0 %	27-133	05/27/2022 10:00	06/03/2022 20:45							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-105B

Laboratory Sample ID: 22E1388-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	05	74-84-0	RSK175M	06/02/2022 12:16	06/02/2022 12:16	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	05	74-85-1	RSK175M	06/02/2022 12:16	06/02/2022 12:16	BLOD		1.50	5.00	1	ug/L	BMR
<b>Methane</b>	05	74-82-8	RSK175M	06/02/2022 12:16	06/02/2022 12:16	6.11		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	05	111 %	70-130	06/02/2022 12:16	06/02/2022 12:16							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-105B

Laboratory Sample ID: 22E1388-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	05	NA	SM22 2320B-2011	06/08/2022 16:42	06/08/2022 16:42	148		5.0	5.0	1	mg/L	MAH
Chloride	05	16887-00-6	SW9056A	05/28/2022 02:34	05/28/2022 02:34	4.0		0.5	1.0	1	mg/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-206A

Laboratory Sample ID: 22E1388-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	06	7440-22-4	SW6020B	05/31/2022 13:00	06/02/2022 14:48	1.79		0.0600	1.00	1	ug/L	RCV
Arsenic	06	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 14:48	1.5		0.50	1.0	1	ug/L	RCV
Barium	06	7440-39-3	SW6020B	05/31/2022 13:00	06/02/2022 14:48	84.5		1.00	5.00	1	ug/L	RCV
Beryllium	06	7440-41-7	SW6020B	05/31/2022 13:00	06/02/2022 14:48	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	06	7440-43-9	SW6020B	05/31/2022 13:00	06/02/2022 14:48	0.108	J	0.100	1.00	1	ug/L	RCV
Cobalt	06	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 14:48	1.65		0.200	1.00	1	ug/L	RCV
Chromium	06	7440-47-3	SW6020B	05/31/2022 13:00	06/02/2022 14:48	2.34		0.400	1.00	1	ug/L	RCV
Copper	06	7440-50-8	SW6020B	05/31/2022 13:00	06/02/2022 14:48	2.06		0.300	1.00	1	ug/L	RCV
Nickel	06	7440-02-0	SW6020B	05/31/2022 13:00	06/02/2022 14:48	14.93		1.000	1.000	1	ug/L	RCV
Lead	06	7439-92-1	SW6020B	05/31/2022 13:00	06/02/2022 14:48	2.0		1.0	1.0	1	ug/L	RCV
Antimony	06	7440-36-0	SW6020B	05/31/2022 13:00	06/02/2022 14:48	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	06	7782-49-2	SW6020B	05/31/2022 13:00	06/02/2022 14:48	BLOD		0.850	1.00	1	ug/L	RCV
Thallium	06	7440-28-0	SW6020B	05/31/2022 13:00	06/02/2022 14:48	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	06	7440-62-2	SW6020B	05/31/2022 13:00	06/02/2022 14:48	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	06	7440-66-6	SW6020B	05/31/2022 13:00	06/02/2022 14:48	11.8		2.50	5.00	1	ug/L	RCV

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-206A

Laboratory Sample ID: 22E1388-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	06	630-20-6	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	06	71-55-6	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	06	79-34-5	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	06	79-00-5	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	06	75-34-3	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	06	75-35-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	06	96-18-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	06	95-50-1	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	06	107-06-2	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	06	78-87-5	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	06	106-46-7	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	06	78-93-3	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	06	591-78-6	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	06	108-10-1	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		1.50	5.00	1	ug/L	BMR
<b>Acetone</b>	06	67-64-1	SW8260D	05/27/2022 17:40	05/27/2022 17:40	8.56	J	7.00	10.0	1	ug/L	BMR
Acrylonitrile	06	107-13-1	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	06	71-43-2	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	06	74-97-5	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	06	75-27-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	06	75-25-2	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	06	74-83-9	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	06	75-15-0	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	06	56-23-5	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	06	108-90-7	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-206A

Laboratory Sample ID: 22E1388-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	06	75-00-3	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	06	67-66-3	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	06	74-87-3	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	06	156-59-2	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	06	10061-01-5	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	06	124-48-1	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	06	74-95-3	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	06	100-41-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	06	74-88-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	06	179601-23-1	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	06	75-09-2	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	06	95-47-6	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	06	100-42-5	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	06	127-18-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	06	108-88-3	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	06	156-60-5	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	06	10061-02-6	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	06	110-57-6	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	06	79-01-6	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	06	75-69-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	06	108-05-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	06	75-01-4	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	06	1330-20-7	SW8260D	05/27/2022 17:40	05/27/2022 17:40	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-206A

Laboratory Sample ID: 22E1388-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	06	106 %	70-120	05/27/2022 17:40	05/27/2022 17:40							
Surr: 4-Bromofluorobenzene (Surr)	06	96.9 %	75-120	05/27/2022 17:40	05/27/2022 17:40							
Surr: Dibromofluoromethane (Surr)	06	102 %	70-130	05/27/2022 17:40	05/27/2022 17:40							
Surr: Toluene-d8 (Surr)	06	99.6 %	70-130	05/27/2022 17:40	05/27/2022 17:40							

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Laboratory Sample ID: 22E1388-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	06	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 08:24	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	06	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 08:24	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	06	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 08:24	BLOD		0.005	0.010	1	ug/L	LBH2

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Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	07	7440-22-4	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	07	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		0.50	1.0	1	ug/L	RCV
<b>Barium</b>	07	7440-39-3	SW6020B	05/31/2022 13:00	06/02/2022 14:51	51.7		1.00	5.00	1	ug/L	RCV
Beryllium	07	7440-41-7	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	07	7440-43-9	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		0.100	1.00	1	ug/L	RCV
<b>Cobalt</b>	07	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 14:51	0.286	J	0.200	1.00	1	ug/L	RCV
Chromium	07	7440-47-3	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		0.400	1.00	1	ug/L	RCV
Copper	07	7440-50-8	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		0.300	1.00	1	ug/L	RCV
Mercury	07	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 15:01	BLOD		0.00020	0.00020	1	mg/L	MWL
<b>Nickel</b>	07	7440-02-0	SW6020B	05/31/2022 13:00	06/02/2022 14:51	1.095		1.000	1.000	1	ug/L	RCV
Lead	07	7439-92-1	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	07	7440-36-0	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	07	7782-49-2	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		0.850	1.00	1	ug/L	RCV
<b>Tin</b>	07	7440-31-5	SW6020B	05/31/2022 13:00	06/02/2022 14:51	4.30		1.00	1.00	1	ug/L	RCV
Thallium	07	7440-28-0	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	07	7440-62-2	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	07	7440-66-6	SW6020B	05/31/2022 13:00	06/02/2022 14:51	BLOD		2.50	5.00	1	ug/L	RCV

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Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	07	630-20-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	07	71-55-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	07	79-34-5	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	07	79-00-5	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	07	75-34-3	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	07	75-35-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.70	1.00	1	ug/L	BMR
1,1-Dichloropropene	07	563-58-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.60	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	07	96-18-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
1,2,4-Trichlorobenzene	07	120-82-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.50	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	07	95-50-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	07	107-06-2	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	07	78-87-5	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
1,3-Dichlorobenzene	07	541-73-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.30	1.00	1	ug/L	BMR
1,3-Dichloropropane	07	142-28-9	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		1.00	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	07	106-46-7	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
2,2-Dichloropropane	07	594-20-7	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.60	2.00	1	ug/L	BMR
2-Butanone (MEK)	07	78-93-3	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	07	591-78-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	07	108-10-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	07	67-64-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		7.00	10.0	1	ug/L	BMR
Acetonitrile	07	75-05-8	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		8.00	10.0	1	ug/L	BMR
Acrolein	07	107-02-8	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		6.00	10.0	1	ug/L	BMR
Acrylonitrile	07	107-13-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		1.70	5.00	1	ug/L	BMR
Allyl chloride	07	107-05-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.60	1.00	1	ug/L	BMR

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Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Benzene	07	71-43-2	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	07	74-97-5	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	07	75-27-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	07	75-25-2	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	07	74-83-9	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	07	75-15-0	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	07	56-23-5	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	07	108-90-7	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Chloroethane	07	75-00-3	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	07	67-66-3	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	07	74-87-3	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.95	1.00	1	ug/L	BMR
Chloroprene	07	126-99-8	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.50	5.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	07	156-59-2	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	07	10061-01-5	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	07	124-48-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	07	74-95-3	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Dichlorodifluoromethane	07	75-71-8	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.95	1.00	1	ug/L	BMR
Ethyl methacrylate	07	97-63-2	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.70	5.00	1	ug/L	BMR
Ethylbenzene	07	100-41-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	07	74-88-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		6.00	10.0	1	ug/L	BMR
Isobutyl Alcohol	07	78-83-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		25.0	40.0	1	ug/L	BMR
m+p-Xylenes	07	179601-23-1	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.60	2.00	1	ug/L	BMR
Methacrylonitrile	07	126-98-7	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		1.00	1.50	1	ug/L	BMR

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	07	80-62-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.70	2.00	1	ug/L	BMR
Methylene chloride	07	75-09-2	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		4.00	4.00	1	ug/L	BMR
Naphthalene	07	91-20-3	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.80	1.00	1	ug/L	BMR
o-Xylene	07	95-47-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Propionitrile	07	107-12-0	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		7.50	40.0	1	ug/L	BMR
Styrene	07	100-42-5	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	07	127-18-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	07	108-88-3	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	07	156-60-5	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	07	10061-02-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	07	110-57-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	07	79-01-6	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	07	75-69-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	07	108-05-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	07	75-01-4	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	07	1330-20-7	SW8260D	05/27/2022 18:04	05/27/2022 18:04	BLOD		1.00	3.00	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	07	103 %	70-120	05/27/2022 18:04	05/27/2022 18:04							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	07	97.6 %	75-120	05/27/2022 18:04	05/27/2022 18:04							
<i>Surr: Dibromofluoromethane (Surr)</i>	07	101 %	70-130	05/27/2022 18:04	05/27/2022 18:04							
<i>Surr: Toluene-d8 (Surr)</i>	07	101 %	70-130	05/27/2022 18:04	05/27/2022 18:04							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
1,2,4,5-Tetrachlorobenzene	07	95-94-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
1,3,5-Trinitrobenzene	07	99-35-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	5.00	1	ug/L	MGG
1,3-Dinitrobenzene	07	99-65-0	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
1,4-Naphthoquinone	07	130-15-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
1-Naphthylamine	07	134-32-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG
2,3,4,6-Tetrachlorophenol	07	58-90-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG
2,4,5-Trichlorophenol	07	95-95-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG
2,4,6-Trichlorophenol	07	88-06-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		7.48	10.0	1	ug/L	MGG
2,4-Dichlorophenol	07	120-83-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.80	10.0	1	ug/L	MGG
2,4-Dimethylphenol	07	105-67-9	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.67	4.67	1	ug/L	MGG
2,4-Dinitrophenol	07	51-28-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		7.48	50.0	1	ug/L	MGG
2,4-Dinitrotoluene	07	121-14-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		5.61	10.0	1	ug/L	MGG
2,6-Dichlorophenol	07	87-65-0	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG
2,6-Dinitrotoluene	07	606-20-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
2-Acetylaminofluorene	07	53-96-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
2-Chloronaphthalene	07	91-58-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.21	10.0	1	ug/L	MGG
2-Chlorophenol	07	95-57-8	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	10.0	1	ug/L	MGG
2-Methylnaphthalene	07	91-57-6	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
2-Naphthylamine	07	91-59-8	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
2-Nitroaniline	07	88-74-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	20.0	1	ug/L	MGG
2-Nitrophenol	07	88-75-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		5.61	10.0	1	ug/L	MGG
3,3'-Dichlorobenzidine	07	91-94-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
3,3'-Dimethylbenzidine	07	119-93-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
3-Methylcholanthrene	07	56-49-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG



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Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
3-Nitroaniline	07	99-09-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	20.0	1	ug/L	MGG
4,6-Dinitro-2-methylphenol	07	534-52-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		7.48	50.0	1	ug/L	MGG
4-Aminobiphenyl	07	92-67-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
4-Bromophenyl phenyl ether	07	101-55-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	10.0	1	ug/L	MGG
4-Chloroaniline	07	106-47-8	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
4-Chlorophenyl phenyl ether	07	7005-72-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	10.0	1	ug/L	MGG
4-Nitroaniline	07	100-01-6	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	20.0	1	ug/L	MGG
4-Nitrophenol	07	100-02-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	50.0	1	ug/L	MGG
5-Nitro-o-toluidine	07	99-55-8	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
7,12-Dimethylbenz (a) anthracene	07	57-97-6	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
Acenaphthene	07	83-32-9	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
Acenaphthylene	07	208-96-8	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
Acetophenone	07	98-86-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	20.0	1	ug/L	MGG
Anthracene	07	120-12-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (a) anthracene	07	56-55-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	9.35	1	ug/L	MGG
Benzo (a) pyrene	07	50-32-8	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.19	0.20	1	ug/L	MGG
Benzo (b) fluoranthene	07	205-99-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
Benzo (g,h,i) perylene	07	191-24-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (k) fluoranthene	07	207-08-9	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		5.61	10.0	1	ug/L	MGG
Benzyl alcohol	07	100-51-6	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	20.0	1	ug/L	MGG
bis (2-Chloroethoxy) methane	07	111-91-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	10.0	1	ug/L	MGG
bis (2-Chloroethyl) ether	07	111-44-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	10.0	1	ug/L	MGG
2,2'-Oxybis (1-chloropropane)	07	108-60-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.80	10.0	1	ug/L	MGG
bis (2-Ethylhexyl) phthalate	07	117-81-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.67	5.00	1	ug/L	MGG

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
Butyl benzyl phthalate	07	85-68-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		6.54	10.0	1	ug/L	MGG
Chlorobenzilate	07	510-15-6	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
Chrysene	07	218-01-9	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
Diallate	07	2303-16-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
Dibenz (a,h) anthracene	07	53-70-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.67	10.0	1	ug/L	MGG
Dibenzofuran	07	132-64-9	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	5.00	1	ug/L	MGG
Diethyl phthalate	07	84-66-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.80	10.0	1	ug/L	MGG
Dimethoate	07	60-51-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
Dimethyl phthalate	07	131-11-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	10.0	1	ug/L	MGG
Di-n-butyl phthalate	07	84-74-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
Di-n-octyl phthalate	07	117-84-0	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		7.48	10.0	1	ug/L	MGG
Diphenylamine	07	122-39-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
Disulfoton	07	298-04-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
Ethyl methanesulfonate	07	62-50-0	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	20.0	1	ug/L	MGG
Ethyl parathion	07	56-38-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
Famphur	07	52-85-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
Fluoranthene	07	206-44-0	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.67	10.0	1	ug/L	MGG
Fluorene	07	86-73-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
Hexachlorobenzene	07	118-74-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	0.93	1	ug/L	MGG
Hexachlorobutadiene	07	87-68-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.21	10.0	1	ug/L	MGG
Hexachlorocyclopentadiene	07	77-47-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.74	10.0	1	ug/L	MGG
Hexachloroethane	07	67-72-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	10.0	1	ug/L	MGG
Hexachloropropene	07	1888-71-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	2.50	1	ug/L	MGG
Indeno (1,2,3-cd) pyrene	07	193-39-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.80	10.0	1	ug/L	MGG

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
Isodrin	07	465-73-6	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG
Isophorone	07	78-59-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		4.67	10.0	1	ug/L	MGG
Isosafrole	07	120-58-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
Kepona	07	143-50-0	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	9.35	1	ug/L	MGG
m+p-Cresols	07	1319-77-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG
Methapyrilene	07	91-80-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG
Methyl methanesulfonate	07	66-27-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD	C	0.93	10.0	1	ug/L	MGG
Methyl parathion	07	298-00-0	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	2.50	1	ug/L	MGG
Nitrobenzene	07	98-95-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodiethylamine	07	55-18-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	2.50	1	ug/L	MGG
n-Nitrosodimethylamine	07	62-75-9	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodi-n-butylamine	07	924-16-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosodi-n-propylamine	07	621-64-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		3.27	10.0	1	ug/L	MGG
n-Nitrosodiphenylamine	07	86-30-6	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosomethylethylamine	07	10595-95-6	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	2.50	1	ug/L	MGG
n-Nitrosopiperidine	07	100-75-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosopyrrolidine	07	930-55-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	2.50	1	ug/L	MGG
o,o,o-Triethyl phosphorothioate	07	126-68-1	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
o,o-Diethyl o-2-pyrazinyl phosphorothioate	07	297-97-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
o+m+p-Cresols	07	1319-77-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.80	10.0	1	ug/L	MGG
o-Cresol	07	95-48-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		7.48	10.0	1	ug/L	MGG
o-Toluidine	07	95-53-4	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	2.50	1	ug/L	MGG
p-(Dimethylamino) azobenzene	07	60-11-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	2.50	1	ug/L	MGG

## Certificate of Analysis

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Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
p-Chloro-m-cresol	07	59-50-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		7.48	10.0	1	ug/L	MGG
Pentachlorobenzene	07	608-93-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
Pentachloronitrobenzene (quintozene)	07	82-68-8	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	9.35	1	ug/L	MGG
Phenacetin	07	62-44-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		0.93	10.0	1	ug/L	MGG
Phenanthrene	07	85-01-8	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		7.48	10.0	1	ug/L	MGG
Phenol	07	108-95-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		2.34	10.0	1	ug/L	MGG
Phorate	07	298-02-2	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	2.50	1	ug/L	MGG
p-Phenylenediamine	07	106-50-3	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD	C	1.87	10.0	1	ug/L	MGG
Pronamide	07	23950-58-5	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	10.0	1	ug/L	MGG
Pyrene	07	129-00-0	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		6.54	10.0	1	ug/L	MGG
Safrole	07	94-59-7	SW8270E	05/31/2022 09:00	05/31/2022 23:46	BLOD		1.87	2.50	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	07	70.2 %	10-86	05/31/2022 09:00	05/31/2022 23:46							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	07	81.2 %	9-87	05/31/2022 09:00	05/31/2022 23:46							
<i>Surr: 2-Fluorophenol (Surr)</i>	07	42.2 %	10-52	05/31/2022 09:00	05/31/2022 23:46							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	07	91.1 %	10-98.5	05/31/2022 09:00	05/31/2022 23:46							
<i>Surr: Phenol-d5 (Surr)</i>	07	29.8 %	5-33	05/31/2022 09:00	05/31/2022 23:46							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	07	89.0 %	27-133	05/31/2022 09:00	05/31/2022 23:46							

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
PCB as Aroclor 1016	07	12674-11-2	SW8082A	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1221	07	11104-28-2	SW8082A	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1232	07	11141-16-5	SW8082A	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1242	07	53469-21-9	SW8082A	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1248	07	12672-29-6	SW8082A	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1254	07	11097-69-1	SW8082A	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1260	07	11096-82-5	SW8082A	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.140	0.200	1	ug/L	LBH2
Surr: DCB	07	65.9 %	30-105	05/31/2022 09:00	06/01/2022 12:47							
Surr: TCMX	07	70.0 %	30-105	05/31/2022 09:00	06/01/2022 12:47							
4,4'-DDD	07	72-54-8	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDE	07	72-55-9	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDT	07	50-29-3	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Aldrin	07	309-00-2	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-BHC	07	319-84-6	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-Chlordane	07	5103-71-9	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
beta-BHC	07	319-85-7	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.019	0.050	1	ug/L	LBH2
Chlordane	07	57-74-9	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.187	0.200	1	ug/L	LBH2
delta-BHC	07	319-86-8	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Dieldrin	07	60-57-1	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan I	07	959-98-8	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan II	07	33213-65-9	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan sulfate	07	1031-07-8	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin	07	72-20-8	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin aldehyde	07	7421-93-4	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2

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Client Sample ID: MW-104B

Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
gamma-BHC (Lindane)	07	58-89-9	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
gamma-Chlordane	07	5103-74-2	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor	07	76-44-8	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor epoxide	07	1024-57-3	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Methoxychlor	07	72-43-5	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.005	0.050	1	ug/L	LBH2
Toxaphene	07	8001-35-2	SW8081B	05/31/2022 09:00	06/01/2022 12:47	BLOD		0.187	1.00	1	ug/L	LBH2
Surr: TCMX	07	70.0 %	18-112	05/31/2022 09:00	06/01/2022 12:47							
Surr: DCB	07	102 %	27-131	05/31/2022 09:00	06/01/2022 12:47							

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<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-T	07	93-76-5	SW8151A	05/31/2022 16:20	06/09/2022 13:05	BLOD		0.200	0.500	1	ug/L	LBH2
2,4,5-TP (Silvex)	07	93-72-1	SW8151A	05/31/2022 16:20	06/09/2022 13:05	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	07	94-75-7	SW8151A	05/31/2022 16:20	06/09/2022 13:05	BLOD		0.200	0.500	1	ug/L	LBH2
Dinoseb	07	88-85-7	SW8151A	05/31/2022 16:20	06/09/2022 13:05	BLOD		0.200	0.500	1	ug/L	LBH2
Pentachlorophenol	07	87-86-5	SW8151A	05/31/2022 16:20	06/09/2022 13:05	BLOD		0.200	0.500	1	ug/L	LBH2
<i>Surr: DCAA (Surr)</i>	07	91.5 %	48.5-134	05/31/2022 16:20	06/09/2022 13:05							

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Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	07	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 08:46	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	07	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 08:46	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	07	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 08:46	BLOD		0.005	0.010	1	ug/L	LBH2



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Laboratory Sample ID: 22E1388-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	07	57-12-5	SW9012B	06/06/2022 17:25	06/06/2022 17:25	BLOD	CI	0.01	0.01	1	mg/L	Omnion Use
Sulfide	07	18496-25-8	SW9215	05/27/2022 18:30	05/27/2022 18:30	6.23		0.80	1.00	1	mg/L	MJRL

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Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	08	7440-22-4	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	08	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 14:54	9.0		0.50	1.0	1	ug/L	RCV
Barium	08	7440-39-3	SW6020B	05/31/2022 13:00	06/02/2022 14:54	70.4		1.00	5.00	1	ug/L	RCV
Beryllium	08	7440-41-7	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	08	7440-43-9	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	08	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 14:54	0.986	J	0.200	1.00	1	ug/L	RCV
Chromium	08	7440-47-3	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		0.400	1.00	1	ug/L	RCV
Copper	08	7440-50-8	SW6020B	05/31/2022 13:00	06/02/2022 14:54	1.08		0.300	1.00	1	ug/L	RCV
Mercury	08	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 15:03	BLOD		0.00020	0.00020	1	mg/L	MWL
Nickel	08	7440-02-0	SW6020B	05/31/2022 13:00	06/02/2022 14:54	1.468		1.000	1.000	1	ug/L	RCV
Lead	08	7439-92-1	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	08	7440-36-0	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	08	7782-49-2	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		0.850	1.00	1	ug/L	RCV
Tin	08	7440-31-5	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		1.00	1.00	1	ug/L	RCV
Thallium	08	7440-28-0	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	08	7440-62-2	SW6020B	05/31/2022 13:00	06/02/2022 14:54	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	08	7440-66-6	SW6020B	05/31/2022 13:00	06/02/2022 14:54	9.45		2.50	5.00	1	ug/L	RCV

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Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	08	630-20-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	08	71-55-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	08	79-34-5	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	08	79-00-5	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	08	75-34-3	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	08	75-35-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.70	1.00	1	ug/L	BMR
1,1-Dichloropropene	08	563-58-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.60	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	08	96-18-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
1,2,4-Trichlorobenzene	08	120-82-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.50	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	08	95-50-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	08	107-06-2	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	08	78-87-5	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
1,3-Dichlorobenzene	08	541-73-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.30	1.00	1	ug/L	BMR
1,3-Dichloropropane	08	142-28-9	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		1.00	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	08	106-46-7	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
2,2-Dichloropropane	08	594-20-7	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.60	2.00	1	ug/L	BMR
2-Butanone (MEK)	08	78-93-3	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	08	591-78-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	08	108-10-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	08	67-64-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		7.00	10.0	1	ug/L	BMR
Acetonitrile	08	75-05-8	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		8.00	10.0	1	ug/L	BMR
Acrolein	08	107-02-8	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		6.00	10.0	1	ug/L	BMR
Acrylonitrile	08	107-13-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		1.70	5.00	1	ug/L	BMR
Allyl chloride	08	107-05-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.60	1.00	1	ug/L	BMR

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Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Benzene	08	71-43-2	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	08	74-97-5	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	08	75-27-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	08	75-25-2	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	08	74-83-9	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	08	75-15-0	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	08	56-23-5	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	08	108-90-7	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Chloroethane	08	75-00-3	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	08	67-66-3	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	08	74-87-3	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.95	1.00	1	ug/L	BMR
Chloroprene	08	126-99-8	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.50	5.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	08	156-59-2	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	08	10061-01-5	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	08	124-48-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	08	74-95-3	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Dichlorodifluoromethane	08	75-71-8	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.95	1.00	1	ug/L	BMR
Ethyl methacrylate	08	97-63-2	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.70	5.00	1	ug/L	BMR
Ethylbenzene	08	100-41-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	08	74-88-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		6.00	10.0	1	ug/L	BMR
Isobutyl Alcohol	08	78-83-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		25.0	40.0	1	ug/L	BMR
m+p-Xylenes	08	179601-23-1	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.60	2.00	1	ug/L	BMR
Methacrylonitrile	08	126-98-7	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		1.00	1.50	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	08	80-62-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.70	2.00	1	ug/L	BMR
Methylene chloride	08	75-09-2	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		4.00	4.00	1	ug/L	BMR
Naphthalene	08	91-20-3	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.80	1.00	1	ug/L	BMR
o-Xylene	08	95-47-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Propionitrile	08	107-12-0	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		7.50	40.0	1	ug/L	BMR
Styrene	08	100-42-5	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	08	127-18-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	08	108-88-3	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	08	156-60-5	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	08	10061-02-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	08	110-57-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	08	79-01-6	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	08	75-69-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	08	108-05-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	08	75-01-4	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	08	1330-20-7	SW8260D	05/27/2022 18:29	05/27/2022 18:29	BLOD		1.00	3.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	08	106 %	70-120	05/27/2022 18:29	05/27/2022 18:29							
Surr: 4-Bromofluorobenzene (Surr)	08	96.5 %	75-120	05/27/2022 18:29	05/27/2022 18:29							
Surr: Dibromofluoromethane (Surr)	08	103 %	70-130	05/27/2022 18:29	05/27/2022 18:29							
Surr: Toluene-d8 (Surr)	08	102 %	70-130	05/27/2022 18:29	05/27/2022 18:29							

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Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
1,2,4,5-Tetrachlorobenzene	08	95-94-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
1,3,5-Trinitrobenzene	08	99-35-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	5.00	1	ug/L	MGG
1,3-Dinitrobenzene	08	99-65-0	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
1,4-Naphthoquinone	08	130-15-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
1-Naphthylamine	08	134-32-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG
2,3,4,6-Tetrachlorophenol	08	58-90-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG
2,4,5-Trichlorophenol	08	95-95-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG
2,4,6-Trichlorophenol	08	88-06-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		7.48	10.0	1	ug/L	MGG
2,4-Dichlorophenol	08	120-83-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.80	10.0	1	ug/L	MGG
2,4-Dimethylphenol	08	105-67-9	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.67	4.67	1	ug/L	MGG
2,4-Dinitrophenol	08	51-28-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		7.48	50.0	1	ug/L	MGG
2,4-Dinitrotoluene	08	121-14-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		5.61	10.0	1	ug/L	MGG
2,6-Dichlorophenol	08	87-65-0	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG
2,6-Dinitrotoluene	08	606-20-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
2-Acetylaminofluorene	08	53-96-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
2-Chloronaphthalene	08	91-58-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.21	10.0	1	ug/L	MGG
2-Chlorophenol	08	95-57-8	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	10.0	1	ug/L	MGG
2-Methylnaphthalene	08	91-57-6	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
2-Naphthylamine	08	91-59-8	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
2-Nitroaniline	08	88-74-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	20.0	1	ug/L	MGG
2-Nitrophenol	08	88-75-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		5.61	10.0	1	ug/L	MGG
3,3'-Dichlorobenzidine	08	91-94-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
3,3'-Dimethylbenzidine	08	119-93-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
3-Methylcholanthrene	08	56-49-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
3-Nitroaniline	08	99-09-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	20.0	1	ug/L	MGG
4,6-Dinitro-2-methylphenol	08	534-52-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		7.48	50.0	1	ug/L	MGG
4-Aminobiphenyl	08	92-67-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
4-Bromophenyl phenyl ether	08	101-55-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	10.0	1	ug/L	MGG
4-Chloroaniline	08	106-47-8	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
4-Chlorophenyl phenyl ether	08	7005-72-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	10.0	1	ug/L	MGG
4-Nitroaniline	08	100-01-6	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	20.0	1	ug/L	MGG
4-Nitrophenol	08	100-02-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	50.0	1	ug/L	MGG
5-Nitro-o-toluidine	08	99-55-8	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
7,12-Dimethylbenz (a) anthracene	08	57-97-6	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
Acenaphthene	08	83-32-9	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
Acenaphthylene	08	208-96-8	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
Acetophenone	08	98-86-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	20.0	1	ug/L	MGG
Anthracene	08	120-12-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (a) anthracene	08	56-55-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	9.35	1	ug/L	MGG
Benzo (a) pyrene	08	50-32-8	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.19	0.20	1	ug/L	MGG
Benzo (b) fluoranthene	08	205-99-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
Benzo (g,h,i) perylene	08	191-24-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (k) fluoranthene	08	207-08-9	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		5.61	10.0	1	ug/L	MGG
Benzyl alcohol	08	100-51-6	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	20.0	1	ug/L	MGG
bis (2-Chloroethoxy) methane	08	111-91-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	10.0	1	ug/L	MGG
bis (2-Chloroethyl) ether	08	111-44-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	10.0	1	ug/L	MGG
2,2'-Oxybis (1-chloropropane)	08	108-60-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.80	10.0	1	ug/L	MGG
bis (2-Ethylhexyl) phthalate	08	117-81-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.67	5.00	1	ug/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
Butyl benzyl phthalate	08	85-68-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		6.54	10.0	1	ug/L	MGG
Chlorobenzilate	08	510-15-6	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
Chrysene	08	218-01-9	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
Diallate	08	2303-16-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
Dibenz (a,h) anthracene	08	53-70-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.67	10.0	1	ug/L	MGG
Dibenzofuran	08	132-64-9	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	5.00	1	ug/L	MGG
Diethyl phthalate	08	84-66-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.80	10.0	1	ug/L	MGG
Dimethoate	08	60-51-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
Dimethyl phthalate	08	131-11-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	10.0	1	ug/L	MGG
Di-n-butyl phthalate	08	84-74-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
Di-n-octyl phthalate	08	117-84-0	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		7.48	10.0	1	ug/L	MGG
Diphenylamine	08	122-39-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
Disulfoton	08	298-04-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
Ethyl methanesulfonate	08	62-50-0	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	20.0	1	ug/L	MGG
Ethyl parathion	08	56-38-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
Famphur	08	52-85-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
Fluoranthene	08	206-44-0	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.67	10.0	1	ug/L	MGG
Fluorene	08	86-73-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
Hexachlorobenzene	08	118-74-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	0.93	1	ug/L	MGG
Hexachlorobutadiene	08	87-68-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.21	10.0	1	ug/L	MGG
Hexachlorocyclopentadiene	08	77-47-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.74	10.0	1	ug/L	MGG
Hexachloroethane	08	67-72-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	10.0	1	ug/L	MGG
Hexachloropropene	08	1888-71-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	2.50	1	ug/L	MGG
Indeno (1,2,3-cd) pyrene	08	193-39-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.80	10.0	1	ug/L	MGG



## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
Isodrin	08	465-73-6	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG
Isophorone	08	78-59-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		4.67	10.0	1	ug/L	MGG
Isosafrole	08	120-58-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
Kepona	08	143-50-0	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	9.35	1	ug/L	MGG
m+p-Cresols	08	1319-77-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG
Methapyrilene	08	91-80-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG
Methyl methanesulfonate	08	66-27-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD	C	0.93	10.0	1	ug/L	MGG
Methyl parathion	08	298-00-0	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	2.50	1	ug/L	MGG
Nitrobenzene	08	98-95-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodiethylamine	08	55-18-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	2.50	1	ug/L	MGG
n-Nitrosodimethylamine	08	62-75-9	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodi-n-butylamine	08	924-16-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosodi-n-propylamine	08	621-64-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		3.27	10.0	1	ug/L	MGG
n-Nitrosodiphenylamine	08	86-30-6	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosomethylethylamine	08	10595-95-6	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	2.50	1	ug/L	MGG
n-Nitrosopiperidine	08	100-75-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosopyrrolidine	08	930-55-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	2.50	1	ug/L	MGG
o,o,o-Triethyl phosphorothioate	08	126-68-1	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
o,o-Diethyl o-2-pyrazinyl phosphorothioate	08	297-97-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
o+m+p-Cresols	08	1319-77-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.80	10.0	1	ug/L	MGG
o-Cresol	08	95-48-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		7.48	10.0	1	ug/L	MGG
o-Toluidine	08	95-53-4	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	2.50	1	ug/L	MGG
p-(Dimethylamino) azobenzene	08	60-11-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	2.50	1	ug/L	MGG

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Client Sample ID: MW-104A

Laboratory Sample ID: 22E1388-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
p-Chloro-m-cresol	08	59-50-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		7.48	10.0	1	ug/L	MGG
Pentachlorobenzene	08	608-93-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
Pentachloronitrobenzene (quintozene)	08	82-68-8	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	9.35	1	ug/L	MGG
Phenacetin	08	62-44-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		0.93	10.0	1	ug/L	MGG
Phenanthrene	08	85-01-8	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		7.48	10.0	1	ug/L	MGG
Phenol	08	108-95-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		2.34	10.0	1	ug/L	MGG
Phorate	08	298-02-2	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	2.50	1	ug/L	MGG
p-Phenylenediamine	08	106-50-3	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD	C	1.87	10.0	1	ug/L	MGG
Pronamide	08	23950-58-5	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	10.0	1	ug/L	MGG
Pyrene	08	129-00-0	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		6.54	10.0	1	ug/L	MGG
Safrole	08	94-59-7	SW8270E	05/31/2022 09:00	06/01/2022 00:20	BLOD		1.87	2.50	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	08	62.0 %	10-86	05/31/2022 09:00	06/01/2022 00:20							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	08	77.6 %	9-87	05/31/2022 09:00	06/01/2022 00:20							
<i>Surr: 2-Fluorophenol (Surr)</i>	08	41.8 %	10-52	05/31/2022 09:00	06/01/2022 00:20							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	08	83.9 %	10-98.5	05/31/2022 09:00	06/01/2022 00:20							
<i>Surr: Phenol-d5 (Surr)</i>	08	27.3 %	5-33	05/31/2022 09:00	06/01/2022 00:20							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	08	80.6 %	27-133	05/31/2022 09:00	06/01/2022 00:20							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
PCB as Aroclor 1016	08	12674-11-2	SW8082A	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1221	08	11104-28-2	SW8082A	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1232	08	11141-16-5	SW8082A	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1242	08	53469-21-9	SW8082A	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1248	08	12672-29-6	SW8082A	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1254	08	11097-69-1	SW8082A	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1260	08	11096-82-5	SW8082A	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.140	0.200	1	ug/L	LBH2
<i>Surr: DCB</i>	08	45.2 %	30-105	05/31/2022 09:00	06/01/2022 13:06							
<i>Surr: TCMX</i>	08	65.3 %	30-105	05/31/2022 09:00	06/01/2022 13:06							
4,4'-DDD	08	72-54-8	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDE	08	72-55-9	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDT	08	50-29-3	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Aldrin	08	309-00-2	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-BHC	08	319-84-6	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-Chlordane	08	5103-71-9	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
beta-BHC	08	319-85-7	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.019	0.050	1	ug/L	LBH2
Chlordane	08	57-74-9	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.187	0.200	1	ug/L	LBH2
delta-BHC	08	319-86-8	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Dieldrin	08	60-57-1	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan I	08	959-98-8	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan II	08	33213-65-9	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan sulfate	08	1031-07-8	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin	08	72-20-8	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin aldehyde	08	7421-93-4	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
gamma-BHC (Lindane)	08	58-89-9	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
gamma-Chlordane	08	5103-74-2	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor	08	76-44-8	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor epoxide	08	1024-57-3	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Methoxychlor	08	72-43-5	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.005	0.050	1	ug/L	LBH2
Toxaphene	08	8001-35-2	SW8081B	05/31/2022 09:00	06/01/2022 13:06	BLOD		0.187	1.00	1	ug/L	LBH2
Surr: TCMX	08	61.2 %	18-112	05/31/2022 09:00	06/01/2022 13:06							
Surr: DCB	08	43.4 %	27-131	05/31/2022 09:00	06/01/2022 13:06							

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<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-T	08	93-76-5	SW8151A	05/31/2022 16:20	06/09/2022 13:32	BLOD		0.200	0.500	1	ug/L	LBH2
2,4,5-TP (Silvex)	08	93-72-1	SW8151A	05/31/2022 16:20	06/09/2022 13:32	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	08	94-75-7	SW8151A	05/31/2022 16:20	06/09/2022 13:32	BLOD		0.200	0.500	1	ug/L	LBH2
Dinoseb	08	88-85-7	SW8151A	05/31/2022 16:20	06/09/2022 13:32	BLOD		0.200	0.500	1	ug/L	LBH2
Pentachlorophenol	08	87-86-5	SW8151A	05/31/2022 16:20	06/09/2022 13:32	BLOD		0.200	0.500	1	ug/L	LBH2
<i>Surr: DCAA (Surr)</i>	08		111 % 48.5-134	05/31/2022 16:20	06/09/2022 13:32							

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<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	08	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 09:07	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	08	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 09:07	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	08	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 09:07	BLOD		0.005	0.010	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	08	57-12-5	SW9012B	06/06/2022 17:26	06/06/2022 17:26	BLOD		0.01	0.01	1	mg/L	Omnion Use
Sulfide	08	18496-25-8	SW9215	05/27/2022 18:30	05/27/2022 18:30	BLOD		0.80	1.00	1	mg/L	MJRL

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	09	7440-22-4	SW6020B	05/31/2022 13:00	06/02/2022 15:07	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	09	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 15:07	1.7		0.50	1.0	1	ug/L	RCV
Barium	09	7440-39-3	SW6020B	05/31/2022 13:00	06/02/2022 15:07	109		1.00	5.00	1	ug/L	RCV
Beryllium	09	7440-41-7	SW6020B	05/31/2022 13:00	06/02/2022 15:07	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	09	7440-43-9	SW6020B	05/31/2022 13:00	06/02/2022 15:07	0.104	J	0.100	1.00	1	ug/L	RCV
Cobalt	09	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 15:07	18.2		0.200	1.00	1	ug/L	RCV
Chromium	09	7440-47-3	SW6020B	05/31/2022 13:00	06/02/2022 15:07	5.38		0.400	1.00	1	ug/L	RCV
Copper	09	7440-50-8	SW6020B	05/31/2022 13:00	06/02/2022 15:07	14.0		0.300	1.00	1	ug/L	RCV
Mercury	09	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 15:05	BLOD		0.00020	0.00020	1	mg/L	MWL
Nickel	09	7440-02-0	SW6020B	05/31/2022 13:00	06/02/2022 15:07	18.48		1.000	1.000	1	ug/L	RCV
Lead	09	7439-92-1	SW6020B	05/31/2022 13:00	06/02/2022 15:07	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	09	7440-36-0	SW6020B	05/31/2022 13:00	06/02/2022 15:07	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	09	7782-49-2	SW6020B	05/31/2022 13:00	06/02/2022 15:07	BLOD		0.850	1.00	1	ug/L	RCV
Tin	09	7440-31-5	SW6020B	05/31/2022 13:00	06/02/2022 15:07	BLOD		1.00	1.00	1	ug/L	RCV
Thallium	09	7440-28-0	SW6020B	05/31/2022 13:00	06/02/2022 15:07	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	09	7440-62-2	SW6020B	05/31/2022 13:00	06/02/2022 15:07	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	09	7440-66-6	SW6020B	05/31/2022 13:00	06/02/2022 15:07	16.0		2.50	5.00	1	ug/L	RCV



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<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	09	630-20-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	09	71-55-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	09	79-34-5	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	09	79-00-5	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	09	75-34-3	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	09	75-35-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.70	1.00	1	ug/L	BMR
1,1-Dichloropropene	09	563-58-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.60	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	09	96-18-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
1,2,4-Trichlorobenzene	09	120-82-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.50	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	09	95-50-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	09	107-06-2	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	09	78-87-5	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
1,3-Dichlorobenzene	09	541-73-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.30	1.00	1	ug/L	BMR
1,3-Dichloropropane	09	142-28-9	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		1.00	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	09	106-46-7	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
2,2-Dichloropropane	09	594-20-7	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.60	2.00	1	ug/L	BMR
2-Butanone (MEK)	09	78-93-3	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	09	591-78-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	09	108-10-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	09	67-64-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		7.00	10.0	1	ug/L	BMR
Acetonitrile	09	75-05-8	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		8.00	10.0	1	ug/L	BMR
Acrolein	09	107-02-8	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		6.00	10.0	1	ug/L	BMR
Acrylonitrile	09	107-13-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		1.70	5.00	1	ug/L	BMR
Allyl chloride	09	107-05-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.60	1.00	1	ug/L	BMR

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Client Sample ID: MW-101

Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Benzene	09	71-43-2	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	09	74-97-5	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	09	75-27-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	09	75-25-2	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	09	74-83-9	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	09	75-15-0	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	09	56-23-5	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	09	108-90-7	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Chloroethane	09	75-00-3	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	09	67-66-3	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	09	74-87-3	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.95	1.00	1	ug/L	BMR
Chloroprene	09	126-99-8	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.50	5.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	09	156-59-2	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	09	10061-01-5	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	09	124-48-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	09	74-95-3	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Dichlorodifluoromethane	09	75-71-8	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.95	1.00	1	ug/L	BMR
Ethyl methacrylate	09	97-63-2	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.70	5.00	1	ug/L	BMR
Ethylbenzene	09	100-41-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	09	74-88-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		6.00	10.0	1	ug/L	BMR
Isobutyl Alcohol	09	78-83-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		25.0	40.0	1	ug/L	BMR
m+p-Xylenes	09	179601-23-1	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.60	2.00	1	ug/L	BMR
Methacrylonitrile	09	126-98-7	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		1.00	1.50	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-101

Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	09	80-62-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.70	2.00	1	ug/L	BMR
Methylene chloride	09	75-09-2	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		4.00	4.00	1	ug/L	BMR
Naphthalene	09	91-20-3	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.80	1.00	1	ug/L	BMR
o-Xylene	09	95-47-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Propionitrile	09	107-12-0	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		7.50	40.0	1	ug/L	BMR
Styrene	09	100-42-5	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	09	127-18-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	09	108-88-3	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	09	156-60-5	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	09	10061-02-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	09	110-57-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	09	79-01-6	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	09	75-69-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	09	108-05-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	09	75-01-4	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	09	1330-20-7	SW8260D	05/27/2022 18:53	05/27/2022 18:53	BLOD		1.00	3.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	09	105 %	70-120	05/27/2022 18:53	05/27/2022 18:53							
Surr: 4-Bromofluorobenzene (Surr)	09	99.1 %	75-120	05/27/2022 18:53	05/27/2022 18:53							
Surr: Dibromofluoromethane (Surr)	09	102 %	70-130	05/27/2022 18:53	05/27/2022 18:53							
Surr: Toluene-d8 (Surr)	09	99.9 %	70-130	05/27/2022 18:53	05/27/2022 18:53							

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Client Sample ID: MW-101

Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
1,2,4,5-Tetrachlorobenzene	09	95-94-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
1,3,5-Trinitrobenzene	09	99-35-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	5.00	1	ug/L	MGG
1,3-Dinitrobenzene	09	99-65-0	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
1,4-Naphthoquinone	09	130-15-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
1-Naphthylamine	09	134-32-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
2,3,4,6-Tetrachlorophenol	09	58-90-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
2,4,5-Trichlorophenol	09	95-95-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
2,4,6-Trichlorophenol	09	88-06-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		7.48	10.0	1	ug/L	MGG
2,4-Dichlorophenol	09	120-83-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.80	10.0	1	ug/L	MGG
2,4-Dimethylphenol	09	105-67-9	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		4.67	4.67	1	ug/L	MGG
2,4-Dinitrophenol	09	51-28-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		7.48	50.0	1	ug/L	MGG
2,4-Dinitrotoluene	09	121-14-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		5.61	10.0	1	ug/L	MGG
2,6-Dichlorophenol	09	87-65-0	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
2,6-Dinitrotoluene	09	606-20-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.74	10.0	1	ug/L	MGG
2-Acetylaminofluorene	09	53-96-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
2-Chloronaphthalene	09	91-58-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		4.21	10.0	1	ug/L	MGG
2-Chlorophenol	09	95-57-8	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	10.0	1	ug/L	MGG
2-Methylnaphthalene	09	91-57-6	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
2-Naphthylamine	09	91-59-8	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
2-Nitroaniline	09	88-74-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	20.0	1	ug/L	MGG
2-Nitrophenol	09	88-75-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		5.61	10.0	1	ug/L	MGG
3,3'-Dichlorobenzidine	09	91-94-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.74	10.0	1	ug/L	MGG
3,3'-Dimethylbenzidine	09	119-93-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
3-Methylcholanthrene	09	56-49-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG

## Certificate of Analysis

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Client Sample ID: MW-101

Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
3-Nitroaniline	09	99-09-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	20.0	1	ug/L	MGG
4,6-Dinitro-2-methylphenol	09	534-52-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD	C	7.48	50.0	1	ug/L	MGG
4-Aminobiphenyl	09	92-67-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
4-Bromophenyl phenyl ether	09	101-55-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	10.0	1	ug/L	MGG
4-Chloroaniline	09	106-47-8	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
4-Chlorophenyl phenyl ether	09	7005-72-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	10.0	1	ug/L	MGG
4-Nitroaniline	09	100-01-6	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	20.0	1	ug/L	MGG
4-Nitrophenol	09	100-02-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	50.0	1	ug/L	MGG
5-Nitro-o-toluidine	09	99-55-8	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
7,12-Dimethylbenz (a) anthracene	09	57-97-6	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
Acenaphthene	09	83-32-9	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.74	10.0	1	ug/L	MGG
Acenaphthylene	09	208-96-8	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.74	10.0	1	ug/L	MGG
Acetophenone	09	98-86-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	20.0	1	ug/L	MGG
Anthracene	09	120-12-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (a) anthracene	09	56-55-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	9.35	1	ug/L	MGG
Benzo (a) pyrene	09	50-32-8	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.19	0.20	1	ug/L	MGG
Benzo (b) fluoranthene	09	205-99-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.74	10.0	1	ug/L	MGG
Benzo (g,h,i) perylene	09	191-24-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD	C	4.67	10.0	1	ug/L	MGG
Benzo (k) fluoranthene	09	207-08-9	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		5.61	10.0	1	ug/L	MGG
Benzyl alcohol	09	100-51-6	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	20.0	1	ug/L	MGG
bis (2-Chloroethoxy) methane	09	111-91-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	10.0	1	ug/L	MGG
bis (2-Chloroethyl) ether	09	111-44-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	10.0	1	ug/L	MGG
2,2'-Oxybis (1-chloropropane)	09	108-60-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.80	10.0	1	ug/L	MGG
bis (2-Ethylhexyl) phthalate	09	117-81-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		4.67	5.00	1	ug/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

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Client Sample ID: MW-101

Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
Butyl benzyl phthalate	09	85-68-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		6.54	10.0	1	ug/L	MGG
Chlorobenzilate	09	510-15-6	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
Chrysene	09	218-01-9	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.74	10.0	1	ug/L	MGG
Diallate	09	2303-16-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
Dibenz (a,h) anthracene	09	53-70-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD	C	4.67	10.0	1	ug/L	MGG
Dibenzofuran	09	132-64-9	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	5.00	1	ug/L	MGG
Diethyl phthalate	09	84-66-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.80	10.0	1	ug/L	MGG
Dimethoate	09	60-51-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
Dimethyl phthalate	09	131-11-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	10.0	1	ug/L	MGG
Di-n-butyl phthalate	09	84-74-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.74	10.0	1	ug/L	MGG
Di-n-octyl phthalate	09	117-84-0	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		7.48	10.0	1	ug/L	MGG
Diphenylamine	09	122-39-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
Disulfoton	09	298-04-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
Ethyl methanesulfonate	09	62-50-0	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	20.0	1	ug/L	MGG
Ethyl parathion	09	56-38-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
Famphur	09	52-85-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
Fluoranthene	09	206-44-0	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		4.67	10.0	1	ug/L	MGG
Fluorene	09	86-73-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.74	10.0	1	ug/L	MGG
Hexachlorobenzene	09	118-74-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	0.93	1	ug/L	MGG
Hexachlorobutadiene	09	87-68-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD	C	4.21	10.0	1	ug/L	MGG
Hexachlorocyclopentadiene	09	77-47-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD	C	3.74	10.0	1	ug/L	MGG
Hexachloroethane	09	67-72-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	10.0	1	ug/L	MGG
Hexachloropropene	09	1888-71-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	2.50	1	ug/L	MGG
Indeno (1,2,3-cd) pyrene	09	193-39-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD	C	2.80	10.0	1	ug/L	MGG

## Certificate of Analysis

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Client Sample ID: MW-101

Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
Isodrin	09	465-73-6	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
Isophorone	09	78-59-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		4.67	10.0	1	ug/L	MGG
Isosafrole	09	120-58-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
Kepon	09	143-50-0	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	9.35	1	ug/L	MGG
m+p-Cresols	09	1319-77-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
Methapyrilene	09	91-80-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
Methyl methanesulfonate	09	66-27-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
Methyl parathion	09	298-00-0	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	2.50	1	ug/L	MGG
Nitrobenzene	09	98-95-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodiethylamine	09	55-18-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	2.50	1	ug/L	MGG
n-Nitrosodimethylamine	09	62-75-9	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodi-n-butylamine	09	924-16-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosodi-n-propylamine	09	621-64-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		3.27	10.0	1	ug/L	MGG
n-Nitrosodiphenylamine	09	86-30-6	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosomethylethylamine	09	10595-95-6	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	2.50	1	ug/L	MGG
n-Nitrosopiperidine	09	100-75-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosopyrrolidine	09	930-55-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	2.50	1	ug/L	MGG
o,o,o-Triethyl phosphorothioate	09	126-68-1	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
o,o-Diethyl o-2-pyrazinyl phosphorothioate	09	297-97-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
o+m+p-Cresols	09	1319-77-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.80	10.0	1	ug/L	MGG
o-Cresol	09	95-48-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		7.48	10.0	1	ug/L	MGG
o-Toluidine	09	95-53-4	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	2.50	1	ug/L	MGG
p-(Dimethylamino) azobenzene	09	60-11-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	2.50	1	ug/L	MGG

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Client Sample ID: MW-101

Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
p-Chloro-m-cresol	09	59-50-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		7.48	10.0	1	ug/L	MGG
Pentachlorobenzene	09	608-93-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
Pentachloronitrobenzene (quintozene)	09	82-68-8	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	9.35	1	ug/L	MGG
Phenacetin	09	62-44-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		0.93	10.0	1	ug/L	MGG
Phenanthrene	09	85-01-8	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		7.48	10.0	1	ug/L	MGG
Phenol	09	108-95-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		2.34	10.0	1	ug/L	MGG
Phorate	09	298-02-2	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	2.50	1	ug/L	MGG
p-Phenylenediamine	09	106-50-3	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD	C	1.87	10.0	1	ug/L	MGG
Pronamide	09	23950-58-5	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	10.0	1	ug/L	MGG
Pyrene	09	129-00-0	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		6.54	10.0	1	ug/L	MGG
Safrole	09	94-59-7	SW8270E	06/01/2022 09:00	06/02/2022 06:03	BLOD		1.87	2.50	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	09	45.9 %	10-86	06/01/2022 09:00	06/02/2022 06:03							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	09	77.9 %	9-87	06/01/2022 09:00	06/02/2022 06:03							
<i>Surr: 2-Fluorophenol (Surr)</i>	09	42.4 %	10-52	06/01/2022 09:00	06/02/2022 06:03							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	09	72.4 %	10-98.5	06/01/2022 09:00	06/02/2022 06:03							
<i>Surr: Phenol-d5 (Surr)</i>	09	29.8 %	5-33	06/01/2022 09:00	06/02/2022 06:03							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	09	82.4 %	27-133	06/01/2022 09:00	06/02/2022 06:03							



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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
PCB as Aroclor 1016	09	12674-11-2	SW8082A	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1221	09	11104-28-2	SW8082A	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1232	09	11141-16-5	SW8082A	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1242	09	53469-21-9	SW8082A	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1248	09	12672-29-6	SW8082A	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1254	09	11097-69-1	SW8082A	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1260	09	11096-82-5	SW8082A	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.140	0.200	1	ug/L	LBH2
Surr: DCB	09	98.2 %	30-105	05/31/2022 09:00	06/01/2022 13:24							
Surr: TCMX	09	86.9 %	30-105	05/31/2022 09:00	06/01/2022 13:24							
4,4'-DDD	09	72-54-8	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDE	09	72-55-9	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDT	09	50-29-3	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Aldrin	09	309-00-2	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-BHC	09	319-84-6	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-Chlordane	09	5103-71-9	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
beta-BHC	09	319-85-7	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.019	0.050	1	ug/L	LBH2
Chlordane	09	57-74-9	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.187	0.200	1	ug/L	LBH2
delta-BHC	09	319-86-8	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Dieldrin	09	60-57-1	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan I	09	959-98-8	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan II	09	33213-65-9	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan sulfate	09	1031-07-8	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin	09	72-20-8	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin aldehyde	09	7421-93-4	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2

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Client Sample ID: MW-101

Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
gamma-BHC (Lindane)	09	58-89-9	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
gamma-Chlordane	09	5103-74-2	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor	09	76-44-8	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor epoxide	09	1024-57-3	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Methoxychlor	09	72-43-5	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.005	0.050	1	ug/L	LBH2
Toxaphene	09	8001-35-2	SW8081B	05/31/2022 09:00	06/01/2022 13:24	BLOD		0.187	1.00	1	ug/L	LBH2
Surr: TCMX	09	86.9 %	18-112	05/31/2022 09:00	06/01/2022 13:24							
Surr: DCB	09	158 %	27-131	05/31/2022 09:00	06/01/2022 13:24							S

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-T	09	93-76-5	SW8151A	05/31/2022 16:20	06/09/2022 14:00	BLOD		0.200	0.500	1	ug/L	LBH2
2,4,5-TP (Silvex)	09	93-72-1	SW8151A	05/31/2022 16:20	06/09/2022 14:00	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	09	94-75-7	SW8151A	05/31/2022 16:20	06/09/2022 14:00	BLOD		0.200	0.500	1	ug/L	LBH2
Dinoseb	09	88-85-7	SW8151A	05/31/2022 16:20	06/09/2022 14:00	BLOD		0.200	0.500	1	ug/L	LBH2
Pentachlorophenol	09	87-86-5	SW8151A	05/31/2022 16:20	06/09/2022 14:00	BLOD		0.200	0.500	1	ug/L	LBH2
<i>Surr: DCAA (Surr)</i>	09	97.3 %	48.5-134	05/31/2022 16:20	06/09/2022 14:00							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	09	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 09:29	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	09	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 09:29	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	09	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 09:29	BLOD		0.005	0.010	1	ug/L	LBH2

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Laboratory Sample ID: 22E1388-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	09	57-12-5	SW9012B	06/06/2022 17:28	06/06/2022 17:28	BLOD		0.01	0.01	1	mg/L	Omnion Use
Sulfide	09	18496-25-8	SW9215	05/27/2022 18:30	05/27/2022 18:30	BLOD		0.80	1.00	1	mg/L	MJRL

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Client Sample ID: MW-106B

Laboratory Sample ID: 22E1388-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	10	7440-22-4	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	10	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 15:10	1.0		0.50	1.0	1	ug/L	RCV
Barium	10	7440-39-3	SW6020B	05/31/2022 13:00	06/02/2022 15:10	108		1.00	5.00	1	ug/L	RCV
Beryllium	10	7440-41-7	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	10	7440-43-9	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	10	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 15:10	0.472	J	0.200	1.00	1	ug/L	RCV
Chromium	10	7440-47-3	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		0.400	1.00	1	ug/L	RCV
Copper	10	7440-50-8	SW6020B	05/31/2022 13:00	06/02/2022 15:10	0.725	J	0.300	1.00	1	ug/L	RCV
Nickel	10	7440-02-0	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		1.000	1.000	1	ug/L	RCV
Lead	10	7439-92-1	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	10	7440-36-0	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	10	7782-49-2	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		0.850	1.00	1	ug/L	RCV
Thallium	10	7440-28-0	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	10	7440-62-2	SW6020B	05/31/2022 13:00	06/02/2022 15:10	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	10	7440-66-6	SW6020B	05/31/2022 13:00	06/02/2022 15:10	2.58	J	2.50	5.00	1	ug/L	RCV

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Client Sample ID: MW-106B

Laboratory Sample ID: 22E1388-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	10	630-20-6	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	10	71-55-6	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	10	79-34-5	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	10	79-00-5	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.50	1.00	1	ug/L	BMR
<b>1,1-Dichloroethane</b>	10	75-34-3	SW8260D	05/27/2022 19:17	05/27/2022 19:17	1.11		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	10	75-35-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	10	96-18-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	10	95-50-1	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	10	107-06-2	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	10	78-87-5	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	10	106-46-7	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	10	78-93-3	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	10	591-78-6	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	10	108-10-1	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	10	67-64-1	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	10	107-13-1	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	10	71-43-2	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	10	74-97-5	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	10	75-27-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	10	75-25-2	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	10	74-83-9	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	10	75-15-0	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	10	56-23-5	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	10	108-90-7	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-106B

Laboratory Sample ID: 22E1388-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	10	75-00-3	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	10	67-66-3	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	10	74-87-3	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	10	156-59-2	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	10	10061-01-5	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	10	124-48-1	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	10	74-95-3	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	10	100-41-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	10	74-88-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	10	179601-23-1	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	10	75-09-2	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	10	95-47-6	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	10	100-42-5	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	10	127-18-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	10	108-88-3	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	10	156-60-5	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	10	10061-02-6	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	10	110-57-6	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	10	79-01-6	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	10	75-69-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	10	108-05-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	10	75-01-4	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	10	1330-20-7	SW8260D	05/27/2022 19:17	05/27/2022 19:17	BLOD		1.00	3.00	1	ug/L	BMR



## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-106B

Laboratory Sample ID: 22E1388-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	10	107 %	70-120	05/27/2022 19:17	05/27/2022 19:17							
Surr: 4-Bromofluorobenzene (Surr)	10	96.9 %	75-120	05/27/2022 19:17	05/27/2022 19:17							
Surr: Dibromofluoromethane (Surr)	10	102 %	70-130	05/27/2022 19:17	05/27/2022 19:17							
Surr: Toluene-d8 (Surr)	10	99.1 %	70-130	05/27/2022 19:17	05/27/2022 19:17							

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Client Sample ID: MW-106B

Laboratory Sample ID: 22E1388-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	10	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 09:51	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	10	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 09:51	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	10	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 09:51	BLOD		0.005	0.010	1	ug/L	LBH2

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Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	11	7440-22-4	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	11	7440-38-2	SW6020B	05/31/2022 13:00	06/02/2022 15:12	3.2		0.50	1.0	1	ug/L	RCV
Barium	11RE1	7440-39-3	SW6020B	05/31/2022 13:00	06/08/2022 13:27	290		10.0	50.0	10	ug/L	RCV
Beryllium	11	7440-41-7	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	11	7440-43-9	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	11	7440-48-4	SW6020B	05/31/2022 13:00	06/02/2022 15:12	5.43		0.200	1.00	1	ug/L	RCV
Chromium	11	7440-47-3	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		0.400	1.00	1	ug/L	RCV
Copper	11	7440-50-8	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		0.300	1.00	1	ug/L	RCV
Mercury	11	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 15:13	BLOD		0.00020	0.00020	1	mg/L	MWL
Nickel	11	7440-02-0	SW6020B	05/31/2022 13:00	06/02/2022 15:12	7.323		1.000	1.000	1	ug/L	RCV
Lead	11	7439-92-1	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	11	7440-36-0	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	11	7782-49-2	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		0.850	1.00	1	ug/L	RCV
Tin	11	7440-31-5	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		1.00	1.00	1	ug/L	RCV
Thallium	11	7440-28-0	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	11	7440-62-2	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	11	7440-66-6	SW6020B	05/31/2022 13:00	06/02/2022 15:12	BLOD		2.50	5.00	1	ug/L	RCV

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Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	11	630-20-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	11	71-55-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	11	79-34-5	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	11	79-00-5	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.50	1.00	1	ug/L	BMR
<b>1,1-Dichloroethane</b>	11	75-34-3	SW8260D	05/27/2022 19:41	05/27/2022 19:41	1.02		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	11	75-35-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.70	1.00	1	ug/L	BMR
1,1-Dichloropropene	11	563-58-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.60	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	11	96-18-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
1,2,4-Trichlorobenzene	11	120-82-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.50	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	11	95-50-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	11	107-06-2	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	11	78-87-5	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
1,3-Dichlorobenzene	11	541-73-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.30	1.00	1	ug/L	BMR
1,3-Dichloropropane	11	142-28-9	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		1.00	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	11	106-46-7	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
2,2-Dichloropropane	11	594-20-7	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.60	2.00	1	ug/L	BMR
2-Butanone (MEK)	11	78-93-3	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	11	591-78-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	11	108-10-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	11	67-64-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		7.00	10.0	1	ug/L	BMR
Acetonitrile	11	75-05-8	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		8.00	10.0	1	ug/L	BMR
Acrolein	11	107-02-8	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		6.00	10.0	1	ug/L	BMR
Acrylonitrile	11	107-13-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		1.70	5.00	1	ug/L	BMR
Allyl chloride	11	107-05-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.60	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Benzene	11	71-43-2	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	11	74-97-5	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	11	75-27-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	11	75-25-2	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	11	74-83-9	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	11	75-15-0	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	11	56-23-5	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	11	108-90-7	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Chloroethane	11	75-00-3	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	11	67-66-3	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	11	74-87-3	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.95	1.00	1	ug/L	BMR
Chloroprene	11	126-99-8	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.50	5.00	1	ug/L	BMR
<b>cis-1,2-Dichloroethylene</b>	11	156-59-2	SW8260D	05/27/2022 19:41	05/27/2022 19:41	0.56	J	0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	11	10061-01-5	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	11	124-48-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	11	74-95-3	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Dichlorodifluoromethane	11	75-71-8	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.95	1.00	1	ug/L	BMR
Ethyl methacrylate	11	97-63-2	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.70	5.00	1	ug/L	BMR
Ethylbenzene	11	100-41-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	11	74-88-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		6.00	10.0	1	ug/L	BMR
Isobutyl Alcohol	11	78-83-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		25.0	40.0	1	ug/L	BMR
m+p-Xylenes	11	179601-23-1	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.60	2.00	1	ug/L	BMR
Methacrylonitrile	11	126-98-7	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		1.00	1.50	1	ug/L	BMR

### Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	11	80-62-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.70	2.00	1	ug/L	BMR
Methylene chloride	11	75-09-2	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		4.00	4.00	1	ug/L	BMR
Naphthalene	11	91-20-3	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.80	1.00	1	ug/L	BMR
o-Xylene	11	95-47-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Propionitrile	11	107-12-0	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		7.50	40.0	1	ug/L	BMR
Styrene	11	100-42-5	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	11	127-18-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	11	108-88-3	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	11	156-60-5	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	11	10061-02-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	11	110-57-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	11	79-01-6	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	11	75-69-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	11	108-05-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	11	75-01-4	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	11	1330-20-7	SW8260D	05/27/2022 19:41	05/27/2022 19:41	BLOD		1.00	3.00	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	11	105 %	70-120	05/27/2022 19:41	05/27/2022 19:41							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	11	100 %	75-120	05/27/2022 19:41	05/27/2022 19:41							
<i>Surr: Dibromofluoromethane (Surr)</i>	11	102 %	70-130	05/27/2022 19:41	05/27/2022 19:41							
<i>Surr: Toluene-d8 (Surr)</i>	11	102 %	70-130	05/27/2022 19:41	05/27/2022 19:41							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
1,2,4,5-Tetrachlorobenzene	11	95-94-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
1,3,5-Trinitrobenzene	11	99-35-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	5.00	1	ug/L	MGG
1,3-Dinitrobenzene	11	99-65-0	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
1,4-Naphthoquinone	11	130-15-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
1-Naphthylamine	11	134-32-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
2,3,4,6-Tetrachlorophenol	11	58-90-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
2,4,5-Trichlorophenol	11	95-95-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
2,4,6-Trichlorophenol	11	88-06-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		7.48	10.0	1	ug/L	MGG
2,4-Dichlorophenol	11	120-83-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.80	10.0	1	ug/L	MGG
2,4-Dimethylphenol	11	105-67-9	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		4.67	4.67	1	ug/L	MGG
2,4-Dinitrophenol	11	51-28-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		7.48	50.0	1	ug/L	MGG
2,4-Dinitrotoluene	11	121-14-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		5.61	10.0	1	ug/L	MGG
2,6-Dichlorophenol	11	87-65-0	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
2,6-Dinitrotoluene	11	606-20-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.74	10.0	1	ug/L	MGG
2-Acetylaminofluorene	11	53-96-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
2-Chloronaphthalene	11	91-58-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		4.21	10.0	1	ug/L	MGG
2-Chlorophenol	11	95-57-8	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	10.0	1	ug/L	MGG
2-Methylnaphthalene	11	91-57-6	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
2-Naphthylamine	11	91-59-8	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
2-Nitroaniline	11	88-74-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	20.0	1	ug/L	MGG
2-Nitrophenol	11	88-75-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		5.61	10.0	1	ug/L	MGG
3,3'-Dichlorobenzidine	11	91-94-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.74	10.0	1	ug/L	MGG
3,3'-Dimethylbenzidine	11	119-93-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
3-Methylcholanthrene	11	56-49-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG

## Certificate of Analysis

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Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
3-Nitroaniline	11	99-09-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	20.0	1	ug/L	MGG
4,6-Dinitro-2-methylphenol	11	534-52-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD	C	7.48	50.0	1	ug/L	MGG
4-Aminobiphenyl	11	92-67-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
4-Bromophenyl phenyl ether	11	101-55-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	10.0	1	ug/L	MGG
4-Chloroaniline	11	106-47-8	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
4-Chlorophenyl phenyl ether	11	7005-72-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	10.0	1	ug/L	MGG
4-Nitroaniline	11	100-01-6	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	20.0	1	ug/L	MGG
4-Nitrophenol	11	100-02-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	50.0	1	ug/L	MGG
5-Nitro-o-toluidine	11	99-55-8	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
7,12-Dimethylbenz (a) anthracene	11	57-97-6	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
Acenaphthene	11	83-32-9	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.74	10.0	1	ug/L	MGG
Acenaphthylene	11	208-96-8	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.74	10.0	1	ug/L	MGG
Acetophenone	11	98-86-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	20.0	1	ug/L	MGG
Anthracene	11	120-12-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (a) anthracene	11	56-55-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	9.35	1	ug/L	MGG
Benzo (a) pyrene	11	50-32-8	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.19	0.20	1	ug/L	MGG
Benzo (b) fluoranthene	11	205-99-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.74	10.0	1	ug/L	MGG
Benzo (g,h,i) perylene	11	191-24-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD	C	4.67	10.0	1	ug/L	MGG
Benzo (k) fluoranthene	11	207-08-9	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		5.61	10.0	1	ug/L	MGG
Benzyl alcohol	11	100-51-6	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	20.0	1	ug/L	MGG
bis (2-Chloroethoxy) methane	11	111-91-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	10.0	1	ug/L	MGG
bis (2-Chloroethyl) ether	11	111-44-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	10.0	1	ug/L	MGG
2,2'-Oxybis (1-chloropropane)	11	108-60-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.80	10.0	1	ug/L	MGG
bis (2-Ethylhexyl) phthalate	11	117-81-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		4.67	5.00	1	ug/L	MGG



## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
Butyl benzyl phthalate	11	85-68-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		6.54	10.0	1	ug/L	MGG
Chlorobenzilate	11	510-15-6	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
Chrysene	11	218-01-9	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.74	10.0	1	ug/L	MGG
Diallate	11	2303-16-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
Dibenz (a,h) anthracene	11	53-70-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD	C	4.67	10.0	1	ug/L	MGG
Dibenzofuran	11	132-64-9	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	5.00	1	ug/L	MGG
Diethyl phthalate	11	84-66-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.80	10.0	1	ug/L	MGG
Dimethoate	11	60-51-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
Dimethyl phthalate	11	131-11-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	10.0	1	ug/L	MGG
Di-n-butyl phthalate	11	84-74-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.74	10.0	1	ug/L	MGG
Di-n-octyl phthalate	11	117-84-0	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		7.48	10.0	1	ug/L	MGG
Diphenylamine	11	122-39-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
Disulfoton	11	298-04-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
Ethyl methanesulfonate	11	62-50-0	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	20.0	1	ug/L	MGG
Ethyl parathion	11	56-38-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
Famphur	11	52-85-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
Fluoranthene	11	206-44-0	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		4.67	10.0	1	ug/L	MGG
Fluorene	11	86-73-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.74	10.0	1	ug/L	MGG
Hexachlorobenzene	11	118-74-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	0.93	1	ug/L	MGG
Hexachlorobutadiene	11	87-68-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD	C	4.21	10.0	1	ug/L	MGG
Hexachlorocyclopentadiene	11	77-47-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD	C	3.74	10.0	1	ug/L	MGG
Hexachloroethane	11	67-72-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	10.0	1	ug/L	MGG
Hexachloropropene	11	1888-71-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	2.50	1	ug/L	MGG
Indeno (1,2,3-cd) pyrene	11	193-39-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD	C	2.80	10.0	1	ug/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
Isodrin	11	465-73-6	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
Isophorone	11	78-59-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		4.67	10.0	1	ug/L	MGG
Isosafrole	11	120-58-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
Kepon	11	143-50-0	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	9.35	1	ug/L	MGG
m+p-Cresols	11	1319-77-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
Methapyrilene	11	91-80-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
Methyl methanesulfonate	11	66-27-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
Methyl parathion	11	298-00-0	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	2.50	1	ug/L	MGG
Nitrobenzene	11	98-95-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodiethylamine	11	55-18-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	2.50	1	ug/L	MGG
n-Nitrosodimethylamine	11	62-75-9	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodi-n-butylamine	11	924-16-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosodi-n-propylamine	11	621-64-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		3.27	10.0	1	ug/L	MGG
n-Nitrosodiphenylamine	11	86-30-6	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosomethylethylamine	11	10595-95-6	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	2.50	1	ug/L	MGG
n-Nitrosopiperidine	11	100-75-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosopyrrolidine	11	930-55-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	2.50	1	ug/L	MGG
o,o,o-Triethyl phosphorothioate	11	126-68-1	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
o,o-Diethyl o-2-pyrazinyl phosphorothioate	11	297-97-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
o+m+p-Cresols	11	1319-77-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.80	10.0	1	ug/L	MGG
o-Cresol	11	95-48-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		7.48	10.0	1	ug/L	MGG
o-Toluidine	11	95-53-4	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	2.50	1	ug/L	MGG
p-(Dimethylamino) azobenzene	11	60-11-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	2.50	1	ug/L	MGG

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
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Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
p-Chloro-m-cresol	11	59-50-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		7.48	10.0	1	ug/L	MGG
Pentachlorobenzene	11	608-93-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
Pentachloronitrobenzene (quintozene)	11	82-68-8	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	9.35	1	ug/L	MGG
Phenacetin	11	62-44-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		0.93	10.0	1	ug/L	MGG
Phenanthrene	11	85-01-8	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		7.48	10.0	1	ug/L	MGG
Phenol	11	108-95-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		2.34	10.0	1	ug/L	MGG
Phorate	11	298-02-2	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	2.50	1	ug/L	MGG
p-Phenylenediamine	11	106-50-3	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD	C	1.87	10.0	1	ug/L	MGG
Pronamide	11	23950-58-5	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	10.0	1	ug/L	MGG
Pyrene	11	129-00-0	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		6.54	10.0	1	ug/L	MGG
Safrole	11	94-59-7	SW8270E	06/01/2022 09:00	06/02/2022 06:36	BLOD		1.87	2.50	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	11	55.4 %	10-86	06/01/2022 09:00	06/02/2022 06:36							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	11	70.8 %	9-87	06/01/2022 09:00	06/02/2022 06:36							
<i>Surr: 2-Fluorophenol (Surr)</i>	11	39.0 %	10-52	06/01/2022 09:00	06/02/2022 06:36							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	11	62.8 %	10-98.5	06/01/2022 09:00	06/02/2022 06:36							
<i>Surr: Phenol-d5 (Surr)</i>	11	26.2 %	5-33	06/01/2022 09:00	06/02/2022 06:36							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	11	83.7 %	27-133	06/01/2022 09:00	06/02/2022 06:36							

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
PCB as Aroclor 1016	11	12674-11-2	SW8082A	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1221	11	11104-28-2	SW8082A	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1232	11	11141-16-5	SW8082A	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1242	11	53469-21-9	SW8082A	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1248	11	12672-29-6	SW8082A	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1254	11	11097-69-1	SW8082A	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1260	11	11096-82-5	SW8082A	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.140	0.200	1	ug/L	LBH2
<i>Surr: DCB</i>	<i>11</i>	<i>99.0 %</i>	<i>30-105</i>	<i>05/31/2022 09:00</i>	<i>06/01/2022 13:43</i>							
<i>Surr: TCMX</i>	<i>11</i>	<i>62.0 %</i>	<i>30-105</i>	<i>05/31/2022 09:00</i>	<i>06/01/2022 13:43</i>							
4,4'-DDD	11	72-54-8	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDE	11	72-55-9	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDT	11	50-29-3	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Aldrin	11	309-00-2	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-BHC	11	319-84-6	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-Chlordane	11	5103-71-9	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
beta-BHC	11	319-85-7	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.019	0.050	1	ug/L	LBH2
Chlordane	11	57-74-9	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.187	0.200	1	ug/L	LBH2
delta-BHC	11	319-86-8	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Dieldrin	11	60-57-1	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan I	11	959-98-8	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan II	11	33213-65-9	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan sulfate	11	1031-07-8	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin	11	72-20-8	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin aldehyde	11	7421-93-4	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2

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Client Sample ID: MW-106A

Laboratory Sample ID: 22E1388-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
gamma-BHC (Lindane)	11	58-89-9	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
gamma-Chlordane	11	5103-74-2	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor	11	76-44-8	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor epoxide	11	1024-57-3	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Methoxychlor	11	72-43-5	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.005	0.050	1	ug/L	LBH2
Toxaphene	11	8001-35-2	SW8081B	05/31/2022 09:00	06/01/2022 13:43	BLOD		0.187	1.00	1	ug/L	LBH2
Surr: TCMX	11	62.6 %	18-112	05/31/2022 09:00	06/01/2022 13:43							
Surr: DCB	11	82.0 %	27-131	05/31/2022 09:00	06/01/2022 13:43							

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<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-T	11	93-76-5	SW8151A	05/31/2022 16:20	06/09/2022 13:59	BLOD		0.200	0.500	1	ug/L	LBH2
2,4,5-TP (Silvex)	11	93-72-1	SW8151A	05/31/2022 16:20	06/09/2022 13:59	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	11	94-75-7	SW8151A	05/31/2022 16:20	06/09/2022 13:59	BLOD		0.200	0.500	1	ug/L	LBH2
Dinoseb	11	88-85-7	SW8151A	05/31/2022 16:20	06/09/2022 13:59	BLOD		0.200	0.500	1	ug/L	LBH2
Pentachlorophenol	11	87-86-5	SW8151A	05/31/2022 16:20	06/09/2022 13:59	BLOD		0.200	0.500	1	ug/L	LBH2
<i>Surr: DCAA (Surr)</i>	11	98.8 %	48.5-134	05/31/2022 16:20	06/09/2022 13:59							

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Client Sample ID: MW-106A

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	11	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 10:12	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	11	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 10:12	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	11	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 10:12	BLOD		0.005	0.010	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	11	57-12-5	SW9012B	06/06/2022 17:29	06/06/2022 17:29	BLOD		0.01	0.01	1	mg/L	Omnion Use
Sulfide	11	18496-25-8	SW9215	05/27/2022 18:30	05/27/2022 18:30	BLOD		0.80	1.00	1	mg/L	MJRL



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Client Sample ID: Trip Blank

Laboratory Sample ID: 22E1388-12

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	12	630-20-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	12	71-55-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	12	79-34-5	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	12	79-00-5	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	12	75-34-3	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	12	75-35-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.70	1.00	1	ug/L	BMR
1,1-Dichloropropene	12	563-58-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.60	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	12	96-18-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
1,2,4-Trichlorobenzene	12	120-82-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.50	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	12	95-50-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	12	107-06-2	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	12	78-87-5	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
1,3-Dichlorobenzene	12	541-73-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.30	1.00	1	ug/L	BMR
1,3-Dichloropropane	12	142-28-9	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		1.00	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	12	106-46-7	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
2,2-Dichloropropane	12	594-20-7	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.60	2.00	1	ug/L	BMR
2-Butanone (MEK)	12	78-93-3	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	12	591-78-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	12	108-10-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		1.50	5.00	1	ug/L	BMR
<b>Acetone</b>	12RE1	67-64-1	SW8260D	05/31/2022 13:00	05/31/2022 13:00	7.21	J	7.00	10.0	1	ug/L	BMR
Acetonitrile	12	75-05-8	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		8.00	10.0	1	ug/L	BMR
Acrolein	12	107-02-8	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		6.00	10.0	1	ug/L	BMR
Acrylonitrile	12	107-13-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		1.70	5.00	1	ug/L	BMR
Allyl chloride	12	107-05-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.60	1.00	1	ug/L	BMR

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Client Sample ID: Trip Blank

Laboratory Sample ID: 22E1388-12

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Benzene	12	71-43-2	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	12	74-97-5	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	12	75-27-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	12	75-25-2	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	12	74-83-9	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	12	75-15-0	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	12	56-23-5	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	12	108-90-7	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Chloroethane	12	75-00-3	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	12	67-66-3	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	12	74-87-3	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.95	1.00	1	ug/L	BMR
Chloroprene	12	126-99-8	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.50	5.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	12	156-59-2	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	12	10061-01-5	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	12	124-48-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	12	74-95-3	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Dichlorodifluoromethane	12	75-71-8	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.95	1.00	1	ug/L	BMR
Ethyl methacrylate	12	97-63-2	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.70	5.00	1	ug/L	BMR
Ethylbenzene	12	100-41-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	12	74-88-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		6.00	10.0	1	ug/L	BMR
Isobutyl Alcohol	12	78-83-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		25.0	40.0	1	ug/L	BMR
m+p-Xylenes	12	179601-23-1	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.60	2.00	1	ug/L	BMR
Methacrylonitrile	12	126-98-7	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		1.00	1.50	1	ug/L	BMR

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<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	12	80-62-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.70	2.00	1	ug/L	BMR
Methylene chloride	12	75-09-2	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		4.00	4.00	1	ug/L	BMR
Naphthalene	12	91-20-3	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.80	1.00	1	ug/L	BMR
o-Xylene	12	95-47-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Propionitrile	12	107-12-0	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		7.50	40.0	1	ug/L	BMR
Styrene	12	100-42-5	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	12	127-18-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	12	108-88-3	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	12	156-60-5	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	12	10061-02-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	12	110-57-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	12	79-01-6	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	12	75-69-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	12	108-05-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	12	75-01-4	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	12	1330-20-7	SW8260D	05/27/2022 16:04	05/27/2022 16:04	BLOD		1.00	3.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	12	106 %	70-120	05/27/2022 16:04	05/27/2022 16:04							
Surr: 4-Bromofluorobenzene (Surr)	12	98.8 %	75-120	05/27/2022 16:04	05/27/2022 16:04							
Surr: Dibromofluoromethane (Surr)	12	98.6 %	70-130	05/27/2022 16:04	05/27/2022 16:04							
Surr: Toluene-d8 (Surr)	12	101 %	70-130	05/27/2022 16:04	05/27/2022 16:04							
Surr: 1,2-Dichloroethane-d4 (Surr)	12RE1	103 %	70-120	05/31/2022 13:00	05/31/2022 13:00							
Surr: 4-Bromofluorobenzene (Surr)	12RE1	99.1 %	75-120	05/31/2022 13:00	05/31/2022 13:00							
Surr: Dibromofluoromethane (Surr)	12RE1	103 %	70-130	05/31/2022 13:00	05/31/2022 13:00							
Surr: Toluene-d8 (Surr)	12RE1	101 %	70-130	05/31/2022 13:00	05/31/2022 13:00							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:30:28PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: Trip Blank

Laboratory Sample ID: 22E1388-12

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	12	106-93-4	SW8011	06/01/2022 11:30	06/02/2022 10:34	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	12	96-18-4	SW8011	06/01/2022 11:30	06/02/2022 10:34	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	12	96-12-8	SW8011	06/01/2022 11:30	06/02/2022 10:34	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Client Sample ID: Trip Blank

Laboratory Sample ID: 22E1388-12

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	12	74-84-0	RSK175M	06/02/2022 10:35	06/02/2022 10:35	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	12	74-85-1	RSK175M	06/02/2022 10:35	06/02/2022 10:35	BLOD		1.50	5.00	1	ug/L	BMR
Methane	12	74-82-8	RSK175M	06/02/2022 10:35	06/02/2022 10:35	BLOD		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	12	120 %	70-130	06/02/2022 10:35	06/02/2022 10:35							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1163 - EPA200.8 R5.4**

**Blank (BFE1163-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/02/2022

Antimony	ND	1.0	ug/L
Arsenic	ND	1.0	ug/L
Barium	ND	5.00	ug/L
Beryllium	ND	1.00	ug/L
Cadmium	ND	1.00	ug/L
Chromium	ND	1.00	ug/L
Cobalt	ND	1.00	ug/L
Copper	ND	1.00	ug/L
Lead	ND	1.0	ug/L
Nickel	ND	1.000	ug/L
Selenium	ND	1.00	ug/L
Silver	ND	1.00	ug/L
Thallium	ND	1.0	ug/L
Tin	ND	1.00	ug/L
Vanadium	ND	5.00	ug/L
Zinc	ND	5.00	ug/L

**LCS (BFE1163-BS1)**

Prepared: 05/31/2022 Analyzed: 06/02/2022

Antimony	53	1.0	ug/L	50.0	106	80-120
Arsenic	53	1.0	ug/L	50.0	107	80-120
Barium	49.8	5.00	ug/L	50.0	99.6	80-120
Beryllium	49.6	1.00	ug/L	50.0	99.2	80-120
Cadmium	52.5	1.00	ug/L	50.0	105	80-120
Chromium	50.8	1.00	ug/L	50.0	102	80-120
Cobalt	51.0	1.00	ug/L	50.0	102	80-120

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1163 - EPA200.8 R5.4

**LCS (BFE1163-BS1)**

Prepared: 05/31/2022 Analyzed: 06/02/2022

Copper	52.6	1.00	ug/L	50.0		105	80-120			
Lead	52	1.0	ug/L	50.0		104	80-120			
Nickel	51.22	1.000	ug/L	50.0		102	80-120			
Selenium	55.8	1.00	ug/L	50.0		112	80-120			
Silver	9.85	1.00	ug/L	10.0		98.5	80-120			
Thallium	53	1.0	ug/L	50.0		105	80-120			
Tin	50.4	1.00	ug/L	50.0		101	80-120			
Vanadium	50.6	5.00	ug/L	50.0		101	80-120			
Zinc	55.0	5.00	ug/L	50.0		110	80-120			

**Matrix Spike (BFE1163-MS1)**

Source: 22E1388-11

Prepared: 05/31/2022 Analyzed: 06/02/2022

Antimony	54	1.0	ug/L	50.0	BLOD	109	75-125			
Arsenic	56	1.0	ug/L	50.0	3.2	106	75-125			
Beryllium	53.2	1.00	ug/L	50.0	BLOD	106	75-125			
Cadmium	50.3	1.00	ug/L	50.0	BLOD	101	75-125			
Chromium	52.5	1.00	ug/L	50.0	BLOD	105	75-125			
Cobalt	56.0	1.00	ug/L	50.0	5.43	101	75-125			
Copper	49.2	1.00	ug/L	50.0	BLOD	98.5	75-125			
Lead	51	1.0	ug/L	50.0	BLOD	102	75-125			
Nickel	56.90	1.000	ug/L	50.0	7.323	99.1	75-125			
Selenium	51.7	1.00	ug/L	50.0	BLOD	103	75-125			
Silver	9.50	1.00	ug/L	10.0	BLOD	95.0	75-125			
Thallium	53	1.0	ug/L	50.0	BLOD	105	75-125			
Tin	53.4	1.00	ug/L	50.0	BLOD	107	75-125			
Vanadium	54.2	5.00	ug/L	50.0	BLOD	108	75-125			

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1163 - EPA200.8 R5.4</b>										
<b>Matrix Spike (BFE1163-MS1)</b>										
			<b>Source: 22E1388-11</b>		Prepared: 05/31/2022 Analyzed: 06/02/2022					
Zinc	49.1	5.00	ug/L	50.0	BLOD	98.1	75-125			
<b>Matrix Spike (BFE1163-MS2)</b>										
			<b>Source: 22E1454-09</b>		Prepared: 05/31/2022 Analyzed: 06/02/2022					
Antimony	53	1.0	ug/L	50.0	BLOD	106	75-125			
Arsenic	53	1.0	ug/L	50.0	BLOD	107	75-125			
Barium	50.6	5.00	ug/L	50.0	BLOD	101	75-125			
Beryllium	53.0	1.00	ug/L	50.0	BLOD	106	75-125			
Cadmium	52.8	1.00	ug/L	50.0	BLOD	106	75-125			
Chromium	52.1	1.00	ug/L	50.0	BLOD	104	75-125			
Cobalt	52.4	1.00	ug/L	50.0	BLOD	105	75-125			
Copper	53.3	1.00	ug/L	50.0	BLOD	107	75-125			
Lead	52	1.0	ug/L	50.0	BLOD	104	75-125			
Nickel	52.59	1.000	ug/L	50.0	BLOD	105	75-125			
Selenium	54.1	1.00	ug/L	50.0	BLOD	108	75-125			
Silver	10.0	1.00	ug/L	10.0	BLOD	100	75-125			
Thallium	53	1.0	ug/L	50.0	BLOD	105	75-125			
Tin	51.3	1.00	ug/L	50.0	BLOD	103	75-125			
Vanadium	52.0	5.00	ug/L	50.0	BLOD	104	75-125			
Zinc	53.3	5.00	ug/L	50.0	14.6	77.6	75-125			
<b>Matrix Spike (BFE1163-MS3)</b>										
			<b>Source: 22E1388-11RE1</b>		Prepared: 05/31/2022 Analyzed: 06/08/2022					
Antimony	54	10	ug/L	50.0	BLOD	107	75-125			
Arsenic	56	10	ug/L	50.0	BLOD	112	75-125			
Barium	351	50.0	ug/L	50.0	290	121	75-125			
Cobalt	56.3	10.0	ug/L	50.0	5.43	102	75-125			
Copper	51.8	10.0	ug/L	50.0	BLOD	104	75-125			



## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1163 - EPA200.8 R5.4</b>										
<b>Matrix Spike (BFE1163-MS3)</b>										
			<b>Source: 22E1388-11RE1</b>		Prepared: 05/31/2022 Analyzed: 06/08/2022					
Selenium	53.2	10.0	ug/L	50.0	BLOD	106	75-125			
Silver	9.76	10.0	ug/L	10.0	BLOD	97.6	75-125			
Thallium	53	10	ug/L	50.0	BLOD	106	75-125			
<b>Matrix Spike Dup (BFE1163-MSD1)</b>										
			<b>Source: 22E1388-11</b>		Prepared: 05/31/2022 Analyzed: 06/02/2022					
Antimony	51	1.0	ug/L	50.0	BLOD	103	75-125	5.44	20	
Arsenic	54	1.0	ug/L	50.0	3.2	101	75-125	4.55	20	
Beryllium	49.6	1.00	ug/L	50.0	BLOD	99.2	75-125	7.00	20	
Cadmium	48.2	1.00	ug/L	50.0	BLOD	96.3	75-125	4.23	20	
Chromium	49.6	1.00	ug/L	50.0	BLOD	99.3	75-125	5.66	20	
Cobalt	53.8	1.00	ug/L	50.0	5.43	96.8	75-125	4.03	20	
Copper	47.6	1.00	ug/L	50.0	BLOD	95.1	75-125	3.46	20	
Lead	48	1.0	ug/L	50.0	BLOD	96.9	75-125	4.94	20	
Nickel	54.82	1.000	ug/L	50.0	7.323	95.0	75-125	3.71	20	
Selenium	48.2	1.00	ug/L	50.0	BLOD	96.4	75-125	7.03	20	
Silver	9.46	1.00	ug/L	10.0	BLOD	94.6	75-125	0.335	20	
Thallium	50	1.0	ug/L	50.0	BLOD	99.3	75-125	5.83	20	
Tin	52.0	1.00	ug/L	50.0	BLOD	104	75-125	2.63	20	
Vanadium	51.3	5.00	ug/L	50.0	BLOD	103	75-125	5.51	20	
Zinc	46.7	5.00	ug/L	50.0	BLOD	93.4	75-125	4.98	20	
<b>Matrix Spike Dup (BFE1163-MSD2)</b>										
			<b>Source: 22E1454-09</b>		Prepared: 05/31/2022 Analyzed: 06/02/2022					
Antimony	52	1.0	ug/L	50.0	BLOD	104	75-125	2.16	20	
Arsenic	52	1.0	ug/L	50.0	BLOD	104	75-125	2.77	20	
Barium	49.6	5.00	ug/L	50.0	BLOD	99.1	75-125	2.10	20	
Beryllium	50.3	1.00	ug/L	50.0	BLOD	101	75-125	5.08	20	

## Certificate of Analysis

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Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1163 - EPA200.8 R5.4

Matrix Spike Dup (BFE1163-MSD2)	Source: 22E1454-09			Prepared: 05/31/2022 Analyzed: 06/02/2022						
Cadmium	51.6	1.00	ug/L	50.0	BLOD	103	75-125	2.21	20	
Chromium	50.5	1.00	ug/L	50.0	BLOD	101	75-125	3.17	20	
Cobalt	50.7	1.00	ug/L	50.0	BLOD	101	75-125	3.37	20	
Copper	51.9	1.00	ug/L	50.0	BLOD	104	75-125	2.67	20	
Lead	51	1.0	ug/L	50.0	BLOD	102	75-125	2.03	20	
Nickel	51.97	1.000	ug/L	50.0	BLOD	104	75-125	1.17	20	
Selenium	52.9	1.00	ug/L	50.0	BLOD	106	75-125	2.38	20	
Silver	9.79	1.00	ug/L	10.0	BLOD	97.9	75-125	2.29	20	
Thallium	51	1.0	ug/L	50.0	BLOD	103	75-125	2.62	20	
Tin	50.2	1.00	ug/L	50.0	BLOD	100	75-125	2.17	20	
Vanadium	50.2	5.00	ug/L	50.0	BLOD	100	75-125	3.66	20	
Zinc	53.0	5.00	ug/L	50.0	14.6	76.9	75-125	0.592	20	

Matrix Spike Dup (BFE1163-MSD3)	Source: 22E1388-11RE1			Prepared: 05/31/2022 Analyzed: 06/08/2022						
Antimony	53	10	ug/L	50.0	BLOD	105	75-125	1.78	20	
Arsenic	54	10	ug/L	50.0	BLOD	108	75-125	3.84	20	
Barium	347	50.0	ug/L	50.0	290	114	75-125	1.03	20	
Cobalt	56.1	10.0	ug/L	50.0	5.43	101	75-125	0.204	20	
Copper	49.6	10.0	ug/L	50.0	BLOD	99.2	75-125	4.26	20	
Selenium	51.8	10.0	ug/L	50.0	BLOD	104	75-125	2.68	20	
Silver	9.97	10.0	ug/L	10.0	BLOD	99.7	75-125	2.14	20	
Thallium	53	10	ug/L	50.0	BLOD	107	75-125	0.660	20	

### Batch BFF0266 - SW7470A

Blank (BFF0266-BLK1)	Prepared & Analyzed: 06/07/2022										
Mercury	ND	0.00020	mg/L								

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0266 - SW7470A</b>										
<b>Blank (BFF0266-BLK1)</b>				Prepared & Analyzed: 06/07/2022						
<b>LCS (BFF0266-BS1)</b>				Prepared & Analyzed: 06/07/2022						
Mercury	0.00265	0.00020	mg/L	0.00250		106	80-120			
<b>Matrix Spike (BFF0266-MS1)</b>				Source: 22E1280-07		Prepared & Analyzed: 06/07/2022				
Mercury	0.00270	0.00020	mg/L	0.00250	BLOD	108	80-120			
<b>Matrix Spike (BFF0266-MS2)</b>				Source: 22E1388-01		Prepared & Analyzed: 06/07/2022				
Mercury	0.00275	0.00020	mg/L	0.00250	BLOD	110	80-120			
<b>Matrix Spike Dup (BFF0266-MSD1)</b>				Source: 22E1280-07		Prepared & Analyzed: 06/07/2022				
Mercury	0.00262	0.00020	mg/L	0.00250	BLOD	105	80-120	3.04	20	
<b>Matrix Spike Dup (BFF0266-MSD2)</b>				Source: 22E1388-01		Prepared & Analyzed: 06/07/2022				
Mercury	0.00266	0.00020	mg/L	0.00250	BLOD	107	80-120	3.16	20	
<b>Batch BFF0393 - SW7470A</b>										
<b>Blank (BFF0393-BLK1)</b>				Prepared & Analyzed: 06/09/2022						
Mercury	ND	0.00020	mg/L							
<b>LCS (BFF0393-BS1)</b>				Prepared & Analyzed: 06/09/2022						
Mercury	0.00251	0.00020	mg/L	0.00250		100	80-120			
<b>Matrix Spike (BFF0393-MS1)</b>				Source: 22E1463-02		Prepared & Analyzed: 06/09/2022				
Mercury	0.00274	0.00020	mg/L	0.00250	BLOD	110	80-120			

### Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0393 - SW7470A</b>										
<b>Matrix Spike (BFF0393-MS2)</b>										
					<b>Source: 22E1463-03</b>					Prepared & Analyzed: 06/09/2022
Mercury	0.00244	0.00020	mg/L	0.00250	BLOD	97.7	80-120			
<b>Matrix Spike Dup (BFF0393-MSD1)</b>										
					<b>Source: 22E1463-02</b>					Prepared & Analyzed: 06/09/2022
Mercury	0.00263	0.00020	mg/L	0.00250	BLOD	105	80-120	3.98	20	
<b>Matrix Spike Dup (BFF0393-MSD2)</b>										
					<b>Source: 22E1463-03</b>					Prepared & Analyzed: 06/09/2022
Mercury	0.00259	0.00020	mg/L	0.00250	BLOD	104	80-120	5.84	20	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1119 - SW5030B-MS**

**Blank (BFE1119-BLK1)**

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

**Blank (BFE1119-BLK1)**

Prepared &amp; Analyzed: 05/27/2022

Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.00	ug/L							
cis-1,2-Dichloroethylene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Iodomethane	ND	10.0	ug/L							
m+p-Xylenes	ND	2.00	ug/L							
Methylene chloride	ND	4.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>48.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.0</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>46.9</i>		<i>ug/L</i>	<i>50.0</i>		<i>93.8</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.2</i>	<i>70-130</i>			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

**Blank (BFE1119-BLK1)**

Prepared & Analyzed: 05/27/2022

<i>Surr: Toluene-d8 (Surr)</i>	49.9		ug/L	50.0		99.8	70-130
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**LCS (BFE1119-BS1)**

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	55.0	0.4	ug/L	50.0		110	80-130
1,1,1-Trichloroethane	52.0	1	ug/L	50.0		104	65-130
1,1,2,2-Tetrachloroethane	51.1	0.4	ug/L	50.0		102	65-130
1,1,2-Trichloroethane	55.2	1	ug/L	50.0		110	75-125
1,1-Dichloroethane	51.5	1	ug/L	50.0		103	70-135
1,1-Dichloroethylene	45.5	1	ug/L	50.0		91.0	70-130
1,2,3-Trichloropropane	51.1	1	ug/L	50.0		102	75-125
1,2-Dichlorobenzene	53.0	0.5	ug/L	50.0		106	70-120
1,2-Dichloroethane	49.2	1	ug/L	50.0		98.5	70-130
1,2-Dichloropropane	53.6	0.5	ug/L	50.0		107	75-125
1,4-Dichlorobenzene	53.8	1	ug/L	50.0		108	75-125
2-Butanone (MEK)	42.8	10	ug/L	50.0		85.7	30-150
2-Hexanone (MBK)	45.3	5	ug/L	50.0		90.6	55-130
4-Methyl-2-pentanone (MIBK)	44.5	5	ug/L	50.0		88.9	60-135
Acetone	64.8	10	ug/L	50.0		130	40-140
Acrylonitrile	0.00	5	ug/L	250			70-130
Benzene	53.1	1	ug/L	50.0		106	80-120
Bromochloromethane	52.8	1	ug/L	50.0		106	65-130
Bromodichloromethane	57.6	0.5	ug/L	50.0		115	75-120
Bromoform	54.5	1	ug/L	50.0		109	70-130
Bromomethane	34.8	1	ug/L	50.0		69.6	30-145
Carbon disulfide	38.8	10	ug/L	50.0		77.6	35-160

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## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1119 - SW5030B-MS**

**LCS (BFE1119-BS1)**

Prepared & Analyzed: 05/27/2022

Carbon tetrachloride	52.6	1	ug/L	50.0		105	65-140			
Chlorobenzene	54.1	1	ug/L	50.0		108	80-120			
Chloroethane	47.1	1	ug/L	50.0		94.2	60-135			
Chloroform	49.4	0.5	ug/L	50.0		98.8	65-135			
Chloromethane	38.8	1	ug/L	50.0		77.6	40-125			
cis-1,2-Dichloroethylene	51.3	1	ug/L	50.0		103	70-125			
cis-1,3-Dichloropropene	46.2	1	ug/L	50.0		92.5	70-130			
Dibromochloromethane	54.2	0.5	ug/L	50.0		108	60-135			
Dibromomethane	52.7	1	ug/L	50.0		105	75-125			
Ethylbenzene	55.0	1	ug/L	50.0		110	75-125			
m+p-Xylenes	104	2	ug/L	100		104	75-130			
Methylene chloride	55.7	4	ug/L	50.0		111	55-140			
o-Xylene	53.6	1	ug/L	50.0		107	80-120			
Styrene	51.7	1	ug/L	50.0		103	65-135			
Tetrachloroethylene (PCE)	81.4	1	ug/L	50.0		163	45-150			L
Toluene	53.9	1	ug/L	50.0		108	75-120			
trans-1,2-Dichloroethylene	51.2	1	ug/L	50.0		102	60-140			
trans-1,3-Dichloropropene	46.2	1	ug/L	50.0		92.5	55-140			
Trichloroethylene	52.5	1	ug/L	50.0		105	70-125			
Trichlorofluoromethane	47.6	1	ug/L	50.0		95.2	60-145			
Vinyl chloride	47.7	0.5	ug/L	50.0		95.3	50-145			
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>48.2</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.4</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>49.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>98.9</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>97.2</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.8</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.7</i>	<i>70-130</i>			



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1119 - SW5030B-MS**

**LCS (BFE1119-BS1)**

Prepared & Analyzed: 05/27/2022

**Matrix Spike (BFE1119-MS1)**

**Source: 22E1293-02**

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	49.7	0.4	ug/L	50.0	BLOD	99.4	80-130			
1,1,1-Trichloroethane	44.0	1	ug/L	50.0	BLOD	88.0	65-130			
1,1,2,2-Tetrachloroethane	47.7	0.4	ug/L	50.0	BLOD	95.4	65-130			
1,1,2-Trichloroethane	51.9	1	ug/L	50.0	BLOD	104	75-125			
1,1-Dichloroethane	44.2	1	ug/L	50.0	BLOD	88.3	70-135			
1,1-Dichloroethylene	36.3	1	ug/L	50.0	BLOD	72.5	70-130			
1,2,3-Trichloropropane	48.9	1	ug/L	50.0	BLOD	97.9	75-125			
1,2-Dichlorobenzene	49.2	0.5	ug/L	50.0	BLOD	98.3	70-120			
1,2-Dichloroethane	45.4	1	ug/L	50.0	BLOD	90.9	70-130			
1,2-Dichloropropane	48.2	0.5	ug/L	50.0	BLOD	96.4	75-125			
1,4-Dichlorobenzene	49.4	1	ug/L	50.0	BLOD	98.8	75-125			
2-Butanone (MEK)	40.2	10	ug/L	50.0	BLOD	80.4	30-150			
2-Hexanone (MBK)	41.4	5	ug/L	50.0	BLOD	82.8	55-130			
4-Methyl-2-pentanone (MIBK)	40.5	5	ug/L	50.0	BLOD	81.1	60-135			
Acetone	55.1	10	ug/L	50.0	BLOD	97.3	40-140			
Acrylonitrile	0.00	5	ug/L	250	BLOD		70-130			M
Benzene	46.8	1	ug/L	50.0	BLOD	93.5	80-120			
Bromochloromethane	48.3	1	ug/L	50.0	BLOD	96.6	65-130			
Bromodichloromethane	52.3	0.5	ug/L	50.0	BLOD	105	75-120			
Bromoform	51.5	1	ug/L	50.0	BLOD	103	70-130			
Bromomethane	28.5	1	ug/L	50.0	BLOD	57.1	30-145			
Carbon disulfide	33.7	10	ug/L	50.0	BLOD	67.4	35-160			
Carbon tetrachloride	45.1	1	ug/L	50.0	BLOD	90.2	65-140			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

Matrix Spike (BFE1119-MS1)

Source: 22E1293-02

Prepared &amp; Analyzed: 05/27/2022

Chlorobenzene	48.7	1	ug/L	50.0	BLOD	97.4	80-120			
Chloroethane	35.8	1	ug/L	50.0	BLOD	71.6	60-135			
Chloroform	42.7	0.5	ug/L	50.0	BLOD	85.5	65-135			
Chloromethane	26.2	1	ug/L	50.0	BLOD	52.4	40-125			
cis-1,2-Dichloroethylene	44.9	1	ug/L	50.0	BLOD	89.7	70-125			
cis-1,3-Dichloropropene	41.9	1	ug/L	50.0	BLOD	83.9	70-130			
Dibromochloromethane	49.1	0.5	ug/L	50.0	BLOD	98.2	60-135			
Dibromomethane	50.0	1	ug/L	50.0	BLOD	100	75-125			
Ethylbenzene	47.7	1	ug/L	50.0	BLOD	95.4	75-125			
m+p-Xylenes	92.2	2	ug/L	100	BLOD	92.2	75-130			
Methylene chloride	47.5	4	ug/L	50.0	27.4	40.2	55-140			M
o-Xylene	47.5	1	ug/L	50.0	BLOD	95.1	80-120			
Styrene	46.5	1	ug/L	50.0	BLOD	93.0	65-135			
Tetrachloroethylene (PCE)	74.0	1	ug/L	50.0	BLOD	148	45-150			
Toluene	47.5	1	ug/L	50.0	BLOD	95.0	75-120			
trans-1,2-Dichloroethylene	44.2	1	ug/L	50.0	BLOD	88.3	60-140			
trans-1,3-Dichloropropene	41.9	1	ug/L	50.0	BLOD	83.9	55-140			
Trichloroethylene	45.4	1	ug/L	50.0	BLOD	90.9	70-125			
Trichlorofluoromethane	36.0	1	ug/L	50.0	BLOD	72.1	60-145			
Vinyl chloride	18.7	0.5	ug/L	50.0	BLOD	37.5	50-145			M
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>47.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>95.2</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>47.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>95.2</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.3</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.6</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.4</i>	<i>70-130</i>			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

Matrix Spike Dup (BFE1119-MSD1)	Source: 22E1293-02		Prepared & Analyzed: 05/27/2022							
1,1,1,2-Tetrachloroethane	46.3	0.4	ug/L	50.0	BLOD	92.6	80-130	7.06	30	
1,1,1-Trichloroethane	41.9	1	ug/L	50.0	BLOD	83.8	65-130	4.94	30	
1,1,2,2-Tetrachloroethane	44.9	0.4	ug/L	50.0	BLOD	89.9	65-130	6.02	30	
1,1,2-Trichloroethane	47.8	1	ug/L	50.0	BLOD	95.7	75-125	8.18	30	
1,1-Dichloroethane	41.0	1	ug/L	50.0	BLOD	82.1	70-135	7.33	30	
1,1-Dichloroethylene	34.7	1	ug/L	50.0	BLOD	69.5	70-130	4.28	30	M
1,2,3-Trichloropropane	45.6	1	ug/L	50.0	BLOD	91.2	75-125	7.09	30	
1,2-Dichlorobenzene	45.1	0.5	ug/L	50.0	BLOD	90.2	70-120	8.59	30	
1,2-Dichloroethane	42.1	1	ug/L	50.0	BLOD	84.2	70-130	7.61	30	
1,2-Dichloropropane	44.2	0.5	ug/L	50.0	BLOD	88.4	75-125	8.72	30	
1,4-Dichlorobenzene	45.1	1	ug/L	50.0	BLOD	90.2	75-125	9.12	30	
2-Butanone (MEK)	39.3	10	ug/L	50.0	BLOD	78.6	30-150		30	
2-Hexanone (MBK)	40.5	5	ug/L	50.0	BLOD	80.9	55-130		30	
4-Methyl-2-pentanone (MIBK)	38.8	5	ug/L	50.0	BLOD	77.6	60-135	4.41	30	
Acetone	52.8	10	ug/L	50.0	BLOD	92.8	40-140		30	
Acrylonitrile	0.00	5	ug/L	250	BLOD		70-130		30	M
Benzene	43.3	1	ug/L	50.0	BLOD	86.5	80-120	7.75	30	
Bromochloromethane	44.0	1	ug/L	50.0	BLOD	87.9	65-130	9.39	30	
Bromodichloromethane	47.4	0.5	ug/L	50.0	BLOD	94.8	75-120	9.89	30	
Bromoform	48.3	1	ug/L	50.0	BLOD	96.6	70-130	6.41	30	
Bromomethane	29.1	1	ug/L	50.0	BLOD	58.2	30-145	1.94	30	
Carbon disulfide	33.4	10	ug/L	50.0	BLOD	66.8	35-160		30	
Carbon tetrachloride	42.1	1	ug/L	50.0	BLOD	84.2	65-140	6.88	30	
Chlorobenzene	44.8	1	ug/L	50.0	BLOD	89.5	80-120	8.41	30	
Chloroethane	34.2	1	ug/L	50.0	BLOD	68.5	60-135	4.51	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFE1119 - SW5030B-MS

Matrix Spike Dup (BFE1119-MSD1)	Source: 22E1293-02		Prepared & Analyzed: 05/27/2022							
Chloroform	39.7	0.5	ug/L	50.0	BLOD	79.3	65-135	7.45	30	
Chloromethane	24.4	1	ug/L	50.0	BLOD	48.9	40-125	6.99	30	
cis-1,2-Dichloroethylene	41.0	1	ug/L	50.0	BLOD	82.1	70-125	8.92	30	
cis-1,3-Dichloropropene	39.0	1	ug/L	50.0	BLOD	78.0	70-130	7.32	30	
Dibromochloromethane	45.8	0.5	ug/L	50.0	BLOD	91.7	60-135	6.91	30	
Dibromomethane	45.8	1	ug/L	50.0	BLOD	91.7	75-125	8.68	30	
Ethylbenzene	45.1	1	ug/L	50.0	BLOD	90.3	75-125	5.52	30	
m+p-Xylenes	86.7	2	ug/L	100	BLOD	86.7	75-130	6.08	30	
Methylene chloride	42.6	4	ug/L	50.0	27.4	30.4	55-140		30	M
o-Xylene	44.3	1	ug/L	50.0	BLOD	88.5	80-120	7.12	30	
Styrene	43.6	1	ug/L	50.0	BLOD	87.1	65-135	6.53	30	
Tetrachloroethylene (PCE)	70.0	1	ug/L	50.0	BLOD	140	45-150	5.56	30	
Toluene	44.3	1	ug/L	50.0	BLOD	88.6	75-120	6.97	30	
trans-1,2-Dichloroethylene	40.7	1	ug/L	50.0	BLOD	81.3	60-140	8.25	30	
trans-1,3-Dichloropropene	39.0	1	ug/L	50.0	BLOD	78.0	55-140	7.32	30	
Trichloroethylene	42.3	1	ug/L	50.0	BLOD	84.6	70-125	7.16	30	
Trichlorofluoromethane	34.2	1	ug/L	50.0	BLOD	68.4	60-145	5.15	30	
Vinyl chloride	29.3	0.5	ug/L	50.0	BLOD	58.5	50-145	43.9	30	M
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>47.0</i>		ug/L	<i>50.0</i>		<i>94.1</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>48.7</i>		ug/L	<i>50.0</i>		<i>97.4</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.1</i>		ug/L	<i>50.0</i>		<i>96.3</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.0</i>		ug/L	<i>50.0</i>		<i>100</i>	<i>70-130</i>			

#### Batch BFE1120 - SW5030B-MS

Blank (BFE1120-BLK1)	Prepared & Analyzed: 05/27/2022									
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## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1120 - SW5030B-MS**

**Blank (BFE1120-BLK1)**

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,1-Dichloropropene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2,4-Trichlorobenzene	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,3-Dichlorobenzene	ND	1.00	ug/L
1,3-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2,2-Dichloropropane	ND	2.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acetonitrile	ND	10.0	ug/L
Acrolein	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Allyl chloride	ND	1.00	ug/L
Benzene	ND	1.00	ug/L

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1120 - SW5030B-MS**

**Blank (BFE1120-BLK1)**

Prepared & Analyzed: 05/27/2022

Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L
Chloromethane	ND	1.00	ug/L
Chloroprene	ND	5.00	ug/L
cis-1,2-Dichloroethylene	ND	1.00	ug/L
cis-1,3-Dichloropropene	ND	1.00	ug/L
Dibromochloromethane	ND	0.50	ug/L
Dibromomethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Ethyl methacrylate	ND	5.00	ug/L
Ethylbenzene	ND	1.00	ug/L
Iodomethane	ND	10.0	ug/L
Isobutyl Alcohol	ND	40.0	ug/L
m+p-Xylenes	ND	2.00	ug/L
Methacrylonitrile	ND	1.50	ug/L
Methyl methacrylate	ND	2.00	ug/L
Methylene chloride	ND	4.00	ug/L
Naphthalene	ND	1.00	ug/L

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**Blank (BFE1120-BLK1)**

Prepared &amp; Analyzed: 05/27/2022

o-Xylene	ND	1.00	ug/L							
Propionitrile	ND	40.0	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	51.7		ug/L	50.0		103	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	49.3		ug/L	50.0		98.6	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	49.8		ug/L	50.0		99.6	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.1		ug/L	50.0		100	70-130			

**LCS (BFE1120-BS1)**

Prepared &amp; Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	53.9	0.4	ug/L	50.0		108	80-130			
1,1,1-Trichloroethane	54.5	1	ug/L	50.0		109	65-130			
1,1,2,2-Tetrachloroethane	50.2	0.4	ug/L	50.0		100	65-130			
1,1,2-Trichloroethane	49.2	1	ug/L	50.0		98.3	75-125			
1,1-Dichloroethane	50.1	1	ug/L	50.0		100	70-135			
1,1-Dichloroethylene	42.7	1	ug/L	50.0		85.3	70-130			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**LCS (BFE1120-BS1)**

Prepared &amp; Analyzed: 05/27/2022

1,1-Dichloropropene	52.4	1	ug/L	50.0		105	75-135			
1,2,3-Trichloropropane	51.4	1	ug/L	50.0		103	75-125			
1,2,4-Trichlorobenzene	50.9	1	ug/L	50.0		102	65-135			
1,2-Dichlorobenzene	54.8	0.5	ug/L	50.0		110	70-120			
1,2-Dichloroethane	50.8	1	ug/L	50.0		102	70-130			
1,2-Dichloropropane	49.2	0.5	ug/L	50.0		98.5	75-125			
1,3-Dichlorobenzene	55.8	1	ug/L	50.0		112	75-125			
1,3-Dichloropropane	50.8	1	ug/L	50.0		102	75-125			
1,4-Dichlorobenzene	55.2	1	ug/L	50.0		110	75-125			
2,2-Dichloropropane	45.7	1	ug/L	50.0		91.4	70-135			
2-Butanone (MEK)	43.3	10	ug/L	50.0		86.5	30-150			
2-Hexanone (MBK)	53.6	5	ug/L	50.0		107	55-130			
4-Methyl-2-pentanone (MIBK)	49.6	5	ug/L	50.0		99.2	60-135			
Acetone	50.2	10	ug/L	50.0		100	40-140			
Acrylonitrile	301	5	ug/L	250		120	70-130			
Benzene	51.1	1	ug/L	50.0		102	80-120			
Bromochloromethane	48.0	1	ug/L	50.0		96.0	65-130			
Bromodichloromethane	55.5	0.5	ug/L	50.0		111	75-120			
Bromoform	49.7	1	ug/L	50.0		99.4	70-130			
Bromomethane	40.4	1	ug/L	50.0		80.9	30-145			
Carbon disulfide	55.4	10	ug/L	50.0		111	35-160			
Carbon tetrachloride	53.9	1	ug/L	50.0		108	65-140			
Chlorobenzene	52.6	1	ug/L	50.0		105	80-120			
Chloroethane	42.9	1	ug/L	50.0		85.9	60-135			
Chloroform	47.2	0.5	ug/L	50.0		94.5	65-135			



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**LCS (BFE1120-BS1)**

Prepared &amp; Analyzed: 05/27/2022

Chloromethane	36.6	1	ug/L	50.0		73.2	40-125			
cis-1,2-Dichloroethylene	47.5	1	ug/L	50.0		95.0	70-125			
cis-1,3-Dichloropropene	38.8	1	ug/L	50.0		77.7	70-130			
Dibromochloromethane	49.3	0.5	ug/L	50.0		98.6	60-135			
Dibromomethane	46.3	1	ug/L	50.0		92.5	75-125			
Dichlorodifluoromethane	15.0	1	ug/L	50.0		30.0	30-155			
Ethylbenzene	56.9	1	ug/L	50.0		114	75-125			
m+p-Xylenes	105	2	ug/L	100		105	75-130			
Methylene chloride	47.3	4	ug/L	50.0		94.7	55-140			
Naphthalene	48.7	1	ug/L	50.0		97.4	55-140			
o-Xylene	54.6	1	ug/L	50.0		109	80-120			
Styrene	52.2	1	ug/L	50.0		104	65-135			
Tetrachloroethylene (PCE)	88.2	1	ug/L	50.0		176	45-150			L
Toluene	53.0	1	ug/L	50.0		106	75-120			
trans-1,2-Dichloroethylene	48.5	1	ug/L	50.0		97.0	60-140			
trans-1,3-Dichloropropene	42.6	1	ug/L	50.0		85.2	55-140			
Trichloroethylene	52.1	1	ug/L	50.0		104	70-125			
Trichlorofluoromethane	49.9	1	ug/L	50.0		99.7	60-145			
Vinyl chloride	39.6	0.5	ug/L	50.0		79.2	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>50.2</i>		ug/L	<i>50.0</i>		<i>100</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.4</i>		ug/L	<i>50.0</i>		<i>101</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.0</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.4</i>		ug/L	<i>50.0</i>		<i>101</i>	<i>70-130</i>			

**Matrix Spike (BFE1120-MS1)**

Source: 22E1388-02

Prepared &amp; Analyzed: 05/27/2022

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**Matrix Spike (BFE1120-MS1)**
**Source: 22E1388-02**
**Prepared & Analyzed: 05/27/2022**

1,1,1,2-Tetrachloroethane	52.8	0.4	ug/L	50.0	BLOD	106	80-130			
1,1,1-Trichloroethane	52.7	1	ug/L	50.0	BLOD	105	65-130			
1,1,2,2-Tetrachloroethane	52.0	0.4	ug/L	50.0	BLOD	104	65-130			
1,1,2-Trichloroethane	51.0	1	ug/L	50.0	BLOD	102	75-125			
1,1-Dichloroethane	49.1	1	ug/L	50.0	BLOD	98.1	70-135			
1,1-Dichloroethylene	42.6	1	ug/L	50.0	BLOD	85.1	70-130			
1,1-Dichloropropene	48.5	1	ug/L	50.0	BLOD	97.0	75-135			
1,2,3-Trichloropropane	52.4	1	ug/L	50.0	BLOD	105	75-125			
1,2,4-Trichlorobenzene	52.3	1	ug/L	50.0	BLOD	105	65-135			
1,2-Dichlorobenzene	54.7	0.5	ug/L	50.0	BLOD	109	70-120			
1,2-Dichloroethane	51.0	1	ug/L	50.0	BLOD	102	70-130			
1,2-Dichloropropane	48.4	0.5	ug/L	50.0	BLOD	96.8	75-125			
1,3-Dichlorobenzene	55.1	1	ug/L	50.0	BLOD	110	75-125			
1,3-Dichloropropane	51.0	1	ug/L	50.0	BLOD	102	75-125			
1,4-Dichlorobenzene	54.9	1	ug/L	50.0	BLOD	110	75-125			
2,2-Dichloropropane	44.5	1	ug/L	50.0	BLOD	89.1	70-135			
2-Butanone (MEK)	44.0	10	ug/L	50.0	BLOD	87.9	30-150			
2-Hexanone (MBK)	53.8	5	ug/L	50.0	BLOD	108	55-130			
4-Methyl-2-pentanone (MIBK)	51.4	5	ug/L	50.0	BLOD	103	60-135			
Acetone	51.7	10	ug/L	50.0	BLOD	92.3	40-140			
Acrylonitrile	318	5	ug/L	250	BLOD	127	70-130			
Benzene	50.1	1	ug/L	50.0	BLOD	100	80-120			
Bromochloromethane	46.2	1	ug/L	50.0	BLOD	92.4	65-130			
Bromodichloromethane	54.7	0.5	ug/L	50.0	BLOD	109	75-120			
Bromoform	50.2	1	ug/L	50.0	BLOD	100	70-130			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**Matrix Spike (BFE1120-MS1)**
**Source: 22E1388-02**
**Prepared & Analyzed: 05/27/2022**

Bromomethane	38.6	1	ug/L	50.0	BLOD	77.1	30-145			
Carbon disulfide	51.8	10	ug/L	50.0	BLOD	104	35-160			
Carbon tetrachloride	52.0	1	ug/L	50.0	BLOD	104	65-140			
Chlorobenzene	51.9	1	ug/L	50.0	BLOD	104	80-120			
Chloroethane	43.0	1	ug/L	50.0	BLOD	86.0	60-135			
Chloroform	46.2	0.5	ug/L	50.0	BLOD	92.5	65-135			
Chloromethane	35.9	1	ug/L	50.0	BLOD	71.8	40-125			
cis-1,2-Dichloroethylene	46.9	1	ug/L	50.0	BLOD	93.8	70-125			
cis-1,3-Dichloropropene	37.7	1	ug/L	50.0	BLOD	75.5	70-130			
Dibromochloromethane	49.2	0.5	ug/L	50.0	BLOD	98.4	60-135			
Dibromomethane	46.7	1	ug/L	50.0	BLOD	93.5	75-125			
Dichlorodifluoromethane	14.5	1	ug/L	50.0	BLOD	28.9	30-155			M
Ethylbenzene	55.8	1	ug/L	50.0	BLOD	112	75-125			
m+p-Xylenes	103	2	ug/L	100	BLOD	103	75-130			
Methylene chloride	45.5	4	ug/L	50.0	BLOD	91.0	55-140			
Naphthalene	53.2	1	ug/L	50.0	BLOD	106	55-140			
o-Xylene	52.8	1	ug/L	50.0	BLOD	106	80-120			
Styrene	51.6	1	ug/L	50.0	BLOD	103	65-135			
Tetrachloroethylene (PCE)	87.1	1	ug/L	50.0	BLOD	174	45-150			M
Toluene	51.2	1	ug/L	50.0	BLOD	102	75-120			
trans-1,2-Dichloroethylene	47.3	1	ug/L	50.0	BLOD	94.6	60-140			
trans-1,3-Dichloropropene	41.5	1	ug/L	50.0	BLOD	82.9	55-140			
Trichloroethylene	51.4	1	ug/L	50.0	BLOD	103	70-125			
Trichlorofluoromethane	47.7	1	ug/L	50.0	BLOD	95.3	60-145			
Vinyl chloride	37.8	0.5	ug/L	50.0	BLOD	75.5	50-145			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**Matrix Spike (BFE1120-MS1)**

Source: 22E1388-02

Prepared & Analyzed: 05/27/2022

<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	53.5		ug/L	50.0		107	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	49.4		ug/L	50.0		98.8	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	51.5		ug/L	50.0		103	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.5		ug/L	50.0		101	70-130			

**Matrix Spike Dup (BFE1120-MSD1)**

Source: 22E1388-02

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	49.4	0.4	ug/L	50.0	BLOD	98.8	80-130	6.69	30	
1,1,1-Trichloroethane	49.2	1	ug/L	50.0	BLOD	98.3	65-130	6.97	30	
1,1,2,2-Tetrachloroethane	49.2	0.4	ug/L	50.0	BLOD	98.3	65-130	5.60	30	
1,1,2-Trichloroethane	46.5	1	ug/L	50.0	BLOD	93.0	75-125	9.17	30	
1,1-Dichloroethane	44.7	1	ug/L	50.0	BLOD	89.4	70-135	9.37	30	
1,1-Dichloroethylene	38.8	1	ug/L	50.0	BLOD	77.6	70-130	9.29	30	
1,1-Dichloropropene	47.0	1	ug/L	50.0	BLOD	93.9	75-135	3.21	30	
1,2,3-Trichloropropane	50.2	1	ug/L	50.0	BLOD	100	75-125	4.27	30	
1,2,4-Trichlorobenzene	48.0	1	ug/L	50.0	BLOD	96.1	65-135	8.45	30	
1,2-Dichlorobenzene	50.6	0.5	ug/L	50.0	BLOD	101	70-120	7.65	30	
1,2-Dichloroethane	46.5	1	ug/L	50.0	BLOD	93.1	70-130	9.17	30	
1,2-Dichloropropane	44.1	0.5	ug/L	50.0	BLOD	88.2	75-125	9.32	30	
1,3-Dichlorobenzene	51.9	1	ug/L	50.0	BLOD	104	75-125	6.04	30	
1,3-Dichloropropane	45.5	1	ug/L	50.0	BLOD	90.9	75-125	11.4	30	
1,4-Dichlorobenzene	51.0	1	ug/L	50.0	BLOD	102	75-125	7.50	30	
2,2-Dichloropropane	40.0	1	ug/L	50.0	BLOD	80.1	70-135	10.6	30	
2-Butanone (MEK)	40.3	10	ug/L	50.0	BLOD	80.6	30-150	8.74	30	
2-Hexanone (MBK)	52.7	5	ug/L	50.0	BLOD	105	55-130	1.97	30	
4-Methyl-2-pentanone (MIBK)	46.7	5	ug/L	50.0	BLOD	93.3	60-135	9.57	30	

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Enthalpy Analytical

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<b>Batch BFE1120 - SW5030B-MS</b>										
<b>Matrix Spike Dup (BFE1120-MSD1)</b>		<b>Source: 22E1388-02</b>			<b>Prepared &amp; Analyzed: 05/27/2022</b>					
Acetone	51.2	10	ug/L	50.0	BLOD	91.3	40-140	0.914	30	
Acrylonitrile	299	5	ug/L	250	BLOD	120	70-130	6.04	30	
Benzene	45.5	1	ug/L	50.0	BLOD	91.0	80-120	9.60	30	
Bromochloromethane	42.1	1	ug/L	50.0	BLOD	84.1	65-130	9.36	30	
Bromodichloromethane	47.2	0.5	ug/L	50.0	BLOD	94.5	75-120	14.7	30	
Bromoform	46.5	1	ug/L	50.0	BLOD	93.1	70-130	7.57	30	
Bromomethane	35.3	1	ug/L	50.0	BLOD	70.7	30-145	8.69	30	
Carbon disulfide	47.2	10	ug/L	50.0	BLOD	94.3	35-160	9.44	30	
Carbon tetrachloride	49.7	1	ug/L	50.0	BLOD	99.4	65-140	4.48	30	
Chlorobenzene	47.8	1	ug/L	50.0	BLOD	95.5	80-120	8.25	30	
Chloroethane	38.8	1	ug/L	50.0	BLOD	77.6	60-135	10.3	30	
Chloroform	42.2	0.5	ug/L	50.0	BLOD	84.3	65-135	9.21	30	
Chloromethane	32.6	1	ug/L	50.0	BLOD	65.2	40-125	9.64	30	
cis-1,2-Dichloroethylene	42.1	1	ug/L	50.0	BLOD	84.1	70-125	10.9	30	
cis-1,3-Dichloropropene	33.5	1	ug/L	50.0	BLOD	67.0	70-130	11.9	30	M
Dibromochloromethane	45.8	0.5	ug/L	50.0	BLOD	91.5	60-135	7.20	30	
Dibromomethane	40.6	1	ug/L	50.0	BLOD	81.3	75-125	13.9	30	
Dichlorodifluoromethane	14.6	1	ug/L	50.0	BLOD	29.2	30-155	0.826	30	M
Ethylbenzene	51.2	1	ug/L	50.0	BLOD	102	75-125	8.62	30	
m+p-Xylenes	94.1	2	ug/L	100	BLOD	94.1	75-130	9.15	30	
Methylene chloride	40.7	4	ug/L	50.0	BLOD	81.4	55-140	11.1	30	
Naphthalene	50.5	1	ug/L	50.0	BLOD	101	55-140	5.15	30	
o-Xylene	49.6	1	ug/L	50.0	BLOD	99.2	80-120	6.36	30	
Styrene	47.0	1	ug/L	50.0	BLOD	94.1	65-135	9.19	30	
Tetrachloroethylene (PCE)	79.4	1	ug/L	50.0	BLOD	159	45-150	9.22	30	M

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**Matrix Spike Dup (BFE1120-MSD1)**

Source: 22E1388-02

Prepared &amp; Analyzed: 05/27/2022

Toluene	46.6	1	ug/L	50.0	BLOD	93.1	75-120	9.40	30	
trans-1,2-Dichloroethylene	42.8	1	ug/L	50.0	BLOD	85.5	60-140	10.1	30	
trans-1,3-Dichloropropene	37.1	1	ug/L	50.0	BLOD	74.3	55-140	11.0	30	
Trichloroethylene	46.4	1	ug/L	50.0	BLOD	92.8	70-125	10.2	30	
Trichlorofluoromethane	46.4	1	ug/L	50.0	BLOD	92.9	60-145	2.64	30	
Vinyl chloride	34.9	0.5	ug/L	50.0	BLOD	69.8	50-145	7.96	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>51.5</i>		<i>ug/L</i>	<i>50.0</i>		<i>103</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>102</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.5</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.1</i>	<i>70-130</i>			

### Batch BFE1173 - SW5030B-MS

**Blank (BFE1173-BLK1)**

Prepared &amp; Analyzed: 05/31/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L							
1,1,1-Trichloroethane	ND	1.00	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L							
1,1,2-Trichloroethane	ND	1.00	ug/L							
1,1-Dichloroethane	ND	1.00	ug/L							
1,1-Dichloroethylene	ND	1.00	ug/L							
1,1-Dichloropropene	ND	1.00	ug/L							
1,2,3-Trichloropropane	ND	1.00	ug/L							
1,2,4-Trichlorobenzene	ND	1.00	ug/L							
1,2-Dichlorobenzene	ND	1.00	ug/L							
1,2-Dichloroethane	ND	1.00	ug/L							
1,2-Dichloropropane	ND	1.00	ug/L							

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1173 - SW5030B-MS**

**Blank (BFE1173-BLK1)**

Prepared & Analyzed: 05/31/2022

1,3-Dichlorobenzene	ND	1.00	ug/L
1,3-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2,2-Dichloropropane	ND	2.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acetonitrile	ND	10.0	ug/L
Acrolein	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Allyl chloride	ND	1.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L
Chloromethane	ND	1.00	ug/L
Chloroprene	ND	5.00	ug/L
cis-1,2-Dichloroethylene	ND	1.00	ug/L

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1173 - SW5030B-MS

**Blank (BFE1173-BLK1)**

Prepared & Analyzed: 05/31/2022

cis-1,3-Dichloropropene	ND	1.00	ug/L
Dibromochloromethane	ND	0.50	ug/L
Dibromomethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Ethyl methacrylate	ND	5.00	ug/L
Ethylbenzene	ND	1.00	ug/L
Iodomethane	ND	10.0	ug/L
Isobutyl Alcohol	ND	40.0	ug/L
m+p-Xylenes	ND	2.00	ug/L
Methacrylonitrile	ND	1.50	ug/L
Methyl methacrylate	ND	2.00	ug/L
Methylene chloride	ND	4.00	ug/L
Naphthalene	ND	1.00	ug/L
o-Xylene	ND	1.00	ug/L
Propionitrile	ND	40.0	ug/L
Styrene	ND	1.00	ug/L
Tetrachloroethylene (PCE)	ND	1.00	ug/L
Toluene	ND	1.00	ug/L
trans-1,2-Dichloroethylene	ND	1.00	ug/L
trans-1,3-Dichloropropene	ND	1.00	ug/L
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L
Trichloroethylene	ND	1.00	ug/L
Trichlorofluoromethane	ND	1.00	ug/L
Vinyl acetate	ND	10.0	ug/L
Vinyl chloride	ND	0.50	ug/L



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1173 - SW5030B-MS</b>										
<b>Blank (BFE1173-BLK1)</b>										
Prepared & Analyzed: 05/31/2022										
Xylenes, Total	ND	3.00	ug/L							
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	49.8		ug/L	50.0		99.5	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	50.1		ug/L	50.0		100	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	50.1		ug/L	50.0		100	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.5		ug/L	50.0		101	70-130			
<b>LCS (BFE1173-BS1)</b>										
Prepared & Analyzed: 05/31/2022										
1,1,1,2-Tetrachloroethane	55.1	0.4	ug/L	50.0		110	80-130			
1,1,1-Trichloroethane	58.2	1	ug/L	50.0		116	65-130			
1,1,2,2-Tetrachloroethane	51.4	0.4	ug/L	50.0		103	65-130			
1,1,2-Trichloroethane	49.9	1	ug/L	50.0		99.7	75-125			
1,1-Dichloroethane	53.0	1	ug/L	50.0		106	70-135			
1,1-Dichloroethylene	53.3	1	ug/L	50.0		107	70-130			
1,1-Dichloropropene	53.7	1	ug/L	50.0		107	75-135			
1,2,3-Trichloropropane	52.9	1	ug/L	50.0		106	75-125			
1,2,4-Trichlorobenzene	51.3	1	ug/L	50.0		103	65-135			
1,2-Dichlorobenzene	53.4	0.5	ug/L	50.0		107	70-120			
1,2-Dichloroethane	51.4	1	ug/L	50.0		103	70-130			
1,2-Dichloropropane	50.1	0.5	ug/L	50.0		100	75-125			
1,3-Dichlorobenzene	53.8	1	ug/L	50.0		108	75-125			
1,3-Dichloropropane	51.2	1	ug/L	50.0		102	75-125			
1,4-Dichlorobenzene	54.4	1	ug/L	50.0		109	75-125			
2,2-Dichloropropane	52.1	1	ug/L	50.0		104	70-135			
2-Butanone (MEK)	46.9	10	ug/L	50.0		93.8	30-150			
2-Hexanone (MBK)	59.9	5	ug/L	50.0		120	55-130			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1173 - SW5030B-MS

**LCS (BFE1173-BS1)**

Prepared &amp; Analyzed: 05/31/2022

4-Methyl-2-pentanone (MIBK)	53.5	5	ug/L	50.0		107	60-135			
Acetone	53.1	10	ug/L	50.0		106	40-140			
Acrylonitrile	116	5	ug/L	250		46.4	70-130			L
Benzene	52.0	1	ug/L	50.0		104	80-120			
Bromochloromethane	48.8	1	ug/L	50.0		97.6	65-130			
Bromodichloromethane	52.9	0.5	ug/L	50.0		106	75-120			
Bromoform	48.9	1	ug/L	50.0		97.8	70-130			
Bromomethane	40.3	1	ug/L	50.0		80.6	30-145			
Carbon disulfide	66.6	10	ug/L	50.0		133	35-160			
Carbon tetrachloride	59.6	1	ug/L	50.0		119	65-140			
Chlorobenzene	52.5	1	ug/L	50.0		105	80-120			
Chloroethane	50.6	1	ug/L	50.0		101	60-135			
Chloroform	48.5	0.5	ug/L	50.0		97.0	65-135			
Chloromethane	44.0	1	ug/L	50.0		88.1	40-125			
cis-1,2-Dichloroethylene	50.5	1	ug/L	50.0		101	70-125			
cis-1,3-Dichloropropene	53.4	1	ug/L	50.0		107	70-130			
Dibromochloromethane	52.4	0.5	ug/L	50.0		105	60-135			
Dibromomethane	47.3	1	ug/L	50.0		94.6	75-125			
Dichlorodifluoromethane	47.1	1	ug/L	50.0		94.1	30-155			
Ethylbenzene	56.4	1	ug/L	50.0		113	75-125			
m+p-Xylenes	108	2	ug/L	100		108	75-130			
Methylene chloride	47.8	4	ug/L	50.0		95.6	55-140			
Naphthalene	49.5	1	ug/L	50.0		99.1	55-140			
o-Xylene	53.7	1	ug/L	50.0		107	80-120			
Styrene	55.9	1	ug/L	50.0		112	65-135			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1173 - SW5030B-MS

#### LCS (BFE1173-BS1)

Prepared & Analyzed: 05/31/2022

Tetrachloroethylene (PCE)	55.7	1	ug/L	50.0		111	45-150			
Toluene	52.2	1	ug/L	50.0		104	75-120			
trans-1,2-Dichloroethylene	51.4	1	ug/L	50.0		103	60-140			
trans-1,3-Dichloropropene	54.4	1	ug/L	50.0		109	55-140			
Trichloroethylene	53.1	1	ug/L	50.0		106	70-125			
Trichlorofluoromethane	62.7	1	ug/L	50.0		125	60-145			
Vinyl chloride	53.0	0.5	ug/L	50.0		106	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>48.7</i>		ug/L	<i>50.0</i>		<i>97.4</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>51.6</i>		ug/L	<i>50.0</i>		<i>103</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>50.9</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.8</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-130</i>			

#### Matrix Spike (BFE1173-MS1)

Source: 22E1478-03

Prepared & Analyzed: 05/31/2022

1,1,1,2-Tetrachloroethane	53.6	0.4	ug/L	50.0	BLOD	107	80-130			
1,1,1-Trichloroethane	57.2	1	ug/L	50.0	BLOD	114	65-130			
1,1,2,2-Tetrachloroethane	50.0	0.4	ug/L	50.0	BLOD	99.9	65-130			
1,1,2-Trichloroethane	49.5	1	ug/L	50.0	BLOD	99.0	75-125			
1,1-Dichloroethane	51.8	1	ug/L	50.0	BLOD	104	70-135			
1,1-Dichloroethylene	51.4	1	ug/L	50.0	BLOD	103	70-130			
1,1-Dichloropropene	53.6	1	ug/L	50.0	BLOD	107	75-135			
1,2,3-Trichloropropane	51.1	1	ug/L	50.0	BLOD	102	75-125			
1,2,4-Trichlorobenzene	51.3	1	ug/L	50.0	BLOD	103	65-135			
1,2-Dichlorobenzene	52.9	0.5	ug/L	50.0	BLOD	106	70-120			
1,2-Dichloroethane	51.3	1	ug/L	50.0	BLOD	103	70-130			
1,2-Dichloropropane	48.6	0.5	ug/L	50.0	BLOD	97.1	75-125			

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Enthalpy Analytical

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**Batch BFE1173 - SW5030B-MS**

**Matrix Spike (BFE1173-MS1)**

**Source: 22E1478-03**

**Prepared & Analyzed: 05/31/2022**

1,3-Dichlorobenzene	53.1	1	ug/L	50.0	BLOD	106	75-125			
1,3-Dichloropropane	51.1	1	ug/L	50.0	BLOD	102	75-125			
1,4-Dichlorobenzene	53.0	1	ug/L	50.0	BLOD	106	75-125			
2,2-Dichloropropane	50.2	1	ug/L	50.0	BLOD	100	70-135			
2-Butanone (MEK)	46.2	10	ug/L	50.0	BLOD	92.3	30-150			
2-Hexanone (MBK)	56.2	5	ug/L	50.0	BLOD	112	55-130			
4-Methyl-2-pentanone (MIBK)	54.7	5	ug/L	50.0	BLOD	109	60-135			
Acetone	47.4	10	ug/L	50.0	8.35	78.2	40-140			
Acrylonitrile	281	5	ug/L	250	BLOD	112	70-130			
Benzene	51.0	1	ug/L	50.0	BLOD	102	80-120			
Bromochloromethane	48.1	1	ug/L	50.0	BLOD	96.3	65-130			
Bromodichloromethane	50.7	0.5	ug/L	50.0	BLOD	101	75-120			
Bromoform	48.3	1	ug/L	50.0	BLOD	96.6	70-130			
Bromomethane	41.3	1	ug/L	50.0	BLOD	82.7	30-145			
Carbon disulfide	64.3	10	ug/L	50.0	BLOD	129	35-160			
Carbon tetrachloride	57.0	1	ug/L	50.0	BLOD	114	65-140			
Chlorobenzene	50.9	1	ug/L	50.0	BLOD	102	80-120			
Chloroethane	51.1	1	ug/L	50.0	BLOD	102	60-135			
Chloroform	47.5	0.5	ug/L	50.0	BLOD	95.0	65-135			
Chloromethane	45.5	1	ug/L	50.0	BLOD	89.4	40-125			
cis-1,2-Dichloroethylene	49.2	1	ug/L	50.0	BLOD	98.5	70-125			
cis-1,3-Dichloropropene	51.5	1	ug/L	50.0	BLOD	103	70-130			
Dibromochloromethane	51.0	0.5	ug/L	50.0	BLOD	102	60-135			
Dibromomethane	46.5	1	ug/L	50.0	BLOD	93.0	75-125			
Dichlorodifluoromethane	44.1	1	ug/L	50.0	BLOD	88.2	30-155			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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### Batch BFE1173 - SW5030B-MS

**Matrix Spike (BFE1173-MS1)**

Source: 22E1478-03

Prepared &amp; Analyzed: 05/31/2022

Ethylbenzene	54.6	1	ug/L	50.0	BLOD	109	75-125			
m+p-Xylenes	105	2	ug/L	100	BLOD	105	75-130			
Methylene chloride	46.8	4	ug/L	50.0	BLOD	93.7	55-140			
Naphthalene	52.7	1	ug/L	50.0	BLOD	105	55-140			
o-Xylene	53.1	1	ug/L	50.0	BLOD	106	80-120			
Styrene	53.5	1	ug/L	50.0	BLOD	107	65-135			
Tetrachloroethylene (PCE)	52.3	1	ug/L	50.0	BLOD	105	45-150			
Toluene	51.5	1	ug/L	50.0	BLOD	103	75-120			
trans-1,2-Dichloroethylene	50.6	1	ug/L	50.0	BLOD	101	60-140			
trans-1,3-Dichloropropene	51.3	1	ug/L	50.0	BLOD	103	55-140			
Trichloroethylene	51.3	1	ug/L	50.0	BLOD	103	70-125			
Trichlorofluoromethane	59.5	1	ug/L	50.0	BLOD	119	60-145			
Vinyl chloride	50.6	0.5	ug/L	50.0	BLOD	101	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	48.6		ug/L	50.0		97.1	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	51.1		ug/L	50.0		102	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	51.4		ug/L	50.0		103	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.4		ug/L	50.0		101	70-130			

**Matrix Spike Dup (BFE1173-MSD1)**

Source: 22E1478-03

Prepared &amp; Analyzed: 05/31/2022

1,1,1,2-Tetrachloroethane	53.6	0.4	ug/L	50.0	BLOD	107	80-130	0.0186	30	
1,1,1-Trichloroethane	55.8	1	ug/L	50.0	BLOD	112	65-130	2.48	30	
1,1,2,2-Tetrachloroethane	51.0	0.4	ug/L	50.0	BLOD	102	65-130	2.14	30	
1,1,2-Trichloroethane	48.7	1	ug/L	50.0	BLOD	97.4	75-125	1.63	30	
1,1-Dichloroethane	51.8	1	ug/L	50.0	BLOD	104	70-135	0.154	30	
1,1-Dichloroethylene	49.9	1	ug/L	50.0	BLOD	99.8	70-130	2.88	30	

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1173 - SW5030B-MS

Matrix Spike Dup (BFE1173-MSD1)

Source: 22E1478-03

Prepared &amp; Analyzed: 05/31/2022

1,1-Dichloropropene	52.3	1	ug/L	50.0	BLOD	105	75-135	2.51	30	
1,2,3-Trichloropropane	51.8	1	ug/L	50.0	BLOD	104	75-125	1.19	30	
1,2,4-Trichlorobenzene	49.8	1	ug/L	50.0	BLOD	99.7	65-135	2.89	30	
1,2-Dichlorobenzene	53.2	0.5	ug/L	50.0	BLOD	106	70-120	0.509	30	
1,2-Dichloroethane	51.2	1	ug/L	50.0	BLOD	102	70-130	0.117	30	
1,2-Dichloropropane	49.4	0.5	ug/L	50.0	BLOD	98.7	75-125	1.63	30	
1,3-Dichlorobenzene	53.5	1	ug/L	50.0	BLOD	107	75-125	0.882	30	
1,3-Dichloropropane	50.5	1	ug/L	50.0	BLOD	101	75-125	1.14	30	
1,4-Dichlorobenzene	54.5	1	ug/L	50.0	BLOD	109	75-125	2.68	30	
2,2-Dichloropropane	49.9	1	ug/L	50.0	BLOD	99.9	70-135	0.440	30	
2-Butanone (MEK)	46.4	10	ug/L	50.0	BLOD	92.9	30-150	0.626	30	
2-Hexanone (MBK)	54.4	5	ug/L	50.0	BLOD	109	55-130	3.18	30	
4-Methyl-2-pentanone (MIBK)	55.0	5	ug/L	50.0	BLOD	110	60-135	0.419	30	
Acetone	46.1	10	ug/L	50.0	8.35	75.5	40-140	2.89	30	
Acrylonitrile	281	5	ug/L	250	BLOD	112	70-130	0.0213	30	
Benzene	51.2	1	ug/L	50.0	BLOD	102	80-120	0.587	30	
Bromochloromethane	47.9	1	ug/L	50.0	BLOD	95.9	65-130	0.416	30	
Bromodichloromethane	52.2	0.5	ug/L	50.0	BLOD	104	75-120	2.84	30	
Bromoform	48.1	1	ug/L	50.0	BLOD	96.2	70-130	0.436	30	
Bromomethane	42.4	1	ug/L	50.0	BLOD	84.8	30-145	2.53	30	
Carbon disulfide	62.5	10	ug/L	50.0	BLOD	125	35-160	2.74	30	
Carbon tetrachloride	55.8	1	ug/L	50.0	BLOD	112	65-140	1.97	30	
Chlorobenzene	50.9	1	ug/L	50.0	BLOD	102	80-120	0.118	30	
Chloroethane	49.8	1	ug/L	50.0	BLOD	99.6	60-135	2.60	30	
Chloroform	47.8	0.5	ug/L	50.0	BLOD	95.5	65-135	0.546	30	

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1173 - SW5030B-MS

Matrix Spike Dup (BFE1173-MSD1)	Source: 22E1478-03			Prepared & Analyzed: 05/31/2022						
Chloromethane	46.8	1	ug/L	50.0	BLOD	92.0	40-125	2.88	30	
cis-1,2-Dichloroethylene	49.6	1	ug/L	50.0	BLOD	99.1	70-125	0.648	30	
cis-1,3-Dichloropropene	52.4	1	ug/L	50.0	BLOD	105	70-130	1.67	30	
Dibromochloromethane	51.0	0.5	ug/L	50.0	BLOD	102	60-135	0.0196	30	
Dibromomethane	47.6	1	ug/L	50.0	BLOD	95.3	75-125	2.42	30	
Dichlorodifluoromethane	44.0	1	ug/L	50.0	BLOD	88.1	30-155	0.0681	30	
Ethylbenzene	54.2	1	ug/L	50.0	BLOD	108	75-125	0.827	30	
m+p-Xylenes	105	2	ug/L	100	BLOD	105	75-130	0.438	30	
Methylene chloride	46.1	4	ug/L	50.0	BLOD	92.2	55-140	1.55	30	
Naphthalene	52.7	1	ug/L	50.0	BLOD	105	55-140	0.0380	30	
o-Xylene	52.6	1	ug/L	50.0	BLOD	105	80-120	0.870	30	
Styrene	53.6	1	ug/L	50.0	BLOD	107	65-135	0.261	30	
Tetrachloroethylene (PCE)	51.9	1	ug/L	50.0	BLOD	104	45-150	0.787	30	
Toluene	51.2	1	ug/L	50.0	BLOD	102	75-120	0.565	30	
trans-1,2-Dichloroethylene	50.1	1	ug/L	50.0	BLOD	100	60-140	0.913	30	
trans-1,3-Dichloropropene	53.5	1	ug/L	50.0	BLOD	107	55-140	4.24	30	
Trichloroethylene	50.0	1	ug/L	50.0	BLOD	99.9	70-125	2.55	30	
Trichlorofluoromethane	56.6	1	ug/L	50.0	BLOD	113	60-145	5.07	30	
Vinyl chloride	49.4	0.5	ug/L	50.0	BLOD	98.9	50-145	2.36	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>47.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>95.4</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>50.5</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.3</i>	<i>70-130</i>			

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Enthalpy Analytical

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**Batch BFE1145 - SW3580A-MS**

**Blank (BFE1145-BLK1)**

Prepared & Analyzed: 05/31/2022

1,2,4,5-Tetrachlorobenzene	ND	10.0	ug/L
1,3,5-Trinitrobenzene	ND	5.00	ug/L
1,3-Dinitrobenzene	ND	2.50	ug/L
1,4-Naphthoquinone	ND	10.0	ug/L
1-Naphthylamine	ND	10.0	ug/L
2,3,4,6-Tetrachlorophenol	ND	10.0	ug/L
2,4,5-Trichlorophenol	ND	10.0	ug/L
2,4,6-Trichlorophenol	ND	10.0	ug/L
2,4-Dichlorophenol	ND	10.0	ug/L
2,4-Dimethylphenol	ND	5.00	ug/L
2,4-Dinitrophenol	ND	50.0	ug/L
2,4-Dinitrotoluene	ND	10.0	ug/L
2,6-Dichlorophenol	ND	10.0	ug/L
2,6-Dinitrotoluene	ND	10.0	ug/L
2-Acetylaminofluorene	ND	2.50	ug/L
2-Chloronaphthalene	ND	10.0	ug/L
2-Chlorophenol	ND	10.0	ug/L
2-Methylnaphthalene	ND	10.0	ug/L
2-Naphthylamine	ND	10.0	ug/L
2-Nitroaniline	ND	20.0	ug/L
2-Nitrophenol	ND	10.0	ug/L
3,3'-Dichlorobenzidine	ND	10.0	ug/L
3,3'-Dimethylbenzidine	ND	2.50	ug/L
3-Methylcholanthrene	ND	10.0	ug/L
3-Nitroaniline	ND	20.0	ug/L



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Enthalpy Analytical

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**Batch BFE1145 - SW3580A-MS**

**Blank (BFE1145-BLK1)**

Prepared & Analyzed: 05/31/2022

4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Aminobiphenyl	ND	10.0	ug/L
4-Bromophenyl phenyl ether	ND	10.0	ug/L
4-Chloroaniline	ND	10.0	ug/L
4-Chlorophenyl phenyl ether	ND	10.0	ug/L
4-Nitroaniline	ND	20.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
5-Nitro-o-toluidine	ND	10.0	ug/L
7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/L
Acenaphthene	ND	10.0	ug/L
Acenaphthylene	ND	10.0	ug/L
Acetophenone	ND	20.0	ug/L
Anthracene	ND	10.0	ug/L
Benzo (a) anthracene	ND	10.0	ug/L
Benzo (a) pyrene	ND	10.0	ug/L
Benzo (b) fluoranthene	ND	10.0	ug/L
Benzo (g,h,i) perylene	ND	10.0	ug/L
Benzo (k) fluoranthene	ND	10.0	ug/L
Benzyl alcohol	ND	20.0	ug/L
bis (2-Chloroethoxy) methane	ND	10.0	ug/L
bis (2-Chloroethyl) ether	ND	10.0	ug/L
2,2'-Oxybis (1-chloropropane)	ND	10.0	ug/L
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L
Butyl benzyl phthalate	ND	10.0	ug/L
Chlorobenzilate	ND	2.50	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFE1145 - SW3580A-MS**

**Blank (BFE1145-BLK1)**

Prepared & Analyzed: 05/31/2022

Chrysene	ND	10.0	ug/L
Diallate	ND	2.50	ug/L
Dibenz (a,h) anthracene	ND	10.0	ug/L
Dibenzofuran	ND	5.00	ug/L
Diethyl phthalate	ND	10.0	ug/L
Dimethoate	ND	2.50	ug/L
Dimethyl phthalate	ND	10.0	ug/L
Di-n-butyl phthalate	ND	10.0	ug/L
Di-n-octyl phthalate	ND	10.0	ug/L
Diphenylamine	ND	10.0	ug/L
Disulfoton	ND	2.50	ug/L
Ethyl methanesulfonate	ND	20.0	ug/L
Ethyl parathion	ND	2.50	ug/L
Famphur	ND	2.50	ug/L
Fluoranthene	ND	10.0	ug/L
Fluorene	ND	10.0	ug/L
Hexachlorobenzene	ND	1.00	ug/L
Hexachlorobutadiene	ND	10.0	ug/L
Hexachlorocyclopentadiene	ND	10.0	ug/L
Hexachloroethane	ND	10.0	ug/L
Hexachloropropene	ND	2.50	ug/L
Indeno (1,2,3-cd) pyrene	ND	10.0	ug/L
Isodrin	ND	10.0	ug/L
Isophorone	ND	10.0	ug/L
Isosafrole	ND	10.0	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFE1145 - SW3580A-MS**

**Blank (BFE1145-BLK1)**

Prepared & Analyzed: 05/31/2022

Kepone	ND	10.0	ug/L							
m+p-Cresols	ND	10.0	ug/L							
Methapyrilene	ND	10.0	ug/L							
Methyl methanesulfonate	ND	10.0	ug/L							
Methyl parathion	ND	2.50	ug/L							
Naphthalene	0.38	0.10	ug/L							B
Nitrobenzene	ND	10.0	ug/L							
n-Nitrosodiethylamine	ND	2.50	ug/L							
n-Nitrosodimethylamine	ND	10.0	ug/L							
n-Nitrosodi-n-butylamine	ND	10.0	ug/L							
n-Nitrosodi-n-propylamine	ND	10.0	ug/L							
n-Nitrosodiphenylamine	ND	10.0	ug/L							
n-Nitrosomethylethylamine	ND	2.50	ug/L							
n-Nitrosopiperidine	ND	10.0	ug/L							
n-Nitrosopyrrolidine	ND	2.50	ug/L							
o,o,o-Triethyl phosphorothioate	ND	10.0	ug/L							
o,o-Diethyl o-2-pyrazinyl phosphorothioate	ND	10.0	ug/L							
o+m+p-Cresols	ND	10.0	ug/L							
o-Cresol	ND	10.0	ug/L							
o-Toluidine	ND	2.50	ug/L							
p-(Dimethylamino) azobenzene	ND	2.50	ug/L							
p-Chloro-m-cresol	ND	10.0	ug/L							
Pentachlorobenzene	ND	10.0	ug/L							
Pentachloronitrobenzene (quintozene)	ND	10.0	ug/L							
Phenacetin	ND	10.0	ug/L							

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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### Batch BFE1145 - SW3580A-MS

**Blank (BFE1145-BLK1)**

Prepared &amp; Analyzed: 05/31/2022

Phenanthrene	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Phorate	ND	2.50	ug/L							
p-Phenylenediamine	ND	10.0	ug/L							
Pronamide	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Safrole	ND	2.50	ug/L							

<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	58.1		ug/L	100		58.1	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	37.6		ug/L	50.0		75.3	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	44.8		ug/L	100		44.8	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	41.5		ug/L	50.0		83.0	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	30.6		ug/L	100		30.6	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	41.1		ug/L	50.0		82.3	27-133			

**LCS (BFE1145-BS1)**

Prepared &amp; Analyzed: 05/31/2022

1,2,4-Trichlorobenzene	33.3	10.0	ug/L	50.0		66.6	22-135			
1,2-Dichlorobenzene	21.2	10.0	ug/L	50.0		42.4	22-115			
1,3-Dichlorobenzene	18.3	10.0	ug/L	50.0		36.6	22-112			
1,4-Dichlorobenzene	19.1	10.0	ug/L	50.0		38.1	13-112			
2,4,6-Trichlorophenol	33.0	10.0	ug/L	50.0		66.0	11-145			
2,4-Dichlorophenol	41.5	10.0	ug/L	50.0		83.0	11-75			L
2,4-Dimethylphenol	35.7	5.00	ug/L	50.0		71.4	11-121			
2,4-Dinitrophenol	68.9	50.0	ug/L	50.0		138	11-165			
2,4-Dinitrotoluene	45.8	10.0	ug/L	50.0		91.5	17-155			
2,6-Dinitrotoluene	35.4	10.0	ug/L	50.0		70.7	15-125			

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**Batch BFE1145 - SW3580A-MS**

**LCS (BFE1145-BS1)**

Prepared & Analyzed: 05/31/2022

2-Chloronaphthalene	29.8	10.0	ug/L	50.0		59.6	27-89			
2-Chlorophenol	26.2	10.0	ug/L	50.0		52.4	15-110			
2-Nitrophenol	35.9	10.0	ug/L	50.0		71.8	11-115			
3,3'-Dichlorobenzidine	24.1	10.0	ug/L	50.0		48.3	25-95			
4,6-Dinitro-2-methylphenol	59.9	50.0	ug/L	50.0		120	25-130			
4-Bromophenyl phenyl ether	31.9	10.0	ug/L	50.0		63.8	15-110			
4-Chlorophenyl phenyl ether	34.8	10.0	ug/L	50.0		69.6	15-110			
4-Nitrophenol	20.6	50.0	ug/L	50.0		41.3	12-70			
Acenaphthene	29.7	10.0	ug/L	50.0		59.5	18-85			
Acenaphthylene	28.3	10.0	ug/L	50.0		56.6	20-75			
Acetophenone	29.4	20.0	ug/L	50.0		58.8	0-200			
alpha-Terpineol	25.1	2.50	ug/L	50.0		50.3	0-200			
Anthracene	30.4	10.0	ug/L	50.0		60.8	35-95			
Benzo (a) anthracene	36.6	10.0	ug/L	50.0		73.2	25-95			
Benzo (a) pyrene	37.8	10.0	ug/L	50.0		75.7	37-110			
Benzo (b) fluoranthene	42.1	10.0	ug/L	50.0		84.3	25-75			L
Benzo (g,h,i) perylene	35.7	10.0	ug/L	50.0		71.4	25-90			
Benzo (k) fluoranthene	37.9	10.0	ug/L	50.0		75.8	25-95			
bis (2-Chloroethoxy) methane	35.2	10.0	ug/L	50.0		70.4	25-110			
bis (2-Chloroethyl) ether	26.8	10.0	ug/L	50.0		53.6	25-85			
2,2'-Oxybis (1-chloropropane)	27.1	10.0	ug/L	50.0		54.1	25-95			
bis (2-Ethylhexyl) phthalate	38.8	5.00	ug/L	50.0		77.7	30-125			
Butyl benzyl phthalate	37.9	10.0	ug/L	50.0		75.7	30-115			
Carbazole	36.4	2.50	ug/L	50.0		72.8	0-200			
Chrysene	38.3	10.0	ug/L	50.0		76.6	20-90			

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**Batch BFE1145 - SW3580A-MS**

**LCS (BFE1145-BS1)**

Prepared & Analyzed: 05/31/2022

Dibenz (a,h) anthracene	41.9	10.0	ug/L	50.0		83.8	27-125			
Diethyl phthalate	33.2	10.0	ug/L	50.0		66.3	25-120			
Dimethyl phthalate	33.4	10.0	ug/L	50.0		66.8	25-125			
Di-n-butyl phthalate	33.1	10.0	ug/L	50.0		66.1	35-115			
Di-n-octyl phthalate	37.9	10.0	ug/L	50.0		75.7	25-105			
Fluoranthene	42.0	10.0	ug/L	50.0		84.0	33-95			
Fluorene	31.7	10.0	ug/L	50.0		63.4	15-97			
Hexachlorobenzene	32.9	1.00	ug/L	50.0		65.8	25-125			
Hexachlorobutadiene	39.8	10.0	ug/L	50.0		79.5	25-125			
Hexachlorocyclopentadiene	29.0	10.0	ug/L	50.0		57.9	25-125			
Hexachloroethane	25.6	10.0	ug/L	50.0		51.1	25-125			
Indeno (1,2,3-cd) pyrene	40.6	10.0	ug/L	50.0		81.1	25-125			
Isophorone	25.5	10.0	ug/L	50.0		51.0	10-110			
Naphthalene	27.6	0.10	ug/L	50.0		55.1	12-100			
Nitrobenzene	38.4	10.0	ug/L	50.0		76.9	30-97			
n-Nitrosodimethylamine	18.2	10.0	ug/L	50.0		36.4	10-85			
n-Nitrosodi-n-propylamine	30.3	10.0	ug/L	50.0		60.5	12-97			
n-Nitrosodiphenylamine	27.4	10.0	ug/L	50.0		54.8	12-97			
p-Chloro-m-cresol	47.9	10.0	ug/L	50.0		95.7	10-91			L
Pentachlorophenol	33.3	20.0	ug/L	50.0		66.5	30-109			
Phenanthrene	33.6	10.0	ug/L	50.0		67.1	30-88			
Phenol	14.0	10.0	ug/L	50.5		27.8	10-70			
Pyrene	36.9	10.0	ug/L	50.0		73.8	27-110			
Pyridine	28.6	10.0	ug/L	50.0		57.3	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>58.5</i>		ug/L	<i>100</i>		<i>58.5</i>	<i>10-86</i>			

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Date Issued: 7/12/2022 2:30:28PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1145 - SW3580A-MS

**LCS (BFE1145-BS1)**

Prepared &amp; Analyzed: 05/31/2022

<i>Surr: 2-Fluorobiphenyl (Surr)</i>	32.2		ug/L	50.0		64.4	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	33.6		ug/L	100		33.6	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	33.5		ug/L	50.0		67.0	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	25.7		ug/L	100		25.7	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	41.8		ug/L	50.0		83.7	27-133			

**Matrix Spike (BFE1145-MS1)**

Source: 22E1478-02

Prepared: 05/31/2022 Analyzed: 06/01/2022

1,2,4-Trichlorobenzene	33.4	10.0	ug/L	52.6	BLOD	63.4	22-65			
1,2-Dichlorobenzene	24.3	10.0	ug/L	52.6	BLOD	46.2	22-60			
1,3-Dichlorobenzene	22.6	10.0	ug/L	52.6	BLOD	43.0	22-60			
1,4-Dichlorobenzene	23.7	10.0	ug/L	52.6	BLOD	45.1	13-60			
2,4,6-Trichlorophenol	32.2	10.0	ug/L	52.6	BLOD	61.2	11-75			
2,4-Dichlorophenol	37.7	10.0	ug/L	52.6	BLOD	71.6	11-75			
2,4-Dimethylphenol	30.2	2.63	ug/L	52.6	BLOD	57.5	11-65			
2,4-Dinitrophenol	61.2	50.0	ug/L	52.6	BLOD	116	11-110			M
2,4-Dinitrotoluene	41.0	10.0	ug/L	52.6	BLOD	78.0	17-95			
2,6-Dinitrotoluene	31.9	10.0	ug/L	52.6	BLOD	60.6	15-125			
2-Chloronaphthalene	28.8	10.0	ug/L	52.6	BLOD	54.7	27-89			
2-Chlorophenol	27.0	10.0	ug/L	52.6	BLOD	51.2	19-64			
2-Nitrophenol	32.3	10.0	ug/L	52.6	BLOD	61.4	11-75			
3,3'-Dichlorobenzidine	14.3	10.0	ug/L	52.6	BLOD	27.2	10-85			
4,6-Dinitro-2-methylphenol	59.3	50.0	ug/L	52.6	BLOD	113	40-130			
4-Bromophenyl phenyl ether	33.4	10.0	ug/L	52.6	BLOD	63.5	15-110			
4-Chlorophenyl phenyl ether	33.8	10.0	ug/L	52.6	BLOD	64.2	15-110			
4-Nitrophenol	27.7	50.0	ug/L	52.6	BLOD	52.7	12-70			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1145 - SW3580A-MS**

**Matrix Spike (BFE1145-MS1)**

**Source: 22E1478-02**

Prepared: 05/31/2022 Analyzed: 06/01/2022

Acenaphthene	30.2	10.0	ug/L	52.6	BLOD	57.4	15-90			
Acenaphthylene	26.9	10.0	ug/L	52.6	BLOD	51.2	15-99			
Acetophenone	29.6	20.0	ug/L	52.6	BLOD	56.2	0-200			
alpha-Terpineol	21.4	2.50	ug/L	52.6	BLOD	40.7	0-200			
Anthracene	32.0	10.0	ug/L	52.6	BLOD	60.7	20-95			
Benzo (a) anthracene	34.1	5.26	ug/L	52.6	BLOD	64.7	25-95			
Benzo (a) pyrene	35.8	5.26	ug/L	52.6	BLOD	68.0	25-82			
Benzo (b) fluoranthene	42.0	10.0	ug/L	52.6	BLOD	79.8	25-75			M
Benzo (g,h,i) perylene	24.0	10.0	ug/L	52.6	BLOD	45.5	25-90			
Benzo (k) fluoranthene	39.2	10.0	ug/L	52.6	BLOD	74.4	25-95			
bis (2-Chloroethoxy) methane	31.1	10.0	ug/L	52.6	BLOD	59.1	25-85			
bis (2-Chloroethyl) ether	26.4	10.0	ug/L	52.6	BLOD	50.2	25-85			
2,2'-Oxybis (1-chloropropane)	28.2	10.0	ug/L	52.6	BLOD	53.6	25-87			
bis (2-Ethylhexyl) phthalate	32.7	5.00	ug/L	52.6	BLOD	62.2	30-125			
Butyl benzyl phthalate	33.4	10.0	ug/L	52.6	BLOD	63.5	30-115			
Carbazole	35.9	2.50	ug/L	52.6	BLOD	68.3	0-200			
Chrysene	30.3	10.0	ug/L	52.6	BLOD	57.7	20-90			
Dibenz (a,h) anthracene	32.2	10.0	ug/L	52.6	BLOD	61.2	27-125			
Diethyl phthalate	30.6	10.0	ug/L	52.6	BLOD	58.0	25-120			
Dimethyl phthalate	31.8	10.0	ug/L	52.6	BLOD	60.4	25-125			
Di-n-butyl phthalate	33.2	10.0	ug/L	52.6	BLOD	63.2	25-115			
Di-n-octyl phthalate	33.8	10.0	ug/L	52.6	BLOD	64.2	22-105			
Fluoranthene	37.6	10.0	ug/L	52.6	BLOD	71.5	25-96			
Fluorene	31.6	10.0	ug/L	52.6	BLOD	60.0	15-97			
Hexachlorobenzene	33.9	0.53	ug/L	52.6	BLOD	64.5	25-125			



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1145 - SW3580A-MS

**Matrix Spike (BFE1145-MS1)**

Source: 22E1478-02

Prepared: 05/31/2022 Analyzed: 06/01/2022

Hexachlorobutadiene	43.6	10.0	ug/L	52.6	BLOD	82.8	25-125			
Hexachlorocyclopentadiene	31.4	10.0	ug/L	52.6	BLOD	59.6	10-90			
Hexachloroethane	30.6	10.0	ug/L	52.6	BLOD	58.2	25-125			
Indeno (1,2,3-cd) pyrene	29.9	10.0	ug/L	52.6	BLOD	56.8	25-125			
Isophorone	23.4	10.0	ug/L	52.6	BLOD	44.4	10-110			
Naphthalene	30.0	0.10	ug/L	52.6	0.32	56.4	12-100			
Nitrobenzene	39.1	10.0	ug/L	52.6	BLOD	74.3	27-77			
n-Nitrosodimethylamine	18.2	10.0	ug/L	52.6	BLOD	34.7	10-85			
n-Nitrosodi-n-propylamine	29.0	10.0	ug/L	52.6	BLOD	55.1	12-97			
n-Nitrosodiphenylamine	25.8	10.0	ug/L	52.6	BLOD	48.9	12-97			
p-Chloro-m-cresol	41.1	10.0	ug/L	52.6	BLOD	78.1	10-91			
Pentachlorophenol	39.3	20.0	ug/L	52.6	BLOD	74.6	27-109			
Phenanthrene	36.8	10.0	ug/L	52.6	BLOD	70.0	35-115			
Phenol	13.3	10.0	ug/L	53.2	BLOD	25.0	10-70			
Pyrene	30.8	10.0	ug/L	52.6	BLOD	58.5	23-110			
Pyridine	29.8	10.0	ug/L	52.6	BLOD	56.6	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	75.7		ug/L	105		72.0	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	30.7		ug/L	52.6		58.3	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	33.0		ug/L	105		31.3	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	34.8		ug/L	52.6		66.1	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	25.0		ug/L	105		23.8	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	34.7		ug/L	52.6		65.9	27-133			

**Matrix Spike Dup (BFE1145-MSD1)**

Source: 22E1478-02

Prepared: 05/31/2022 Analyzed: 06/01/2022

1,2,4-Trichlorobenzene	31.9	10.0	ug/L	51.5	BLOD	61.8	22-65	4.51	20	
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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFE1145 - SW3580A-MS**

Matrix Spike Dup (BFE1145-MSD1)	Source: 22E1478-02		Prepared: 05/31/2022 Analyzed: 06/01/2022							
1,2-Dichlorobenzene	21.7	10.0	ug/L	51.5	BLOD	42.2	22-60	11.1	20	
1,3-Dichlorobenzene	20.8	10.0	ug/L	51.5	BLOD	40.4	22-60	8.46	20	
1,4-Dichlorobenzene	21.8	10.0	ug/L	51.5	BLOD	42.3	13-60	8.58	20	
2,4,6-Trichlorophenol	31.3	10.0	ug/L	51.5	BLOD	60.7	11-75	2.94	20	
2,4-Dichlorophenol	36.0	10.0	ug/L	51.5	BLOD	69.9	11-75	4.58	20	
2,4-Dimethylphenol	27.7	2.58	ug/L	51.5	BLOD	53.6	11-65	8.94	20	
2,4-Dinitrophenol	57.0	50.0	ug/L	51.5	BLOD	111	11-110	7.09	20	M
2,4-Dinitrotoluene	37.8	10.0	ug/L	51.5	BLOD	73.3	17-95	8.32	20	
2,6-Dinitrotoluene	30.9	10.0	ug/L	51.5	BLOD	60.0	15-125	3.11	20	
2-Chloronaphthalene	27.4	10.0	ug/L	51.5	BLOD	53.1	27-89	5.11	20	
2-Chlorophenol	24.8	10.0	ug/L	51.5	BLOD	48.1	19-64	8.48	20	
2-Nitrophenol	30.8	10.0	ug/L	51.5	BLOD	59.7	11-75	4.87	20	
3,3'-Dichlorobenzidine	12.5	10.0	ug/L	51.5	BLOD	24.2	10-85	13.6	20	
4,6-Dinitro-2-methylphenol	54.3	50.0	ug/L	51.5	BLOD	105	40-130	8.74	20	
4-Bromophenyl phenyl ether	32.0	10.0	ug/L	51.5	BLOD	62.0	15-110	4.47	20	
4-Chlorophenyl phenyl ether	32.9	10.0	ug/L	51.5	BLOD	63.8	15-110	2.65	20	
4-Nitrophenol	24.0	50.0	ug/L	51.5	BLOD	46.6	12-70	14.3	20	
Acenaphthene	28.4	10.0	ug/L	51.5	BLOD	55.0	15-90	6.35	20	
Acenaphthylene	25.9	10.0	ug/L	51.5	BLOD	50.2	15-99	4.04	20	
Acetophenone	27.6	20.0	ug/L	51.5	BLOD	53.6	0-200	6.74	20	
alpha-Terpineol	20.6	2.50	ug/L	51.5	BLOD	40.0	0-200	3.72	20	
Anthracene	30.7	10.0	ug/L	51.5	BLOD	59.5	20-95	4.21	20	
Benzo (a) anthracene	30.5	5.15	ug/L	51.5	BLOD	59.2	25-95	10.9	20	
Benzo (a) pyrene	32.6	5.15	ug/L	51.5	BLOD	63.3	25-82	9.23	20	
Benzo (b) fluoranthene	37.0	10.0	ug/L	51.5	BLOD	71.7	25-75	12.8	20	

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Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1145 - SW3580A-MS**

Matrix Spike Dup (BFE1145-MSD1)	Source: 22E1478-02		Prepared: 05/31/2022 Analyzed: 06/01/2022							
Benzo (g,h,i) perylene	19.6	10.0	ug/L	51.5	BLOD	38.1	25-90	19.8	20	
Benzo (k) fluoranthene	36.3	10.0	ug/L	51.5	BLOD	70.5	25-95	7.49	20	
bis (2-Chloroethoxy) methane	29.9	10.0	ug/L	51.5	BLOD	57.9	25-85	4.05	20	
bis (2-Chloroethyl) ether	23.6	10.0	ug/L	51.5	BLOD	45.8	25-85	11.1	20	
2,2'-Oxybis (1-chloropropane)	24.8	10.0	ug/L	51.5	BLOD	48.0	25-87	13.1	20	
bis (2-Ethylhexyl) phthalate	28.8	5.00	ug/L	51.5	BLOD	55.9	30-125	12.7	20	
Butyl benzyl phthalate	28.5	10.0	ug/L	51.5	BLOD	55.3	30-115	15.9	20	
Carbazole	33.0	2.50	ug/L	51.5	BLOD	64.0	0-200	8.54	20	
Chrysene	27.0	10.0	ug/L	51.5	BLOD	52.3	20-90	11.8	20	
Dibenz (a,h) anthracene	27.6	10.0	ug/L	51.5	BLOD	53.6	27-125	15.4	20	
Diethyl phthalate	29.9	10.0	ug/L	51.5	BLOD	58.0	25-120	2.12	20	
Dimethyl phthalate	30.1	10.0	ug/L	51.5	BLOD	58.4	25-125	5.47	20	
Di-n-butyl phthalate	31.1	10.0	ug/L	51.5	BLOD	60.4	25-115	6.65	20	
Di-n-octyl phthalate	29.0	10.0	ug/L	51.5	BLOD	56.2	22-105	15.5	20	
Fluoranthene	36.1	10.0	ug/L	51.5	BLOD	70.0	25-96	4.16	20	
Fluorene	30.9	10.0	ug/L	51.5	BLOD	59.9	15-97	2.22	20	
Hexachlorobenzene	32.3	0.52	ug/L	51.5	BLOD	62.7	25-125	4.82	20	
Hexachlorobutadiene	41.8	10.0	ug/L	51.5	BLOD	81.0	25-125	4.22	20	
Hexachlorocyclopentadiene	30.6	10.0	ug/L	51.5	BLOD	59.3	10-90	2.57	20	
Hexachloroethane	28.6	10.0	ug/L	51.5	BLOD	55.5	25-125	6.82	20	
Indeno (1,2,3-cd) pyrene	25.2	10.0	ug/L	51.5	BLOD	48.9	25-125	17.0	20	
Isophorone	22.6	10.0	ug/L	51.5	BLOD	43.8	10-110	3.56	20	
Naphthalene	28.4	0.10	ug/L	51.5	0.32	54.5	12-100	5.37	20	
Nitrobenzene	36.4	10.0	ug/L	51.5	BLOD	70.6	27-77	7.19	20	
n-Nitrosodimethylamine	16.9	10.0	ug/L	51.5	BLOD	32.8	10-85	7.57	20	

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Enthalpy Analytical

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### Batch BFE1145 - SW3580A-MS

Matrix Spike Dup (BFE1145-MSD1)	Source: 22E1478-02		Prepared: 05/31/2022 Analyzed: 06/01/2022							
n-Nitrosodi-n-propylamine	26.7	10.0	ug/L	51.5	BLOD	51.7	12-97	8.46	20	
n-Nitrosodiphenylamine	22.5	10.0	ug/L	51.5	BLOD	43.6	12-97	13.5	20	
p-Chloro-m-cresol	40.2	10.0	ug/L	51.5	BLOD	78.0	10-91	2.17	20	
Pentachlorophenol	35.7	20.0	ug/L	51.5	BLOD	69.3	27-109	9.40	20	
Phenanthrene	35.1	10.0	ug/L	51.5	BLOD	68.2	35-115	4.72	20	
Phenol	12.5	10.0	ug/L	52.1	BLOD	24.0	10-70	6.12	20	
Pyrene	26.4	10.0	ug/L	51.5	BLOD	51.3	23-110	15.3	20	
Pyridine	24.7	10.0	ug/L	51.5	BLOD	47.8	0-200	18.9	20	
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	71.7		ug/L	103		69.5	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	29.1		ug/L	51.5		56.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	30.5		ug/L	103		29.6	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	32.0		ug/L	51.5		62.1	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	23.7		ug/L	103		23.0	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	29.4		ug/L	51.5		57.1	27-133			

### Batch BFF0013 - SW3580A-MS

Blank (BFF0013-BLK1)	Prepared & Analyzed: 06/01/2022									
1,2,4,5-Tetrachlorobenzene	ND	10.0	ug/L							
1,3,5-Trinitrobenzene	ND	5.00	ug/L							
1,3-Dinitrobenzene	ND	2.50	ug/L							
1,4-Naphthoquinone	ND	10.0	ug/L							
1-Naphthylamine	ND	10.0	ug/L							
2,3,4,6-Tetrachlorophenol	ND	10.0	ug/L							
2,4,5-Trichlorophenol	ND	10.0	ug/L							
2,4,6-Trichlorophenol	ND	10.0	ug/L							

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Enthalpy Analytical

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### Batch BFF0013 - SW3580A-MS

**Blank (BFF0013-BLK1)**

Prepared &amp; Analyzed: 06/01/2022

2,4-Dichlorophenol	ND	10.0	ug/L
2,4-Dimethylphenol	ND	5.00	ug/L
2,4-Dinitrophenol	ND	50.0	ug/L
2,4-Dinitrotoluene	ND	10.0	ug/L
2,6-Dichlorophenol	ND	10.0	ug/L
2,6-Dinitrotoluene	ND	10.0	ug/L
2-Acetylaminofluorene	ND	2.50	ug/L
2-Chloronaphthalene	ND	10.0	ug/L
2-Chlorophenol	ND	10.0	ug/L
2-Methylnaphthalene	ND	10.0	ug/L
2-Naphthylamine	ND	10.0	ug/L
2-Nitroaniline	ND	20.0	ug/L
2-Nitrophenol	ND	10.0	ug/L
3,3'-Dichlorobenzidine	ND	10.0	ug/L
3,3'-Dimethylbenzidine	ND	2.50	ug/L
3-Methylcholanthrene	ND	10.0	ug/L
3-Nitroaniline	ND	20.0	ug/L
4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Aminobiphenyl	ND	10.0	ug/L
4-Bromophenyl phenyl ether	ND	10.0	ug/L
4-Chloroaniline	ND	10.0	ug/L
4-Chlorophenyl phenyl ether	ND	10.0	ug/L
4-Nitroaniline	ND	20.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
5-Nitro-o-toluidine	ND	10.0	ug/L

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Enthalpy Analytical

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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/L
Acenaphthene	ND	10.0	ug/L
Acenaphthylene	ND	10.0	ug/L
Acetophenone	ND	20.0	ug/L
Anthracene	ND	10.0	ug/L
Benzo (a) anthracene	ND	10.0	ug/L
Benzo (a) pyrene	ND	10.0	ug/L
Benzo (b) fluoranthene	ND	10.0	ug/L
Benzo (g,h,i) perylene	ND	10.0	ug/L
Benzo (k) fluoranthene	ND	10.0	ug/L
Benzyl alcohol	ND	20.0	ug/L
bis (2-Chloroethoxy) methane	ND	10.0	ug/L
bis (2-Chloroethyl) ether	ND	10.0	ug/L
2,2'-Oxybis (1-chloropropane)	ND	10.0	ug/L
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L
Butyl benzyl phthalate	ND	10.0	ug/L
Chlorobenzilate	ND	2.50	ug/L
Chrysene	ND	10.0	ug/L
Diallate	ND	2.50	ug/L
Dibenz (a,h) anthracene	ND	10.0	ug/L
Dibenzofuran	ND	5.00	ug/L
Diethyl phthalate	ND	10.0	ug/L
Dimethoate	ND	2.50	ug/L
Dimethyl phthalate	ND	10.0	ug/L
Di-n-butyl phthalate	ND	10.0	ug/L

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

Di-n-octyl phthalate	ND	10.0	ug/L							
Diphenylamine	ND	10.0	ug/L							
Disulfoton	ND	2.50	ug/L							
Ethyl methanesulfonate	ND	20.0	ug/L							
Ethyl parathion	ND	2.50	ug/L							
Famphur	ND	2.50	ug/L							
Fluoranthene	ND	10.0	ug/L							
Fluorene	ND	10.0	ug/L							
Hexachlorobenzene	ND	1.00	ug/L							
Hexachlorobutadiene	ND	10.0	ug/L							
Hexachlorocyclopentadiene	ND	10.0	ug/L							
Hexachloroethane	ND	10.0	ug/L							
Hexachloropropene	ND	2.50	ug/L							
Indeno (1,2,3-cd) pyrene	ND	10.0	ug/L							
Isodrin	ND	10.0	ug/L							
Isophorone	ND	10.0	ug/L							
Isosafrole	ND	10.0	ug/L							
Kepone	ND	10.0	ug/L							
m+p-Cresols	ND	10.0	ug/L							
Methapyrilene	ND	10.0	ug/L							
Methyl methanesulfonate	ND	10.0	ug/L							
Methyl parathion	ND	2.50	ug/L							
Naphthalene	0.26	0.10	ug/L							B
Nitrobenzene	ND	10.0	ug/L							
n-Nitrosodiethylamine	ND	2.50	ug/L							

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

n-Nitrosodimethylamine	ND	10.0	ug/L							
n-Nitrosodi-n-butylamine	ND	10.0	ug/L							
n-Nitrosodi-n-propylamine	ND	10.0	ug/L							
n-Nitrosodiphenylamine	ND	10.0	ug/L							
n-Nitrosomethylethylamine	ND	2.50	ug/L							
n-Nitrosopiperidine	ND	10.0	ug/L							
n-Nitrosopyrrolidine	ND	2.50	ug/L							
o,o,o-Triethyl phosphorothioate	ND	10.0	ug/L							
o,o-Diethyl o-2-pyrazinyl phosphorothioate	ND	10.0	ug/L							
o+m+p-Cresols	ND	10.0	ug/L							
o-Cresol	ND	10.0	ug/L							
o-Toluidine	ND	2.50	ug/L							
p-(Dimethylamino) azobenzene	ND	2.50	ug/L							
p-Chloro-m-cresol	ND	10.0	ug/L							
Pentachlorobenzene	ND	10.0	ug/L							
Pentachloronitrobenzene (quintozene)	ND	10.0	ug/L							
Phenacetin	ND	10.0	ug/L							
Phenanthrene	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Phorate	ND	2.50	ug/L							
p-Phenylenediamine	ND	10.0	ug/L							
Pronamide	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Safrole	ND	2.50	ug/L							
Surr: 2,4,6-Tribromophenol (Surr)	55.4		ug/L	100		55.4	10-86			



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**Blank (BFF0013-BLK1)**

Prepared &amp; Analyzed: 06/01/2022

<i>Surr: 2-Fluorobiphenyl (Surr)</i>	33.8		ug/L	50.0		67.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	45.2		ug/L	100		45.2	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	34.4		ug/L	50.0		68.9	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	31.6		ug/L	100		31.6	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	40.5		ug/L	50.0		81.0	27-133			

**LCS (BFF0013-BS1)**

Prepared &amp; Analyzed: 06/01/2022

1,2,4-Trichlorobenzene	17.2	10.0	ug/L	50.0		34.5	22-135			
1,2-Dichlorobenzene	12.3	10.0	ug/L	50.0		24.7	22-115			
1,3-Dichlorobenzene	10.7	10.0	ug/L	50.0		21.5	22-112			L
1,4-Dichlorobenzene	11.7	10.0	ug/L	50.0		23.3	13-112			
2,4,6-Trichlorophenol	26.0	10.0	ug/L	50.0		51.9	11-145			
2,4-Dichlorophenol	28.3	10.0	ug/L	50.0		56.7	11-75			
2,4-Dimethylphenol	23.8	5.00	ug/L	50.0		47.5	11-121			
2,4-Dinitrophenol	31.7	50.0	ug/L	50.0		63.4	11-165			
2,4-Dinitrotoluene	35.6	10.0	ug/L	50.0		71.1	17-155			
2,6-Dinitrotoluene	26.7	10.0	ug/L	50.0		53.4	15-125			
2-Chloronaphthalene	25.8	10.0	ug/L	50.0		51.5	27-89			
2-Chlorophenol	20.5	10.0	ug/L	50.0		41.1	15-110			
2-Nitrophenol	22.9	10.0	ug/L	50.0		45.8	11-115			
3,3'-Dichlorobenzidine	19.7	10.0	ug/L	50.0		39.4	25-95			
4,6-Dinitro-2-methylphenol	36.0	50.0	ug/L	50.0		72.1	25-130			
4-Bromophenyl phenyl ether	23.7	10.0	ug/L	50.0		47.4	15-110			
4-Chlorophenyl phenyl ether	25.2	10.0	ug/L	50.0		50.4	15-110			
4-Nitrophenol	13.7	50.0	ug/L	50.0		27.4	12-70			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**LCS (BFF0013-BS1)**

Prepared & Analyzed: 06/01/2022

Acenaphthene	27.2	10.0	ug/L	50.0		54.5	18-85			
Acenaphthylene	30.0	10.0	ug/L	50.0		60.1	20-75			
Acetophenone	20.9	20.0	ug/L	50.0		41.8	0-200			
alpha-Terpineol	19.8	2.50	ug/L	50.0		39.6	0-200			
Anthracene	33.3	10.0	ug/L	50.0		66.6	35-95			
Benzo (a) anthracene	40.2	10.0	ug/L	50.0		80.3	25-95			
Benzo (a) pyrene	46.3	10.0	ug/L	50.0		92.7	37-110			
Benzo (b) fluoranthene	49.3	10.0	ug/L	50.0		98.5	25-75			L
Benzo (g,h,i) perylene	16.2	10.0	ug/L	50.0		32.4	25-90			
Benzo (k) fluoranthene	42.8	10.0	ug/L	50.0		85.6	25-95			
bis (2-Chloroethoxy) methane	23.6	10.0	ug/L	50.0		47.1	25-110			
bis (2-Chloroethyl) ether	19.4	10.0	ug/L	50.0		38.8	25-85			
2,2'-Oxybis (1-chloropropane)	20.4	10.0	ug/L	50.0		40.9	25-95			
bis (2-Ethylhexyl) phthalate	46.0	5.00	ug/L	50.0		91.9	30-125			
Butyl benzyl phthalate	45.3	10.0	ug/L	50.0		90.6	30-115			
Carbazole	42.8	2.50	ug/L	50.0		85.5	0-200			
Chrysene	42.6	10.0	ug/L	50.0		85.2	20-90			
Dibenz (a,h) anthracene	21.5	10.0	ug/L	50.0		43.1	27-125			
Diethyl phthalate	32.9	10.0	ug/L	50.0		65.8	25-120			
Dimethyl phthalate	32.1	10.0	ug/L	50.0		64.3	25-125			
Di-n-butyl phthalate	44.7	10.0	ug/L	50.0		89.4	35-115			
Di-n-octyl phthalate	73.4	10.0	ug/L	50.0		147	25-105			L
Fluoranthene	42.7	10.0	ug/L	50.0		85.3	33-95			
Fluorene	30.3	10.0	ug/L	50.0		60.5	15-97			
Hexachlorobenzene	26.3	1.00	ug/L	50.0		52.6	25-125			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**LCS (BFF0013-BS1)**

Prepared & Analyzed: 06/01/2022

Hexachlorobutadiene	15.4	10.0	ug/L	50.0		30.8	25-125			
Hexachlorocyclopentadiene	10.3	10.0	ug/L	50.0		20.6	25-125			L
Hexachloroethane	9.46	10.0	ug/L	50.0		18.9	25-125			L
Indeno (1,2,3-cd) pyrene	21.8	10.0	ug/L	50.0		43.6	25-125			
Isophorone	16.4	10.0	ug/L	50.0		32.9	10-110			
Naphthalene	19.0	0.10	ug/L	50.0		38.0	12-100			
Nitrobenzene	21.8	10.0	ug/L	50.0		43.5	30-97			
n-Nitrosodimethylamine	11.6	10.0	ug/L	50.0		23.2	10-85			
n-Nitrosodi-n-propylamine	24.8	10.0	ug/L	50.0		49.6	12-97			
n-Nitrosodiphenylamine	23.0	10.0	ug/L	50.0		46.0	12-97			
p-Chloro-m-cresol	28.5	10.0	ug/L	50.0		57.0	10-91			
Pentachlorophenol	28.8	20.0	ug/L	50.0		57.6	30-109			
Phenanthrene	35.8	10.0	ug/L	50.0		71.7	30-88			
Phenol	9.42	10.0	ug/L	50.5		18.7	10-70			
Pyrene	44.5	10.0	ug/L	50.0		89.0	27-110			
Pyridine	18.9	10.0	ug/L	50.0		37.8	0-200			
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<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.7		ug/L	100		55.7	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	28.0		ug/L	50.0		56.0	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	26.7		ug/L	100		26.7	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	24.7		ug/L	50.0		49.4	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	22.5		ug/L	100		22.5	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	46.9		ug/L	50.0		93.8	27-133			

**Matrix Spike (BFF0013-MS1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2,4-Trichlorobenzene	20.1	10.0	ug/L	46.7	BLOD	43.0	22-65			
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## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Matrix Spike (BFF0013-MS1)**

**Source: 22E1463-02**

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2-Dichlorobenzene	18.0	10.0	ug/L	46.7	BLOD	38.6	22-60			
1,3-Dichlorobenzene	16.8	10.0	ug/L	46.7	BLOD	36.0	22-60			
1,4-Dichlorobenzene	18.1	10.0	ug/L	46.7	BLOD	38.7	13-60			
2,4,6-Trichlorophenol	23.1	10.0	ug/L	46.7	BLOD	49.4	11-75			
2,4-Dichlorophenol	25.3	10.0	ug/L	46.7	BLOD	54.1	11-75			
2,4-Dimethylphenol	22.0	4.67	ug/L	46.7	BLOD	47.1	11-65			
2,4-Dinitrophenol	31.6	50.0	ug/L	46.7	BLOD	67.7	11-110			
2,4-Dinitrotoluene	35.6	10.0	ug/L	46.7	BLOD	76.3	17-95			
2,6-Dinitrotoluene	28.1	10.0	ug/L	46.7	BLOD	60.2	15-125			
2-Chloronaphthalene	25.3	10.0	ug/L	46.7	BLOD	54.1	27-89			
2-Chlorophenol	22.8	10.0	ug/L	46.7	BLOD	48.9	19-64			
2-Nitrophenol	23.1	10.0	ug/L	46.7	BLOD	49.4	11-75			
3,3'-Dichlorobenzidine	14.1	10.0	ug/L	46.7	BLOD	30.2	10-85			
4,6-Dinitro-2-methylphenol	32.2	50.0	ug/L	46.7	BLOD	69.0	40-130			
4-Bromophenyl phenyl ether	24.5	10.0	ug/L	46.7	BLOD	52.4	15-110			
4-Chlorophenyl phenyl ether	26.4	10.0	ug/L	46.7	BLOD	56.5	15-110			
4-Nitrophenol	11.8	50.0	ug/L	46.7	BLOD	25.3	12-70			
Acenaphthene	27.4	10.0	ug/L	46.7	BLOD	58.6	15-90			
Acenaphthylene	29.9	10.0	ug/L	46.7	BLOD	63.9	15-99			
Acetophenone	20.5	20.0	ug/L	46.7	BLOD	43.9	0-200			
alpha-Terpineol	16.7	2.50	ug/L	46.7	BLOD	35.8	0-200			
Anthracene	34.4	10.0	ug/L	46.7	BLOD	73.7	20-95			
Benzo (a) anthracene	36.4	9.35	ug/L	46.7	BLOD	77.9	25-95			
Benzo (a) pyrene	43.9	9.35	ug/L	46.7	BLOD	94.0	25-82			M
Benzo (b) fluoranthene	44.4	10.0	ug/L	46.7	BLOD	95.0	25-75			M

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike (BFF0013-MS1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
Benzo (g,h,i) perylene	14.2	10.0	ug/L	46.7	BLOD	30.4	25-90			
Benzo (k) fluoranthene	47.9	10.0	ug/L	46.7	BLOD	102	25-95			M
bis (2-Chloroethoxy) methane	22.1	10.0	ug/L	46.7	BLOD	47.3	25-85			
bis (2-Chloroethyl) ether	22.1	10.0	ug/L	46.7	BLOD	47.3	25-85			
2,2'-Oxybis (1-chloropropane)	21.8	10.0	ug/L	46.7	BLOD	46.7	25-87			
bis (2-Ethylhexyl) phthalate	42.8	5.00	ug/L	46.7	BLOD	91.6	30-125			
Butyl benzyl phthalate	42.3	10.0	ug/L	46.7	BLOD	90.6	30-115			
Carbazole	38.9	2.50	ug/L	46.7	BLOD	83.1	0-200			
Chrysene	38.8	10.0	ug/L	46.7	BLOD	83.0	20-90			
Dibenz (a,h) anthracene	18.9	10.0	ug/L	46.7	BLOD	40.5	27-125			
Diethyl phthalate	33.6	10.0	ug/L	46.7	BLOD	71.9	25-120			
Dimethyl phthalate	33.3	10.0	ug/L	46.7	BLOD	71.3	25-125			
Di-n-butyl phthalate	40.6	10.0	ug/L	46.7	BLOD	87.0	25-115			
Di-n-octyl phthalate	84.0	10.0	ug/L	46.7	BLOD	180	22-105			M
Fluoranthene	38.7	10.0	ug/L	46.7	BLOD	82.9	25-96			
Fluorene	32.6	10.0	ug/L	46.7	BLOD	69.8	15-97			
Hexachlorobenzene	26.0	0.93	ug/L	46.7	BLOD	55.6	25-125			
Hexachlorobutadiene	19.2	10.0	ug/L	46.7	BLOD	41.0	25-125			
Hexachlorocyclopentadiene	8.53	10.0	ug/L	46.7	BLOD	18.3	10-90			
Hexachloroethane	16.5	10.0	ug/L	46.7	BLOD	35.4	25-125			
Indeno (1,2,3-cd) pyrene	19.1	10.0	ug/L	46.7	BLOD	40.9	25-125			
Isophorone	14.3	10.0	ug/L	46.7	BLOD	30.7	10-110			
Naphthalene	21.3	0.10	ug/L	46.7	0.20	45.1	12-100			
Nitrobenzene	22.5	10.0	ug/L	46.7	BLOD	48.1	27-77			
n-Nitrosodimethylamine	13.9	10.0	ug/L	46.7	BLOD	29.8	10-85			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**Matrix Spike (BFF0013-MS1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

n-Nitrosodi-n-propylamine	21.8	10.0	ug/L	46.7	BLOD	46.6	12-97			
n-Nitrosodiphenylamine	24.1	10.0	ug/L	46.7	BLOD	51.6	12-97			
p-Chloro-m-cresol	25.6	10.0	ug/L	46.7	BLOD	54.8	10-91			
Pentachlorophenol	25.4	20.0	ug/L	46.7	BLOD	54.4	27-109			
Phenanthrene	38.2	10.0	ug/L	46.7	BLOD	81.8	35-115			
Phenol	8.69	10.0	ug/L	47.2	BLOD	18.4	10-70			
Pyrene	43.1	10.0	ug/L	46.7	BLOD	92.2	23-110			
Pyridine	5.50	10.0	ug/L	46.7	BLOD	11.8	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.4		ug/L	93.5		59.3	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	27.7		ug/L	46.7		59.3	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	33.1		ug/L	93.5		35.4	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	26.7		ug/L	46.7		57.1	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	22.0		ug/L	93.5		23.5	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	44.7		ug/L	46.7		95.6	27-133			

**Matrix Spike Dup (BFF0013-MSD1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2,4-Trichlorobenzene	28.4	10.0	ug/L	46.7	BLOD	60.7	22-65	34.2	20	P
1,2-Dichlorobenzene	27.2	10.0	ug/L	46.7	BLOD	58.2	22-60	40.5	20	P
1,3-Dichlorobenzene	25.6	10.0	ug/L	46.7	BLOD	54.8	22-60	41.4	20	P
1,4-Dichlorobenzene	27.3	10.0	ug/L	46.7	BLOD	58.4	13-60	40.6	20	P
2,4,6-Trichlorophenol	31.5	10.0	ug/L	46.7	BLOD	67.3	11-75	30.7	20	P
2,4-Dichlorophenol	36.4	10.0	ug/L	46.7	BLOD	77.9	11-75	36.1	20	M, P
2,4-Dimethylphenol	30.1	4.67	ug/L	46.7	BLOD	64.5	11-65	31.2	20	P
2,4-Dinitrophenol	51.7	50.0	ug/L	46.7	BLOD	111	11-110	48.2	20	M, P
2,4-Dinitrotoluene	47.6	10.0	ug/L	46.7	BLOD	102	17-95	28.8	20	M, P

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
2,6-Dinitrotoluene	36.4	10.0	ug/L	46.7	BLOD	77.9	15-125	25.6	20	P
2-Chloronaphthalene	37.7	10.0	ug/L	46.7	BLOD	80.6	27-89	39.4	20	P
2-Chlorophenol	33.9	10.0	ug/L	46.7	BLOD	72.4	19-64	38.8	20	M, P
2-Nitrophenol	32.2	10.0	ug/L	46.7	BLOD	68.8	11-75	33.0	20	P
3,3'-Dichlorobenzidine	20.7	10.0	ug/L	46.7	BLOD	44.4	10-85	37.9	20	P
4,6-Dinitro-2-methylphenol	47.4	50.0	ug/L	46.7	BLOD	102	40-130	38.2	20	P
4-Bromophenyl phenyl ether	29.5	10.0	ug/L	46.7	BLOD	63.2	15-110	18.7	20	
4-Chlorophenyl phenyl ether	36.6	10.0	ug/L	46.7	BLOD	78.2	15-110	32.3	20	P
4-Nitrophenol	16.9	50.0	ug/L	46.7	BLOD	36.1	12-70	35.1	20	P
Acenaphthene	38.7	10.0	ug/L	46.7	BLOD	82.9	15-90	34.4	20	P
Acenaphthylene	43.8	10.0	ug/L	46.7	BLOD	93.8	15-99	37.8	20	P
Acetophenone	29.1	20.0	ug/L	46.7	BLOD	62.2	0-200	34.6	20	P
alpha-Terpineol	22.6	2.50	ug/L	46.7	BLOD	48.4	0-200	30.0	20	P
Anthracene	44.9	10.0	ug/L	46.7	BLOD	96.1	20-95	26.4	20	M, P
Benzo (a) anthracene	48.0	9.35	ug/L	46.7	BLOD	103	25-95	27.5	20	M, P
Benzo (a) pyrene	57.3	9.35	ug/L	46.7	BLOD	123	25-82	26.4	20	M, P
Benzo (b) fluoranthene	55.7	10.0	ug/L	46.7	BLOD	119	25-75	22.6	20	M, P
Benzo (g,h,i) perylene	20.7	10.0	ug/L	46.7	BLOD	44.2	25-90	37.2	20	P
Benzo (k) fluoranthene	71.2	10.0	ug/L	46.7	BLOD	152	25-95	39.3	20	M, P
bis (2-Chloroethoxy) methane	32.4	10.0	ug/L	46.7	BLOD	69.2	25-85	37.7	20	P
bis (2-Chloroethyl) ether	32.8	10.0	ug/L	46.7	BLOD	70.3	25-85	39.2	20	P
2,2'-Oxybis (1-chloropropane)	33.5	10.0	ug/L	46.7	BLOD	71.7	25-87	42.2	20	P
bis (2-Ethylhexyl) phthalate	51.1	5.00	ug/L	46.7	BLOD	109	30-125	17.7	20	
Butyl benzyl phthalate	51.7	10.0	ug/L	46.7	BLOD	111	30-115	19.9	20	
Carbazole	52.1	2.50	ug/L	46.7	BLOD	112	0-200	29.2	20	P

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0013 - SW3580A-MS</b>										
<b>Matrix Spike Dup (BFF0013-MSD1)</b>	<b>Source: 22E1463-02</b>			<b>Prepared: 06/01/2022 Analyzed: 06/02/2022</b>						
Chrysene	51.6	10.0	ug/L	46.7	BLOD	110	20-90	28.4	20	M, P
Dibenz (a,h) anthracene	27.6	10.0	ug/L	46.7	BLOD	59.0	27-125	37.3	20	P
Diethyl phthalate	44.1	10.0	ug/L	46.7	BLOD	94.3	25-120	26.9	20	P
Dimethyl phthalate	45.5	10.0	ug/L	46.7	BLOD	97.3	25-125	30.9	20	P
Di-n-butyl phthalate	55.3	10.0	ug/L	46.7	BLOD	118	25-115	30.5	20	M, P
Di-n-octyl phthalate	69.6	10.0	ug/L	46.7	BLOD	149	22-105	18.8	20	M
Fluoranthene	52.7	10.0	ug/L	46.7	BLOD	113	25-96	30.6	20	M, P
Fluorene	44.8	10.0	ug/L	46.7	BLOD	95.9	15-97	31.5	20	P
Hexachlorobenzene	32.1	0.93	ug/L	46.7	BLOD	68.7	25-125	21.2	20	P
Hexachlorobutadiene	27.3	10.0	ug/L	46.7	BLOD	58.4	25-125	35.0	20	P
Hexachlorocyclopentadiene	14.2	10.0	ug/L	46.7	BLOD	30.5	10-90	50.1	20	P
Hexachloroethane	26.0	10.0	ug/L	46.7	BLOD	55.5	25-125	44.4	20	P
Indeno (1,2,3-cd) pyrene	28.0	10.0	ug/L	46.7	BLOD	59.9	25-125	37.7	20	P
Isophorone	22.1	10.0	ug/L	46.7	BLOD	47.3	10-110	42.7	20	P
Naphthalene	31.0	0.10	ug/L	46.7	0.20	66.0	12-100	37.4	20	P
Nitrobenzene	34.1	10.0	ug/L	46.7	BLOD	73.1	27-77	41.3	20	P
n-Nitrosodimethylamine	18.5	10.0	ug/L	46.7	BLOD	39.6	10-85	28.1	20	P
n-Nitrosodi-n-propylamine	31.0	10.0	ug/L	46.7	BLOD	66.4	12-97	35.0	20	P
n-Nitrosodiphenylamine	30.0	10.0	ug/L	46.7	BLOD	64.3	12-97	21.9	20	P
p-Chloro-m-cresol	35.9	10.0	ug/L	46.7	BLOD	76.9	10-91	33.6	20	P
Pentachlorophenol	36.1	20.0	ug/L	46.7	BLOD	77.3	27-109	34.8	20	P
Phenanthrene	50.0	10.0	ug/L	46.7	BLOD	107	35-115	26.7	20	P
Phenol	14.5	10.0	ug/L	47.2	BLOD	30.6	10-70	49.8	20	P
Pyrene	51.4	10.0	ug/L	46.7	BLOD	110	23-110	17.5	20	
Pyridine	27.2	10.0	ug/L	46.7	BLOD	58.2	0-200	133	20	P



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

<b>Matrix Spike Dup (BFF0013-MSD1)</b>	<b>Source: 22E1463-02</b>	Prepared: 06/01/2022 Analyzed: 06/02/2022
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<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	67.0		ug/L	93.5		71.7	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	38.8		ug/L	46.7		82.9	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	45.7		ug/L	93.5		48.9	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	36.8		ug/L	46.7		78.8	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	31.7		ug/L	93.5		33.9	5-33			S
<i>Surr: p-Terphenyl-d14 (Surr)</i>	51.6		ug/L	46.7		110	27-133			

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1147 - SW3510C/EPA600-ECD

**Blank (BFE1147-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

PCB as Aroclor 1016	ND	0.200	ug/L
4,4'-DDD	ND	0.050	ug/L
PCB as Aroclor 1221	ND	0.200	ug/L
PCB as Aroclor 1232	ND	0.200	ug/L
4,4'-DDE	ND	0.050	ug/L
PCB as Aroclor 1242	ND	0.200	ug/L
PCB as Aroclor 1248	ND	0.200	ug/L
4,4'-DDT	ND	0.050	ug/L
PCB as Aroclor 1254	ND	0.200	ug/L
PCB as Aroclor 1260	ND	0.200	ug/L
Aldrin	ND	0.050	ug/L
alpha-BHC	ND	0.050	ug/L
alpha-Chlordane	ND	0.050	ug/L
beta-BHC	ND	0.050	ug/L
Chlordane	ND	0.200	ug/L
delta-BHC	ND	0.050	ug/L
Dieldrin	ND	0.050	ug/L
Endosulfan I	ND	0.050	ug/L
Endosulfan II	ND	0.050	ug/L
Endosulfan sulfate	ND	0.050	ug/L
Endrin	ND	0.050	ug/L
Endrin aldehyde	ND	0.050	ug/L
Endrin ketone	ND	0.050	ug/L
gamma-BHC (Lindane)	ND	0.050	ug/L
gamma-Chlordane	ND	0.050	ug/L

## Certificate of Analysis

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1147 - SW3510C/EPA600-ECD

**Blank (BFE1147-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

Heptachlor	ND	0.050	ug/L							
Heptachlor epoxide	ND	0.050	ug/L							
Methoxychlor	ND	0.050	ug/L							
Toxaphene	ND	1.00	ug/L							
<i>Surr: DCB</i>	<i>0.158</i>		ug/L	<i>0.200</i>		<i>79.2</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.126</i>		ug/L	<i>0.200</i>		<i>63.2</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.117</i>		ug/L	<i>0.200</i>		<i>58.5</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.154</i>		ug/L	<i>0.200</i>		<i>76.9</i>	<i>27-131</i>			

**LCS (BFE1147-BS1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

4,4'-DDD	0.108	0.050	ug/L	0.100		108	23-134			
4,4'-DDE	0.096	0.050	ug/L	0.100		96.5	23-134			
4,4'-DDT	0.101	0.050	ug/L	0.100		101	23-134			
Aldrin	0.061	0.050	ug/L	0.100		61.4	23-134			
alpha-BHC	0.070	0.050	ug/L	0.100		69.8	23-134			
beta-BHC	0.068	0.050	ug/L	0.100		68.2	23-134			
delta-BHC	0.080	0.050	ug/L	0.100		79.9	23-134			
Dieldrin	0.091	0.050	ug/L	0.100		90.7	23-134			
Endosulfan I	0.085	0.050	ug/L	0.100		85.0	23-134			
Endosulfan II	0.097	0.050	ug/L	0.100		96.9	23-134			
Endosulfan sulfate	0.103	0.050	ug/L	0.100		103	23-134			
Endrin	0.100	0.050	ug/L	0.100		100	23-134			
Endrin aldehyde	0.107	0.050	ug/L	0.100		107	23-134			
gamma-BHC (Lindane)	0.069	0.050	ug/L	0.100		69.5	23-134			
Heptachlor	0.071	0.050	ug/L	0.100		71.3	23-134			

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>LCS (BFE1147-BS1)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Heptachlor epoxide	0.090	0.050	ug/L	0.100		90.4	23-134			
Methoxychlor	0.111	0.050	ug/L	0.100		111	23-134			
Mirex	0.104	0.050	ug/L	0.100		104	23-134			
<i>Surr: TCMX</i>	<i>0.0998</i>		ug/L	<i>0.200</i>		<i>49.9</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.222</i>		ug/L	<i>0.200</i>		<i>111</i>	<i>27-131</i>			
<b>LCS (BFE1147-BS2)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
PCB as Aroclor 1016	0.831	0.200	ug/L	1.00		83.1	70-130			
PCB as Aroclor 1260	0.780	0.200	ug/L	1.00		78.0	70-130			
<i>Surr: DCB</i>	<i>0.170</i>		ug/L	<i>0.200</i>		<i>84.9</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.123</i>		ug/L	<i>0.200</i>		<i>61.3</i>	<i>30-105</i>			
<b>LCS (BFE1147-BS3)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Toxaphene	1.94	1.00	ug/L	2.50		77.5	23-134			
<i>Surr: TCMX</i>	<i>0.136</i>		ug/L	<i>0.200</i>		<i>68.2</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.174</i>		ug/L	<i>0.200</i>		<i>86.9</i>	<i>27-131</i>			
<b>LCS (BFE1147-BS4)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Chlordane	1.80	0.200	ug/L	2.50		71.9	23-134			
<i>Surr: TCMX</i>	<i>0.136</i>		ug/L	<i>0.200</i>		<i>68.2</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.152</i>		ug/L	<i>0.200</i>		<i>76.2</i>	<i>27-131</i>			
<b>Matrix Spike (BFE1147-MS1)</b>		<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/01/2022						
4,4'-DDD	0.125	0.050	ug/L	0.0935	BLOD	133	23-134			
4,4'-DDE	0.116	0.050	ug/L	0.0935	BLOD	124	23-134			
4,4'-DDT	0.119	0.050	ug/L	0.0935	BLOD	127	23-134			

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>Matrix Spike (BFE1147-MS1)</b>										
			<b>Source: 22E1463-02</b>		<b>Prepared &amp; Analyzed: 06/01/2022</b>					
Aldrin	0.083	0.050	ug/L	0.0935	BLOD	89.3	23-134			
alpha-BHC	0.095	0.050	ug/L	0.0935	BLOD	102	23-134			
beta-BHC	0.085	0.050	ug/L	0.0935	BLOD	91.3	23-134			
delta-BHC	0.116	0.050	ug/L	0.0935	BLOD	125	23-134			
Dieldrin	0.110	0.050	ug/L	0.0935	BLOD	118	23-134			
Endosulfan I	0.101	0.050	ug/L	0.0935	BLOD	108	23-134			
Endosulfan II	0.118	0.050	ug/L	0.0935	BLOD	126	23-134			
Endosulfan sulfate	0.121	0.050	ug/L	0.0935	BLOD	129	23-134			
Endrin	0.120	0.050	ug/L	0.0935	BLOD	129	23-134			
Endrin aldehyde	0.117	0.050	ug/L	0.0935	BLOD	126	23-134			
gamma-BHC (Lindane)	0.094	0.050	ug/L	0.0935	BLOD	101	23-134			
Heptachlor	0.097	0.050	ug/L	0.0935	BLOD	104	23-134			
Heptachlor epoxide	0.111	0.050	ug/L	0.0935	BLOD	118	23-134			
Methoxychlor	0.125	0.050	ug/L	0.0935	BLOD	134	23-134			
Mirex	0.078	0.050	ug/L	0.0935	BLOD	83.5	23-134			
<i>Surr: TCMX</i>	<i>0.0951</i>		ug/L	<i>0.187</i>		<i>50.9</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.125</i>		ug/L	<i>0.187</i>		<i>67.0</i>	<i>27-131</i>			
<b>Matrix Spike (BFE1147-MS2)</b>										
			<b>Source: 22E1463-02</b>		<b>Prepared &amp; Analyzed: 06/01/2022</b>					
PCB as Aroclor 1016	1.27	0.200	ug/L	0.935	BLOD	135	70-130			M
PCB as Aroclor 1260	0.990	0.200	ug/L	0.935	BLOD	106	70-130			
<i>Surr: DCB</i>	<i>0.202</i>		ug/L	<i>0.187</i>		<i>108</i>	<i>30-105</i>			S
<i>Surr: TCMX</i>	<i>0.102</i>		ug/L	<i>0.187</i>		<i>54.6</i>	<i>30-105</i>			
<b>Matrix Spike Dup (BFE1147-MSD1)</b>										
			<b>Source: 22E1463-02</b>		<b>Prepared &amp; Analyzed: 06/01/2022</b>					
4,4'-DDD	0.140	0.050	ug/L	0.0935	BLOD	150	23-134	11.5	20	M

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1147 - SW3510C/EPA600-ECD

Matrix Spike Dup (BFE1147-MSD1)		Source: 22E1463-02			Prepared & Analyzed: 06/01/2022						
4,4'-DDE	0.125	0.050	ug/L	0.0935	BLOD	134	23-134	7.64	20	M	
4,4'-DDT	0.137	0.050	ug/L	0.0935	BLOD	147	23-134	14.3	20	M	
Aldrin	0.094	0.050	ug/L	0.0935	BLOD	101	23-134	12.2	20		
alpha-BHC	0.104	0.050	ug/L	0.0935	BLOD	111	23-134	8.82	20		
beta-BHC	0.102	0.050	ug/L	0.0935	BLOD	109	23-134	17.7	20		
delta-BHC	0.116	0.050	ug/L	0.0935	BLOD	125	23-134	0.0401	20		
Dieldrin	0.119	0.050	ug/L	0.0935	BLOD	127	23-134	7.17	20		
Endosulfan I	0.110	0.050	ug/L	0.0935	BLOD	117	23-134	8.63	20		
Endosulfan II	0.132	0.050	ug/L	0.0935	BLOD	142	23-134	11.8	20	M	
Endosulfan sulfate	0.139	0.050	ug/L	0.0935	BLOD	148	23-134	13.7	20	M	
Endrin	0.129	0.050	ug/L	0.0935	BLOD	138	23-134	6.84	20	M	
Endrin aldehyde	0.130	0.050	ug/L	0.0935	BLOD	139	23-134	10.0	20	M	
gamma-BHC (Lindane)	0.103	0.050	ug/L	0.0935	BLOD	110	23-134	8.44	20		
Heptachlor	0.097	0.050	ug/L	0.0935	BLOD	104	23-134	0.154	20		
Heptachlor epoxide	0.108	0.050	ug/L	0.0935	BLOD	115	23-134	2.53	20		
Methoxychlor	0.145	0.050	ug/L	0.0935	BLOD	155	23-134	14.7	20	M	
Mirex	0.094	0.050	ug/L	0.0935	BLOD	101	23-134	18.6	20		
<i>Surr: TCMX</i>		0.102	ug/L	0.187		54.7	18-112				
<i>Surr: DCB</i>		0.140	ug/L	0.187		74.7	27-131				
Matrix Spike Dup (BFE1147-MSD2)		Source: 22E1463-02			Prepared & Analyzed: 06/01/2022						
PCB as Aroclor 1016	0.839	0.200	ug/L	0.935	BLOD	89.8	70-130	40.5	20	P	
PCB as Aroclor 1260	0.760	0.200	ug/L	0.935	BLOD	81.3	70-130	26.3	20	P	
<i>Surr: DCB</i>		0.163	ug/L	0.187		87.0	30-105				
<i>Surr: TCMX</i>		0.130	ug/L	0.187		69.6	30-105				

### Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1204 - SW8151A/EPA600</b>										
<b>Blank (BFE1204-BLK1)</b>										
				Prepared: 05/31/2022 Analyzed: 06/09/2022						
2,4,5-T	ND	0.500	ug/L							
2,4,5-TP (Silvex)	ND	0.500	ug/L							
2,4-D	ND	0.500	ug/L							
Dinoseb	ND	0.500	ug/L							
Pentachlorophenol	ND	0.500	ug/L							
<i>Surr: DCAA (Surr)</i>	<i>1.01</i>		ug/L	<i>1.11</i>		<i>90.5</i>	<i>48.5-134</i>			
<b>LCS (BFE1204-BS1)</b>										
				Prepared: 05/31/2022 Analyzed: 06/09/2022						
2,4,5-T	0.548	0.500	ug/L	0.556		98.7	62-145			
2,4,5-TP (Silvex)	0.601	0.500	ug/L	0.556		108	62-132			
2,4-D	0.652	0.500	ug/L	0.556		117	74-139			
Dinoseb	0.467	0.500	ug/L	0.556		84.0	59-136			
Pentachlorophenol	0.523	0.500	ug/L	0.556		94.1	62-118			
<i>Surr: DCAA (Surr)</i>	<i>1.00</i>		ug/L	<i>1.11</i>		<i>90.4</i>	<i>70-130</i>			
<b>Matrix Spike (BFE1204-MS1)</b>										
				<b>Source: 22E1463-02</b>		Prepared: 06/01/2022 Analyzed: 06/09/2022				
2,4,5-T	0.530	0.500	ug/L	0.556	BLOD	95.3	53-144			
2,4,5-TP (Silvex)	0.576	0.500	ug/L	0.556	BLOD	104	52-129			
2,4-D	0.502	0.500	ug/L	0.556	BLOD	90.3	53-126			
Dinoseb	0.446	0.500	ug/L	0.556	BLOD	80.3	60-137			
Pentachlorophenol	0.602	0.500	ug/L	0.556	BLOD	108	52-124			
<i>Surr: DCAA (Surr)</i>	<i>1.08</i>		ug/L	<i>1.11</i>		<i>97.5</i>	<i>70-130</i>			
<b>Matrix Spike Dup (BFE1204-MSD1)</b>										
				<b>Source: 22E1463-02</b>		Prepared: 06/01/2022 Analyzed: 06/09/2022				
2,4,5-T	0.511	0.500	ug/L	0.556	BLOD	91.9	53-144	3.63	20	
2,4,5-TP (Silvex)	0.528	0.500	ug/L	0.556	BLOD	94.9	52-129	8.76	20	

## Certificate of Analysis

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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1204 - SW8151A/EPA600**

Matrix Spike Dup (BFE1204-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/09/2022							
2,4-D	0.411	0.500	ug/L	0.556	BLOD	74.0	53-126	19.8	20	
Dinoseb	0.423	0.500	ug/L	0.556	BLOD	76.2	60-137	5.20	20	
Pentachlorophenol	0.521	0.500	ug/L	0.556	BLOD	93.7	52-124	14.4	20	
<i>Surr: DCAA (Surr)</i>	<i>1.06</i>		ug/L	<i>1.11</i>		<i>95.7</i>	<i>70-130</i>			



## Certificate of Analysis

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Micro-extractables by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0016 - SW8011</b>										
<b>Blank (BFF0016-BLK1)</b>				Prepared: 06/01/2022 Analyzed: 06/02/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L							
1,2,3-Trichloropropane	ND	0.010	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L							
<b>LCS (BFF0016-BS1)</b>				Prepared: 06/01/2022 Analyzed: 06/02/2022						
1,2-Dibromoethane (EDB)	0.300	0.010	ug/L	0.250		120	65-135			
1,2,3-Trichloropropane	0.265	0.010	ug/L	0.250		106	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.318	0.010	ug/L	0.250		127	65-135			
<b>Matrix Spike (BFF0016-MS1)</b>				<b>Source: 22E1280-03</b>		Prepared: 06/01/2022 Analyzed: 06/02/2022				
1,2-Dibromoethane (EDB)	0.312	0.010	ug/L	0.250	BLOD	125	65-135			
1,2,3-Trichloropropane	0.271	0.010	ug/L	0.250	BLOD	108	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.319	0.010	ug/L	0.250	BLOD	127	65-135			
<b>Matrix Spike Dup (BFF0016-MSD1)</b>				<b>Source: 22E1280-03</b>		Prepared: 06/01/2022 Analyzed: 06/02/2022				
1,2-Dibromoethane (EDB)	0.303	0.010	ug/L	0.250	BLOD	121	65-135	2.75	20	
1,2,3-Trichloropropane	0.253	0.010	ug/L	0.250	BLOD	101	65-135	6.97	20	
1,2-Dibromo-3-chloropropane (DBCP)	0.316	0.010	ug/L	0.250	BLOD	126	65-135	0.870	20	

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0087 - No Prep VOC</b>										
<b>Blank (BFF0087-BLK1)</b>										
				Prepared & Analyzed: 06/02/2022						
Ethane	ND	5.00	ug/L							
Ethene	ND	5.00	ug/L							
Methane	ND	5.00	ug/L							
<i>Surr: Acetylene (Surr)</i>	449		ug/L	432		104	70-130			
<b>LCS (BFF0087-BS1)</b>										
				Prepared & Analyzed: 06/02/2022						
Ethane	540	5.00	ug/L	500		108	70-130			
Ethene	488	5.00	ug/L	464		105	70-130			
Methane	276	5.00	ug/L	266		104	70-130			
<i>Surr: Acetylene (Surr)</i>	496		ug/L	432		115	70-130			
<b>Duplicate (BFF0087-DUP1)</b>										
				Source: 22E1463-02			Prepared & Analyzed: 06/02/2022			
Ethane	ND	5.00	ug/L		BLOD			NA	20	
Ethene	ND	5.00	ug/L		BLOD			NA	20	
Methane	379	5.00	ug/L		378			0.346	20	
<i>Surr: Acetylene (Surr)</i>	510		ug/L	432		118	70-130			
<b>Matrix Spike (BFF0087-MS1)</b>										
				Source: 22E1463-02			Prepared & Analyzed: 06/02/2022			
Ethane	612	5.00	ug/L	500	BLOD	122	70-130			
Ethene	544	5.00	ug/L	464	BLOD	117	70-130			
Methane	547	5.00	ug/L	266	378	63.7	70-130			M
<i>Surr: Acetylene (Surr)</i>	489		ug/L	432		113	70-130			
<b>Matrix Spike Dup (BFF0087-MSD1)</b>										
				Source: 22E1463-02			Prepared & Analyzed: 06/02/2022			
Ethane	716	5.00	ug/L	500	BLOD	143	70-130	15.7	20	M
Ethene	635	5.00	ug/L	464	BLOD	137	70-130	15.4	20	M

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0087 - No Prep VOC**

Matrix Spike Dup (BFF0087-MSD1)	Source: 22E1463-02		Prepared & Analyzed: 06/02/2022							
Methane	597	5.00	ug/L	266	378	82.5	70-130	8.74	20	
<i>Surr: Acetylene (Surr)</i>	591		ug/L	432		137	70-130			S

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1123 - No Prep IC</b>										
<b>Blank (BFE1123-BLK1)</b>				Prepared & Analyzed: 05/27/2022						
Chloride	ND	1.0	mg/L							
<b>LCS (BFE1123-BS1)</b>				Prepared & Analyzed: 05/27/2022						
Chloride	18.6	1	mg/L	20.0		92.8	90-110			
<b>LCS Dup (BFE1123-BSD1)</b>				Prepared & Analyzed: 05/27/2022						
Chloride	18.8	1	mg/L	20.0		93.8	90-110	1.06	15	
<b>Matrix Spike (BFE1123-MS1)</b>				Source: 22E1388-01 Prepared & Analyzed: 05/27/2022						
Chloride	33.3	1.0	mg/L	11.1	21.7	104	90-110			
<b>Matrix Spike (BFE1123-MS2)</b>				Source: 22E1388-05 Prepared & Analyzed: 05/28/2022						
Chloride	14.1	1.0	mg/L	11.1	4.0	90.9	90-110			
<b>Matrix Spike Dup (BFE1123-MSD1)</b>				Source: 22E1388-01 Prepared & Analyzed: 05/27/2022						
Chloride	32.0	1.0	mg/L	11.1	21.7	92.5	90-110	4.03	15	
<b>Matrix Spike Dup (BFE1123-MSD2)</b>				Source: 22E1388-05 Prepared & Analyzed: 05/28/2022						
Chloride	15.1	1.0	mg/L	11.1	4.0	100	90-110	6.89	15	
<b>Batch BFE1151 - No Prep Wet Chem</b>										
<b>Blank (BFE1151-BLK1)</b>				Prepared & Analyzed: 05/27/2022						
Sulfide	ND	1.00	mg/L							
<b>LCS (BFE1151-BS1)</b>				Prepared & Analyzed: 05/27/2022						
Sulfide	4.89	1	mg/L	5.00		97.8	80-120			

## Certificate of Analysis

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Wet Chemistry Analysis - Quality Control  
 Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1151 - No Prep Wet Chem</b>										
<b>Matrix Spike (BFE1151-MS1)</b>		<b>Source: 22E1249-01</b>			<b>Prepared &amp; Analyzed: 05/27/2022</b>					
Sulfide	5.21	1.00	mg/L	5.00	BLOD	104	75-125			
<b>Matrix Spike Dup (BFE1151-MSD1)</b>		<b>Source: 22E1249-01</b>			<b>Prepared &amp; Analyzed: 05/27/2022</b>					
Sulfide	5.29	1.00	mg/L	5.00	BLOD	106	75-125	1.52	20	
<b>Batch BFF0256 - No Prep Wet Chem</b>										
<b>LCS (BFF0256-BS1)</b>		<b>Prepared &amp; Analyzed: 06/06/2022</b>								
Cyanide	0.27	0.01	mg/L	0.250		109	80-120			
<b>Matrix Spike (BFF0256-MS1)</b>		<b>Source: 22E1249-12</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.25	0.01	mg/L	0.250	BLOD	98.4	80-120			
<b>Matrix Spike (BFF0256-MS2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.23	0.01	mg/L	0.250	BLOD	90.0	80-120			
<b>Matrix Spike Dup (BFF0256-MSD1)</b>		<b>Source: 22E1249-12</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.25	0.01	mg/L	0.250	BLOD	101	80-120	2.93	20	
<b>Matrix Spike Dup (BFF0256-MSD2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.23	0.01	mg/L	0.250	BLOD	92.4	80-120	2.54	20	
<b>Batch BFF0313 - No Prep Wet Chem</b>										
<b>Blank (BFF0313-BLK1)</b>		<b>Prepared &amp; Analyzed: 06/07/2022</b>								
Alkalinity	ND	5.0	mg/L							

## Certificate of Analysis

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0313 - No Prep Wet Chem</b>										
<b>LCS (BFF0313-BS1)</b>				Prepared & Analyzed: 06/07/2022						
Alkalinity	51.0	5.0	mg/L	50.0		102	80-120			
<b>Duplicate (BFF0313-DUP1)</b>				Prepared & Analyzed: 06/07/2022						
	<b>Source: 22E1303-03</b>									
Alkalinity	33.0	5.0	mg/L		34.0			2.99	20	
<b>Batch BFF0367 - No Prep Wet Chem</b>										
<b>Blank (BFF0367-BLK1)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	ND	5.0	mg/L							
<b>LCS (BFF0367-BS1)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	47.0	5.0	mg/L	50.0		94.0	80-120			
<b>Duplicate (BFF0367-DUP1)</b>				Prepared & Analyzed: 06/08/2022						
	<b>Source: 22E1388-05</b>									
Alkalinity	144	5.0	mg/L		148			2.74	20	
<b>Duplicate (BFF0367-DUP2)</b>				Prepared & Analyzed: 06/08/2022						
	<b>Source: 22E1463-02</b>									
Alkalinity	313	5.0	mg/L		309			1.29	20	

## Certificate of Analysis

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Date Issued: 7/12/2022 2:30:28PM

### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
22E1388-01	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-02	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-03	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-04	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-05	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-06	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-07	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-08	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-09	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-10	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-11	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-11RE1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0327	AF20045

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
22E1388-01	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
22E1388-02	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
22E1388-03	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
22E1388-04	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
22E1388-05	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
22E1388-01	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1388-02	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:30:28PM

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
22E1388-03	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1388-04	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1388-05	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1388-12	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
22E1388-07	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
22E1388-08	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
22E1388-09	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
22E1388-11	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
22E1388-07	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1388-08	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1388-09	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1388-11	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1388-01	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
22E1388-02	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
22E1388-03	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
22E1388-04	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
22E1388-05	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
22E1388-07	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1388-08	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1388-09	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1388-11	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143



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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method: SW3510C/EPA600-ECD</b>		
22E1388-07	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1388-08	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1388-09	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1388-11	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW3580A-MS</b>		
22E1388-01	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-02	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-03	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-04	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-05	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-07	1070 mL / 1.00 mL	SW8270E	BFE1145	SFF0004	AC20134
22E1388-08	1070 mL / 1.00 mL	SW8270E	BFE1145	SFF0004	AC20134
22E1388-09	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
22E1388-11	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22E1388-01	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
22E1388-04	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
22E1388-05	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
22E1388-02	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-03	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-06	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-07	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-08	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22E1388-09	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-10	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-11	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-12	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-12RE1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
22E1388-01	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
22E1388-02	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-03	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-04	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-05	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-07	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-08	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-09	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-11	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
22E1388-02	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-03	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-06	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-07	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-08	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-09	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-10	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
22E1388-11	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-12	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22E1388-07	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
22E1388-08	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
22E1388-09	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
22E1388-11	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0386	AE20149

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### QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
BFE1163-BLK1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-BS1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MS1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MS2	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MS3		SW6020B	BFE1163	SFF0327	AF20045
BFE1163-MS3	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0327	AF20045
BFE1163-MSD1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MSD2	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MSD3		SW6020B	BFE1163	SFF0327	AF20045
BFE1163-MSD3	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0327	AF20045

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
BFE1123-BLK1	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-BS1	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-BSD1	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-MS1	4.50 mL / 5.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-MS2	4.50 mL / 5.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-MSD1	4.50 mL / 5.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-MSD2	4.50 mL / 5.00 mL	SW9056A	BFE1123	SFF0018	AB20130

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
BFF0087-BLK1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-BS1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-DUP1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MRL1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MS1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MSD1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFE1151-BLK1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFE1151-BS1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFE1151-MRL1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFE1151-MS1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFE1151-MSD1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFF0256-BLK1		SW9012B	BFF0256	SFF0305	AF20043
BFF0256-BS1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MS1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MS2	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MSD1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MSD2	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0313-BLK1	200 mL / 200 mL	SM22 2320B-2011	BFF0313	SFF0270	
BFF0313-BS1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
BFF0313-DUP1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
BFF0367-BLK1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-BS1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-DUP1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-DUP2	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
BFE1147-BLK1	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS1	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-BS3	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS4	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MS1	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MS2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-MSD1	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MSD2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-BLK1	1000 mL / 1.00 mL	SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS2	1000 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
BFE1147-BS3		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS4		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MS1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MS2	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
BFE1147-MSD1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MSD2	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3580A-MS</b>	
BFE1098-BLK1		SW8270E	BFE1098	SFF0012	AE20006
BFE1098-BS1		SW8270E	BFE1098	SFF0012	AE20006
BFE1098-BS2		SW8270E	BFE1098	SFF0013	AE20034
BFE1145-BLK1	1000 mL / 1.00 mL	SW8270E	BFE1145	SFF0004	AC20134
BFE1145-BS1	1000 mL / 1.00 mL	SW8270E	BFE1145	SFF0004	AC20134
BFE1145-MS1	950 mL / 0.500 mL	SW8270E	BFE1145	SFF0004	AC20134
BFE1145-MSD1	970 mL / 0.500 mL	SW8270E	BFE1145	SFF0004	AC20134

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3580A-MS</b>	
BFF0013-BLK1	1000 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-BS1	1000 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-MS1	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-MSD1	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
BFE1119-BLK1	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1119-BLK2		SW8260D	BFE1119	SFE1046	AE20123
BFE1119-BS1	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1119-BS2	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1119-MS1	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1119-MSD1	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1120-BLK1	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
BFE1120-BS1	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
BFE1120-MS1	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
BFE1120-MSD1	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
BFE1173-BLK1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066
BFE1173-BS1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066
BFE1173-MS1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066
BFE1173-MSD1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW7470A</b>	
BFF0266-BLK1	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0266-BS1	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0266-MS1	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW7470A</b>	
BFF0266-MS2	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0266-MSD1	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0266-MSD2	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0393-BLK1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-BS1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MS1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MS2	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MSD1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MSD2	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW8011</b>	
BFF0016-BLK1	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
BFF0016-BS1	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
BFF0016-MS1	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
BFF0016-MSD1	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW8151A/EPA600</b>	
BFE1204-BLK1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-BS1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-MS1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-MSD1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156



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### Certified Analyses included in this Report

Analyte	Certifications
<b><i>RSK175M in Non-Potable Water</i></b>	
Ethane	VELAP
Ethene	VELAP
Methane	VELAP
<b><i>SM22 2320B-2011 in Non-Potable Water</i></b>	
Alkalinity	VELAP,PADEP,WVDEP,NHDES,MADEP
<b><i>SW6020B in Non-Potable Water</i></b>	
Antimony	VELAP,NCDEQ,WVDEP,NHDES
Arsenic	VELAP,WVDEP,NHDES
Barium	VELAP,WVDEP,NHDES
Beryllium	VELAP,WVDEP,NHDES
Cadmium	VELAP,WVDEP,NHDES
Chromium	VELAP,WVDEP,NHDES
Cobalt	VELAP,WVDEP,NHDES
Copper	VELAP,WVDEP,NHDES
Lead	VELAP,WVDEP,NHDES
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP,NHDES
Silver	VELAP,WVDEP,NHDES
Thallium	VELAP,WVDEP,NHDES
Tin	VELAP,WVDEP
Vanadium	VELAP,WVDEP,NHDES
Zinc	VELAP,WVDEP,NHDES
<b><i>SW7470A in Non-Potable Water</i></b>	
Mercury	VELAP,NCDEQ,WVDEP,NHDES
<b><i>SW8011 in Non-Potable Water</i></b>	

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### Certified Analyses included in this Report

Analyte	Certifications
1,2-Dibromoethane (EDB)	VELAP,NCDEQ
1,2,3-Trichloropropane	VELAP,NCDEQ
1,2-Dibromo-3-chloropropane (DBCP)	VELAP,NCDEQ
<b>SW8081B in Non-Potable Water</b>	
4,4'-DDD	NCDEQ,VELAP,WVDEP,PADEP,NHDES
4,4'-DDE	NCDEQ,VELAP,WVDEP,PADEP,NHDES
4,4'-DDT	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Aldrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
alpha-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
alpha-Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
beta-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
delta-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Dieldrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan I	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan II	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan sulfate	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin aldehyde	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-BHC (Lindane)	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor epoxide	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Methoxychlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Toxaphene	NCDEQ,VELAP,WVDEP,PADEP,NHDES
<b>SW8082A in Non-Potable Water</b>	
PCB as Aroclor 1016	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1221	VELAP,PADEP,NCDEQ,WVDEP,NHDES

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
PCB as Aroclor 1232	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1242	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1248	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1254	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1260	VELAP,PADEP,NCDEQ,WVDEP,NHDES
<b>SW8151A in Non-Potable Water</b>	
2,4,5-T	VELAP,PADEP,NCDEQ,WVDEP
2,4,5-TP (Silvex)	VELAP,PADEP,NCDEQ,WVDEP
2,4-D	VELAP,PADEP,NCDEQ,WVDEP
Dinoseb	VELAP,PADEP,NCDEQ,WVDEP
Pentachlorophenol	VELAP,PADEP,NCDEQ,WVDEP
<b>SW8260D in Non-Potable Water</b>	
1,1,1,2-Tetrachloroethane	NCDEQ,WVDEP,VELAP
1,1,1-Trichloroethane	NCDEQ,WVDEP,VELAP
1,1,2,2-Tetrachloroethane	NCDEQ,WVDEP,VELAP
1,1,2-Trichloroethane	NCDEQ,WVDEP,VELAP
1,1-Dichloroethane	NCDEQ,WVDEP,VELAP
1,1-Dichloroethylene	NCDEQ,WVDEP,VELAP
1,1-Dichloropropene	NCDEQ,WVDEP,VELAP
1,2,3-Trichloropropane	NCDEQ,WVDEP,VELAP
1,2,4-Trichlorobenzene	NCDEQ,WVDEP,VELAP
1,2-Dichlorobenzene	NCDEQ,WVDEP,VELAP
1,2-Dichloroethane	NCDEQ,WVDEP,VELAP
1,2-Dichloropropane	NCDEQ,WVDEP,VELAP
1,3-Dichlorobenzene	NCDEQ,WVDEP,VELAP
1,3-Dichloropropane	NCDEQ,WVDEP,VELAP
1,4-Dichlorobenzene	NCDEQ,WVDEP,VELAP
2,2-Dichloropropane	NCDEQ,WVDEP,VELAP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
2-Butanone (MEK)	NCDEQ, WVDEP, VELAP
2-Hexanone (MBK)	NCDEQ, WVDEP, VELAP
4-Methyl-2-pentanone (MIBK)	NCDEQ, WVDEP, VELAP
Acetone	NCDEQ, WVDEP, VELAP
Acetonitrile	NCDEQ, WVDEP, VELAP
Acrolein	NCDEQ, WVDEP, VELAP
Acrylonitrile	NCDEQ, WVDEP, VELAP
Allyl chloride	NCDEQ, WVDEP, VELAP
Benzene	NCDEQ, WVDEP, VELAP
Bromochloromethane	NCDEQ, WVDEP, VELAP
Bromodichloromethane	NCDEQ, WVDEP, VELAP
Bromoform	NCDEQ, WVDEP, VELAP
Bromomethane	NCDEQ, WVDEP, VELAP
Carbon disulfide	NCDEQ, WVDEP, VELAP
Carbon tetrachloride	NCDEQ, WVDEP, VELAP
Chlorobenzene	NCDEQ, WVDEP, VELAP
Chloroethane	NCDEQ, WVDEP, VELAP
Chloroform	NCDEQ, WVDEP, VELAP
Chloromethane	NCDEQ, WVDEP, VELAP
Chloroprene	NCDEQ, WVDEP, VELAP
cis-1,2-Dichloroethylene	NCDEQ, WVDEP, VELAP
cis-1,3-Dichloropropene	NCDEQ, WVDEP, VELAP
Dibromochloromethane	NCDEQ, WVDEP, VELAP
Dibromomethane	NCDEQ, WVDEP, VELAP
Dichlorodifluoromethane	NCDEQ, WVDEP, VELAP
Ethyl methacrylate	NCDEQ, WVDEP, VELAP
Ethylbenzene	NCDEQ, WVDEP, VELAP
Iodomethane	NCDEQ, WVDEP, VELAP

## Certificate of Analysis

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Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
Isobutyl Alcohol	NCDEQ, WVDEP, VELAP
m+p-Xylenes	NCDEQ, WVDEP, VELAP
Methacrylonitrile	NCDEQ, WVDEP, VELAP
Methyl methacrylate	NCDEQ, WVDEP, VELAP
Methylene chloride	NCDEQ, WVDEP, VELAP
Naphthalene	NCDEQ, WVDEP, VELAP
o-Xylene	NCDEQ, WVDEP, VELAP
Propionitrile	NCDEQ, WVDEP, VELAP
Styrene	NCDEQ, WVDEP, VELAP
Tetrachloroethylene (PCE)	NCDEQ, WVDEP, VELAP
Toluene	NCDEQ, WVDEP, VELAP
trans-1,2-Dichloroethylene	NCDEQ, WVDEP, VELAP
trans-1,3-Dichloropropene	NCDEQ, WVDEP, VELAP
trans-1,4-Dichloro-2-butene	NCDEQ, WVDEP, VELAP
Trichloroethylene	NCDEQ, WVDEP, VELAP
Trichlorofluoromethane	NCDEQ, WVDEP, VELAP
Vinyl acetate	NCDEQ, WVDEP, VELAP
Vinyl chloride	NCDEQ, WVDEP, VELAP
Xylenes, Total	NCDEQ, WVDEP, VELAP

### **SW8270E in Non-Potable Water**

1,2,4,5-Tetrachlorobenzene	VELAP, NCDEQ, WVDEP
1,3,5-Trinitrobenzene	VELAP, NCDEQ, WVDEP
1,3-Dinitrobenzene	VELAP, NCDEQ, WVDEP
1,4-Naphthoquinone	VELAP, NCDEQ, WVDEP
1-Naphthylamine	VELAP, NCDEQ, WVDEP
2,3,4,6-Tetrachlorophenol	VELAP, NCDEQ, WVDEP
2,4,5-Trichlorophenol	VELAP, NCDEQ, WVDEP
2,4,6-Trichlorophenol	VELAP, NCDEQ, WVDEP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
2,4-Dichlorophenol	VELAP,NCDEQ,WVDEP
2,4-Dimethylphenol	VELAP,NCDEQ,WVDEP
2,4-Dinitrophenol	VELAP,NCDEQ,WVDEP
2,4-Dinitrotoluene	VELAP,NCDEQ,WVDEP
2,6-Dichlorophenol	VELAP,NCDEQ,WVDEP
2,6-Dinitrotoluene	VELAP,NCDEQ,WVDEP
2-Acetylaminofluorene	VELAP,NCDEQ,WVDEP
2-Chloronaphthalene	VELAP,NCDEQ,WVDEP
2-Chlorophenol	VELAP,NCDEQ,WVDEP
2-Methylnaphthalene	VELAP,NCDEQ,WVDEP
2-Naphthylamine	VELAP,NCDEQ,WVDEP
2-Nitroaniline	VELAP,NCDEQ,WVDEP
2-Nitrophenol	VELAP,NCDEQ,WVDEP
3,3'-Dichlorobenzidine	VELAP,NCDEQ,WVDEP
3,3'-Dimethylbenzidine	VELAP,NCDEQ,WVDEP
3-Methylcholanthrene	VELAP,NCDEQ,WVDEP
3-Nitroaniline	VELAP,NCDEQ,WVDEP
4,6-Dinitro-2-methylphenol	VELAP,NCDEQ,WVDEP
4-Aminobiphenyl	VELAP,NCDEQ,WVDEP
4-Bromophenyl phenyl ether	VELAP,NCDEQ,WVDEP
4-Chloroaniline	VELAP,NCDEQ,WVDEP
4-Chlorophenyl phenyl ether	VELAP,NCDEQ,WVDEP
4-Nitroaniline	VELAP,NCDEQ,WVDEP
4-Nitrophenol	VELAP,NCDEQ,WVDEP
5-Nitro-o-toluidine	VELAP,NCDEQ,WVDEP
7,12-Dimethylbenz (a) anthracene	VELAP,NCDEQ,WVDEP
Acenaphthene	VELAP,NCDEQ,WVDEP
Acenaphthylene	VELAP,NCDEQ,WVDEP

## Certificate of Analysis

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Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
Acetophenone	VELAP,NCDEQ,WVDEP
Anthracene	VELAP,NCDEQ,WVDEP
Benzo (a) anthracene	VELAP,NCDEQ,WVDEP
Benzo (a) pyrene	VELAP,NCDEQ,WVDEP
Benzo (b) fluoranthene	VELAP,NCDEQ,WVDEP
Benzo (g,h,i) perylene	VELAP,NCDEQ,WVDEP
Benzo (k) fluoranthene	VELAP,NCDEQ,WVDEP
Benzyl alcohol	VELAP,NCDEQ,WVDEP
bis (2-Chloroethoxy) methane	VELAP,NCDEQ,WVDEP
bis (2-Chloroethyl) ether	VELAP,NCDEQ,WVDEP
2,2'-Oxybis (1-chloropropane)	VELAP,NCDEQ,WVDEP
bis (2-Ethylhexyl) phthalate	VELAP,NCDEQ,WVDEP
Butyl benzyl phthalate	VELAP,NCDEQ,WVDEP
Chlorobenzilate	VELAP,NCDEQ,WVDEP
Chrysene	VELAP,NCDEQ,WVDEP
Diallate	VELAP,NCDEQ,WVDEP
Dibenz (a,h) anthracene	VELAP,NCDEQ,WVDEP
Dibenzofuran	VELAP,NCDEQ,WVDEP
Diethyl phthalate	VELAP,NCDEQ,WVDEP
Dimethoate	VELAP,NCDEQ,WVDEP
Dimethyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-butyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-octyl phthalate	VELAP,NCDEQ,WVDEP
Diphenylamine	VELAP,NCDEQ,WVDEP
Disulfoton	VELAP,NCDEQ,WVDEP
Ethyl methanesulfonate	VELAP,NCDEQ,WVDEP
Ethyl parathion	VELAP,NCDEQ,WVDEP
Famphur	VELAP,NCDEQ,WVDEP



## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
Fluoranthene	VELAP,NCDEQ,WVDEP
Fluorene	VELAP,NCDEQ,WVDEP
Hexachlorobenzene	VELAP,NCDEQ,WVDEP
Hexachlorobutadiene	VELAP,NCDEQ,WVDEP
Hexachlorocyclopentadiene	VELAP,NCDEQ,WVDEP
Hexachloroethane	VELAP,NCDEQ,WVDEP
Hexachloropropene	VELAP,NCDEQ,WVDEP
Indeno (1,2,3-cd) pyrene	VELAP,NCDEQ,WVDEP
Isodrin	VELAP,NCDEQ,WVDEP
Isophorone	VELAP,NCDEQ,WVDEP
Isosafrole	VELAP,NCDEQ,WVDEP
Kepone	VELAP,NCDEQ,WVDEP
m+p-Cresols	VELAP,NCDEQ,WVDEP
Methapyrilene	VELAP,NCDEQ,WVDEP
Methyl methanesulfonate	VELAP,NCDEQ,WVDEP
Methyl parathion	VELAP,NCDEQ,WVDEP
Nitrobenzene	VELAP,NCDEQ,WVDEP
n-Nitrosodiethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodimethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodi-n-butylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodi-n-propylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodiphenylamine	VELAP,NCDEQ,WVDEP
n-Nitrosomethylethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosopiperidine	VELAP,NCDEQ,WVDEP
n-Nitrosopyrrolidine	VELAP,NCDEQ,WVDEP
o,o,o-Triethyl phosphorothioate	VELAP,NCDEQ,WVDEP
o,o-Diethyl o-2-pyrazinyl phosphorothioate	VELAP,NCDEQ,WVDEP
o+m+p-Cresols	VELAP,WVDEP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
o-Cresol	VELAP,NCDEQ,WVDEP
o-Toluidine	VELAP,NCDEQ,WVDEP
p-(Dimethylamino) azobenzene	VELAP,NCDEQ,WVDEP
p-Chloro-m-cresol	VELAP,NCDEQ,WVDEP
Pentachlorobenzene	VELAP,NCDEQ,WVDEP
Pentachloronitrobenzene (quintozene)	VELAP,NCDEQ,WVDEP
Phenacetin	VELAP,NCDEQ,WVDEP
Phenanthrene	VELAP,NCDEQ,WVDEP
Phenol	VELAP,NCDEQ,WVDEP
Phorate	VELAP,NCDEQ,WVDEP
p-Phenylenediamine	VELAP,NCDEQ,WVDEP
Pronamide	VELAP,NCDEQ,WVDEP
Pyrene	VELAP,NCDEQ,WVDEP
Safrole	VELAP,NCDEQ,WVDEP
<b>SW9012B in Non-Potable Water</b>	
Cyanide	VELAP,WVDEP
<b>SW9056A in Non-Potable Water</b>	
Chloride	VELAP
<b>SW9215 in Non-Potable Water</b>	
Sulfide	VELAP

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**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Code	Description	Laboratory ID	Expires
MADEP	Massachusetts DEP	M-VA913	06/30/2022
MdDOE	Maryland DE Drinking Water	341	12/31/2022
NC	North Carolina DENR	495	07/31/2022
NCDEQ	North Carolina DEQ	495	12/31/2022
NCDOH	North Carolina Department of Health	51714	07/31/2022
NJDEP	NELAP-New Jersey DEP	VA015	06/30/2022
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #007	68-03503	10/31/2022
VELAP	NELAP-Virginia Certificate #11900	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2022

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

### Qualifiers and Definitions

B	Blank contamination. The recorded result is associated with a contaminated blank.
C	Continuing calibration verification response for this analyte is outside specifications.
Cl	Residual Chlorine or other oxidizing agent was detected in the container used to analyze this sample.
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
P	Duplicate analysis does not meet the acceptance criteria for precision
S	Surrogate recovery was outside acceptance criteria
RPD	Relative Percent Difference
Qual	Qualifiers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 022182768.07 TI
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? **YES** Va      Is sample from a chlorinated supply? YES **NO**      PWS I.D. #:

SAMPLER NAME (PRINT): **L. HOWARD**  
**M. NGUYEN**      SAMPLER SIGNATURE: *[Signature]*      Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS	
											VSWMR Table 3.1 B	VOC Table 3.1 B /EDB 8011	MEE	Chloride	Alkalinity	VSWMR TABLE 3.1 A		
1) MW-206 A	X					052422	1305		GW	6								
2) MW-104 B	X					↓	1505		GW	12	X							
3) MW-104 A	X					↓	1649		GW	12	X							
4) MW-101	X					052522	841		GW	12	X							
5) MW-106 B	X					↓	1141		GW	6								5.2°C
6) MW-106 A	X					↓	1116		GW	12	X							271
7)																		on ice
8)																		sealed
9)																		
10) TRIP BLANK	X					051922	1220		DI	6	X	X						

RECEIVED: <i>[Signature]</i> DATE / TIME: 1335	RECEIVED: LCN DATE / TIME: 052522 1202	QC Data Package	LAB USE ONLY	COOLER TEMP _____ °C
RECEIVED: LCN DATE / TIME: 052522 1202	RECEIVED: <i>[Signature]</i> DATE / TIME: 5/26/22 0800	Level I <input type="checkbox"/>	SCS-W	22E1388
RECEIVED: LCN DATE / TIME: 052522 1202	RECEIVED: <i>[Signature]</i> DATE / TIME: 5/26/22 0800	Level II <input checked="" type="checkbox"/>	1st Semi-Annual 2022	Recd: 05/26/2022 Due: 06/10/2022
RECEIVED: LCN DATE / TIME: 052522 1202	RECEIVED: <i>[Signature]</i> DATE / TIME: 5/26/22 0800	Level III <input type="checkbox"/>		
RECEIVED: LCN DATE / TIME: 052522 1202	RECEIVED: <i>[Signature]</i> DATE / TIME: 5/26/22 0800	Level IV <input type="checkbox"/>		

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**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? **YES** Va      Is sample from a chlorinated supply? YES **NO**      PWS I.D. #:

SAMPLER NAME (PRINT): **L. HOWARD**  
**M. NGUYEN**      SAMPLER SIGNATURE: *[Signature]*      Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)							COMMENTS
											As and Co 6020	Hg	Bis (2-ethylhexyl) phthalate <del>1,1-Dichloroethane,</del> Benzene, and Vinyl Chloride	MEE	Chloride	Alkalinity	VSWNR TABLE 3.1A	
1) MW-105 A	X				052422	1432		GW	10	X	X	X	X	X	X			
2) MW-210 A	X				↓	1706		GW	12		X	X		X	X			
3) MW-210 B	X				↓	1833		GW	12		X	X		X	X			
4) MW-109 109	X				↓	1845		GW	10	X	X	X	X	X	X			
5) MW-105 B	X				052522	853		GW	10	X	X	X	X	X	X			
6)																		
7)																	5.2°C	
8)																	LF1	
9)																	onice	
10)																	Sealed	

PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)

RECEIVED: <i>[Signature]</i> 052522 @ 1330 LCN RECEIVED: <i>[Signature]</i> 5/26/22 OXCO	QC Data Package Level I <input type="checkbox"/> Level II <input checked="" type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/>	LAB USE ONLY <b>SCS-W</b> <b>1st Semi-Annual 2022</b> <b>Recd: 05/26/2022 Due: 06/10/2022</b>	COOLER TEMP <b>22E1388</b> v130325002 1st Semi Annual
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# Sample Preservation Log

Order ID: 22E1388

Date Performed: 5/27/22

Analyst Performing Check: Mas for DLJ

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (808/808/808) PCB DW only			SVOC (229/229/229)			CrVI * **		Pest/PCB (808) / SVOC (828)													
		pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	Received Res. Cl	final	Received Res. Cl	final	Received Res. Cl	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH	pH as Received	Fixed pH										
		< 2	Other	> 12	Other	> 8	Other	< 1	Other	< 1	Other	< 1	Other	< 1	Other	< 1	Other	+	-	+	-	+	-	< 1	Other	Other	Other	Other											
01	B	X																	X																				
	G																																						
02	F	X																		X																			
	I																			X																			
03	E	X																		X																			
	F																			X																			
04	B	X																		X																			
	H																			X																			
05	B	X																		X																			
	G																			X																			
06	C	X																																					
07	A		X																																				
	D																			X																			
	E																																						
	H																																						

NaOH ID: \_\_\_\_\_ HNO<sub>3</sub> ID: 2E01121  
 H<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> ID: \_\_\_\_\_  
 HCl ID: \_\_\_\_\_ Na<sub>2</sub>SO<sub>3</sub> ID: \_\_\_\_\_

CrVI preserved date/time: \_\_\_\_\_  
 \* pH must be adjusted between 8.3 - 9.7  
 Buffer Sol'n ID: \_\_\_\_\_  
 1N NaOH ID: \_\_\_\_\_

Metals were received with pH = 3. HNO<sub>3</sub> was added at 1105 on 27 May 2022 by DLJ in the Log-In room to bring pH= <2.

# Sample Preservation Log

Order ID: 22E1388

Date Performed: 5/27/22

Analyst Performing Check: Mrs An DLJ

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/804/808) PCB DW only		BYOG (323/270/825)		CrVI * **		Pest/PCB (808)/BYOG(825)									
		pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	Received Res. Cl	Final + Dr.	Received Res. Cl	Final + Dr.	Received pH	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH				
		< 2	Other	> 12	Other	> 8	Other	< 1	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	+	.	+	.			< 1	Other		Other		Other				
08	A			✓																													
08	F	✓																															
08	F																																
08	H					✓																											
09	A			✓																													
09	E	✓																															
09	F																																
09	H			✓																													
10	C	✓																															
11	A			✓																													
11	E	✓																															
11	F																																
11	H			✓																													

NaOH ID: \_\_\_\_\_ HNO3 ID: 2E01121  
 H2SO4 ID: \_\_\_\_\_ Na2S2O3 ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na2SO3 ID: \_\_\_\_\_

CrVI preserved date/time: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 Buffer Soln ID: \_\_\_\_\_  
 1N NaOH ID: \_\_\_\_\_

Metals were received with pH = 3. HNO3 was added at 1105 on 27 May 2022 by DLJ in the Log-In room to bring pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR138 for waste water.



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**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Laboratory Order ID: 22E1388

### Sample Conditions Checklist

Samples Received at:	5.20°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes



1941 Reymet Road • Richmond, Virginia 23237 • Tel: (804)-358-8295 Fax: (804)-358-8297

## Certificate of Analysis

*Final Report*

Laboratory Order ID 22E1463

Client Name: SCS Engineers-Winchester  
296 Victory Road  
Winchester, VA 22602

Date Received: May 27, 2022 16:30  
Date Issued: July 12, 2022 14:25  
Project Number: 022180208.07 T1  
Purchase Order:

Submitted To: Jennifer Robb

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Enclosed are the results of analyses for samples received by the laboratory on 05/27/2022 16:30. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars  
Technical Director

**End Notes:**

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Enthalpy Analytical.

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Laboratory Sample ID: 22E1463-02

Client Sample ID: MW-205B

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	02	SW6020B	0.56	J	0.50	1.0	1	ug/L
Barium	02	SW6020B	93.3		1.00	5.00	1	ug/L
Zinc	02	SW6020B	3.43	J	2.50	5.00	1	ug/L
Methane	02	RSK175M	378		1.50	5.00	1	ug/L
Alkalinity	02	SM22 2320B-2011	309		5.0	5.0	1	mg/L
Chloride	02	SW9056A	8.3		0.5	1.0	1	mg/L

Laboratory Sample ID: 22E1463-03

Client Sample ID: Field Blank

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Acetone	03	SW8260D	12.1		7.00	10.0	1	ug/L

Laboratory Sample ID: 22E1463-04

Client Sample ID: MW-211A

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	04	SW6020B	47.5		1.00	5.00	1	ug/L
Cobalt	04	SW6020B	0.316	J	0.200	1.00	1	ug/L
Methane	04	RSK175M	27.0		1.50	5.00	1	ug/L
Alkalinity	04	SM22 2320B-2011	297		5.0	5.0	1	mg/L
Chloride	04	SW9056A	1.0	J	0.5	1.0	1	mg/L

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Laboratory Sample ID: **22E1463-05**                      Client Sample ID: **MW-206B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	05	SW6020B	0.61	J	0.50	1.0	1	ug/L
Barium	05	SW6020B	136		1.00	5.00	1	ug/L
Chromium	05	SW6020B	0.961	J	0.400	1.00	1	ug/L
Cobalt	05	SW6020B	1.43		0.200	1.00	1	ug/L
Copper	05	SW6020B	1.31		0.300	1.00	1	ug/L
Nickel	05	SW6020B	18.90		1.000	1.000	1	ug/L
Silver	05	SW6020B	0.136	J	0.0600	1.00	1	ug/L
Zinc	05	SW6020B	15.7		2.50	5.00	1	ug/L
Methane	05	RSK175M	3.48	J	1.50	5.00	1	ug/L
Alkalinity	05	SM22 2320B-2011	333		5.0	5.0	1	mg/L
Chloride	05	SW9056A	7.5		0.5	1.0	1	mg/L

Laboratory Sample ID: **22E1463-06**                      Client Sample ID: **MW-211B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	06	SW6020B	88.8		1.00	5.00	1	ug/L
Chromium	06	SW6020B	0.459	J	0.400	1.00	1	ug/L
Silver	06	SW6020B	0.0632	J	0.0600	1.00	1	ug/L
Zinc	06	SW6020B	3.52	J	2.50	5.00	1	ug/L
Alkalinity	06	SM22 2320B-2011	345		5.0	5.0	1	mg/L
Chloride	06	SW9056A	2.2		0.5	1.0	1	mg/L

### Analysis Detects Report

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

**Laboratory Sample ID: 22E1463-07**                      **Client Sample ID: MW-108**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	07	SW6020B	13		0.50	1.0	1	ug/L
Barium	07RE1	SW6020B	757		10.0	50.0	10	ug/L
Cadmium	07	SW6020B	0.203	J	0.100	1.00	1	ug/L
Chromium	07	SW6020B	1.15		0.400	1.00	1	ug/L
Cobalt	07	SW6020B	42.8		0.200	1.00	1	ug/L
Copper	07	SW6020B	2.50		0.300	1.00	1	ug/L
Mercury	07	SW7470A	0.00057		0.00020	0.00020	1	mg/L
Nickel	07	SW6020B	35.69		1.000	1.000	1	ug/L
Zinc	07	SW6020B	54.4		2.50	5.00	1	ug/L
1,1-Dichloroethane	07	SW8260D	5.81		0.60	1.00	1	ug/L
1,4-Dichlorobenzene	07	SW8260D	1.75		0.40	1.00	1	ug/L
Benzene	07	SW8260D	9.46		0.40	1.00	1	ug/L
Chlorobenzene	07	SW8260D	1.30		0.40	1.00	1	ug/L
Chloroethane	07	SW8260D	1.22		0.70	1.00	1	ug/L
cis-1,2-Dichloroethylene	07	SW8260D	54.7		0.40	1.00	1	ug/L
Toluene	07	SW8260D	17.4		0.50	1.00	1	ug/L
Vinyl chloride	07	SW8260D	8.13		0.50	0.50	1	ug/L
Phenol	07	SW8270E	3.37	J	2.34	10.0	1	ug/L
Methane	07RE1	RSK175M	2440		7.50	25.0	5	ug/L
Alkalinity	07	SM22 2320B-2011	680		5.0	5.0	1	mg/L
Chloride	07	SW9056A	34.7		0.5	1.0	1	mg/L

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Laboratory Sample ID: 22E1463-08      Client Sample ID: MW-108 Duplicate

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	08	SW6020B	13		0.50	1.0	1	ug/L
Barium	08RE1	SW6020B	733		10.0	50.0	10	ug/L
Chromium	08	SW6020B	0.473	J	0.400	1.00	1	ug/L
Cobalt	08	SW6020B	41.7		0.200	1.00	1	ug/L
Copper	08	SW6020B	0.716	J	0.300	1.00	1	ug/L
Nickel	08	SW6020B	34.63		1.000	1.000	1	ug/L
Zinc	08	SW6020B	27.6		2.50	5.00	1	ug/L
1,1-Dichloroethane	08	SW8260D	6.28		0.60	1.00	1	ug/L
Benzene	08	SW8260D	7.30		0.40	1.00	1	ug/L
Chlorobenzene	08	SW8260D	1.31		0.40	1.00	1	ug/L
Chloroethane	08	SW8260D	1.07		0.70	1.00	1	ug/L
cis-1,2-Dichloroethylene	08	SW8260D	61.3		0.40	1.00	1	ug/L
Toluene	08	SW8260D	10.9		0.50	1.00	1	ug/L
Vinyl chloride	08	SW8260D	7.98		0.50	0.50	1	ug/L
Phenol	08	SW8270E	2.75	J	2.34	10.0	1	ug/L
Methane	08RE1	RSK175M	3430		7.50	25.0	5	ug/L
Alkalinity	08	SM22 2320B-2011	639		5.0	5.0	1	mg/L
Chloride	08	SW9056A	35.7		0.5	1.0	1	mg/L

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the "Certificate of Analysis".

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Trip Blank	22E1463-01	Ground Water	05/19/2022 12:20	05/27/2022 16:30
MW-205B	22E1463-02	Ground Water	05/25/2022 14:24	05/27/2022 16:30
Field Blank	22E1463-03	Ground Water	05/25/2022 15:00	05/27/2022 16:30
MW-211A	22E1463-04	Ground Water	05/25/2022 18:09	05/27/2022 16:30
MW-206B	22E1463-05	Ground Water	05/26/2022 12:25	05/27/2022 16:30
MW-211B	22E1463-06	Ground Water	05/26/2022 13:55	05/27/2022 16:30
MW-108	22E1463-07	Ground Water	05/26/2022 18:10	05/27/2022 16:30
MW-108 Duplicate	22E1463-08	Ground Water	05/26/2022 19:10	05/27/2022 16:30

Final COA reissued on 6/27 to update reportinglist and limits per COC.



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: Trip Blank

Laboratory Sample ID: 22E1463-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	01	630-20-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	0.40	1	ug/L	RJB
1,1,1-Trichloroethane	01	71-55-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.60	1.00	1	ug/L	RJB
1,1,1,2-Tetrachloroethane	01	79-34-5	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.30	0.40	1	ug/L	RJB
1,1,2-Trichloroethane	01	79-00-5	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.50	1.00	1	ug/L	RJB
1,1-Dichloroethane	01	75-34-3	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.60	1.00	1	ug/L	RJB
1,1-Dichloroethylene	01	75-35-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.70	1.00	1	ug/L	RJB
1,1-Dichloropropene	01	563-58-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.60	1.00	1	ug/L	RJB
1,2,3-Trichloropropane	01	96-18-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
1,2,4-Trichlorobenzene	01	120-82-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.50	1.00	1	ug/L	RJB
1,2-Dichlorobenzene	01	95-50-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichloroethane	01	107-06-2	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.70	1.00	1	ug/L	RJB
1,2-Dichloropropane	01	78-87-5	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
1,3-Dichlorobenzene	01	541-73-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.30	1.00	1	ug/L	RJB
1,3-Dichloropropane	01	142-28-9	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		1.00	1.00	1	ug/L	RJB
1,4-Dichlorobenzene	01	106-46-7	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
2,2-Dichloropropane	01	594-20-7	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.60	2.00	1	ug/L	RJB
2-Butanone (MEK)	01	78-93-3	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		3.00	10.0	1	ug/L	RJB
2-Hexanone (MBK)	01	591-78-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		2.20	5.00	1	ug/L	RJB
4-Methyl-2-pentanone (MIBK)	01	108-10-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		1.50	5.00	1	ug/L	RJB
Acetone	01	67-64-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		7.00	10.0	1	ug/L	RJB
Acetonitrile	01	75-05-8	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		8.00	10.0	1	ug/L	RJB
Acrolein	01	107-02-8	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		6.00	10.0	1	ug/L	RJB
Acrylonitrile	01	107-13-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		1.70	5.00	1	ug/L	RJB
Allyl chloride	01	107-05-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.60	1.00	1	ug/L	RJB

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: Trip Blank

Laboratory Sample ID: 22E1463-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Benzene	01	71-43-2	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Bromochloromethane	01	74-97-5	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.50	1.00	1	ug/L	RJB
Bromodichloromethane	01	75-27-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	0.50	1	ug/L	RJB
Bromoform	01	75-25-2	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Bromomethane	01	74-83-9	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.80	1.00	1	ug/L	RJB
Carbon disulfide	01	75-15-0	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		5.00	10.0	1	ug/L	RJB
Carbon tetrachloride	01	56-23-5	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.50	1.00	1	ug/L	RJB
Chlorobenzene	01	108-90-7	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Chloroethane	01	75-00-3	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.70	1.00	1	ug/L	RJB
Chloroform	01	67-66-3	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.50	0.50	1	ug/L	RJB
Chloromethane	01	74-87-3	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.95	1.00	1	ug/L	RJB
Chloroprene	01	126-99-8	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.50	5.00	1	ug/L	RJB
cis-1,2-Dichloroethylene	01	156-59-2	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
cis-1,3-Dichloropropene	01	10061-01-5	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.30	1.00	1	ug/L	RJB
Dibromochloromethane	01	124-48-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.35	0.50	1	ug/L	RJB
Dibromomethane	01	74-95-3	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Dichlorodifluoromethane	01	75-71-8	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.95	1.00	1	ug/L	RJB
Ethyl methacrylate	01	97-63-2	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.70	5.00	1	ug/L	RJB
Ethylbenzene	01	100-41-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Iodomethane	01	74-88-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		6.00	10.0	1	ug/L	RJB
Isobutyl Alcohol	01	78-83-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		25.0	40.0	1	ug/L	RJB
m+p-Xylenes	01	179601-23-1	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.60	2.00	1	ug/L	RJB
Methacrylonitrile	01	126-98-7	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		1.00	1.50	1	ug/L	RJB

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: Trip Blank

Laboratory Sample ID: 22E1463-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	01	80-62-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.70	2.00	1	ug/L	RJB
Methylene chloride	01	75-09-2	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		4.00	4.00	1	ug/L	RJB
Naphthalene	01	91-20-3	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.80	1.00	1	ug/L	RJB
o-Xylene	01	95-47-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Propionitrile	01	107-12-0	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		7.50	40.0	1	ug/L	RJB
Styrene	01	100-42-5	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Tetrachloroethylene (PCE)	01	127-18-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Toluene	01	108-88-3	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.50	1.00	1	ug/L	RJB
trans-1,2-Dichloroethylene	01	156-60-5	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.60	1.00	1	ug/L	RJB
trans-1,3-Dichloropropene	01	10061-02-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.30	1.00	1	ug/L	RJB
trans-1,4-Dichloro-2-butene	01	110-57-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		1.00	4.00	1	ug/L	RJB
Trichloroethylene	01	79-01-6	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.40	1.00	1	ug/L	RJB
Trichlorofluoromethane	01	75-69-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.80	1.00	1	ug/L	RJB
Vinyl acetate	01	108-05-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		2.00	10.0	1	ug/L	RJB
Vinyl chloride	01	75-01-4	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		0.50	0.50	1	ug/L	RJB
Xylenes, Total	01	1330-20-7	SW8260D	06/02/2022 13:38	06/02/2022 13:38	BLOD		1.00	3.00	1	ug/L	RJB
Surr: 1,2-Dichloroethane-d4 (Surr)	01	90.2 %	70-120	06/02/2022 13:38	06/02/2022 13:38							
Surr: 4-Bromofluorobenzene (Surr)	01	92.9 %	75-120	06/02/2022 13:38	06/02/2022 13:38							
Surr: Dibromofluoromethane (Surr)	01	91.3 %	70-130	06/02/2022 13:38	06/02/2022 13:38							
Surr: Toluene-d8 (Surr)	01	101 %	70-130	06/02/2022 13:38	06/02/2022 13:38							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: Trip Blank

Laboratory Sample ID: 22E1463-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	01	106-93-4	SW8011	06/07/2022 11:30	06/07/2022 19:36	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	01	96-18-4	SW8011	06/07/2022 11:30	06/07/2022 19:36	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	01	96-12-8	SW8011	06/07/2022 11:30	06/07/2022 19:36	BLOD		0.005	0.010	1	ug/L	LBH2

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Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	02	7440-22-4	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	02	7440-38-2	SW6020B	06/02/2022 17:00	06/07/2022 17:45	0.56	J	0.50	1.0	1	ug/L	RCV
Barium	02	7440-39-3	SW6020B	06/02/2022 17:00	06/07/2022 17:45	93.3		1.00	5.00	1	ug/L	RCV
Beryllium	02	7440-41-7	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	02	7440-43-9	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	02	7440-48-4	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		0.200	1.00	1	ug/L	RCV
Chromium	02	7440-47-3	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		0.400	1.00	1	ug/L	RCV
Copper	02	7440-50-8	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		0.300	1.00	1	ug/L	RCV
Mercury	02	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 15:20	BLOD		0.00020	0.00020	1	mg/L	MWL
Nickel	02	7440-02-0	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		1.000	1.000	1	ug/L	RCV
Lead	02	7439-92-1	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	02	7440-36-0	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	02	7782-49-2	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		0.850	1.00	1	ug/L	RCV
Tin	02	7440-31-5	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		1.00	1.00	1	ug/L	RCV
Thallium	02	7440-28-0	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	02	7440-62-2	SW6020B	06/02/2022 17:00	06/07/2022 17:45	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	02	7440-66-6	SW6020B	06/02/2022 17:00	06/07/2022 17:45	3.43	J	2.50	5.00	1	ug/L	RCV

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	02	630-20-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	02	71-55-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	02	79-34-5	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	02	79-00-5	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	02	75-34-3	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	02	75-35-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.70	1.00	1	ug/L	BMR
1,1-Dichloropropene	02	563-58-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.60	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	02	96-18-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
1,2,4-Trichlorobenzene	02	120-82-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.50	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	02	95-50-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	02	107-06-2	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	02	78-87-5	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
1,3-Dichlorobenzene	02	541-73-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.30	1.00	1	ug/L	BMR
1,3-Dichloropropane	02	142-28-9	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		1.00	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	02	106-46-7	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
2,2-Dichloropropane	02	594-20-7	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.60	2.00	1	ug/L	BMR
2-Butanone (MEK)	02	78-93-3	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	02	591-78-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	02	108-10-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	02	67-64-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		7.00	10.0	1	ug/L	BMR
Acetonitrile	02	75-05-8	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		8.00	10.0	1	ug/L	BMR
Acrolein	02	107-02-8	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		6.00	10.0	1	ug/L	BMR
Acrylonitrile	02	107-13-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		1.70	5.00	1	ug/L	BMR
Allyl chloride	02	107-05-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.60	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Benzene	02	71-43-2	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	02	74-97-5	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	02	75-27-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	02	75-25-2	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	02	74-83-9	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	02	75-15-0	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	02	56-23-5	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	02	108-90-7	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Chloroethane	02	75-00-3	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	02	67-66-3	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	02	74-87-3	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.95	1.00	1	ug/L	BMR
Chloroprene	02	126-99-8	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.50	5.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	02	156-59-2	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	02	10061-01-5	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	02	124-48-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	02	74-95-3	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Dichlorodifluoromethane	02	75-71-8	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.95	1.00	1	ug/L	BMR
Ethyl methacrylate	02	97-63-2	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.70	5.00	1	ug/L	BMR
Ethylbenzene	02	100-41-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	02	74-88-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		6.00	10.0	1	ug/L	BMR
Isobutyl Alcohol	02	78-83-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		25.0	40.0	1	ug/L	BMR
m+p-Xylenes	02	179601-23-1	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.60	2.00	1	ug/L	BMR
Methacrylonitrile	02	126-98-7	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		1.00	1.50	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	02	80-62-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.70	2.00	1	ug/L	BMR
Methylene chloride	02	75-09-2	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		4.00	4.00	1	ug/L	BMR
Naphthalene	02	91-20-3	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.80	1.00	1	ug/L	BMR
o-Xylene	02	95-47-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Propionitrile	02	107-12-0	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		7.50	40.0	1	ug/L	BMR
Styrene	02	100-42-5	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	02	127-18-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	02	108-88-3	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	02	156-60-5	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	02	10061-02-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	02	110-57-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	02	79-01-6	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	02	75-69-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	02	108-05-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	02	75-01-4	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	02	1330-20-7	SW8260D	06/01/2022 12:17	06/01/2022 12:17	BLOD		1.00	3.00	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	02	104 %	70-120	06/01/2022 12:17	06/01/2022 12:17							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	02	99.8 %	75-120	06/01/2022 12:17	06/01/2022 12:17							
<i>Surr: Dibromofluoromethane (Surr)</i>	02	103 %	70-130	06/01/2022 12:17	06/01/2022 12:17							
<i>Surr: Toluene-d8 (Surr)</i>	02	101 %	70-130	06/01/2022 12:17	06/01/2022 12:17							



## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
1,2,4,5-Tetrachlorobenzene	02	95-94-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
1,3,5-Trinitrobenzene	02	99-35-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	5.00	1	ug/L	MGG
1,3-Dinitrobenzene	02	99-65-0	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
1,4-Naphthoquinone	02	130-15-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
1-Naphthylamine	02	134-32-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
2,3,4,6-Tetrachlorophenol	02	58-90-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
2,4,5-Trichlorophenol	02	95-95-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
2,4,6-Trichlorophenol	02	88-06-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		7.48	10.0	1	ug/L	MGG
2,4-Dichlorophenol	02	120-83-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.80	10.0	1	ug/L	MGG
2,4-Dimethylphenol	02	105-67-9	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		4.67	4.67	1	ug/L	MGG
2,4-Dinitrophenol	02	51-28-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		7.48	50.0	1	ug/L	MGG
2,4-Dinitrotoluene	02	121-14-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		5.61	10.0	1	ug/L	MGG
2,6-Dichlorophenol	02	87-65-0	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
2,6-Dinitrotoluene	02	606-20-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.74	10.0	1	ug/L	MGG
2-Acetylaminofluorene	02	53-96-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
2-Chloronaphthalene	02	91-58-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		4.21	10.0	1	ug/L	MGG
2-Chlorophenol	02	95-57-8	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	10.0	1	ug/L	MGG
2-Methylnaphthalene	02	91-57-6	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
2-Naphthylamine	02	91-59-8	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
2-Nitroaniline	02	88-74-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	20.0	1	ug/L	MGG
2-Nitrophenol	02	88-75-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		5.61	10.0	1	ug/L	MGG
3,3'-Dichlorobenzidine	02	91-94-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.74	10.0	1	ug/L	MGG
3,3'-Dimethylbenzidine	02	119-93-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
3-Methylcholanthrene	02	56-49-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
3-Nitroaniline	02	99-09-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	20.0	1	ug/L	MGG
4,6-Dinitro-2-methylphenol	02	534-52-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD	C	7.48	50.0	1	ug/L	MGG
4-Aminobiphenyl	02	92-67-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
4-Bromophenyl phenyl ether	02	101-55-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	10.0	1	ug/L	MGG
4-Chloroaniline	02	106-47-8	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
4-Chlorophenyl phenyl ether	02	7005-72-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	10.0	1	ug/L	MGG
4-Nitroaniline	02	100-01-6	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	20.0	1	ug/L	MGG
4-Nitrophenol	02	100-02-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	50.0	1	ug/L	MGG
5-Nitro-o-toluidine	02	99-55-8	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
7,12-Dimethylbenz (a) anthracene	02	57-97-6	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
Acenaphthene	02	83-32-9	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.74	10.0	1	ug/L	MGG
Acenaphthylene	02	208-96-8	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.74	10.0	1	ug/L	MGG
Acetophenone	02	98-86-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	20.0	1	ug/L	MGG
Anthracene	02	120-12-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (a) anthracene	02	56-55-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	9.35	1	ug/L	MGG
Benzo (a) pyrene	02	50-32-8	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.19	0.20	1	ug/L	MGG
Benzo (b) fluoranthene	02	205-99-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.74	10.0	1	ug/L	MGG
Benzo (g,h,i) perylene	02	191-24-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD	C	4.67	10.0	1	ug/L	MGG
Benzo (k) fluoranthene	02	207-08-9	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		5.61	10.0	1	ug/L	MGG
Benzyl alcohol	02	100-51-6	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	20.0	1	ug/L	MGG
bis (2-Chloroethoxy) methane	02	111-91-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	10.0	1	ug/L	MGG
bis (2-Chloroethyl) ether	02	111-44-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	10.0	1	ug/L	MGG
2,2'-Oxybis (1-chloropropane)	02	108-60-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.80	10.0	1	ug/L	MGG
bis (2-Ethylhexyl) phthalate	02	117-81-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		4.67	5.00	1	ug/L	MGG

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
Butyl benzyl phthalate	02	85-68-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		6.54	10.0	1	ug/L	MGG
Chlorobenzilate	02	510-15-6	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
Chrysene	02	218-01-9	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.74	10.0	1	ug/L	MGG
Diallate	02	2303-16-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
Dibenz (a,h) anthracene	02	53-70-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD	C	4.67	10.0	1	ug/L	MGG
Dibenzofuran	02	132-64-9	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	5.00	1	ug/L	MGG
Diethyl phthalate	02	84-66-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.80	10.0	1	ug/L	MGG
Dimethoate	02	60-51-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
Dimethyl phthalate	02	131-11-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	10.0	1	ug/L	MGG
Di-n-butyl phthalate	02	84-74-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.74	10.0	1	ug/L	MGG
Di-n-octyl phthalate	02	117-84-0	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		7.48	10.0	1	ug/L	MGG
Diphenylamine	02	122-39-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
Disulfoton	02	298-04-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
Ethyl methanesulfonate	02	62-50-0	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	20.0	1	ug/L	MGG
Ethyl parathion	02	56-38-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
Famphur	02	52-85-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
Fluoranthene	02	206-44-0	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		4.67	10.0	1	ug/L	MGG
Fluorene	02	86-73-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.74	10.0	1	ug/L	MGG
Hexachlorobenzene	02	118-74-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	0.93	1	ug/L	MGG
Hexachlorobutadiene	02	87-68-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		4.21	10.0	1	ug/L	MGG
Hexachlorocyclopentadiene	02	77-47-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD	C	3.74	10.0	1	ug/L	MGG
Hexachloroethane	02	67-72-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	10.0	1	ug/L	MGG
Hexachloropropene	02	1888-71-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	2.50	1	ug/L	MGG
Indeno (1,2,3-cd) pyrene	02	193-39-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD	C	2.80	10.0	1	ug/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
Isodrin	02	465-73-6	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
Isophorone	02	78-59-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		4.67	10.0	1	ug/L	MGG
Isosafrole	02	120-58-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
Kepon	02	143-50-0	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD	C	1.87	9.35	1	ug/L	MGG
m+p-Cresols	02	1319-77-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
Methapyrilene	02	91-80-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
Methyl methanesulfonate	02	66-27-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
Methyl parathion	02	298-00-0	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	2.50	1	ug/L	MGG
Nitrobenzene	02	98-95-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodiethylamine	02	55-18-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	2.50	1	ug/L	MGG
n-Nitrosodimethylamine	02	62-75-9	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodi-n-butylamine	02	924-16-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosodi-n-propylamine	02	621-64-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		3.27	10.0	1	ug/L	MGG
n-Nitrosodiphenylamine	02	86-30-6	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosomethylethylamine	02	10595-95-6	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	2.50	1	ug/L	MGG
n-Nitrosopiperidine	02	100-75-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosopyrrolidine	02	930-55-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	2.50	1	ug/L	MGG
o,o,o-Triethyl phosphorothioate	02	126-68-1	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
o,o-Diethyl o-2-pyrazinyl phosphorothioate	02	297-97-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
o+m+p-Cresols	02	1319-77-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.80	10.0	1	ug/L	MGG
o-Cresol	02	95-48-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		7.48	10.0	1	ug/L	MGG
o-Toluidine	02	95-53-4	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	2.50	1	ug/L	MGG
p-(Dimethylamino) azobenzene	02	60-11-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	2.50	1	ug/L	MGG

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
p-Chloro-m-cresol	02	59-50-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		7.48	10.0	1	ug/L	MGG
Pentachlorobenzene	02	608-93-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
Pentachloronitrobenzene (quintozene)	02	82-68-8	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	9.35	1	ug/L	MGG
Phenacetin	02	62-44-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		0.93	10.0	1	ug/L	MGG
Phenanthrene	02	85-01-8	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		7.48	10.0	1	ug/L	MGG
Phenol	02	108-95-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		2.34	10.0	1	ug/L	MGG
Phorate	02	298-02-2	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	2.50	1	ug/L	MGG
p-Phenylenediamine	02	106-50-3	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD	C	1.87	10.0	1	ug/L	MGG
Pronamide	02	23950-58-5	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	10.0	1	ug/L	MGG
Pyrene	02	129-00-0	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		6.54	10.0	1	ug/L	MGG
Safrole	02	94-59-7	SW8270E	06/01/2022 10:16	06/01/2022 23:57	BLOD		1.87	2.50	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	02	62.4 %	10-86	06/01/2022 10:16	06/01/2022 23:57							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	02	78.3 %	9-87	06/01/2022 10:16	06/01/2022 23:57							
<i>Surr: 2-Fluorophenol (Surr)</i>	02	50.0 %	10-52	06/01/2022 10:16	06/01/2022 23:57							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	02	76.6 %	10-98.5	06/01/2022 10:16	06/01/2022 23:57							
<i>Surr: Phenol-d5 (Surr)</i>	02	32.8 %	5-33	06/01/2022 10:16	06/01/2022 23:57							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	02	84.6 %	27-133	06/01/2022 10:16	06/01/2022 23:57							

## Certificate of Analysis

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Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
PCB as Aroclor 1016	02	12674-11-2	SW8082A	06/01/2022 09:00	06/01/2022 20:10	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1221	02	11104-28-2	SW8082A	06/01/2022 09:00	06/01/2022 20:10	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1232	02	11141-16-5	SW8082A	06/01/2022 09:00	06/01/2022 20:10	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1242	02	53469-21-9	SW8082A	06/01/2022 09:00	06/01/2022 20:10	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1248	02	12672-29-6	SW8082A	06/01/2022 09:00	06/01/2022 20:10	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1254	02	11097-69-1	SW8082A	06/01/2022 09:00	06/01/2022 20:10	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1260	02	11096-82-5	SW8082A	06/01/2022 09:00	06/01/2022 20:10	BLOD		0.140	0.200	1	ug/L	LBH2
<i>Surr: DCB</i>	02	98.7 %	30-105	06/01/2022 09:00	06/01/2022 20:10							
<i>Surr: TCMX</i>	02	63.9 %	30-105	06/01/2022 09:00	06/01/2022 20:10							
4,4'-DDD	02	72-54-8	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDE	02	72-55-9	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDT	02	50-29-3	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Aldrin	02	309-00-2	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-BHC	02	319-84-6	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-Chlordane	02	5103-71-9	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
beta-BHC	02	319-85-7	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.019	0.050	1	ug/L	LBH2
Chlordane	02	57-74-9	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.187	0.200	1	ug/L	LBH2
delta-BHC	02	319-86-8	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Dieldrin	02	60-57-1	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan I	02	959-98-8	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan II	02	33213-65-9	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan sulfate	02	1031-07-8	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin	02	72-20-8	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin aldehyde	02	7421-93-4	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
gamma-BHC (Lindane)	02	58-89-9	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
gamma-Chlordane	02	5103-74-2	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor	02	76-44-8	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor epoxide	02	1024-57-3	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Methoxychlor	02	72-43-5	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.005	0.050	1	ug/L	LBH2
Toxaphene	02	8001-35-2	SW8081B	06/01/2022 09:00	06/02/2022 10:16	BLOD		0.187	1.00	1	ug/L	LBH2
Surr: TCMX	02	55.8 %	18-112	06/01/2022 09:00	06/02/2022 10:16							
Surr: DCB	02	70.4 %	27-131	06/01/2022 09:00	06/02/2022 10:16							

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Client Sample ID: MW-205B

Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-T	02	93-76-5	SW8151A	06/01/2022 16:20	06/09/2022 14:28	BLOD		0.200	0.500	1	ug/L	LBH2
2,4,5-TP (Silvex)	02	93-72-1	SW8151A	06/01/2022 16:20	06/09/2022 14:28	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	02	94-75-7	SW8151A	06/01/2022 16:20	06/09/2022 14:28	BLOD		0.200	0.500	1	ug/L	LBH2
Dinoseb	02	88-85-7	SW8151A	06/01/2022 16:20	06/09/2022 14:28	BLOD		0.200	0.500	1	ug/L	LBH2
Pentachlorophenol	02	87-86-5	SW8151A	06/01/2022 16:20	06/09/2022 14:28	BLOD		0.200	0.500	1	ug/L	LBH2
<i>Surr: DCAA (Surr)</i>	02	86.1 %	48.5-134	06/01/2022 16:20	06/09/2022 14:28							



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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	02	106-93-4	SW8011	06/07/2022 11:30	06/07/2022 19:57	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	02	96-18-4	SW8011	06/07/2022 11:30	06/07/2022 19:57	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	02	96-12-8	SW8011	06/07/2022 11:30	06/07/2022 19:57	BLOD		0.005	0.010	1	ug/L	LBH2

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Laboratory Sample ID: 22E1463-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	02	74-84-0	RSK175M	06/02/2022 11:00	06/02/2022 11:00	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	02	74-85-1	RSK175M	06/02/2022 11:00	06/02/2022 11:00	BLOD		1.50	5.00	1	ug/L	BMR
<b>Methane</b>	02	74-82-8	RSK175M	06/02/2022 11:00	06/02/2022 11:00	378		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	02	114 %	70-130	06/02/2022 11:00	06/02/2022 11:00							

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Client Sample ID: **MW-205B**

Laboratory Sample ID: **22E1463-02**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	02	NA	SM22 2320B-2011	06/08/2022 16:42	06/08/2022 16:42	309		5.0	5.0	1	mg/L	MAH
Chloride	02	16887-00-6	SW9056A	05/31/2022 22:02	05/31/2022 22:02	8.3		0.5	1.0	1	mg/L	MGG
Cyanide	02	57-12-5	SW9012B	06/06/2022 17:35	06/06/2022 17:35	BLOD		0.01	0.01	1	mg/L	Omnion Use
Sulfide	02	18496-25-8	SW9215	05/31/2022 16:50	05/31/2022 16:50	BLOD		0.80	1.00	1	mg/L	MJRL

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Client Sample ID: Field Blank

Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	03	7440-22-4	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	03	7440-38-2	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		0.50	1.0	1	ug/L	RCV
Barium	03	7440-39-3	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		1.00	5.00	1	ug/L	RCV
Beryllium	03	7440-41-7	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	03	7440-43-9	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	03	7440-48-4	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		0.200	1.00	1	ug/L	RCV
Chromium	03	7440-47-3	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		0.400	1.00	1	ug/L	RCV
Copper	03	7440-50-8	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		0.300	1.00	1	ug/L	RCV
Mercury	03	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 17:51	BLOD		0.00020	0.00020	1	mg/L	ARP
Nickel	03	7440-02-0	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		1.000	1.000	1	ug/L	RCV
Lead	03	7439-92-1	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	03	7440-36-0	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	03	7782-49-2	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		0.850	1.00	1	ug/L	RCV
Tin	03	7440-31-5	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		1.00	1.00	1	ug/L	RCV
Thallium	03	7440-28-0	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	03	7440-62-2	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	03	7440-66-6	SW6020B	06/02/2022 17:00	06/07/2022 17:53	BLOD		2.50	5.00	1	ug/L	RCV

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Client Sample ID: Field Blank

Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	03	630-20-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	0.40	1	ug/L	RJB
1,1,1-Trichloroethane	03	71-55-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.60	1.00	1	ug/L	RJB
1,1,2,2-Tetrachloroethane	03	79-34-5	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.30	0.40	1	ug/L	RJB
1,1,2-Trichloroethane	03	79-00-5	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.50	1.00	1	ug/L	RJB
1,1-Dichloroethane	03	75-34-3	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.60	1.00	1	ug/L	RJB
1,1-Dichloroethylene	03	75-35-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.70	1.00	1	ug/L	RJB
1,1-Dichloropropene	03	563-58-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.60	1.00	1	ug/L	RJB
1,2,3-Trichloropropane	03	96-18-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
1,2,4-Trichlorobenzene	03	120-82-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.50	1.00	1	ug/L	RJB
1,2-Dichlorobenzene	03	95-50-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichloroethane	03	107-06-2	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.70	1.00	1	ug/L	RJB
1,2-Dichloropropane	03	78-87-5	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
1,3-Dichlorobenzene	03	541-73-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.30	1.00	1	ug/L	RJB
1,3-Dichloropropane	03	142-28-9	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		1.00	1.00	1	ug/L	RJB
1,4-Dichlorobenzene	03	106-46-7	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
2,2-Dichloropropane	03	594-20-7	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.60	2.00	1	ug/L	RJB
2-Butanone (MEK)	03	78-93-3	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		3.00	10.0	1	ug/L	RJB
2-Hexanone (MBK)	03	591-78-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		2.20	5.00	1	ug/L	RJB
4-Methyl-2-pentanone (MIBK)	03	108-10-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		1.50	5.00	1	ug/L	RJB
Acetone	03	67-64-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	12.1		7.00	10.0	1	ug/L	RJB
Acetonitrile	03	75-05-8	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		8.00	10.0	1	ug/L	RJB
Acrolein	03	107-02-8	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		6.00	10.0	1	ug/L	RJB
Acrylonitrile	03	107-13-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		1.70	5.00	1	ug/L	RJB
Allyl chloride	03	107-05-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.60	1.00	1	ug/L	RJB

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Client Sample ID: Field Blank

Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Benzene	03	71-43-2	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Bromochloromethane	03	74-97-5	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.50	1.00	1	ug/L	RJB
Bromodichloromethane	03	75-27-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	0.50	1	ug/L	RJB
Bromoform	03	75-25-2	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Bromomethane	03	74-83-9	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.80	1.00	1	ug/L	RJB
Carbon disulfide	03	75-15-0	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		5.00	10.0	1	ug/L	RJB
Carbon tetrachloride	03	56-23-5	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.50	1.00	1	ug/L	RJB
Chlorobenzene	03	108-90-7	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Chloroethane	03	75-00-3	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.70	1.00	1	ug/L	RJB
Chloroform	03	67-66-3	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.50	0.50	1	ug/L	RJB
Chloromethane	03	74-87-3	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.95	1.00	1	ug/L	RJB
Chloroprene	03	126-99-8	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.50	5.00	1	ug/L	RJB
cis-1,2-Dichloroethylene	03	156-59-2	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
cis-1,3-Dichloropropene	03	10061-01-5	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.30	1.00	1	ug/L	RJB
Dibromochloromethane	03	124-48-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.35	0.50	1	ug/L	RJB
Dibromomethane	03	74-95-3	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Dichlorodifluoromethane	03	75-71-8	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.95	1.00	1	ug/L	RJB
Ethyl methacrylate	03	97-63-2	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.70	5.00	1	ug/L	RJB
Ethylbenzene	03	100-41-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Iodomethane	03	74-88-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		6.00	10.0	1	ug/L	RJB
Isobutyl Alcohol	03	78-83-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		25.0	40.0	1	ug/L	RJB
m+p-Xylenes	03	179601-23-1	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.60	2.00	1	ug/L	RJB
Methacrylonitrile	03	126-98-7	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		1.00	1.50	1	ug/L	RJB

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Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: Field Blank

Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	03	80-62-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.70	2.00	1	ug/L	RJB
Methylene chloride	03	75-09-2	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		4.00	4.00	1	ug/L	RJB
Naphthalene	03	91-20-3	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.80	1.00	1	ug/L	RJB
o-Xylene	03	95-47-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Propionitrile	03	107-12-0	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		7.50	40.0	1	ug/L	RJB
Styrene	03	100-42-5	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Tetrachloroethylene (PCE)	03	127-18-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Toluene	03	108-88-3	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.50	1.00	1	ug/L	RJB
trans-1,2-Dichloroethylene	03	156-60-5	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.60	1.00	1	ug/L	RJB
trans-1,3-Dichloropropene	03	10061-02-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.30	1.00	1	ug/L	RJB
trans-1,4-Dichloro-2-butene	03	110-57-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		1.00	4.00	1	ug/L	RJB
Trichloroethylene	03	79-01-6	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.40	1.00	1	ug/L	RJB
Trichlorofluoromethane	03	75-69-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.80	1.00	1	ug/L	RJB
Vinyl acetate	03	108-05-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		2.00	10.0	1	ug/L	RJB
Vinyl chloride	03	75-01-4	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		0.50	0.50	1	ug/L	RJB
Xylenes, Total	03	1330-20-7	SW8260D	06/02/2022 14:02	06/02/2022 14:02	BLOD		1.00	3.00	1	ug/L	RJB
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	03	95.3 %	70-120	06/02/2022 14:02	06/02/2022 14:02							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	03	91.5 %	75-120	06/02/2022 14:02	06/02/2022 14:02							
<i>Surr: Dibromofluoromethane (Surr)</i>	03	89.8 %	70-130	06/02/2022 14:02	06/02/2022 14:02							
<i>Surr: Toluene-d8 (Surr)</i>	03	105 %	70-130	06/02/2022 14:02	06/02/2022 14:02							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: Field Blank

Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
1,2,4,5-Tetrachlorobenzene	03	95-94-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
1,3,5-Trinitrobenzene	03	99-35-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	5.00	1	ug/L	MGG
1,3-Dinitrobenzene	03	99-65-0	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
1,4-Naphthoquinone	03	130-15-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
1-Naphthylamine	03	134-32-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
2,3,4,6-Tetrachlorophenol	03	58-90-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
2,4,5-Trichlorophenol	03	95-95-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
2,4,6-Trichlorophenol	03	88-06-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		7.48	10.0	1	ug/L	MGG
2,4-Dichlorophenol	03	120-83-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.80	10.0	1	ug/L	MGG
2,4-Dimethylphenol	03	105-67-9	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.67	4.67	1	ug/L	MGG
2,4-Dinitrophenol	03	51-28-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		7.48	50.0	1	ug/L	MGG
2,4-Dinitrotoluene	03	121-14-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		5.61	10.0	1	ug/L	MGG
2,6-Dichlorophenol	03	87-65-0	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
2,6-Dinitrotoluene	03	606-20-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
2-Acetylaminofluorene	03	53-96-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
2-Chloronaphthalene	03	91-58-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.21	10.0	1	ug/L	MGG
2-Chlorophenol	03	95-57-8	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	10.0	1	ug/L	MGG
2-Methylnaphthalene	03	91-57-6	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
2-Naphthylamine	03	91-59-8	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
2-Nitroaniline	03	88-74-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	20.0	1	ug/L	MGG
2-Nitrophenol	03	88-75-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		5.61	10.0	1	ug/L	MGG
3,3'-Dichlorobenzidine	03	91-94-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
3,3'-Dimethylbenzidine	03	119-93-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
3-Methylcholanthrene	03	56-49-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG



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Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
3-Nitroaniline	03	99-09-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	20.0	1	ug/L	MGG
4,6-Dinitro-2-methylphenol	03	534-52-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		7.48	50.0	1	ug/L	MGG
4-Aminobiphenyl	03	92-67-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
4-Bromophenyl phenyl ether	03	101-55-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	10.0	1	ug/L	MGG
4-Chloroaniline	03	106-47-8	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
4-Chlorophenyl phenyl ether	03	7005-72-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	10.0	1	ug/L	MGG
4-Nitroaniline	03	100-01-6	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	20.0	1	ug/L	MGG
4-Nitrophenol	03	100-02-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	50.0	1	ug/L	MGG
5-Nitro-o-toluidine	03	99-55-8	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
7,12-Dimethylbenz (a) anthracene	03	57-97-6	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
Acenaphthene	03	83-32-9	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
Acenaphthylene	03	208-96-8	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
Acetophenone	03	98-86-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	20.0	1	ug/L	MGG
Anthracene	03	120-12-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (a) anthracene	03	56-55-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	9.35	1	ug/L	MGG
Benzo (a) pyrene	03	50-32-8	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.19	0.20	1	ug/L	MGG
Benzo (b) fluoranthene	03	205-99-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
Benzo (g,h,i) perylene	03	191-24-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (k) fluoranthene	03	207-08-9	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		5.61	10.0	1	ug/L	MGG
Benzyl alcohol	03	100-51-6	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	20.0	1	ug/L	MGG
bis (2-Chloroethoxy) methane	03	111-91-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	10.0	1	ug/L	MGG
bis (2-Chloroethyl) ether	03	111-44-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	10.0	1	ug/L	MGG
2,2'-Oxybis (1-chloropropane)	03	108-60-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.80	10.0	1	ug/L	MGG
bis (2-Ethylhexyl) phthalate	03	117-81-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.67	5.00	1	ug/L	MGG

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Client Sample ID: Field Blank

Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
Butyl benzyl phthalate	03	85-68-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		6.54	10.0	1	ug/L	MGG
Chlorobenzilate	03	510-15-6	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
Chrysene	03	218-01-9	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
Diallate	03	2303-16-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
Dibenz (a,h) anthracene	03	53-70-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.67	10.0	1	ug/L	MGG
Dibenzofuran	03	132-64-9	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	5.00	1	ug/L	MGG
Diethyl phthalate	03	84-66-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.80	10.0	1	ug/L	MGG
Dimethoate	03	60-51-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
Dimethyl phthalate	03	131-11-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	10.0	1	ug/L	MGG
Di-n-butyl phthalate	03	84-74-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
Di-n-octyl phthalate	03	117-84-0	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		7.48	10.0	1	ug/L	MGG
Diphenylamine	03	122-39-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
Disulfoton	03	298-04-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
Ethyl methanesulfonate	03	62-50-0	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	20.0	1	ug/L	MGG
Ethyl parathion	03	56-38-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
Famphur	03	52-85-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
Fluoranthene	03	206-44-0	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.67	10.0	1	ug/L	MGG
Fluorene	03	86-73-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
Hexachlorobenzene	03	118-74-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	0.93	1	ug/L	MGG
Hexachlorobutadiene	03	87-68-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.21	10.0	1	ug/L	MGG
Hexachlorocyclopentadiene	03	77-47-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.74	10.0	1	ug/L	MGG
Hexachloroethane	03	67-72-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	10.0	1	ug/L	MGG
Hexachloropropene	03	1888-71-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	2.50	1	ug/L	MGG
Indeno (1,2,3-cd) pyrene	03	193-39-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.80	10.0	1	ug/L	MGG

## Certificate of Analysis

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Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
Isodrin	03	465-73-6	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
Isophorone	03	78-59-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		4.67	10.0	1	ug/L	MGG
Isosafrole	03	120-58-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
Kepon	03	143-50-0	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	9.35	1	ug/L	MGG
m+p-Cresols	03	1319-77-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
Methapyrilene	03	91-80-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
Methyl methanesulfonate	03	66-27-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
Methyl parathion	03	298-00-0	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	2.50	1	ug/L	MGG
Nitrobenzene	03	98-95-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodiethylamine	03	55-18-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	2.50	1	ug/L	MGG
n-Nitrosodimethylamine	03	62-75-9	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodi-n-butylamine	03	924-16-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosodi-n-propylamine	03	621-64-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		3.27	10.0	1	ug/L	MGG
n-Nitrosodiphenylamine	03	86-30-6	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosomethylethylamine	03	10595-95-6	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	2.50	1	ug/L	MGG
n-Nitrosopiperidine	03	100-75-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosopyrrolidine	03	930-55-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	2.50	1	ug/L	MGG
o,o,o-Triethyl phosphorothioate	03	126-68-1	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
o,o-Diethyl o-2-pyrazinyl phosphorothioate	03	297-97-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
o+m+p-Cresols	03	1319-77-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.80	10.0	1	ug/L	MGG
o-Cresol	03	95-48-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		7.48	10.0	1	ug/L	MGG
o-Toluidine	03	95-53-4	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	2.50	1	ug/L	MGG
p-(Dimethylamino) azobenzene	03	60-11-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	2.50	1	ug/L	MGG

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
p-Chloro-m-cresol	03	59-50-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		7.48	10.0	1	ug/L	MGG
Pentachlorobenzene	03	608-93-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
Pentachloronitrobenzene (quintozene)	03	82-68-8	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	9.35	1	ug/L	MGG
Phenacetin	03	62-44-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		0.93	10.0	1	ug/L	MGG
Phenanthrene	03	85-01-8	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		7.48	10.0	1	ug/L	MGG
Phenol	03	108-95-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		2.34	10.0	1	ug/L	MGG
Phorate	03	298-02-2	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	2.50	1	ug/L	MGG
p-Phenylenediamine	03	106-50-3	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
Pronamide	03	23950-58-5	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	10.0	1	ug/L	MGG
Pyrene	03	129-00-0	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		6.54	10.0	1	ug/L	MGG
Safrole	03	94-59-7	SW8270E	06/01/2022 13:30	06/02/2022 01:38	BLOD		1.87	2.50	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	03	32.7 %	10-86	06/01/2022 13:30	06/02/2022 01:38							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	03	47.3 %	9-87	06/01/2022 13:30	06/02/2022 01:38							
<i>Surr: 2-Fluorophenol (Surr)</i>	03	22.4 %	10-52	06/01/2022 13:30	06/02/2022 01:38							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	03	49.9 %	10-98.5	06/01/2022 13:30	06/02/2022 01:38							
<i>Surr: Phenol-d5 (Surr)</i>	03	16.2 %	5-33	06/01/2022 13:30	06/02/2022 01:38							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	03	60.8 %	27-133	06/01/2022 13:30	06/02/2022 01:38							

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Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: Field Blank

Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
PCB as Aroclor 1016	03	12674-11-2	SW8082A	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1221	03	11104-28-2	SW8082A	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1232	03	11141-16-5	SW8082A	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1242	03	53469-21-9	SW8082A	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1248	03	12672-29-6	SW8082A	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1254	03	11097-69-1	SW8082A	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1260	03	11096-82-5	SW8082A	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.140	0.200	1	ug/L	LBH2
<i>Surr: DCB</i>	03	58.5 %	30-105	06/01/2022 09:00	06/01/2022 19:33							
<i>Surr: TCMX</i>	03	54.3 %	30-105	06/01/2022 09:00	06/01/2022 19:33							
4,4'-DDD	03	72-54-8	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDE	03	72-55-9	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDT	03	50-29-3	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Aldrin	03	309-00-2	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-BHC	03	319-84-6	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-Chlordane	03	5103-71-9	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
beta-BHC	03	319-85-7	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.019	0.050	1	ug/L	LBH2
Chlordane	03	57-74-9	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.187	0.200	1	ug/L	LBH2
delta-BHC	03	319-86-8	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Dieldrin	03	60-57-1	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan I	03	959-98-8	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan II	03	33213-65-9	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan sulfate	03	1031-07-8	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin	03	72-20-8	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin aldehyde	03	7421-93-4	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2

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Client Sample ID: Field Blank

Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
gamma-BHC (Lindane)	03	58-89-9	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
gamma-Chlordane	03	5103-74-2	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor	03	76-44-8	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor epoxide	03	1024-57-3	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Methoxychlor	03	72-43-5	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.005	0.050	1	ug/L	LBH2
Toxaphene	03	8001-35-2	SW8081B	06/01/2022 09:00	06/01/2022 19:33	BLOD		0.187	1.00	1	ug/L	LBH2
Surr: TCMX	03	54.3 %	18-112	06/01/2022 09:00	06/01/2022 19:33							
Surr: DCB	03	58.5 %	27-131	06/01/2022 09:00	06/01/2022 19:33							

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<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-T	03	93-76-5	SW8151A	06/01/2022 16:20	06/09/2022 19:31	BLOD		0.200	0.500	1	ug/L	LBH2
2,4,5-TP (Silvex)	03	93-72-1	SW8151A	06/01/2022 16:20	06/09/2022 19:31	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	03	94-75-7	SW8151A	06/01/2022 16:20	06/09/2022 19:31	BLOD		0.200	0.500	1	ug/L	LBH2
Dinoseb	03	88-85-7	SW8151A	06/01/2022 16:20	06/09/2022 19:31	BLOD		0.200	0.500	1	ug/L	LBH2
Pentachlorophenol	03	87-86-5	SW8151A	06/01/2022 16:20	06/09/2022 19:31	BLOD		0.200	0.500	1	ug/L	LBH2
<i>Surr: DCAA (Surr)</i>	03	93.4 %	48.5-134	06/01/2022 16:20	06/09/2022 19:31							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	03	106-93-4	SW8011	06/07/2022 11:30	06/07/2022 21:02	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	03	96-18-4	SW8011	06/07/2022 11:30	06/07/2022 21:02	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	03	96-12-8	SW8011	06/07/2022 11:30	06/07/2022 21:02	BLOD		0.005	0.010	1	ug/L	LBH2



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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	03	74-84-0	RSK175M	06/02/2022 10:47	06/02/2022 10:47	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	03	74-85-1	RSK175M	06/02/2022 10:47	06/02/2022 10:47	BLOD		1.50	5.00	1	ug/L	BMR
Methane	03	74-82-8	RSK175M	06/02/2022 10:47	06/02/2022 10:47	BLOD		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	03	95.5 %	70-130	06/02/2022 10:47	06/02/2022 10:47							

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Laboratory Sample ID: 22E1463-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	03	NA	SM22 2320B-2011	06/08/2022 16:42	06/08/2022 16:42	BLOD		5.0	5.0	1	mg/L	MAH
Chloride	03	16887-00-6	SW9056A	05/31/2022 23:25	05/31/2022 23:25	BLOD		0.5	1.0	1	mg/L	MGG
Cyanide	03	57-12-5	SW9012B	06/06/2022 17:38	06/06/2022 17:38	BLOD		0.01	0.01	1	mg/L	Omnion Use
Sulfide	03	18496-25-8	SW9215	05/31/2022 16:50	05/31/2022 16:50	BLOD		0.80	1.00	1	mg/L	MJRL

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Client Sample ID: MW-211A

Laboratory Sample ID: 22E1463-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	04	7440-22-4	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	04	7440-38-2	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		0.50	1.0	1	ug/L	RCV
<b>Barium</b>	04	7440-39-3	SW6020B	06/02/2022 17:00	06/07/2022 17:56	47.5		1.00	5.00	1	ug/L	RCV
Beryllium	04	7440-41-7	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	04	7440-43-9	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		0.100	1.00	1	ug/L	RCV
<b>Cobalt</b>	04	7440-48-4	SW6020B	06/02/2022 17:00	06/07/2022 17:56	0.316	J	0.200	1.00	1	ug/L	RCV
Chromium	04	7440-47-3	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		0.400	1.00	1	ug/L	RCV
Copper	04	7440-50-8	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		0.300	1.00	1	ug/L	RCV
Mercury	04	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 17:06	BLOD		0.00020	0.00020	1	mg/L	ARP
Nickel	04	7440-02-0	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		1.000	1.000	1	ug/L	RCV
Lead	04	7439-92-1	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	04	7440-36-0	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	04	7782-49-2	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		0.850	1.00	1	ug/L	RCV
Thallium	04	7440-28-0	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	04	7440-62-2	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	04	7440-66-6	SW6020B	06/02/2022 17:00	06/07/2022 17:56	BLOD		2.50	5.00	1	ug/L	RCV

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Client Sample ID: MW-211A

Laboratory Sample ID: 22E1463-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	04	630-20-6	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	0.40	1	ug/L	RJB
1,1,1-Trichloroethane	04	71-55-6	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.60	1.00	1	ug/L	RJB
1,1,1,2-Tetrachloroethane	04	79-34-5	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.30	0.40	1	ug/L	RJB
1,1,2-Trichloroethane	04	79-00-5	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.50	1.00	1	ug/L	RJB
1,1-Dichloroethane	04	75-34-3	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.60	1.00	1	ug/L	RJB
1,1-Dichloroethylene	04	75-35-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.70	1.00	1	ug/L	RJB
1,2,3-Trichloropropane	04	96-18-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichlorobenzene	04	95-50-1	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichloroethane	04	107-06-2	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.70	1.00	1	ug/L	RJB
1,2-Dichloropropane	04	78-87-5	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
1,4-Dichlorobenzene	04	106-46-7	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
2-Butanone (MEK)	04	78-93-3	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		3.00	10.0	1	ug/L	RJB
2-Hexanone (MBK)	04	591-78-6	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		2.20	5.00	1	ug/L	RJB
4-Methyl-2-pentanone (MIBK)	04	108-10-1	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		1.50	5.00	1	ug/L	RJB
Acetone	04	67-64-1	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		7.00	10.0	1	ug/L	RJB
Acrylonitrile	04	107-13-1	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		1.70	5.00	1	ug/L	RJB
Benzene	04	71-43-2	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
Bromochloromethane	04	74-97-5	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.50	1.00	1	ug/L	RJB
Bromodichloromethane	04	75-27-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	0.50	1	ug/L	RJB
Bromoform	04	75-25-2	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
Bromomethane	04	74-83-9	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.80	1.00	1	ug/L	RJB
Carbon disulfide	04	75-15-0	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		5.00	10.0	1	ug/L	RJB
Carbon tetrachloride	04	56-23-5	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.50	1.00	1	ug/L	RJB
Chlorobenzene	04	108-90-7	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB

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Client Sample ID: MW-211A

Laboratory Sample ID: 22E1463-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	04	75-00-3	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.70	1.00	1	ug/L	RJB
Chloroform	04	67-66-3	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.50	0.50	1	ug/L	RJB
Chloromethane	04	74-87-3	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.95	1.00	1	ug/L	RJB
cis-1,2-Dichloroethylene	04	156-59-2	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
cis-1,3-Dichloropropene	04	10061-01-5	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.30	1.00	1	ug/L	RJB
Dibromochloromethane	04	124-48-1	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.35	0.50	1	ug/L	RJB
Dibromomethane	04	74-95-3	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
Ethylbenzene	04	100-41-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
Iodomethane	04	74-88-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		6.00	10.0	1	ug/L	RJB
m+p-Xylenes	04	179601-23-1	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.60	2.00	1	ug/L	RJB
Methylene chloride	04	75-09-2	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		4.00	4.00	1	ug/L	RJB
o-Xylene	04	95-47-6	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
Styrene	04	100-42-5	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
Tetrachloroethylene (PCE)	04	127-18-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
Toluene	04	108-88-3	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.50	1.00	1	ug/L	RJB
trans-1,2-Dichloroethylene	04	156-60-5	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.60	1.00	1	ug/L	RJB
trans-1,3-Dichloropropene	04	10061-02-6	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.30	1.00	1	ug/L	RJB
trans-1,4-Dichloro-2-butene	04	110-57-6	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		1.00	4.00	1	ug/L	RJB
Trichloroethylene	04	79-01-6	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.40	1.00	1	ug/L	RJB
Trichlorofluoromethane	04	75-69-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.80	1.00	1	ug/L	RJB
Vinyl acetate	04	108-05-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		2.00	10.0	1	ug/L	RJB
Vinyl chloride	04	75-01-4	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		0.50	0.50	1	ug/L	RJB
Xylenes, Total	04	1330-20-7	SW8260D	06/02/2022 18:32	06/02/2022 18:32	BLOD		1.00	3.00	1	ug/L	RJB

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:25:23PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-211A

Laboratory Sample ID: 22E1463-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	04	94.2 %	70-120	06/02/2022 18:32	06/02/2022 18:32							
Surr: 4-Bromofluorobenzene (Surr)	04	91.1 %	75-120	06/02/2022 18:32	06/02/2022 18:32							
Surr: Dibromofluoromethane (Surr)	04	80.7 %	70-130	06/02/2022 18:32	06/02/2022 18:32							
Surr: Toluene-d8 (Surr)	04	104 %	70-130	06/02/2022 18:32	06/02/2022 18:32							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-211A

Laboratory Sample ID: 22E1463-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	04	117-81-7	SW8270E	06/01/2022 13:30	06/02/2022 02:11	BLOD		4.67	5.00	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	04	56.5 %	10-86	06/01/2022 13:30	06/02/2022 02:11							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	04	76.0 %	9-87	06/01/2022 13:30	06/02/2022 02:11							
<i>Surr: 2-Fluorophenol (Surr)</i>	04	39.3 %	10-52	06/01/2022 13:30	06/02/2022 02:11							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	04	83.2 %	10-98.5	06/01/2022 13:30	06/02/2022 02:11							
<i>Surr: Phenol-d5 (Surr)</i>	04	26.7 %	5-33	06/01/2022 13:30	06/02/2022 02:11							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	04	84.1 %	27-133	06/01/2022 13:30	06/02/2022 02:11							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

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Client Site I.D.: City of Bristol 1st Semi-Annual 2022

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Client Sample ID: MW-211A

Laboratory Sample ID: 22E1463-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	04	106-93-4	SW8011	06/07/2022 11:30	06/07/2022 21:23	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	04	96-18-4	SW8011	06/07/2022 11:30	06/07/2022 21:23	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	04	96-12-8	SW8011	06/07/2022 11:30	06/07/2022 21:23	BLOD		0.005	0.010	1	ug/L	LBH2



## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-211A

Laboratory Sample ID: 22E1463-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	04	74-84-0	RSK175M	06/02/2022 12:29	06/02/2022 12:29	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	04	74-85-1	RSK175M	06/02/2022 12:29	06/02/2022 12:29	BLOD		1.50	5.00	1	ug/L	BMR
<b>Methane</b>	04	74-82-8	RSK175M	06/02/2022 12:29	06/02/2022 12:29	27.0		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	04	127 %	70-130	06/02/2022 12:29	06/02/2022 12:29							

## Certificate of Analysis

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Client Sample ID: MW-211A

Laboratory Sample ID: 22E1463-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	04	NA	SM22 2320B-2011	06/08/2022 16:42	06/08/2022 16:42	297		5.0	5.0	1	mg/L	MAH
Chloride	04	16887-00-6	SW9056A	06/01/2022 03:35	06/01/2022 03:35	1.0	J	0.5	1.0	1	mg/L	MGG

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-206B

Laboratory Sample ID: 22E1463-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	05	7440-22-4	SW6020B	06/02/2022 17:00	06/07/2022 17:58	0.136	J	0.0600	1.00	1	ug/L	RCV
Arsenic	05	7440-38-2	SW6020B	06/02/2022 17:00	06/07/2022 17:58	0.61	J	0.50	1.0	1	ug/L	RCV
Barium	05	7440-39-3	SW6020B	06/02/2022 17:00	06/07/2022 17:58	136		1.00	5.00	1	ug/L	RCV
Beryllium	05	7440-41-7	SW6020B	06/02/2022 17:00	06/07/2022 17:58	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	05	7440-43-9	SW6020B	06/02/2022 17:00	06/07/2022 17:58	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	05	7440-48-4	SW6020B	06/02/2022 17:00	06/07/2022 17:58	1.43		0.200	1.00	1	ug/L	RCV
Chromium	05	7440-47-3	SW6020B	06/02/2022 17:00	06/07/2022 17:58	0.961	J	0.400	1.00	1	ug/L	RCV
Copper	05	7440-50-8	SW6020B	06/02/2022 17:00	06/07/2022 17:58	1.31		0.300	1.00	1	ug/L	RCV
Nickel	05	7440-02-0	SW6020B	06/02/2022 17:00	06/07/2022 17:58	18.90		1.000	1.000	1	ug/L	RCV
Lead	05	7439-92-1	SW6020B	06/02/2022 17:00	06/07/2022 17:58	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	05	7440-36-0	SW6020B	06/02/2022 17:00	06/07/2022 17:58	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	05	7782-49-2	SW6020B	06/02/2022 17:00	06/07/2022 17:58	BLOD		0.850	1.00	1	ug/L	RCV
Thallium	05	7440-28-0	SW6020B	06/02/2022 17:00	06/07/2022 17:58	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	05	7440-62-2	SW6020B	06/02/2022 17:00	06/07/2022 17:58	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	05	7440-66-6	SW6020B	06/02/2022 17:00	06/07/2022 17:58	15.7		2.50	5.00	1	ug/L	RCV

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-206B

Laboratory Sample ID: 22E1463-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>							<b>Sample Qualifier:</b>		<b>pH</b>			
1,1,1,2-Tetrachloroethane	05	630-20-6	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	0.40	1	ug/L	RJB
1,1,1-Trichloroethane	05	71-55-6	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.60	1.00	1	ug/L	RJB
1,1,2,2-Tetrachloroethane	05	79-34-5	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.30	0.40	1	ug/L	RJB
1,1,2-Trichloroethane	05	79-00-5	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.50	1.00	1	ug/L	RJB
1,1-Dichloroethane	05	75-34-3	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.60	1.00	1	ug/L	RJB
1,1-Dichloroethylene	05	75-35-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.70	1.00	1	ug/L	RJB
1,2,3-Trichloropropane	05	96-18-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichlorobenzene	05	95-50-1	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichloroethane	05	107-06-2	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.70	1.00	1	ug/L	RJB
1,2-Dichloropropane	05	78-87-5	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
1,4-Dichlorobenzene	05	106-46-7	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
2-Butanone (MEK)	05	78-93-3	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		3.00	10.0	1	ug/L	RJB
2-Hexanone (MBK)	05	591-78-6	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		2.20	5.00	1	ug/L	RJB
4-Methyl-2-pentanone (MIBK)	05	108-10-1	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		1.50	5.00	1	ug/L	RJB
Acetone	05	67-64-1	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		7.00	10.0	1	ug/L	RJB
Acrylonitrile	05	107-13-1	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		1.70	5.00	1	ug/L	RJB
Benzene	05	71-43-2	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
Bromochloromethane	05	74-97-5	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.50	1.00	1	ug/L	RJB
Bromodichloromethane	05	75-27-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	0.50	1	ug/L	RJB
Bromoform	05	75-25-2	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
Bromomethane	05	74-83-9	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.80	1.00	1	ug/L	RJB
Carbon disulfide	05	75-15-0	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		5.00	10.0	1	ug/L	RJB
Carbon tetrachloride	05	56-23-5	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.50	1.00	1	ug/L	RJB
Chlorobenzene	05	108-90-7	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-206B

Laboratory Sample ID: 22E1463-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>							<b>Sample Qualifier:</b>		<b>pH</b>			
Chloroethane	05	75-00-3	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.70	1.00	1	ug/L	RJB
Chloroform	05	67-66-3	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.50	0.50	1	ug/L	RJB
Chloromethane	05	74-87-3	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.95	1.00	1	ug/L	RJB
cis-1,2-Dichloroethylene	05	156-59-2	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
cis-1,3-Dichloropropene	05	10061-01-5	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.30	1.00	1	ug/L	RJB
Dibromochloromethane	05	124-48-1	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.35	0.50	1	ug/L	RJB
Dibromomethane	05	74-95-3	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
Ethylbenzene	05	100-41-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
Iodomethane	05	74-88-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		6.00	10.0	1	ug/L	RJB
m+p-Xylenes	05	179601-23-1	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.60	2.00	1	ug/L	RJB
Methylene chloride	05	75-09-2	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		4.00	4.00	1	ug/L	RJB
o-Xylene	05	95-47-6	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
Styrene	05	100-42-5	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
Tetrachloroethylene (PCE)	05	127-18-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
Toluene	05	108-88-3	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.50	1.00	1	ug/L	RJB
trans-1,2-Dichloroethylene	05	156-60-5	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.60	1.00	1	ug/L	RJB
trans-1,3-Dichloropropene	05	10061-02-6	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.30	1.00	1	ug/L	RJB
trans-1,4-Dichloro-2-butene	05	110-57-6	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		1.00	4.00	1	ug/L	RJB
Trichloroethylene	05	79-01-6	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.40	1.00	1	ug/L	RJB
Trichlorofluoromethane	05	75-69-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.80	1.00	1	ug/L	RJB
Vinyl acetate	05	108-05-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		2.00	10.0	1	ug/L	RJB
Vinyl chloride	05	75-01-4	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		0.50	0.50	1	ug/L	RJB
Xylenes, Total	05	1330-20-7	SW8260D	06/02/2022 18:57	06/02/2022 18:57	BLOD		1.00	3.00	1	ug/L	RJB

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-206B

Laboratory Sample ID: 22E1463-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>						<b>Sample Qualifier:</b>		<b>pH</b>				
Surr: 1,2-Dichloroethane-d4 (Surr)	05	107 %	70-120	06/02/2022 18:57	06/02/2022 18:57							
Surr: 4-Bromofluorobenzene (Surr)	05	93.8 %	75-120	06/02/2022 18:57	06/02/2022 18:57							
Surr: Dibromofluoromethane (Surr)	05	94.7 %	70-130	06/02/2022 18:57	06/02/2022 18:57							
Surr: Toluene-d8 (Surr)	05	105 %	70-130	06/02/2022 18:57	06/02/2022 18:57							

## Certificate of Analysis

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Client Sample ID: MW-206B

Laboratory Sample ID: 22E1463-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	05	106-93-4	SW8011	06/07/2022 11:30	06/07/2022 21:45	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	05	96-18-4	SW8011	06/07/2022 11:30	06/07/2022 21:45	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	05	96-12-8	SW8011	06/07/2022 11:30	06/07/2022 21:45	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: **MW-206B**

Laboratory Sample ID: **22E1463-05**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	05	74-84-0	RSK175M	06/02/2022 12:42	06/02/2022 12:42	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	05	74-85-1	RSK175M	06/02/2022 12:42	06/02/2022 12:42	BLOD		1.50	5.00	1	ug/L	BMR
<b>Methane</b>	05	74-82-8	RSK175M	06/02/2022 12:42	06/02/2022 12:42	3.48	J	1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	05	111 %	70-130	06/02/2022 12:42	06/02/2022 12:42							



### Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:25:23PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-206B

Laboratory Sample ID: 22E1463-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	05	NA	SM22 2320B-2011	06/08/2022 16:42	06/08/2022 16:42	333		5.0	5.0	1	mg/L	MAH
Chloride	05	16887-00-6	SW9056A	05/31/2022 23:53	05/31/2022 23:53	7.5		0.5	1.0	1	mg/L	MGG

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-211B

Laboratory Sample ID: 22E1463-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	06	7440-22-4	SW6020B	06/02/2022 17:00	06/07/2022 18:01	0.0632	J	0.0600	1.00	1	ug/L	RCV
Arsenic	06	7440-38-2	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		0.50	1.0	1	ug/L	RCV
Barium	06	7440-39-3	SW6020B	06/02/2022 17:00	06/07/2022 18:01	88.8		1.00	5.00	1	ug/L	RCV
Beryllium	06	7440-41-7	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	06	7440-43-9	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	06	7440-48-4	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		0.200	1.00	1	ug/L	RCV
Chromium	06	7440-47-3	SW6020B	06/02/2022 17:00	06/07/2022 18:01	0.459	J	0.400	1.00	1	ug/L	RCV
Copper	06	7440-50-8	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		0.300	1.00	1	ug/L	RCV
Mercury	06	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 17:08	BLOD		0.00020	0.00020	1	mg/L	ARP
Nickel	06	7440-02-0	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		1.000	1.000	1	ug/L	RCV
Lead	06	7439-92-1	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	06	7440-36-0	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	06	7782-49-2	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		0.850	1.00	1	ug/L	RCV
Thallium	06	7440-28-0	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	06	7440-62-2	SW6020B	06/02/2022 17:00	06/07/2022 18:01	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	06	7440-66-6	SW6020B	06/02/2022 17:00	06/07/2022 18:01	3.52	J	2.50	5.00	1	ug/L	RCV

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-211B

Laboratory Sample ID: 22E1463-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	06	630-20-6	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	0.40	1	ug/L	RJB
1,1,1-Trichloroethane	06	71-55-6	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.60	1.00	1	ug/L	RJB
1,1,2,2-Tetrachloroethane	06	79-34-5	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.30	0.40	1	ug/L	RJB
1,1,2-Trichloroethane	06	79-00-5	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.50	1.00	1	ug/L	RJB
1,1-Dichloroethane	06	75-34-3	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.60	1.00	1	ug/L	RJB
1,1-Dichloroethylene	06	75-35-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.70	1.00	1	ug/L	RJB
1,2,3-Trichloropropane	06	96-18-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichlorobenzene	06	95-50-1	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichloroethane	06	107-06-2	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.70	1.00	1	ug/L	RJB
1,2-Dichloropropane	06	78-87-5	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
1,4-Dichlorobenzene	06	106-46-7	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
2-Butanone (MEK)	06	78-93-3	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		3.00	10.0	1	ug/L	RJB
2-Hexanone (MBK)	06	591-78-6	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		2.20	5.00	1	ug/L	RJB
4-Methyl-2-pentanone (MIBK)	06	108-10-1	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		1.50	5.00	1	ug/L	RJB
Acetone	06	67-64-1	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		7.00	10.0	1	ug/L	RJB
Acrylonitrile	06	107-13-1	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		1.70	5.00	1	ug/L	RJB
Benzene	06	71-43-2	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
Bromochloromethane	06	74-97-5	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.50	1.00	1	ug/L	RJB
Bromodichloromethane	06	75-27-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	0.50	1	ug/L	RJB
Bromoform	06	75-25-2	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
Bromomethane	06	74-83-9	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.80	1.00	1	ug/L	RJB
Carbon disulfide	06	75-15-0	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		5.00	10.0	1	ug/L	RJB
Carbon tetrachloride	06	56-23-5	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.50	1.00	1	ug/L	RJB
Chlorobenzene	06	108-90-7	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-211B

Laboratory Sample ID: 22E1463-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	06	75-00-3	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.70	1.00	1	ug/L	RJB
Chloroform	06	67-66-3	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.50	0.50	1	ug/L	RJB
Chloromethane	06	74-87-3	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.95	1.00	1	ug/L	RJB
cis-1,2-Dichloroethylene	06	156-59-2	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
cis-1,3-Dichloropropene	06	10061-01-5	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.30	1.00	1	ug/L	RJB
Dibromochloromethane	06	124-48-1	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.35	0.50	1	ug/L	RJB
Dibromomethane	06	74-95-3	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
Ethylbenzene	06	100-41-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
Iodomethane	06	74-88-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		6.00	10.0	1	ug/L	RJB
m+p-Xylenes	06	179601-23-1	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.60	2.00	1	ug/L	RJB
Methylene chloride	06	75-09-2	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		4.00	4.00	1	ug/L	RJB
o-Xylene	06	95-47-6	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
Styrene	06	100-42-5	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
Tetrachloroethylene (PCE)	06	127-18-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
Toluene	06	108-88-3	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.50	1.00	1	ug/L	RJB
trans-1,2-Dichloroethylene	06	156-60-5	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.60	1.00	1	ug/L	RJB
trans-1,3-Dichloropropene	06	10061-02-6	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.30	1.00	1	ug/L	RJB
trans-1,4-Dichloro-2-butene	06	110-57-6	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		1.00	4.00	1	ug/L	RJB
Trichloroethylene	06	79-01-6	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.40	1.00	1	ug/L	RJB
Trichlorofluoromethane	06	75-69-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.80	1.00	1	ug/L	RJB
Vinyl acetate	06	108-05-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		2.00	10.0	1	ug/L	RJB
Vinyl chloride	06	75-01-4	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		0.50	0.50	1	ug/L	RJB
Xylenes, Total	06	1330-20-7	SW8260D	06/02/2022 19:21	06/02/2022 19:21	BLOD		1.00	3.00	1	ug/L	RJB

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### Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:25:23PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-211B

Laboratory Sample ID: 22E1463-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	06	99.0 %	70-120	06/02/2022 19:21	06/02/2022 19:21							
Surr: 4-Bromofluorobenzene (Surr)	06	89.7 %	75-120	06/02/2022 19:21	06/02/2022 19:21							
Surr: Dibromofluoromethane (Surr)	06	99.2 %	70-130	06/02/2022 19:21	06/02/2022 19:21							
Surr: Toluene-d8 (Surr)	06	103 %	70-130	06/02/2022 19:21	06/02/2022 19:21							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-211B

Laboratory Sample ID: 22E1463-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	06	117-81-7	SW8270E	05/27/2022 09:15	06/03/2022 15:16	BLOD		4.67	5.00	1	ug/L	MGG
Surr: 2,4,6-Tribromophenol (Surr)	06	56.5 %	10-86	05/27/2022 09:15	06/03/2022 15:16							S
Surr: 2-Fluorobiphenyl (Surr)	06	88.4 %	9-87	05/27/2022 09:15	06/03/2022 15:16							S
Surr: 2-Fluorophenol (Surr)	06	44.3 %	10-52	05/27/2022 09:15	06/03/2022 15:16							S
Surr: Nitrobenzene-d5 (Surr)	06	84.1 %	10-98.5	05/27/2022 09:15	06/03/2022 15:16							S
Surr: Phenol-d5 (Surr)	06	34.8 %	5-33	05/27/2022 09:15	06/03/2022 15:16							S
Surr: p-Terphenyl-d14 (Surr)	06	77.4 %	27-133	05/27/2022 09:15	06/03/2022 15:16							S

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-211B

Laboratory Sample ID: 22E1463-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	06	106-93-4	SW8011	06/07/2022 11:30	06/07/2022 22:06	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	06	96-18-4	SW8011	06/07/2022 11:30	06/07/2022 22:06	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	06	96-12-8	SW8011	06/07/2022 11:30	06/07/2022 22:06	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-211B

Laboratory Sample ID: 22E1463-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	06	74-84-0	RSK175M	06/02/2022 12:54	06/02/2022 12:54	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	06	74-85-1	RSK175M	06/02/2022 12:54	06/02/2022 12:54	BLOD		1.50	5.00	1	ug/L	BMR
Methane	06	74-82-8	RSK175M	06/02/2022 12:54	06/02/2022 12:54	BLOD		1.50	5.00	1	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	06	131 %	70-130	06/02/2022 12:54	06/02/2022 12:54							S



## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:25:23PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-211B

Laboratory Sample ID: 22E1463-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	06	NA	SM22 2320B-2011	06/08/2022 16:42	06/08/2022 16:42	345		5.0	5.0	1	mg/L	MAH
Chloride	06	16887-00-6	SW9056A	06/01/2022 00:21	06/01/2022 00:21	2.2		0.5	1.0	1	mg/L	MGG

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-108

Laboratory Sample ID: 22E1463-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	07	7440-22-4	SW6020B	06/02/2022 17:00	06/07/2022 18:04	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	07	7440-38-2	SW6020B	06/02/2022 17:00	06/07/2022 18:04	13		0.50	1.0	1	ug/L	RCV
Barium	07RE1	7440-39-3	SW6020B	06/02/2022 17:00	06/08/2022 13:16	757		10.0	50.0	10	ug/L	RCV
Beryllium	07	7440-41-7	SW6020B	06/02/2022 17:00	06/07/2022 18:04	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	07	7440-43-9	SW6020B	06/02/2022 17:00	06/07/2022 18:04	0.203	J	0.100	1.00	1	ug/L	RCV
Cobalt	07	7440-48-4	SW6020B	06/02/2022 17:00	06/07/2022 18:04	42.8		0.200	1.00	1	ug/L	RCV
Chromium	07	7440-47-3	SW6020B	06/02/2022 17:00	06/07/2022 18:04	1.15		0.400	1.00	1	ug/L	RCV
Copper	07	7440-50-8	SW6020B	06/02/2022 17:00	06/07/2022 18:04	2.50		0.300	1.00	1	ug/L	RCV
Mercury	07	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 17:09	0.00057		0.00020	0.00020	1	mg/L	ARP
Nickel	07	7440-02-0	SW6020B	06/02/2022 17:00	06/07/2022 18:04	35.69		1.000	1.000	1	ug/L	RCV
Lead	07	7439-92-1	SW6020B	06/02/2022 17:00	06/07/2022 18:04	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	07	7440-36-0	SW6020B	06/02/2022 17:00	06/07/2022 18:04	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	07	7782-49-2	SW6020B	06/02/2022 17:00	06/07/2022 18:04	BLOD		0.850	1.00	1	ug/L	RCV
Tin	07	7440-31-5	SW6020B	06/02/2022 17:00	06/07/2022 18:04	BLOD		1.00	1.00	1	ug/L	RCV
Thallium	07	7440-28-0	SW6020B	06/02/2022 17:00	06/07/2022 18:04	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	07	7440-62-2	SW6020B	06/02/2022 17:00	06/07/2022 18:04	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	07	7440-66-6	SW6020B	06/02/2022 17:00	06/07/2022 18:04	54.4		2.50	5.00	1	ug/L	RCV

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-108

Laboratory Sample ID: 22E1463-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	07	630-20-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	0.40	1	ug/L	RJB
1,1,1-Trichloroethane	07	71-55-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.60	1.00	1	ug/L	RJB
1,1,2,2-Tetrachloroethane	07	79-34-5	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.30	0.40	1	ug/L	RJB
1,1,2-Trichloroethane	07	79-00-5	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.50	1.00	1	ug/L	RJB
<b>1,1-Dichloroethane</b>	07	75-34-3	SW8260D	06/02/2022 19:46	06/02/2022 19:46	5.81		0.60	1.00	1	ug/L	RJB
1,1-Dichloroethylene	07	75-35-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.70	1.00	1	ug/L	RJB
1,1-Dichloropropene	07	563-58-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.60	1.00	1	ug/L	RJB
1,2,3-Trichloropropane	07	96-18-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
1,2,4-Trichlorobenzene	07	120-82-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.50	1.00	1	ug/L	RJB
1,2-Dichlorobenzene	07	95-50-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichloroethane	07	107-06-2	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.70	1.00	1	ug/L	RJB
1,2-Dichloropropane	07	78-87-5	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
1,3-Dichlorobenzene	07	541-73-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.30	1.00	1	ug/L	RJB
1,3-Dichloropropane	07	142-28-9	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		1.00	1.00	1	ug/L	RJB
<b>1,4-Dichlorobenzene</b>	07	106-46-7	SW8260D	06/02/2022 19:46	06/02/2022 19:46	1.75		0.40	1.00	1	ug/L	RJB
2,2-Dichloropropane	07	594-20-7	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.60	2.00	1	ug/L	RJB
2-Butanone (MEK)	07	78-93-3	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		3.00	10.0	1	ug/L	RJB
2-Hexanone (MBK)	07	591-78-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		2.20	5.00	1	ug/L	RJB
4-Methyl-2-pentanone (MIBK)	07	108-10-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		1.50	5.00	1	ug/L	RJB
Acetone	07	67-64-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		7.00	10.0	1	ug/L	RJB
Acetonitrile	07	75-05-8	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		8.00	10.0	1	ug/L	RJB
Acrolein	07	107-02-8	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		6.00	10.0	1	ug/L	RJB
Acrylonitrile	07	107-13-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		1.70	5.00	1	ug/L	RJB
Allyl chloride	07	107-05-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.60	1.00	1	ug/L	RJB

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-108

Laboratory Sample ID: 22E1463-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
<b>Benzene</b>	07	71-43-2	SW8260D	06/02/2022 19:46	06/02/2022 19:46	9.46		0.40	1.00	1	ug/L	RJB
Bromochloromethane	07	74-97-5	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.50	1.00	1	ug/L	RJB
Bromodichloromethane	07	75-27-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	0.50	1	ug/L	RJB
Bromoform	07	75-25-2	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
Bromomethane	07	74-83-9	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.80	1.00	1	ug/L	RJB
Carbon disulfide	07	75-15-0	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		5.00	10.0	1	ug/L	RJB
Carbon tetrachloride	07	56-23-5	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.50	1.00	1	ug/L	RJB
<b>Chlorobenzene</b>	07	108-90-7	SW8260D	06/02/2022 19:46	06/02/2022 19:46	1.30		0.40	1.00	1	ug/L	RJB
<b>Chloroethane</b>	07	75-00-3	SW8260D	06/02/2022 19:46	06/02/2022 19:46	1.22		0.70	1.00	1	ug/L	RJB
Chloroform	07	67-66-3	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.50	0.50	1	ug/L	RJB
Chloromethane	07	74-87-3	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.95	1.00	1	ug/L	RJB
Chloroprene	07	126-99-8	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.50	5.00	1	ug/L	RJB
<b>cis-1,2-Dichloroethylene</b>	07	156-59-2	SW8260D	06/02/2022 19:46	06/02/2022 19:46	54.7		0.40	1.00	1	ug/L	RJB
cis-1,3-Dichloropropene	07	10061-01-5	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.30	1.00	1	ug/L	RJB
Dibromochloromethane	07	124-48-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.35	0.50	1	ug/L	RJB
Dibromomethane	07	74-95-3	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
Dichlorodifluoromethane	07	75-71-8	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.95	1.00	1	ug/L	RJB
Ethyl methacrylate	07	97-63-2	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.70	5.00	1	ug/L	RJB
Ethylbenzene	07	100-41-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
Iodomethane	07	74-88-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		6.00	10.0	1	ug/L	RJB
Isobutyl Alcohol	07	78-83-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		25.0	40.0	1	ug/L	RJB
m+p-Xylenes	07	179601-23-1	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.60	2.00	1	ug/L	RJB
Methacrylonitrile	07	126-98-7	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		1.00	1.50	1	ug/L	RJB

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Client Sample ID: MW-108

Laboratory Sample ID: 22E1463-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	07	80-62-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.70	2.00	1	ug/L	RJB
Methylene chloride	07	75-09-2	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		4.00	4.00	1	ug/L	RJB
Naphthalene	07	91-20-3	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.80	1.00	1	ug/L	RJB
o-Xylene	07	95-47-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
Propionitrile	07	107-12-0	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		7.50	40.0	1	ug/L	RJB
Styrene	07	100-42-5	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
Tetrachloroethylene (PCE)	07	127-18-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
<b>Toluene</b>	07	108-88-3	SW8260D	06/02/2022 19:46	06/02/2022 19:46	17.4		0.50	1.00	1	ug/L	RJB
trans-1,2-Dichloroethylene	07	156-60-5	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.60	1.00	1	ug/L	RJB
trans-1,3-Dichloropropene	07	10061-02-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.30	1.00	1	ug/L	RJB
trans-1,4-Dichloro-2-butene	07	110-57-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		1.00	4.00	1	ug/L	RJB
Trichloroethylene	07	79-01-6	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.40	1.00	1	ug/L	RJB
Trichlorofluoromethane	07	75-69-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		0.80	1.00	1	ug/L	RJB
Vinyl acetate	07	108-05-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		2.00	10.0	1	ug/L	RJB
<b>Vinyl chloride</b>	07	75-01-4	SW8260D	06/02/2022 19:46	06/02/2022 19:46	8.13		0.50	0.50	1	ug/L	RJB
Xylenes, Total	07	1330-20-7	SW8260D	06/02/2022 19:46	06/02/2022 19:46	BLOD		1.00	3.00	1	ug/L	RJB
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	07	103 %	70-120	06/02/2022 19:46	06/02/2022 19:46							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	07	92.7 %	75-120	06/02/2022 19:46	06/02/2022 19:46							
<i>Surr: Dibromofluoromethane (Surr)</i>	07	90.5 %	70-130	06/02/2022 19:46	06/02/2022 19:46							
<i>Surr: Toluene-d8 (Surr)</i>	07	105 %	70-130	06/02/2022 19:46	06/02/2022 19:46							

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Client Sample ID: MW-108

Laboratory Sample ID: 22E1463-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
1,2,4,5-Tetrachlorobenzene	07	95-94-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
1,3,5-Trinitrobenzene	07	99-35-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	5.00	1	ug/L	MGG
1,3-Dinitrobenzene	07	99-65-0	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
1,4-Naphthoquinone	07	130-15-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
1-Naphthylamine	07	134-32-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
2,3,4,6-Tetrachlorophenol	07	58-90-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
2,4,5-Trichlorophenol	07	95-95-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
2,4,6-Trichlorophenol	07	88-06-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		7.48	10.0	1	ug/L	MGG
2,4-Dichlorophenol	07	120-83-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.80	10.0	1	ug/L	MGG
2,4-Dimethylphenol	07	105-67-9	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.67	4.67	1	ug/L	MGG
2,4-Dinitrophenol	07	51-28-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		7.48	50.0	1	ug/L	MGG
2,4-Dinitrotoluene	07	121-14-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		5.61	10.0	1	ug/L	MGG
2,6-Dichlorophenol	07	87-65-0	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
2,6-Dinitrotoluene	07	606-20-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.74	10.0	1	ug/L	MGG
2-Acetylaminofluorene	07	53-96-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
2-Chloronaphthalene	07	91-58-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.21	10.0	1	ug/L	MGG
2-Chlorophenol	07	95-57-8	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	10.0	1	ug/L	MGG
2-Methylnaphthalene	07	91-57-6	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
2-Naphthylamine	07	91-59-8	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
2-Nitroaniline	07	88-74-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	20.0	1	ug/L	MGG
2-Nitrophenol	07	88-75-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		5.61	10.0	1	ug/L	MGG
3,3'-Dichlorobenzidine	07	91-94-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.74	10.0	1	ug/L	MGG
3,3'-Dimethylbenzidine	07	119-93-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
3-Methylcholanthrene	07	56-49-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG

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Client Sample ID: MW-108

Laboratory Sample ID: 22E1463-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
3-Nitroaniline	07	99-09-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	20.0	1	ug/L	MGG
4,6-Dinitro-2-methylphenol	07	534-52-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		7.48	50.0	1	ug/L	MGG
4-Aminobiphenyl	07	92-67-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
4-Bromophenyl phenyl ether	07	101-55-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	10.0	1	ug/L	MGG
4-Chloroaniline	07	106-47-8	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
4-Chlorophenyl phenyl ether	07	7005-72-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	10.0	1	ug/L	MGG
4-Nitroaniline	07	100-01-6	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	20.0	1	ug/L	MGG
4-Nitrophenol	07	100-02-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	50.0	1	ug/L	MGG
5-Nitro-o-toluidine	07	99-55-8	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
7,12-Dimethylbenz (a) anthracene	07	57-97-6	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
Acenaphthene	07	83-32-9	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.74	10.0	1	ug/L	MGG
Acenaphthylene	07	208-96-8	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.74	10.0	1	ug/L	MGG
Acetophenone	07	98-86-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	20.0	1	ug/L	MGG
Anthracene	07	120-12-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (a) anthracene	07	56-55-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	9.35	1	ug/L	MGG
Benzo (a) pyrene	07	50-32-8	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.19	0.20	1	ug/L	MGG
Benzo (b) fluoranthene	07	205-99-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.74	10.0	1	ug/L	MGG
Benzo (g,h,i) perylene	07	191-24-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (k) fluoranthene	07	207-08-9	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		5.61	10.0	1	ug/L	MGG
Benzyl alcohol	07	100-51-6	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	20.0	1	ug/L	MGG
bis (2-Chloroethoxy) methane	07	111-91-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	10.0	1	ug/L	MGG
bis (2-Chloroethyl) ether	07	111-44-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	10.0	1	ug/L	MGG
2,2'-Oxybis (1-chloropropane)	07	108-60-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.80	10.0	1	ug/L	MGG
bis (2-Ethylhexyl) phthalate	07	117-81-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.67	5.00	1	ug/L	MGG

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
Butyl benzyl phthalate	07	85-68-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		6.54	10.0	1	ug/L	MGG
Chlorobenzilate	07	510-15-6	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
Chrysene	07	218-01-9	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.74	10.0	1	ug/L	MGG
Diallate	07	2303-16-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
Dibenz (a,h) anthracene	07	53-70-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.67	10.0	1	ug/L	MGG
Dibenzofuran	07	132-64-9	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	5.00	1	ug/L	MGG
Diethyl phthalate	07	84-66-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.80	10.0	1	ug/L	MGG
Dimethoate	07	60-51-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
Dimethyl phthalate	07	131-11-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	10.0	1	ug/L	MGG
Di-n-butyl phthalate	07	84-74-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.74	10.0	1	ug/L	MGG
Di-n-octyl phthalate	07	117-84-0	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		7.48	10.0	1	ug/L	MGG
Diphenylamine	07	122-39-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
Disulfoton	07	298-04-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
Ethyl methanesulfonate	07	62-50-0	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	20.0	1	ug/L	MGG
Ethyl parathion	07	56-38-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
Famphur	07	52-85-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
Fluoranthene	07	206-44-0	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.67	10.0	1	ug/L	MGG
Fluorene	07	86-73-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.74	10.0	1	ug/L	MGG
Hexachlorobenzene	07	118-74-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	0.93	1	ug/L	MGG
Hexachlorobutadiene	07	87-68-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.21	10.0	1	ug/L	MGG
Hexachlorocyclopentadiene	07	77-47-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD	C	3.74	10.0	1	ug/L	MGG
Hexachloroethane	07	67-72-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	10.0	1	ug/L	MGG
Hexachloropropene	07	1888-71-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	2.50	1	ug/L	MGG
Indeno (1,2,3-cd) pyrene	07	193-39-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.80	10.0	1	ug/L	MGG



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Client Sample ID: MW-108

Laboratory Sample ID: 22E1463-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
Isodrin	07	465-73-6	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
Isophorone	07	78-59-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		4.67	10.0	1	ug/L	MGG
Isosafrole	07	120-58-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
Kepon	07	143-50-0	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	9.35	1	ug/L	MGG
m+p-Cresols	07	1319-77-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
Methapyrilene	07	91-80-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
Methyl methanesulfonate	07	66-27-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
Methyl parathion	07	298-00-0	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	2.50	1	ug/L	MGG
Nitrobenzene	07	98-95-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodiethylamine	07	55-18-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.34	2.50	1	ug/L	MGG
n-Nitrosodimethylamine	07	62-75-9	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodi-n-butylamine	07	924-16-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosodi-n-propylamine	07	621-64-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		3.27	10.0	1	ug/L	MGG
n-Nitrosodiphenylamine	07	86-30-6	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosomethylethylamine	07	10595-95-6	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	2.50	1	ug/L	MGG
n-Nitrosopiperidine	07	100-75-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosopyrrolidine	07	930-55-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	2.50	1	ug/L	MGG
o,o,o-Triethyl phosphorothioate	07	126-68-1	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
o,o-Diethyl o-2-pyrazinyl phosphorothioate	07	297-97-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
o+m+p-Cresols	07	1319-77-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		2.80	10.0	1	ug/L	MGG
o-Cresol	07	95-48-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		7.48	10.0	1	ug/L	MGG
o-Toluidine	07	95-53-4	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	2.50	1	ug/L	MGG
p-(Dimethylamino) azobenzene	07	60-11-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	2.50	1	ug/L	MGG

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Client Sample ID: MW-108

Laboratory Sample ID: 22E1463-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
p-Chloro-m-cresol	07	59-50-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		7.48	10.0	1	ug/L	MGG
Pentachlorobenzene	07	608-93-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
Pentachloronitrobenzene (quintozene)	07	82-68-8	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	9.35	1	ug/L	MGG
Phenacetin	07	62-44-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		0.93	10.0	1	ug/L	MGG
Phenanthrene	07	85-01-8	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		7.48	10.0	1	ug/L	MGG
<b>Phenol</b>	07	108-95-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	3.37	J	2.34	10.0	1	ug/L	MGG
Phorate	07	298-02-2	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	2.50	1	ug/L	MGG
p-Phenylenediamine	07	106-50-3	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD	C	1.87	10.0	1	ug/L	MGG
Pronamide	07	23950-58-5	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	10.0	1	ug/L	MGG
Pyrene	07	129-00-0	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		6.54	10.0	1	ug/L	MGG
Safrole	07	94-59-7	SW8270E	05/27/2022 09:15	06/03/2022 15:49	BLOD		1.87	2.50	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	07	69.6 %	10-86	05/27/2022 09:15	06/03/2022 15:49							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	07	88.9 %	9-87	05/27/2022 09:15	06/03/2022 15:49							S
<i>Surr: 2-Fluorophenol (Surr)</i>	07	40.6 %	10-52	05/27/2022 09:15	06/03/2022 15:49							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	07	82.0 %	10-98.5	05/27/2022 09:15	06/03/2022 15:49							
<i>Surr: Phenol-d5 (Surr)</i>	07	31.5 %	5-33	05/27/2022 09:15	06/03/2022 15:49							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	07	80.9 %	27-133	05/27/2022 09:15	06/03/2022 15:49							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
PCB as Aroclor 1016	07	12674-11-2	SW8082A	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1221	07	11104-28-2	SW8082A	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1232	07	11141-16-5	SW8082A	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1242	07	53469-21-9	SW8082A	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1248	07	12672-29-6	SW8082A	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1254	07	11097-69-1	SW8082A	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1260	07	11096-82-5	SW8082A	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.140	0.200	1	ug/L	LBH2
<i>Surr: DCB</i>	07	82.3 %	30-105	06/01/2022 09:00	06/01/2022 19:51							
<i>Surr: TCMX</i>	07	72.9 %	30-105	06/01/2022 09:00	06/01/2022 19:51							
4,4'-DDD	07	72-54-8	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDE	07	72-55-9	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDT	07	50-29-3	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Aldrin	07	309-00-2	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-BHC	07	319-84-6	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-Chlordane	07	5103-71-9	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
beta-BHC	07	319-85-7	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.019	0.050	1	ug/L	LBH2
Chlordane	07	57-74-9	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.187	0.200	1	ug/L	LBH2
delta-BHC	07	319-86-8	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Dieldrin	07	60-57-1	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan I	07	959-98-8	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan II	07	33213-65-9	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan sulfate	07	1031-07-8	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin	07	72-20-8	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin aldehyde	07	7421-93-4	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
gamma-BHC (Lindane)	07	58-89-9	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
gamma-Chlordane	07	5103-74-2	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor	07	76-44-8	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor epoxide	07	1024-57-3	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Methoxychlor	07	72-43-5	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.005	0.050	1	ug/L	LBH2
Toxaphene	07	8001-35-2	SW8081B	06/01/2022 09:00	06/01/2022 19:51	BLOD		0.187	1.00	1	ug/L	LBH2
Surr: TCMX	07	72.9 %	18-112	06/01/2022 09:00	06/01/2022 19:51							
Surr: DCB	07	82.3 %	27-131	06/01/2022 09:00	06/01/2022 19:51							

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<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-T	07	93-76-5	SW8151A	06/02/2022 12:30	06/09/2022 17:13	BLOD		0.200	0.500	1	ug/L	LBH2
2,4,5-TP (Silvex)	07	93-72-1	SW8151A	06/02/2022 12:30	06/09/2022 17:13	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	07	94-75-7	SW8151A	06/02/2022 12:30	06/09/2022 17:13	BLOD		0.200	0.500	1	ug/L	LBH2
Dinoseb	07	88-85-7	SW8151A	06/02/2022 12:30	06/09/2022 17:13	BLOD		0.200	0.500	1	ug/L	LBH2
Pentachlorophenol	07	87-86-5	SW8151A	06/02/2022 12:30	06/09/2022 17:13	BLOD		0.200	0.500	1	ug/L	LBH2
<i>Surr: DCAA (Surr)</i>	07	88.7 %	48.5-134	06/02/2022 12:30	06/09/2022 17:13							

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<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	07	106-93-4	SW8011	06/07/2022 11:30	06/07/2022 22:28	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	07	96-18-4	SW8011	06/07/2022 11:30	06/07/2022 22:28	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	07	96-12-8	SW8011	06/07/2022 11:30	06/07/2022 22:28	BLOD		0.005	0.010	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	07	74-84-0	RSK175M	06/02/2022 13:07	06/02/2022 13:07	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	07	74-85-1	RSK175M	06/02/2022 13:07	06/02/2022 13:07	BLOD		1.50	5.00	1	ug/L	BMR
<b>Methane</b>	07RE1	74-82-8	RSK175M	06/02/2022 13:57	06/02/2022 13:57	2440		7.50	25.0	5	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	07	125 %	70-130	06/02/2022 13:07	06/02/2022 13:07							
<i>Surr: Acetylene (Surr)</i>	07RE1	158 %	70-130	06/02/2022 13:57	06/02/2022 13:57							S
<b>Wet Chemistry Analysis</b>												
<b>Alkalinity</b>	07	NA	SM22 2320B-2011	06/08/2022 16:42	06/08/2022 16:42	680		5.0	5.0	1	mg/L	MAH
<b>Chloride</b>	07	16887-00-6	SW9056A	06/01/2022 00:48	06/01/2022 00:48	34.7		0.5	1.0	1	mg/L	MGG
Cyanide	07	57-12-5	SW9012B	06/06/2022 17:40	06/06/2022 17:40	BLOD	CI	0.01	0.01	1	mg/L	Omnion Use
Sulfide	07	18496-25-8	SW9215	05/31/2022 16:50	05/31/2022 16:50	BLOD		0.80	1.00	1	mg/L	MJRL

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Client Sample ID: MW-108 Duplicate

Laboratory Sample ID: 22E1463-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	08	7440-22-4	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		0.0600	1.00	1	ug/L	RCV
Arsenic	08	7440-38-2	SW6020B	06/02/2022 17:00	06/07/2022 18:14	13		0.50	1.0	1	ug/L	RCV
Barium	08RE1	7440-39-3	SW6020B	06/02/2022 17:00	06/08/2022 13:19	733		10.0	50.0	10	ug/L	RCV
Beryllium	08	7440-41-7	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		0.200	1.00	1	ug/L	RCV
Cadmium	08	7440-43-9	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		0.100	1.00	1	ug/L	RCV
Cobalt	08	7440-48-4	SW6020B	06/02/2022 17:00	06/07/2022 18:14	41.7		0.200	1.00	1	ug/L	RCV
Chromium	08	7440-47-3	SW6020B	06/02/2022 17:00	06/07/2022 18:14	0.473	J	0.400	1.00	1	ug/L	RCV
Copper	08	7440-50-8	SW6020B	06/02/2022 17:00	06/07/2022 18:14	0.716	J	0.300	1.00	1	ug/L	RCV
Mercury	08	7439-97-6	SW7470A	06/09/2022 10:29	06/09/2022 17:11	BLOD		0.00020	0.00020	1	mg/L	ARP
Nickel	08	7440-02-0	SW6020B	06/02/2022 17:00	06/07/2022 18:14	34.63		1.000	1.000	1	ug/L	RCV
Lead	08	7439-92-1	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		1.0	1.0	1	ug/L	RCV
Antimony	08	7440-36-0	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		1.0	1.0	1	ug/L	RCV
Selenium	08	7782-49-2	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		0.850	1.00	1	ug/L	RCV
Tin	08	7440-31-5	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		1.00	1.00	1	ug/L	RCV
Thallium	08	7440-28-0	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		1.0	1.0	1	ug/L	RCV
Vanadium	08	7440-62-2	SW6020B	06/02/2022 17:00	06/07/2022 18:14	BLOD		2.50	5.00	1	ug/L	RCV
Zinc	08	7440-66-6	SW6020B	06/02/2022 17:00	06/07/2022 18:14	27.6		2.50	5.00	1	ug/L	RCV



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Laboratory Sample ID: 22E1463-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	08	630-20-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	0.40	1	ug/L	RJB
1,1,1-Trichloroethane	08	71-55-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.60	1.00	1	ug/L	RJB
1,1,2,2-Tetrachloroethane	08	79-34-5	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.30	0.40	1	ug/L	RJB
1,1,2-Trichloroethane	08	79-00-5	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.50	1.00	1	ug/L	RJB
<b>1,1-Dichloroethane</b>	08	75-34-3	SW8260D	06/02/2022 14:51	06/02/2022 14:51	6.28		0.60	1.00	1	ug/L	RJB
1,1-Dichloroethylene	08	75-35-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.70	1.00	1	ug/L	RJB
1,1-Dichloropropene	08	563-58-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.60	1.00	1	ug/L	RJB
1,2,3-Trichloropropane	08	96-18-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
1,2,4-Trichlorobenzene	08	120-82-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.50	1.00	1	ug/L	RJB
1,2-Dichlorobenzene	08	95-50-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
1,2-Dichloroethane	08	107-06-2	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.70	1.00	1	ug/L	RJB
1,2-Dichloropropane	08	78-87-5	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
1,3-Dichlorobenzene	08	541-73-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.30	1.00	1	ug/L	RJB
1,3-Dichloropropane	08	142-28-9	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		1.00	1.00	1	ug/L	RJB
1,4-Dichlorobenzene	08	106-46-7	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
2,2-Dichloropropane	08	594-20-7	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.60	2.00	1	ug/L	RJB
2-Butanone (MEK)	08	78-93-3	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		3.00	10.0	1	ug/L	RJB
2-Hexanone (MBK)	08	591-78-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		2.20	5.00	1	ug/L	RJB
4-Methyl-2-pentanone (MIBK)	08	108-10-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		1.50	5.00	1	ug/L	RJB
Acetone	08	67-64-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		7.00	10.0	1	ug/L	RJB
Acetonitrile	08	75-05-8	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		8.00	10.0	1	ug/L	RJB
Acrolein	08	107-02-8	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		6.00	10.0	1	ug/L	RJB
Acrylonitrile	08	107-13-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		1.70	5.00	1	ug/L	RJB
Allyl chloride	08	107-05-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.60	1.00	1	ug/L	RJB

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Laboratory Sample ID: 22E1463-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
<b>Benzene</b>	08	71-43-2	SW8260D	06/02/2022 14:51	06/02/2022 14:51	7.30		0.40	1.00	1	ug/L	RJB
Bromochloromethane	08	74-97-5	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.50	1.00	1	ug/L	RJB
Bromodichloromethane	08	75-27-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	0.50	1	ug/L	RJB
Bromoform	08	75-25-2	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
Bromomethane	08	74-83-9	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.80	1.00	1	ug/L	RJB
Carbon disulfide	08	75-15-0	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		5.00	10.0	1	ug/L	RJB
Carbon tetrachloride	08	56-23-5	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.50	1.00	1	ug/L	RJB
<b>Chlorobenzene</b>	08	108-90-7	SW8260D	06/02/2022 14:51	06/02/2022 14:51	1.31		0.40	1.00	1	ug/L	RJB
<b>Chloroethane</b>	08	75-00-3	SW8260D	06/02/2022 14:51	06/02/2022 14:51	1.07		0.70	1.00	1	ug/L	RJB
Chloroform	08	67-66-3	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.50	0.50	1	ug/L	RJB
Chloromethane	08	74-87-3	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.95	1.00	1	ug/L	RJB
Chloroprene	08	126-99-8	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.50	5.00	1	ug/L	RJB
<b>cis-1,2-Dichloroethylene</b>	08	156-59-2	SW8260D	06/02/2022 14:51	06/02/2022 14:51	61.3		0.40	1.00	1	ug/L	RJB
cis-1,3-Dichloropropene	08	10061-01-5	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.30	1.00	1	ug/L	RJB
Dibromochloromethane	08	124-48-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.35	0.50	1	ug/L	RJB
Dibromomethane	08	74-95-3	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
Dichlorodifluoromethane	08	75-71-8	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.95	1.00	1	ug/L	RJB
Ethyl methacrylate	08	97-63-2	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.70	5.00	1	ug/L	RJB
Ethylbenzene	08	100-41-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
Iodomethane	08	74-88-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		6.00	10.0	1	ug/L	RJB
Isobutyl Alcohol	08	78-83-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		25.0	40.0	1	ug/L	RJB
m+p-Xylenes	08	179601-23-1	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.60	2.00	1	ug/L	RJB
Methacrylonitrile	08	126-98-7	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		1.00	1.50	1	ug/L	RJB

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Methyl methacrylate	08	80-62-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.70	2.00	1	ug/L	RJB
Methylene chloride	08	75-09-2	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		4.00	4.00	1	ug/L	RJB
Naphthalene	08	91-20-3	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.80	1.00	1	ug/L	RJB
o-Xylene	08	95-47-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
Propionitrile	08	107-12-0	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		7.50	40.0	1	ug/L	RJB
Styrene	08	100-42-5	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
Tetrachloroethylene (PCE)	08	127-18-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
<b>Toluene</b>	08	108-88-3	SW8260D	06/02/2022 14:51	06/02/2022 14:51	10.9		0.50	1.00	1	ug/L	RJB
trans-1,2-Dichloroethylene	08	156-60-5	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.60	1.00	1	ug/L	RJB
trans-1,3-Dichloropropene	08	10061-02-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.30	1.00	1	ug/L	RJB
trans-1,4-Dichloro-2-butene	08	110-57-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		1.00	4.00	1	ug/L	RJB
Trichloroethylene	08	79-01-6	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.40	1.00	1	ug/L	RJB
Trichlorofluoromethane	08	75-69-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		0.80	1.00	1	ug/L	RJB
Vinyl acetate	08	108-05-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		2.00	10.0	1	ug/L	RJB
<b>Vinyl chloride</b>	08	75-01-4	SW8260D	06/02/2022 14:51	06/02/2022 14:51	7.98		0.50	0.50	1	ug/L	RJB
Xylenes, Total	08	1330-20-7	SW8260D	06/02/2022 14:51	06/02/2022 14:51	BLOD		1.00	3.00	1	ug/L	RJB
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	08	101 %	70-120	06/02/2022 14:51	06/02/2022 14:51							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	08	95.8 %	75-120	06/02/2022 14:51	06/02/2022 14:51							
<i>Surr: Dibromofluoromethane (Surr)</i>	08	85.0 %	70-130	06/02/2022 14:51	06/02/2022 14:51							
<i>Surr: Toluene-d8 (Surr)</i>	08	103 %	70-130	06/02/2022 14:51	06/02/2022 14:51							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
1,2,4,5-Tetrachlorobenzene	08	95-94-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
1,3,5-Trinitrobenzene	08	99-35-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	5.00	1	ug/L	MGG
1,3-Dinitrobenzene	08	99-65-0	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
1,4-Naphthoquinone	08	130-15-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
1-Naphthylamine	08	134-32-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
2,3,4,6-Tetrachlorophenol	08	58-90-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
2,4,5-Trichlorophenol	08	95-95-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
2,4,6-Trichlorophenol	08	88-06-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		7.48	10.0	1	ug/L	MGG
2,4-Dichlorophenol	08	120-83-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.80	10.0	1	ug/L	MGG
2,4-Dimethylphenol	08	105-67-9	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.67	4.67	1	ug/L	MGG
2,4-Dinitrophenol	08	51-28-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		7.48	50.0	1	ug/L	MGG
2,4-Dinitrotoluene	08	121-14-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		5.61	10.0	1	ug/L	MGG
2,6-Dichlorophenol	08	87-65-0	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
2,6-Dinitrotoluene	08	606-20-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.74	10.0	1	ug/L	MGG
2-Acetylaminofluorene	08	53-96-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
2-Chloronaphthalene	08	91-58-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.21	10.0	1	ug/L	MGG
2-Chlorophenol	08	95-57-8	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	10.0	1	ug/L	MGG
2-Methylnaphthalene	08	91-57-6	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
2-Naphthylamine	08	91-59-8	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
2-Nitroaniline	08	88-74-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	20.0	1	ug/L	MGG
2-Nitrophenol	08	88-75-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		5.61	10.0	1	ug/L	MGG
3,3'-Dichlorobenzidine	08	91-94-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.74	10.0	1	ug/L	MGG
3,3'-Dimethylbenzidine	08	119-93-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
3-Methylcholanthrene	08	56-49-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
3-Nitroaniline	08	99-09-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	20.0	1	ug/L	MGG
4,6-Dinitro-2-methylphenol	08	534-52-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		7.48	50.0	1	ug/L	MGG
4-Aminobiphenyl	08	92-67-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
4-Bromophenyl phenyl ether	08	101-55-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	10.0	1	ug/L	MGG
4-Chloroaniline	08	106-47-8	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
4-Chlorophenyl phenyl ether	08	7005-72-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	10.0	1	ug/L	MGG
4-Nitroaniline	08	100-01-6	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	20.0	1	ug/L	MGG
4-Nitrophenol	08	100-02-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	50.0	1	ug/L	MGG
5-Nitro-o-toluidine	08	99-55-8	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
7,12-Dimethylbenz (a) anthracene	08	57-97-6	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
Acenaphthene	08	83-32-9	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.74	10.0	1	ug/L	MGG
Acenaphthylene	08	208-96-8	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.74	10.0	1	ug/L	MGG
Acetophenone	08	98-86-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	20.0	1	ug/L	MGG
Anthracene	08	120-12-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (a) anthracene	08	56-55-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	9.35	1	ug/L	MGG
Benzo (a) pyrene	08	50-32-8	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.19	0.20	1	ug/L	MGG
Benzo (b) fluoranthene	08	205-99-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.74	10.0	1	ug/L	MGG
Benzo (g,h,i) perylene	08	191-24-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.67	10.0	1	ug/L	MGG
Benzo (k) fluoranthene	08	207-08-9	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		5.61	10.0	1	ug/L	MGG
Benzyl alcohol	08	100-51-6	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	20.0	1	ug/L	MGG
bis (2-Chloroethoxy) methane	08	111-91-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	10.0	1	ug/L	MGG
bis (2-Chloroethyl) ether	08	111-44-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	10.0	1	ug/L	MGG
2,2'-Oxybis (1-chloropropane)	08	108-60-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.80	10.0	1	ug/L	MGG
bis (2-Ethylhexyl) phthalate	08	117-81-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.67	5.00	1	ug/L	MGG

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Client Sample ID: MW-108 Duplicate

Laboratory Sample ID: 22E1463-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
Butyl benzyl phthalate	08	85-68-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		6.54	10.0	1	ug/L	MGG
Chlorobenzilate	08	510-15-6	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
Chrysene	08	218-01-9	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.74	10.0	1	ug/L	MGG
Diallate	08	2303-16-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
Dibenz (a,h) anthracene	08	53-70-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.67	10.0	1	ug/L	MGG
Dibenzofuran	08	132-64-9	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	5.00	1	ug/L	MGG
Diethyl phthalate	08	84-66-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.80	10.0	1	ug/L	MGG
Dimethoate	08	60-51-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
Dimethyl phthalate	08	131-11-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	10.0	1	ug/L	MGG
Di-n-butyl phthalate	08	84-74-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.74	10.0	1	ug/L	MGG
Di-n-octyl phthalate	08	117-84-0	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		7.48	10.0	1	ug/L	MGG
Diphenylamine	08	122-39-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
Disulfoton	08	298-04-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
Ethyl methanesulfonate	08	62-50-0	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	20.0	1	ug/L	MGG
Ethyl parathion	08	56-38-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
Famphur	08	52-85-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
Fluoranthene	08	206-44-0	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.67	10.0	1	ug/L	MGG
Fluorene	08	86-73-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.74	10.0	1	ug/L	MGG
Hexachlorobenzene	08	118-74-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	0.93	1	ug/L	MGG
Hexachlorobutadiene	08	87-68-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.21	10.0	1	ug/L	MGG
Hexachlorocyclopentadiene	08	77-47-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD	C	3.74	10.0	1	ug/L	MGG
Hexachloroethane	08	67-72-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	10.0	1	ug/L	MGG
Hexachloropropene	08	1888-71-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	2.50	1	ug/L	MGG
Indeno (1,2,3-cd) pyrene	08	193-39-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.80	10.0	1	ug/L	MGG

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
Isodrin	08	465-73-6	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
Isophorone	08	78-59-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		4.67	10.0	1	ug/L	MGG
Isosafrole	08	120-58-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
Kepono	08	143-50-0	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	9.35	1	ug/L	MGG
m+p-Cresols	08	1319-77-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
Methapyrilene	08	91-80-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
Methyl methanesulfonate	08	66-27-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
Methyl parathion	08	298-00-0	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	2.50	1	ug/L	MGG
Nitrobenzene	08	98-95-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodiethylamine	08	55-18-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.34	2.50	1	ug/L	MGG
n-Nitrosodimethylamine	08	62-75-9	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosodi-n-butylamine	08	924-16-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosodi-n-propylamine	08	621-64-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		3.27	10.0	1	ug/L	MGG
n-Nitrosodiphenylamine	08	86-30-6	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.80	10.0	1	ug/L	MGG
n-Nitrosomethylethylamine	08	10595-95-6	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	2.50	1	ug/L	MGG
n-Nitrosopiperidine	08	100-75-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
n-Nitrosopyrrolidine	08	930-55-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	2.50	1	ug/L	MGG
o,o,o-Triethyl phosphorothioate	08	126-68-1	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
o,o-Diethyl o-2-pyrazinyl phosphorothioate	08	297-97-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
o+m+p-Cresols	08	1319-77-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		2.80	10.0	1	ug/L	MGG
o-Cresol	08	95-48-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		7.48	10.0	1	ug/L	MGG
o-Toluidine	08	95-53-4	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	2.50	1	ug/L	MGG
p-(Dimethylamino) azobenzene	08	60-11-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	2.50	1	ug/L	MGG

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Laboratory Sample ID: 22E1463-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
p-Chloro-m-cresol	08	59-50-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		7.48	10.0	1	ug/L	MGG
Pentachlorobenzene	08	608-93-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
Pentachloronitrobenzene (quintozene)	08	82-68-8	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	9.35	1	ug/L	MGG
Phenacetin	08	62-44-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		0.93	10.0	1	ug/L	MGG
Phenanthrene	08	85-01-8	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		7.48	10.0	1	ug/L	MGG
<b>Phenol</b>	08	108-95-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	2.75	J	2.34	10.0	1	ug/L	MGG
Phorate	08	298-02-2	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	2.50	1	ug/L	MGG
p-Phenylenediamine	08	106-50-3	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD	C	1.87	10.0	1	ug/L	MGG
Pronamide	08	23950-58-5	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	10.0	1	ug/L	MGG
Pyrene	08	129-00-0	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		6.54	10.0	1	ug/L	MGG
Safrole	08	94-59-7	SW8270E	05/27/2022 09:15	06/03/2022 16:22	BLOD		1.87	2.50	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	08	61.9 %	10-86	05/27/2022 09:15	06/03/2022 16:22							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	08	76.7 %	9-87	05/27/2022 09:15	06/03/2022 16:22							
<i>Surr: 2-Fluorophenol (Surr)</i>	08	35.9 %	10-52	05/27/2022 09:15	06/03/2022 16:22							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	08	71.9 %	10-98.5	05/27/2022 09:15	06/03/2022 16:22							
<i>Surr: Phenol-d5 (Surr)</i>	08	27.4 %	5-33	05/27/2022 09:15	06/03/2022 16:22							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	08	70.3 %	27-133	05/27/2022 09:15	06/03/2022 16:22							



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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
PCB as Aroclor 1016	08	12674-11-2	SW8082A	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1221	08	11104-28-2	SW8082A	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1232	08	11141-16-5	SW8082A	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1242	08	53469-21-9	SW8082A	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1248	08	12672-29-6	SW8082A	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1254	08	11097-69-1	SW8082A	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.140	0.200	1	ug/L	LBH2
PCB as Aroclor 1260	08	11096-82-5	SW8082A	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.140	0.200	1	ug/L	LBH2
<i>Surr: DCB</i>	08	49.9 %	30-105	06/01/2022 09:00	06/01/2022 17:21							
<i>Surr: TCMX</i>	08	57.7 %	30-105	06/01/2022 09:00	06/01/2022 17:21							
4,4'-DDD	08	72-54-8	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDE	08	72-55-9	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
4,4'-DDT	08	50-29-3	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Aldrin	08	309-00-2	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-BHC	08	319-84-6	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
alpha-Chlordane	08	5103-71-9	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
beta-BHC	08	319-85-7	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.019	0.050	1	ug/L	LBH2
Chlordane	08	57-74-9	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.187	0.200	1	ug/L	LBH2
delta-BHC	08	319-86-8	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Dieldrin	08	60-57-1	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan I	08	959-98-8	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan II	08	33213-65-9	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Endosulfan sulfate	08	1031-07-8	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin	08	72-20-8	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Endrin aldehyde	08	7421-93-4	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>												
gamma-BHC (Lindane)	08	58-89-9	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
gamma-Chlordane	08	5103-74-2	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor	08	76-44-8	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Heptachlor epoxide	08	1024-57-3	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Methoxychlor	08	72-43-5	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.005	0.050	1	ug/L	LBH2
Toxaphene	08	8001-35-2	SW8081B	06/01/2022 09:00	06/01/2022 17:21	BLOD		0.187	1.00	1	ug/L	LBH2
Surr: TCMX	08	57.7 %	18-112	06/01/2022 09:00	06/01/2022 17:21							
Surr: DCB	08	49.9 %	27-131	06/01/2022 09:00	06/01/2022 17:21							

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<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-T	08	93-76-5	SW8151A	06/02/2022 12:30	06/09/2022 17:41	BLOD		0.200	0.500	1	ug/L	LBH2
2,4,5-TP (Silvex)	08	93-72-1	SW8151A	06/02/2022 12:30	06/09/2022 17:41	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	08	94-75-7	SW8151A	06/02/2022 12:30	06/09/2022 17:41	BLOD		0.200	0.500	1	ug/L	LBH2
Dinoseb	08	88-85-7	SW8151A	06/02/2022 12:30	06/09/2022 17:41	BLOD		0.200	0.500	1	ug/L	LBH2
Pentachlorophenol	08	87-86-5	SW8151A	06/02/2022 12:30	06/09/2022 17:41	BLOD		0.200	0.500	1	ug/L	LBH2
<i>Surr: DCAA (Surr)</i>	08	94.9 %	48.5-134	06/02/2022 12:30	06/09/2022 17:41							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/12/2022 2:25:23PM

Client Site I.D.: City of Bristol 1st Semi-Annual 2022

Submitted To: Jennifer Robb

Client Sample ID: MW-108 Duplicate

Laboratory Sample ID: 22E1463-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	08	106-93-4	SW8011	06/07/2022 11:30	06/07/2022 22:49	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	08	96-18-4	SW8011	06/07/2022 11:30	06/07/2022 22:49	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	08	96-12-8	SW8011	06/07/2022 11:30	06/07/2022 22:49	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:25:23PM

Client Sample ID: MW-108 Duplicate

Laboratory Sample ID: 22E1463-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	08	74-84-0	RSK175M	06/02/2022 13:20	06/02/2022 13:20	BLOD		1.50	5.00	1	ug/L	BMR
Ethene	08	74-85-1	RSK175M	06/02/2022 13:20	06/02/2022 13:20	BLOD		1.50	5.00	1	ug/L	BMR
<b>Methane</b>	08RE1	74-82-8	RSK175M	06/02/2022 14:09	06/02/2022 14:09	3430		7.50	25.0	5	ug/L	BMR
<i>Surr: Acetylene (Surr)</i>	08	128 %	70-130	06/02/2022 13:20	06/02/2022 13:20							
<i>Surr: Acetylene (Surr)</i>	08RE1	137 %	70-130	06/02/2022 14:09	06/02/2022 14:09							S
<b>Wet Chemistry Analysis</b>												
<b>Alkalinity</b>	08	NA	SM22 2320B-2011	06/08/2022 16:42	06/08/2022 16:42	639		5.0	5.0	1	mg/L	MAH
<b>Chloride</b>	08	16887-00-6	SW9056A	06/01/2022 01:16	06/01/2022 01:16	35.7		0.5	1.0	1	mg/L	MGG
Cyanide	08	57-12-5	SW9012B	06/06/2022 17:41	06/06/2022 17:41	BLOD	CI	0.01	0.01	1	mg/L	Omnion Use
Sulfide	08	18496-25-8	SW9215	05/31/2022 16:50	05/31/2022 16:50	BLOD		0.80	1.00	1	mg/L	MJRL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0097 - EPA200.8 R5.4**

**Blank (BFF0097-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/07/2022

Antimony	ND	1.0	ug/L							
Arsenic	ND	1.0	ug/L							
Barium	ND	5.00	ug/L							
Beryllium	ND	1.00	ug/L							
Cadmium	ND	1.00	ug/L							
Chromium	ND	1.00	ug/L							
Cobalt	ND	1.00	ug/L							
Copper	ND	1.00	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	1.000	ug/L							
Selenium	ND	1.00	ug/L							
Silver	ND	1.00	ug/L							
Thallium	ND	1.0	ug/L							
Tin	ND	1.00	ug/L							
Vanadium	ND	5.00	ug/L							
Zinc	ND	5.00	ug/L							

**LCS (BFF0097-BS1)**

Prepared: 06/02/2022 Analyzed: 06/07/2022

Antimony	50	1.0	ug/L	50.0		99.6	80-120			
Arsenic	50	1.0	ug/L	50.0		100	80-120			
Barium	46.7	5.00	ug/L	50.0		93.4	80-120			
Beryllium	50.6	1.00	ug/L	50.0		101	80-120			
Cadmium	49.0	1.00	ug/L	50.0		98.1	80-120			
Chromium	48.4	1.00	ug/L	50.0		96.8	80-120			
Cobalt	47.7	1.00	ug/L	50.0		95.4	80-120			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0097 - EPA200.8 R5.4

**LCS (BFF0097-BS1)**

Prepared: 06/02/2022 Analyzed: 06/07/2022

Copper	48.0	1.00	ug/L	50.0		96.0	80-120			
Lead	50	1.0	ug/L	50.0		99.0	80-120			
Nickel	47.49	1.000	ug/L	50.0		95.0	80-120			
Selenium	52.6	1.00	ug/L	50.0		105	80-120			
Silver	9.44	1.00	ug/L	10.0		94.4	80-120			
Thallium	50	1.0	ug/L	50.0		100	80-120			
Tin	49.0	1.00	ug/L	50.0		98.0	80-120			
Vanadium	48.5	5.00	ug/L	50.0		96.9	80-120			
Zinc	51.9	5.00	ug/L	50.0		104	80-120			

**Matrix Spike (BFF0097-MS1)**

Source: 22E1463-02

Prepared: 06/02/2022 Analyzed: 06/07/2022

Antimony	50	1.0	ug/L	50.0	BLOD	99.8	75-125			
Arsenic	50	1.0	ug/L	50.0	0.56	99.0	75-125			
Barium	143	5.00	ug/L	50.0	93.3	100	75-125			
Beryllium	52.8	1.00	ug/L	50.0	BLOD	106	75-125			
Cadmium	47.9	1.00	ug/L	50.0	BLOD	95.8	75-125			
Chromium	49.2	1.00	ug/L	50.0	BLOD	98.3	75-125			
Cobalt	46.1	1.00	ug/L	50.0	BLOD	92.1	75-125			
Copper	45.4	1.00	ug/L	50.0	BLOD	90.7	75-125			
Lead	49	1.0	ug/L	50.0	BLOD	97.4	75-125			
Nickel	46.48	1.000	ug/L	50.0	BLOD	93.0	75-125			
Selenium	51.6	1.00	ug/L	50.0	BLOD	103	75-125			
Silver	9.00	1.00	ug/L	10.0	BLOD	90.0	75-125			
Thallium	51	1.0	ug/L	50.0	BLOD	101	75-125			
Tin	50.3	1.00	ug/L	50.0	BLOD	101	75-125			

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0097 - EPA200.8 R5.4</b>										
<b>Matrix Spike (BFF0097-MS1)</b>		<b>Source: 22E1463-02</b>			Prepared: 06/02/2022 Analyzed: 06/07/2022					
Vanadium	50.5	5.00	ug/L	50.0	BLOD	101	75-125			
Zinc	50.2	5.00	ug/L	50.0	3.43	93.6	75-125			
<b>Matrix Spike (BFF0097-MS2)</b>		<b>Source: 22F0064-03</b>			Prepared: 06/02/2022 Analyzed: 06/07/2022					
Antimony	51	1.0	ug/L	50.0	BLOD	102	75-125			
Arsenic	51	1.0	ug/L	50.0	BLOD	103	75-125			
Barium	82.0	5.00	ug/L	50.0	33.6	96.8	75-125			
Beryllium	57.3	1.00	ug/L	50.0	BLOD	115	75-125			
Cadmium	50.2	1.00	ug/L	50.0	BLOD	100	75-125			
Chromium	50.7	1.00	ug/L	50.0	BLOD	101	75-125			
Cobalt	49.1	1.00	ug/L	50.0	BLOD	98.2	75-125			
Copper	48.4	1.00	ug/L	50.0	BLOD	96.9	75-125			
Lead	49	1.0	ug/L	50.0	BLOD	98.4	75-125			
Nickel	49.03	1.000	ug/L	50.0	BLOD	98.1	75-125			
Selenium	54.5	1.00	ug/L	50.0	BLOD	109	75-125			
Silver	9.39	1.00	ug/L	10.0	BLOD	93.9	75-125			
Thallium	50	1.0	ug/L	50.0	BLOD	101	75-125			
Tin	51.8	1.00	ug/L	50.0	BLOD	104	75-125			
Vanadium	52.4	5.00	ug/L	50.0	BLOD	105	75-125			
Zinc	51.4	5.00	ug/L	50.0	BLOD	103	75-125			
<b>Matrix Spike Dup (BFF0097-MSD1)</b>		<b>Source: 22E1463-02</b>			Prepared: 06/02/2022 Analyzed: 06/07/2022					
Antimony	51	1.0	ug/L	50.0	BLOD	101	75-125	1.62	20	
Arsenic	51	1.0	ug/L	50.0	0.56	102	75-125	2.82	20	
Barium	144	5.00	ug/L	50.0	93.3	101	75-125	0.458	20	
Beryllium	50.1	1.00	ug/L	50.0	BLOD	100	75-125	5.20	20	



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
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Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0097 - EPA200.8 R5.4

Matrix Spike Dup (BFF0097-MSD1)	Source: 22E1463-02			Prepared: 06/02/2022 Analyzed: 06/07/2022						
Cadmium	48.3	1.00	ug/L	50.0	BLOD	96.5	75-125	0.752	20	
Chromium	50.2	1.00	ug/L	50.0	BLOD	100	75-125	1.99	20	
Cobalt	46.9	1.00	ug/L	50.0	BLOD	93.8	75-125	1.81	20	
Copper	45.8	1.00	ug/L	50.0	BLOD	91.6	75-125	0.892	20	
Lead	48	1.0	ug/L	50.0	BLOD	96.6	75-125	0.831	20	
Nickel	46.90	1.000	ug/L	50.0	BLOD	93.8	75-125	0.903	20	
Selenium	52.2	1.00	ug/L	50.0	BLOD	104	75-125	1.26	20	
Silver	8.96	1.00	ug/L	10.0	BLOD	89.6	75-125	0.376	20	
Thallium	50	1.0	ug/L	50.0	BLOD	101	75-125	0.565	20	
Tin	51.0	1.00	ug/L	50.0	BLOD	102	75-125	1.25	20	
Vanadium	50.8	5.00	ug/L	50.0	BLOD	102	75-125	0.608	20	
Zinc	51.3	5.00	ug/L	50.0	3.43	95.8	75-125	2.20	20	
Matrix Spike Dup (BFF0097-MSD2)	Source: 22F0064-03			Prepared: 06/02/2022 Analyzed: 06/07/2022						
Antimony	50	1.0	ug/L	50.0	BLOD	99.2	75-125	3.13	20	
Arsenic	50	1.0	ug/L	50.0	BLOD	99.2	75-125	3.30	20	
Barium	80.9	5.00	ug/L	50.0	33.6	94.7	75-125	1.33	20	
Beryllium	54.3	1.00	ug/L	50.0	BLOD	109	75-125	5.32	20	
Cadmium	48.6	1.00	ug/L	50.0	BLOD	97.2	75-125	3.34	20	
Chromium	49.5	1.00	ug/L	50.0	BLOD	98.9	75-125	2.43	20	
Cobalt	47.0	1.00	ug/L	50.0	BLOD	94.0	75-125	4.42	20	
Copper	47.0	1.00	ug/L	50.0	BLOD	94.0	75-125	3.02	20	
Lead	48	1.0	ug/L	50.0	BLOD	96.7	75-125	1.74	20	
Nickel	47.05	1.000	ug/L	50.0	BLOD	94.1	75-125	4.11	20	
Selenium	52.5	1.00	ug/L	50.0	BLOD	105	75-125	3.65	20	

## Certificate of Analysis

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Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0097 - EPA200.8 R5.4</b>										
<b>Matrix Spike Dup (BFF0097-MSD2)</b>		<b>Source: 22F0064-03</b>			Prepared: 06/02/2022 Analyzed: 06/07/2022					
Silver	9.07	1.00	ug/L	10.0	BLOD	90.7	75-125	3.47	20	
Thallium	49	1.0	ug/L	50.0	BLOD	98.2	75-125	2.67	20	
Tin	50.3	1.00	ug/L	50.0	BLOD	101	75-125	2.87	20	
Vanadium	50.9	5.00	ug/L	50.0	BLOD	102	75-125	2.82	20	
Zinc	50.3	5.00	ug/L	50.0	BLOD	101	75-125	2.17	20	
<b>Batch BFF0393 - SW7470A</b>										
<b>Blank (BFF0393-BLK1)</b>		Prepared & Analyzed: 06/09/2022								
Mercury	ND	0.00020	mg/L							
<b>LCS (BFF0393-BS1)</b>		Prepared & Analyzed: 06/09/2022								
Mercury	0.00251	0.00020	mg/L	0.00250	100		80-120			
<b>Matrix Spike (BFF0393-MS1)</b>		<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/09/2022					
Mercury	0.00274	0.00020	mg/L	0.00250	BLOD	110	80-120			
<b>Matrix Spike (BFF0393-MS2)</b>		<b>Source: 22E1463-03</b>			Prepared & Analyzed: 06/09/2022					
Mercury	0.00244	0.00020	mg/L	0.00250	BLOD	97.7	80-120			
<b>Matrix Spike Dup (BFF0393-MSD1)</b>		<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/09/2022					
Mercury	0.00263	0.00020	mg/L	0.00250	BLOD	105	80-120	3.98	20	
<b>Matrix Spike Dup (BFF0393-MSD2)</b>		<b>Source: 22E1463-03</b>			Prepared & Analyzed: 06/09/2022					
Mercury	0.00259	0.00020	mg/L	0.00250	BLOD	104	80-120	5.84	20	

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Blank (BFF0032-BLK1)**

Prepared & Analyzed: 06/02/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,1-Dichloropropene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2,4-Trichlorobenzene	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,3-Dichlorobenzene	ND	1.00	ug/L
1,3-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2,2-Dichloropropane	ND	2.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acetonitrile	ND	10.0	ug/L
Acrolein	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Allyl chloride	ND	1.00	ug/L
Benzene	ND	1.00	ug/L

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Blank (BFF0032-BLK1)**

Prepared & Analyzed: 06/02/2022

Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L
Chloromethane	ND	1.00	ug/L
Chloroprene	ND	5.00	ug/L
cis-1,2-Dichloroethylene	ND	1.00	ug/L
cis-1,3-Dichloropropene	ND	1.00	ug/L
Dibromochloromethane	ND	0.50	ug/L
Dibromomethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Ethyl methacrylate	ND	5.00	ug/L
Ethylbenzene	ND	1.00	ug/L
Iodomethane	ND	10.0	ug/L
Isobutyl Alcohol	ND	40.0	ug/L
m+p-Xylenes	ND	2.00	ug/L
Methacrylonitrile	ND	1.50	ug/L
Methyl methacrylate	ND	2.00	ug/L
Methylene chloride	ND	4.00	ug/L

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0032 - SW5030B-MS

**Blank (BFF0032-BLK1)**

Prepared &amp; Analyzed: 06/02/2022

o-Xylene	ND	1.00	ug/L							
Propionitrile	ND	40.0	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	49.1		ug/L	50.0		98.2	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	47.5		ug/L	50.0		95.0	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	49.0		ug/L	50.0		98.1	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.8		ug/L	50.0		102	70-130			

**LCS (BFF0032-BS1)**

Prepared &amp; Analyzed: 06/02/2022

1,1,1,2-Tetrachloroethane	45.8	0.4	ug/L	50.0		91.6	80-130			
1,1,1-Trichloroethane	50.4	1	ug/L	50.0		101	65-130			
1,1,2,2-Tetrachloroethane	47.8	0.4	ug/L	50.0		95.6	65-130			
1,1,2-Trichloroethane	50.5	1	ug/L	50.0		101	75-125			
1,1-Dichloroethane	48.6	1	ug/L	50.0		97.3	70-135			
1,1-Dichloroethylene	41.3	1	ug/L	50.0		82.6	70-130			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**LCS (BFF0032-BS1)**

Prepared & Analyzed: 06/02/2022

1,1-Dichloropropene	49.6	1	ug/L	50.0		99.1	75-135			
1,2,3-Trichloropropane	45.7	1	ug/L	50.0		91.4	75-125			
1,2,4-Trichlorobenzene	49.5	1	ug/L	50.0		98.9	65-135			
1,2-Dichlorobenzene	45.9	0.5	ug/L	50.0		91.8	70-120			
1,2-Dichloroethane	45.2	1	ug/L	50.0		90.5	70-130			
1,2-Dichloropropane	48.8	0.5	ug/L	50.0		97.6	75-125			
1,3-Dichlorobenzene	45.2	1	ug/L	50.0		90.4	75-125			
1,3-Dichloropropane	47.0	1	ug/L	50.0		94.0	75-125			
1,4-Dichlorobenzene	45.3	1	ug/L	50.0		90.6	75-125			
2,2-Dichloropropane	49.7	1	ug/L	50.0		99.5	70-135			
2-Butanone (MEK)	49.0	10	ug/L	50.0		98.0	30-150			
2-Hexanone (MBK)	44.5	5	ug/L	50.0		89.0	55-130			
4-Methyl-2-pentanone (MIBK)	47.8	5	ug/L	50.0		95.6	60-135			
Acetone	56.1	10	ug/L	50.0		112	40-140			
Acrylonitrile	252	5	ug/L	250		101	70-130			
Benzene	46.8	1	ug/L	50.0		93.5	80-120			
Bromochloromethane	43.0	1	ug/L	50.0		86.1	65-130			
Bromodichloromethane	53.1	0.5	ug/L	50.0		106	75-120			
Bromoform	41.6	1	ug/L	50.0		83.1	70-130			
Bromomethane	57.0	1	ug/L	50.0		114	30-145			
Carbon disulfide	43.4	10	ug/L	50.0		86.8	35-160			
Carbon tetrachloride	51.2	1	ug/L	50.0		102	65-140			
Chlorobenzene	45.3	1	ug/L	50.0		90.5	80-120			
Chloroethane	50.9	1	ug/L	50.0		102	60-135			
Chloroform	48.0	0.5	ug/L	50.0		96.0	65-135			

### Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFF0032 - SW5030B-MS

**LCS (BFF0032-BS1)**

Prepared &amp; Analyzed: 06/02/2022

Chloromethane	50.0	1	ug/L	50.0		100	40-125			
cis-1,2-Dichloroethylene	44.2	1	ug/L	50.0		88.5	70-125			
cis-1,3-Dichloropropene	38.5	1	ug/L	50.0		77.0	70-130			
Dibromochloromethane	42.3	0.5	ug/L	50.0		84.6	60-135			
Dibromomethane	46.2	1	ug/L	50.0		92.4	75-125			
Dichlorodifluoromethane	45.5	1	ug/L	50.0		91.1	30-155			
Dichlorodifluoromethane	45.5	1	ug/L	50.0		91.1	30-155			
Ethylbenzene	51.1	1	ug/L	50.0		102	75-125			
m+p-Xylenes	92.9	2	ug/L	100		92.9	75-130			
Methylene chloride	47.0	4	ug/L	50.0		94.0	55-140			
o-Xylene	48.0	1	ug/L	50.0		96.0	80-120			
Styrene	41.4	1	ug/L	50.0		82.7	65-135			
Tetrachloroethylene (PCE)	77.4	1	ug/L	50.0		155	45-150			L
Toluene	46.0	1	ug/L	50.0		92.1	75-120			
trans-1,2-Dichloroethylene	47.0	1	ug/L	50.0		94.1	60-140			
trans-1,3-Dichloropropene	36.1	1	ug/L	50.0		72.2	55-140			
Trichloroethylene	47.9	1	ug/L	50.0		95.7	70-125			
Trichlorofluoromethane	54.1	1	ug/L	50.0		108	60-145			
Vinyl chloride	56.8	0.5	ug/L	50.0		114	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>49.1</i>		ug/L	<i>50.0</i>		<i>98.3</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>51.4</i>		ug/L	<i>50.0</i>		<i>103</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>46.8</i>		ug/L	<i>50.0</i>		<i>93.6</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.9</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-130</i>			

**Duplicate (BFF0032-DUP1)**

Source: 22E1463-08

Prepared &amp; Analyzed: 06/02/2022

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
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Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Duplicate (BFF0032-DUP1)**

**Source: 22E1463-08**

**Prepared & Analyzed: 06/02/2022**

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,1-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,2-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethane	6.12	1.00	ug/L		6.28			2.58	30	
1,1-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,2,4-Trichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,3-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,3-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,4-Dichlorobenzene	1.93	1.00	ug/L		BLOD			NA	30	
2,2-Dichloropropane	ND	2.00	ug/L		BLOD			NA	30	
2-Butanone (MEK)	ND	10.0	ug/L		BLOD			NA	30	
2-Hexanone (MBK)	ND	5.00	ug/L		BLOD			NA	30	
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L		BLOD			NA	30	
Acetone	ND	10.0	ug/L		BLOD			NA	30	
Acetonitrile	ND	10.0	ug/L		BLOD			NA	30	
Acrolein	ND	10.0	ug/L		BLOD			NA	30	
Acrylonitrile	ND	5.00	ug/L		BLOD			NA	30	
Allyl chloride	ND	1.00	ug/L		BLOD			NA	30	
Benzene	7.46	1.00	ug/L		7.30			2.17	30	



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Duplicate (BFF0032-DUP1)**

**Source: 22E1463-08**

**Prepared & Analyzed: 06/02/2022**

Bromochloromethane	ND	1.00	ug/L		BLOD			NA	30	
Bromodichloromethane	ND	0.50	ug/L		BLOD			NA	30	
Bromoform	ND	1.00	ug/L		BLOD			NA	30	
Bromomethane	ND	1.00	ug/L		BLOD			NA	30	
Carbon disulfide	ND	10.0	ug/L		BLOD			NA	30	
Carbon tetrachloride	ND	1.00	ug/L		BLOD			NA	30	
Chlorobenzene	1.35	1.00	ug/L		1.31			3.01	30	
Chloroethane	1.36	1.00	ug/L		1.07			23.9	30	
Chloroform	ND	0.50	ug/L		BLOD			NA	30	
Chloromethane	ND	1.00	ug/L		BLOD			NA	30	
Chloroprene	ND	5.00	ug/L		BLOD			NA	30	
cis-1,2-Dichloroethylene	59.9	1.00	ug/L		61.3			2.41	30	
cis-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Dibromochloromethane	ND	0.50	ug/L		BLOD			NA	30	
Dibromomethane	ND	1.00	ug/L		BLOD			NA	30	
Dichlorodifluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Dichlorodifluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Ethyl methacrylate	ND	5.00	ug/L		BLOD			NA	30	
Ethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Iodomethane	ND	10.0	ug/L		BLOD			NA	30	
Isobutyl Alcohol	ND	40.0	ug/L		BLOD			NA	30	
m+p-Xylenes	ND	2.00	ug/L		BLOD			NA	30	
Methacrylonitrile	ND	1.50	ug/L		BLOD			NA	30	
Methyl methacrylate	ND	2.00	ug/L		BLOD			NA	30	
Methylene chloride	ND	4.00	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0032 - SW5030B-MS

**Duplicate (BFF0032-DUP1)**

Source: 22E1463-08

Prepared &amp; Analyzed: 06/02/2022

o-Xylene	ND	1.00	ug/L		BLOD			NA	30	
Propionitrile	ND	40.0	ug/L		BLOD			NA	30	
Styrene	ND	1.00	ug/L		BLOD			NA	30	
Tetrachloroethylene (PCE)	ND	1.00	ug/L		BLOD			NA	30	
Toluene	10.8	1.00	ug/L		10.9			0.551	30	
trans-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L		BLOD			NA	30	
Trichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
Trichlorofluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Vinyl acetate	ND	10.0	ug/L		BLOD			NA	30	
Vinyl chloride	7.56	0.50	ug/L		7.98			5.41	30	
Xylenes, Total	ND	3.00	ug/L		BLOD			NA	30	
Tetrahydrofuran	ND	10.0	ug/L		BLOD			NA	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	48.4		ug/L	50.0		96.9	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	47.5		ug/L	50.0		95.0	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	44.8		ug/L	50.0		89.6	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	51.3		ug/L	50.0		103	70-130			

**Matrix Spike (BFF0032-MS1)**

Source: 22E1463-08

Prepared &amp; Analyzed: 06/02/2022

1,1,1,2-Tetrachloroethane	50.7	0.4	ug/L	50.0	BLOD	101	80-130			
1,1,1-Trichloroethane	50.8	1	ug/L	50.0	BLOD	102	65-130			
1,1,2,2-Tetrachloroethane	48.6	0.4	ug/L	50.0	BLOD	97.2	65-130			
1,1,2-Trichloroethane	51.6	1	ug/L	50.0	BLOD	103	75-125			
1,1-Dichloroethane	53.2	1	ug/L	50.0	6.28	93.9	70-135			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Matrix Spike (BFF0032-MS1)**

**Source: 22E1463-08**

Prepared & Analyzed: 06/02/2022

1,1-Dichloroethylene	40.7	1	ug/L	50.0	BLOD	81.4	70-130			
1,1-Dichloropropene	49.1	1	ug/L	50.0	BLOD	98.3	75-135			
1,2,3-Trichloropropane	47.5	1	ug/L	50.0	BLOD	95.0	75-125			
1,2,4-Trichlorobenzene	52.3	1	ug/L	50.0	BLOD	105	65-135			
1,2-Dichlorobenzene	48.3	0.5	ug/L	50.0	BLOD	96.7	70-120			
1,2-Dichloroethane	45.6	1	ug/L	50.0	BLOD	91.3	70-130			
1,2-Dichloropropane	49.4	0.5	ug/L	50.0	BLOD	98.9	75-125			
1,3-Dichlorobenzene	50.8	1	ug/L	50.0	BLOD	102	75-125			
1,3-Dichloropropane	47.7	1	ug/L	50.0	BLOD	95.4	75-125			
1,4-Dichlorobenzene	51.2	1	ug/L	50.0	BLOD	102	75-125			
2,2-Dichloropropane	50.4	1	ug/L	50.0	BLOD	101	70-135			
2-Butanone (MEK)	39.5	10	ug/L	50.0	BLOD	79.0	30-150			
2-Hexanone (MBK)	41.6	5	ug/L	50.0	BLOD	83.3	55-130			
4-Methyl-2-pentanone (MIBK)	44.6	5	ug/L	50.0	BLOD	89.1	60-135			
Acetone	44.2	10	ug/L	50.0	BLOD	80.7	40-140			
Acrylonitrile	224	5	ug/L	250	BLOD	89.8	70-130			
Benzene	57.7	1	ug/L	50.0	7.30	101	80-120			
Bromochloromethane	43.2	1	ug/L	50.0	BLOD	86.3	65-130			
Bromodichloromethane	54.2	0.5	ug/L	50.0	BLOD	108	75-120			
Bromoform	43.8	1	ug/L	50.0	BLOD	87.6	70-130			
Bromomethane	46.4	1	ug/L	50.0	BLOD	92.8	30-145			
Carbon disulfide	42.1	10	ug/L	50.0	BLOD	84.1	35-160			
Carbon tetrachloride	53.7	1	ug/L	50.0	BLOD	107	65-140			
Chlorobenzene	50.3	1	ug/L	50.0	1.31	97.9	80-120			
Chloroethane	47.1	1	ug/L	50.0	1.07	92.0	60-135			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0032 - SW5030B-MS

Matrix Spike (BFF0032-MS1)

Source: 22E1463-08

Prepared & Analyzed: 06/02/2022

Chloroform	47.6	0.5	ug/L	50.0	BLOD	95.2	65-135			
Chloromethane	55.1	1	ug/L	50.0	BLOD	110	40-125			
cis-1,2-Dichloroethylene	103	1	ug/L	50.0	61.3	83.7	70-125			
cis-1,2-Dichloroethylene	103	1	ug/L	50.0	61.3	83.7	70-125			M
cis-1,3-Dichloropropene	39.6	1	ug/L	50.0	BLOD	79.1	70-130			
Dibromochloromethane	43.9	0.5	ug/L	50.0	BLOD	87.7	60-135			
Dibromomethane	46.2	1	ug/L	50.0	BLOD	92.5	75-125			
Dichlorodifluoromethane	45.2	1	ug/L	50.0	BLOD	90.3	30-155			
Dichlorodifluoromethane	45.2	1	ug/L	50.0	BLOD	90.3	30-155			
Ethylbenzene	54.6	1	ug/L	50.0	BLOD	109	75-125			
m+p-Xylenes	100	2	ug/L	100	BLOD	100	75-130			
Methylene chloride	45.2	4	ug/L	50.0	BLOD	90.3	55-140			
o-Xylene	51.1	1	ug/L	50.0	BLOD	102	80-120			
Styrene	44.8	1	ug/L	50.0	BLOD	89.5	65-135			
Tetrachloroethylene (PCE)	84.1	1	ug/L	50.0	BLOD	168	45-150			M
Toluene	59.3	1	ug/L	50.0	10.9	96.9	75-120			
trans-1,2-Dichloroethylene	45.8	1	ug/L	50.0	BLOD	90.6	60-140			
trans-1,3-Dichloropropene	37.3	1	ug/L	50.0	BLOD	74.5	55-140			
Trichloroethylene	50.0	1	ug/L	50.0	BLOD	99.9	70-125			
Trichlorofluoromethane	51.9	1	ug/L	50.0	BLOD	104	60-145			
Vinyl chloride	64.3	0.5	ug/L	50.0	7.98	113	50-145			
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Surr: 1,2-Dichloroethane-d4 (Surr)	49.1		ug/L	50.0		98.2	70-120			
Surr: 4-Bromofluorobenzene (Surr)	54.3		ug/L	50.0		109	75-120			
Surr: Dibromofluoromethane (Surr)	44.9		ug/L	50.0		89.9	70-130			
Surr: Toluene-d8 (Surr)	50.8		ug/L	50.0		102	70-130			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Matrix Spike (BFF0032-MS1)**                      Source: 22E1463-08                      Prepared & Analyzed: 06/02/2022

**Batch BFF0033 - SW5030B-MS**

**Blank (BFF0033-BLK1)**    Prepared & Analyzed: 06/01/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,1-Dichloropropene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2,4-Trichlorobenzene	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,3-Dichlorobenzene	ND	1.00	ug/L
1,3-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2,2-Dichloropropane	ND	2.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acetonitrile	ND	10.0	ug/L
Acrolein	ND	10.0	ug/L

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0033 - SW5030B-MS**

**Blank (BFF0033-BLK1)**

Prepared & Analyzed: 06/01/2022

Acrylonitrile	ND	5.00	ug/L
Allyl chloride	ND	1.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L
Chloromethane	ND	1.00	ug/L
Chloroprene	ND	5.00	ug/L
cis-1,2-Dichloroethylene	ND	1.00	ug/L
cis-1,3-Dichloropropene	ND	1.00	ug/L
Dibromochloromethane	ND	0.50	ug/L
Dibromomethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Ethyl methacrylate	ND	5.00	ug/L
Ethylbenzene	ND	1.00	ug/L
Iodomethane	ND	10.0	ug/L
Isobutyl Alcohol	ND	40.0	ug/L
m+p-Xylenes	ND	2.00	ug/L
Methacrylonitrile	ND	1.50	ug/L

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

**Blank (BFF0033-BLK1)**

Prepared & Analyzed: 06/01/2022

Methyl methacrylate	ND	2.00	ug/L							
Methylene chloride	ND	4.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Propionitrile	ND	40.0	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>54.1</i>		ug/L	<i>50.0</i>		<i>108</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>49.6</i>		ug/L	<i>50.0</i>		<i>99.2</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.5</i>		ug/L	<i>50.0</i>		<i>103</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>51.0</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-130</i>			

**LCS (BFF0033-BS1)**

Prepared & Analyzed: 06/01/2022

1,1,1,2-Tetrachloroethane	52.8	0.4	ug/L	50.0		106	80-130			
1,1,1-Trichloroethane	53.9	1	ug/L	50.0		108	65-130			
1,1,2,2-Tetrachloroethane	53.5	0.4	ug/L	50.0		107	65-130			
1,1,2-Trichloroethane	49.2	1	ug/L	50.0		98.4	75-125			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0033 - SW5030B-MS**

**LCS (BFF0033-BS1)**

Prepared & Analyzed: 06/01/2022

1,1-Dichloroethane	48.4	1	ug/L	50.0		96.9	70-135			
1,1-Dichloroethylene	42.1	1	ug/L	50.0		84.2	70-130			
1,1-Dichloropropene	50.6	1	ug/L	50.0		101	75-135			
1,2,3-Trichloropropane	55.1	1	ug/L	50.0		110	75-125			
1,2,4-Trichlorobenzene	48.7	1	ug/L	50.0		97.4	65-135			
1,2-Dichlorobenzene	51.2	0.5	ug/L	50.0		102	70-120			
1,2-Dichloroethane	50.4	1	ug/L	50.0		101	70-130			
1,2-Dichloropropane	47.2	0.5	ug/L	50.0		94.5	75-125			
1,3-Dichlorobenzene	52.0	1	ug/L	50.0		104	75-125			
1,3-Dichloropropane	48.3	1	ug/L	50.0		96.6	75-125			
1,4-Dichlorobenzene	51.3	1	ug/L	50.0		103	75-125			
2,2-Dichloropropane	44.8	1	ug/L	50.0		89.6	70-135			
2-Butanone (MEK)	41.1	10	ug/L	50.0		82.1	30-150			
2-Hexanone (MBK)	58.8	5	ug/L	50.0		118	55-130			
4-Methyl-2-pentanone (MIBK)	48.6	5	ug/L	50.0		97.2	60-135			
Acetone	48.0	10	ug/L	50.0		96.0	40-140			
Acrylonitrile	301	5	ug/L	250		120	70-130			
Benzene	47.3	1	ug/L	50.0		94.6	80-120			
Bromochloromethane	44.1	1	ug/L	50.0		88.2	65-130			
Bromodichloromethane	53.0	0.5	ug/L	50.0		106	75-120			
Bromoform	50.6	1	ug/L	50.0		101	70-130			
Bromomethane	42.6	1	ug/L	50.0		85.3	30-145			
Carbon disulfide	51.3	10	ug/L	50.0		103	35-160			
Carbon tetrachloride	53.1	1	ug/L	50.0		106	65-140			
Chlorobenzene	52.4	1	ug/L	50.0		105	80-120			



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

**LCS (BFF0033-BS1)**

Prepared &amp; Analyzed: 06/01/2022

Chloroethane	48.2	1	ug/L	50.0		96.5	60-135			
Chloroform	45.4	0.5	ug/L	50.0		90.9	65-135			
Chloromethane	49.8	1	ug/L	50.0		99.5	40-125			
cis-1,2-Dichloroethylene	45.3	1	ug/L	50.0		90.5	70-125			
cis-1,3-Dichloropropene	35.9	1	ug/L	50.0		71.8	70-130			
Dibromochloromethane	47.7	0.5	ug/L	50.0		95.5	60-135			
Dibromomethane	44.6	1	ug/L	50.0		89.3	75-125			
Dichlorodifluoromethane	42.1	1	ug/L	50.0		84.2	30-155			
Ethylbenzene	56.7	1	ug/L	50.0		113	75-125			
m+p-Xylenes	104	2	ug/L	100		104	75-130			
Methylene chloride	44.8	4	ug/L	50.0		89.7	55-140			
o-Xylene	53.6	1	ug/L	50.0		107	80-120			
Styrene	52.2	1	ug/L	50.0		104	65-135			
Tetrachloroethylene (PCE)	90.5	1	ug/L	50.0		181	45-150			L
Toluene	49.1	1	ug/L	50.0		98.1	75-120			
trans-1,2-Dichloroethylene	45.8	1	ug/L	50.0		91.7	60-140			
trans-1,3-Dichloropropene	39.4	1	ug/L	50.0		78.8	55-140			
Trichloroethylene	49.0	1	ug/L	50.0		98.0	70-125			
Trichlorofluoromethane	61.1	1	ug/L	50.0		122	60-145			
Vinyl chloride	50.6	0.5	ug/L	50.0		101	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>52.9</i>		<i>ug/L</i>	<i>50.0</i>		<i>106</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>55.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>52.3</i>		<i>ug/L</i>	<i>50.0</i>		<i>105</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-130</i>			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

**Matrix Spike (BFF0033-MS1)**

Source: 22E1463-02

Prepared &amp; Analyzed: 06/01/2022

1,1,1,2-Tetrachloroethane	47.9	0.4	ug/L	50.0	BLOD	95.8	80-130			
1,1,1-Trichloroethane	52.0	1	ug/L	50.0	BLOD	104	65-130			
1,1,2,2-Tetrachloroethane	48.1	0.4	ug/L	50.0	BLOD	96.2	65-130			
1,1,2-Trichloroethane	46.6	1	ug/L	50.0	BLOD	93.2	75-125			
1,1-Dichloroethane	47.1	1	ug/L	50.0	BLOD	94.3	70-135			
1,1-Dichloroethylene	41.4	1	ug/L	50.0	BLOD	82.9	70-130			
1,1-Dichloropropene	49.3	1	ug/L	50.0	BLOD	98.7	75-135			
1,2,3-Trichloropropane	49.5	1	ug/L	50.0	BLOD	99.0	75-125			
1,2,4-Trichlorobenzene	46.5	1	ug/L	50.0	BLOD	92.9	65-135			
1,2-Dichlorobenzene	49.1	0.5	ug/L	50.0	BLOD	98.2	70-120			
1,2-Dichloroethane	48.4	1	ug/L	50.0	BLOD	96.9	70-130			
1,2-Dichloropropane	44.7	0.5	ug/L	50.0	BLOD	89.5	75-125			
1,3-Dichlorobenzene	49.6	1	ug/L	50.0	BLOD	99.3	75-125			
1,3-Dichloropropane	48.2	1	ug/L	50.0	BLOD	96.4	75-125			
1,4-Dichlorobenzene	50.0	1	ug/L	50.0	BLOD	100	75-125			
2,2-Dichloropropane	44.6	1	ug/L	50.0	BLOD	89.2	70-135			
2-Butanone (MEK)	40.6	10	ug/L	50.0	BLOD	81.3	30-150			
2-Hexanone (MBK)	51.7	5	ug/L	50.0	BLOD	103	55-130			
4-Methyl-2-pentanone (MIBK)	48.0	5	ug/L	50.0	BLOD	96.0	60-135			
Acetone	50.0	10	ug/L	50.0	BLOD	92.9	40-140			
Acrylonitrile	290	5	ug/L	250	BLOD	116	70-130			
Benzene	46.7	1	ug/L	50.0	BLOD	93.4	80-120			
Bromochloromethane	43.9	1	ug/L	50.0	BLOD	87.8	65-130			
Bromodichloromethane	48.8	0.5	ug/L	50.0	BLOD	97.5	75-120			
Bromoform	45.7	1	ug/L	50.0	BLOD	91.4	70-130			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0033 - SW5030B-MS**

Matrix Spike (BFF0033-MS1)	Source: 22E1463-02			Prepared & Analyzed: 06/01/2022						
Bromomethane	44.0	1	ug/L	50.0	BLOD	88.1	30-145			
Carbon disulfide	48.0	10	ug/L	50.0	BLOD	96.0	35-160			
Carbon tetrachloride	52.0	1	ug/L	50.0	BLOD	104	65-140			
Chlorobenzene	47.4	1	ug/L	50.0	BLOD	94.8	80-120			
Chloroethane	47.8	1	ug/L	50.0	BLOD	95.7	60-135			
Chloroform	43.4	0.5	ug/L	50.0	BLOD	86.8	65-135			
Chloromethane	50.3	1	ug/L	50.0	BLOD	101	40-125			
cis-1,2-Dichloroethylene	43.9	1	ug/L	50.0	BLOD	87.8	70-125			
cis-1,3-Dichloropropene	35.2	1	ug/L	50.0	BLOD	70.4	70-130			
Dibromochloromethane	46.0	0.5	ug/L	50.0	BLOD	92.0	60-135			
Dibromomethane	43.2	1	ug/L	50.0	BLOD	86.5	75-125			
Dichlorodifluoromethane	42.5	1	ug/L	50.0	BLOD	84.9	30-155			
Ethylbenzene	51.8	1	ug/L	50.0	BLOD	104	75-125			
m+p-Xylenes	94.8	2	ug/L	100	BLOD	94.8	75-130			
Methylene chloride	42.4	4	ug/L	50.0	BLOD	84.9	55-140			
o-Xylene	49.1	1	ug/L	50.0	BLOD	98.3	80-120			
Styrene	47.1	1	ug/L	50.0	BLOD	94.2	65-135			
Tetrachloroethylene (PCE)	84.9	1	ug/L	50.0	BLOD	170	45-150			M
Toluene	47.6	1	ug/L	50.0	BLOD	95.2	75-120			
trans-1,2-Dichloroethylene	45.5	1	ug/L	50.0	BLOD	91.1	60-140			
trans-1,3-Dichloropropene	38.7	1	ug/L	50.0	BLOD	77.5	55-140			
Trichloroethylene	46.9	1	ug/L	50.0	BLOD	93.8	70-125			
Trichlorofluoromethane	59.4	1	ug/L	50.0	BLOD	119	60-145			
Vinyl chloride	50.3	0.5	ug/L	50.0	BLOD	101	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>55.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>110</i>	<i>70-120</i>			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

**Matrix Spike (BFF0033-MS1)**

Source: 22E1463-02

Prepared &amp; Analyzed: 06/01/2022

<i>Surr: 4-Bromofluorobenzene (Surr)</i>	50.8		ug/L	50.0		102	75-120		
<i>Surr: Dibromofluoromethane (Surr)</i>	50.6		ug/L	50.0		101	70-130		
<i>Surr: Toluene-d8 (Surr)</i>	50.7		ug/L	50.0		101	70-130		

**Matrix Spike Dup (BFF0033-MSD1)**

Source: 22E1463-02

Prepared &amp; Analyzed: 06/01/2022

1,1,1,2-Tetrachloroethane	48.7	0.4	ug/L	50.0	BLOD	97.4	80-130	1.72	30
1,1,1-Trichloroethane	51.4	1	ug/L	50.0	BLOD	103	65-130	1.10	30
1,1,2,2-Tetrachloroethane	48.7	0.4	ug/L	50.0	BLOD	97.4	65-130	1.24	30
1,1,2-Trichloroethane	47.6	1	ug/L	50.0	BLOD	95.3	75-125	2.19	30
1,1-Dichloroethane	46.2	1	ug/L	50.0	BLOD	92.3	70-135	2.08	30
1,1-Dichloroethylene	39.9	1	ug/L	50.0	BLOD	79.8	70-130	3.76	30
1,1-Dichloropropene	47.7	1	ug/L	50.0	BLOD	95.5	75-135	3.30	30
1,2,3-Trichloropropane	49.8	1	ug/L	50.0	BLOD	99.5	75-125	0.564	30
1,2,4-Trichlorobenzene	49.0	1	ug/L	50.0	BLOD	98.1	65-135	5.38	30
1,2-Dichlorobenzene	49.9	0.5	ug/L	50.0	BLOD	99.8	70-120	1.58	30
1,2-Dichloroethane	48.0	1	ug/L	50.0	BLOD	95.9	70-130	0.975	30
1,2-Dichloropropane	45.6	0.5	ug/L	50.0	BLOD	91.2	75-125	1.95	30
1,3-Dichlorobenzene	50.4	1	ug/L	50.0	BLOD	101	75-125	1.58	30
1,3-Dichloropropane	46.9	1	ug/L	50.0	BLOD	93.9	75-125	2.69	30
1,4-Dichlorobenzene	50.3	1	ug/L	50.0	BLOD	101	75-125	0.618	30
2,2-Dichloropropane	42.4	1	ug/L	50.0	BLOD	84.8	70-135	5.01	30
2-Butanone (MEK)	43.4	10	ug/L	50.0	BLOD	86.7	30-150	6.45	30
2-Hexanone (MBK)	56.8	5	ug/L	50.0	BLOD	114	55-130	9.36	30
4-Methyl-2-pentanone (MIBK)	53.0	5	ug/L	50.0	BLOD	106	60-135	9.79	30
Acetone	48.7	10	ug/L	50.0	BLOD	90.2	40-140	2.70	30

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Enthalpy Analytical

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### Batch BFF0033 - SW5030B-MS

Matrix Spike Dup (BFF0033-MSD1)	Source: 22E1463-02			Prepared & Analyzed: 06/01/2022						
Acrylonitrile	294	5	ug/L	250	BLOD	118	70-130	1.41	30	
Benzene	46.4	1	ug/L	50.0	BLOD	92.7	80-120	0.752	30	
Bromochloromethane	41.9	1	ug/L	50.0	BLOD	83.8	65-130	4.64	30	
Bromodichloromethane	50.3	0.5	ug/L	50.0	BLOD	101	75-120	3.13	30	
Bromoform	46.7	1	ug/L	50.0	BLOD	93.5	70-130	2.23	30	
Bromomethane	44.6	1	ug/L	50.0	BLOD	89.3	30-145	1.40	30	
Carbon disulfide	51.1	10	ug/L	50.0	BLOD	102	35-160	6.23	30	
Carbon tetrachloride	50.5	1	ug/L	50.0	BLOD	101	65-140	2.85	30	
Chlorobenzene	47.5	1	ug/L	50.0	BLOD	95.0	80-120	0.211	30	
Chloroethane	46.9	1	ug/L	50.0	BLOD	93.7	60-135	2.05	30	
Chloroform	43.7	0.5	ug/L	50.0	BLOD	87.5	65-135	0.780	30	
Chloromethane	48.7	1	ug/L	50.0	BLOD	97.5	40-125	3.21	30	
cis-1,2-Dichloroethylene	43.6	1	ug/L	50.0	BLOD	87.2	70-125	0.617	30	
cis-1,3-Dichloropropene	35.5	1	ug/L	50.0	BLOD	70.9	70-130	0.679	30	
Dibromochloromethane	45.2	0.5	ug/L	50.0	BLOD	90.4	60-135	1.82	30	
Dibromomethane	42.3	1	ug/L	50.0	BLOD	84.6	75-125	2.17	30	
Dichlorodifluoromethane	37.0	1	ug/L	50.0	BLOD	74.0	30-155	13.7	30	
Ethylbenzene	51.9	1	ug/L	50.0	BLOD	104	75-125	0.328	30	
m+p-Xylenes	95.3	2	ug/L	100	BLOD	95.3	75-130	0.558	30	
Methylene chloride	42.5	4	ug/L	50.0	BLOD	85.0	55-140	0.0942	30	
o-Xylene	49.8	1	ug/L	50.0	BLOD	99.6	80-120	1.35	30	
Styrene	46.5	1	ug/L	50.0	BLOD	93.0	65-135	1.26	30	
Tetrachloroethylene (PCE)	81.8	1	ug/L	50.0	BLOD	164	45-150	3.80	30	M
Toluene	47.3	1	ug/L	50.0	BLOD	94.7	75-120	0.506	30	
trans-1,2-Dichloroethylene	44.3	1	ug/L	50.0	BLOD	88.7	60-140	2.67	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

Matrix Spike Dup (BFF0033-MSD1)	Source: 22E1463-02			Prepared & Analyzed: 06/01/2022						
trans-1,3-Dichloropropene	38.6	1	ug/L	50.0	BLOD	77.2	55-140	0.362	30	
Trichloroethylene	47.1	1	ug/L	50.0	BLOD	94.2	70-125	0.447	30	
Trichlorofluoromethane	54.2	1	ug/L	50.0	BLOD	108	60-145	9.18	30	
Vinyl chloride	47.2	0.5	ug/L	50.0	BLOD	94.4	50-145	6.34	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>50.3</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.8</i>		<i>ug/L</i>	<i>50.0</i>		<i>102</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.9</i>		<i>ug/L</i>	<i>50.0</i>		<i>104</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-130</i>			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

1,2,4,5-Tetrachlorobenzene	ND	10.0	ug/L
1,3,5-Trinitrobenzene	ND	5.00	ug/L
1,3-Dinitrobenzene	ND	2.50	ug/L
1,4-Naphthoquinone	ND	10.0	ug/L
1-Naphthylamine	ND	10.0	ug/L
2,3,4,6-Tetrachlorophenol	ND	10.0	ug/L
2,4,5-Trichlorophenol	ND	10.0	ug/L
2,4,6-Trichlorophenol	ND	10.0	ug/L
2,4-Dichlorophenol	ND	10.0	ug/L
2,4-Dimethylphenol	ND	5.00	ug/L
2,4-Dinitrophenol	ND	50.0	ug/L
2,4-Dinitrotoluene	ND	10.0	ug/L
2,6-Dichlorophenol	ND	10.0	ug/L
2,6-Dinitrotoluene	ND	10.0	ug/L
2-Acetylaminofluorene	ND	2.50	ug/L
2-Chloronaphthalene	ND	10.0	ug/L
2-Chlorophenol	ND	10.0	ug/L
2-Methylnaphthalene	ND	10.0	ug/L
2-Naphthylamine	ND	10.0	ug/L
2-Nitroaniline	ND	20.0	ug/L
2-Nitrophenol	ND	10.0	ug/L
3,3'-Dichlorobenzidine	ND	10.0	ug/L
3,3'-Dimethylbenzidine	ND	2.50	ug/L
3-Methylcholanthrene	ND	10.0	ug/L
3-Nitroaniline	ND	20.0	ug/L

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Enthalpy Analytical

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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Aminobiphenyl	ND	10.0	ug/L
4-Bromophenyl phenyl ether	ND	10.0	ug/L
4-Chloroaniline	ND	10.0	ug/L
4-Chlorophenyl phenyl ether	ND	10.0	ug/L
4-Nitroaniline	ND	20.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
5-Nitro-o-toluidine	ND	10.0	ug/L
7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/L
Acenaphthene	ND	10.0	ug/L
Acenaphthylene	ND	10.0	ug/L
Acetophenone	ND	20.0	ug/L
Anthracene	ND	10.0	ug/L
Benzo (a) anthracene	ND	10.0	ug/L
Benzo (a) pyrene	ND	10.0	ug/L
Benzo (b) fluoranthene	ND	10.0	ug/L
Benzo (g,h,i) perylene	ND	10.0	ug/L
Benzo (k) fluoranthene	ND	10.0	ug/L
Benzyl alcohol	ND	20.0	ug/L
bis (2-Chloroethoxy) methane	ND	10.0	ug/L
bis (2-Chloroethyl) ether	ND	10.0	ug/L
2,2'-Oxybis (1-chloropropane)	ND	10.0	ug/L
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L
Butyl benzyl phthalate	ND	10.0	ug/L
Chlorobenzilate	ND	2.50	ug/L



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

Chrysene	ND	10.0	ug/L
Diallate	ND	2.50	ug/L
Dibenz (a,h) anthracene	ND	10.0	ug/L
Dibenzofuran	ND	5.00	ug/L
Diethyl phthalate	ND	10.0	ug/L
Dimethoate	ND	2.50	ug/L
Dimethyl phthalate	ND	10.0	ug/L
Di-n-butyl phthalate	ND	10.0	ug/L
Di-n-octyl phthalate	ND	10.0	ug/L
Diphenylamine	ND	10.0	ug/L
Disulfoton	ND	2.50	ug/L
Ethyl methanesulfonate	ND	20.0	ug/L
Ethyl parathion	ND	2.50	ug/L
Famphur	ND	2.50	ug/L
Fluoranthene	ND	10.0	ug/L
Fluorene	ND	10.0	ug/L
Hexachlorobenzene	ND	1.00	ug/L
Hexachlorobutadiene	ND	10.0	ug/L
Hexachlorocyclopentadiene	ND	10.0	ug/L
Hexachloroethane	ND	10.0	ug/L
Hexachloropropene	ND	2.50	ug/L
Indeno (1,2,3-cd) pyrene	ND	10.0	ug/L
Isodrin	ND	10.0	ug/L
Isophorone	ND	10.0	ug/L
Isosafrole	ND	10.0	ug/L

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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

Kepone	ND	10.0	ug/L							
m+p-Cresols	ND	10.0	ug/L							
Methapyrilene	ND	10.0	ug/L							
Methyl methanesulfonate	ND	10.0	ug/L							
Methyl parathion	ND	2.50	ug/L							
Naphthalene	0.26	0.10	ug/L							B
Nitrobenzene	ND	10.0	ug/L							
n-Nitrosodiethylamine	ND	2.50	ug/L							
n-Nitrosodimethylamine	ND	10.0	ug/L							
n-Nitrosodi-n-butylamine	ND	10.0	ug/L							
n-Nitrosodi-n-propylamine	ND	10.0	ug/L							
n-Nitrosodiphenylamine	ND	10.0	ug/L							
n-Nitrosomethylethylamine	ND	2.50	ug/L							
n-Nitrosopiperidine	ND	10.0	ug/L							
n-Nitrosopyrrolidine	ND	2.50	ug/L							
o,o,o-Triethyl phosphorothioate	ND	10.0	ug/L							
o,o-Diethyl o-2-pyrazinyl phosphorothioate	ND	10.0	ug/L							
o+m+p-Cresols	ND	10.0	ug/L							
o-Cresol	ND	10.0	ug/L							
o-Toluidine	ND	2.50	ug/L							
p-(Dimethylamino) azobenzene	ND	2.50	ug/L							
p-Chloro-m-cresol	ND	10.0	ug/L							
Pentachlorobenzene	ND	10.0	ug/L							
Pentachloronitrobenzene (quintozene)	ND	10.0	ug/L							
Phenacetin	ND	10.0	ug/L							

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### Batch BFF0013 - SW3580A-MS

**Blank (BFF0013-BLK1)**

Prepared &amp; Analyzed: 06/01/2022

Phenanthrene	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Phorate	ND	2.50	ug/L							
p-Phenylenediamine	ND	10.0	ug/L							
Pronamide	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Safrole	ND	2.50	ug/L							

<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.4		ug/L	100		55.4	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	33.8		ug/L	50.0		67.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	45.2		ug/L	100		45.2	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	34.4		ug/L	50.0		68.9	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	31.6		ug/L	100		31.6	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	40.5		ug/L	50.0		81.0	27-133			

**LCS (BFF0013-BS1)**

Prepared &amp; Analyzed: 06/01/2022

1,2,4-Trichlorobenzene	17.2	10.0	ug/L	50.0		34.5	22-135			
1,2-Dichlorobenzene	12.3	10.0	ug/L	50.0		24.7	22-115			
1,3-Dichlorobenzene	10.7	10.0	ug/L	50.0		21.5	22-112			L
1,4-Dichlorobenzene	11.7	10.0	ug/L	50.0		23.3	13-112			
2,4,6-Trichlorophenol	26.0	10.0	ug/L	50.0		51.9	11-145			
2,4-Dichlorophenol	28.3	10.0	ug/L	50.0		56.7	11-75			
2,4-Dimethylphenol	23.8	5.00	ug/L	50.0		47.5	11-121			
2,4-Dinitrophenol	31.7	50.0	ug/L	50.0		63.4	11-165			
2,4-Dinitrotoluene	35.6	10.0	ug/L	50.0		71.1	17-155			
2,6-Dinitrotoluene	26.7	10.0	ug/L	50.0		53.4	15-125			

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Enthalpy Analytical

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### Batch BFF0013 - SW3580A-MS

**LCS (BFF0013-BS1)**

Prepared &amp; Analyzed: 06/01/2022

2-Chloronaphthalene	25.8	10.0	ug/L	50.0		51.5	27-89			
2-Chlorophenol	20.5	10.0	ug/L	50.0		41.1	15-110			
2-Nitrophenol	22.9	10.0	ug/L	50.0		45.8	11-115			
3,3'-Dichlorobenzidine	19.7	10.0	ug/L	50.0		39.4	25-95			
4,6-Dinitro-2-methylphenol	36.0	50.0	ug/L	50.0		72.1	25-130			
4-Bromophenyl phenyl ether	23.7	10.0	ug/L	50.0		47.4	15-110			
4-Chlorophenyl phenyl ether	25.2	10.0	ug/L	50.0		50.4	15-110			
4-Nitrophenol	13.7	50.0	ug/L	50.0		27.4	12-70			
Acenaphthene	27.2	10.0	ug/L	50.0		54.5	18-85			
Acenaphthylene	30.0	10.0	ug/L	50.0		60.1	20-75			
Acetophenone	20.9	20.0	ug/L	50.0		41.8	0-200			
alpha-Terpineol	19.8	2.50	ug/L	50.0		39.6	0-200			
Anthracene	33.3	10.0	ug/L	50.0		66.6	35-95			
Benzo (a) anthracene	40.2	10.0	ug/L	50.0		80.3	25-95			
Benzo (a) pyrene	46.3	10.0	ug/L	50.0		92.7	37-110			
Benzo (b) fluoranthene	49.3	10.0	ug/L	50.0		98.5	25-75			L
Benzo (g,h,i) perylene	16.2	10.0	ug/L	50.0		32.4	25-90			
Benzo (k) fluoranthene	42.8	10.0	ug/L	50.0		85.6	25-95			
bis (2-Chloroethoxy) methane	23.6	10.0	ug/L	50.0		47.1	25-110			
bis (2-Chloroethyl) ether	19.4	10.0	ug/L	50.0		38.8	25-85			
2,2'-Oxybis (1-chloropropane)	20.4	10.0	ug/L	50.0		40.9	25-95			
bis (2-Ethylhexyl) phthalate	46.0	5.00	ug/L	50.0		91.9	30-125			
Butyl benzyl phthalate	45.3	10.0	ug/L	50.0		90.6	30-115			
Carbazole	42.8	2.50	ug/L	50.0		85.5	0-200			
Chrysene	42.6	10.0	ug/L	50.0		85.2	20-90			

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**Batch BFF0013 - SW3580A-MS**

**LCS (BFF0013-BS1)**

Prepared & Analyzed: 06/01/2022

Dibenz (a,h) anthracene	21.5	10.0	ug/L	50.0		43.1	27-125			
Diethyl phthalate	32.9	10.0	ug/L	50.0		65.8	25-120			
Dimethyl phthalate	32.1	10.0	ug/L	50.0		64.3	25-125			
Di-n-butyl phthalate	44.7	10.0	ug/L	50.0		89.4	35-115			
Di-n-octyl phthalate	73.4	10.0	ug/L	50.0		147	25-105			L
Fluoranthene	42.7	10.0	ug/L	50.0		85.3	33-95			
Fluorene	30.3	10.0	ug/L	50.0		60.5	15-97			
Hexachlorobenzene	26.3	1.00	ug/L	50.0		52.6	25-125			
Hexachlorobutadiene	15.4	10.0	ug/L	50.0		30.8	25-125			
Hexachlorocyclopentadiene	10.3	10.0	ug/L	50.0		20.6	25-125			L
Hexachloroethane	9.46	10.0	ug/L	50.0		18.9	25-125			L
Indeno (1,2,3-cd) pyrene	21.8	10.0	ug/L	50.0		43.6	25-125			
Isophorone	16.4	10.0	ug/L	50.0		32.9	10-110			
Naphthalene	19.0	0.10	ug/L	50.0		38.0	12-100			
Nitrobenzene	21.8	10.0	ug/L	50.0		43.5	30-97			
n-Nitrosodimethylamine	11.6	10.0	ug/L	50.0		23.2	10-85			
n-Nitrosodi-n-propylamine	24.8	10.0	ug/L	50.0		49.6	12-97			
n-Nitrosodiphenylamine	23.0	10.0	ug/L	50.0		46.0	12-97			
p-Chloro-m-cresol	28.5	10.0	ug/L	50.0		57.0	10-91			
Pentachlorophenol	28.8	20.0	ug/L	50.0		57.6	30-109			
Phenanthrene	35.8	10.0	ug/L	50.0		71.7	30-88			
Phenol	9.42	10.0	ug/L	50.5		18.7	10-70			
Pyrene	44.5	10.0	ug/L	50.0		89.0	27-110			
Pyridine	18.9	10.0	ug/L	50.0		37.8	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>55.7</i>		ug/L	<i>100</i>		<i>55.7</i>	<i>10-86</i>			

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### Batch BFF0013 - SW3580A-MS

**LCS (BFF0013-BS1)**

Prepared & Analyzed: 06/01/2022

<i>Surr: 2-Fluorobiphenyl (Surr)</i>	28.0		ug/L	50.0		56.0	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	26.7		ug/L	100		26.7	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	24.7		ug/L	50.0		49.4	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	22.5		ug/L	100		22.5	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	46.9		ug/L	50.0		93.8	27-133			

**Matrix Spike (BFF0013-MS1)**

**Source: 22E1463-02**

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2,4-Trichlorobenzene	20.1	10.0	ug/L	46.7	BLOD	43.0	22-65			
1,2-Dichlorobenzene	18.0	10.0	ug/L	46.7	BLOD	38.6	22-60			
1,3-Dichlorobenzene	16.8	10.0	ug/L	46.7	BLOD	36.0	22-60			
1,4-Dichlorobenzene	18.1	10.0	ug/L	46.7	BLOD	38.7	13-60			
2,4,6-Trichlorophenol	23.1	10.0	ug/L	46.7	BLOD	49.4	11-75			
2,4-Dichlorophenol	25.3	10.0	ug/L	46.7	BLOD	54.1	11-75			
2,4-Dimethylphenol	22.0	4.67	ug/L	46.7	BLOD	47.1	11-65			
2,4-Dinitrophenol	31.6	50.0	ug/L	46.7	BLOD	67.7	11-110			
2,4-Dinitrotoluene	35.6	10.0	ug/L	46.7	BLOD	76.3	17-95			
2,6-Dinitrotoluene	28.1	10.0	ug/L	46.7	BLOD	60.2	15-125			
2-Chloronaphthalene	25.3	10.0	ug/L	46.7	BLOD	54.1	27-89			
2-Chlorophenol	22.8	10.0	ug/L	46.7	BLOD	48.9	19-64			
2-Nitrophenol	23.1	10.0	ug/L	46.7	BLOD	49.4	11-75			
3,3'-Dichlorobenzidine	14.1	10.0	ug/L	46.7	BLOD	30.2	10-85			
4,6-Dinitro-2-methylphenol	32.2	50.0	ug/L	46.7	BLOD	69.0	40-130			
4-Bromophenyl phenyl ether	24.5	10.0	ug/L	46.7	BLOD	52.4	15-110			
4-Chlorophenyl phenyl ether	26.4	10.0	ug/L	46.7	BLOD	56.5	15-110			
4-Nitrophenol	11.8	50.0	ug/L	46.7	BLOD	25.3	12-70			

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**Batch BFF0013 - SW3580A-MS**

**Matrix Spike (BFF0013-MS1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

Acenaphthene	27.4	10.0	ug/L	46.7	BLOD	58.6	15-90			
Acenaphthylene	29.9	10.0	ug/L	46.7	BLOD	63.9	15-99			
Acetophenone	20.5	20.0	ug/L	46.7	BLOD	43.9	0-200			
alpha-Terpineol	16.7	2.50	ug/L	46.7	BLOD	35.8	0-200			
Anthracene	34.4	10.0	ug/L	46.7	BLOD	73.7	20-95			
Benzo (a) anthracene	36.4	9.35	ug/L	46.7	BLOD	77.9	25-95			
Benzo (a) pyrene	43.9	9.35	ug/L	46.7	BLOD	94.0	25-82			M
Benzo (b) fluoranthene	44.4	10.0	ug/L	46.7	BLOD	95.0	25-75			M
Benzo (g,h,i) perylene	14.2	10.0	ug/L	46.7	BLOD	30.4	25-90			
Benzo (k) fluoranthene	47.9	10.0	ug/L	46.7	BLOD	102	25-95			M
bis (2-Chloroethoxy) methane	22.1	10.0	ug/L	46.7	BLOD	47.3	25-85			
bis (2-Chloroethyl) ether	22.1	10.0	ug/L	46.7	BLOD	47.3	25-85			
2,2'-Oxybis (1-chloropropane)	21.8	10.0	ug/L	46.7	BLOD	46.7	25-87			
bis (2-Ethylhexyl) phthalate	42.8	5.00	ug/L	46.7	BLOD	91.6	30-125			
Butyl benzyl phthalate	42.3	10.0	ug/L	46.7	BLOD	90.6	30-115			
Carbazole	38.9	2.50	ug/L	46.7	BLOD	83.1	0-200			
Chrysene	38.8	10.0	ug/L	46.7	BLOD	83.0	20-90			
Dibenz (a,h) anthracene	18.9	10.0	ug/L	46.7	BLOD	40.5	27-125			
Diethyl phthalate	33.6	10.0	ug/L	46.7	BLOD	71.9	25-120			
Dimethyl phthalate	33.3	10.0	ug/L	46.7	BLOD	71.3	25-125			
Di-n-butyl phthalate	40.6	10.0	ug/L	46.7	BLOD	87.0	25-115			
Di-n-octyl phthalate	84.0	10.0	ug/L	46.7	BLOD	180	22-105			M
Fluoranthene	38.7	10.0	ug/L	46.7	BLOD	82.9	25-96			
Fluorene	32.6	10.0	ug/L	46.7	BLOD	69.8	15-97			
Hexachlorobenzene	26.0	0.93	ug/L	46.7	BLOD	55.6	25-125			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**Matrix Spike (BFF0013-MS1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

Hexachlorobutadiene	19.2	10.0	ug/L	46.7	BLOD	41.0	25-125			
Hexachlorocyclopentadiene	8.53	10.0	ug/L	46.7	BLOD	18.3	10-90			
Hexachloroethane	16.5	10.0	ug/L	46.7	BLOD	35.4	25-125			
Indeno (1,2,3-cd) pyrene	19.1	10.0	ug/L	46.7	BLOD	40.9	25-125			
Isophorone	14.3	10.0	ug/L	46.7	BLOD	30.7	10-110			
Naphthalene	21.3	0.10	ug/L	46.7	0.20	45.1	12-100			
Nitrobenzene	22.5	10.0	ug/L	46.7	BLOD	48.1	27-77			
n-Nitrosodimethylamine	13.9	10.0	ug/L	46.7	BLOD	29.8	10-85			
n-Nitrosodi-n-propylamine	21.8	10.0	ug/L	46.7	BLOD	46.6	12-97			
n-Nitrosodiphenylamine	24.1	10.0	ug/L	46.7	BLOD	51.6	12-97			
p-Chloro-m-cresol	25.6	10.0	ug/L	46.7	BLOD	54.8	10-91			
Pentachlorophenol	25.4	20.0	ug/L	46.7	BLOD	54.4	27-109			
Phenanthrene	38.2	10.0	ug/L	46.7	BLOD	81.8	35-115			
Phenol	8.69	10.0	ug/L	47.2	BLOD	18.4	10-70			
Pyrene	43.1	10.0	ug/L	46.7	BLOD	92.2	23-110			
Pyridine	5.50	10.0	ug/L	46.7	BLOD	11.8	0-200			
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<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.4		ug/L	93.5		59.3	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	27.7		ug/L	46.7		59.3	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	33.1		ug/L	93.5		35.4	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	26.7		ug/L	46.7		57.1	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	22.0		ug/L	93.5		23.5	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	44.7		ug/L	46.7		95.6	27-133			

**Matrix Spike Dup (BFF0013-MSD1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2,4-Trichlorobenzene	28.4	10.0	ug/L	46.7	BLOD	60.7	22-65	34.2	20	P
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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
1,2-Dichlorobenzene	27.2	10.0	ug/L	46.7	BLOD	58.2	22-60	40.5	20	P
1,3-Dichlorobenzene	25.6	10.0	ug/L	46.7	BLOD	54.8	22-60	41.4	20	P
1,4-Dichlorobenzene	27.3	10.0	ug/L	46.7	BLOD	58.4	13-60	40.6	20	P
2,4,6-Trichlorophenol	31.5	10.0	ug/L	46.7	BLOD	67.3	11-75	30.7	20	P
2,4-Dichlorophenol	36.4	10.0	ug/L	46.7	BLOD	77.9	11-75	36.1	20	M, P
2,4-Dimethylphenol	30.1	4.67	ug/L	46.7	BLOD	64.5	11-65	31.2	20	P
2,4-Dinitrophenol	51.7	50.0	ug/L	46.7	BLOD	111	11-110	48.2	20	M, P
2,4-Dinitrotoluene	47.6	10.0	ug/L	46.7	BLOD	102	17-95	28.8	20	M, P
2,6-Dinitrotoluene	36.4	10.0	ug/L	46.7	BLOD	77.9	15-125	25.6	20	P
2-Chloronaphthalene	37.7	10.0	ug/L	46.7	BLOD	80.6	27-89	39.4	20	P
2-Chlorophenol	33.9	10.0	ug/L	46.7	BLOD	72.4	19-64	38.8	20	M, P
2-Nitrophenol	32.2	10.0	ug/L	46.7	BLOD	68.8	11-75	33.0	20	P
3,3'-Dichlorobenzidine	20.7	10.0	ug/L	46.7	BLOD	44.4	10-85	37.9	20	P
4,6-Dinitro-2-methylphenol	47.4	50.0	ug/L	46.7	BLOD	102	40-130	38.2	20	P
4-Bromophenyl phenyl ether	29.5	10.0	ug/L	46.7	BLOD	63.2	15-110	18.7	20	
4-Chlorophenyl phenyl ether	36.6	10.0	ug/L	46.7	BLOD	78.2	15-110	32.3	20	P
4-Nitrophenol	16.9	50.0	ug/L	46.7	BLOD	36.1	12-70	35.1	20	P
Acenaphthene	38.7	10.0	ug/L	46.7	BLOD	82.9	15-90	34.4	20	P
Acenaphthylene	43.8	10.0	ug/L	46.7	BLOD	93.8	15-99	37.8	20	P
Acetophenone	29.1	20.0	ug/L	46.7	BLOD	62.2	0-200	34.6	20	P
alpha-Terpineol	22.6	2.50	ug/L	46.7	BLOD	48.4	0-200	30.0	20	P
Anthracene	44.9	10.0	ug/L	46.7	BLOD	96.1	20-95	26.4	20	M, P
Benzo (a) anthracene	48.0	9.35	ug/L	46.7	BLOD	103	25-95	27.5	20	M, P
Benzo (a) pyrene	57.3	9.35	ug/L	46.7	BLOD	123	25-82	26.4	20	M, P
Benzo (b) fluoranthene	55.7	10.0	ug/L	46.7	BLOD	119	25-75	22.6	20	M, P

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
Benzo (g,h,i) perylene	20.7	10.0	ug/L	46.7	BLOD	44.2	25-90	37.2	20	P
Benzo (k) fluoranthene	71.2	10.0	ug/L	46.7	BLOD	152	25-95	39.3	20	M, P
bis (2-Chloroethoxy) methane	32.4	10.0	ug/L	46.7	BLOD	69.2	25-85	37.7	20	P
bis (2-Chloroethyl) ether	32.8	10.0	ug/L	46.7	BLOD	70.3	25-85	39.2	20	P
2,2'-Oxybis (1-chloropropane)	33.5	10.0	ug/L	46.7	BLOD	71.7	25-87	42.2	20	P
bis (2-Ethylhexyl) phthalate	51.1	5.00	ug/L	46.7	BLOD	109	30-125	17.7	20	
Butyl benzyl phthalate	51.7	10.0	ug/L	46.7	BLOD	111	30-115	19.9	20	
Carbazole	52.1	2.50	ug/L	46.7	BLOD	112	0-200	29.2	20	P
Chrysene	51.6	10.0	ug/L	46.7	BLOD	110	20-90	28.4	20	M, P
Dibenz (a,h) anthracene	27.6	10.0	ug/L	46.7	BLOD	59.0	27-125	37.3	20	P
Diethyl phthalate	44.1	10.0	ug/L	46.7	BLOD	94.3	25-120	26.9	20	P
Dimethyl phthalate	45.5	10.0	ug/L	46.7	BLOD	97.3	25-125	30.9	20	P
Di-n-butyl phthalate	55.3	10.0	ug/L	46.7	BLOD	118	25-115	30.5	20	M, P
Di-n-octyl phthalate	69.6	10.0	ug/L	46.7	BLOD	149	22-105	18.8	20	M
Fluoranthene	52.7	10.0	ug/L	46.7	BLOD	113	25-96	30.6	20	M, P
Fluorene	44.8	10.0	ug/L	46.7	BLOD	95.9	15-97	31.5	20	P
Hexachlorobenzene	32.1	0.93	ug/L	46.7	BLOD	68.7	25-125	21.2	20	P
Hexachlorobutadiene	27.3	10.0	ug/L	46.7	BLOD	58.4	25-125	35.0	20	P
Hexachlorocyclopentadiene	14.2	10.0	ug/L	46.7	BLOD	30.5	10-90	50.1	20	P
Hexachloroethane	26.0	10.0	ug/L	46.7	BLOD	55.5	25-125	44.4	20	P
Indeno (1,2,3-cd) pyrene	28.0	10.0	ug/L	46.7	BLOD	59.9	25-125	37.7	20	P
Isophorone	22.1	10.0	ug/L	46.7	BLOD	47.3	10-110	42.7	20	P
Naphthalene	31.0	0.10	ug/L	46.7	0.20	66.0	12-100	37.4	20	P
Nitrobenzene	34.1	10.0	ug/L	46.7	BLOD	73.1	27-77	41.3	20	P
n-Nitrosodimethylamine	18.5	10.0	ug/L	46.7	BLOD	39.6	10-85	28.1	20	P

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
n-Nitrosodi-n-propylamine	31.0	10.0	ug/L	46.7	BLOD	66.4	12-97	35.0	20	P
n-Nitrosodiphenylamine	30.0	10.0	ug/L	46.7	BLOD	64.3	12-97	21.9	20	P
p-Chloro-m-cresol	35.9	10.0	ug/L	46.7	BLOD	76.9	10-91	33.6	20	P
Pentachlorophenol	36.1	20.0	ug/L	46.7	BLOD	77.3	27-109	34.8	20	P
Phenanthrene	50.0	10.0	ug/L	46.7	BLOD	107	35-115	26.7	20	P
Phenol	14.5	10.0	ug/L	47.2	BLOD	30.6	10-70	49.8	20	P
Pyrene	51.4	10.0	ug/L	46.7	BLOD	110	23-110	17.5	20	
Pyridine	27.2	10.0	ug/L	46.7	BLOD	58.2	0-200	133	20	P
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>67.0</i>		ug/L	<i>93.5</i>		<i>71.7</i>	<i>10-86</i>			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>38.8</i>		ug/L	<i>46.7</i>		<i>82.9</i>	<i>9-87</i>			
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>45.7</i>		ug/L	<i>93.5</i>		<i>48.9</i>	<i>10-52</i>			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>36.8</i>		ug/L	<i>46.7</i>		<i>78.8</i>	<i>10-98.5</i>			
<i>Surr: Phenol-d5 (Surr)</i>	<i>31.7</i>		ug/L	<i>93.5</i>		<i>33.9</i>	<i>5-33</i>			S
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>51.6</i>		ug/L	<i>46.7</i>		<i>110</i>	<i>27-133</i>			

### Batch BFF0088 - SW3580A-MS

Blank (BFF0088-BLK1)	Prepared: 06/02/2022 Analyzed: 06/03/2022									
1,2,4,5-Tetrachlorobenzene	ND	10.0	ug/L							
1,3,5-Trinitrobenzene	ND	5.00	ug/L							
1,3-Dinitrobenzene	ND	2.50	ug/L							
1,4-Naphthoquinone	ND	10.0	ug/L							
1-Naphthylamine	ND	10.0	ug/L							
2,3,4,6-Tetrachlorophenol	ND	10.0	ug/L							
2,4,5-Trichlorophenol	ND	10.0	ug/L							
2,4,6-Trichlorophenol	ND	10.0	ug/L							

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Enthalpy Analytical

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**Batch BFF0088 - SW3580A-MS**

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

2,4-Dichlorophenol	ND	10.0	ug/L
2,4-Dimethylphenol	ND	5.00	ug/L
2,4-Dinitrophenol	ND	50.0	ug/L
2,4-Dinitrotoluene	ND	10.0	ug/L
2,6-Dichlorophenol	ND	10.0	ug/L
2,6-Dinitrotoluene	ND	10.0	ug/L
2-Acetylaminofluorene	ND	2.50	ug/L
2-Chloronaphthalene	ND	10.0	ug/L
2-Chlorophenol	ND	10.0	ug/L
2-Methylnaphthalene	ND	10.0	ug/L
2-Naphthylamine	ND	10.0	ug/L
2-Nitroaniline	ND	20.0	ug/L
2-Nitrophenol	ND	10.0	ug/L
3,3'-Dichlorobenzidine	ND	10.0	ug/L
3,3'-Dimethylbenzidine	ND	2.50	ug/L
3-Methylcholanthrene	ND	10.0	ug/L
3-Nitroaniline	ND	20.0	ug/L
4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Aminobiphenyl	ND	10.0	ug/L
4-Bromophenyl phenyl ether	ND	10.0	ug/L
4-Chloroaniline	ND	10.0	ug/L
4-Chlorophenyl phenyl ether	ND	10.0	ug/L
4-Nitroaniline	ND	20.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
5-Nitro-o-toluidine	ND	10.0	ug/L

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**Batch BFF0088 - SW3580A-MS**

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/L
Acenaphthene	ND	10.0	ug/L
Acenaphthylene	ND	10.0	ug/L
Acetophenone	ND	20.0	ug/L
Anthracene	ND	10.0	ug/L
Benzo (a) anthracene	ND	10.0	ug/L
Benzo (a) pyrene	ND	10.0	ug/L
Benzo (b) fluoranthene	ND	10.0	ug/L
Benzo (g,h,i) perylene	ND	10.0	ug/L
Benzo (k) fluoranthene	ND	10.0	ug/L
Benzyl alcohol	ND	20.0	ug/L
bis (2-Chloroethoxy) methane	ND	10.0	ug/L
bis (2-Chloroethyl) ether	ND	10.0	ug/L
2,2'-Oxybis (1-chloropropane)	ND	10.0	ug/L
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L
Butyl benzyl phthalate	ND	10.0	ug/L
Chlorobenzilate	ND	2.50	ug/L
Chrysene	ND	10.0	ug/L
Diallate	ND	2.50	ug/L
Dibenz (a,h) anthracene	ND	10.0	ug/L
Dibenzofuran	ND	5.00	ug/L
Diethyl phthalate	ND	10.0	ug/L
Dimethoate	ND	2.50	ug/L
Dimethyl phthalate	ND	10.0	ug/L
Di-n-butyl phthalate	ND	10.0	ug/L

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**Batch BFF0088 - SW3580A-MS**

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

Di-n-octyl phthalate	ND	10.0	ug/L
Diphenylamine	ND	10.0	ug/L
Disulfoton	ND	2.50	ug/L
Ethyl methanesulfonate	ND	20.0	ug/L
Ethyl parathion	ND	2.50	ug/L
Famphur	ND	2.50	ug/L
Fluoranthene	ND	10.0	ug/L
Fluorene	ND	10.0	ug/L
Hexachlorobenzene	ND	1.00	ug/L
Hexachlorobutadiene	ND	10.0	ug/L
Hexachlorocyclopentadiene	ND	10.0	ug/L
Hexachloroethane	ND	10.0	ug/L
Hexachloropropene	ND	2.50	ug/L
Indeno (1,2,3-cd) pyrene	ND	10.0	ug/L
Isodrin	ND	10.0	ug/L
Isophorone	ND	10.0	ug/L
Isosafrole	ND	10.0	ug/L
Kepone	ND	10.0	ug/L
m+p-Cresols	ND	10.0	ug/L
Methapyrilene	ND	10.0	ug/L
Methyl methanesulfonate	ND	10.0	ug/L
Methyl parathion	ND	2.50	ug/L
Naphthalene	0.28	0.10	ug/L
Nitrobenzene	ND	10.0	ug/L
n-Nitrosodiethylamine	ND	2.50	ug/L

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**Batch BFF0088 - SW3580A-MS**

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

n-Nitrosodimethylamine	ND	10.0	ug/L							
n-Nitrosodi-n-butylamine	ND	10.0	ug/L							
n-Nitrosodi-n-propylamine	ND	10.0	ug/L							
n-Nitrosodiphenylamine	ND	10.0	ug/L							
n-Nitrosomethylethylamine	ND	2.50	ug/L							
n-Nitrosopiperidine	ND	10.0	ug/L							
n-Nitrosopyrrolidine	ND	2.50	ug/L							
o,o,o-Triethyl phosphorothioate	ND	10.0	ug/L							
o,o-Diethyl o-2-pyrazinyl phosphorothioate	ND	10.0	ug/L							
o+m+p-Cresols	ND	10.0	ug/L							
o-Cresol	ND	10.0	ug/L							
o-Toluidine	ND	2.50	ug/L							
p-(Dimethylamino) azobenzene	ND	2.50	ug/L							
p-Chloro-m-cresol	ND	10.0	ug/L							
Pentachlorobenzene	ND	10.0	ug/L							
Pentachloronitrobenzene (quintozene)	ND	10.0	ug/L							
Phenacetin	ND	10.0	ug/L							
Phenanthrene	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Phorate	ND	2.50	ug/L							
p-Phenylenediamine	ND	10.0	ug/L							
Pronamide	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Safrole	ND	2.50	ug/L							
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	49.8		ug/L	100		49.8	10-86			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0088 - SW3580A-MS

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

Surr: 2-Fluorobiphenyl (Surr)	38.6		ug/L	50.0		77.1	9-87
Surr: 2-Fluorophenol (Surr)	38.8		ug/L	100		38.8	10-52
Surr: Nitrobenzene-d5 (Surr)	37.4		ug/L	50.0		74.7	10-98.5
Surr: Phenol-d5 (Surr)	29.9		ug/L	100		29.9	5-33
Surr: p-Terphenyl-d14 (Surr)	38.5		ug/L	50.0		76.9	27-133

**LCS (BFF0088-BS1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

1,2,4-Trichlorobenzene	13.2	10.0	ug/L	50.0		26.5	22-135
1,2-Dichlorobenzene	12.2	10.0	ug/L	50.0		24.4	22-115
1,3-Dichlorobenzene	11.7	10.0	ug/L	50.0		23.3	22-112
1,4-Dichlorobenzene	12.4	10.0	ug/L	50.0		24.7	13-112
2,4,6-Trichlorophenol	17.4	10.0	ug/L	50.0		34.9	11-145
2,4-Dichlorophenol	17.0	10.0	ug/L	50.0		34.0	11-75
2,4-Dimethylphenol	14.4	5.00	ug/L	50.0		28.8	11-121
2,4-Dinitrophenol	26.8	50.0	ug/L	50.0		53.6	11-165
2,4-Dinitrotoluene	27.5	10.0	ug/L	50.0		55.1	17-155
2,6-Dinitrotoluene	19.0	10.0	ug/L	50.0		38.1	15-125
2-Chloronaphthalene	17.0	10.0	ug/L	50.0		33.9	27-89
2-Chlorophenol	15.7	10.0	ug/L	50.0		31.4	15-110
2-Nitrophenol	15.9	10.0	ug/L	50.0		31.7	11-115
3,3'-Dichlorobenzidine	13.5	10.0	ug/L	50.0		27.0	25-95
4,6-Dinitro-2-methylphenol	28.9	50.0	ug/L	50.0		57.8	25-130
4-Bromophenyl phenyl ether	18.4	10.0	ug/L	50.0		36.8	15-110
4-Chlorophenyl phenyl ether	18.0	10.0	ug/L	50.0		36.0	15-110
4-Nitrophenol	9.83	50.0	ug/L	50.0		19.7	12-70



## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0088 - SW3580A-MS

**LCS (BFF0088-BS1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

Acenaphthene	17.8	10.0	ug/L	50.0		35.6	18-85			
Acenaphthylene	19.2	10.0	ug/L	50.0		38.5	20-75			
Acetophenone	16.4	20.0	ug/L	50.0		32.9	0-200			
alpha-Terpineol	16.0	2.50	ug/L	50.0		32.1	0-200			
Anthracene	24.7	10.0	ug/L	50.0		49.4	35-95			
Benzo (a) anthracene	35.6	10.0	ug/L	50.0		71.2	25-95			
Benzo (a) pyrene	46.0	10.0	ug/L	50.0		91.9	37-110			
Benzo (b) fluoranthene	44.1	10.0	ug/L	50.0		88.2	25-75			L
Benzo (g,h,i) perylene	39.4	10.0	ug/L	50.0		78.8	25-90			
Benzo (k) fluoranthene	41.2	10.0	ug/L	50.0		82.5	25-95			
bis (2-Chloroethoxy) methane	16.8	10.0	ug/L	50.0		33.5	25-110			
bis (2-Chloroethyl) ether	16.4	10.0	ug/L	50.0		32.8	25-85			
2,2'-Oxybis (1-chloropropane)	14.9	10.0	ug/L	50.0		29.7	25-95			
bis (2-Ethylhexyl) phthalate	41.7	5.00	ug/L	50.0		83.3	30-125			
Butyl benzyl phthalate	38.6	10.0	ug/L	50.0		77.3	30-115			
Carbazole	34.3	2.50	ug/L	50.0		68.7	0-200			
Chrysene	41.2	10.0	ug/L	50.0		82.3	20-90			
Dibenz (a,h) anthracene	40.5	10.0	ug/L	50.0		80.9	27-125			
Diethyl phthalate	27.4	10.0	ug/L	50.0		54.7	25-120			
Dimethyl phthalate	22.0	10.0	ug/L	50.0		43.9	25-125			
Di-n-butyl phthalate	43.3	10.0	ug/L	50.0		86.6	35-115			
Di-n-octyl phthalate	55.5	10.0	ug/L	50.0		111	25-105			L
Fluoranthene	38.1	10.0	ug/L	50.0		76.2	33-95			
Fluorene	21.5	10.0	ug/L	50.0		43.0	15-97			
Hexachlorobenzene	22.4	1.00	ug/L	50.0		44.8	25-125			

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0088 - SW3580A-MS

**LCS (BFF0088-BS1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

Hexachlorobutadiene	13.5	10.0	ug/L	50.0		27.0	25-125			
Hexachlorocyclopentadiene	ND	10.0	ug/L	50.0			25-125			L
Hexachloroethane	12.2	10.0	ug/L	50.0		24.3	25-125			L
Indeno (1,2,3-cd) pyrene	42.0	10.0	ug/L	50.0		84.0	25-125			
Isophorone	9.44	10.0	ug/L	50.0		18.9	10-110			
Naphthalene	15.2	0.10	ug/L	50.0		30.5	12-100			
Nitrobenzene	17.8	10.0	ug/L	50.0		35.6	30-97			
n-Nitrosodimethylamine	10.6	10.0	ug/L	50.0		21.1	10-85			
n-Nitrosodi-n-propylamine	19.1	10.0	ug/L	50.0		38.1	12-97			
n-Nitrosodiphenylamine	18.4	10.0	ug/L	50.0		36.8	12-97			
p-Chloro-m-cresol	17.6	10.0	ug/L	50.0		35.3	10-91			
Pentachlorophenol	20.2	20.0	ug/L	50.0		40.5	30-109			
Phenanthrene	31.2	10.0	ug/L	50.0		62.3	30-88			
Phenol	5.34	10.0	ug/L	50.5		10.6	10-70			
Pyrene	41.7	10.0	ug/L	50.0		83.4	27-110			
Pyridine	5.10	10.0	ug/L	50.0		10.2	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	38.1		ug/L	100		38.1	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	17.8		ug/L	50.0		35.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	19.8		ug/L	100		19.8	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	18.9		ug/L	50.0		37.8	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	13.8		ug/L	100		13.8	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	37.4		ug/L	50.0		74.9	27-133			

**Matrix Spike (BFF0088-MS1)**

Source: 22F0103-05

Prepared &amp; Analyzed: 06/03/2022

1,2,4-Trichlorobenzene	45.1	10.0	ug/L	48.5	BLOD	92.8	22-65			M
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## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0088 - SW3580A-MS**

**Matrix Spike (BFF0088-MS1)**

**Source: 22F0103-05**

Prepared & Analyzed: 06/03/2022

1,2-Dichlorobenzene	33.2	10.0	ug/L	48.5	BLOD	68.3	22-60			M
1,3-Dichlorobenzene	30.8	10.0	ug/L	48.5	BLOD	63.4	22-60			M
1,4-Dichlorobenzene	31.9	10.0	ug/L	48.5	BLOD	65.8	13-60			M
2,4,6-Trichlorophenol	38.8	10.0	ug/L	48.5	BLOD	79.8	11-75			M
2,4-Dichlorophenol	49.6	10.0	ug/L	48.5	BLOD	102	11-75			M
2,4-Dimethylphenol	39.9	4.85	ug/L	48.5	BLOD	82.1	11-65			M
2,4-Dinitrophenol	63.9	50.0	ug/L	48.5	BLOD	132	11-110			M
2,4-Dinitrotoluene	50.3	10.0	ug/L	48.5	BLOD	104	17-95			M
2,6-Dinitrotoluene	43.4	10.0	ug/L	48.5	BLOD	89.4	15-125			
2-Chloronaphthalene	38.3	10.0	ug/L	48.5	BLOD	78.8	27-89			
2-Chlorophenol	38.5	10.0	ug/L	48.5	BLOD	79.3	19-64			M
2-Nitrophenol	45.3	10.0	ug/L	48.5	BLOD	93.2	11-75			M
3,3'-Dichlorobenzidine	28.8	10.0	ug/L	48.5	BLOD	59.3	10-85			
4,6-Dinitro-2-methylphenol	60.3	50.0	ug/L	48.5	BLOD	124	40-130			
4-Bromophenyl phenyl ether	41.1	10.0	ug/L	48.5	BLOD	84.6	15-110			
4-Chlorophenyl phenyl ether	42.0	10.0	ug/L	48.5	BLOD	86.6	15-110			
4-Nitrophenol	24.2	50.0	ug/L	48.5	BLOD	49.9	12-70			
Acenaphthene	38.0	10.0	ug/L	48.5	BLOD	78.2	15-90			
Acenaphthylene	36.0	10.0	ug/L	48.5	BLOD	74.2	15-99			
Acetophenone	40.2	20.0	ug/L	48.5	BLOD	82.8	0-200			
alpha-Terpineol	30.2	2.50	ug/L	48.5	BLOD	62.3	0-200			
Anthracene	38.1	10.0	ug/L	48.5	BLOD	78.4	20-95			
Benzo (a) anthracene	43.9	9.71	ug/L	48.5	BLOD	90.4	25-95			
Benzo (a) pyrene	41.8	9.71	ug/L	48.5	BLOD	86.2	25-82			M
Benzo (b) fluoranthene	46.3	10.0	ug/L	48.5	BLOD	95.4	25-75			M

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0088 - SW3580A-MS

**Matrix Spike (BFF0088-MS1)**
**Source: 22F0103-05**
**Prepared & Analyzed: 06/03/2022**

Benzo (g,h,i) perylene	31.1	10.0	ug/L	48.5	BLOD	64.1	25-90			
Benzo (k) fluoranthene	46.1	10.0	ug/L	48.5	BLOD	94.9	25-95			
bis (2-Chloroethoxy) methane	44.2	10.0	ug/L	48.5	BLOD	91.0	25-85			M
bis (2-Chloroethyl) ether	39.1	10.0	ug/L	48.5	BLOD	80.6	25-85			
2,2'-Oxybis (1-chloropropane)	39.1	10.0	ug/L	48.5	BLOD	80.6	25-87			
bis (2-Ethylhexyl) phthalate	41.7	5.00	ug/L	48.5	BLOD	85.9	30-125			
Butyl benzyl phthalate	38.8	10.0	ug/L	48.5	BLOD	80.0	30-115			
Carbazole	42.3	2.50	ug/L	48.5	BLOD	87.1	0-200			
Chrysene	43.0	10.0	ug/L	48.5	BLOD	88.7	20-90			
Dibenz (a,h) anthracene	39.8	10.0	ug/L	48.5	BLOD	82.1	27-125			
Diethyl phthalate	39.5	10.0	ug/L	48.5	BLOD	81.3	25-120			
Dimethyl phthalate	42.3	10.0	ug/L	48.5	BLOD	87.0	25-125			
Di-n-butyl phthalate	39.9	10.0	ug/L	48.5	BLOD	82.1	25-115			
Di-n-octyl phthalate	41.5	10.0	ug/L	48.5	BLOD	85.5	22-105			
Fluoranthene	48.9	10.0	ug/L	48.5	BLOD	101	25-96			M
Fluorene	39.1	10.0	ug/L	48.5	BLOD	80.6	15-97			
Hexachlorobenzene	39.6	0.97	ug/L	48.5	BLOD	81.6	25-125			
Hexachlorobutadiene	57.9	10.0	ug/L	48.5	BLOD	119	25-125			
Hexachlorocyclopentadiene	25.5	10.0	ug/L	48.5	BLOD	52.5	10-90			
Hexachloroethane	42.9	10.0	ug/L	48.5	BLOD	88.4	25-125			
Indeno (1,2,3-cd) pyrene	37.3	10.0	ug/L	48.5	BLOD	76.9	25-125			
Isophorone	30.1	10.0	ug/L	48.5	BLOD	62.0	10-110			
Naphthalene	37.4	0.10	ug/L	48.5	0.28	76.5	12-100			
Nitrobenzene	56.4	10.0	ug/L	48.5	BLOD	116	27-77			M
n-Nitrosodimethylamine	23.3	10.0	ug/L	48.5	BLOD	48.1	10-85			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0088 - SW3580A-MS

**Matrix Spike (BFF0088-MS1)**

Source: 22F0103-05

Prepared &amp; Analyzed: 06/03/2022

n-Nitrosodi-n-propylamine	39.3	10.0	ug/L	48.5	BLOD	80.9	12-97			
n-Nitrosodiphenylamine	32.5	10.0	ug/L	48.5	BLOD	66.9	12-97			
p-Chloro-m-cresol	53.5	10.0	ug/L	48.5	BLOD	110	10-91			M
Pentachlorophenol	36.2	20.0	ug/L	48.5	BLOD	74.6	27-109			
Phenanthrene	41.8	10.0	ug/L	48.5	BLOD	86.1	35-115			
Phenol	17.8	10.0	ug/L	49.0	BLOD	36.3	10-70			
Pyrene	39.5	10.0	ug/L	48.5	BLOD	81.4	23-110			
Pyridine	35.9	10.0	ug/L	48.5	BLOD	73.9	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	73.8		ug/L	97.1		76.0	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	40.1		ug/L	48.5		82.6	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	45.3		ug/L	97.1		46.7	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	49.3		ug/L	48.5		101	10-98.5			M
<i>Surr: Phenol-d5 (Surr)</i>	33.0		ug/L	97.1		34.0	5-33			M
<i>Surr: p-Terphenyl-d14 (Surr)</i>	37.6		ug/L	48.5		77.5	27-133			

**Matrix Spike Dup (BFF0088-MSD1)**

Source: 22F0103-05

Prepared: 06/03/2022 Analyzed: 06/04/2022

1,2,4-Trichlorobenzene	42.4	10.0	ug/L	48.5	BLOD	87.4	22-65	6.06	20	M
1,2-Dichlorobenzene	30.8	10.0	ug/L	48.5	BLOD	63.5	22-60	7.41	20	M
1,3-Dichlorobenzene	28.9	10.0	ug/L	48.5	BLOD	59.6	22-60	6.11	20	
1,4-Dichlorobenzene	29.9	10.0	ug/L	48.5	BLOD	61.5	13-60	6.73	20	M
2,4,6-Trichlorophenol	37.7	10.0	ug/L	48.5	BLOD	77.6	11-75	2.87	20	M
2,4-Dichlorophenol	48.0	10.0	ug/L	48.5	BLOD	98.8	11-75	3.26	20	M
2,4-Dimethylphenol	38.6	4.85	ug/L	48.5	BLOD	79.6	11-65	3.14	20	M
2,4-Dinitrophenol	69.1	50.0	ug/L	48.5	BLOD	142	11-110	7.84	20	M
2,4-Dinitrotoluene	48.9	10.0	ug/L	48.5	BLOD	101	17-95	2.70	20	M

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Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0088 - SW3580A-MS**

Matrix Spike Dup (BFF0088-MSD1)	Source: 22F0103-05			Prepared: 06/03/2022 Analyzed: 06/04/2022						
2,6-Dinitrotoluene	41.0	10.0	ug/L	48.5	BLOD	84.4	15-125	5.73	20	
2-Chloronaphthalene	36.0	10.0	ug/L	48.5	BLOD	74.1	27-89	6.20	20	
2-Chlorophenol	36.2	10.0	ug/L	48.5	BLOD	74.7	19-64	5.98	20	M
2-Nitrophenol	44.0	10.0	ug/L	48.5	BLOD	90.7	11-75	2.74	20	M
3,3'-Dichlorobenzidine	28.0	10.0	ug/L	48.5	BLOD	57.7	10-85	2.67	20	
4,6-Dinitro-2-methylphenol	57.7	50.0	ug/L	48.5	BLOD	119	40-130	4.46	20	
4-Bromophenyl phenyl ether	38.9	10.0	ug/L	48.5	BLOD	80.1	15-110	5.51	20	
4-Chlorophenyl phenyl ether	39.7	10.0	ug/L	48.5	BLOD	81.7	15-110	5.77	20	
4-Nitrophenol	23.3	50.0	ug/L	48.5	BLOD	47.9	12-70	4.13	20	
Acenaphthene	36.0	10.0	ug/L	48.5	BLOD	74.2	15-90	5.25	20	
Acenaphthylene	33.9	10.0	ug/L	48.5	BLOD	69.8	15-99	6.11	20	
Acetophenone	38.1	20.0	ug/L	48.5	BLOD	78.6	0-200	5.23	20	
alpha-Terpineol	29.2	2.50	ug/L	48.5	BLOD	60.1	0-200	3.63	20	
Anthracene	36.0	10.0	ug/L	48.5	BLOD	74.1	20-95	5.74	20	
Benzo (a) anthracene	42.9	9.71	ug/L	48.5	BLOD	88.4	25-95	2.28	20	
Benzo (a) pyrene	41.9	9.71	ug/L	48.5	BLOD	86.4	25-82	0.209	20	M
Benzo (b) fluoranthene	43.1	10.0	ug/L	48.5	BLOD	88.9	25-75	7.03	20	M
Benzo (g,h,i) perylene	33.9	10.0	ug/L	48.5	BLOD	69.9	25-90	8.60	20	
Benzo (k) fluoranthene	43.6	10.0	ug/L	48.5	BLOD	89.7	25-95	5.59	20	
bis (2-Chloroethoxy) methane	41.2	10.0	ug/L	48.5	BLOD	84.9	25-85	6.94	20	
bis (2-Chloroethyl) ether	36.4	10.0	ug/L	48.5	BLOD	75.1	25-85	7.07	20	
2,2'-Oxybis (1-chloropropane)	35.2	10.0	ug/L	48.5	BLOD	72.5	25-87	10.7	20	
bis (2-Ethylhexyl) phthalate	43.4	5.00	ug/L	48.5	BLOD	89.4	30-125	4.01	20	
Butyl benzyl phthalate	40.2	10.0	ug/L	48.5	BLOD	82.8	30-115	3.44	20	
Carbazole	39.2	2.50	ug/L	48.5	BLOD	80.7	0-200	7.58	20	

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0088 - SW3580A-MS</b>										
<b>Matrix Spike Dup (BFF0088-MSD1)</b>	<b>Source: 22F0103-05</b>			<b>Prepared: 06/03/2022 Analyzed: 06/04/2022</b>						
Chrysene	42.8	10.0	ug/L	48.5	BLOD	88.1	20-90	0.611	20	
Dibenz (a,h) anthracene	42.4	10.0	ug/L	48.5	BLOD	87.4	27-125	6.30	20	
Diethyl phthalate	38.5	10.0	ug/L	48.5	BLOD	79.3	25-120	2.57	20	
Dimethyl phthalate	39.8	10.0	ug/L	48.5	BLOD	82.1	25-125	5.87	20	
Di-n-butyl phthalate	37.5	10.0	ug/L	48.5	BLOD	77.2	25-115	6.20	20	
Di-n-octyl phthalate	41.5	10.0	ug/L	48.5	BLOD	85.6	22-105	0.0702	20	
Fluoranthene	47.4	10.0	ug/L	48.5	BLOD	97.7	25-96	3.00	20	M
Fluorene	36.5	10.0	ug/L	48.5	BLOD	75.2	15-97	6.93	20	
Hexachlorobenzene	37.7	0.97	ug/L	48.5	BLOD	77.6	25-125	5.05	20	
Hexachlorobutadiene	55.3	10.0	ug/L	48.5	BLOD	114	25-125	4.53	20	
Hexachlorocyclopentadiene	24.8	10.0	ug/L	48.5	BLOD	51.2	10-90	2.62	20	
Hexachloroethane	41.9	10.0	ug/L	48.5	BLOD	86.3	25-125	2.34	20	
Indeno (1,2,3-cd) pyrene	40.4	10.0	ug/L	48.5	BLOD	83.2	25-125	7.97	20	
Isophorone	27.8	10.0	ug/L	48.5	BLOD	57.3	10-110	7.81	20	
Naphthalene	34.6	0.10	ug/L	48.5	0.28	70.6	12-100	7.95	20	
Nitrobenzene	52.8	10.0	ug/L	48.5	BLOD	109	27-77	6.72	20	M
n-Nitrosodimethylamine	24.3	10.0	ug/L	48.5	BLOD	50.0	10-85	4.04	20	
n-Nitrosodi-n-propylamine	37.3	10.0	ug/L	48.5	BLOD	76.9	12-97	5.02	20	
n-Nitrosodiphenylamine	30.4	10.0	ug/L	48.5	BLOD	62.7	12-97	6.48	20	
p-Chloro-m-cresol	50.2	10.0	ug/L	48.5	BLOD	104	10-91	6.29	20	M
Pentachlorophenol	33.1	20.0	ug/L	48.5	BLOD	68.2	27-109	9.02	20	
Phenanthrene	38.0	10.0	ug/L	48.5	BLOD	78.4	35-115	9.44	20	
Phenol	16.4	10.0	ug/L	49.0	BLOD	33.4	10-70	8.25	20	
Pyrene	43.1	10.0	ug/L	48.5	BLOD	88.8	23-110	8.72	20	
Pyridine	32.4	10.0	ug/L	48.5	BLOD	66.8	0-200	10.1	20	

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0088 - SW3580A-MS**

**Matrix Spike Dup (BFF0088-MSD1)**      **Source: 22F0103-05**      Prepared: 06/03/2022 Analyzed: 06/04/2022

<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	64.2		ug/L	97.1		66.1	10-86
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	36.9		ug/L	48.5		76.0	9-87
<i>Surr: 2-Fluorophenol (Surr)</i>	45.0		ug/L	97.1		46.3	10-52
<i>Surr: Nitrobenzene-d5 (Surr)</i>	42.8		ug/L	48.5		88.2	10-98.5
<i>Surr: Phenol-d5 (Surr)</i>	29.0		ug/L	97.1		29.9	5-33
<i>Surr: p-Terphenyl-d14 (Surr)</i>	38.7		ug/L	48.5		79.8	27-133



## Certificate of Analysis

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Client Site I.D.: City of Bristol 1st Semi-Annual 2022

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1147 - SW3510C/EPA600-ECD

**Blank (BFE1147-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

4,4'-DDD	ND	0.050	ug/L							
PCB as Aroclor 1016	ND	0.200	ug/L							
PCB as Aroclor 1221	ND	0.200	ug/L							
4,4'-DDE	ND	0.050	ug/L							
PCB as Aroclor 1232	ND	0.200	ug/L							
PCB as Aroclor 1242	ND	0.200	ug/L							
4,4'-DDT	ND	0.050	ug/L							
PCB as Aroclor 1248	ND	0.200	ug/L							
PCB as Aroclor 1254	ND	0.200	ug/L							
Aldrin	ND	0.050	ug/L							
PCB as Aroclor 1260	ND	0.200	ug/L							
alpha-BHC	ND	0.050	ug/L							
alpha-Chlordane	ND	0.050	ug/L							
beta-BHC	ND	0.050	ug/L							
Chlordane	ND	0.200	ug/L							
delta-BHC	ND	0.050	ug/L							
Dieldrin	ND	0.050	ug/L							
Endosulfan I	ND	0.050	ug/L							
Endosulfan II	ND	0.050	ug/L							
Endosulfan sulfate	ND	0.050	ug/L							
Endrin	ND	0.050	ug/L							
Endrin aldehyde	ND	0.050	ug/L							
Endrin ketone	ND	0.050	ug/L							
gamma-BHC (Lindane)	ND	0.050	ug/L							
gamma-Chlordane	ND	0.050	ug/L							

## Certificate of Analysis

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1147 - SW3510C/EPA600-ECD

**Blank (BFE1147-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

Heptachlor	ND	0.050	ug/L							
Heptachlor epoxide	ND	0.050	ug/L							
Methoxychlor	ND	0.050	ug/L							
Toxaphene	ND	1.00	ug/L							
<i>Surr: DCB</i>	<i>0.158</i>		ug/L	<i>0.200</i>		<i>79.2</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.117</i>		ug/L	<i>0.200</i>		<i>58.5</i>	<i>18-112</i>			
<i>Surr: TCMX</i>	<i>0.126</i>		ug/L	<i>0.200</i>		<i>63.2</i>	<i>30-105</i>			
<i>Surr: DCB</i>	<i>0.154</i>		ug/L	<i>0.200</i>		<i>76.9</i>	<i>27-131</i>			

**LCS (BFE1147-BS1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

4,4'-DDD	0.108	0.050	ug/L	0.100		108	23-134			
4,4'-DDE	0.096	0.050	ug/L	0.100		96.5	23-134			
4,4'-DDT	0.101	0.050	ug/L	0.100		101	23-134			
Aldrin	0.061	0.050	ug/L	0.100		61.4	23-134			
alpha-BHC	0.070	0.050	ug/L	0.100		69.8	23-134			
beta-BHC	0.068	0.050	ug/L	0.100		68.2	23-134			
delta-BHC	0.080	0.050	ug/L	0.100		79.9	23-134			
Dieldrin	0.091	0.050	ug/L	0.100		90.7	23-134			
Endosulfan I	0.085	0.050	ug/L	0.100		85.0	23-134			
Endosulfan II	0.097	0.050	ug/L	0.100		96.9	23-134			
Endosulfan sulfate	0.103	0.050	ug/L	0.100		103	23-134			
Endrin	0.100	0.050	ug/L	0.100		100	23-134			
Endrin aldehyde	0.107	0.050	ug/L	0.100		107	23-134			
gamma-BHC (Lindane)	0.069	0.050	ug/L	0.100		69.5	23-134			
Heptachlor	0.071	0.050	ug/L	0.100		71.3	23-134			

## Certificate of Analysis

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>LCS (BFE1147-BS1)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Heptachlor epoxide	0.090	0.050	ug/L	0.100		90.4	23-134			
Methoxychlor	0.111	0.050	ug/L	0.100		111	23-134			
Mirex	0.104	0.050	ug/L	0.100		104	23-134			
<i>Surr: TCMX</i>	<i>0.0998</i>		ug/L	<i>0.200</i>		<i>49.9</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.222</i>		ug/L	<i>0.200</i>		<i>111</i>	<i>27-131</i>			
<b>LCS (BFE1147-BS2)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
PCB as Aroclor 1016	0.831	0.200	ug/L	1.00		83.1	70-130			
PCB as Aroclor 1260	0.780	0.200	ug/L	1.00		78.0	70-130			
<i>Surr: DCB</i>	<i>0.170</i>		ug/L	<i>0.200</i>		<i>84.9</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.123</i>		ug/L	<i>0.200</i>		<i>61.3</i>	<i>30-105</i>			
<b>LCS (BFE1147-BS3)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Toxaphene	1.94	1.00	ug/L	2.50		77.5	23-134			
<i>Surr: TCMX</i>	<i>0.136</i>		ug/L	<i>0.200</i>		<i>68.2</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.174</i>		ug/L	<i>0.200</i>		<i>86.9</i>	<i>27-131</i>			
<b>LCS (BFE1147-BS4)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Chlordane	1.80	0.200	ug/L	2.50		71.9	23-134			
<i>Surr: TCMX</i>	<i>0.136</i>		ug/L	<i>0.200</i>		<i>68.2</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.152</i>		ug/L	<i>0.200</i>		<i>76.2</i>	<i>27-131</i>			
<b>Matrix Spike (BFE1147-MS1)</b>				<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/01/2022				
4,4'-DDD	0.125	0.050	ug/L	0.0935	BLOD	133	23-134			
4,4'-DDE	0.116	0.050	ug/L	0.0935	BLOD	124	23-134			
4,4'-DDT	0.119	0.050	ug/L	0.0935	BLOD	127	23-134			

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>Matrix Spike (BFE1147-MS1)</b>										
			<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/01/2022					
Aldrin	0.083	0.050	ug/L	0.0935	BLOD	89.3	23-134			
alpha-BHC	0.095	0.050	ug/L	0.0935	BLOD	102	23-134			
beta-BHC	0.085	0.050	ug/L	0.0935	BLOD	91.3	23-134			
delta-BHC	0.116	0.050	ug/L	0.0935	BLOD	125	23-134			
Dieldrin	0.110	0.050	ug/L	0.0935	BLOD	118	23-134			
Endosulfan I	0.101	0.050	ug/L	0.0935	BLOD	108	23-134			
Endosulfan II	0.118	0.050	ug/L	0.0935	BLOD	126	23-134			
Endosulfan sulfate	0.121	0.050	ug/L	0.0935	BLOD	129	23-134			
Endrin	0.120	0.050	ug/L	0.0935	BLOD	129	23-134			
Endrin aldehyde	0.117	0.050	ug/L	0.0935	BLOD	126	23-134			
gamma-BHC (Lindane)	0.094	0.050	ug/L	0.0935	BLOD	101	23-134			
Heptachlor	0.097	0.050	ug/L	0.0935	BLOD	104	23-134			
Heptachlor epoxide	0.111	0.050	ug/L	0.0935	BLOD	118	23-134			
Methoxychlor	0.125	0.050	ug/L	0.0935	BLOD	134	23-134			
Mirex	0.078	0.050	ug/L	0.0935	BLOD	83.5	23-134			
<i>Surr: TCMX</i>	<i>0.0951</i>		ug/L	<i>0.187</i>		<i>50.9</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.125</i>		ug/L	<i>0.187</i>		<i>67.0</i>	<i>27-131</i>			
<b>Matrix Spike (BFE1147-MS2)</b>										
			<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/01/2022					
PCB as Aroclor 1016	1.27	0.200	ug/L	0.935	BLOD	135	70-130			M
PCB as Aroclor 1260	0.990	0.200	ug/L	0.935	BLOD	106	70-130			
<i>Surr: DCB</i>	<i>0.202</i>		ug/L	<i>0.187</i>		<i>108</i>	<i>30-105</i>			S
<i>Surr: TCMX</i>	<i>0.102</i>		ug/L	<i>0.187</i>		<i>54.6</i>	<i>30-105</i>			
<b>Matrix Spike Dup (BFE1147-MSD1)</b>										
			<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/01/2022					
4,4'-DDD	0.140	0.050	ug/L	0.0935	BLOD	150	23-134	11.5	20	M

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>Matrix Spike Dup (BFE1147-MSD1)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
4,4'-DDE	0.125	0.050	ug/L	0.0935	BLOD	134	23-134	7.64	20	M
4,4'-DDT	0.137	0.050	ug/L	0.0935	BLOD	147	23-134	14.3	20	M
Aldrin	0.094	0.050	ug/L	0.0935	BLOD	101	23-134	12.2	20	
alpha-BHC	0.104	0.050	ug/L	0.0935	BLOD	111	23-134	8.82	20	
beta-BHC	0.102	0.050	ug/L	0.0935	BLOD	109	23-134	17.7	20	
delta-BHC	0.116	0.050	ug/L	0.0935	BLOD	125	23-134	0.0401	20	
Dieldrin	0.119	0.050	ug/L	0.0935	BLOD	127	23-134	7.17	20	
Endosulfan I	0.110	0.050	ug/L	0.0935	BLOD	117	23-134	8.63	20	
Endosulfan II	0.132	0.050	ug/L	0.0935	BLOD	142	23-134	11.8	20	M
Endosulfan sulfate	0.139	0.050	ug/L	0.0935	BLOD	148	23-134	13.7	20	M
Endrin	0.129	0.050	ug/L	0.0935	BLOD	138	23-134	6.84	20	M
Endrin aldehyde	0.130	0.050	ug/L	0.0935	BLOD	139	23-134	10.0	20	M
gamma-BHC (Lindane)	0.103	0.050	ug/L	0.0935	BLOD	110	23-134	8.44	20	
Heptachlor	0.097	0.050	ug/L	0.0935	BLOD	104	23-134	0.154	20	
Heptachlor epoxide	0.108	0.050	ug/L	0.0935	BLOD	115	23-134	2.53	20	
Methoxychlor	0.145	0.050	ug/L	0.0935	BLOD	155	23-134	14.7	20	M
Mirex	0.094	0.050	ug/L	0.0935	BLOD	101	23-134	18.6	20	
<i>Surr: TCMX</i>	<i>0.102</i>		ug/L	<i>0.187</i>		<i>54.7</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.140</i>		ug/L	<i>0.187</i>		<i>74.7</i>	<i>27-131</i>			
<b>Matrix Spike Dup (BFE1147-MSD2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
PCB as Aroclor 1016	0.839	0.200	ug/L	0.935	BLOD	89.8	70-130	40.5	20	P
PCB as Aroclor 1260	0.760	0.200	ug/L	0.935	BLOD	81.3	70-130	26.3	20	P
<i>Surr: DCB</i>	<i>0.163</i>		ug/L	<i>0.187</i>		<i>87.0</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.130</i>		ug/L	<i>0.187</i>		<i>69.6</i>	<i>30-105</i>			

### Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1204 - SW8151A/EPA600</b>										
<b>Blank (BFE1204-BLK1)</b> <span style="float: right;">Prepared: 05/31/2022 Analyzed: 06/09/2022</span>										
2,4,5-T	ND	0.500	ug/L							
2,4,5-TP (Silvex)	ND	0.500	ug/L							
2,4-D	ND	0.500	ug/L							
Dinoseb	ND	0.500	ug/L							
Pentachlorophenol	ND	0.500	ug/L							
<i>Surr: DCAA (Surr)</i>	<i>1.01</i>		ug/L	<i>1.11</i>		<i>90.5</i>	<i>48.5-134</i>			
<b>LCS (BFE1204-BS1)</b> <span style="float: right;">Prepared: 05/31/2022 Analyzed: 06/09/2022</span>										
2,4,5-T	0.548	0.500	ug/L	0.556		98.7	62-145			
2,4,5-TP (Silvex)	0.601	0.500	ug/L	0.556		108	62-132			
2,4-D	0.652	0.500	ug/L	0.556		117	74-139			
Dinoseb	0.467	0.500	ug/L	0.556		84.0	59-136			
Pentachlorophenol	0.523	0.500	ug/L	0.556		94.1	62-118			
<i>Surr: DCAA (Surr)</i>	<i>1.00</i>		ug/L	<i>1.11</i>		<i>90.4</i>	<i>70-130</i>			
<b>Matrix Spike (BFE1204-MS1)</b> <span style="float: right;">Source: 22E1463-02 Prepared: 06/01/2022 Analyzed: 06/09/2022</span>										
2,4,5-T	0.530	0.500	ug/L	0.556	BLOD	95.3	53-144			
2,4,5-TP (Silvex)	0.576	0.500	ug/L	0.556	BLOD	104	52-129			
2,4-D	0.502	0.500	ug/L	0.556	BLOD	90.3	53-126			
Dinoseb	0.446	0.500	ug/L	0.556	BLOD	80.3	60-137			
Pentachlorophenol	0.602	0.500	ug/L	0.556	BLOD	108	52-124			
<i>Surr: DCAA (Surr)</i>	<i>1.08</i>		ug/L	<i>1.11</i>		<i>97.5</i>	<i>70-130</i>			
<b>Matrix Spike Dup (BFE1204-MSD1)</b> <span style="float: right;">Source: 22E1463-02 Prepared: 06/01/2022 Analyzed: 06/09/2022</span>										
2,4,5-T	0.511	0.500	ug/L	0.556	BLOD	91.9	53-144	3.63	20	
2,4,5-TP (Silvex)	0.528	0.500	ug/L	0.556	BLOD	94.9	52-129	8.76	20	

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1204 - SW8151A/EPA600</b>										
<b>Matrix Spike Dup (BFE1204-MSD1)</b>										
			<b>Source: 22E1463-02</b>		Prepared: 06/01/2022 Analyzed: 06/09/2022					
2,4-D	0.411	0.500	ug/L	0.556	BLOD	74.0	53-126	19.8	20	
Dinoseb	0.423	0.500	ug/L	0.556	BLOD	76.2	60-137	5.20	20	
Pentachlorophenol	0.521	0.500	ug/L	0.556	BLOD	93.7	52-124	14.4	20	
<i>Surr: DCAA (Surr)</i>	<i>1.06</i>		ug/L	<i>1.11</i>		<i>95.7</i>	<i>70-130</i>			
<b>Batch BFF0117 - SW8151A/EPA600</b>										
<b>Blank (BFF0117-BLK1)</b>										
			Prepared: 06/02/2022 Analyzed: 06/09/2022							
2,4,5-T	ND	0.500	ug/L							
2,4,5-TP (Silvex)	ND	0.500	ug/L							
2,4-D	ND	0.500	ug/L							
Dinoseb	ND	0.500	ug/L							
Pentachlorophenol	ND	0.500	ug/L							
<i>Surr: DCAA (Surr)</i>	<i>1.06</i>		ug/L	<i>1.11</i>		<i>95.5</i>	<i>48.5-134</i>			
<b>LCS (BFF0117-BS1)</b>										
			Prepared: 06/02/2022 Analyzed: 06/09/2022							
2,4,5-T	0.633	0.500	ug/L	0.556		114	62-145			
2,4,5-TP (Silvex)	0.562	0.500	ug/L	0.556		101	62-132			
2,4-D	0.579	0.500	ug/L	0.556		104	74-139			
Dinoseb	0.530	0.500	ug/L	0.556		95.4	59-136			
Pentachlorophenol	0.607	0.500	ug/L	0.556		109	62-118			
<i>Surr: DCAA (Surr)</i>	<i>1.04</i>		ug/L	<i>1.11</i>		<i>93.4</i>	<i>70-130</i>			
<b>Matrix Spike (BFF0117-MS1)</b>										
			<b>Source: 22F0103-05</b>		Prepared: 06/03/2022 Analyzed: 06/09/2022					
2,4,5-T	0.469	0.500	ug/L	0.556	BLOD	84.4	53-144			
2,4,5-TP (Silvex)	0.470	0.500	ug/L	0.556	BLOD	84.6	52-129			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0117 - SW8151A/EPA600</b>										
<b>Matrix Spike (BFF0117-MS1)</b>										
			<b>Source: 22F0103-05</b>		Prepared: 06/03/2022 Analyzed: 06/09/2022					
2,4-D	0.486	0.500	ug/L	0.556	BLOD	87.5	53-126			
Dinoseb	0.440	0.500	ug/L	0.556	BLOD	79.2	60-137			
Pentachlorophenol	0.482	0.500	ug/L	0.556	BLOD	86.8	52-124			
<i>Surr: DCAA (Surr)</i>	<i>1.08</i>		ug/L	<i>1.11</i>		<i>96.9</i>	<i>70-130</i>			
<b>Matrix Spike Dup (BFF0117-MSD1)</b>										
			<b>Source: 22F0103-05</b>		Prepared: 06/03/2022 Analyzed: 06/09/2022					
2,4,5-T	0.414	0.500	ug/L	0.556	BLOD	74.4	53-144	12.5	20	
2,4,5-TP (Silvex)	0.455	0.500	ug/L	0.556	BLOD	81.9	52-129	3.24	20	
2,4-D	0.484	0.500	ug/L	0.556	BLOD	87.2	53-126	0.389	20	
Dinoseb	0.392	0.500	ug/L	0.556	BLOD	70.6	60-137	11.5	20	
Pentachlorophenol	0.470	0.500	ug/L	0.556	BLOD	84.6	52-124	2.49	20	
<i>Surr: DCAA (Surr)</i>	<i>1.02</i>		ug/L	<i>1.11</i>		<i>91.4</i>	<i>70-130</i>			



## Certificate of Analysis

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Micro-extractables by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0301 - SW8011</b>										
<b>Blank (BFF0301-BLK1)</b>				Prepared & Analyzed: 06/07/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L							
1,2,3-Trichloropropane	ND	0.010	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L							
<b>LCS (BFF0301-BS1)</b>				Prepared & Analyzed: 06/07/2022						
1,2-Dibromoethane (EDB)	0.324	0.010	ug/L	0.250		130	65-135			
1,2,3-Trichloropropane	0.265	0.010	ug/L	0.250		106	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.333	0.010	ug/L	0.250		133	65-135			
<b>Matrix Spike (BFF0301-MS1)</b>				<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/07/2022				
1,2-Dibromoethane (EDB)	0.247	0.010	ug/L	0.253	BLOD	97.7	65-135			
1,2,3-Trichloropropane	0.197	0.010	ug/L	0.253	BLOD	78.1	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.243	0.010	ug/L	0.253	BLOD	96.4	65-135			
<b>Matrix Spike (BFF0301-MS2)</b>				<b>Source: 22F0064-03</b>		Prepared: 06/07/2022 Analyzed: 06/08/2022				
1,2-Dibromoethane (EDB)	0.201	0.010	ug/L	0.251	BLOD	80.3	65-135			
1,2,3-Trichloropropane	0.176	0.010	ug/L	0.251	BLOD	70.0	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.188	0.010	ug/L	0.251	BLOD	74.8	65-135			
<b>Matrix Spike Dup (BFF0301-MSD1)</b>				<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/07/2022				
1,2-Dibromoethane (EDB)	0.261	0.010	ug/L	0.252	BLOD	104	65-135	5.73	20	
1,2,3-Trichloropropane	0.242	0.010	ug/L	0.252	BLOD	96.2	65-135	20.5	20	P
1,2-Dibromo-3-chloropropane (DBCP)	0.257	0.010	ug/L	0.252	BLOD	102	65-135	5.29	20	
<b>Matrix Spike Dup (BFF0301-MSD2)</b>				<b>Source: 22F0064-03</b>		Prepared: 06/07/2022 Analyzed: 06/08/2022				
1,2-Dibromoethane (EDB)	0.235	0.010	ug/L	0.254	BLOD	92.7	65-135	15.5	20	
1,2,3-Trichloropropane	0.206	0.010	ug/L	0.254	BLOD	81.0	65-135	15.6	20	
1,2-Dibromo-3-chloropropane (DBCP)	0.221	0.010	ug/L	0.254	BLOD	87.2	65-135	16.5	20	

## Certificate of Analysis

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0087 - No Prep VOC</b>										
<b>Blank (BFF0087-BLK1)</b>										
				Prepared & Analyzed: 06/02/2022						
Ethane	ND	5.00	ug/L							
Ethene	ND	5.00	ug/L							
Methane	ND	5.00	ug/L							
<i>Surr: Acetylene (Surr)</i>	449		ug/L	432		104	70-130			
<b>LCS (BFF0087-BS1)</b>										
				Prepared & Analyzed: 06/02/2022						
Ethane	540	5.00	ug/L	500		108	70-130			
Ethene	488	5.00	ug/L	464		105	70-130			
Methane	276	5.00	ug/L	266		104	70-130			
<i>Surr: Acetylene (Surr)</i>	496		ug/L	432		115	70-130			
<b>Duplicate (BFF0087-DUP1)</b>										
				Source: 22E1463-02			Prepared & Analyzed: 06/02/2022			
Ethane	ND	5.00	ug/L		BLOD			NA	20	
Ethene	ND	5.00	ug/L		BLOD			NA	20	
Methane	379	5.00	ug/L		378			0.346	20	
<i>Surr: Acetylene (Surr)</i>	510		ug/L	432		118	70-130			
<b>Matrix Spike (BFF0087-MS1)</b>										
				Source: 22E1463-02			Prepared & Analyzed: 06/02/2022			
Ethane	612	5.00	ug/L	500	BLOD	122	70-130			
Ethene	544	5.00	ug/L	464	BLOD	117	70-130			
Methane	547	5.00	ug/L	266	378	63.7	70-130			M
<i>Surr: Acetylene (Surr)</i>	489		ug/L	432		113	70-130			
<b>Matrix Spike Dup (BFF0087-MSD1)</b>										
				Source: 22E1463-02			Prepared & Analyzed: 06/02/2022			
Ethane	716	5.00	ug/L	500	BLOD	143	70-130	15.7	20	M
Ethene	635	5.00	ug/L	464	BLOD	137	70-130	15.4	20	M

### Certificate of Analysis

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0087 - No Prep VOC**

Matrix Spike Dup (BFF0087-MSD1)	Source: 22E1463-02		Prepared & Analyzed: 06/02/2022							
Methane	597	5.00	ug/L	266	378	82.5	70-130	8.74	20	
<i>Surr: Acetylene (Surr)</i>	591		ug/L	432		137	70-130			S

### Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1202 - No Prep IC</b>										
<b>Blank (BFE1202-BLK1)</b>				Prepared & Analyzed: 05/31/2022						
Chloride	ND	1.0	mg/L							
<b>LCS (BFE1202-BS1)</b>				Prepared & Analyzed: 05/31/2022						
Chloride	18.0	1	mg/L	20.0		90.2	90-110			
<b>LCS Dup (BFE1202-BSD1)</b>				Prepared & Analyzed: 05/31/2022						
Chloride	18.9	1	mg/L	20.0		94.3	90-110	4.48	15	
<b>Matrix Spike (BFE1202-MS1)</b>				Source: 22E1463-02 Prepared & Analyzed: 05/31/2022						
Chloride	20.8	1.0	mg/L	11.1	8.3	112	90-110			M
<b>Matrix Spike (BFE1202-MS2)</b>				Source: 22E1463-04 Prepared & Analyzed: 06/01/2022						
Chloride	11.8	1.0	mg/L	11.1	1.0	97.3	90-110			
<b>Matrix Spike Dup (BFE1202-MSD1)</b>				Source: 22E1463-02 Prepared & Analyzed: 05/31/2022						
Chloride	19.6	1.0	mg/L	11.1	8.3	101	90-110	6.12	15	
<b>Matrix Spike Dup (BFE1202-MSD2)</b>				Source: 22E1463-04 Prepared & Analyzed: 06/01/2022						
Chloride	11.8	1.0	mg/L	11.1	1.0	97.1	90-110	0.170	15	
<b>Batch BFF0002 - No Prep Wet Chem</b>										
<b>Blank (BFF0002-BLK1)</b>				Prepared & Analyzed: 05/31/2022						
Sulfide	ND	1.00	mg/L							
<b>LCS (BFF0002-BS1)</b>				Prepared & Analyzed: 05/31/2022						
Sulfide	4.90	1	mg/L	5.00		98.0	80-120			

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0002 - No Prep Wet Chem</b>										
<b>Matrix Spike (BFF0002-MS1)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 05/31/2022</b>					
Sulfide	4.83	1.00	mg/L	5.00	BLOD	96.6	75-125			
<b>Matrix Spike Dup (BFF0002-MSD1)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 05/31/2022</b>					
Sulfide	4.87	1.00	mg/L	5.00	BLOD	97.4	75-125	0.825	20	
<b>Batch BFF0256 - No Prep Wet Chem</b>										
<b>LCS (BFF0256-BS1)</b>		<b>Prepared &amp; Analyzed: 06/06/2022</b>								
Cyanide	0.27	0.01	mg/L	0.250		109	80-120			
<b>Matrix Spike (BFF0256-MS1)</b>		<b>Source: 22E1249-12</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.25	0.01	mg/L	0.250	BLOD	98.4	80-120			
<b>Matrix Spike (BFF0256-MS2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.23	0.01	mg/L	0.250	BLOD	90.0	80-120			
<b>Matrix Spike Dup (BFF0256-MSD1)</b>		<b>Source: 22E1249-12</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.25	0.01	mg/L	0.250	BLOD	101	80-120	2.93	20	
<b>Matrix Spike Dup (BFF0256-MSD2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.23	0.01	mg/L	0.250	BLOD	92.4	80-120	2.54	20	
<b>Batch BFF0367 - No Prep Wet Chem</b>										
<b>Blank (BFF0367-BLK1)</b>		<b>Prepared &amp; Analyzed: 06/08/2022</b>								
Alkalinity	ND	5.0	mg/L							

## Certificate of Analysis

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0367 - No Prep Wet Chem</b>										
<b>LCS (BFF0367-BS1)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	47.0	5.0	mg/L	50.0		94.0	80-120			
<b>Duplicate (BFF0367-DUP1)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	144	5.0	mg/L		148			2.74	20	
<b>Duplicate (BFF0367-DUP2)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	313	5.0	mg/L		309			1.29	20	

## Certificate of Analysis

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Date Issued: 7/12/2022 2:25:23PM

### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
22E1463-02	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-03	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-04	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-05	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-06	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-07	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-07RE1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0327	AF20045
22E1463-08	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-08RE1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0327	AF20045

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
22E1463-02	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-03	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-04	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-05	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-06	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-07	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-08	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
22E1463-02	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-03	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-04	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:25:23PM

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
22E1463-05	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-06	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-07	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-07RE1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-08	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-08RE1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
22E1463-02	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
22E1463-03	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
22E1463-07	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
22E1463-08	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
22E1463-02	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1463-03	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1463-07	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1463-08	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1463-02	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-03	200 mL / 200 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-04	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-05	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-06	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-07	10.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-08	10.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method: SW3510C/EPA600-ECD</b>		
22E1463-02	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0066	AE20143
22E1463-03	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1463-07	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1463-08	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1463-02	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1463-02RE1	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1463-03	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1463-07	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1463-08	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW3580A-MS</b>		
22E1463-02	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
22E1463-03	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0079	AC20134
22E1463-04	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0079	AC20134
22E1463-06	1070 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
22E1463-07	1070 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
22E1463-08	1070 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22E1463-01	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-03	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-04	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-05	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-06	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-07	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-08	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22E1463-02	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
22E1463-02	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-03	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-04	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-06	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-07	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-08	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
22E1463-01	59.8 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-02	59.2 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-03	59.3 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-04	59.6 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-05	60.0 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-06	59.5 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-07	59.8 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-08	58.7 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22E1463-02	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
22E1463-03	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22E1463-07	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156
22E1463-08	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156

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### QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
BFF0097-BLK1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-BS1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-BS2		SW6020B	BFF0097		
BFF0097-MS1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-MS2	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-MSD1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-MSD2	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
BFE1202-BLK1	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-BS1	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-BSD1	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-MS1	4.50 mL / 5.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-MS2	4.50 mL / 5.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-MSD1	4.50 mL / 5.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-MSD2	4.50 mL / 5.00 mL	SW9056A	BFE1202	SFF0117	AB20130

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
BFF0087-BLK1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-BS1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-DUP1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
BFF0087-MRL1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MS1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MSD1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFF0002-BLK1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0002-BS1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0002-MRL1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0002-MS1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0002-MSD1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0256-BLK1		SW9012B	BFF0256	SFF0305	AF20043
BFF0256-BS1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MS1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MS2	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MSD1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MSD2	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0367-BLK1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-BS1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-DUP1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-DUP2	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
BFE1147-BLK1	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS1	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS2		SW8081B	BFE1147	SFF0059	AC20077

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
BFE1147-BS3	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS4	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MS1	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MS2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-MSD1	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MSD2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-BLK1	1000 mL / 1.00 mL	SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS2	1000 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
BFE1147-BS3		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS4		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MS1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MS2	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
BFE1147-MSD1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MSD2	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3580A-MS</b>	
BFF0013-BLK1	1000 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-BS1	1000 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-MS1	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-MSD1	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0088-BLK1	1000 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
BFF0088-BS1	1000 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
BFF0088-MS1	1030 mL / 1.00 mL	SW8270E	BFF0088	SFF0188	AC20134
BFF0088-MSD1	1030 mL / 1.00 mL	SW8270E	BFF0088	SFF0188	AC20134

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
BFF0032-BLK1	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
BFF0032-BS1	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
BFF0032-DUP1	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
BFF0032-MS1	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
BFF0033-BLK1	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066
BFF0033-BS1	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066
BFF0033-MS1	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066
BFF0033-MSD1	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW7470A</b>	
BFF0393-BLK1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-BS1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MS1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MS2	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MSD1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MSD2	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW8011</b>	
BFF0301-BLK1	60.0 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-BS1	60.0 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-MS1	59.4 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-MS2	59.8 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-MSD1	59.6 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-MSD2	59.1 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW8151A/EPA600</b>	
BFE1204-BLK1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-BS1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-MS1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-MSD1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFF0117-BLK1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156
BFF0117-BS1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156
BFF0117-MRL1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0915	AD20156
BFF0117-MRL2		SW8151A	BFF0117		
BFF0117-MS1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156
BFF0117-MSD1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156



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### Certified Analyses included in this Report

Analyte	Certifications
<b><i>RSK175M in Non-Potable Water</i></b>	
Ethane	VELAP
Ethene	VELAP
Methane	VELAP
<b><i>SM22 2320B-2011 in Non-Potable Water</i></b>	
Alkalinity	VELAP,PADEP,WVDEP,NHDES,MADEP
<b><i>SW6020B in Non-Potable Water</i></b>	
Antimony	VELAP,NCDEQ,WVDEP,NHDES
Arsenic	VELAP,WVDEP,NHDES
Barium	VELAP,WVDEP,NHDES
Beryllium	VELAP,WVDEP,NHDES
Cadmium	VELAP,WVDEP,NHDES
Chromium	VELAP,WVDEP,NHDES
Cobalt	VELAP,WVDEP,NHDES
Copper	VELAP,WVDEP,NHDES
Lead	VELAP,WVDEP,NHDES
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP,NHDES
Silver	VELAP,WVDEP,NHDES
Thallium	VELAP,WVDEP,NHDES
Tin	VELAP,WVDEP
Vanadium	VELAP,WVDEP,NHDES
Zinc	VELAP,WVDEP,NHDES
<b><i>SW7470A in Non-Potable Water</i></b>	
Mercury	VELAP,NCDEQ,WVDEP,NHDES
<b><i>SW8011 in Non-Potable Water</i></b>	

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### Certified Analyses included in this Report

Analyte	Certifications
1,2-Dibromoethane (EDB)	VELAP,NCDEQ
1,2,3-Trichloropropane	VELAP,NCDEQ
1,2-Dibromo-3-chloropropane (DBCP)	VELAP,NCDEQ
<b>SW8081B in Non-Potable Water</b>	
4,4'-DDD	NCDEQ,VELAP,WVDEP,PADEP,NHDES
4,4'-DDE	NCDEQ,VELAP,WVDEP,PADEP,NHDES
4,4'-DDT	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Aldrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
alpha-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
alpha-Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
beta-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
delta-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Dieldrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan I	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan II	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan sulfate	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin aldehyde	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-BHC (Lindane)	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor epoxide	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Methoxychlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Toxaphene	NCDEQ,VELAP,WVDEP,PADEP,NHDES
<b>SW8082A in Non-Potable Water</b>	
PCB as Aroclor 1016	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1221	VELAP,PADEP,NCDEQ,WVDEP,NHDES

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### Certified Analyses included in this Report

Analyte	Certifications
PCB as Aroclor 1232	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1242	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1248	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1254	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1260	VELAP,PADEP,NCDEQ,WVDEP,NHDES
<b>SW8151A in Non-Potable Water</b>	
2,4,5-T	VELAP,PADEP,NCDEQ,WVDEP
2,4,5-TP (Silvex)	VELAP,PADEP,NCDEQ,WVDEP
2,4-D	VELAP,PADEP,NCDEQ,WVDEP
Dinoseb	VELAP,PADEP,NCDEQ,WVDEP
Pentachlorophenol	VELAP,PADEP,NCDEQ,WVDEP
<b>SW8260D in Non-Potable Water</b>	
1,1,1,2-Tetrachloroethane	NCDEQ,WVDEP,VELAP
1,1,1-Trichloroethane	NCDEQ,WVDEP,VELAP
1,1,2,2-Tetrachloroethane	NCDEQ,WVDEP,VELAP
1,1,2-Trichloroethane	NCDEQ,WVDEP,VELAP
1,1-Dichloroethane	NCDEQ,WVDEP,VELAP
1,1-Dichloroethylene	NCDEQ,WVDEP,VELAP
1,1-Dichloropropene	NCDEQ,WVDEP,VELAP
1,2,3-Trichloropropane	NCDEQ,WVDEP,VELAP
1,2,4-Trichlorobenzene	NCDEQ,WVDEP,VELAP
1,2-Dichlorobenzene	NCDEQ,WVDEP,VELAP
1,2-Dichloroethane	NCDEQ,WVDEP,VELAP
1,2-Dichloropropane	NCDEQ,WVDEP,VELAP
1,3-Dichlorobenzene	NCDEQ,WVDEP,VELAP
1,3-Dichloropropane	NCDEQ,WVDEP,VELAP
1,4-Dichlorobenzene	NCDEQ,WVDEP,VELAP
2,2-Dichloropropane	NCDEQ,WVDEP,VELAP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### Certified Analyses included in this Report

Analyte	Certifications
2-Butanone (MEK)	NCDEQ, WVDEP, VELAP
2-Hexanone (MBK)	NCDEQ, WVDEP, VELAP
4-Methyl-2-pentanone (MIBK)	NCDEQ, WVDEP, VELAP
Acetone	NCDEQ, WVDEP, VELAP
Acetonitrile	NCDEQ, WVDEP, VELAP
Acrolein	NCDEQ, WVDEP, VELAP
Acrylonitrile	NCDEQ, WVDEP, VELAP
Allyl chloride	NCDEQ, WVDEP, VELAP
Benzene	NCDEQ, WVDEP, VELAP
Bromochloromethane	NCDEQ, WVDEP, VELAP
Bromodichloromethane	NCDEQ, WVDEP, VELAP
Bromoform	NCDEQ, WVDEP, VELAP
Bromomethane	NCDEQ, WVDEP, VELAP
Carbon disulfide	NCDEQ, WVDEP, VELAP
Carbon tetrachloride	NCDEQ, WVDEP, VELAP
Chlorobenzene	NCDEQ, WVDEP, VELAP
Chloroethane	NCDEQ, WVDEP, VELAP
Chloroform	NCDEQ, WVDEP, VELAP
Chloromethane	NCDEQ, WVDEP, VELAP
Chloroprene	NCDEQ, WVDEP, VELAP
cis-1,2-Dichloroethylene	NCDEQ, WVDEP, VELAP
cis-1,3-Dichloropropene	NCDEQ, WVDEP, VELAP
Dibromochloromethane	NCDEQ, WVDEP, VELAP
Dibromomethane	NCDEQ, WVDEP, VELAP
Dichlorodifluoromethane	NCDEQ, WVDEP, VELAP
Ethyl methacrylate	NCDEQ, WVDEP, VELAP
Ethylbenzene	NCDEQ, WVDEP, VELAP
Iodomethane	NCDEQ, WVDEP, VELAP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### Certified Analyses included in this Report

Analyte	Certifications
Isobutyl Alcohol	NCDEQ, WVDEP, VELAP
m+p-Xylenes	NCDEQ, WVDEP, VELAP
Methacrylonitrile	NCDEQ, WVDEP, VELAP
Methyl methacrylate	NCDEQ, WVDEP, VELAP
Methylene chloride	NCDEQ, WVDEP, VELAP
Naphthalene	NCDEQ, WVDEP, VELAP
o-Xylene	NCDEQ, WVDEP, VELAP
Propionitrile	NCDEQ, WVDEP, VELAP
Styrene	NCDEQ, WVDEP, VELAP
Tetrachloroethylene (PCE)	NCDEQ, WVDEP, VELAP
Toluene	NCDEQ, WVDEP, VELAP
trans-1,2-Dichloroethylene	NCDEQ, WVDEP, VELAP
trans-1,3-Dichloropropene	NCDEQ, WVDEP, VELAP
trans-1,4-Dichloro-2-butene	NCDEQ, WVDEP, VELAP
Trichloroethylene	NCDEQ, WVDEP, VELAP
Trichlorofluoromethane	NCDEQ, WVDEP, VELAP
Vinyl acetate	NCDEQ, WVDEP, VELAP
Vinyl chloride	NCDEQ, WVDEP, VELAP
Xylenes, Total	NCDEQ, WVDEP, VELAP
<b>SW8270E in Non-Potable Water</b>	
1,2,4,5-Tetrachlorobenzene	VELAP, NCDEQ, WVDEP
1,3,5-Trinitrobenzene	VELAP, NCDEQ, WVDEP
1,3-Dinitrobenzene	VELAP, NCDEQ, WVDEP
1,4-Naphthoquinone	VELAP, NCDEQ, WVDEP
1-Naphthylamine	VELAP, NCDEQ, WVDEP
2,3,4,6-Tetrachlorophenol	VELAP, NCDEQ, WVDEP
2,4,5-Trichlorophenol	VELAP, NCDEQ, WVDEP
2,4,6-Trichlorophenol	VELAP, NCDEQ, WVDEP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### Certified Analyses included in this Report

Analyte	Certifications
2,4-Dichlorophenol	VELAP,NCDEQ,WVDEP
2,4-Dimethylphenol	VELAP,NCDEQ,WVDEP
2,4-Dinitrophenol	VELAP,NCDEQ,WVDEP
2,4-Dinitrotoluene	VELAP,NCDEQ,WVDEP
2,6-Dichlorophenol	VELAP,NCDEQ,WVDEP
2,6-Dinitrotoluene	VELAP,NCDEQ,WVDEP
2-Acetylaminofluorene	VELAP,NCDEQ,WVDEP
2-Chloronaphthalene	VELAP,NCDEQ,WVDEP
2-Chlorophenol	VELAP,NCDEQ,WVDEP
2-Methylnaphthalene	VELAP,NCDEQ,WVDEP
2-Naphthylamine	VELAP,NCDEQ,WVDEP
2-Nitroaniline	VELAP,NCDEQ,WVDEP
2-Nitrophenol	VELAP,NCDEQ,WVDEP
3,3'-Dichlorobenzidine	VELAP,NCDEQ,WVDEP
3,3'-Dimethylbenzidine	VELAP,NCDEQ,WVDEP
3-Methylcholanthrene	VELAP,NCDEQ,WVDEP
3-Nitroaniline	VELAP,NCDEQ,WVDEP
4,6-Dinitro-2-methylphenol	VELAP,NCDEQ,WVDEP
4-Aminobiphenyl	VELAP,NCDEQ,WVDEP
4-Bromophenyl phenyl ether	VELAP,NCDEQ,WVDEP
4-Chloroaniline	VELAP,NCDEQ,WVDEP
4-Chlorophenyl phenyl ether	VELAP,NCDEQ,WVDEP
4-Nitroaniline	VELAP,NCDEQ,WVDEP
4-Nitrophenol	VELAP,NCDEQ,WVDEP
5-Nitro-o-toluidine	VELAP,NCDEQ,WVDEP
7,12-Dimethylbenz (a) anthracene	VELAP,NCDEQ,WVDEP
Acenaphthene	VELAP,NCDEQ,WVDEP
Acenaphthylene	VELAP,NCDEQ,WVDEP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### Certified Analyses included in this Report

Analyte	Certifications
Acetophenone	VELAP,NCDEQ,WVDEP
Anthracene	VELAP,NCDEQ,WVDEP
Benzo (a) anthracene	VELAP,NCDEQ,WVDEP
Benzo (a) pyrene	VELAP,NCDEQ,WVDEP
Benzo (b) fluoranthene	VELAP,NCDEQ,WVDEP
Benzo (g,h,i) perylene	VELAP,NCDEQ,WVDEP
Benzo (k) fluoranthene	VELAP,NCDEQ,WVDEP
Benzyl alcohol	VELAP,NCDEQ,WVDEP
bis (2-Chloroethoxy) methane	VELAP,NCDEQ,WVDEP
bis (2-Chloroethyl) ether	VELAP,NCDEQ,WVDEP
2,2'-Oxybis (1-chloropropane)	VELAP,NCDEQ,WVDEP
bis (2-Ethylhexyl) phthalate	VELAP,NCDEQ,WVDEP
Butyl benzyl phthalate	VELAP,NCDEQ,WVDEP
Chlorobenzilate	VELAP,NCDEQ,WVDEP
Chrysene	VELAP,NCDEQ,WVDEP
Diallate	VELAP,NCDEQ,WVDEP
Dibenz (a,h) anthracene	VELAP,NCDEQ,WVDEP
Dibenzofuran	VELAP,NCDEQ,WVDEP
Diethyl phthalate	VELAP,NCDEQ,WVDEP
Dimethoate	VELAP,NCDEQ,WVDEP
Dimethyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-butyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-octyl phthalate	VELAP,NCDEQ,WVDEP
Diphenylamine	VELAP,NCDEQ,WVDEP
Disulfoton	VELAP,NCDEQ,WVDEP
Ethyl methanesulfonate	VELAP,NCDEQ,WVDEP
Ethyl parathion	VELAP,NCDEQ,WVDEP
Famphur	VELAP,NCDEQ,WVDEP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### Certified Analyses included in this Report

Analyte	Certifications
Fluoranthene	VELAP,NCDEQ,WVDEP
Fluorene	VELAP,NCDEQ,WVDEP
Hexachlorobenzene	VELAP,NCDEQ,WVDEP
Hexachlorobutadiene	VELAP,NCDEQ,WVDEP
Hexachlorocyclopentadiene	VELAP,NCDEQ,WVDEP
Hexachloroethane	VELAP,NCDEQ,WVDEP
Hexachloropropene	VELAP,NCDEQ,WVDEP
Indeno (1,2,3-cd) pyrene	VELAP,NCDEQ,WVDEP
Isodrin	VELAP,NCDEQ,WVDEP
Isophorone	VELAP,NCDEQ,WVDEP
Isosafrole	VELAP,NCDEQ,WVDEP
Kepone	VELAP,NCDEQ,WVDEP
m+p-Cresols	VELAP,NCDEQ,WVDEP
Methapyrilene	VELAP,NCDEQ,WVDEP
Methyl methanesulfonate	VELAP,NCDEQ,WVDEP
Methyl parathion	VELAP,NCDEQ,WVDEP
Nitrobenzene	VELAP,NCDEQ,WVDEP
n-Nitrosodiethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodimethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodi-n-butylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodi-n-propylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodiphenylamine	VELAP,NCDEQ,WVDEP
n-Nitrosomethylethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosopiperidine	VELAP,NCDEQ,WVDEP
n-Nitrosopyrrolidine	VELAP,NCDEQ,WVDEP
o,o,o-Triethyl phosphorothioate	VELAP,NCDEQ,WVDEP
o,o-Diethyl o-2-pyrazinyl phosphorothioate	VELAP,NCDEQ,WVDEP
o+m+p-Cresols	VELAP,WVDEP



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### Certified Analyses included in this Report

Analyte	Certifications
o-Cresol	VELAP,NCDEQ,WVDEP
o-Toluidine	VELAP,NCDEQ,WVDEP
p-(Dimethylamino) azobenzene	VELAP,NCDEQ,WVDEP
p-Chloro-m-cresol	VELAP,NCDEQ,WVDEP
Pentachlorobenzene	VELAP,NCDEQ,WVDEP
Pentachloronitrobenzene (quintozene)	VELAP,NCDEQ,WVDEP
Phenacetin	VELAP,NCDEQ,WVDEP
Phenanthrene	VELAP,NCDEQ,WVDEP
Phenol	VELAP,NCDEQ,WVDEP
Phorate	VELAP,NCDEQ,WVDEP
p-Phenylenediamine	VELAP,NCDEQ,WVDEP
Pronamide	VELAP,NCDEQ,WVDEP
Pyrene	VELAP,NCDEQ,WVDEP
Safrole	VELAP,NCDEQ,WVDEP
<b>SW9012B in Non-Potable Water</b>	
Cyanide	VELAP,WVDEP
<b>SW9056A in Non-Potable Water</b>	
Chloride	VELAP
<b>SW9215 in Non-Potable Water</b>	
Sulfide	VELAP

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Code	Description	Laboratory ID	Expires
MADEP	Massachusetts DEP	M-VA913	06/30/2022
MdDOE	Maryland DE Drinking Water	341	12/31/2022
NC	North Carolina DENR	495	07/31/2022
NCDEQ	North Carolina DEQ	495	12/31/2022
NCDOH	North Carolina Department of Health	51714	07/31/2022
NJDEP	NELAP-New Jersey DEP	VA015	06/30/2022
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #007	68-03503	10/31/2022
VELAP	NELAP-Virginia Certificate #11900	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2022

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### Qualifiers and Definitions

B	Blank contamination. The recorded result is associated with a contaminated blank.
C	Continuing calibration verification response for this analyte is outside specifications.
Cl	Residual Chlorine or other oxidizing agent was detected in the container used to analyze this sample.
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
P	Duplicate analysis does not meet the acceptance criteria for precision
pH	The container used to analyze this sample had a pH measurement of greater than 2 s.u.
S	Surrogate recovery was outside acceptance criteria
RPD	Relative Percent Difference
Qual	Qualifiers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

**CHAIN OF CUSTODY**

PAGE 1 OF 1

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07 TI
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: Jrobb@scsengineers.com	Pretreatment Program:
Is sample for compliance reporting? YES Va	Is sample from a chlorinated supply? YES NO	PWS I.D. #:
SAMPLER NAME (PRINT): L. HOWARD M. NGUYEN	SAMPLER SIGNATURE: <i>[Signature]</i>	Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)							COMMENTS		
											VSWMR Table 3.1A	VOC Table 3.1A/EDB 8011	Chloride	Alkalinity	MEE	Hg	Bis (2-ethylhexyl) phthalate			
																	VSWMR TABLE 3.1B			
1) TRIP BLANK	X					051922	1220		DI	6		X								
2) MW-205 B/M/S/MSIX	X					052522	1424		GW	51			X	X	X					
3) FIELD BLANK	X					↓	1500		DI	17			X	X	X					
4) MW-211 A	X					↓	1819		GW	12	X		X	X	X	X	X			
5) MW-206 B	X					052622	1225		GW	11	X		X	X	X					
6) MW-211 B	X					↓	1355		GW	12	X		X	X	X	X	X			
7) MW-108	X					↓	1810		GW	17			X	X	X					
8) MW-108 DUPLICATE	X					↓	1910		GW	17			X	X	X					
9)																				
10)																				

RECEIVED: <i>[Signature]</i> 052722 1500	DATE / TIME: 5/27/22	RECEIVED: <i>[Signature]</i> 5/27/22	DATE / TIME: 1630	QC Data Package	LAB USE ONLY	COOLER TEMP 3.0 °C
RECEIVED: <i>[Signature]</i> LCN	DATE / TIME: LCN	RECEIVED: <i>[Signature]</i> mm 5/27/22	DATE / TIME: 1630	Level I <input type="checkbox"/>	271 Sealed Ice	SCS-W 22E1463 1st Semi-Annual 2022 Recd: 05/27/2022 Due: 06/13/2022
RECEIVED: <i>[Signature]</i> LCN	DATE / TIME: LCN	RECEIVED: <i>[Signature]</i> mm 5/27/22	DATE / TIME: 1630	Level II <input checked="" type="checkbox"/>		
RECEIVED: <i>[Signature]</i> LCN	DATE / TIME: LCN	RECEIVED: <i>[Signature]</i> mm 5/27/22	DATE / TIME: 1630	Level III <input type="checkbox"/>		
RECEIVED: <i>[Signature]</i> LCN	DATE / TIME: LCN	RECEIVED: <i>[Signature]</i> mm 5/27/22	DATE / TIME: 1630	Level IV <input type="checkbox"/>		

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**INITIALS**  
 formerly Air, Water & Soil Laboratories

**CHAIN OF CUSTODY**

PAGE | OF |

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218708.07 T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? **YES** Va      Is sample from a chlorinated supply? YES **NO**      PWS I.D. #:

SAMPLER NAME (PRINT): *L. HOWARD*      SAMPLER SIGNATURE: *[Signature]*      Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)							COMMENTS				
											VSWMR Table 3.1A	VOC Table 3.1A/EEDB 8011	Chloride	Alkalinity	MEE	Hg	Bis (2-ethylhexyl) phthalate					
																	VSWMR TABLE 3.1B					
1) TRIP BLANK	X					051922	270		DI	6		X										
2) MW-205 B/MS/100	X					052522	1424		GW	1			X	X	X							
3) FIELD BLANK	X					↓	1500		DI	1			X	X	X							
4) MW-211A	X					↓	1719	1809	GW	12	X		X	X	X	X	X				(MN) 052722	
5) MW-200 B	X					052622	1225		GW	11	X		X	X	X							01310
6) MW-211 B	X					↓	1355		GW	12	X		X	X	X	X	X					
7) MW-108	X					↓	1810		GW	7			X	X	X							X
8) MW-108 Duplicates	X					↓	1910		GW	7			X	X	X							X
9)																						

INQUIRED: <i>[Signature]</i> DATE / TIME: 052722 @ 1500	RECEIVED: <i>LCN</i> DATE / TIME: 5/27/22 1630	QC Data Package	LAB USE ONLY	COOLER TEMP <i>3.0</i> °C
INQUIRED: <i>LCN</i> DATE / TIME:	RECEIVED: <i>mm</i> 5/27/22 1630	Level I <input type="checkbox"/>	271	SCS-W 1st Semi-Annual 2022 Recd: 05/27/2022 Due: 06/13/2022
INQUIRED: DATE / TIME:	RECEIVED: DATE / TIME:	Level II <input checked="" type="checkbox"/>	sealed	
INQUIRED: DATE / TIME:	RECEIVED: DATE / TIME:	Level III <input type="checkbox"/>	ice	
INQUIRED: DATE / TIME:	RECEIVED: DATE / TIME:	Level IV <input type="checkbox"/>		

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# Sample Preservation Log

Order ID: 22E1463

Date Performed: 5/31/22

Analyst Performing Check: MNM

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/808) PCB DW only		SVOC (824/824/824)		CrVI * **		Pass/POB (808) / SVOC(824)							
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received		Received		pH as Received		pH as Received		pH as Received		pH as Received	
		< 2	Other	> 12	Other	> 8	Other	< 1	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	+	-	+	-	+	-	< 1	Other	Other	Other	Other	
2	G			/																											
2	D	/																													
2	T																														
2	W					/																									
2	AD			/																											
2	AE			/																											
2	AG					/																									
2	AL	/																													
2	AM	/																													
3	C			/																											
3	H	/																													
3	K					/																									
3	L																														
4	E	/																													

NaOH ID: \_\_\_\_\_ HNO<sub>3</sub> ID: \_\_\_\_\_ GrVI preserved date/time: \_\_\_\_\_ Analyst Init: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 H<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub> ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na<sub>2</sub>SO<sub>3</sub> ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 8N NaOH: \_\_\_\_\_

Metals were received with pH = 4. HNO<sub>3</sub> was added at 1029 on 31 May 2022 by MNM in the Log-In room to bring pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.



# Sample Preservation Log

Order ID: 22E1463

Date Performed: 5/31/22

Analyst Performing Check: MNM

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/8084/808) PGB DW only		BVOG (824/827 & 825)			CrVI * **		PassPOB (806) / BVOG(823)						
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received Res. Cl	final + Dr.	Received Res. Cl	final + Dr.	Received	Final	pH as Received	Final	pH as Received	Final	pH as Received	Final
		<2	Other	>12	Other	>8	Other	<2	Other	<2	Other	<2	Other	<2	Other	<2	Other	<2	Other	+	-	+	-			<2	Other		Other		Other
4	I																	-	-												
5	H																														
6	E																														
6	I																														
7	C																														
7	J		4 <2																												
7	M																														
7	N																														
8	C																														
8	J		4 <2																												
8	M																														
8	N																														

NaOH ID: \_\_\_\_\_ HNO3 ID: \_\_\_\_\_ CrVI preserved date/time: \_\_\_\_\_ Analyst I  
H2SO4 ID: \_\_\_\_\_ Na2S2O3 ID: \_\_\_\_\_ \* pH must be adjusted between 9.3 - 9.7 Buffer Sol'n ID: \_\_\_\_\_  
HCL ID: \_\_\_\_\_ Na2SO4 ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 8N NaOH

Metals were received with pH = 4. HNO3 was added at 1029 on 31 May 2022 by MNM in the Log-In room to bring pH = <2.

\*W.Va only certifies DIS3 CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.

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**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM



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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Laboratory Order ID: 22E1463

### Sample Conditions Checklist

Samples Received at:	3.00°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes



TNI Accredited  
VELAP ID 460021



1941 Reymet Road • Richmond, Virginia 23237 • Tel: (804)-358-8295 Fax: (804)-358-8297

## Certificate of Analysis

*Final Report*

Laboratory Order ID 22L0423

Client Name: SCS Engineers-Winchester  
296 Victory Road  
Winchester, VA 22602

Date Received: December 8, 2022 8:00  
Date Issued: December 30, 2022 11:56  
Project Number: 02218208.07 T1  
Purchase Order:

Submitted To: Jennifer Robb

Client Site I.D.: City of Bristol 2nd Semi-Annual

Enclosed are the results of analyses for samples received by the laboratory on 12/08/2022 08:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars  
Technical Director

**End Notes:**

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Enthalpy Analytical.

**Analysis Detects Report**

 Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

**Laboratory Sample ID: 22L0423-01**
**Client Sample ID: MW-104B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	01	SW6020B	26.8		1.00	5.00	1	ug/L
Cobalt	01	SW6020B	0.998	J	0.200	1.00	1	ug/L
Nickel	01	SW6020B	1.421		1.000	1.000	1	ug/L
Tin	01RE1	SW6020B	1.13		1.00	1.00	1	ug/L

**Laboratory Sample ID: 22L0423-02**
**Client Sample ID: MW-104A**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	02	SW6020B	6.5		0.50	1.0	1	ug/L
Barium	02	SW6020B	67.2		1.00	5.00	1	ug/L
Cobalt	02	SW6020B	1.15		0.200	1.00	1	ug/L
Nickel	02	SW6020B	1.693		1.000	1.000	1	ug/L
Tin	02RE2	SW6020B	1.16		1.00	1.00	1	ug/L

**Laboratory Sample ID: 22L0423-03**
**Client Sample ID: MW-106A**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	03	SW6020B	3.4		0.50	1.0	1	ug/L
Barium	03RE1	SW6020B	274		10.0	50.0	10	ug/L
Cobalt	03	SW6020B	5.44		0.200	1.00	1	ug/L
Nickel	03	SW6020B	7.568		1.000	1.000	1	ug/L
Tin	03RE2	SW6020B	1.50		1.00	1.00	1	ug/L
1,1-Dichloroethane	03	SW8260D	1.02		0.60	1.00	1	ug/L
cis-1,2-Dichloroethylene	03	SW8260D	0.67	J	0.40	1.00	1	ug/L

### Analysis Detects Report

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

**Laboratory Sample ID: 22L0423-04**                      **Client Sample ID: MW-101**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	04	SW6020B	0.69	J	0.50	1.0	1	ug/L
Barium	04	SW6020B	83.2		1.00	5.00	1	ug/L
Cobalt	04	SW6020B	2.10		0.200	1.00	1	ug/L
Copper	04	SW6020B	1.66		0.300	1.00	1	ug/L
Nickel	04	SW6020B	3.502		1.000	1.000	1	ug/L
Zinc	04	SW6020B	3.03	J	2.50	5.00	1	ug/L

**Laboratory Sample ID: 22L0423-05**                      **Client Sample ID: MW-205B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	05	SW6020B	103		1.00	5.00	1	ug/L

**Laboratory Sample ID: 22L0423-06**                      **Client Sample ID: MW-206A**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	06	SW6020B	80.3		1.00	5.00	1	ug/L
Chromium	06	SW6020B	3.66		0.600	1.00	1	ug/L
Cobalt	06	SW6020B	0.895	J	0.200	1.00	1	ug/L
Copper	06	SW6020B	0.969	J	0.300	1.00	1	ug/L
Nickel	06	SW6020B	26.62		1.000	1.000	1	ug/L
Silver	06	SW6020B	0.394	J	0.0600	1.00	1	ug/L
Zinc	06	SW6020B	6.52		2.50	5.00	1	ug/L

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

**Laboratory Sample ID: 22L0423-07**                      **Client Sample ID: MW-206B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	07	SW6020B	0.53	J	0.50	1.0	1	ug/L
Barium	07	SW6020B	170		1.00	5.00	1	ug/L
Cobalt	07	SW6020B	1.13		0.200	1.00	1	ug/L
Copper	07	SW6020B	0.634	J	0.300	1.00	1	ug/L
Nickel	07	SW6020B	2.544		1.000	1.000	1	ug/L
Zinc	07	SW6020B	5.07		2.50	5.00	1	ug/L

**Laboratory Sample ID: 22L0423-08**                      **Client Sample ID: MW-211A**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	08	SW6020B	47.6		1.00	5.00	1	ug/L
Copper	08	SW6020B	0.390	J	0.300	1.00	1	ug/L
Silver	08	SW6020B	0.107	J	0.0600	1.00	1	ug/L

**Laboratory Sample ID: 22L0423-09**                      **Client Sample ID: MW-211B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	09	SW6020B	97.6		1.00	5.00	1	ug/L
Silver	09	SW6020B	0.0722	J	0.0600	1.00	1	ug/L
Zinc	09	SW6020B	6.51		2.50	5.00	1	ug/L

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

**Laboratory Sample ID: 22L0423-10**                      **Client Sample ID: MW-106B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	10	SW6020B	92.2		1.00	5.00	1	ug/L
Cobalt	10	SW6020B	0.264	J	0.200	1.00	1	ug/L

**Laboratory Sample ID: 22L0423-11**                      **Client Sample ID: MW-210A**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	11	SW6020B	8.2		0.50	1.0	1	ug/L
Barium	11	SW6020B	35.3		1.00	5.00	1	ug/L
Nickel	11	SW6020B	2.794		1.000	1.000	1	ug/L
Silver	11	SW6020B	0.190	J	0.0600	1.00	1	ug/L

**Laboratory Sample ID: 22L0423-12**                      **Client Sample ID: MW-210B**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Barium	12	SW6020B	70.3		1.00	5.00	1	ug/L
Chromium	12	SW6020B	0.677	J	0.600	1.00	1	ug/L
Nickel	12	SW6020B	2.629		1.000	1.000	1	ug/L

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Laboratory Sample ID: 22L0423-13      Client Sample ID: MW-108

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	13	SW6020B	12		0.50	1.0	1	ug/L
Barium	13RE1	SW6020B	743		10.0	50.0	10	ug/L
Cadmium	13	SW6020B	0.563	J	0.100	1.00	1	ug/L
Chromium	13	SW6020B	1.81		0.600	1.00	1	ug/L
Cobalt	13	SW6020B	27.8		0.200	1.00	1	ug/L
Copper	13	SW6020B	0.904	J	0.300	1.00	1	ug/L
Lead	13	SW6020B	1.5		1.0	1.0	1	ug/L
Mercury	13	SW7470A	0.00125		0.00020	0.00020	1	mg/L
Nickel	13	SW6020B	22.52		1.000	1.000	1	ug/L
Zinc	13	SW6020B	96.1		2.50	5.00	1	ug/L
1,1-Dichloroethane	13	SW8260D	5.19		0.60	1.00	1	ug/L
1,4-Dichlorobenzene	13	SW8260D	1.65		0.40	1.00	1	ug/L
Benzene	13	SW8260D	39.3		0.40	1.00	1	ug/L
Chlorobenzene	13	SW8260D	1.25		0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	13	SW8260D	44.8		0.40	1.00	1	ug/L
Vinyl chloride	13	SW8260D	11.9		0.50	0.50	1	ug/L
Methane	13	RSK175M	2280		1.5	5.0	1	ug/L
Alkalinity	13	SM22 2320B-2011	647		5.0	5.0	1	mg/L
Chloride	13	EPA300.0 R2.1	37.0		5.0	10.0	10	mg/L

### Analysis Detects Report

 Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Laboratory Sample ID: 22L0423-14      Client Sample ID: GC Outfall

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Antimony	14RE1	SW6020B	5.4		1.0	1.0	1	ug/L
Arsenic	14	SW6020B	270		5.0	10	10	ug/L
Barium	14	SW6020B	1060		10.0	50.0	10	ug/L
Chromium	14	SW6020B	111		6.00	10.0	10	ug/L
Cobalt	14	SW6020B	9.44	J	2.00	10.0	10	ug/L
Copper	14	SW6020B	69.8		3.00	10.0	10	ug/L
Nickel	14	SW6020B	23.53		10.00	10.00	10	ug/L
Tin	14RE2	SW6020B	4.02		1.00	1.00	1	ug/L
Vanadium	14	SW6020B	88.6		25.0	50.0	10	ug/L
Zinc	14	SW6020B	85.8		25.0	50.0	10	ug/L
1,2-Dichlorobenzene	14	SW8260D	1.62		0.40	1.00	1	ug/L
1,4-Dichlorobenzene	14	SW8260D	26.2		0.40	1.00	1	ug/L
2-Butanone (MEK)	14RE1	SW8260D	442		30.0	100	10	ug/L
4-Methyl-2-pentanone (MIBK)	14	SW8260D	47.3		1.50	5.00	1	ug/L
Acetone	14RE1	SW8260D	506		70.0	100	10	ug/L
Acrylonitrile	14	SW8260D	4.00	J	1.70	5.00	1	ug/L
Benzene	14RE1	SW8260D	710		4.00	10.0	10	ug/L
Chlorobenzene	14	SW8260D	5.53		0.40	1.00	1	ug/L
cis-1,2-Dichloroethylene	14	SW8260D	0.73	J	0.40	1.00	1	ug/L
Ethylbenzene	14	SW8260D	91.5		0.40	1.00	1	ug/L
m+p-Xylenes	14	SW8260D	55.4		0.60	2.00	1	ug/L
o-Xylene	14	SW8260D	35.0		0.40	1.00	1	ug/L
Toluene	14	SW8260D	44.8		0.50	1.00	1	ug/L
Xylenes, Total	14	SW8260D	90.4		1.00	3.00	1	ug/L
Phenol	14	SW8270E	143		23.4	93.5	10	ug/L
Methane	14	RSK175M	349		1.5	5.0	1	ug/L
Alkalinity	14	SM22 2320B-2011	2200		5.0	5.0	1	mg/L



**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Laboratory Sample ID: **22L0423-14**                      Client Sample ID: **GC Outfall**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Chloride	14	EPA300.0 R2.1	1740		50.0	100	100	mg/L

### Analysis Detects Report

 Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Laboratory Sample ID: 22L0423-15      Client Sample ID: GC Outfall Duplicate

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Antimony	15RE1	SW6020B	8.0		1.0	1.0	1	ug/L
Arsenic	15	SW6020B	290		5.0	10	10	ug/L
Barium	15	SW6020B	1060		10.0	50.0	10	ug/L
Chromium	15	SW6020B	111		6.00	10.0	10	ug/L
Cobalt	15	SW6020B	8.98	J	2.00	10.0	10	ug/L
Copper	15	SW6020B	76.6		3.00	10.0	10	ug/L
Nickel	15	SW6020B	21.95		10.00	10.00	10	ug/L
Tin	15RE3	SW6020B	3.72		1.00	1.00	1	ug/L
Vanadium	15	SW6020B	88.3		25.0	50.0	10	ug/L
Zinc	15RE1	SW6020B	46.2		2.50	5.00	1	ug/L
1,2-Dichlorobenzene	15	SW8260D	1.44		0.40	1.00	1	ug/L
1,4-Dichlorobenzene	15	SW8260D	23.5		0.40	1.00	1	ug/L
2-Butanone (MEK)	15	SW8260D	287		3.00	10.0	1	ug/L
4-Methyl-2-pentanone (MIBK)	15	SW8260D	35.5		1.50	5.00	1	ug/L
Acetone	15RE1	SW8260D	391		70.0	100	10	ug/L
Benzene	15RE1	SW8260D	414		4.00	10.0	10	ug/L
Chlorobenzene	15	SW8260D	5.11		0.40	1.00	1	ug/L
Chloroform	15	SW8260D	2.43		0.50	0.50	1	ug/L
cis-1,2-Dichloroethylene	15	SW8260D	0.72	J	0.40	1.00	1	ug/L
Ethylbenzene	15	SW8260D	79.3		0.40	1.00	1	ug/L
m+p-Xylenes	15	SW8260D	48.5		0.60	2.00	1	ug/L
o-Xylene	15	SW8260D	29.8		0.40	1.00	1	ug/L
Toluene	15	SW8260D	38.0		0.50	1.00	1	ug/L
Xylenes, Total	15	SW8260D	78.2		1.00	3.00	1	ug/L
Phenol	15	SW8270E	140		23.4	93.5	10	ug/L
Methane	15	RSK175M	300		1.5	5.0	1	ug/L
Alkalinity	15	SM22 2320B-2011	2060		5.0	5.0	1	mg/L

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

**Laboratory Sample ID: 22L0423-15**                      **Client Sample ID: GC Outfall Duplicate**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Chloride	15	EPA300.0 R2.1	1630		50.0	100	100	mg/L

**Laboratory Sample ID: 22L0423-16**                      **Client Sample ID: Field Blank**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Acetone	16	SW8260D	11.5		7.00	10.0	1	ug/L

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the " Certificate of Analysis".

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-104B	22L0423-01	Ground Water	12/05/2022 14:56	12/08/2022 08:00
MW-104A	22L0423-02	Ground Water	12/05/2022 12:21	12/08/2022 08:00
MW-106A	22L0423-03	Ground Water	12/06/2022 12:46	12/08/2022 08:00
MW-101	22L0423-04	Ground Water	12/06/2022 14:03	12/08/2022 08:00
MW-205B	22L0423-05	Ground Water	12/06/2022 15:00	12/08/2022 08:00
MW-206A	22L0423-06	Ground Water	12/05/2022 10:49	12/08/2022 08:00
MW-206B	22L0423-07	Ground Water	12/05/2022 11:50	12/08/2022 08:00
MW-211A	22L0423-08	Ground Water	12/06/2022 11:33	12/08/2022 08:00
MW-211B	22L0423-09	Ground Water	12/06/2022 11:49	12/08/2022 08:00
MW-106B	22L0423-10	Ground Water	12/06/2022 13:15	12/08/2022 08:00
MW-210A	22L0423-11	Ground Water	12/07/2022 09:24	12/08/2022 08:00
MW-210B	22L0423-12	Ground Water	12/07/2022 09:39	12/08/2022 08:00
MW-108	22L0423-13	Ground Water	12/05/2022 14:35	12/08/2022 08:00
GC Outfall	22L0423-14	Ground Water	12/06/2022 10:30	12/08/2022 08:00
GC Outfall Duplicate	22L0423-15	Ground Water	12/06/2022 10:45	12/08/2022 08:00
Field Blank	22L0423-16	Ground Water	12/06/2022 13:01	12/08/2022 08:00
Trip Blank	22L0423-17	Non-Potable Water	11/29/2022 11:00	12/08/2022 08:00

Samples 22L0423-14 and -15 do not meet the MCL for bis(2-ethylhexyl) phthalate due to dilutions made necessary by matrix interference.

The Certificate of Analysis is being re-issued on 12/30/22 to reflect revised Sb, Be, Cd, Tl and bis (2-ethylhexyl) phthalate data

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-104B

Laboratory Sample ID: 22L0423-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	01	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	01	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		0.50	1.0	1	ug/L	MWL
<b>Barium</b>	01	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:19	26.8		1.00	5.00	1	ug/L	MWL
Beryllium	01	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	01	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		0.100	1.00	1	ug/L	MWL
<b>Cobalt</b>	01	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:19	0.998	J	0.200	1.00	1	ug/L	MWL
Chromium	01	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		0.600	1.00	1	ug/L	MWL
Copper	01	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		0.300	1.00	1	ug/L	MWL
Mercury	01	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:14	BLOD		0.00020	0.00020	1	mg/L	ACM
<b>Nickel</b>	01	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:19	1.421		1.000	1.000	1	ug/L	MWL
Lead	01	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	01	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	01	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		0.850	1.00	1	ug/L	MWL
<b>Tin</b>	01RE1	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 14:20	1.13		1.00	1.00	1	ug/L	MWL
Thallium	01	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	01	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	01	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:19	BLOD		2.50	5.00	1	ug/L	MWL
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	01	630-20-6	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	01	71-55-6	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	01	79-34-5	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	01	79-00-5	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	01	75-34-3	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	01	75-35-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.70	1.00	1	ug/L	BMR

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-104B

Laboratory Sample ID: 22L0423-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,2,3-Trichloropropane	01	96-18-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	01	95-50-1	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	01	107-06-2	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	01	78-87-5	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	01	106-46-7	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	01	78-93-3	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	01	591-78-6	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	01	108-10-1	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	01	67-64-1	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	01	107-13-1	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	01	71-43-2	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	01	74-97-5	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	01	75-27-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	01	75-25-2	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	01	74-83-9	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	01	75-15-0	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	01	56-23-5	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	01	108-90-7	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Chloroethane	01	75-00-3	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	01	67-66-3	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	01	74-87-3	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	01	156-59-2	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	01	10061-01-5	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	01	124-48-1	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.35	0.50	1	ug/L	BMR

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Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-104B

Laboratory Sample ID: 22L0423-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Dibromomethane	01	74-95-3	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	01	100-41-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	01	74-88-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	01	179601-23-1	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	01	75-09-2	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	01	95-47-6	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	01	100-42-5	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	01	127-18-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	01	108-88-3	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	01	156-60-5	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	01	10061-02-6	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	01	110-57-6	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	01	79-01-6	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	01	75-69-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	01	108-05-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	01	75-01-4	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	01	1330-20-7	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		1.00	3.00	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	01	106 %	70-120	12/09/2022 14:45	12/09/2022 14:45							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	01	96.7 %	75-120	12/09/2022 14:45	12/09/2022 14:45							
<i>Surr: Dibromofluoromethane (Surr)</i>	01	97.3 %	70-130	12/09/2022 14:45	12/09/2022 14:45							
<i>Surr: Toluene-d8 (Surr)</i>	01	98.9 %	70-130	12/09/2022 14:45	12/09/2022 14:45							
Dichlorodifluoromethane	01	75-71-8	SW8260D	12/09/2022 14:45	12/09/2022 14:45	BLOD		0.95	1.00	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	01	106 %	70-120	12/09/2022 14:45	12/09/2022 14:45							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	01	96.7 %	75-120	12/09/2022 14:45	12/09/2022 14:45							

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### Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-104B

Laboratory Sample ID: 22L0423-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: Dibromofluoromethane (Surr)	01	97.3 %	70-130	12/09/2022 14:45	12/09/2022 14:45							
Surr: Toluene-d8 (Surr)	01	98.9 %	70-130	12/09/2022 14:45	12/09/2022 14:45							



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Laboratory Sample ID: 22L0423-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	01	117-81-7	SW8270E	12/09/2022 10:02	12/12/2022 16:11	BLOD		4.67	5.00	1	ug/L	MGG
Diethyl phthalate	01	84-66-2	SW8270E	12/09/2022 10:02	12/12/2022 16:11	BLOD		2.80	10.0	1	ug/L	MGG
Di-n-butyl phthalate	01	84-74-2	SW8270E	12/09/2022 10:02	12/12/2022 16:11	BLOD		3.74	10.0	1	ug/L	MGG
Phenol	01	108-95-2	SW8270E	12/09/2022 10:02	12/12/2022 16:11	BLOD		2.34	10.0	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>01</i>	<i>87.2 %</i>	<i>10-86</i>	<i>12/09/2022 10:02</i>	<i>12/12/2022 16:11</i>							<i>S</i>
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>01</i>	<i>179 %</i>	<i>9-87</i>	<i>12/09/2022 10:02</i>	<i>12/12/2022 16:11</i>							<i>S</i>
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>01</i>	<i>65.9 %</i>	<i>10-52</i>	<i>12/09/2022 10:02</i>	<i>12/12/2022 16:11</i>							<i>S</i>
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>01</i>	<i>144 %</i>	<i>10-98.5</i>	<i>12/09/2022 10:02</i>	<i>12/12/2022 16:11</i>							<i>S</i>
<i>Surr: Phenol-d5 (Surr)</i>	<i>01</i>	<i>52.5 %</i>	<i>5-33</i>	<i>12/09/2022 10:02</i>	<i>12/12/2022 16:11</i>							<i>S</i>
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>01</i>	<i>121 %</i>	<i>27-133</i>	<i>12/09/2022 10:02</i>	<i>12/12/2022 16:11</i>							<i>S</i>

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Client Sample ID: MW-104B

Laboratory Sample ID: 22L0423-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	01	93-72-1	SW8151A	12/12/2022 14:15	12/16/2022 15:42	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	01	94-75-7	SW8151A	12/12/2022 14:15	12/16/2022 15:42	BLOD		0.200	0.500	1	ug/L	LBH2
Surr: DCAA (Surr)	01	94.6 %	48.5-134	12/12/2022 14:15	12/16/2022 15:42							

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Client Sample ID: MW-104B

Laboratory Sample ID: 22L0423-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	01	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 20:17	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	01	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 20:17	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	01	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 20:17	BLOD		0.005	0.010	1	ug/L	LBH2

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Laboratory Sample ID: 22L0423-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	01	57-12-5	SW9012B	12/14/2022 13:42	12/14/2022 13:42	BLOD	CI	0.01	0.01	1	mg/L	MKS
Sulfide	01	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL

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Client Sample ID: MW-104A

Laboratory Sample ID: 22L0423-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	02	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	02	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:22	6.5		0.50	1.0	1	ug/L	MWL
Barium	02	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:22	67.2		1.00	5.00	1	ug/L	MWL
Beryllium	02	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	02	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	02	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:22	1.15		0.200	1.00	1	ug/L	MWL
Chromium	02	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		0.600	1.00	1	ug/L	MWL
Copper	02	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		0.300	1.00	1	ug/L	MWL
Mercury	02	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:16	BLOD		0.00020	0.00020	1	mg/L	ACM
Nickel	02	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:22	1.693		1.000	1.000	1	ug/L	MWL
Lead	02	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	02	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	02	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		0.850	1.00	1	ug/L	MWL
Tin	02RE2	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 14:23	1.16		1.00	1.00	1	ug/L	MWL
Thallium	02	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	02	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	02	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:22	BLOD		2.50	5.00	1	ug/L	MWL

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Client Sample ID: MW-104A

Laboratory Sample ID: 22L0423-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	02	630-20-6	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	02	71-55-6	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.60	1.00	1	ug/L	BMR
1,1,1,2-Tetrachloroethane	02	79-34-5	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	02	79-00-5	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	02	75-34-3	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	02	75-35-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	02	96-18-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	02	95-50-1	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	02	107-06-2	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	02	78-87-5	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	02	106-46-7	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	02	78-93-3	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	02	591-78-6	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	02	108-10-1	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	02	67-64-1	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	02	107-13-1	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	02	71-43-2	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	02	74-97-5	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	02	75-27-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	02	75-25-2	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	02	74-83-9	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	02	75-15-0	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	02	56-23-5	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	02	108-90-7	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR

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 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-104A

Laboratory Sample ID: 22L0423-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	02	75-00-3	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	02	67-66-3	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	02	74-87-3	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	02	156-59-2	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	02	10061-01-5	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	02	124-48-1	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	02	74-95-3	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	02	100-41-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	02	74-88-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	02	179601-23-1	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	02	75-09-2	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	02	95-47-6	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	02	100-42-5	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	02	127-18-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	02	108-88-3	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	02	156-60-5	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	02	10061-02-6	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	02	110-57-6	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	02	79-01-6	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	02	75-69-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	02	108-05-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	02	75-01-4	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	02	1330-20-7	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		1.00	3.00	1	ug/L	BMR

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Laboratory Sample ID: 22L0423-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	02	104 %	70-120	12/09/2022 15:10	12/09/2022 15:10							
Surr: 4-Bromofluorobenzene (Surr)	02	95.5 %	75-120	12/09/2022 15:10	12/09/2022 15:10							
Surr: Dibromofluoromethane (Surr)	02	96.7 %	70-130	12/09/2022 15:10	12/09/2022 15:10							
Surr: Toluene-d8 (Surr)	02	98.9 %	70-130	12/09/2022 15:10	12/09/2022 15:10							
Dichlorodifluoromethane	02	75-71-8	SW8260D	12/09/2022 15:10	12/09/2022 15:10	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	02	104 %	70-120	12/09/2022 15:10	12/09/2022 15:10							
Surr: 4-Bromofluorobenzene (Surr)	02	95.5 %	75-120	12/09/2022 15:10	12/09/2022 15:10							
Surr: Dibromofluoromethane (Surr)	02	96.7 %	70-130	12/09/2022 15:10	12/09/2022 15:10							
Surr: Toluene-d8 (Surr)	02	98.9 %	70-130	12/09/2022 15:10	12/09/2022 15:10							



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<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	02	117-81-7	SW8270E	12/09/2022 10:02	12/12/2022 16:46	BLOD		4.67	5.00	1	ug/L	MGG
Diethyl phthalate	02	84-66-2	SW8270E	12/09/2022 10:02	12/12/2022 16:46	BLOD		2.80	10.0	1	ug/L	MGG
Di-n-butyl phthalate	02	84-74-2	SW8270E	12/09/2022 10:02	12/12/2022 16:46	BLOD		3.74	10.0	1	ug/L	MGG
Phenol	02	108-95-2	SW8270E	12/09/2022 10:02	12/12/2022 16:46	BLOD		2.34	10.0	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	02	99.8 %	10-86	12/09/2022 10:02	12/12/2022 16:46							S
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	02	111 %	9-87	12/09/2022 10:02	12/12/2022 16:46							S
<i>Surr: 2-Fluorophenol (Surr)</i>	02	46.4 %	10-52	12/09/2022 10:02	12/12/2022 16:46							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	02	105 %	10-98.5	12/09/2022 10:02	12/12/2022 16:46							S
<i>Surr: Phenol-d5 (Surr)</i>	02	34.5 %	5-33	12/09/2022 10:02	12/12/2022 16:46							S
<i>Surr: p-Terphenyl-d14 (Surr)</i>	02	85.3 %	27-133	12/09/2022 10:02	12/12/2022 16:46							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	02	93-72-1	SW8151A	12/12/2022 14:15	12/16/2022 16:07	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	02	94-75-7	SW8151A	12/12/2022 14:15	12/16/2022 16:07	BLOD		0.200	0.500	1	ug/L	LBH2
Surr: DCAA (Surr)	02	87.2 %	48.5-134	12/12/2022 14:15	12/16/2022 16:07							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	02	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 20:39	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	02	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 20:39	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	02	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 20:39	BLOD		0.005	0.010	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	02	57-12-5	SW9012B	12/14/2022 13:42	12/14/2022 13:42	BLOD	CI	0.01	0.01	1	mg/L	MKS
Sulfide	02	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL

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Client Sample ID: MW-106A

Laboratory Sample ID: 22L0423-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	03	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	03	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:25	3.4		0.50	1.0	1	ug/L	MWL
Barium	03RE1	7440-39-3	SW6020B	12/12/2022 12:30	12/19/2022 12:39	274		10.0	50.0	10	ug/L	MWL
Beryllium	03	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	03	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	03	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:25	5.44		0.200	1.00	1	ug/L	MWL
Chromium	03	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		0.600	1.00	1	ug/L	MWL
Copper	03	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		0.300	1.00	1	ug/L	MWL
Mercury	03	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:19	BLOD		0.00020	0.00020	1	mg/L	ACM
Nickel	03	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:25	7.568		1.000	1.000	1	ug/L	MWL
Lead	03	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	03	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	03	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		0.850	1.00	1	ug/L	MWL
Tin	03RE2	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 14:26	1.50		1.00	1.00	1	ug/L	MWL
Thallium	03	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	03	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	03	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:25	BLOD		2.50	5.00	1	ug/L	MWL

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Laboratory Sample ID: 22L0423-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	03	630-20-6	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	03	71-55-6	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	03	79-34-5	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	03	79-00-5	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.50	1.00	1	ug/L	BMR
<b>1,1-Dichloroethane</b>	03	75-34-3	SW8260D	12/09/2022 15:36	12/09/2022 15:36	1.02		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	03	75-35-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	03	96-18-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	03	95-50-1	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	03	107-06-2	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	03	78-87-5	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	03	106-46-7	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	03	78-93-3	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	03	591-78-6	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	03	108-10-1	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	03	67-64-1	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	03	107-13-1	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	03	71-43-2	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	03	74-97-5	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	03	75-27-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	03	75-25-2	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	03	74-83-9	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	03	75-15-0	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	03	56-23-5	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	03	108-90-7	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-106A

Laboratory Sample ID: 22L0423-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	03	75-00-3	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	03	67-66-3	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	03	74-87-3	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.95	1.00	1	ug/L	BMR
<b>cis-1,2-Dichloroethylene</b>	03	156-59-2	SW8260D	12/09/2022 15:36	12/09/2022 15:36	0.67	J	0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	03	10061-01-5	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	03	124-48-1	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	03	74-95-3	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	03	100-41-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	03	74-88-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	03	179601-23-1	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	03	75-09-2	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	03	95-47-6	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	03	100-42-5	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	03	127-18-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	03	108-88-3	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	03	156-60-5	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	03	10061-02-6	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	03	110-57-6	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	03	79-01-6	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	03	75-69-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	03	108-05-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	03	75-01-4	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	03	1330-20-7	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		1.00	3.00	1	ug/L	BMR

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Client Sample ID: MW-106A

Laboratory Sample ID: 22L0423-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	03	105 %	70-120	12/09/2022 15:36	12/09/2022 15:36							
Surr: 4-Bromofluorobenzene (Surr)	03	95.2 %	75-120	12/09/2022 15:36	12/09/2022 15:36							
Surr: Dibromofluoromethane (Surr)	03	96.7 %	70-130	12/09/2022 15:36	12/09/2022 15:36							
Surr: Toluene-d8 (Surr)	03	100 %	70-130	12/09/2022 15:36	12/09/2022 15:36							
Dichlorodifluoromethane	03	75-71-8	SW8260D	12/09/2022 15:36	12/09/2022 15:36	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	03	105 %	70-120	12/09/2022 15:36	12/09/2022 15:36							
Surr: 4-Bromofluorobenzene (Surr)	03	95.2 %	75-120	12/09/2022 15:36	12/09/2022 15:36							
Surr: Dibromofluoromethane (Surr)	03	96.7 %	70-130	12/09/2022 15:36	12/09/2022 15:36							
Surr: Toluene-d8 (Surr)	03	100 %	70-130	12/09/2022 15:36	12/09/2022 15:36							



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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	03	117-81-7	SW8270E	12/09/2022 10:02	12/12/2022 17:20	BLOD		4.67	5.00	1	ug/L	MGG
Diethyl phthalate	03	84-66-2	SW8270E	12/09/2022 10:02	12/12/2022 17:20	BLOD		2.80	10.0	1	ug/L	MGG
Di-n-butyl phthalate	03	84-74-2	SW8270E	12/09/2022 10:02	12/12/2022 17:20	BLOD		3.74	10.0	1	ug/L	MGG
Phenol	03	108-95-2	SW8270E	12/09/2022 10:02	12/12/2022 17:20	BLOD		2.34	10.0	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	03	104 %	10-86	12/09/2022 10:02	12/12/2022 17:20							S
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	03	99.4 %	9-87	12/09/2022 10:02	12/12/2022 17:20							S
<i>Surr: 2-Fluorophenol (Surr)</i>	03	42.5 %	10-52	12/09/2022 10:02	12/12/2022 17:20							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	03	93.0 %	10-98.5	12/09/2022 10:02	12/12/2022 17:20							
<i>Surr: Phenol-d5 (Surr)</i>	03	30.4 %	5-33	12/09/2022 10:02	12/12/2022 17:20							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	03	99.6 %	27-133	12/09/2022 10:02	12/12/2022 17:20							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	03	93-72-1	SW8151A	12/13/2022 14:00	12/16/2022 17:51	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	03	94-75-7	SW8151A	12/13/2022 14:00	12/16/2022 17:51	BLOD		0.200	0.500	1	ug/L	LBH2
Surr: DCAA (Surr)	03	90.7 %	48.5-134	12/13/2022 14:00	12/16/2022 17:51							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	03	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 21:01	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	03	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 21:01	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	03	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 21:01	BLOD		0.005	0.010	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	03	57-12-5	SW9012B	12/14/2022 13:42	12/14/2022 13:42	BLOD	CI	0.01	0.01	1	mg/L	MKS
Sulfide	03	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL

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Client Sample ID: MW-101

Laboratory Sample ID: 22L0423-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	04	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	04	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:28	0.69	J	0.50	1.0	1	ug/L	MWL
Barium	04	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:28	83.2		1.00	5.00	1	ug/L	MWL
Beryllium	04	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	04	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	04	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:28	2.10		0.200	1.00	1	ug/L	MWL
Chromium	04	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		0.600	1.00	1	ug/L	MWL
Copper	04	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:28	1.66		0.300	1.00	1	ug/L	MWL
Mercury	04	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:31	BLOD		0.00020	0.00020	1	mg/L	ACM
Nickel	04	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:28	3.502		1.000	1.000	1	ug/L	MWL
Lead	04	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	04	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	04	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		0.850	1.00	1	ug/L	MWL
Tin	04RE1	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 14:41	BLOD		1.00	1.00	1	ug/L	MWL
Thallium	04	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	04	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:28	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	04	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:28	3.03	J	2.50	5.00	1	ug/L	MWL

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Laboratory Sample ID: 22L0423-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	04	630-20-6	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	04	71-55-6	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.60	1.00	1	ug/L	BMR
1,1,1,2-Tetrachloroethane	04	79-34-5	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	04	79-00-5	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	04	75-34-3	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	04	75-35-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	04	96-18-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	04	95-50-1	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	04	107-06-2	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	04	78-87-5	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	04	106-46-7	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	04	78-93-3	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	04	591-78-6	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	04	108-10-1	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	04	67-64-1	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	04	107-13-1	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	04	71-43-2	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	04	74-97-5	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	04	75-27-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	04	75-25-2	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	04	74-83-9	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	04	75-15-0	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	04	56-23-5	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	04	108-90-7	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR

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<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	04	75-00-3	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	04	67-66-3	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	04	74-87-3	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	04	156-59-2	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	04	10061-01-5	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	04	124-48-1	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	04	74-95-3	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	04	100-41-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	04	74-88-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	04	179601-23-1	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	04	75-09-2	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	04	95-47-6	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	04	100-42-5	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	04	127-18-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	04	108-88-3	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	04	156-60-5	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	04	10061-02-6	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	04	110-57-6	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	04	79-01-6	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	04	75-69-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	04	108-05-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	04	75-01-4	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	04	1330-20-7	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-101

Laboratory Sample ID: 22L0423-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	04	101 %	70-120	12/09/2022 16:01	12/09/2022 16:01							
Surr: 4-Bromofluorobenzene (Surr)	04	98.7 %	75-120	12/09/2022 16:01	12/09/2022 16:01							
Surr: Dibromofluoromethane (Surr)	04	96.6 %	70-130	12/09/2022 16:01	12/09/2022 16:01							
Surr: Toluene-d8 (Surr)	04	99.0 %	70-130	12/09/2022 16:01	12/09/2022 16:01							
Dichlorodifluoromethane	04	75-71-8	SW8260D	12/09/2022 16:01	12/09/2022 16:01	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	04	101 %	70-120	12/09/2022 16:01	12/09/2022 16:01							
Surr: 4-Bromofluorobenzene (Surr)	04	98.7 %	75-120	12/09/2022 16:01	12/09/2022 16:01							
Surr: Dibromofluoromethane (Surr)	04	96.6 %	70-130	12/09/2022 16:01	12/09/2022 16:01							
Surr: Toluene-d8 (Surr)	04	99.0 %	70-130	12/09/2022 16:01	12/09/2022 16:01							



## Certificate of Analysis

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Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-101

Laboratory Sample ID: 22L0423-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	04	117-81-7	SW8270E	12/09/2022 10:02	12/12/2022 17:55	BLOD		4.67	5.00	1	ug/L	MGG
Diethyl phthalate	04	84-66-2	SW8270E	12/09/2022 10:02	12/12/2022 17:55	BLOD		2.80	10.0	1	ug/L	MGG
Di-n-butyl phthalate	04	84-74-2	SW8270E	12/09/2022 10:02	12/12/2022 17:55	BLOD		3.74	10.0	1	ug/L	MGG
Phenol	04	108-95-2	SW8270E	12/09/2022 10:02	12/12/2022 17:55	BLOD		2.34	10.0	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	04	75.4 %	10-86	12/09/2022 10:02	12/12/2022 17:55							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	04	68.2 %	9-87	12/09/2022 10:02	12/12/2022 17:55							
<i>Surr: 2-Fluorophenol (Surr)</i>	04	33.9 %	10-52	12/09/2022 10:02	12/12/2022 17:55							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	04	73.3 %	10-98.5	12/09/2022 10:02	12/12/2022 17:55							
<i>Surr: Phenol-d5 (Surr)</i>	04	23.5 %	5-33	12/09/2022 10:02	12/12/2022 17:55							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	04	76.2 %	27-133	12/09/2022 10:02	12/12/2022 17:55							

## Certificate of Analysis

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Client Site I.D.: City of Bristol 2nd Semi-Annual

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Client Sample ID: MW-101

Laboratory Sample ID: 22L0423-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	04	93-72-1	SW8151A	12/13/2022 14:00	12/16/2022 18:17	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	04	94-75-7	SW8151A	12/13/2022 14:00	12/16/2022 18:17	BLOD		0.200	0.500	1	ug/L	LBH2
Surr: DCAA (Surr)	04	131 %	48.5-134	12/13/2022 14:00	12/16/2022 18:17							

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Client Sample ID: MW-101

Laboratory Sample ID: 22L0423-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	04	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 21:22	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	04	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 21:22	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	04	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 21:22	BLOD		0.005	0.010	1	ug/L	LBH2

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### Certificate of Analysis

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Client Sample ID: MW-101

Laboratory Sample ID: 22L0423-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	04	57-12-5	SW9012B	12/15/2022 12:39	12/15/2022 12:39	BLOD	CI	0.01	0.01	1	mg/L	MKS
Sulfide	04	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL

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Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-205B

Laboratory Sample ID: 22L0423-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	05	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	05	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		0.50	1.0	1	ug/L	MWL
<b>Barium</b>	05	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:31	103		1.00	5.00	1	ug/L	MWL
Beryllium	05	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	05	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	05	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		0.200	1.00	1	ug/L	MWL
Chromium	05	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		0.600	1.00	1	ug/L	MWL
Copper	05	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		0.300	1.00	1	ug/L	MWL
Mercury	05	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:33	BLOD		0.00020	0.00020	1	mg/L	ACM
Nickel	05	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		1.000	1.000	1	ug/L	MWL
Lead	05	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	05	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	05	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		0.850	1.00	1	ug/L	MWL
Tin	05RE1	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 14:44	BLOD		1.00	1.00	1	ug/L	MWL
Thallium	05	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	05	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	05	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:31	BLOD		2.50	5.00	1	ug/L	MWL

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Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-205B

Laboratory Sample ID: 22L0423-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	05	630-20-6	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	05	71-55-6	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.60	1.00	1	ug/L	BMR
1,1,1,2-Tetrachloroethane	05	79-34-5	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	05	79-00-5	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	05	75-34-3	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	05	75-35-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	05	96-18-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	05	95-50-1	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	05	107-06-2	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	05	78-87-5	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	05	106-46-7	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	05	78-93-3	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	05	591-78-6	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	05	108-10-1	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	05	67-64-1	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	05	107-13-1	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	05	71-43-2	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	05	74-97-5	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	05	75-27-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	05	75-25-2	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	05	74-83-9	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	05	75-15-0	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	05	56-23-5	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	05	108-90-7	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-205B

Laboratory Sample ID: 22L0423-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	05	75-00-3	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	05	67-66-3	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	05	74-87-3	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	05	156-59-2	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	05	10061-01-5	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	05	124-48-1	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	05	74-95-3	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	05	100-41-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	05	74-88-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	05	179601-23-1	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	05	75-09-2	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	05	95-47-6	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	05	100-42-5	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	05	127-18-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	05	108-88-3	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	05	156-60-5	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	05	10061-02-6	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	05	110-57-6	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	05	79-01-6	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	05	75-69-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	05	108-05-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	05	75-01-4	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	05	1330-20-7	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-205B

Laboratory Sample ID: 22L0423-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	05	106 %	70-120	12/09/2022 16:27	12/09/2022 16:27							
Surr: 4-Bromofluorobenzene (Surr)	05	93.6 %	75-120	12/09/2022 16:27	12/09/2022 16:27							
Surr: Dibromofluoromethane (Surr)	05	99.4 %	70-130	12/09/2022 16:27	12/09/2022 16:27							
Surr: Toluene-d8 (Surr)	05	99.0 %	70-130	12/09/2022 16:27	12/09/2022 16:27							
Dichlorodifluoromethane	05	75-71-8	SW8260D	12/09/2022 16:27	12/09/2022 16:27	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	05	106 %	70-120	12/09/2022 16:27	12/09/2022 16:27							
Surr: 4-Bromofluorobenzene (Surr)	05	93.6 %	75-120	12/09/2022 16:27	12/09/2022 16:27							
Surr: Dibromofluoromethane (Surr)	05	99.4 %	70-130	12/09/2022 16:27	12/09/2022 16:27							
Surr: Toluene-d8 (Surr)	05	99.0 %	70-130	12/09/2022 16:27	12/09/2022 16:27							



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Client Sample ID: MW-205B

Laboratory Sample ID: 22L0423-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	05	117-81-7	SW8270E	12/12/2022 08:50	12/12/2022 20:53	BLOD		4.67	5.00	1	ug/L	MGG
Diethyl phthalate	05	84-66-2	SW8270E	12/12/2022 08:50	12/12/2022 20:53	BLOD		2.80	10.0	1	ug/L	MGG
Di-n-butyl phthalate	05	84-74-2	SW8270E	12/12/2022 08:50	12/12/2022 20:53	BLOD		3.74	10.0	1	ug/L	MGG
Phenol	05	108-95-2	SW8270E	12/12/2022 08:50	12/12/2022 20:53	BLOD		2.34	10.0	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>05</i>	<i>55.4 %</i>	<i>10-86</i>	<i>12/12/2022 08:50</i>	<i>12/12/2022 20:53</i>							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>05</i>	<i>59.0 %</i>	<i>9-87</i>	<i>12/12/2022 08:50</i>	<i>12/12/2022 20:53</i>							
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>05</i>	<i>35.2 %</i>	<i>10-52</i>	<i>12/12/2022 08:50</i>	<i>12/12/2022 20:53</i>							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>05</i>	<i>65.7 %</i>	<i>10-98.5</i>	<i>12/12/2022 08:50</i>	<i>12/12/2022 20:53</i>							
<i>Surr: Phenol-d5 (Surr)</i>	<i>05</i>	<i>23.0 %</i>	<i>5-33</i>	<i>12/12/2022 08:50</i>	<i>12/12/2022 20:53</i>							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>05</i>	<i>74.1 %</i>	<i>27-133</i>	<i>12/12/2022 08:50</i>	<i>12/12/2022 20:53</i>							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: **MW-205B**

Laboratory Sample ID: **22L0423-05**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	05	93-72-1	SW8151A	12/13/2022 14:00	12/16/2022 18:42	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	05	94-75-7	SW8151A	12/13/2022 14:00	12/16/2022 18:42	BLOD		0.200	0.500	1	ug/L	LBH2
Surr: DCAA (Surr)	05	96.7 %	48.5-134	12/13/2022 14:00	12/16/2022 18:42							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-205B

Laboratory Sample ID: 22L0423-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	05	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 21:44	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	05	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 21:44	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	05	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 21:44	BLOD		0.005	0.010	1	ug/L	LBH2

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### Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-205B

Laboratory Sample ID: 22L0423-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Cyanide	05	57-12-5	SW9012B	12/15/2022 12:39	12/15/2022 12:39	BLOD		0.01	0.01	1	mg/L	MKS
Sulfide	05	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-206A

Laboratory Sample ID: 22L0423-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	06	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:34	0.394	J	0.0600	1.00	1	ug/L	MWL
Arsenic	06	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:34	BLOD		0.50	1.0	1	ug/L	MWL
Barium	06	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:34	80.3		1.00	5.00	1	ug/L	MWL
Beryllium	06	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:34	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	06	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:34	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	06	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:34	0.895	J	0.200	1.00	1	ug/L	MWL
Chromium	06	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:34	3.66		0.600	1.00	1	ug/L	MWL
Copper	06	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:34	0.969	J	0.300	1.00	1	ug/L	MWL
Nickel	06	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:34	26.62		1.000	1.000	1	ug/L	MWL
Lead	06	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:34	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	06	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:34	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	06	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:34	BLOD		0.850	1.00	1	ug/L	MWL
Thallium	06	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:34	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	06	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:34	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	06	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:34	6.52		2.50	5.00	1	ug/L	MWL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-206A

Laboratory Sample ID: 22L0423-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	06	630-20-6	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	06	71-55-6	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	06	79-34-5	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	06	79-00-5	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	06	75-34-3	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	06	75-35-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	06	96-18-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	06	95-50-1	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	06	107-06-2	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	06	78-87-5	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	06	106-46-7	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	06	78-93-3	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	06	591-78-6	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	06	108-10-1	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	06	67-64-1	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	06	107-13-1	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	06	71-43-2	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	06	74-97-5	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	06	75-27-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	06	75-25-2	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	06	74-83-9	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	06	75-15-0	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	06	56-23-5	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	06	108-90-7	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-206A

Laboratory Sample ID: 22L0423-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	06	75-00-3	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	06	67-66-3	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	06	74-87-3	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	06	156-59-2	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	06	10061-01-5	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	06	124-48-1	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	06	74-95-3	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	06	100-41-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	06	74-88-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	06	179601-23-1	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	06	75-09-2	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	06	95-47-6	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	06	100-42-5	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	06	127-18-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	06	108-88-3	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	06	156-60-5	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	06	10061-02-6	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	06	110-57-6	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	06	79-01-6	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	06	75-69-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	06	108-05-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	06	75-01-4	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	06	1330-20-7	SW8260D	12/09/2022 16:52	12/09/2022 16:52	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-206A

Laboratory Sample ID: 22L0423-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	06	105 %	70-120	12/09/2022 16:52	12/09/2022 16:52							
Surr: 4-Bromofluorobenzene (Surr)	06	96.6 %	75-120	12/09/2022 16:52	12/09/2022 16:52							
Surr: Dibromofluoromethane (Surr)	06	96.7 %	70-130	12/09/2022 16:52	12/09/2022 16:52							
Surr: Toluene-d8 (Surr)	06	99.8 %	70-130	12/09/2022 16:52	12/09/2022 16:52							



## Certificate of Analysis

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Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-206A

Laboratory Sample ID: 22L0423-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	06	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 22:06	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	06	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 22:06	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	06	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 22:06	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-206B

Laboratory Sample ID: 22L0423-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	07	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	07	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:37	0.53	J	0.50	1.0	1	ug/L	MWL
Barium	07	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:37	170		1.00	5.00	1	ug/L	MWL
Beryllium	07	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	07	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	07	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:37	1.13		0.200	1.00	1	ug/L	MWL
Chromium	07	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		0.600	1.00	1	ug/L	MWL
Copper	07	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:37	0.634	J	0.300	1.00	1	ug/L	MWL
Nickel	07	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:37	2.544		1.000	1.000	1	ug/L	MWL
Lead	07	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	07	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	07	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		0.850	1.00	1	ug/L	MWL
Thallium	07	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	07	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:37	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	07	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:37	5.07		2.50	5.00	1	ug/L	MWL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-206B

Laboratory Sample ID: 22L0423-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	07	630-20-6	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	07	71-55-6	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	07	79-34-5	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	07	79-00-5	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	07	75-34-3	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	07	75-35-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	07	96-18-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	07	95-50-1	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	07	107-06-2	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	07	78-87-5	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	07	106-46-7	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	07	78-93-3	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	07	591-78-6	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	07	108-10-1	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	07	67-64-1	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	07	107-13-1	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	07	71-43-2	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	07	74-97-5	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	07	75-27-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	07	75-25-2	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	07	74-83-9	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	07	75-15-0	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	07	56-23-5	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	07	108-90-7	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-206B

Laboratory Sample ID: 22L0423-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	07	75-00-3	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	07	67-66-3	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	07	74-87-3	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	07	156-59-2	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	07	10061-01-5	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	07	124-48-1	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	07	74-95-3	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	07	100-41-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	07	74-88-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	07	179601-23-1	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	07	75-09-2	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	07	95-47-6	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	07	100-42-5	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	07	127-18-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	07	108-88-3	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	07	156-60-5	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	07	10061-02-6	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	07	110-57-6	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	07	79-01-6	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	07	75-69-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	07	108-05-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	07	75-01-4	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	07	1330-20-7	SW8260D	12/09/2022 17:18	12/09/2022 17:18	BLOD		1.00	3.00	1	ug/L	BMR

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### Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-206B

Laboratory Sample ID: 22L0423-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	07	103 %	70-120	12/09/2022 17:18	12/09/2022 17:18							
Surr: 4-Bromofluorobenzene (Surr)	07	97.2 %	75-120	12/09/2022 17:18	12/09/2022 17:18							
Surr: Dibromofluoromethane (Surr)	07	97.5 %	70-130	12/09/2022 17:18	12/09/2022 17:18							
Surr: Toluene-d8 (Surr)	07	100 %	70-130	12/09/2022 17:18	12/09/2022 17:18							

## Certificate of Analysis

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Laboratory Sample ID: 22L0423-07

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	07	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 22:28	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	07	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 22:28	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	07	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 22:28	BLOD		0.005	0.010	1	ug/L	LBH2

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 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-211A

Laboratory Sample ID: 22L0423-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	08	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:40	0.107	J	0.0600	1.00	1	ug/L	MWL
Arsenic	08	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		0.50	1.0	1	ug/L	MWL
Barium	08	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:40	47.6		1.00	5.00	1	ug/L	MWL
Beryllium	08	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	08	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	08	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		0.200	1.00	1	ug/L	MWL
Chromium	08	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		0.600	1.00	1	ug/L	MWL
Copper	08	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:40	0.390	J	0.300	1.00	1	ug/L	MWL
Nickel	08	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		1.000	1.000	1	ug/L	MWL
Lead	08	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	08	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	08	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		0.850	1.00	1	ug/L	MWL
Thallium	08	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	08	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	08	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:40	BLOD		2.50	5.00	1	ug/L	MWL

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 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-211A

Laboratory Sample ID: 22L0423-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	08	630-20-6	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	08	71-55-6	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.60	1.00	1	ug/L	BMR
1,1,1,2-Tetrachloroethane	08	79-34-5	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	08	79-00-5	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	08	75-34-3	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	08	75-35-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	08	96-18-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	08	95-50-1	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	08	107-06-2	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	08	78-87-5	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	08	106-46-7	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	08	78-93-3	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	08	591-78-6	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	08	108-10-1	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	08	67-64-1	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	08	107-13-1	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	08	71-43-2	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	08	74-97-5	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	08	75-27-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	08	75-25-2	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	08	74-83-9	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	08	75-15-0	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	08	56-23-5	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	08	108-90-7	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-211A

Laboratory Sample ID: 22L0423-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	08	75-00-3	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	08	67-66-3	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	08	74-87-3	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	08	156-59-2	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	08	10061-01-5	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	08	124-48-1	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	08	74-95-3	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	08	100-41-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	08	74-88-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	08	179601-23-1	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	08	75-09-2	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	08	95-47-6	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	08	100-42-5	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	08	127-18-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	08	108-88-3	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	08	156-60-5	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	08	10061-02-6	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	08	110-57-6	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	08	79-01-6	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	08	75-69-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	08	108-05-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	08	75-01-4	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	08	1330-20-7	SW8260D	12/09/2022 17:44	12/09/2022 17:44	BLOD		1.00	3.00	1	ug/L	BMR

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-211A

Laboratory Sample ID: 22L0423-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	08	105 %	70-120	12/09/2022 17:44	12/09/2022 17:44							
Surr: 4-Bromofluorobenzene (Surr)	08	93.0 %	75-120	12/09/2022 17:44	12/09/2022 17:44							
Surr: Dibromofluoromethane (Surr)	08	108 %	70-130	12/09/2022 17:44	12/09/2022 17:44							
Surr: Toluene-d8 (Surr)	08	98.2 %	70-130	12/09/2022 17:44	12/09/2022 17:44							

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Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-211A

Laboratory Sample ID: 22L0423-08

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	08	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 22:50	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	08	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 22:50	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	08	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 22:50	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-211B

Laboratory Sample ID: 22L0423-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	09	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:43	0.0722	J	0.0600	1.00	1	ug/L	MWL
Arsenic	09	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		0.50	1.0	1	ug/L	MWL
Barium	09	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:43	97.6		1.00	5.00	1	ug/L	MWL
Beryllium	09	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	09	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	09	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		0.200	1.00	1	ug/L	MWL
Chromium	09	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		0.600	1.00	1	ug/L	MWL
Copper	09	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		0.300	1.00	1	ug/L	MWL
Nickel	09	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		1.000	1.000	1	ug/L	MWL
Lead	09	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	09	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	09	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		0.850	1.00	1	ug/L	MWL
Thallium	09	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	09	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:43	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	09	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:43	6.51		2.50	5.00	1	ug/L	MWL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-211B

Laboratory Sample ID: 22L0423-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	09	630-20-6	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	09	71-55-6	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.60	1.00	1	ug/L	BMR
1,1,1,2-Tetrachloroethane	09	79-34-5	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	09	79-00-5	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	09	75-34-3	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	09	75-35-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	09	96-18-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	09	95-50-1	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	09	107-06-2	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	09	78-87-5	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	09	106-46-7	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	09	78-93-3	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	09	591-78-6	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	09	108-10-1	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	09	67-64-1	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	09	107-13-1	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	09	71-43-2	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	09	74-97-5	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	09	75-27-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	09	75-25-2	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	09	74-83-9	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	09	75-15-0	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	09	56-23-5	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	09	108-90-7	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-211B

Laboratory Sample ID: 22L0423-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	09	75-00-3	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	09	67-66-3	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	09	74-87-3	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	09	156-59-2	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	09	10061-01-5	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	09	124-48-1	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	09	74-95-3	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	09	100-41-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	09	74-88-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	09	179601-23-1	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	09	75-09-2	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	09	95-47-6	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	09	100-42-5	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	09	127-18-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	09	108-88-3	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	09	156-60-5	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	09	10061-02-6	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	09	110-57-6	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	09	79-01-6	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	09	75-69-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	09	108-05-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	09	75-01-4	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	09	1330-20-7	SW8260D	12/09/2022 18:09	12/09/2022 18:09	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-211B

Laboratory Sample ID: 22L0423-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	09	104 %	70-120	12/09/2022 18:09	12/09/2022 18:09							
Surr: 4-Bromofluorobenzene (Surr)	09	96.4 %	75-120	12/09/2022 18:09	12/09/2022 18:09							
Surr: Dibromofluoromethane (Surr)	09	98.0 %	70-130	12/09/2022 18:09	12/09/2022 18:09							
Surr: Toluene-d8 (Surr)	09	98.3 %	70-130	12/09/2022 18:09	12/09/2022 18:09							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-211B

Laboratory Sample ID: 22L0423-09

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	09	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 23:12	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	09	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 23:12	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	09	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 23:12	BLOD		0.005	0.010	1	ug/L	LBH2



## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-106B

Laboratory Sample ID: 22L0423-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	10	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	10	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		0.50	1.0	1	ug/L	MWL
<b>Barium</b>	10	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 20:58	92.2		1.00	5.00	1	ug/L	MWL
Beryllium	10	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	10	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		0.100	1.00	1	ug/L	MWL
<b>Cobalt</b>	10	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 20:58	0.264	J	0.200	1.00	1	ug/L	MWL
Chromium	10	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		0.600	1.00	1	ug/L	MWL
Copper	10	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		0.300	1.00	1	ug/L	MWL
Nickel	10	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		1.000	1.000	1	ug/L	MWL
Lead	10	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	10	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	10	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		0.850	1.00	1	ug/L	MWL
Thallium	10	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	10	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	10	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 20:58	BLOD		2.50	5.00	1	ug/L	MWL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-106B

Laboratory Sample ID: 22L0423-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	10	630-20-6	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	10	71-55-6	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	10	79-34-5	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	10	79-00-5	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	10	75-34-3	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	10	75-35-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	10	96-18-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	10	95-50-1	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	10	107-06-2	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	10	78-87-5	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	10	106-46-7	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	10	78-93-3	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	10	591-78-6	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	10	108-10-1	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	10	67-64-1	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	10	107-13-1	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	10	71-43-2	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	10	74-97-5	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	10	75-27-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	10	75-25-2	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	10	74-83-9	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	10	75-15-0	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	10	56-23-5	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	10	108-90-7	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-106B

Laboratory Sample ID: 22L0423-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	10	75-00-3	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	10	67-66-3	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	10	74-87-3	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	10	156-59-2	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	10	10061-01-5	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	10	124-48-1	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	10	74-95-3	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	10	100-41-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	10	74-88-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	10	179601-23-1	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	10	75-09-2	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	10	95-47-6	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	10	100-42-5	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	10	127-18-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	10	108-88-3	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	10	156-60-5	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	10	10061-02-6	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	10	110-57-6	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	10	79-01-6	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	10	75-69-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	10	108-05-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	10	75-01-4	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	10	1330-20-7	SW8260D	12/09/2022 18:35	12/09/2022 18:35	BLOD		1.00	3.00	1	ug/L	BMR

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-106B

Laboratory Sample ID: 22L0423-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	10	107 %	70-120	12/09/2022 18:35	12/09/2022 18:35							
Surr: 4-Bromofluorobenzene (Surr)	10	95.6 %	75-120	12/09/2022 18:35	12/09/2022 18:35							
Surr: Dibromofluoromethane (Surr)	10	108 %	70-130	12/09/2022 18:35	12/09/2022 18:35							
Surr: Toluene-d8 (Surr)	10	101 %	70-130	12/09/2022 18:35	12/09/2022 18:35							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-106B

Laboratory Sample ID: 22L0423-10

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	10	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 23:33	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	10	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 23:33	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	10	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 23:33	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-210A

Laboratory Sample ID: 22L0423-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	11	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 21:01	0.190	J	0.0600	1.00	1	ug/L	MWL
Arsenic	11	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 21:01	8.2		0.50	1.0	1	ug/L	MWL
Barium	11	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 21:01	35.3		1.00	5.00	1	ug/L	MWL
Beryllium	11	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	11	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	11	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		0.200	1.00	1	ug/L	MWL
Chromium	11	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		0.600	1.00	1	ug/L	MWL
Copper	11	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		0.300	1.00	1	ug/L	MWL
Nickel	11	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 21:01	2.794		1.000	1.000	1	ug/L	MWL
Lead	11	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	11	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	11	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		0.850	1.00	1	ug/L	MWL
Thallium	11	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	11	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	11	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 21:01	BLOD		2.50	5.00	1	ug/L	MWL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-210A

Laboratory Sample ID: 22L0423-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	11	630-20-6	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	11	71-55-6	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	11	79-34-5	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	11	79-00-5	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	11	75-34-3	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	11	75-35-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	11	96-18-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	11	95-50-1	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	11	107-06-2	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	11	78-87-5	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	11	106-46-7	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	11	78-93-3	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	11	591-78-6	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	11	108-10-1	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	11	67-64-1	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	11	107-13-1	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	11	71-43-2	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	11	74-97-5	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	11	75-27-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	11	75-25-2	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	11	74-83-9	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	11	75-15-0	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	11	56-23-5	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	11	108-90-7	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-210A

Laboratory Sample ID: 22L0423-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	11	75-00-3	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	11	67-66-3	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	11	74-87-3	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	11	156-59-2	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	11	10061-01-5	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	11	124-48-1	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	11	74-95-3	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	11	100-41-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	11	74-88-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	11	179601-23-1	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	11	75-09-2	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	11	95-47-6	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	11	100-42-5	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	11	127-18-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	11	108-88-3	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	11	156-60-5	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	11	10061-02-6	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	11	110-57-6	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	11	79-01-6	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	11	75-69-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	11	108-05-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	11	75-01-4	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	11	1330-20-7	SW8260D	12/09/2022 19:00	12/09/2022 19:00	BLOD		1.00	3.00	1	ug/L	BMR



## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-210A

Laboratory Sample ID: 22L0423-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	11	104 %	70-120	12/09/2022 19:00	12/09/2022 19:00							
Surr: 4-Bromofluorobenzene (Surr)	11	96.9 %	75-120	12/09/2022 19:00	12/09/2022 19:00							
Surr: Dibromofluoromethane (Surr)	11	99.2 %	70-130	12/09/2022 19:00	12/09/2022 19:00							
Surr: Toluene-d8 (Surr)	11	99.5 %	70-130	12/09/2022 19:00	12/09/2022 19:00							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-210A

Laboratory Sample ID: 22L0423-11

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	11	106-93-4	SW8011	12/12/2022 12:25	12/12/2022 23:55	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	11	96-18-4	SW8011	12/12/2022 12:25	12/12/2022 23:55	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	11	96-12-8	SW8011	12/12/2022 12:25	12/12/2022 23:55	BLOD		0.005	0.010	1	ug/L	LBH2

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-210B

Laboratory Sample ID: 22L0423-12

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	12	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	12	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		0.50	1.0	1	ug/L	MWL
<b>Barium</b>	12	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 21:04	70.3		1.00	5.00	1	ug/L	MWL
Beryllium	12	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	12	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	12	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		0.200	1.00	1	ug/L	MWL
<b>Chromium</b>	12	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 21:04	0.677	J	0.600	1.00	1	ug/L	MWL
Copper	12	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		0.300	1.00	1	ug/L	MWL
<b>Nickel</b>	12	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 21:04	2.629		1.000	1.000	1	ug/L	MWL
Lead	12	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	12	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	12	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		0.850	1.00	1	ug/L	MWL
Thallium	12	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	12	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	12	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 21:04	BLOD		2.50	5.00	1	ug/L	MWL

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-210B

Laboratory Sample ID: 22L0423-12

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	12	630-20-6	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	12	71-55-6	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	12	79-34-5	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	12	79-00-5	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	12	75-34-3	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	12	75-35-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	12	96-18-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	12	95-50-1	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	12	107-06-2	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	12	78-87-5	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	12	106-46-7	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	12	78-93-3	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	12	591-78-6	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	12	108-10-1	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	12	67-64-1	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	12	107-13-1	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	12	71-43-2	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	12	74-97-5	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	12	75-27-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	12	75-25-2	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	12	74-83-9	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	12	75-15-0	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	12	56-23-5	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	12	108-90-7	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-210B

Laboratory Sample ID: 22L0423-12

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	12	75-00-3	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	12	67-66-3	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	12	74-87-3	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	12	156-59-2	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	12	10061-01-5	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	12	124-48-1	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	12	74-95-3	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	12	100-41-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	12	74-88-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	12	179601-23-1	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	12	75-09-2	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	12	95-47-6	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	12	100-42-5	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	12	127-18-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	12	108-88-3	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	12	156-60-5	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	12	10061-02-6	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	12	110-57-6	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	12	79-01-6	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	12	75-69-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	12	108-05-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	12	75-01-4	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	12	1330-20-7	SW8260D	12/09/2022 19:26	12/09/2022 19:26	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-210B

Laboratory Sample ID: 22L0423-12

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	12	103 %	70-120	12/09/2022 19:26	12/09/2022 19:26							
Surr: 4-Bromofluorobenzene (Surr)	12	96.8 %	75-120	12/09/2022 19:26	12/09/2022 19:26							
Surr: Dibromofluoromethane (Surr)	12	101 %	70-130	12/09/2022 19:26	12/09/2022 19:26							
Surr: Toluene-d8 (Surr)	12	98.1 %	70-130	12/09/2022 19:26	12/09/2022 19:26							

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 Client Site I.D.: City of Bristol 2nd Semi-Annual  
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Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: **MW-210B**

Laboratory Sample ID: **22L0423-12**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	12	106-93-4	SW8011	12/12/2022 12:25	12/13/2022 00:17	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	12	96-18-4	SW8011	12/12/2022 12:25	12/13/2022 00:17	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	12	96-12-8	SW8011	12/12/2022 12:25	12/13/2022 00:17	BLOD		0.005	0.010	1	ug/L	LBH2

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 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-108

Laboratory Sample ID: 22L0423-13

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	13	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 21:07	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	13	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 21:07	12		0.50	1.0	1	ug/L	MWL
Barium	13RE1	7440-39-3	SW6020B	12/12/2022 12:30	12/19/2022 12:42	743		10.0	50.0	10	ug/L	MWL
Beryllium	13	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 21:07	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	13	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 21:07	0.563	J	0.100	1.00	1	ug/L	MWL
Cobalt	13	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 21:07	27.8		0.200	1.00	1	ug/L	MWL
Chromium	13	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 21:07	1.81		0.600	1.00	1	ug/L	MWL
Copper	13	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 21:07	0.904	J	0.300	1.00	1	ug/L	MWL
Mercury	13	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:36	0.00125		0.00020	0.00020	1	mg/L	ACM
Nickel	13	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 21:07	22.52		1.000	1.000	1	ug/L	MWL
Lead	13	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 21:07	1.5		1.0	1.0	1	ug/L	MWL
Antimony	13	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 21:07	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	13	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 21:07	BLOD		0.850	1.00	1	ug/L	MWL
Tin	13RE2	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 14:47	BLOD		1.00	1.00	1	ug/L	MWL
Thallium	13	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 21:07	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	13	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 21:07	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	13	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 21:07	96.1		2.50	5.00	1	ug/L	MWL



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Client Sample ID: MW-108

Laboratory Sample ID: 22L0423-13

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	13	630-20-6	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	13	71-55-6	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	13	79-34-5	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	13	79-00-5	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.50	1.00	1	ug/L	BMR
<b>1,1-Dichloroethane</b>	13	75-34-3	SW8260D	12/09/2022 19:51	12/09/2022 19:51	5.19		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	13	75-35-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	13	96-18-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	13	95-50-1	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	13	107-06-2	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	13	78-87-5	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
<b>1,4-Dichlorobenzene</b>	13	106-46-7	SW8260D	12/09/2022 19:51	12/09/2022 19:51	1.65		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	13	78-93-3	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	13	591-78-6	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	13	108-10-1	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	13	67-64-1	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	13	107-13-1	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		1.70	5.00	1	ug/L	BMR
<b>Benzene</b>	13	71-43-2	SW8260D	12/09/2022 19:51	12/09/2022 19:51	39.3		0.40	1.00	1	ug/L	BMR
Bromochloromethane	13	74-97-5	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	13	75-27-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	13	75-25-2	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	13	74-83-9	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	13	75-15-0	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	13	56-23-5	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.50	1.00	1	ug/L	BMR
<b>Chlorobenzene</b>	13	108-90-7	SW8260D	12/09/2022 19:51	12/09/2022 19:51	1.25		0.40	1.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: MW-108

Laboratory Sample ID: 22L0423-13

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	13	75-00-3	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	13	67-66-3	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	13	74-87-3	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.95	1.00	1	ug/L	BMR
<b>cis-1,2-Dichloroethylene</b>	13	156-59-2	SW8260D	12/09/2022 19:51	12/09/2022 19:51	44.8		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	13	10061-01-5	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	13	124-48-1	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	13	74-95-3	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	13	100-41-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	13	74-88-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	13	179601-23-1	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	13	75-09-2	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	13	95-47-6	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	13	100-42-5	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	13	127-18-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	13	108-88-3	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	13	156-60-5	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	13	10061-02-6	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	13	110-57-6	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	13	79-01-6	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	13	75-69-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	13	108-05-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		2.00	10.0	1	ug/L	BMR
<b>Vinyl chloride</b>	13	75-01-4	SW8260D	12/09/2022 19:51	12/09/2022 19:51	11.9		0.50	0.50	1	ug/L	BMR
Xylenes, Total	13	1330-20-7	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		1.00	3.00	1	ug/L	BMR

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 12/30/2022 11:56:27AM

Client Site I.D.: City of Bristol 2nd Semi-Annual

Submitted To: Jennifer Robb

Client Sample ID: MW-108

Laboratory Sample ID: 22L0423-13

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	13	101 %	70-120	12/09/2022 19:51	12/09/2022 19:51							
Surr: 4-Bromofluorobenzene (Surr)	13	96.1 %	75-120	12/09/2022 19:51	12/09/2022 19:51							
Surr: Dibromofluoromethane (Surr)	13	95.2 %	70-130	12/09/2022 19:51	12/09/2022 19:51							
Surr: Toluene-d8 (Surr)	13	101 %	70-130	12/09/2022 19:51	12/09/2022 19:51							
Dichlorodifluoromethane	13	75-71-8	SW8260D	12/09/2022 19:51	12/09/2022 19:51	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	13	101 %	70-120	12/09/2022 19:51	12/09/2022 19:51							
Surr: 4-Bromofluorobenzene (Surr)	13	96.1 %	75-120	12/09/2022 19:51	12/09/2022 19:51							
Surr: Dibromofluoromethane (Surr)	13	95.2 %	70-130	12/09/2022 19:51	12/09/2022 19:51							
Surr: Toluene-d8 (Surr)	13	101 %	70-130	12/09/2022 19:51	12/09/2022 19:51							

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Laboratory Sample ID: 22L0423-13

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	13	117-81-7	SW8270E	12/09/2022 10:02	12/12/2022 18:30	BLOD		4.67	5.00	1	ug/L	MGG
Diethyl phthalate	13	84-66-2	SW8270E	12/09/2022 10:02	12/12/2022 18:30	BLOD		2.80	10.0	1	ug/L	MGG
Di-n-butyl phthalate	13	84-74-2	SW8270E	12/09/2022 10:02	12/12/2022 18:30	BLOD		3.74	10.0	1	ug/L	MGG
Phenol	13	108-95-2	SW8270E	12/09/2022 10:02	12/12/2022 18:30	BLOD		2.34	10.0	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	13	148 %	10-86	12/09/2022 10:02	12/12/2022 18:30							S
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	13	144 %	9-87	12/09/2022 10:02	12/12/2022 18:30							S
<i>Surr: 2-Fluorophenol (Surr)</i>	13	56.9 %	10-52	12/09/2022 10:02	12/12/2022 18:30							S
<i>Surr: Nitrobenzene-d5 (Surr)</i>	13	116 %	10-98.5	12/09/2022 10:02	12/12/2022 18:30							S
<i>Surr: Phenol-d5 (Surr)</i>	13	43.8 %	5-33	12/09/2022 10:02	12/12/2022 18:30							S
<i>Surr: p-Terphenyl-d14 (Surr)</i>	13	147 %	27-133	12/09/2022 10:02	12/12/2022 18:30							S

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Laboratory Sample ID: 22L0423-13

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	13	93-72-1	SW8151A	12/12/2022 14:15	12/16/2022 16:33	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	13	94-75-7	SW8151A	12/12/2022 14:15	12/16/2022 16:33	BLOD		0.200	0.500	1	ug/L	LBH2
Surr: DCAA (Surr)	13	87.3 %	48.5-134	12/12/2022 14:15	12/16/2022 16:33							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	13	106-93-4	SW8011	12/12/2022 12:25	12/13/2022 00:39	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	13	96-18-4	SW8011	12/12/2022 12:25	12/13/2022 00:39	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	13	96-12-8	SW8011	12/12/2022 12:25	12/13/2022 00:39	BLOD		0.005	0.010	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	13	74-84-0	RSK175M	12/09/2022 15:15	12/09/2022 15:15	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	13	146 %	70-130	12/09/2022 15:15	12/09/2022 15:15							S
Ethene	13	74-85-1	RSK175M	12/09/2022 15:15	12/09/2022 15:15	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	13	146 %	70-130	12/09/2022 15:15	12/09/2022 15:15							S
<b>Methane</b>	13	74-82-8	RSK175M	12/09/2022 15:15	12/09/2022 15:15	2280		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	13	146 %	70-130	12/09/2022 15:15	12/09/2022 15:15							S

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	13	NA	SM22 2320B-2011	12/15/2022 18:25	12/15/2022 18:25	647		5.0	5.0	1	mg/L	JIW
Chloride	13	16887-00-6	EPA300.0 R2.1	12/12/2022 22:57	12/12/2022 22:57	37.0		5.0	10.0	10	mg/L	MGG
Cyanide	13	57-12-5	SW9012B	12/14/2022 13:42	12/14/2022 13:42	BLOD	CI	0.01	0.01	1	mg/L	MKS
Sulfide	13	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL



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Client Sample ID: GC Outfall

Laboratory Sample ID: 22L0423-14

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	14	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 21:16	BLOD		0.600	10.0	10	ug/L	MWL
Arsenic	14	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 21:16	270		5.0	10	10	ug/L	MWL
Barium	14	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 21:16	1060		10.0	50.0	10	ug/L	MWL
Beryllium	14RE1	7440-41-7	SW6020B	12/12/2022 12:30	12/19/2022 12:45	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	14RE1	7440-43-9	SW6020B	12/12/2022 12:30	12/19/2022 12:45	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	14	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 21:16	9.44	J	2.00	10.0	10	ug/L	MWL
Chromium	14	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 21:16	111		6.00	10.0	10	ug/L	MWL
Copper	14	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 21:16	69.8		3.00	10.0	10	ug/L	MWL
Mercury	14	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:43	BLOD		0.00020	0.00020	1	mg/L	ACM
Nickel	14	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 21:16	23.53		10.00	10.00	10	ug/L	MWL
Lead	14	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 21:16	BLOD		10	10	10	ug/L	MWL
Antimony	14RE1	7440-36-0	SW6020B	12/12/2022 12:30	12/19/2022 12:45	5.4		1.0	1.0	1	ug/L	MWL
Selenium	14	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 21:16	BLOD		8.50	10.0	10	ug/L	MWL
Tin	14RE2	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 14:50	4.02		1.00	1.00	1	ug/L	MWL
Thallium	14RE1	7440-28-0	SW6020B	12/12/2022 12:30	12/19/2022 12:45	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	14	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 21:16	88.6		25.0	50.0	10	ug/L	MWL
Zinc	14	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 21:16	85.8		25.0	50.0	10	ug/L	MWL

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Client Sample ID: GC Outfall

Laboratory Sample ID: 22L0423-14

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	14	630-20-6	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	14	71-55-6	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	14	79-34-5	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	14	79-00-5	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	14	75-34-3	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	14	75-35-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	14	96-18-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	1.00	1	ug/L	BMR
<b>1,2-Dichlorobenzene</b>	14	95-50-1	SW8260D	12/09/2022 20:42	12/09/2022 20:42	1.62		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	14	107-06-2	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	14	78-87-5	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	1.00	1	ug/L	BMR
<b>1,4-Dichlorobenzene</b>	14	106-46-7	SW8260D	12/09/2022 20:42	12/09/2022 20:42	26.2		0.40	1.00	1	ug/L	BMR
<b>2-Butanone (MEK)</b>	14RE1	78-93-3	SW8260D	12/12/2022 16:27	12/12/2022 16:27	442		30.0	100	10	ug/L	RJB
2-Hexanone (MBK)	14	591-78-6	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		2.20	5.00	1	ug/L	BMR
<b>4-Methyl-2-pentanone (MIBK)</b>	14	108-10-1	SW8260D	12/09/2022 20:42	12/09/2022 20:42	47.3		1.50	5.00	1	ug/L	BMR
<b>Acetone</b>	14RE1	67-64-1	SW8260D	12/12/2022 16:27	12/12/2022 16:27	506		70.0	100	10	ug/L	RJB
<b>Acrylonitrile</b>	14	107-13-1	SW8260D	12/09/2022 20:42	12/09/2022 20:42	4.00	J	1.70	5.00	1	ug/L	BMR
<b>Benzene</b>	14RE1	71-43-2	SW8260D	12/12/2022 16:27	12/12/2022 16:27	710		4.00	10.0	10	ug/L	RJB
Bromochloromethane	14	74-97-5	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	14	75-27-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	14	75-25-2	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	14	74-83-9	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	14	75-15-0	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	14	56-23-5	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.50	1.00	1	ug/L	BMR
<b>Chlorobenzene</b>	14	108-90-7	SW8260D	12/09/2022 20:42	12/09/2022 20:42	5.53		0.40	1.00	1	ug/L	BMR

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	14	75-00-3	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	14	67-66-3	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	14	74-87-3	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.95	1.00	1	ug/L	BMR
<b>cis-1,2-Dichloroethylene</b>	14	156-59-2	SW8260D	12/09/2022 20:42	12/09/2022 20:42	0.73	J	0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	14	10061-01-5	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	14	124-48-1	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	14	74-95-3	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	1.00	1	ug/L	BMR
<b>Ethylbenzene</b>	14	100-41-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	91.5		0.40	1.00	1	ug/L	BMR
Iodomethane	14	74-88-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		6.00	10.0	1	ug/L	BMR
<b>m+p-Xylenes</b>	14	179601-23-1	SW8260D	12/09/2022 20:42	12/09/2022 20:42	55.4		0.60	2.00	1	ug/L	BMR
Methylene chloride	14	75-09-2	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		4.00	4.00	1	ug/L	BMR
<b>o-Xylene</b>	14	95-47-6	SW8260D	12/09/2022 20:42	12/09/2022 20:42	35.0		0.40	1.00	1	ug/L	BMR
Styrene	14	100-42-5	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	14	127-18-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	1.00	1	ug/L	BMR
<b>Toluene</b>	14	108-88-3	SW8260D	12/09/2022 20:42	12/09/2022 20:42	44.8		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	14	156-60-5	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	14	10061-02-6	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	14	110-57-6	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	14	79-01-6	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	14	75-69-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	14	108-05-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	14	75-01-4	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.50	0.50	1	ug/L	BMR
<b>Xylenes, Total</b>	14	1330-20-7	SW8260D	12/09/2022 20:42	12/09/2022 20:42	90.4		1.00	3.00	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	14	96.2 %	70-120	12/09/2022 20:42	12/09/2022 20:42							

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Client Sample ID: GC Outfall

Laboratory Sample ID: 22L0423-14

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 4-Bromofluorobenzene (Surr)	14		101 % 75-120	12/09/2022 20:42	12/09/2022 20:42							
Surr: Dibromofluoromethane (Surr)	14		101 % 70-130	12/09/2022 20:42	12/09/2022 20:42							
Surr: Toluene-d8 (Surr)	14		95.7 % 70-130	12/09/2022 20:42	12/09/2022 20:42							
Surr: 1,2-Dichloroethane-d4 (Surr)	14RE1		102 % 70-120	12/12/2022 16:27	12/12/2022 16:27							
Surr: 4-Bromofluorobenzene (Surr)	14RE1		97.1 % 75-120	12/12/2022 16:27	12/12/2022 16:27							
Surr: Dibromofluoromethane (Surr)	14RE1		100 % 70-130	12/12/2022 16:27	12/12/2022 16:27							
Surr: Toluene-d8 (Surr)	14RE1		98.6 % 70-130	12/12/2022 16:27	12/12/2022 16:27							
Dichlorodifluoromethane	14	75-71-8	SW8260D	12/09/2022 20:42	12/09/2022 20:42	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	14		96.2 % 70-120	12/09/2022 20:42	12/09/2022 20:42							
Surr: 4-Bromofluorobenzene (Surr)	14		101 % 75-120	12/09/2022 20:42	12/09/2022 20:42							
Surr: Dibromofluoromethane (Surr)	14		101 % 70-130	12/09/2022 20:42	12/09/2022 20:42							
Surr: Toluene-d8 (Surr)	14		95.7 % 70-130	12/09/2022 20:42	12/09/2022 20:42							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: GC Outfall

Laboratory Sample ID: 22L0423-14

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatle Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	14	117-81-7	SW8270E	12/12/2022 08:50	12/12/2022 21:28	BLOD		23.4	23.4	10	ug/L	MGG
Diethyl phthalate	14	84-66-2	SW8270E	12/12/2022 08:50	12/12/2022 21:28	BLOD		28.0	93.5	10	ug/L	MGG
Di-n-butyl phthalate	14	84-74-2	SW8270E	12/12/2022 08:50	12/12/2022 21:28	BLOD		37.4	93.5	10	ug/L	MGG
<b>Phenol</b>	14	108-95-2	SW8270E	12/12/2022 08:50	12/12/2022 21:28	143		23.4	93.5	10	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	14	102 %	10-86	12/12/2022 08:50	12/12/2022 21:28							DS
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	14	76.8 %	9-87	12/12/2022 08:50	12/12/2022 21:28							DS
<i>Surr: 2-Fluorophenol (Surr)</i>	14	52.9 %	10-52	12/12/2022 08:50	12/12/2022 21:28							DS
<i>Surr: Nitrobenzene-d5 (Surr)</i>	14	110 %	10-98.5	12/12/2022 08:50	12/12/2022 21:28							DS
<i>Surr: Phenol-d5 (Surr)</i>	14	40.7 %	5-33	12/12/2022 08:50	12/12/2022 21:28							DS
<i>Surr: p-Terphenyl-d14 (Surr)</i>	14	92.8 %	27-133	12/12/2022 08:50	12/12/2022 21:28							DS

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Laboratory Sample ID: 22L0423-14

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	14	93-72-1	SW8151A	12/13/2022 14:00	12/19/2022 19:40	BLOD		0.428	2.00	4	ug/L	LBH2
2,4-D	14	94-75-7	SW8151A	12/13/2022 14:00	12/19/2022 19:40	BLOD		0.800	2.00	4	ug/L	LBH2
Surr: DCAA (Surr)	14	332 %	48.5-134	12/13/2022 14:00	12/19/2022 19:40							DS

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	14	106-93-4	SW8011	12/12/2022 12:25	12/13/2022 01:44	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	14	96-18-4	SW8011	12/12/2022 12:25	12/13/2022 01:44	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	14	96-12-8	SW8011	12/12/2022 12:25	12/13/2022 01:44	BLOD		0.005	0.010	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	14	74-84-0	RSK175M	12/09/2022 15:41	12/09/2022 15:41	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	14	131 %	70-130	12/09/2022 15:41	12/09/2022 15:41							S
Ethene	14	74-85-1	RSK175M	12/09/2022 15:41	12/09/2022 15:41	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	14	131 %	70-130	12/09/2022 15:41	12/09/2022 15:41							S
<b>Methane</b>	14	74-82-8	RSK175M	12/09/2022 15:41	12/09/2022 15:41	349		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	14	131 %	70-130	12/09/2022 15:41	12/09/2022 15:41							S



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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	14	NA	SM22 2320B-2011	12/15/2022 18:25	12/15/2022 18:25	2200		5.0	5.0	1	mg/L	JIW
Chloride	14	16887-00-6	EPA300.0 R2.1	12/10/2022 01:59	12/10/2022 01:59	1740		50.0	100	100	mg/L	ADG
Cyanide	14	57-12-5	SW9012B	12/15/2022 12:39	12/15/2022 12:39	BLOD		0.01	0.01	1	mg/L	MKS
Sulfide	14	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL

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Laboratory Sample ID: 22L0423-15

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	15	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 21:18	BLOD		0.600	10.0	10	ug/L	MWL
Arsenic	15	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 21:18	290		5.0	10	10	ug/L	MWL
Barium	15	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 21:18	1060		10.0	50.0	10	ug/L	MWL
Beryllium	15RE1	7440-41-7	SW6020B	12/12/2022 12:30	12/19/2022 12:48	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	15RE1	7440-43-9	SW6020B	12/12/2022 12:30	12/19/2022 12:48	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	15	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 21:18	8.98	J	2.00	10.0	10	ug/L	MWL
Chromium	15	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 21:18	111		6.00	10.0	10	ug/L	MWL
Copper	15	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 21:18	76.6		3.00	10.0	10	ug/L	MWL
Mercury	15	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:46	BLOD		0.00020	0.00020	1	mg/L	ACM
Nickel	15	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 21:18	21.95		10.00	10.00	10	ug/L	MWL
Lead	15	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 21:18	BLOD		10	10	10	ug/L	MWL
Antimony	15RE1	7440-36-0	SW6020B	12/12/2022 12:30	12/19/2022 12:48	8.0		1.0	1.0	1	ug/L	MWL
Selenium	15	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 21:18	BLOD		8.50	10.0	10	ug/L	MWL
Tin	15RE3	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 14:55	3.72		1.00	1.00	1	ug/L	MWL
Thallium	15RE1	7440-28-0	SW6020B	12/12/2022 12:30	12/19/2022 12:48	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	15	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 21:18	88.3		25.0	50.0	10	ug/L	MWL
Zinc	15RE1	7440-66-6	SW6020B	12/12/2022 12:30	12/19/2022 12:48	46.2		2.50	5.00	1	ug/L	MWL
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	15	630-20-6	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	15	71-55-6	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	15	79-34-5	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	15	79-00-5	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	15	75-34-3	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	15	75-35-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.70	1.00	1	ug/L	BMR

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Laboratory Sample ID: 22L0423-15

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,2,3-Trichloropropane	15	96-18-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	1.00	1	ug/L	BMR
<b>1,2-Dichlorobenzene</b>	15	95-50-1	SW8260D	12/09/2022 21:08	12/09/2022 21:08	1.44		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	15	107-06-2	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	15	78-87-5	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	1.00	1	ug/L	BMR
<b>1,4-Dichlorobenzene</b>	15	106-46-7	SW8260D	12/09/2022 21:08	12/09/2022 21:08	23.5		0.40	1.00	1	ug/L	BMR
<b>2-Butanone (MEK)</b>	15	78-93-3	SW8260D	12/09/2022 21:08	12/09/2022 21:08	287		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	15	591-78-6	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		2.20	5.00	1	ug/L	BMR
<b>4-Methyl-2-pentanone (MIBK)</b>	15	108-10-1	SW8260D	12/09/2022 21:08	12/09/2022 21:08	35.5		1.50	5.00	1	ug/L	BMR
<b>Acetone</b>	15RE1	67-64-1	SW8260D	12/12/2022 16:52	12/12/2022 16:52	391		70.0	100	10	ug/L	RJB
Acrylonitrile	15	107-13-1	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		1.70	5.00	1	ug/L	BMR
<b>Benzene</b>	15RE1	71-43-2	SW8260D	12/12/2022 16:52	12/12/2022 16:52	414		4.00	10.0	10	ug/L	RJB
Bromochloromethane	15	74-97-5	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	15	75-27-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	15	75-25-2	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	15	74-83-9	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	15	75-15-0	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	15	56-23-5	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.50	1.00	1	ug/L	BMR
<b>Chlorobenzene</b>	15	108-90-7	SW8260D	12/09/2022 21:08	12/09/2022 21:08	5.11		0.40	1.00	1	ug/L	BMR
Chloroethane	15	75-00-3	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.70	1.00	1	ug/L	BMR
<b>Chloroform</b>	15	67-66-3	SW8260D	12/09/2022 21:08	12/09/2022 21:08	2.43		0.50	0.50	1	ug/L	BMR
Chloromethane	15	74-87-3	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.95	1.00	1	ug/L	BMR
<b>cis-1,2-Dichloroethylene</b>	15	156-59-2	SW8260D	12/09/2022 21:08	12/09/2022 21:08	0.72	J	0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	15	10061-01-5	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	15	124-48-1	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.35	0.50	1	ug/L	BMR

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<b>Volatile Organic Compounds by GCMS</b>												
Dibromomethane	15	74-95-3	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	1.00	1	ug/L	BMR
<b>Ethylbenzene</b>	15	100-41-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	79.3		0.40	1.00	1	ug/L	BMR
Iodomethane	15	74-88-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		6.00	10.0	1	ug/L	BMR
<b>m+p-Xylenes</b>	15	179601-23-1	SW8260D	12/09/2022 21:08	12/09/2022 21:08	48.5		0.60	2.00	1	ug/L	BMR
Methylene chloride	15	75-09-2	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		4.00	4.00	1	ug/L	BMR
<b>o-Xylene</b>	15	95-47-6	SW8260D	12/09/2022 21:08	12/09/2022 21:08	29.8		0.40	1.00	1	ug/L	BMR
Styrene	15	100-42-5	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	15	127-18-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	1.00	1	ug/L	BMR
<b>Toluene</b>	15	108-88-3	SW8260D	12/09/2022 21:08	12/09/2022 21:08	38.0		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	15	156-60-5	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	15	10061-02-6	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	15	110-57-6	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	15	79-01-6	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	15	75-69-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	15	108-05-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	15	75-01-4	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.50	0.50	1	ug/L	BMR
<b>Xylenes, Total</b>	15	1330-20-7	SW8260D	12/09/2022 21:08	12/09/2022 21:08	78.2		1.00	3.00	1	ug/L	BMR
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	15	97.2 %	70-120	12/09/2022 21:08	12/09/2022 21:08							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	15	97.2 %	75-120	12/09/2022 21:08	12/09/2022 21:08							
<i>Surr: Dibromofluoromethane (Surr)</i>	15	92.7 %	70-130	12/09/2022 21:08	12/09/2022 21:08							
<i>Surr: Toluene-d8 (Surr)</i>	15	94.6 %	70-130	12/09/2022 21:08	12/09/2022 21:08							
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	15RE1	107 %	70-120	12/12/2022 16:52	12/12/2022 16:52							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	15RE1	98.4 %	75-120	12/12/2022 16:52	12/12/2022 16:52							
<i>Surr: Dibromofluoromethane (Surr)</i>	15RE1	96.6 %	70-130	12/12/2022 16:52	12/12/2022 16:52							

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<b>Volatile Organic Compounds by GCMS</b>												
Surr: Toluene-d8 (Surr)	15RE1	98.5 %	70-130	12/12/2022 16:52	12/12/2022 16:52							
Dichlorodifluoromethane	15	75-71-8	SW8260D	12/09/2022 21:08	12/09/2022 21:08	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	15	97.2 %	70-120	12/09/2022 21:08	12/09/2022 21:08							
Surr: 4-Bromofluorobenzene (Surr)	15	97.2 %	75-120	12/09/2022 21:08	12/09/2022 21:08							
Surr: Dibromofluoromethane (Surr)	15	92.7 %	70-130	12/09/2022 21:08	12/09/2022 21:08							
Surr: Toluene-d8 (Surr)	15	94.6 %	70-130	12/09/2022 21:08	12/09/2022 21:08							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: GC Outfall Duplicate

Laboratory Sample ID: 22L0423-15

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	15	117-81-7	SW8270E	12/12/2022 08:50	12/12/2022 22:04	BLOD		23.4	23.4	10	ug/L	MGG
Diethyl phthalate	15	84-66-2	SW8270E	12/12/2022 08:50	12/12/2022 22:04	BLOD		28.0	93.5	10	ug/L	MGG
Di-n-butyl phthalate	15	84-74-2	SW8270E	12/12/2022 08:50	12/12/2022 22:04	BLOD		37.4	93.5	10	ug/L	MGG
<b>Phenol</b>	15	108-95-2	SW8270E	12/12/2022 08:50	12/12/2022 22:04	140		23.4	93.5	10	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	15	111 %	10-86	12/12/2022 08:50	12/12/2022 22:04							DS
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	15	91.6 %	9-87	12/12/2022 08:50	12/12/2022 22:04							DS
<i>Surr: 2-Fluorophenol (Surr)</i>	15	62.9 %	10-52	12/12/2022 08:50	12/12/2022 22:04							DS
<i>Surr: Nitrobenzene-d5 (Surr)</i>	15	127 %	10-98.5	12/12/2022 08:50	12/12/2022 22:04							DS
<i>Surr: Phenol-d5 (Surr)</i>	15	45.9 %	5-33	12/12/2022 08:50	12/12/2022 22:04							DS
<i>Surr: p-Terphenyl-d14 (Surr)</i>	15	105 %	27-133	12/12/2022 08:50	12/12/2022 22:04							DS

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Laboratory Sample ID: 22L0423-15

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	15	93-72-1	SW8151A	12/13/2022 14:00	12/19/2022 20:06	BLOD		0.428	2.00	4	ug/L	LBH2
2,4-D	15	94-75-7	SW8151A	12/13/2022 14:00	12/19/2022 20:06	BLOD		0.800	2.00	4	ug/L	LBH2
Surr: DCAA (Surr)	15	340 %	48.5-134	12/13/2022 14:00	12/19/2022 20:06							DS

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Laboratory Sample ID: 22L0423-15

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	15	106-93-4	SW8011	12/12/2022 12:25	12/13/2022 02:06	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	15	96-18-4	SW8011	12/12/2022 12:25	12/13/2022 02:06	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	15	96-12-8	SW8011	12/12/2022 12:25	12/13/2022 02:06	BLOD		0.005	0.010	1	ug/L	LBH2



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Laboratory Sample ID: 22L0423-15

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	15	74-84-0	RSK175M	12/09/2022 15:53	12/09/2022 15:53	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	15	146 %	70-130	12/09/2022 15:53	12/09/2022 15:53							S
Ethene	15	74-85-1	RSK175M	12/09/2022 15:53	12/09/2022 15:53	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	15	146 %	70-130	12/09/2022 15:53	12/09/2022 15:53							S
<b>Methane</b>	15	74-82-8	RSK175M	12/09/2022 15:53	12/09/2022 15:53	300		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	15	146 %	70-130	12/09/2022 15:53	12/09/2022 15:53							S

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	15	NA	SM22 2320B-2011	12/15/2022 18:25	12/15/2022 18:25	2060		5.0	5.0	1	mg/L	JIW
Chloride	15	16887-00-6	EPA300.0 R2.1	12/10/2022 02:24	12/10/2022 02:24	1630		50.0	100	100	mg/L	ADG
Cyanide	15	57-12-5	SW9012B	12/15/2022 12:39	12/15/2022 12:39	BLOD		0.01	0.01	1	mg/L	MKS
Sulfide	15	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL

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Laboratory Sample ID: 22L0423-16

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>												
Silver	16	7440-22-4	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		0.0600	1.00	1	ug/L	MWL
Arsenic	16	7440-38-2	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		0.50	1.0	1	ug/L	MWL
Barium	16	7440-39-3	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		1.00	5.00	1	ug/L	MWL
Beryllium	16	7440-41-7	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		0.200	1.00	1	ug/L	MWL
Cadmium	16	7440-43-9	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		0.100	1.00	1	ug/L	MWL
Cobalt	16	7440-48-4	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		0.200	1.00	1	ug/L	MWL
Chromium	16	7440-47-3	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		0.600	1.00	1	ug/L	MWL
Copper	16	7440-50-8	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		0.300	1.00	1	ug/L	MWL
Mercury	16	7439-97-6	SW7470A	12/15/2022 09:15	12/15/2022 15:48	BLOD		0.00020	0.00020	1	mg/L	ACM
Nickel	16	7440-02-0	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		1.000	1.000	1	ug/L	MWL
Lead	16	7439-92-1	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		1.0	1.0	1	ug/L	MWL
Antimony	16	7440-36-0	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		1.0	1.0	1	ug/L	MWL
Selenium	16	7782-49-2	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		0.850	1.00	1	ug/L	MWL
Tin	16RE2	7440-31-5	SW6020B	12/12/2022 10:30	12/20/2022 15:01	BLOD		1.00	1.00	1	ug/L	MWL
Thallium	16	7440-28-0	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		1.0	1.0	1	ug/L	MWL
Vanadium	16	7440-62-2	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		2.50	5.00	1	ug/L	MWL
Zinc	16	7440-66-6	SW6020B	12/12/2022 12:30	12/18/2022 21:21	BLOD		2.50	5.00	1	ug/L	MWL

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Laboratory Sample ID: 22L0423-16

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	16	630-20-6	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	16	71-55-6	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.60	1.00	1	ug/L	BMR
1,1,2,2-Tetrachloroethane	16	79-34-5	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	16	79-00-5	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	16	75-34-3	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	16	75-35-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	16	96-18-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	16	95-50-1	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	16	107-06-2	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	16	78-87-5	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	16	106-46-7	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	16	78-93-3	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	16	591-78-6	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	16	108-10-1	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		1.50	5.00	1	ug/L	BMR
<b>Acetone</b>	16	67-64-1	SW8260D	12/09/2022 13:28	12/09/2022 13:28	11.5		7.00	10.0	1	ug/L	BMR
Acrylonitrile	16	107-13-1	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	16	71-43-2	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	16	74-97-5	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	16	75-27-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	16	75-25-2	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	16	74-83-9	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	16	75-15-0	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	16	56-23-5	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	16	108-90-7	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR

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Laboratory Sample ID: 22L0423-16

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	16	75-00-3	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	16	67-66-3	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	16	74-87-3	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	16	156-59-2	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	16	10061-01-5	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	16	124-48-1	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	16	74-95-3	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	16	100-41-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	16	74-88-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	16	179601-23-1	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	16	75-09-2	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	16	95-47-6	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	16	100-42-5	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	16	127-18-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	16	108-88-3	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	16	156-60-5	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	16	10061-02-6	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	16	110-57-6	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	16	79-01-6	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	16	75-69-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	16	108-05-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	16	75-01-4	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	16	1330-20-7	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		1.00	3.00	1	ug/L	BMR

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	16	103 %	70-120	12/09/2022 13:28	12/09/2022 13:28							
Surr: 4-Bromofluorobenzene (Surr)	16	94.6 %	75-120	12/09/2022 13:28	12/09/2022 13:28							
Surr: Dibromofluoromethane (Surr)	16	101 %	70-130	12/09/2022 13:28	12/09/2022 13:28							
Surr: Toluene-d8 (Surr)	16	99.6 %	70-130	12/09/2022 13:28	12/09/2022 13:28							
Dichlorodifluoromethane	16	75-71-8	SW8260D	12/09/2022 13:28	12/09/2022 13:28	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	16	103 %	70-120	12/09/2022 13:28	12/09/2022 13:28							
Surr: 4-Bromofluorobenzene (Surr)	16	94.6 %	75-120	12/09/2022 13:28	12/09/2022 13:28							
Surr: Dibromofluoromethane (Surr)	16	101 %	70-130	12/09/2022 13:28	12/09/2022 13:28							
Surr: Toluene-d8 (Surr)	16	99.6 %	70-130	12/09/2022 13:28	12/09/2022 13:28							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Semivolatile Organic Compounds by GCMS</b>												
bis (2-Ethylhexyl) phthalate	16	117-81-7	SW8270E	12/12/2022 08:50	12/12/2022 22:39	BLOD		4.67	5.00	1	ug/L	MGG
Diethyl phthalate	16	84-66-2	SW8270E	12/12/2022 08:50	12/12/2022 22:39	BLOD		2.80	10.0	1	ug/L	MGG
Di-n-butyl phthalate	16	84-74-2	SW8270E	12/12/2022 08:50	12/12/2022 22:39	BLOD		3.74	10.0	1	ug/L	MGG
Phenol	16	108-95-2	SW8270E	12/12/2022 08:50	12/12/2022 22:39	BLOD		2.34	10.0	1	ug/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	16	77.8 %	10-86	12/12/2022 08:50	12/12/2022 22:39							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	16	68.6 %	9-87	12/12/2022 08:50	12/12/2022 22:39							
<i>Surr: 2-Fluorophenol (Surr)</i>	16	38.6 %	10-52	12/12/2022 08:50	12/12/2022 22:39							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	16	75.7 %	10-98.5	12/12/2022 08:50	12/12/2022 22:39							
<i>Surr: Phenol-d5 (Surr)</i>	16	26.1 %	5-33	12/12/2022 08:50	12/12/2022 22:39							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	16	90.8 %	27-133	12/12/2022 08:50	12/12/2022 22:39							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: Field Blank

Laboratory Sample ID: 22L0423-16

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Organochlorine Herbicides by GC/ECD</b>												
2,4,5-TP (Silvex)	16	93-72-1	SW8151A	12/13/2022 14:00	12/16/2022 19:08	BLOD		0.107	0.500	1	ug/L	LBH2
2,4-D	16	94-75-7	SW8151A	12/13/2022 14:00	12/16/2022 19:08	BLOD		0.200	0.500	1	ug/L	LBH2
Surr: DCAA (Surr)	16	99.0 %	48.5-134	12/13/2022 14:00	12/16/2022 19:08							



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Laboratory Sample ID: 22L0423-16

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	16	106-93-4	SW8011	12/12/2022 13:30	12/13/2022 05:00	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	16	96-18-4	SW8011	12/12/2022 13:30	12/13/2022 05:00	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	16	96-12-8	SW8011	12/12/2022 13:30	12/13/2022 05:00	BLOD		0.005	0.010	1	ug/L	LBH2

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Laboratory Sample ID: 22L0423-16

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	16	74-84-0	RSK175M	12/09/2022 15:02	12/09/2022 15:02	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	16	99.5 %	70-130	12/09/2022 15:02	12/09/2022 15:02							
Ethene	16	74-85-1	RSK175M	12/09/2022 15:02	12/09/2022 15:02	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	16	99.5 %	70-130	12/09/2022 15:02	12/09/2022 15:02							
Methane	16	74-82-8	RSK175M	12/09/2022 15:02	12/09/2022 15:02	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	16	99.5 %	70-130	12/09/2022 15:02	12/09/2022 15:02							

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Client Sample ID: Field Blank

Laboratory Sample ID: 22L0423-16

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Alkalinity	16	NA	SM22 2320B-2011	12/15/2022 18:25	12/15/2022 18:25	BLOD		5.0	5.0	1	mg/L	JIW
Chloride	16	16887-00-6	EPA300.0 R2.1	12/10/2022 02:48	12/10/2022 02:48	BLOD		0.5	1.0	1	mg/L	ADG
Cyanide	16	57-12-5	SW9012B	12/15/2022 12:39	12/15/2022 12:39	BLOD		0.01	0.01	1	mg/L	MKS
Sulfide	16	18496-25-8	SW9215	12/09/2022 14:14	12/09/2022 14:14	BLOD		0.80	1.00	1	mg/L	AAL

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Date Issued: 12/30/2022 11:56:27AM

Client Sample ID: Trip Blank

Laboratory Sample ID: 22L0423-17

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
1,1,1,2-Tetrachloroethane	17	630-20-6	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	0.40	1	ug/L	BMR
1,1,1-Trichloroethane	17	71-55-6	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.60	1.00	1	ug/L	BMR
1,1,1,2-Tetrachloroethane	17	79-34-5	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.30	0.40	1	ug/L	BMR
1,1,2-Trichloroethane	17	79-00-5	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.50	1.00	1	ug/L	BMR
1,1-Dichloroethane	17	75-34-3	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.60	1.00	1	ug/L	BMR
1,1-Dichloroethylene	17	75-35-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.70	1.00	1	ug/L	BMR
1,2,3-Trichloropropane	17	96-18-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichlorobenzene	17	95-50-1	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
1,2-Dichloroethane	17	107-06-2	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.70	1.00	1	ug/L	BMR
1,2-Dichloropropane	17	78-87-5	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
1,4-Dichlorobenzene	17	106-46-7	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
2-Butanone (MEK)	17	78-93-3	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		3.00	10.0	1	ug/L	BMR
2-Hexanone (MBK)	17	591-78-6	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		2.20	5.00	1	ug/L	BMR
4-Methyl-2-pentanone (MIBK)	17	108-10-1	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		1.50	5.00	1	ug/L	BMR
Acetone	17	67-64-1	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		7.00	10.0	1	ug/L	BMR
Acrylonitrile	17	107-13-1	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		1.70	5.00	1	ug/L	BMR
Benzene	17	71-43-2	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
Bromochloromethane	17	74-97-5	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.50	1.00	1	ug/L	BMR
Bromodichloromethane	17	75-27-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	0.50	1	ug/L	BMR
Bromoform	17	75-25-2	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
Bromomethane	17	74-83-9	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.80	1.00	1	ug/L	BMR
Carbon disulfide	17	75-15-0	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		5.00	10.0	1	ug/L	BMR
Carbon tetrachloride	17	56-23-5	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.50	1.00	1	ug/L	BMR
Chlorobenzene	17	108-90-7	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR

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Client Sample ID: Trip Blank

Laboratory Sample ID: 22L0423-17

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Chloroethane	17	75-00-3	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.70	1.00	1	ug/L	BMR
Chloroform	17	67-66-3	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.50	0.50	1	ug/L	BMR
Chloromethane	17	74-87-3	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.95	1.00	1	ug/L	BMR
cis-1,2-Dichloroethylene	17	156-59-2	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
cis-1,3-Dichloropropene	17	10061-01-5	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.30	1.00	1	ug/L	BMR
Dibromochloromethane	17	124-48-1	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.35	0.50	1	ug/L	BMR
Dibromomethane	17	74-95-3	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	17	100-41-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
Iodomethane	17	74-88-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		6.00	10.0	1	ug/L	BMR
m+p-Xylenes	17	179601-23-1	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.60	2.00	1	ug/L	BMR
Methylene chloride	17	75-09-2	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		4.00	4.00	1	ug/L	BMR
o-Xylene	17	95-47-6	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
Styrene	17	100-42-5	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
Tetrachloroethylene (PCE)	17	127-18-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	17	108-88-3	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.50	1.00	1	ug/L	BMR
trans-1,2-Dichloroethylene	17	156-60-5	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.60	1.00	1	ug/L	BMR
trans-1,3-Dichloropropene	17	10061-02-6	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.30	1.00	1	ug/L	BMR
trans-1,4-Dichloro-2-butene	17	110-57-6	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		1.00	4.00	1	ug/L	BMR
Trichloroethylene	17	79-01-6	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.40	1.00	1	ug/L	BMR
Trichlorofluoromethane	17	75-69-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.80	1.00	1	ug/L	BMR
Vinyl acetate	17	108-05-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		2.00	10.0	1	ug/L	BMR
Vinyl chloride	17	75-01-4	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.50	0.50	1	ug/L	BMR
Xylenes, Total	17	1330-20-7	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		1.00	3.00	1	ug/L	BMR

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Client Sample ID: Trip Blank

Laboratory Sample ID: 22L0423-17

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Volatile Organic Compounds by GCMS</b>												
Surr: 1,2-Dichloroethane-d4 (Surr)	17	111 %	70-120	12/09/2022 13:54	12/09/2022 13:54							
Surr: 4-Bromofluorobenzene (Surr)	17	98.7 %	75-120	12/09/2022 13:54	12/09/2022 13:54							
Surr: Dibromofluoromethane (Surr)	17	100 %	70-130	12/09/2022 13:54	12/09/2022 13:54							
Surr: Toluene-d8 (Surr)	17	101 %	70-130	12/09/2022 13:54	12/09/2022 13:54							
Dichlorodifluoromethane	17	75-71-8	SW8260D	12/09/2022 13:54	12/09/2022 13:54	BLOD		0.95	1.00	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	17	111 %	70-120	12/09/2022 13:54	12/09/2022 13:54							
Surr: 4-Bromofluorobenzene (Surr)	17	98.7 %	75-120	12/09/2022 13:54	12/09/2022 13:54							
Surr: Dibromofluoromethane (Surr)	17	100 %	70-130	12/09/2022 13:54	12/09/2022 13:54							
Surr: Toluene-d8 (Surr)	17	101 %	70-130	12/09/2022 13:54	12/09/2022 13:54							

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Micro-extractables by GC/ECD</b>												
1,2-Dibromoethane (EDB)	17	106-93-4	SW8011	12/12/2022 13:30	12/13/2022 05:22	BLOD		0.008	0.010	1	ug/L	LBH2
1,2,3-Trichloropropane	17	96-18-4	SW8011	12/12/2022 13:30	12/13/2022 05:22	BLOD		0.009	0.010	1	ug/L	LBH2
1,2-Dibromo-3-chloropropane (DBCP)	17	96-12-8	SW8011	12/12/2022 13:30	12/13/2022 05:22	BLOD		0.005	0.010	1	ug/L	LBH2

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Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Head Space Analysis by GC</b>												
Ethane	17	74-84-0	RSK175M	12/09/2022 14:49	12/09/2022 14:49	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	17	87.6 %	70-130	12/09/2022 14:49	12/09/2022 14:49							
Ethene	17	74-85-1	RSK175M	12/09/2022 14:49	12/09/2022 14:49	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	17	87.6 %	70-130	12/09/2022 14:49	12/09/2022 14:49							
Methane	17	74-82-8	RSK175M	12/09/2022 14:49	12/09/2022 14:49	BLOD		1.5	5.0	1	ug/L	RJB
<i>Surr: Acetylene (Surr)</i>	17	87.6 %	70-130	12/09/2022 14:49	12/09/2022 14:49							



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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0428 - EPA200.8 R5.4

**Blank (BFL0428-BLK1)**

Prepared: 12/12/2022 Analyzed: 12/18/2022

Antimony	ND	1.0	ug/L
Arsenic	ND	1.0	ug/L
Barium	ND	5.00	ug/L
Beryllium	ND	1.00	ug/L
Cadmium	ND	1.00	ug/L
Chromium	ND	1.00	ug/L
Cobalt	ND	1.00	ug/L
Copper	ND	1.00	ug/L
Lead	ND	1.0	ug/L
Nickel	ND	1.000	ug/L
Selenium	ND	1.00	ug/L
Silver	ND	1.00	ug/L
Thallium	ND	1.0	ug/L
Vanadium	ND	5.00	ug/L
Zinc	ND	5.00	ug/L

**LCS (BFL0428-BS1)**

Prepared: 12/12/2022 Analyzed: 12/18/2022

Antimony	52	1.0	ug/L	50.0	104	80-120
Arsenic	49	1.0	ug/L	50.0	98.3	80-120
Barium	50.5	5.00	ug/L	50.0	101	80-120
Beryllium	55.8	1.00	ug/L	50.0	112	80-120
Cadmium	50.3	1.00	ug/L	50.0	101	80-120
Chromium	51.2	1.00	ug/L	50.0	102	80-120
Cobalt	48.9	1.00	ug/L	50.0	97.8	80-120
Copper	50.1	1.00	ug/L	50.0	100	80-120

## Certificate of Analysis

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Date Issued: 12/30/2022 11:56:27AM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0428 - EPA200.8 R5.4**

**LCS (BFL0428-BS1)**

Prepared: 12/12/2022 Analyzed: 12/18/2022

Lead	50	1.0	ug/L	50.0		101	80-120			
Nickel	49.02	1.000	ug/L	50.0		98.0	80-120			
Selenium	51.7	1.00	ug/L	50.0		103	80-120			
Silver	9.38	1.00	ug/L	10.0		93.8	80-120			E
Thallium	52	1.0	ug/L	50.0		104	80-120			
Vanadium	49.9	5.00	ug/L	50.0		99.7	80-120			
Zinc	52.2	5.00	ug/L	50.0		104	80-120			

**Matrix Spike (BFL0428-MS1)**

**Source: 22L0423-13**

Prepared: 12/12/2022 Analyzed: 12/18/2022

Antimony	52	1.0	ug/L	50.0	BLOD	103	75-125			
Arsenic	60	1.0	ug/L	50.0	12	95.6	75-125			
Barium	827	5.00	ug/L	50.0	787	80.8	75-125			M, E
Beryllium	46.2	1.00	ug/L	50.0	BLOD	92.4	75-125			
Cadmium	47.8	1.00	ug/L	50.0	0.563	94.4	75-125			
Chromium	49.4	1.00	ug/L	50.0	1.81	95.1	75-125			
Cobalt	74.2	1.00	ug/L	50.0	27.8	92.8	75-125			M
Copper	45.3	1.00	ug/L	50.0	0.904	88.8	75-125			
Lead	50	1.0	ug/L	50.0	1.5	96.6	75-125			
Nickel	67.04	1.000	ug/L	50.0	22.52	89.0	75-125			M
Selenium	45.2	1.00	ug/L	50.0	BLOD	90.4	75-125			
Silver	9.09	1.00	ug/L	10.0	BLOD	90.9	75-125			E
Thallium	51	1.0	ug/L	50.0	BLOD	102	75-125			
Vanadium	49.9	5.00	ug/L	50.0	BLOD	99.7	75-125			
Zinc	139	5.00	ug/L	50.0	96.1	85.5	75-125			M

**Matrix Spike (BFL0428-MS2)**

**Source: 22L0423-16**

Prepared: 12/12/2022 Analyzed: 12/18/2022

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 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFL0428 - EPA200.8 R5.4

**Matrix Spike (BFL0428-MS2)**

Source: 22L0423-16

Prepared: 12/12/2022 Analyzed: 12/18/2022

Antimony	52	1.0	ug/L	50.0	BLOD	104	75-125			
Arsenic	49	1.0	ug/L	50.0	BLOD	97.9	75-125			
Barium	51.9	5.00	ug/L	50.0	BLOD	104	75-125			
Beryllium	50.6	1.00	ug/L	50.0	BLOD	101	75-125			
Cadmium	49.5	1.00	ug/L	50.0	BLOD	99.0	75-125			
Chromium	48.6	1.00	ug/L	50.0	BLOD	97.3	75-125			
Cobalt	48.6	1.00	ug/L	50.0	BLOD	97.3	75-125			
Copper	48.7	1.00	ug/L	50.0	BLOD	97.4	75-125			
Lead	50	1.0	ug/L	50.0	BLOD	100	75-125			
Nickel	48.02	1.000	ug/L	50.0	BLOD	96.0	75-125			
Selenium	50.1	1.00	ug/L	50.0	BLOD	100	75-125			
Silver	9.52	1.00	ug/L	10.0	BLOD	95.2	75-125			E
Thallium	50	1.0	ug/L	50.0	BLOD	101	75-125			
Vanadium	48.4	5.00	ug/L	50.0	BLOD	96.7	75-125			
Zinc	51.1	5.00	ug/L	50.0	BLOD	102	75-125			

**Matrix Spike Dup (BFL0428-MSD1)**

Source: 22L0423-13

Prepared: 12/12/2022 Analyzed: 12/18/2022

Antimony	51	1.0	ug/L	50.0	BLOD	103	75-125	0.620	20	
Arsenic	59	1.0	ug/L	50.0	12	94.5	75-125	0.948	20	
Barium	831	5.00	ug/L	50.0	787	89.1	75-125	0.501	20	E
Beryllium	46.3	1.00	ug/L	50.0	BLOD	92.5	75-125	0.134	20	
Cadmium	48.0	1.00	ug/L	50.0	0.563	94.9	75-125	0.565	20	
Chromium	49.7	1.00	ug/L	50.0	1.81	95.9	75-125	0.758	20	
Cobalt	72.8	1.00	ug/L	50.0	27.8	90.0	75-125	1.92	20	
Copper	45.9	1.00	ug/L	50.0	0.904	89.9	75-125	1.27	20	

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0428 - EPA200.8 R5.4

Matrix Spike Dup (BFL0428-MSD1)	Source: 22L0423-13			Prepared: 12/12/2022 Analyzed: 12/18/2022						
Lead	52	1.0	ug/L	50.0	1.5	100	75-125	3.47	20	
Nickel	66.64	1.000	ug/L	50.0	22.52	88.2	75-125	0.601	20	
Selenium	45.7	1.00	ug/L	50.0	BLOD	91.3	75-125	1.02	20	
Silver	9.24	1.00	ug/L	10.0	BLOD	92.4	75-125	1.55	20	E
Thallium	51	1.0	ug/L	50.0	BLOD	103	75-125	0.153	20	
Vanadium	49.8	5.00	ug/L	50.0	BLOD	99.5	75-125	0.220	20	
Zinc	137	5.00	ug/L	50.0	96.1	82.8	75-125	0.977	20	

Matrix Spike Dup (BFL0428-MSD2)	Source: 22L0423-16			Prepared: 12/12/2022 Analyzed: 12/18/2022						
Antimony	52	1.0	ug/L	50.0	BLOD	105	75-125	0.342	20	
Arsenic	49	1.0	ug/L	50.0	BLOD	98.7	75-125	0.881	20	
Barium	50.8	5.00	ug/L	50.0	BLOD	102	75-125	2.15	20	
Beryllium	54.7	1.00	ug/L	50.0	BLOD	109	75-125	7.93	20	
Cadmium	50.2	1.00	ug/L	50.0	BLOD	100	75-125	1.47	20	
Chromium	50.8	1.00	ug/L	50.0	BLOD	102	75-125	4.43	20	
Cobalt	48.3	1.00	ug/L	50.0	BLOD	96.6	75-125	0.720	20	
Copper	48.7	1.00	ug/L	50.0	BLOD	97.5	75-125	0.0287	20	
Lead	51	1.0	ug/L	50.0	BLOD	102	75-125	1.80	20	
Nickel	48.16	1.000	ug/L	50.0	BLOD	96.3	75-125	0.290	20	
Selenium	51.5	1.00	ug/L	50.0	BLOD	103	75-125	2.72	20	
Silver	9.40	1.00	ug/L	10.0	BLOD	94.0	75-125	1.37	20	E
Thallium	51	1.0	ug/L	50.0	BLOD	103	75-125	2.07	20	
Vanadium	49.4	5.00	ug/L	50.0	BLOD	98.7	75-125	2.07	20	
Zinc	51.5	5.00	ug/L	50.0	BLOD	103	75-125	0.916	20	

### Batch BFL0592 - SW7470A

### Certificate of Analysis

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 Client Site I.D.: City of Bristol 2nd Semi-Annual  
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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0592 - SW7470A</b>										
<b>Blank (BFL0592-BLK1)</b>				Prepared & Analyzed: 12/15/2022						
Mercury	ND	0.00020	mg/L							
<b>LCS (BFL0592-BS1)</b>				Prepared & Analyzed: 12/15/2022						
Mercury	0.00255	0.00020	mg/L	0.00250		102	80-120			
<b>Matrix Spike (BFL0592-MS1)</b>				Source: 22L0423-13		Prepared & Analyzed: 12/15/2022				
Mercury	0.00376	0.00020	mg/L	0.00250	0.00125	100	80-120			
<b>Matrix Spike Dup (BFL0592-MSD1)</b>				Source: 22L0423-13		Prepared & Analyzed: 12/15/2022				
Mercury	0.00387	0.00020	mg/L	0.00250	0.00125	105	80-120	2.88	20	
<b>Batch BFL0762 - EPA200.8 R5.4</b>										
<b>Blank (BFL0762-BLK1)</b>				Prepared & Analyzed: 12/20/2022						
Tin	ND	1.00	ug/L							
<b>LCS (BFL0762-BS1)</b>				Prepared & Analyzed: 12/20/2022						
Tin	56.3	1.00	ug/L	50.0		113	80-120			
<b>Matrix Spike (BFL0762-MS1)</b>				Source: 22L0205-10RE2		Prepared & Analyzed: 12/20/2022				
Tin	56.1	1.00	ug/L	50.0	BLOD	112	75-125			
<b>Matrix Spike Dup (BFL0762-MSD1)</b>				Source: 22L0205-10RE2		Prepared & Analyzed: 12/20/2022				
Tin	56.4	1.00	ug/L	50.0	BLOD	113	75-125	0.473	20	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**Blank (BFL0391-BLK1)**

Prepared & Analyzed: 12/09/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**Blank (BFL0391-BLK1)**

Prepared & Analyzed: 12/09/2022

Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.00	ug/L							
cis-1,2-Dichloroethylene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	1.00	ug/L							
Dichlorodifluoromethane	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Iodomethane	ND	10.0	ug/L							
m+p-Xylenes	ND	2.00	ug/L							
Methylene chloride	ND	4.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
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Surr: 1,2-Dichloroethane-d4 (Surr)	51.3		ug/L	50.0		103	70-120			
Surr: 4-Bromofluorobenzene (Surr)	47.9		ug/L	50.0		95.8	75-120			

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### Batch BFL0391 - SW5030B-MS

**Blank (BFL0391-BLK1)**

Prepared & Analyzed: 12/09/2022

<i>Surr: Dibromofluoromethane (Surr)</i>	50.0		ug/L	50.0		100	70-130
<i>Surr: Toluene-d8 (Surr)</i>	49.9		ug/L	50.0		99.8	70-130

**LCS (BFL0391-BS1)**

Prepared & Analyzed: 12/09/2022

1,1,1,2-Tetrachloroethane	50.0	0.4	ug/L	50.0		99.9	80-130
1,1,1,2-Tetrachloroethane	50.0	0.4	ug/L	50.0		99.9	80-130
1,1,1-Trichloroethane	44.5	1	ug/L	50.0		89.0	65-130
1,1,1-Trichloroethane	44.5	1	ug/L	50.0		89.0	65-130
1,1,2,2-Tetrachloroethane	44.9	0.4	ug/L	50.0		89.7	65-130
1,1,2,2-Tetrachloroethane	44.9	0.4	ug/L	50.0		89.7	65-130
1,1,2-Trichloroethane	46.9	1	ug/L	50.0		93.7	75-125
1,1,2-Trichloroethane	46.9	1	ug/L	50.0		93.7	75-125
1,1-Dichloroethane	41.8	1	ug/L	50.0		83.5	70-135
1,1-Dichloroethane	41.8	1	ug/L	50.0		83.5	70-135
1,1-Dichloroethylene	37.1	1	ug/L	50.0		74.3	70-130
1,1-Dichloroethylene	37.1	1	ug/L	50.0		74.3	70-130
1,1-Dichloropropene	44.1	1	ug/L	50.0		88.2	75-135
1,2,3-Trichloropropane	45.2	1	ug/L	50.0		90.5	75-125
1,2,3-Trichloropropane	45.2	1	ug/L	50.0		90.5	75-125
1,2,4-Trichlorobenzene	51.8	1	ug/L	50.0		104	65-135
1,2-Dichlorobenzene	52.4	0.5	ug/L	50.0		105	70-120
1,2-Dichlorobenzene	52.4	0.5	ug/L	50.0		105	70-120
1,2-Dichloroethane	38.9	1	ug/L	50.0		77.8	70-130
1,2-Dichloroethane	38.9	1	ug/L	50.0		77.8	70-130
1,2-Dichloropropane	46.0	0.5	ug/L	50.0		92.1	75-125



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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0391 - SW5030B-MS

**LCS (BFL0391-BS1)**

Prepared &amp; Analyzed: 12/09/2022

1,2-Dichloropropane	46.0	0.5	ug/L	50.0		92.1	75-125			
1,3-Dichlorobenzene	51.5	1	ug/L	50.0		103	75-125			
1,3-Dichloropropane	45.1	1	ug/L	50.0		90.1	75-125			
1,4-Dichlorobenzene	51.6	1	ug/L	50.0		103	75-125			
1,4-Dichlorobenzene	51.6	1	ug/L	50.0		103	75-125			
2,2-Dichloropropane	44.6	1	ug/L	50.0		89.1	70-135			
2-Butanone (MEK)	43.9	10	ug/L	50.0		87.9	30-150			
2-Butanone (MEK)	43.9	10	ug/L	50.0		87.9	30-150			
2-Hexanone (MBK)	49.6	5	ug/L	50.0		99.2	55-130			
2-Hexanone (MBK)	49.6	5	ug/L	50.0		99.2	55-130			
4-Methyl-2-pentanone (MIBK)	49.2	5	ug/L	50.0		98.3	60-135			
4-Methyl-2-pentanone (MIBK)	49.2	5	ug/L	50.0		98.3	60-135			
Acetone	39.6	10	ug/L	50.0		79.2	40-140			
Acetone	39.6	10	ug/L	50.0		79.2	40-140			
Acrylonitrile	234	5	ug/L	250		93.6	70-130			
Acrylonitrile	234	5	ug/L	250		93.6	70-130			
Benzene	45.6	1	ug/L	50.0		91.2	80-120			
Benzene	45.6	1	ug/L	50.0		91.2	80-120			
Bromochloromethane	49.6	1	ug/L	50.0		99.3	65-130			
Bromochloromethane	49.6	1	ug/L	50.0		99.3	65-130			
Bromodichloromethane	49.6	0.5	ug/L	50.0		99.1	75-120			
Bromodichloromethane	49.6	0.5	ug/L	50.0		99.1	75-120			
Bromoform	49.4	1	ug/L	50.0		98.8	70-130			
Bromoform	49.4	1	ug/L	50.0		98.8	70-130			
Bromomethane	40.9	1	ug/L	50.0		81.8	30-145			

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Enthalpy Analytical

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**Batch BFL0391 - SW5030B-MS**

**LCS (BFL0391-BS1)**

Prepared & Analyzed: 12/09/2022

Bromomethane	40.9	1	ug/L	50.0		81.8	30-145			
Carbon disulfide	41.1	10	ug/L	50.0		82.1	35-160			
Carbon disulfide	41.1	10	ug/L	50.0		82.1	35-160			
Carbon tetrachloride	45.7	1	ug/L	50.0		91.4	65-140			
Carbon tetrachloride	45.7	1	ug/L	50.0		91.4	65-140			
Chlorobenzene	48.5	1	ug/L	50.0		97.0	80-120			
Chlorobenzene	48.5	1	ug/L	50.0		97.0	80-120			
Chloroethane	39.7	1	ug/L	50.0		79.4	60-135			
Chloroethane	39.7	1	ug/L	50.0		79.4	60-135			
Chloroform	39.0	0.5	ug/L	50.0		78.1	65-135			
Chloroform	39.0	0.5	ug/L	50.0		78.1	65-135			
Chloromethane	45.0	1	ug/L	50.0		89.9	40-125			
Chloromethane	45.0	1	ug/L	50.0		89.9	40-125			
cis-1,2-Dichloroethylene	39.0	1	ug/L	50.0		78.0	70-125			
cis-1,2-Dichloroethylene	39.0	1	ug/L	50.0		78.0	70-125			
cis-1,3-Dichloropropene	41.4	1	ug/L	50.0		82.7	70-130			
cis-1,3-Dichloropropene	41.4	1	ug/L	50.0		82.7	70-130			
Dibromochloromethane	47.0	0.5	ug/L	50.0		94.0	60-135			
Dibromochloromethane	47.0	0.5	ug/L	50.0		94.0	60-135			
Dibromomethane	42.9	1	ug/L	50.0		85.9	75-125			
Dibromomethane	42.9	1	ug/L	50.0		85.9	75-125			
Dichlorodifluoromethane	32.1	1	ug/L	50.0		64.1	30-155			
Ethylbenzene	51.8	1	ug/L	50.0		104	75-125			
Ethylbenzene	51.8	1	ug/L	50.0		104	75-125			
m+p-Xylenes	98.5	2	ug/L	100		98.5	75-130			

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Enthalpy Analytical

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#### Batch BFL0391 - SW5030B-MS

**LCS (BFL0391-BS1)**

Prepared &amp; Analyzed: 12/09/2022

m+p-Xylenes	98.5	2	ug/L	100		98.5	75-130			
Methylene chloride	42.0	4	ug/L	50.0		84.0	55-140			
Methylene chloride	42.0	4	ug/L	50.0		84.0	55-140			
o-Xylene	49.9	1	ug/L	50.0		99.7	80-120			
o-Xylene	49.9	1	ug/L	50.0		99.7	80-120			
Styrene	50.6	1	ug/L	50.0		101	65-135			
Styrene	50.6	1	ug/L	50.0		101	65-135			
Tetrachloroethylene (PCE)	79.7	1	ug/L	50.0		159	45-150			L
Tetrachloroethylene (PCE)	79.7	1	ug/L	50.0		159	45-150			L
Toluene	46.8	1	ug/L	50.0		93.6	75-120			
Toluene	46.8	1	ug/L	50.0		93.6	75-120			
trans-1,2-Dichloroethylene	39.5	1	ug/L	50.0		78.9	60-140			
trans-1,2-Dichloroethylene	39.5	1	ug/L	50.0		78.9	60-140			
trans-1,3-Dichloropropene	43.9	1	ug/L	50.0		87.9	55-140			
trans-1,3-Dichloropropene	43.9	1	ug/L	50.0		87.9	55-140			
Trichloroethylene	43.5	1	ug/L	50.0		87.0	70-125			
Trichloroethylene	43.5	1	ug/L	50.0		87.0	70-125			
Trichlorofluoromethane	45.7	1	ug/L	50.0		91.4	60-145			
Trichlorofluoromethane	45.7	1	ug/L	50.0		91.4	60-145			
Vinyl chloride	41.5	0.5	ug/L	50.0		83.0	50-145			
Vinyl chloride	41.5	0.5	ug/L	50.0		83.0	50-145			
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>50.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>49.2</i>		<i>ug/L</i>	<i>50.0</i>		<i>98.4</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>46.9</i>		<i>ug/L</i>	<i>50.0</i>		<i>93.9</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>51.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>103</i>	<i>70-130</i>			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**LCS (BFL0391-BS1)**

Prepared & Analyzed: 12/09/2022

**Matrix Spike (BFL0391-MS1)**

**Source: 22L0423-13**

Prepared & Analyzed: 12/09/2022

1,1,1,2-Tetrachloroethane	50.3	0.4	ug/L	50.0	BLOD	101	80-130			
1,1,1,2-Tetrachloroethane	50.3	0.4	ug/L	50.0	BLOD	101	80-130			
1,1,1-Trichloroethane	50.6	1	ug/L	50.0	BLOD	101	65-130			
1,1,1-Trichloroethane	50.6	1	ug/L	50.0	BLOD	101	65-130			
1,1,2,2-Tetrachloroethane	46.0	0.4	ug/L	50.0	BLOD	92.1	65-130			
1,1,2,2-Tetrachloroethane	46.0	0.4	ug/L	50.0	BLOD	92.1	65-130			
1,1,2-Trichloroethane	47.1	1	ug/L	50.0	BLOD	94.3	75-125			
1,1,2-Trichloroethane	47.1	1	ug/L	50.0	BLOD	94.3	75-125			
1,1-Dichloroethane	53.9	1	ug/L	50.0	5.19	97.4	70-135			
1,1-Dichloroethane	53.9	1	ug/L	50.0	5.19	97.4	70-135			
1,1-Dichloroethylene	41.0	1	ug/L	50.0	BLOD	82.1	70-130			
1,1-Dichloroethylene	41.0	1	ug/L	50.0	BLOD	82.1	70-130			
1,1-Dichloropropene	49.9	1	ug/L	50.0	BLOD	99.8	75-135			
1,2,3-Trichloropropane	46.0	1	ug/L	50.0	BLOD	92.1	75-125			
1,2,3-Trichloropropane	46.0	1	ug/L	50.0	BLOD	92.1	75-125			
1,2,4-Trichlorobenzene	57.4	1	ug/L	50.0	BLOD	115	65-135			
1,2-Dichlorobenzene	52.8	0.5	ug/L	50.0	BLOD	106	70-120			
1,2-Dichlorobenzene	52.8	0.5	ug/L	50.0	BLOD	106	70-120			
1,2-Dichloroethane	40.2	1	ug/L	50.0	BLOD	80.4	70-130			
1,2-Dichloroethane	40.2	1	ug/L	50.0	BLOD	80.4	70-130			
1,2-Dichloropropane	45.8	0.5	ug/L	50.0	BLOD	91.6	75-125			
1,2-Dichloropropane	45.8	0.5	ug/L	50.0	BLOD	91.6	75-125			
1,3-Dichlorobenzene	52.2	1	ug/L	50.0	BLOD	104	75-125			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**Matrix Spike (BFL0391-MS1)**

**Source: 22L0423-13**

Prepared & Analyzed: 12/09/2022

1,3-Dichloropropane	45.4	1	ug/L	50.0	BLOD	90.9	75-125			
1,4-Dichlorobenzene	52.5	1	ug/L	50.0	1.65	102	75-125			
1,4-Dichlorobenzene	52.5	1	ug/L	50.0	1.65	102	75-125			
2,2-Dichloropropane	48.2	1	ug/L	50.0	BLOD	96.4	70-135			
2-Butanone (MEK)	42.5	10	ug/L	50.0	BLOD	85.0	30-150			
2-Butanone (MEK)	42.5	10	ug/L	50.0	BLOD	85.0	30-150			
2-Hexanone (MBK)	46.4	5	ug/L	50.0	BLOD	92.8	55-130			
2-Hexanone (MBK)	46.4	5	ug/L	50.0	BLOD	92.8	55-130			
4-Methyl-2-pentanone (MIBK)	47.2	5	ug/L	50.0	BLOD	94.4	60-135			
4-Methyl-2-pentanone (MIBK)	47.2	5	ug/L	50.0	BLOD	94.4	60-135			
Acetone	44.4	10	ug/L	50.0	BLOD	79.8	40-140			
Acetone	44.4	10	ug/L	50.0	BLOD	79.8	40-140			
Acrylonitrile	237	5	ug/L	250	BLOD	94.8	70-130			
Acrylonitrile	237	5	ug/L	250	BLOD	94.8	70-130			
Benzene	84.4	1	ug/L	50.0	39.3	90.4	80-120			
Benzene	84.4	1	ug/L	50.0	39.3	90.4	80-120			
Bromochloromethane	48.8	1	ug/L	50.0	BLOD	97.6	65-130			
Bromochloromethane	48.8	1	ug/L	50.0	BLOD	97.6	65-130			
Bromodichloromethane	48.8	0.5	ug/L	50.0	BLOD	97.5	75-120			
Bromodichloromethane	48.8	0.5	ug/L	50.0	BLOD	97.5	75-120			
Bromoform	49.7	1	ug/L	50.0	BLOD	99.5	70-130			
Bromoform	49.7	1	ug/L	50.0	BLOD	99.5	70-130			
Bromomethane	35.8	1	ug/L	50.0	BLOD	71.5	30-145			
Bromomethane	35.8	1	ug/L	50.0	BLOD	71.5	30-145			
Carbon disulfide	43.6	10	ug/L	50.0	BLOD	87.1	35-160			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**Matrix Spike (BFL0391-MS1)**

Source: 22L0423-13

Prepared & Analyzed: 12/09/2022

Carbon disulfide	43.6	10	ug/L	50.0	BLOD	87.1	35-160			
Carbon tetrachloride	50.8	1	ug/L	50.0	BLOD	102	65-140			
Carbon tetrachloride	50.8	1	ug/L	50.0	BLOD	102	65-140			
Chlorobenzene	51.8	1	ug/L	50.0	1.25	101	80-120			
Chlorobenzene	51.8	1	ug/L	50.0	1.25	101	80-120			
Chloroethane	44.3	1	ug/L	50.0	BLOD	88.6	60-135			
Chloroethane	44.3	1	ug/L	50.0	BLOD	88.6	60-135			
Chloroform	40.1	0.5	ug/L	50.0	BLOD	80.1	65-135			
Chloroform	40.1	0.5	ug/L	50.0	BLOD	80.1	65-135			
Chloromethane	45.1	1	ug/L	50.0	BLOD	90.2	40-125			
Chloromethane	45.1	1	ug/L	50.0	BLOD	90.2	40-125			
cis-1,2-Dichloroethylene	90.0	1	ug/L	50.0	44.8	90.4	70-125			
cis-1,2-Dichloroethylene	90.0	1	ug/L	50.0	44.8	90.4	70-125			
cis-1,3-Dichloropropene	40.3	1	ug/L	50.0	BLOD	80.6	70-130			
cis-1,3-Dichloropropene	40.3	1	ug/L	50.0	BLOD	80.6	70-130			
Dibromochloromethane	46.1	0.5	ug/L	50.0	BLOD	92.1	60-135			
Dibromochloromethane	46.1	0.5	ug/L	50.0	BLOD	92.1	60-135			
Dibromomethane	48.1	1	ug/L	50.0	BLOD	96.3	75-125			
Dibromomethane	48.1	1	ug/L	50.0	BLOD	96.3	75-125			
Dichlorodifluoromethane	32.3	1	ug/L	50.0	BLOD	64.6	30-155			
Ethylbenzene	52.2	1	ug/L	50.0	BLOD	104	75-125			
Ethylbenzene	52.2	1	ug/L	50.0	BLOD	104	75-125			
m+p-Xylenes	100	2	ug/L	100	BLOD	100	75-130			
m+p-Xylenes	100	2	ug/L	100	BLOD	100	75-130			
Methylene chloride	41.7	4	ug/L	50.0	BLOD	83.4	55-140			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0391 - SW5030B-MS

**Matrix Spike (BFL0391-MS1)**

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

Methylene chloride	41.7	4	ug/L	50.0	BLOD	83.4	55-140			
o-Xylene	51.3	1	ug/L	50.0	BLOD	103	80-120			
o-Xylene	51.3	1	ug/L	50.0	BLOD	103	80-120			
Styrene	51.5	1	ug/L	50.0	BLOD	103	65-135			
Styrene	51.5	1	ug/L	50.0	BLOD	103	65-135			
Tetrachloroethylene (PCE)	81.9	1	ug/L	50.0	BLOD	164	45-150			M
Tetrachloroethylene (PCE)	81.9	1	ug/L	50.0	BLOD	164	45-150			M
Toluene	46.6	1	ug/L	50.0	BLOD	92.4	75-120			
Toluene	46.6	1	ug/L	50.0	BLOD	92.4	75-120			
trans-1,2-Dichloroethylene	46.0	1	ug/L	50.0	BLOD	92.1	60-140			
trans-1,2-Dichloroethylene	46.0	1	ug/L	50.0	BLOD	92.1	60-140			
trans-1,3-Dichloropropene	42.8	1	ug/L	50.0	BLOD	85.6	55-140			
trans-1,3-Dichloropropene	42.8	1	ug/L	50.0	BLOD	85.6	55-140			
Trichloroethylene	45.5	1	ug/L	50.0	BLOD	91.0	70-125			
Trichloroethylene	45.5	1	ug/L	50.0	BLOD	91.0	70-125			
Trichlorofluoromethane	47.1	1	ug/L	50.0	BLOD	94.2	60-145			
Trichlorofluoromethane	47.1	1	ug/L	50.0	BLOD	94.2	60-145			
Vinyl chloride	51.3	0.5	ug/L	50.0	11.9	78.7	50-145			
Vinyl chloride	51.3	0.5	ug/L	50.0	11.9	78.7	50-145			
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Surr: 1,2-Dichloroethane-d4 (Surr)	52.1		ug/L	50.0		104	70-120			
Surr: 4-Bromofluorobenzene (Surr)	49.0		ug/L	50.0		98.0	75-120			
Surr: Dibromofluoromethane (Surr)	51.9		ug/L	50.0		104	70-130			
Surr: Toluene-d8 (Surr)	49.2		ug/L	50.0		98.5	70-130			

**Matrix Spike Dup (BFL0391-MSD1)**

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

Matrix Spike Dup (BFL0391-MSD1)	Source: 22L0423-13			Prepared & Analyzed: 12/09/2022						
1,1,1,2-Tetrachloroethane	51.1	0.4	ug/L	50.0	BLOD	102	80-130	1.46	30	
1,1,1,2-Tetrachloroethane	51.1	0.4	ug/L	50.0	BLOD	102	80-130	1.46	30	
1,1,1-Trichloroethane	45.8	1	ug/L	50.0	BLOD	91.7	65-130	9.97	30	
1,1,1-Trichloroethane	45.8	1	ug/L	50.0	BLOD	91.7	65-130	9.97	30	
1,1,2,2-Tetrachloroethane	46.9	0.4	ug/L	50.0	BLOD	93.8	65-130	1.83	30	
1,1,2,2-Tetrachloroethane	46.9	0.4	ug/L	50.0	BLOD	93.8	65-130	1.83	30	
1,1,2-Trichloroethane	46.1	1	ug/L	50.0	BLOD	92.2	75-125	2.27	30	
1,1,2-Trichloroethane	46.1	1	ug/L	50.0	BLOD	92.2	75-125	2.27	30	
1,1-Dichloroethane	51.0	1	ug/L	50.0	5.19	91.6	70-135	5.49	30	
1,1-Dichloroethane	51.0	1	ug/L	50.0	5.19	91.6	70-135	5.49	30	
1,1-Dichloroethylene	40.6	1	ug/L	50.0	BLOD	81.2	70-130	1.13	30	
1,1-Dichloroethylene	40.6	1	ug/L	50.0	BLOD	81.2	70-130	1.13	30	
1,1-Dichloropropene	45.2	1	ug/L	50.0	BLOD	90.5	75-135	9.84	30	
1,2,3-Trichloropropane	48.9	1	ug/L	50.0	BLOD	97.9	75-125	6.06	30	
1,2,3-Trichloropropane	48.9	1	ug/L	50.0	BLOD	97.9	75-125	6.06	30	
1,2,4-Trichlorobenzene	53.8	1	ug/L	50.0	BLOD	108	65-135	6.55	30	
1,2-Dichlorobenzene	51.4	0.5	ug/L	50.0	BLOD	103	70-120	2.76	30	
1,2-Dichlorobenzene	51.4	0.5	ug/L	50.0	BLOD	103	70-120	2.76	30	
1,2-Dichloroethane	38.7	1	ug/L	50.0	BLOD	77.3	70-130	3.93	30	
1,2-Dichloroethane	38.7	1	ug/L	50.0	BLOD	77.3	70-130	3.93	30	
1,2-Dichloropropane	44.5	0.5	ug/L	50.0	BLOD	89.0	75-125	2.86	30	
1,2-Dichloropropane	44.5	0.5	ug/L	50.0	BLOD	89.0	75-125	2.86	30	
1,3-Dichlorobenzene	50.9	1	ug/L	50.0	BLOD	102	75-125	2.54	30	
1,3-Dichloropropane	44.2	1	ug/L	50.0	BLOD	88.5	75-125	2.72	30	
1,4-Dichlorobenzene	51.3	1	ug/L	50.0	1.65	99.2	75-125	2.31	30	



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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**Matrix Spike Dup (BFL0391-MSD1)**

**Source: 22L0423-13**

**Prepared & Analyzed: 12/09/2022**

1,4-Dichlorobenzene	51.3	1	ug/L	50.0	1.65	99.2	75-125	2.31	30	
2,2-Dichloropropane	45.2	1	ug/L	50.0	BLOD	90.4	70-135	6.47	30	
2-Butanone (MEK)	50.5	10	ug/L	50.0	BLOD	101	30-150	17.2	30	
2-Butanone (MEK)	50.5	10	ug/L	50.0	BLOD	101	30-150	17.2	30	
2-Hexanone (MBK)	57.7	5	ug/L	50.0	BLOD	115	55-130	21.6	30	
2-Hexanone (MBK)	57.7	5	ug/L	50.0	BLOD	115	55-130	21.6	30	
4-Methyl-2-pentanone (MIBK)	55.3	5	ug/L	50.0	BLOD	111	60-135	15.8	30	
4-Methyl-2-pentanone (MIBK)	55.3	5	ug/L	50.0	BLOD	111	60-135	15.8	30	
Acetone	49.0	10	ug/L	50.0	BLOD	89.0	40-140	9.86	30	
Acetone	49.0	10	ug/L	50.0	BLOD	89.0	40-140	9.86	30	
Acrylonitrile	249	5	ug/L	250	BLOD	99.8	70-130	5.07	30	
Acrylonitrile	249	5	ug/L	250	BLOD	99.8	70-130	5.07	30	
Benzene	82.8	1	ug/L	50.0	39.3	87.1	80-120	1.92	30	
Benzene	82.8	1	ug/L	50.0	39.3	87.1	80-120	1.92	30	
Bromochloromethane	40.6	1	ug/L	50.0	BLOD	81.3	65-130	18.3	30	
Bromochloromethane	40.6	1	ug/L	50.0	BLOD	81.3	65-130	18.3	30	
Bromodichloromethane	47.5	0.5	ug/L	50.0	BLOD	94.9	75-120	2.68	30	
Bromodichloromethane	47.5	0.5	ug/L	50.0	BLOD	94.9	75-120	2.68	30	
Bromoform	50.1	1	ug/L	50.0	BLOD	100	70-130	0.681	30	
Bromoform	50.1	1	ug/L	50.0	BLOD	100	70-130	0.681	30	
Bromomethane	40.8	1	ug/L	50.0	BLOD	81.6	30-145	13.2	30	
Bromomethane	40.8	1	ug/L	50.0	BLOD	81.6	30-145	13.2	30	
Carbon disulfide	47.4	10	ug/L	50.0	BLOD	94.8	35-160	8.40	30	
Carbon disulfide	47.4	10	ug/L	50.0	BLOD	94.8	35-160	8.40	30	
Carbon tetrachloride	48.8	1	ug/L	50.0	BLOD	97.5	65-140	4.14	30	

### Certificate of Analysis

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFL0391 - SW5030B-MS

Matrix Spike Dup (BFL0391-MSD1)

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

Carbon tetrachloride	48.8	1	ug/L	50.0	BLOD	97.5	65-140	4.14	30	
Chlorobenzene	51.0	1	ug/L	50.0	1.25	99.6	80-120	1.52	30	
Chlorobenzene	51.0	1	ug/L	50.0	1.25	99.6	80-120	1.52	30	
Chloroethane	38.9	1	ug/L	50.0	BLOD	77.7	60-135	13.1	30	
Chloroethane	38.9	1	ug/L	50.0	BLOD	77.7	60-135	13.1	30	
Chloroform	38.3	0.5	ug/L	50.0	BLOD	76.7	65-135	4.39	30	
Chloroform	38.3	0.5	ug/L	50.0	BLOD	76.7	65-135	4.39	30	
Chloromethane	43.0	1	ug/L	50.0	BLOD	86.0	40-125	4.81	30	
Chloromethane	43.0	1	ug/L	50.0	BLOD	86.0	40-125	4.81	30	
cis-1,2-Dichloroethylene	89.4	1	ug/L	50.0	44.8	89.2	70-125	0.669	30	
cis-1,2-Dichloroethylene	89.4	1	ug/L	50.0	44.8	89.2	70-125	0.669	30	
cis-1,3-Dichloropropene	39.4	1	ug/L	50.0	BLOD	78.7	70-130	2.38	30	
cis-1,3-Dichloropropene	39.4	1	ug/L	50.0	BLOD	78.7	70-130	2.38	30	
Dibromochloromethane	45.3	0.5	ug/L	50.0	BLOD	90.7	60-135	1.58	30	
Dibromochloromethane	45.3	0.5	ug/L	50.0	BLOD	90.7	60-135	1.58	30	
Dibromomethane	47.6	1	ug/L	50.0	BLOD	95.2	75-125	1.15	30	
Dibromomethane	47.6	1	ug/L	50.0	BLOD	95.2	75-125	1.15	30	
Dichlorodifluoromethane	30.3	1	ug/L	50.0	BLOD	60.5	30-155	6.49	30	
Ethylbenzene	51.7	1	ug/L	50.0	BLOD	103	75-125	1.08	30	
Ethylbenzene	51.7	1	ug/L	50.0	BLOD	103	75-125	1.08	30	
m+p-Xylenes	99.2	2	ug/L	100	BLOD	99.2	75-130	0.983	30	
m+p-Xylenes	99.2	2	ug/L	100	BLOD	99.2	75-130	0.983	30	
Methylene chloride	40.2	4	ug/L	50.0	BLOD	80.4	55-140	3.64	30	
Methylene chloride	40.2	4	ug/L	50.0	BLOD	80.4	55-140	3.64	30	
o-Xylene	50.3	1	ug/L	50.0	BLOD	101	80-120	1.97	30	

### Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0391 - SW5030B-MS</b>										
<b>Matrix Spike Dup (BFL0391-MSD1)</b>		<b>Source: 22L0423-13</b>			<b>Prepared &amp; Analyzed: 12/09/2022</b>					
o-Xylene	50.3	1	ug/L	50.0	BLOD	101	80-120	1.97	30	
Styrene	50.8	1	ug/L	50.0	BLOD	102	65-135	1.47	30	
Styrene	50.8	1	ug/L	50.0	BLOD	102	65-135	1.47	30	
Tetrachloroethylene (PCE)	81.8	1	ug/L	50.0	BLOD	164	45-150	0.134	30	M
Tetrachloroethylene (PCE)	81.8	1	ug/L	50.0	BLOD	164	45-150	0.134	30	M
Toluene	45.6	1	ug/L	50.0	BLOD	90.3	75-120	2.21	30	
Toluene	45.6	1	ug/L	50.0	BLOD	90.3	75-120	2.21	30	
trans-1,2-Dichloroethylene	39.9	1	ug/L	50.0	BLOD	79.9	60-140	14.2	30	
trans-1,2-Dichloroethylene	39.9	1	ug/L	50.0	BLOD	79.9	60-140	14.2	30	
trans-1,3-Dichloropropene	42.4	1	ug/L	50.0	BLOD	84.7	55-140	1.01	30	
trans-1,3-Dichloropropene	42.4	1	ug/L	50.0	BLOD	84.7	55-140	1.01	30	
Trichloroethylene	43.7	1	ug/L	50.0	BLOD	87.4	70-125	4.01	30	
Trichloroethylene	43.7	1	ug/L	50.0	BLOD	87.4	70-125	4.01	30	
Trichlorofluoromethane	44.9	1	ug/L	50.0	BLOD	89.8	60-145	4.78	30	
Trichlorofluoromethane	44.9	1	ug/L	50.0	BLOD	89.8	60-145	4.78	30	
Vinyl chloride	53.4	0.5	ug/L	50.0	11.9	82.8	50-145	3.92	30	
Vinyl chloride	53.4	0.5	ug/L	50.0	11.9	82.8	50-145	3.92	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>51.0</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>49.9</i>		ug/L	<i>50.0</i>		<i>99.9</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.8</i>		ug/L	<i>50.0</i>		<i>104</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.0</i>		ug/L	<i>50.0</i>		<i>98.0</i>	<i>70-130</i>			

#### Batch BFL0436 - SW5030B-MS

<b>Blank (BFL0436-BLK1)</b>		<b>Prepared &amp; Analyzed: 12/12/2022</b>								
1,1,1,2-Tetrachloroethane	ND	0.40	ug/L							

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0436 - SW5030B-MS**

**Blank (BFL0436-BLK1)**

Prepared & Analyzed: 12/12/2022

1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0436 - SW5030B-MS

**Blank (BFL0436-BLK1)**

Prepared &amp; Analyzed: 12/12/2022

Chloromethane	ND	1.00	ug/L							
cis-1,2-Dichloroethylene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Iodomethane	ND	10.0	ug/L							
m+p-Xylenes	ND	2.00	ug/L							
Methylene chloride	ND	4.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>54.2</i>		<i>ug/L</i>	<i>50.0</i>		<i>108</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>48.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>97.1</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>47.5</i>		<i>ug/L</i>	<i>50.0</i>		<i>95.1</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.8</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.6</i>	<i>70-130</i>			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0436 - SW5030B-MS**

**Blank (BFL0436-BLK1)**

Prepared & Analyzed: 12/12/2022

**LCS (BFL0436-BS1)**

Prepared & Analyzed: 12/12/2022

1,1,1,2-Tetrachloroethane	54.2	0.4	ug/L	50.0		108	80-130			
1,1,1-Trichloroethane	49.0	1	ug/L	50.0		98.0	65-130			
1,1,2,2-Tetrachloroethane	46.8	0.4	ug/L	50.0		93.6	65-130			
1,1,2-Trichloroethane	48.9	1	ug/L	50.0		97.8	75-125			
1,1-Dichloroethane	45.7	1	ug/L	50.0		91.4	70-135			
1,1-Dichloroethylene	44.0	1	ug/L	50.0		87.9	70-130			
1,2,3-Trichloropropane	47.6	1	ug/L	50.0		95.1	75-125			
1,2-Dichlorobenzene	53.6	0.5	ug/L	50.0		107	70-120			
1,2-Dichloroethane	41.0	1	ug/L	50.0		82.1	70-130			
1,2-Dichloropropane	47.0	0.5	ug/L	50.0		94.1	75-125			
1,4-Dichlorobenzene	54.3	1	ug/L	50.0		109	75-125			
2-Butanone (MEK)	48.5	10	ug/L	50.0		96.9	30-150			
2-Hexanone (MBK)	53.9	5	ug/L	50.0		108	55-130			
4-Methyl-2-pentanone (MIBK)	49.7	5	ug/L	50.0		99.4	60-135			
Acetone	50.9	10	ug/L	50.0		102	40-140			
Acrylonitrile	262	5	ug/L	250		105	70-130			
Benzene	46.4	1	ug/L	50.0		92.9	80-120			
Bromochloromethane	47.1	1	ug/L	50.0		94.1	65-130			
Bromodichloromethane	50.5	0.5	ug/L	50.0		101	75-120			
Bromoform	53.1	1	ug/L	50.0		106	70-130			
Bromomethane	50.3	1	ug/L	50.0		101	30-145			
Carbon disulfide	47.9	10	ug/L	50.0		95.7	35-160			
Carbon tetrachloride	45.8	1	ug/L	50.0		91.5	65-140			

### Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFL0436 - SW5030B-MS

**LCS (BFL0436-BS1)**

Prepared &amp; Analyzed: 12/12/2022

Chlorobenzene	51.0	1	ug/L	50.0		102	80-120			
Chloroethane	43.2	1	ug/L	50.0		86.5	60-135			
Chloroform	42.6	0.5	ug/L	50.0		85.2	65-135			
Chloromethane	49.1	1	ug/L	50.0		98.2	40-125			
cis-1,2-Dichloroethylene	44.0	1	ug/L	50.0		88.0	70-125			
cis-1,3-Dichloropropene	43.1	1	ug/L	50.0		86.1	70-130			
Dibromochloromethane	48.8	0.5	ug/L	50.0		97.5	60-135			
Dibromomethane	49.4	1	ug/L	50.0		98.8	75-125			
Ethylbenzene	53.8	1	ug/L	50.0		108	75-125			
m+p-Xylenes	103	2	ug/L	100		103	75-130			
Methylene chloride	45.4	4	ug/L	50.0		90.9	55-140			
o-Xylene	52.6	1	ug/L	50.0		105	80-120			
Styrene	53.5	1	ug/L	50.0		107	65-135			
Tetrachloroethylene (PCE)	84.1	1	ug/L	50.0		168	45-150			L
Toluene	48.1	1	ug/L	50.0		96.2	75-120			
trans-1,2-Dichloroethylene	44.0	1	ug/L	50.0		88.0	60-140			
trans-1,3-Dichloropropene	46.7	1	ug/L	50.0		93.4	55-140			
Trichloroethylene	44.8	1	ug/L	50.0		89.5	70-125			
Trichlorofluoromethane	49.3	1	ug/L	50.0		98.5	60-145			
Vinyl chloride	43.4	0.5	ug/L	50.0		86.9	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>55.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>110</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>100</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>97.2</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>98.3</i>	<i>70-130</i>			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0436 - SW5030B-MS**

Duplicate (BFL0436-DUP1)	Source: 22L0557-02			Prepared & Analyzed: 12/12/2022						
1,1,1,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,1-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,2-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,4-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
2-Butanone (MEK)	ND	10.0	ug/L		BLOD			NA	30	
2-Hexanone (MBK)	ND	5.00	ug/L		BLOD			NA	30	
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L		BLOD			NA	30	
Acetone	ND	10.0	ug/L		BLOD			NA	30	
Acrylonitrile	ND	5.00	ug/L		BLOD			NA	30	
Benzene	ND	1.00	ug/L		BLOD			NA	30	
Bromochloromethane	ND	1.00	ug/L		BLOD			NA	30	
Bromodichloromethane	ND	0.50	ug/L		BLOD			NA	30	
Bromoform	ND	1.00	ug/L		BLOD			NA	30	
Bromomethane	ND	1.00	ug/L		BLOD			NA	30	
Carbon disulfide	ND	10.0	ug/L		BLOD			NA	30	
Carbon tetrachloride	ND	1.00	ug/L		BLOD			NA	30	
Chlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
Chloroethane	ND	1.00	ug/L		BLOD			NA	30	



## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0436 - SW5030B-MS

Duplicate (BFL0436-DUP1)

Source: 22L0557-02

Prepared &amp; Analyzed: 12/12/2022

Chloroform	ND	0.50	ug/L		BLOD			NA	30	
Chloromethane	ND	1.00	ug/L		BLOD			NA	30	
cis-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
cis-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Dibromochloromethane	ND	0.50	ug/L		BLOD			NA	30	
Dibromomethane	ND	1.00	ug/L		BLOD			NA	30	
Ethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Iodomethane	ND	10.0	ug/L		BLOD			NA	30	
m+p-Xylenes	ND	2.00	ug/L		BLOD			NA	30	
Methylene chloride	ND	4.00	ug/L		BLOD			NA	30	
o-Xylene	ND	1.00	ug/L		BLOD			NA	30	
Styrene	ND	1.00	ug/L		BLOD			NA	30	
Tetrachloroethylene (PCE)	ND	1.00	ug/L		BLOD			NA	30	
Toluene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L		BLOD			NA	30	
Trichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
Trichlorofluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Vinyl acetate	ND	10.0	ug/L		BLOD			NA	30	
Vinyl chloride	ND	0.50	ug/L		BLOD			NA	30	
Xylenes, Total	ND	3.00	ug/L		BLOD			NA	30	
Tetrahydrofuran	ND	10.0	ug/L		BLOD			NA	30	
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Surr: 1,2-Dichloroethane-d4 (Surr)	52.3		ug/L	50.0		105	70-120			
Surr: 4-Bromofluorobenzene (Surr)	48.6		ug/L	50.0		97.1	75-120			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0436 - SW5030B-MS

**Duplicate (BFL0436-DUP1)**

Source: 22L0557-02

Prepared &amp; Analyzed: 12/12/2022

<i>Surr: Dibromofluoromethane (Surr)</i>	57.0		ug/L	50.0		114	70-130
<i>Surr: Toluene-d8 (Surr)</i>	50.2		ug/L	50.0		100	70-130

**Matrix Spike (BFL0436-MS1)**

Source: 22L0557-01

Prepared &amp; Analyzed: 12/12/2022

1,1,1,2-Tetrachloroethane	53.2	0.4	ug/L	50.0	BLOD	106	80-130
1,1,1-Trichloroethane	48.6	1	ug/L	50.0	BLOD	97.1	65-130
1,1,2,2-Tetrachloroethane	48.2	0.4	ug/L	50.0	BLOD	96.4	65-130
1,1,2-Trichloroethane	46.2	1	ug/L	50.0	BLOD	92.5	75-125
1,1-Dichloroethane	45.5	1	ug/L	50.0	BLOD	91.1	70-135
1,1-Dichloroethylene	39.1	1	ug/L	50.0	BLOD	78.2	70-130
1,2,3-Trichloropropane	48.9	1	ug/L	50.0	BLOD	97.9	75-125
1,2-Dichlorobenzene	53.7	0.5	ug/L	50.0	BLOD	107	70-120
1,2-Dichloroethane	36.9	1	ug/L	50.0	BLOD	73.8	70-130
1,2-Dichloropropane	45.5	0.5	ug/L	50.0	BLOD	90.9	75-125
1,4-Dichlorobenzene	53.0	1	ug/L	50.0	BLOD	106	75-125
2-Butanone (MEK)	50.3	10	ug/L	50.0	BLOD	101	30-150
2-Hexanone (MBK)	58.5	5	ug/L	50.0	BLOD	117	55-130
4-Methyl-2-pentanone (MIBK)	52.8	5	ug/L	50.0	BLOD	106	60-135
Acetone	49.0	10	ug/L	50.0	BLOD	92.1	40-140
Acrylonitrile	236	5	ug/L	250	BLOD	94.2	70-130
Benzene	45.8	1	ug/L	50.0	BLOD	91.5	80-120
Bromochloromethane	42.1	1	ug/L	50.0	BLOD	84.1	65-130
Bromodichloromethane	48.4	0.5	ug/L	50.0	BLOD	96.7	75-120
Bromoform	52.6	1	ug/L	50.0	BLOD	105	70-130
Bromomethane	40.1	1	ug/L	50.0	BLOD	80.1	30-145

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0436 - SW5030B-MS

**Matrix Spike (BFL0436-MS1)**

Source: 22L0557-01

Prepared &amp; Analyzed: 12/12/2022

Carbon disulfide	44.2	10	ug/L	50.0	BLOD	88.4	35-160			
Carbon tetrachloride	49.0	1	ug/L	50.0	BLOD	98.0	65-140			
Chlorobenzene	50.9	1	ug/L	50.0	BLOD	102	80-120			
Chloroethane	40.3	1	ug/L	50.0	BLOD	80.6	60-135			
Chloroform	37.9	0.5	ug/L	50.0	BLOD	75.7	65-135			
Chloromethane	40.6	1	ug/L	50.0	BLOD	81.1	40-125			
cis-1,2-Dichloroethylene	46.3	1	ug/L	50.0	BLOD	92.5	70-125			
cis-1,3-Dichloropropene	41.6	1	ug/L	50.0	BLOD	83.2	70-130			
Dibromochloromethane	45.6	0.5	ug/L	50.0	BLOD	91.3	60-135			
Dibromomethane	47.7	1	ug/L	50.0	BLOD	95.3	75-125			
Ethylbenzene	52.4	1	ug/L	50.0	BLOD	105	75-125			
m+p-Xylenes	103	2	ug/L	100	BLOD	103	75-130			
Methylene chloride	39.7	4	ug/L	50.0	BLOD	79.4	55-140			
o-Xylene	52.0	1	ug/L	50.0	BLOD	104	80-120			
Styrene	51.9	1	ug/L	50.0	BLOD	104	65-135			
Tetrachloroethylene (PCE)	83.4	1	ug/L	50.0	BLOD	167	45-150			M
Toluene	45.6	1	ug/L	50.0	BLOD	91.2	75-120			
trans-1,2-Dichloroethylene	44.7	1	ug/L	50.0	BLOD	89.3	60-140			
trans-1,3-Dichloropropene	43.2	1	ug/L	50.0	BLOD	86.3	55-140			
Trichloroethylene	44.9	1	ug/L	50.0	BLOD	89.8	70-125			
Trichlorofluoromethane	42.3	1	ug/L	50.0	BLOD	84.6	60-145			
Vinyl chloride	39.2	0.5	ug/L	50.0	BLOD	78.4	50-145			
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Surr: 1,2-Dichloroethane-d4 (Surr)	49.6		ug/L	50.0		99.2	70-120			
Surr: 4-Bromofluorobenzene (Surr)	50.0		ug/L	50.0		99.9	75-120			
Surr: Dibromofluoromethane (Surr)	50.3		ug/L	50.0		101	70-130			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0436 - SW5030B-MS**

**Matrix Spike (BFL0436-MS1)**

**Source: 22L0557-01**

Prepared & Analyzed: 12/12/2022

<i>Surr: Toluene-d8 (Surr)</i>	49.2	ug/L	50.0	98.5	70-130
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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 12/30/2022 11:56:27AM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

**Blank (BFL0373-BLK1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L							
Diethyl phthalate	ND	10.0	ug/L							
Di-n-butyl phthalate	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	81.4		ug/L	100		81.4	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	42.7		ug/L	50.0		85.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	43.2		ug/L	100		43.2	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	44.5		ug/L	50.0		89.0	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	31.4		ug/L	100		31.4	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	48.8		ug/L	50.0		97.7	27-133			

**LCS (BFL0373-BS1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

1,2,4-Trichlorobenzene	25.9	10.0	ug/L	50.0		51.8	22-135			
1,2-Dichlorobenzene	25.3	10.0	ug/L	50.0		50.6	22-115			
1,3-Dichlorobenzene	24.0	10.0	ug/L	50.0		48.1	22-112			
1,4-Dichlorobenzene	25.7	10.0	ug/L	50.0		51.4	13-112			
2,4,6-Trichlorophenol	29.9	10.0	ug/L	50.0		59.8	11-145			
2,4-Dichlorophenol	28.2	10.0	ug/L	50.0		56.5	11-75			
2,4-Dimethylphenol	24.1	5.00	ug/L	50.0		48.2	11-121			
2,4-Dinitrophenol	33.4	50.0	ug/L	50.0		66.7	11-165			
2,4-Dinitrotoluene	40.3	10.0	ug/L	50.0		80.6	17-155			
2,6-Dinitrotoluene	35.5	10.0	ug/L	50.0		71.0	15-125			
2-Chloronaphthalene	30.4	10.0	ug/L	50.0		60.8	27-89			
2-Chlorophenol	28.9	10.0	ug/L	50.0		57.8	15-110			
2-Nitrophenol	30.7	10.0	ug/L	50.0		61.4	11-115			

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0373 - SW3510C/EPA600-MS**

**LCS (BFL0373-BS1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

3,3'-Dichlorobenzidine	18.7	10.0	ug/L	50.0		37.4	25-95			
4,6-Dinitro-2-methylphenol	41.6	50.0	ug/L	50.0		83.2	25-130			
4-Bromophenyl phenyl ether	31.4	10.0	ug/L	50.0		62.9	15-110			
4-Chlorophenyl phenyl ether	30.5	10.0	ug/L	50.0		61.0	15-110			
4-Nitrophenol	14.6	50.0	ug/L	50.0		29.1	12-70			
Acenaphthene	31.2	10.0	ug/L	50.0		62.5	18-85			
Acenaphthylene	32.4	10.0	ug/L	50.0		64.8	20-75			
Acetophenone	30.2	20.0	ug/L	50.0		60.5	0-200			
alpha-Terpineol	31.9	2.50	ug/L	50.0		63.7	0-200			
Anthracene	36.6	10.0	ug/L	50.0		73.2	35-95			
Benzo (a) anthracene	38.5	10.0	ug/L	50.0		77.0	25-95			
Benzo (a) pyrene	44.7	0.20	ug/L	50.0		89.4	37-110			
Benzo (b) fluoranthene	50.4	10.0	ug/L	50.0		101	25-75			L
Benzo (g,h,i) perylene	29.8	10.0	ug/L	50.0		59.7	25-90			
Benzo (k) fluoranthene	45.4	10.0	ug/L	50.0		90.8	25-95			
bis (2-Chloroethoxy) methane	26.9	10.0	ug/L	50.0		53.9	25-110			
bis (2-Chloroethyl) ether	28.8	10.0	ug/L	50.0		57.7	25-85			
2,2'-Oxybis (1-chloropropane)	31.8	10.0	ug/L	50.0		63.6	25-95			
bis (2-Ethylhexyl) phthalate	39.5	5.00	ug/L	50.0		78.9	30-125			
Butyl benzyl phthalate	37.1	10.0	ug/L	50.0		74.2	30-115			
Carbazole	37.1	2.50	ug/L	50.0		74.2	0-200			
Chrysene	37.3	10.0	ug/L	50.0		74.6	20-90			
Dibenz (a,h) anthracene	35.6	10.0	ug/L	50.0		71.1	27-125			
Diethyl phthalate	39.6	10.0	ug/L	50.0		79.2	25-120			
Dimethyl phthalate	39.7	10.0	ug/L	50.0		79.4	25-125			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0373 - SW3510C/EPA600-MS**

**LCS (BFL0373-BS1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

Di-n-butyl phthalate	39.3	10.0	ug/L	50.0		78.6	35-115			
Di-n-octyl phthalate	64.9	10.0	ug/L	50.0		130	25-105			L
Fluoranthene	38.9	10.0	ug/L	50.0		77.9	33-95			
Fluorene	35.1	10.0	ug/L	50.0		70.3	15-97			
Hexachlorobenzene	40.0	1.00	ug/L	50.0		80.0	25-125			
Hexachlorobutadiene	28.3	10.0	ug/L	50.0		56.7	25-125			
Hexachlorocyclopentadiene	13.3	10.0	ug/L	50.0		26.5	25-125			
Hexachloroethane	27.1	10.0	ug/L	50.0		54.2	25-125			
Indeno (1,2,3-cd) pyrene	34.3	10.0	ug/L	50.0		68.7	25-125			
Isophorone	21.4	10.0	ug/L	50.0		42.8	10-110			
Naphthalene	29.7	0.10	ug/L	50.0		59.4	12-100			
Nitrobenzene	33.9	10.0	ug/L	50.0		67.7	30-97			
n-Nitrosodimethylamine	18.3	10.0	ug/L	50.0		36.7	10-85			
n-Nitrosodi-n-propylamine	30.5	10.0	ug/L	50.0		61.1	12-97			
n-Nitrosodiphenylamine	28.6	10.0	ug/L	50.0		57.3	12-97			
p-Chloro-m-cresol	29.8	10.0	ug/L	50.0		59.6	10-91			
Pentachlorophenol	31.1	20.0	ug/L	50.0		62.2	30-109			
Phenanthrene	42.8	10.0	ug/L	50.0		85.7	30-88			
Phenol	10.4	10.0	ug/L	50.5		20.5	10-70			
Pyrene	41.6	10.0	ug/L	50.0		83.3	27-110			
Pyridine	21.2	10.0	ug/L	50.0		42.3	0-200			
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<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	75.2		ug/L	100		75.2	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	32.2		ug/L	50.0		64.4	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	35.0		ug/L	100		35.0	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	35.7		ug/L	50.0		71.3	10-98.5			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

**LCS (BFL0373-BS1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

Surr: Phenol-d5 (Surr)	25.2	ug/L	100	25.2	5-33
Surr: p-Terphenyl-d14 (Surr)	43.0	ug/L	50.0	85.9	27-133

**Matrix Spike (BFL0373-MS1)**

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

1,2,4-Trichlorobenzene	32.6	10.0	ug/L	46.7	BLOD	69.7	22-65		M
1,2-Dichlorobenzene	33.0	10.0	ug/L	46.7	BLOD	70.7	22-60		M
1,3-Dichlorobenzene	32.1	10.0	ug/L	46.7	BLOD	68.8	22-60		M
1,4-Dichlorobenzene	36.1	10.0	ug/L	46.7	BLOD	77.3	13-60		M
1,4-Dioxane	11.1	50.0	ug/L		12.2		0-200		
2,4,6-Trichlorophenol	36.5	10.0	ug/L	46.7	BLOD	78.1	11-75		M
2,4-Dichlorophenol	33.8	10.0	ug/L	46.7	BLOD	72.3	11-75		
2,4-Dimethylphenol	32.5	4.67	ug/L	46.7	BLOD	69.5	11-65		M
2,4-Dinitrophenol	10.2	50.0	ug/L	46.7	BLOD	21.8	11-110		
2,4-Dinitrotoluene	42.2	10.0	ug/L	46.7	BLOD	90.2	17-95		
2,6-Dinitrotoluene	39.1	10.0	ug/L	46.7	BLOD	83.7	15-125		
2-Chloronaphthalene	39.2	10.0	ug/L	46.7	BLOD	83.9	27-89		
2-Chlorophenol	35.0	10.0	ug/L	46.7	BLOD	75.0	19-64		M
2-Nitrophenol	36.0	10.0	ug/L	46.7	BLOD	77.1	11-75		M
3,3'-Dichlorobenzidine	19.7	10.0	ug/L	46.7	BLOD	42.1	10-85		
4,6-Dinitro-2-methylphenol	44.0	50.0	ug/L	46.7	BLOD	94.1	40-130		
4-Bromophenyl phenyl ether	32.3	10.0	ug/L	46.7	BLOD	69.2	15-110		
4-Chlorophenyl phenyl ether	34.5	10.0	ug/L	46.7	BLOD	73.8	15-110		
4-Nitrophenol	14.2	50.0	ug/L	46.7	BLOD	30.4	12-70		
Acenaphthene	38.9	10.0	ug/L	46.7	BLOD	83.3	15-90		
Acenaphthylene	41.9	10.0	ug/L	46.7	BLOD	89.6	15-99		



## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

**Matrix Spike (BFL0373-MS1)**

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

Acetophenone	31.6	20.0	ug/L	46.7	BLOD	67.6	0-200			
alpha-Terpineol	37.1	2.50	ug/L	46.7	BLOD	79.4	0-200			
Anthracene	42.7	10.0	ug/L	46.7	BLOD	91.4	20-95			
Benzo (a) anthracene	42.5	9.35	ug/L	46.7	BLOD	90.9	25-95			
Benzo (a) pyrene	44.4	0.20	ug/L	46.7	BLOD	95.0	25-82			M
Benzo (b) fluoranthene	49.9	10.0	ug/L	46.7	BLOD	107	25-75			M
Benzo (g,h,i) perylene	35.3	10.0	ug/L	46.7	BLOD	75.5	25-90			
Benzo (k) fluoranthene	44.7	10.0	ug/L	46.7	BLOD	95.7	25-95			M
bis (2-Chloroethoxy) methane	32.6	10.0	ug/L	46.7	BLOD	69.8	25-85			
bis (2-Chloroethyl) ether	36.3	10.0	ug/L	46.7	BLOD	77.7	25-85			
2,2'-Oxybis (1-chloropropane)	39.3	10.0	ug/L	46.7	BLOD	84.2	25-87			
bis (2-Ethylhexyl) phthalate	42.9	5.00	ug/L	46.7	BLOD	91.7	30-125			
Butyl benzyl phthalate	37.7	10.0	ug/L	46.7	BLOD	80.8	30-115			
Carbazole	40.3	2.50	ug/L	46.7	BLOD	86.2	0-200			
Chrysene	40.4	10.0	ug/L	46.7	BLOD	86.5	20-90			
Dibenz (a,h) anthracene	42.4	10.0	ug/L	46.7	BLOD	90.7	27-125			
Diethyl phthalate	45.6	10.0	ug/L	46.7	BLOD	97.6	25-120			
Dimethyl phthalate	45.9	10.0	ug/L	46.7	BLOD	98.2	25-125			
Di-n-butyl phthalate	36.9	10.0	ug/L	46.7	BLOD	79.0	25-115			
Di-n-octyl phthalate	70.9	10.0	ug/L	46.7	BLOD	152	22-105			M
Fluoranthene	46.4	10.0	ug/L	46.7	BLOD	99.4	25-96			M
Fluorene	41.6	10.0	ug/L	46.7	BLOD	88.9	15-97			
Hexachlorobenzene	40.3	0.93	ug/L	46.7	BLOD	86.3	25-125			
Hexachlorobutadiene	34.5	10.0	ug/L	46.7	BLOD	73.8	25-125			
Hexachlorocyclopentadiene	24.8	10.0	ug/L	46.7	BLOD	53.1	10-90			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

**Matrix Spike (BFL0373-MS1)**

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

Hexachloroethane	34.2	10.0	ug/L	46.7	BLOD	73.2	25-125			
Indeno (1,2,3-cd) pyrene	39.7	10.0	ug/L	46.7	BLOD	85.1	25-125			
Isophorone	26.9	10.0	ug/L	46.7	BLOD	57.7	10-110			
Naphthalene	38.6	0.10	ug/L	46.7	BLOD	82.7	12-100			
Nitrobenzene	40.3	10.0	ug/L	46.7	BLOD	86.2	27-77			M
n-Nitrosodimethylamine	21.6	10.0	ug/L	46.7	BLOD	46.1	10-85			
n-Nitrosodi-n-propylamine	37.9	10.0	ug/L	46.7	BLOD	81.0	12-97			
n-Nitrosodiphenylamine	31.6	10.0	ug/L	46.7	BLOD	67.7	12-97			
p-Chloro-m-cresol	36.1	10.0	ug/L	46.7	BLOD	77.2	10-91			
Pentachlorophenol	36.9	20.0	ug/L	46.7	BLOD	78.9	27-109			
Phenanthrene	48.2	10.0	ug/L	46.7	BLOD	103	35-115			
Phenol	12.9	10.0	ug/L	47.2	BLOD	27.4	10-70			
Pyrene	45.6	10.0	ug/L	46.7	BLOD	97.7	23-110			
Pyridine	30.6	10.0	ug/L	46.7	BLOD	65.4	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	80.1		ug/L	93.5		85.7	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	43.6		ug/L	46.7		93.3	9-87			S
<i>Surr: 2-Fluorophenol (Surr)</i>	42.2		ug/L	93.5		45.2	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	42.9		ug/L	46.7		91.7	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	30.8		ug/L	93.5		32.9	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	41.3		ug/L	46.7		88.5	27-133			

**Matrix Spike Dup (BFL0373-MSD1)**

Source: 22L0423-13

Prepared: 12/09/2022 Analyzed: 12/12/2022

1,2,4-Trichlorobenzene	35.5	10.0	ug/L	46.7	BLOD	75.9	22-65	8.57	20	M
1,2-Dichlorobenzene	32.1	10.0	ug/L	46.7	BLOD	68.8	22-60	2.72	20	M
1,3-Dichlorobenzene	31.2	10.0	ug/L	46.7	BLOD	66.8	22-60	2.92	20	M

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

Matrix Spike Dup (BFL0373-MSD1)	Source: 22L0423-13			Prepared: 12/09/2022 Analyzed: 12/12/2022						
1,4-Dichlorobenzene	34.7	10.0	ug/L	46.7	BLOD	74.2	13-60	4.01	20	M
1,4-Dioxane	11.9	50.0	ug/L		12.2		0-200	6.91	20	
2,4,6-Trichlorophenol	38.9	10.0	ug/L	46.7	BLOD	83.3	11-75	6.49	20	M
2,4-Dichlorophenol	36.9	10.0	ug/L	46.7	BLOD	78.9	11-75	8.76	20	M
2,4-Dimethylphenol	32.5	4.67	ug/L	46.7	BLOD	69.5	11-65	0.0288	20	M
2,4-Dinitrophenol	12.0	50.0	ug/L	46.7	BLOD	25.6	11-110	16.0	20	
2,4-Dinitrotoluene	46.1	10.0	ug/L	46.7	BLOD	98.6	17-95	8.89	20	M
2,6-Dinitrotoluene	41.9	10.0	ug/L	46.7	BLOD	89.6	15-125	6.76	20	
2-Chloronaphthalene	39.0	10.0	ug/L	46.7	BLOD	83.5	27-89	0.550	20	
2-Chlorophenol	32.3	10.0	ug/L	46.7	BLOD	69.2	19-64	8.10	20	M
2-Nitrophenol	40.0	10.0	ug/L	46.7	BLOD	85.5	11-75	10.4	20	M
3,3'-Dichlorobenzidine	16.6	10.0	ug/L	46.7	BLOD	35.5	10-85	17.1	20	
4,6-Dinitro-2-methylphenol	47.1	50.0	ug/L	46.7	BLOD	101	40-130	6.93	20	
4-Bromophenyl phenyl ether	35.7	10.0	ug/L	46.7	BLOD	76.4	15-110	9.95	20	
4-Chlorophenyl phenyl ether	35.9	10.0	ug/L	46.7	BLOD	76.8	15-110	3.99	20	
4-Nitrophenol	16.9	50.0	ug/L	46.7	BLOD	36.1	12-70	17.2	20	
Acenaphthene	39.7	10.0	ug/L	46.7	BLOD	85.0	15-90	2.02	20	
Acenaphthylene	39.7	10.0	ug/L	46.7	BLOD	85.0	15-99	5.27	20	
Acetophenone	35.5	20.0	ug/L	46.7	BLOD	76.0	0-200	11.6	20	
alpha-Terpineol	40.2	2.50	ug/L	46.7	BLOD	86.0	0-200	7.98	20	
Anthracene	39.9	10.0	ug/L	46.7	BLOD	85.4	20-95	6.72	20	
Benzo (a) anthracene	41.0	9.35	ug/L	46.7	BLOD	87.8	25-95	3.42	20	
Benzo (a) pyrene	46.1	0.20	ug/L	46.7	BLOD	98.8	25-82	3.92	20	M
Benzo (b) fluoranthene	52.4	10.0	ug/L	46.7	BLOD	112	25-75	4.77	20	M
Benzo (g,h,i) perylene	36.3	10.0	ug/L	46.7	BLOD	77.7	25-90	2.98	20	

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

Matrix Spike Dup (BFL0373-MSD1)	Source: 22L0423-13			Prepared: 12/09/2022 Analyzed: 12/12/2022						
Benzo (k) fluoranthene	44.5	10.0	ug/L	46.7	BLOD	95.2	25-95	0.503	20	M
bis (2-Chloroethoxy) methane	35.7	10.0	ug/L	46.7	BLOD	76.4	25-85	9.11	20	
bis (2-Chloroethyl) ether	35.0	10.0	ug/L	46.7	BLOD	74.9	25-85	3.69	20	
2,2'-Oxybis (1-chloropropane)	40.7	10.0	ug/L	46.7	BLOD	87.2	25-87	3.50	20	M
bis (2-Ethylhexyl) phthalate	42.5	5.00	ug/L	46.7	BLOD	91.0	30-125	0.766	20	
Butyl benzyl phthalate	38.9	10.0	ug/L	46.7	BLOD	83.2	30-115	2.98	20	
Carbazole	38.1	2.50	ug/L	46.7	BLOD	81.6	0-200	5.43	20	
Chrysene	38.7	10.0	ug/L	46.7	BLOD	82.9	20-90	4.30	20	
Dibenz (a,h) anthracene	42.9	10.0	ug/L	46.7	BLOD	91.8	27-125	1.21	20	
Diethyl phthalate	44.8	10.0	ug/L	46.7	BLOD	95.8	25-120	1.90	20	
Dimethyl phthalate	45.6	10.0	ug/L	46.7	BLOD	97.5	25-125	0.654	20	
Di-n-butyl phthalate	37.3	10.0	ug/L	46.7	BLOD	79.9	25-115	1.06	20	
Di-n-octyl phthalate	28.1	10.0	ug/L	46.7	BLOD	60.1	22-105	86.5	20	P
Fluoranthene	38.7	10.0	ug/L	46.7	BLOD	82.9	25-96	18.1	20	
Fluorene	41.8	10.0	ug/L	46.7	BLOD	89.4	15-97	0.516	20	
Hexachlorobenzene	43.7	0.93	ug/L	46.7	BLOD	93.6	25-125	8.16	20	
Hexachlorobutadiene	38.1	10.0	ug/L	46.7	BLOD	81.5	25-125	9.89	20	
Hexachlorocyclopentadiene	20.4	10.0	ug/L	46.7	BLOD	43.7	10-90	19.5	20	
Hexachloroethane	34.8	10.0	ug/L	46.7	BLOD	74.5	25-125	1.73	20	
Indeno (1,2,3-cd) pyrene	40.5	10.0	ug/L	46.7	BLOD	86.6	25-125	1.84	20	
Isophorone	29.8	10.0	ug/L	46.7	BLOD	63.8	10-110	10.1	20	
Naphthalene	38.3	0.10	ug/L	46.7	BLOD	82.0	12-100	0.850	20	
Nitrobenzene	39.8	10.0	ug/L	46.7	BLOD	85.1	27-77	1.28	20	M
n-Nitrosodimethylamine	25.3	10.0	ug/L	46.7	BLOD	54.1	10-85	15.9	20	
n-Nitrosodi-n-propylamine	38.7	10.0	ug/L	46.7	BLOD	82.9	12-97	2.24	20	

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

Matrix Spike Dup (BFL0373-MSD1)	Source: 22L0423-13		Prepared: 12/09/2022 Analyzed: 12/12/2022							
n-Nitrosodiphenylamine	32.5	10.0	ug/L	46.7	BLOD	69.5	12-97	2.65	20	
p-Chloro-m-cresol	38.9	10.0	ug/L	46.7	BLOD	83.3	10-91	7.58	20	
Pentachlorophenol	43.1	20.0	ug/L	46.7	BLOD	92.2	27-109	15.6	20	
Phenanthrene	45.1	10.0	ug/L	46.7	BLOD	96.4	35-115	6.75	20	
Phenol	13.1	10.0	ug/L	47.2	BLOD	27.9	10-70	1.58	20	
Pyrene	43.3	10.0	ug/L	46.7	BLOD	92.6	23-110	5.30	20	
Pyridine	29.6	10.0	ug/L	46.7	BLOD	63.3	0-200	3.36	20	
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	86.7		ug/L	93.5		92.8	10-86			M
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	41.8		ug/L	46.7		89.5	9-87			M
<i>Surr: 2-Fluorophenol (Surr)</i>	39.9		ug/L	93.5		42.6	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	42.8		ug/L	46.7		91.6	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	30.3		ug/L	93.5		32.4	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	42.6		ug/L	46.7		91.1	27-133			

### Batch BFL0423 - SW3510C/EPA600-MS

Blank (BFL0423-BLK1)	Prepared & Analyzed: 12/12/2022									
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L							
Diethyl phthalate	ND	10.0	ug/L							
Di-n-butyl phthalate	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	175		ug/L	100		175	10-86			S
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	79.2		ug/L	50.0		158	9-87			S
<i>Surr: 2-Fluorophenol (Surr)</i>	95.2		ug/L	100		95.2	10-52			S
<i>Surr: Nitrobenzene-d5 (Surr)</i>	87.4		ug/L	50.0		175	10-98.5			S

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0423 - SW3510C/EPA600-MS

**Blank (BFL0423-BLK1)**

Prepared &amp; Analyzed: 12/12/2022

Surr: Phenol-d5 (Surr)	66.0		ug/L	100		66.0	5-33			S
Surr: p-Terphenyl-d14 (Surr)	90.0		ug/L	50.0		180	27-133			S

**LCS (BFL0423-BS1)**

Prepared: 12/12/2022 Analyzed: 12/13/2022

1,2,4-Trichlorobenzene	45.2	10.0	ug/L	50.0		90.5	22-135			
1,2-Dichlorobenzene	48.3	10.0	ug/L	50.0		96.6	22-115			
1,3-Dichlorobenzene	44.3	10.0	ug/L	50.0		88.6	22-112			
1,4-Dichlorobenzene	49.9	10.0	ug/L	50.0		99.8	13-112			
1-Chloronaphthalene	51.8	10.0	ug/L				0-200			
2,3,4,6-Tetrachlorophenol	1.20	10.0	ug/L				0-200			
2,4,6-Trichlorophenol	54.0	10.0	ug/L	50.0		108	11-145			
2,4-Dichlorophenol	54.7	10.0	ug/L	50.0		109	11-75			
2,4-Dimethylphenol	55.8	5.00	ug/L	50.0		112	11-121			
2,4-Dinitrophenol	37.6	50.0	ug/L	50.0		75.1	11-165			
2,4-Dinitrotoluene	77.0	10.0	ug/L	50.0		154	17-155			
2,6-Dinitrotoluene	69.9	10.0	ug/L	50.0		140	15-125			L
2-Chloronaphthalene	49.4	10.0	ug/L	50.0		98.7	27-89			L
2-Chlorophenol	58.7	10.0	ug/L	50.0		117	15-110			L
2-Nitrophenol	68.3	10.0	ug/L	50.0		137	11-115			L
3,3'-Dichlorobenzidine	44.4	10.0	ug/L	50.0		88.8	25-95			
4,6-Dinitro-2-methylphenol	74.7	50.0	ug/L	50.0		149	25-130			L
4-Aminobiphenyl	2.97	10.0	ug/L				0-200			
4-Bromophenyl phenyl ether	62.2	10.0	ug/L	50.0		124	15-110			L
4-Chlorophenyl phenyl ether	51.7	10.0	ug/L	50.0		103	15-110			
4-Nitrophenol	26.3	50.0	ug/L	50.0		52.5	12-70			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFL0423 - SW3510C/EPA600-MS**

**LCS (BFL0423-BS1)**

Prepared: 12/12/2022 Analyzed: 12/13/2022

Acenaphthene	54.6	10.0	ug/L	50.0		109	18-85			L
Acenaphthylene	54.6	10.0	ug/L	50.0		109	20-75			L
Acetophenone	56.2	20.0	ug/L	50.0		112	0-200			
alpha-Terpineol	53.8	2.50	ug/L	50.0		108	0-200			
Anthracene	65.1	10.0	ug/L	50.0		130	35-95			L
Benzo (a) anthracene	76.2	10.0	ug/L	50.0		152	25-95			L
Benzo (a) pyrene	85.4	0.20	ug/L	50.0		171	37-110			L
Benzo (b) fluoranthene	77.8	10.0	ug/L	50.0		156	25-75			L
Benzo (g,h,i) perylene	82.8	10.0	ug/L	50.0		166	25-90			L
Benzo (k) fluoranthene	77.4	10.0	ug/L	50.0		155	25-95			L
bis (2-Chloroethoxy) methane	56.3	10.0	ug/L	50.0		113	25-110			L
bis (2-Chloroethyl) ether	59.4	10.0	ug/L	50.0		119	25-85			L
2,2'-Oxybis (1-chloropropane)	60.2	10.0	ug/L	50.0		120	25-95			L
bis (2-Ethylhexyl) phthalate	93.3	5.00	ug/L	50.0		187	30-125			L
Butyl benzyl phthalate	98.9	10.0	ug/L	50.0		198	30-115			L
Carbazole	69.6	2.50	ug/L	50.0		139	0-200			
Chrysene	76.5	10.0	ug/L	50.0		153	20-90			L
Dibenz (a,h) anthracene	91.4	10.0	ug/L	50.0		183	27-125			L
Dibenzofuran	ND	5.00	ug/L				0-200			
Diethyl phthalate	64.5	10.0	ug/L	50.0		129	25-120			L
Dimethyl phthalate	61.8	10.0	ug/L	50.0		124	25-125			
Di-n-butyl phthalate	50.9	10.0	ug/L	50.0		102	35-115			
Di-n-octyl phthalate	85.6	10.0	ug/L	50.0		171	25-105			L
Fluoranthene	67.3	10.0	ug/L	50.0		135	33-95			L
Fluorene	58.9	10.0	ug/L	50.0		118	15-97			L

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0423 - SW3510C/EPA600-MS

**LCS (BFL0423-BS1)**

Prepared: 12/12/2022 Analyzed: 12/13/2022

Hexachlorobenzene	63.8	1.00	ug/L	50.0		128	25-125			L
Hexachlorobutadiene	43.9	10.0	ug/L	50.0		87.9	25-125			
Hexachlorocyclopentadiene	32.7	10.0	ug/L	50.0		65.5	25-125			
Hexachloroethane	46.4	10.0	ug/L	50.0		92.8	25-125			
Indeno (1,2,3-cd) pyrene	92.5	10.0	ug/L	50.0		185	25-125			L
Isophorone	40.8	10.0	ug/L	50.0		81.5	10-110			
Naphthalene	45.1	0.10	ug/L	50.0		90.1	12-100			
Nitrobenzene	64.1	10.0	ug/L	50.0		128	30-97			
n-Nitrosodimethylamine	46.9	10.0	ug/L	50.0		93.7	10-85			L
n-Nitrosodi-n-propylamine	63.3	10.0	ug/L	50.0		127	12-97			L
n-Nitrosodiphenylamine	52.1	10.0	ug/L	50.0		104	12-97			L
p-Chloro-m-cresol	59.0	10.0	ug/L	50.0		118	10-91			
Pentachlorophenol	65.6	20.0	ug/L	50.0		131	30-109			L
Phenanthrene	75.5	10.0	ug/L	50.0		151	30-88			L
Phenol	29.7	10.0	ug/L	50.5		58.8	10-70			
Pyrene	79.7	10.0	ug/L	50.0		159	27-110			L
Pyridine	50.3	10.0	ug/L	50.0		101	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>132</i>		ug/L	<i>100</i>		<i>132</i>	<i>10-86</i>			<i>S</i>
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>52.6</i>		ug/L	<i>50.0</i>		<i>105</i>	<i>9-87</i>			<i>S</i>
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>84.9</i>		ug/L	<i>100</i>		<i>84.9</i>	<i>10-52</i>			<i>S</i>
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>69.7</i>		ug/L	<i>50.0</i>		<i>139</i>	<i>10-98.5</i>			<i>S</i>
<i>Surr: Phenol-d5 (Surr)</i>	<i>58.5</i>		ug/L	<i>100</i>		<i>58.5</i>	<i>5-33</i>			<i>S</i>
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>86.4</i>		ug/L	<i>50.0</i>		<i>173</i>	<i>27-133</i>			<i>S</i>



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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0446 - SW8151A/EPA600</b>										
<b>Blank (BFL0446-BLK1)</b>										
				Prepared: 12/12/2022 Analyzed: 12/16/2022						
2,4,5-TP (Silvex)	ND	0.500	ug/L							
2,4-D	ND	0.500	ug/L							
<i>Surr: DCAA (Surr)</i>	<i>0.892</i>		ug/L	<i>1.11</i>		<i>80.3</i>	<i>48.5-134</i>			
<b>LCS (BFL0446-BS1)</b>										
				Prepared: 12/12/2022 Analyzed: 12/16/2022						
2,4,5-T	0.526	0.500	ug/L	0.556		94.8	62-145			
2,4,5-TP (Silvex)	0.474	0.500	ug/L	0.556		85.4	62-132			
2,4-D	0.547	0.500	ug/L	0.556		98.4	74-139			
Dinoseb	0.575	0.500	ug/L	0.556		103	59-136			
Pentachlorophenol	0.600	0.500	ug/L	0.556		108	62-118			
<i>Surr: DCAA (Surr)</i>	<i>1.07</i>		ug/L	<i>1.11</i>		<i>96.2</i>	<i>70-130</i>			
<b>Matrix Spike (BFL0446-MS1)</b>										
		<b>Source: 22L0423-13</b>			Prepared: 12/12/2022 Analyzed: 12/16/2022					
2,4,5-T	0.552	0.500	ug/L	0.556	BLOD	99.3	53-144			
2,4,5-TP (Silvex)	0.624	0.500	ug/L	0.556	BLOD	112	52-129			
2,4-D	0.815	0.500	ug/L	0.556	BLOD	147	53-126			M
Dinoseb	0.731	0.500	ug/L	0.556	BLOD	132	60-137			
Pentachlorophenol	0.690	0.500	ug/L	0.556	BLOD	124	52-124			M
<i>Surr: DCAA (Surr)</i>	<i>1.24</i>		ug/L	<i>1.11</i>		<i>112</i>	<i>70-130</i>			
<b>Matrix Spike Dup (BFL0446-MSD1)</b>										
		<b>Source: 22L0423-13</b>			Prepared: 12/12/2022 Analyzed: 12/16/2022					
2,4,5-T	0.548	0.500	ug/L	0.556	BLOD	98.6	53-144	0.808	20	
2,4,5-TP (Silvex)	0.548	0.500	ug/L	0.556	BLOD	98.7	52-129	13.0	20	
2,4-D	0.791	0.500	ug/L	0.556	BLOD	142	53-126	3.02	20	M
Dinoseb	0.611	0.500	ug/L	0.556	BLOD	110	60-137	17.8	20	
Pentachlorophenol	0.578	0.500	ug/L	0.556	BLOD	104	52-124	17.6	20	

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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0446 - SW8151A/EPA600**

**Matrix Spike Dup (BFL0446-MSD1)**      **Source: 22L0423-13**      Prepared: 12/12/2022 Analyzed: 12/16/2022

<i>Surr: DCAA (Surr)</i>	1.08	ug/L	1.11	97.1	70-130
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Micro-extractables by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0454 - SW8011</b>										
<b>Blank (BFL0454-BLK1)</b>				Prepared & Analyzed: 12/12/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L							
1,2,3-Trichloropropane	ND	0.010	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L							
<b>LCS (BFL0454-BS1)</b>				Prepared & Analyzed: 12/12/2022						
1,2-Dibromoethane (EDB)	0.224	0.010	ug/L	0.250		89.5	65-135			
1,2,3-Trichloropropane	0.206	0.010	ug/L	0.250		82.4	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.241	0.010	ug/L	0.250		96.4	65-135			
<b>Matrix Spike (BFL0454-MS1)</b>				<b>Source: 22L0423-13</b>		Prepared: 12/12/2022 Analyzed: 12/13/2022				
1,2-Dibromoethane (EDB)	0.207	0.010	ug/L	0.251	BLOD	82.5	65-135			
1,2,3-Trichloropropane	0.752	0.010	ug/L	0.251	BLOD	300	65-135			M
1,2-Dibromo-3-chloropropane (DBCP)	0.195	0.010	ug/L	0.251	BLOD	77.6	65-135			
<b>Matrix Spike Dup (BFL0454-MSD1)</b>				<b>Source: 22L0423-13</b>		Prepared: 12/12/2022 Analyzed: 12/13/2022				
1,2-Dibromoethane (EDB)	0.213	0.010	ug/L	0.256	BLOD	83.2	65-135	2.64	20	
1,2,3-Trichloropropane	0.759	0.010	ug/L	0.256	BLOD	297	65-135	0.849	20	M
1,2-Dibromo-3-chloropropane (DBCP)	0.201	0.010	ug/L	0.256	BLOD	78.5	65-135	3.07	20	
<b>Batch BFL0456 - SW8011</b>										
<b>Blank (BFL0456-BLK1)</b>				Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L							
1,2,3-Trichloropropane	ND	0.010	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L							
<b>LCS (BFL0456-BS1)</b>				Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	0.215	0.010	ug/L	0.250		85.9	65-135			
1,2,3-Trichloropropane	0.193	0.010	ug/L	0.250		77.2	65-135			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
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Micro-extractables by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0456 - SW8011</b>										
<b>LCS (BFL0456-BS1)</b>										
				Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromo-3-chloropropane (DBCP)	0.219	0.010	ug/L	0.250		87.8	65-135			
<b>Duplicate (BFL0456-DUP1)</b>										
				Source: 22L0480-03 Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L		BLOD			NA	20	
1,2,3-Trichloropropane	ND	0.010	ug/L		BLOD			NA	20	
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L		BLOD			NA	20	
<b>Matrix Spike (BFL0456-MS1)</b>										
				Source: 22L0480-01 Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	0.245	0.010	ug/L	0.254	BLOD	96.5	65-135			
1,2,3-Trichloropropane	0.645	0.010	ug/L	0.254	BLOD	254	65-135			M
1,2-Dibromo-3-chloropropane (DBCP)	0.248	0.010	ug/L	0.254	BLOD	97.6	65-135			

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0394 - SW5030B-MS</b>										
<b>Blank (BFL0394-BLK1)</b>										
				Prepared & Analyzed: 12/09/2022						
Ethane	ND	5.0	ug/L							
Ethene	ND	5.0	ug/L							
Methane	ND	5.0	ug/L							
<i>Surr: Acetylene (Surr)</i>	466		ug/L	432		108	70-130			
<i>Surr: Acetylene (Surr)</i>	466		ug/L	432		108	70-130			
<b>LCS (BFL0394-BS1)</b>										
				Prepared & Analyzed: 12/09/2022						
Methane	262	5.0	ug/L	266		98.6	70-130			
Ethene	467	5.0	ug/L	464		101	70-130			
Ethane	518	5.0	ug/L	500		104	70-130			
<i>Surr: Acetylene (Surr)</i>	462		ug/L	432		107	70-130			
<i>Surr: Acetylene (Surr)</i>	462		ug/L	432		107	70-130			
<b>Matrix Spike (BFL0394-MS1)</b>										
		<b>Source: 22L0423-13</b>			Prepared & Analyzed: 12/09/2022					
Methane	2450	5.0	ug/L	266	2280	64.3	70-130			M
Ethane	677	5.0	ug/L	500	BLOD	135	70-130			M
Ethene	607	5.0	ug/L	464	BLOD	131	70-130			M
<i>Surr: Acetylene (Surr)</i>	611		ug/L	432		141	70-130			S
<i>Surr: Acetylene (Surr)</i>	611		ug/L	432		141	70-130			S
<b>Matrix Spike Dup (BFL0394-MSD1)</b>										
		<b>Source: 22L0423-13</b>			Prepared & Analyzed: 12/09/2022					
Methane	2930	5.0	ug/L	266	2280	242	70-130	17.6	20	M
Ethene	622	5.0	ug/L	464	BLOD	134	70-130	2.46	20	M
Ethane	694	5.0	ug/L	500	BLOD	139	70-130	2.47	20	M
<i>Surr: Acetylene (Surr)</i>	612		ug/L	432		142	70-130			S
<i>Surr: Acetylene (Surr)</i>	612		ug/L	432		142	70-130			S

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0382 - No Prep Wet Chem</b>										
<b>Blank (BFL0382-BLK1)</b>				Prepared & Analyzed: 12/09/2022						
Sulfide	ND	1.00	mg/L							
<b>LCS (BFL0382-BS1)</b>				Prepared & Analyzed: 12/09/2022						
Sulfide	5.25	1	mg/L	5.00		105	80-120			
<b>Matrix Spike (BFL0382-MS1)</b>				Source: 22L0423-13		Prepared & Analyzed: 12/09/2022				
Sulfide	5.43	1.00	mg/L	5.00	BLOD	109	75-125			
<b>Matrix Spike Dup (BFL0382-MSD1)</b>				Source: 22L0423-13		Prepared & Analyzed: 12/09/2022				
Sulfide	5.11	1.00	mg/L	5.00	BLOD	102	75-125	6.07	20	
<b>Batch BFL0440 - No Prep IC</b>										
<b>Blank (BFL0440-BLK1)</b>				Prepared & Analyzed: 12/09/2022						
Chloride	ND	1.0	mg/L							
<b>LCS (BFL0440-BS1)</b>				Prepared & Analyzed: 12/09/2022						
Chloride	21.0	1	mg/L	20.0		105	90-110			
<b>LCS Dup (BFL0440-BSD1)</b>				Prepared & Analyzed: 12/09/2022						
Chloride	21.4	1	mg/L	20.0		107	90-110	1.87	15	
<b>Matrix Spike (BFL0440-MS1)</b>				Source: 22L0294-01RE1		Prepared & Analyzed: 12/09/2022				
Chloride	357	11.1	mg/L	111	242	104	90-110			
<b>Matrix Spike (BFL0440-MS2)</b>				Source: 22L0436-02		Prepared & Analyzed: 12/10/2022				
Chloride	100	1.1	mg/L	11.1	90.6	87.3	90-110			M

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0440 - No Prep IC</b>										
<b>Matrix Spike Dup (BFL0440-MSD1)</b>		<b>Source: 22L0294-01RE1</b>			<b>Prepared &amp; Analyzed: 12/09/2022</b>					
Chloride	329	11.1	mg/L	111	242	78.7	90-110	8.15	15	M
<b>Matrix Spike Dup (BFL0440-MSD2)</b>		<b>Source: 22L0436-02</b>			<b>Prepared &amp; Analyzed: 12/10/2022</b>					
Chloride	98.9	1.1	mg/L	11.1	90.6	73.9	90-110	1.50	15	M
<b>Batch BFL0447 - No Prep IC</b>										
<b>Blank (BFL0447-BLK1)</b>		<b>Prepared &amp; Analyzed: 12/12/2022</b>								
Chloride	ND	1.0	mg/L							
<b>LCS (BFL0447-BS1)</b>		<b>Prepared &amp; Analyzed: 12/12/2022</b>								
Chloride	19.9	1	mg/L	20.0						
<b>LCS Dup (BFL0447-BSD1)</b>		<b>Prepared &amp; Analyzed: 12/12/2022</b>								
Chloride	21.5	1	mg/L	20.0	108	90-110	8.18	15		
<b>Matrix Spike (BFL0447-MS1)</b>		<b>Source: 22L0423-13</b>			<b>Prepared &amp; Analyzed: 12/12/2022</b>					
Chloride	155	11.1	mg/L	111	37.0	106	90-110			
<b>Matrix Spike (BFL0447-MS2)</b>		<b>Source: 22L0482-03</b>			<b>Prepared &amp; Analyzed: 12/13/2022</b>					
Chloride	13.3	1.1	mg/L	11.1	2.6	96.5	90-110			
<b>Matrix Spike Dup (BFL0447-MSD1)</b>		<b>Source: 22L0423-13</b>			<b>Prepared &amp; Analyzed: 12/12/2022</b>					
Chloride	153	11.1	mg/L	111	37.0	105	90-110	1.18	15	
<b>Matrix Spike Dup (BFL0447-MSD2)</b>		<b>Source: 22L0482-03</b>			<b>Prepared &amp; Analyzed: 12/13/2022</b>					
Chloride	11.8	1.1	mg/L	11.1	2.6	83.3	90-110	11.8	15	M

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0553 - No Prep Wet Chem</b>										
<b>Blank (BFL0553-BLK1)</b>				Prepared & Analyzed: 12/14/2022						
Cyanide	ND	0.01	mg/L							
<b>LCS (BFL0553-BS1)</b>				Prepared & Analyzed: 12/14/2022						
Cyanide	0.26	0.01	mg/L	0.250		105	80-120			
<b>Matrix Spike (BFL0553-MS1)</b>				Source: 22L0495-03 Prepared & Analyzed: 12/14/2022						
Cyanide	0.22	0.01	mg/L	0.250	BLOD	88.1	80-120			
<b>Matrix Spike (BFL0553-MS2)</b>				Source: 22L0423-13 Prepared & Analyzed: 12/14/2022						
Cyanide	0.23	0.01	mg/L	0.250	BLOD	91.4	80-120			
<b>Matrix Spike Dup (BFL0553-MSD1)</b>				Source: 22L0495-03 Prepared & Analyzed: 12/14/2022						
Cyanide	0.24	0.01	mg/L	0.250	BLOD	96.4	80-120	8.97	20	
<b>Matrix Spike Dup (BFL0553-MSD2)</b>				Source: 22L0423-13 Prepared & Analyzed: 12/14/2022						
Cyanide	0.24	0.01	mg/L	0.250	BLOD	96.8	80-120	5.74	20	
<b>Batch BFL0614 - No Prep Wet Chem</b>										
<b>Blank (BFL0614-BLK1)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>Blank (BFL0614-BLK2)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>Blank (BFL0614-BLK3)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							



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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0614 - No Prep Wet Chem</b>										
<b>Blank (BFL0614-BLK4)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>Blank (BFL0614-BLK5)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>Blank (BFL0614-BLK6)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>LCS (BFL0614-BS1)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	0.24	0.01	mg/L	0.250		97.3	80-120			
<b>LCS (BFL0614-BS2)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	0.23	0.01	mg/L	0.250		93.9	80-120			
<b>Matrix Spike (BFL0614-MS1)</b>				Source: 22L0722-03		Prepared & Analyzed: 12/15/2022				
Cyanide	0.23	0.01	mg/L	0.250	BLOD	91.3	80-120			
<b>Matrix Spike (BFL0614-MS2)</b>				Source: 22L0480-07		Prepared & Analyzed: 12/15/2022				
Cyanide	0.22	0.01	mg/L	0.250	BLOD	87.7	80-120			
<b>Matrix Spike Dup (BFL0614-MSD1)</b>				Source: 22L0722-03		Prepared & Analyzed: 12/15/2022				
Cyanide	0.24	0.01	mg/L	0.250	BLOD	95.1	80-120	4.03	20	
<b>Matrix Spike Dup (BFL0614-MSD2)</b>				Source: 22L0480-07		Prepared & Analyzed: 12/15/2022				
Cyanide	0.24	0.01	mg/L	0.250	BLOD	95.6	80-120	8.64	20	

### Batch BFL0645 - No Prep Wet Chem

**Blank (BFL0645-BLK1)** Prepared & Analyzed: 12/15/2022

Alkalinity	ND	5.0	mg/L
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## Certificate of Analysis

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0645 - No Prep Wet Chem**

**LCS (BFL0645-BS1)**

Prepared & Analyzed: 12/15/2022

Alkalinity	51.0	5.0	mg/L	50.0	102	80-120
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**Duplicate (BFL0645-DUP1)**

**Source: 22L0423-13**

Prepared & Analyzed: 12/15/2022

Alkalinity	651	5.0	mg/L	647	0.616	20
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### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
22L0423-01	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-02	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-03	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-03RE1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0673	AL20109
22L0423-04	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-05	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-06	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-07	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-08	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-09	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-10	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-11	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-12	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-13	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-13RE1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0673	AL20109
22L0423-14	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-14RE1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0673	AL20109
22L0423-15	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-15RE1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0673	AL20109
22L0423-16	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-01RE1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-02RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-03RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-04RE1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-05RE1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-13RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-14RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: EPA200.8 R5.4</b>		
22L0423-15RE3	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-16RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method: No Prep IC</b>		
22L0423-14	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
22L0423-15	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
22L0423-16	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
22L0423-13	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method: No Prep Wet Chem</b>		
22L0423-01	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-02	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-03	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-04	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-05	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-13	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-14	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-15	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-16	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-01	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
22L0423-02	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
22L0423-03	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
22L0423-13	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
22L0423-04	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
22L0423-05	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
22L0423-14	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
22L0423-15	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
22L0423-16	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
22L0423-13	50.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
22L0423-14	10.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
22L0423-15	10.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
22L0423-16	200 mL / 200 mL	SM22 2320B-2011	BFL0645	SFL0595	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatiles Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-MS</b>	
22L0423-01	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-02	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-03	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-04	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-13	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-05	1070 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040
22L0423-14	1070 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040
22L0423-15	1070 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040
22L0423-16	1070 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
22L0423-01	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-02	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-03	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-04	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-05	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22L0423-06	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-07	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-08	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-09	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-10	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-11	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-12	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-13	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-14	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-15	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-16	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-17	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-13	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-14	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-15	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-16	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-17	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-14RE1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034
22L0423-15RE1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
22L0423-01	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-02	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-03	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-04	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-05	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-13	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
22L0423-14	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-15	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-16	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
22L0423-01	59.8 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-02	59.4 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-03	59.5 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-04	60.1 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-05	60.1 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-06	58.9 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-07	58.7 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-08	58.3 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-09	58.5 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-10	58.7 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-11	58.9 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-12	58.5 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-13	59.8 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-14	59.1 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-15	59.4 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-16	59.6 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178
22L0423-17	59.5 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22L0423-01	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-02	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22L0423-03	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-04	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-05	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-13	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-14	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0766	AK20122
22L0423-15	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0766	AK20122
22L0423-16	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122



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### QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
BFL0428-BLK1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-BS1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-MS1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-MS2	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-MSD1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-MSD2	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0762-BLK1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
BFL0762-BS1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
BFL0762-MS1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
BFL0762-MS2		SW6020B	BFL0762		
BFL0762-MSD1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
BFL0762-MSD2		SW6020B	BFL0762		

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
BFL0440-BLK1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-BS1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-BSD1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-MS1	0.450 mL / 5.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-MS2	4.50 mL / 5.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-MSD1	0.450 mL / 5.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-MSD2	4.50 mL / 5.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0447-BLK1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
BFL0447-BS1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-BSD1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-MS1	0.450 mL / 5.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-MS2	4.50 mL / 5.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-MSD1	0.450 mL / 5.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-MSD2	4.50 mL / 5.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFL0382-BLK1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0382-BS1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0382-MRL1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0382-MS1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0382-MSD1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0553-BLK1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-BS1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MRL1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MS1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MS2	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MSD1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MSD2	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0614-BLK1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK3	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK4	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK5	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK6	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BS1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095

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<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFL0614-BS2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL3	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL4	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL5	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MS1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MS2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MSD1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MSD2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0645-BLK1	200 mL / 200 mL	SM22 2320B-2011	BFL0645	SFL0595	
BFL0645-BS1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
BFL0645-DUP1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
BFL0645-MRL1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-MS</b>	
BFL0373-BLK1	1000 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
BFL0373-BS1	1000 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
BFL0373-MS1	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0426	AI20189
BFL0373-MSD1	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
BFL0423-BLK1	1000 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040
BFL0423-BS1	1000 mL / 1.00 mL	SW8270E	BFL0423	SFL0470	AL20040

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
BFL0391-BLK1	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
BFL0391-BS1	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
BFL0391-MS1	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
BFL0391-MSD1	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
BFL0394-BLK1	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
BFL0394-BS1	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
BFL0394-MS1	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
BFL0394-MSD1	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
BFL0436-BLK1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034
BFL0436-BS1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034
BFL0436-DUP1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034
BFL0436-MS1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
BFL0592-BLK1	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
BFL0592-BS1	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
BFL0592-MS1	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
BFL0592-MSD1	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
BFL0454-BLK1	60.0 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
BFL0454-BS1	60.0 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
BFL0454-MS1	59.8 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
BFL0454-MSD1	58.7 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
BFL0456-BLK1	60.0 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178
BFL0456-BS1	60.0 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
BFL0456-DUP1	59.4 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178
BFL0456-MS1	59.1 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
BFL0446-BLK1	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
BFL0446-BS1	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
BFL0446-MS1	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
BFL0446-MSD1	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

### Certified Analyses included in this Report

Analyte	Certifications
<b><i>EPA300.0 R2.1 in Non-Potable Water</i></b>	
Chloride	VELAP,NCDEQ,PADEP,WVDEP
<b><i>RSK175M in Non-Potable Water</i></b>	
Ethane	VELAP
Ethene	VELAP
Methane	VELAP
<b><i>SM22 2320B-2011 in Non-Potable Water</i></b>	
Alkalinity	VELAP,WVDEP,PADEP
<b><i>SW6020B in Non-Potable Water</i></b>	
Antimony	VELAP,NCDEQ,WVDEP
Arsenic	VELAP,WVDEP
Barium	VELAP,WVDEP
Beryllium	VELAP,WVDEP
Cadmium	VELAP,WVDEP
Chromium	VELAP,WVDEP
Cobalt	VELAP,WVDEP
Copper	VELAP,WVDEP
Lead	VELAP,WVDEP
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP
Silver	VELAP,WVDEP
Thallium	VELAP,WVDEP
Tin	VELAP,WVDEP
Vanadium	VELAP,WVDEP
Zinc	VELAP,WVDEP
<b><i>SW7470A in Non-Potable Water</i></b>	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

### Certified Analyses included in this Report

Analyte	Certifications
Mercury	VELAP,NCDEQ,WVDEP
<b>SW8011 in Non-Potable Water</b>	
1,2-Dibromoethane (EDB)	VELAP,NCDEQ
1,2,3-Trichloropropane	VELAP,NCDEQ
1,2-Dibromo-3-chloropropane (DBCP)	VELAP,NCDEQ
<b>SW8151A in Non-Potable Water</b>	
2,4,5-TP (Silvex)	VELAP,PADEP,NCDEQ,WVDEP
2,4-D	VELAP,PADEP,NCDEQ,WVDEP
<b>SW8260D in Non-Potable Water</b>	
1,1,1,2-Tetrachloroethane	VELAP,NCDEQ,WVDEP
1,1,1-Trichloroethane	VELAP,NCDEQ,WVDEP
1,1,2,2-Tetrachloroethane	VELAP,NCDEQ,WVDEP
1,1,2-Trichloroethane	VELAP,NCDEQ,WVDEP
1,1-Dichloroethane	VELAP,NCDEQ,WVDEP
1,1-Dichloroethylene	VELAP,NCDEQ,WVDEP
1,2,3-Trichloropropane	VELAP,NCDEQ,WVDEP
1,2-Dichlorobenzene	VELAP,NCDEQ,WVDEP
1,2-Dichloroethane	VELAP,NCDEQ,WVDEP
1,2-Dichloropropane	VELAP,NCDEQ,WVDEP
1,4-Dichlorobenzene	VELAP,NCDEQ,WVDEP
2-Butanone (MEK)	VELAP,NCDEQ,WVDEP
2-Hexanone (MBK)	VELAP,NCDEQ,WVDEP
4-Methyl-2-pentanone (MIBK)	VELAP,NCDEQ,WVDEP
Acetone	VELAP,NCDEQ,WVDEP
Acrylonitrile	VELAP,NCDEQ,WVDEP
Benzene	VELAP,NCDEQ,WVDEP
Bromochloromethane	VELAP,NCDEQ,WVDEP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

### Certified Analyses included in this Report

Analyte	Certifications
Bromodichloromethane	VELAP,NCDEQ,WVDEP
Bromoform	VELAP,NCDEQ,WVDEP
Bromomethane	VELAP,NCDEQ,WVDEP
Carbon disulfide	VELAP,NCDEQ,WVDEP
Carbon tetrachloride	VELAP,NCDEQ,WVDEP
Chlorobenzene	VELAP,NCDEQ,WVDEP
Chloroethane	VELAP,NCDEQ,WVDEP
Chloroform	VELAP,NCDEQ,WVDEP
Chloromethane	VELAP,NCDEQ,WVDEP
cis-1,2-Dichloroethylene	VELAP,NCDEQ,WVDEP
cis-1,3-Dichloropropene	VELAP,NCDEQ,WVDEP
Dibromochloromethane	VELAP,NCDEQ,WVDEP
Dibromomethane	VELAP,NCDEQ,WVDEP
Dichlorodifluoromethane	VELAP,NCDEQ,WVDEP
Ethylbenzene	VELAP,NCDEQ,WVDEP
Iodomethane	VELAP,NCDEQ,WVDEP
m+p-Xylenes	VELAP,NCDEQ,WVDEP
Methylene chloride	VELAP,NCDEQ,WVDEP
o-Xylene	VELAP,NCDEQ,WVDEP
Styrene	VELAP,NCDEQ,WVDEP
Tetrachloroethylene (PCE)	VELAP,NCDEQ,WVDEP
Toluene	VELAP,NCDEQ,WVDEP
trans-1,2-Dichloroethylene	VELAP,NCDEQ,WVDEP
trans-1,3-Dichloropropene	VELAP,NCDEQ,WVDEP
trans-1,4-Dichloro-2-butene	VELAP,NCDEQ,WVDEP
Trichloroethylene	VELAP,NCDEQ,WVDEP
Trichlorofluoromethane	VELAP,NCDEQ,WVDEP
Vinyl acetate	VELAP,NCDEQ,WVDEP



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

### Certified Analyses included in this Report

Analyte	Certifications
Vinyl chloride	VELAP,NCDEQ,WVDEP
Xylenes, Total	VELAP,NCDEQ,WVDEP
<b>SW8270E in Non-Potable Water</b>	
bis (2-Ethylhexyl) phthalate	VELAP,NCDEQ,WVDEP
Diethyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-butyl phthalate	VELAP,NCDEQ,WVDEP
Phenol	VELAP,NCDEQ,WVDEP
<b>SW9012B in Non-Potable Water</b>	
Cyanide	VELAP,WVDEP
<b>SW9215 in Non-Potable Water</b>	
Sulfide	VELAP

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2023
NC	North Carolina DENR	495	07/31/2023
NCDEQ	North Carolina DEQ	495	07/31/2023
NCDOH	North Carolina Department of Health	51714	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 2nd Semi-Annual  
Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

### Qualifiers and Definitions

CI	Residual Chlorine or other oxidizing agent was detected in the container used to analyze this sample.
DS	Surrogate concentration reflects a dilution factor.
E	Estimated concentration, outside calibration range
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
P	Duplicate analysis does not meet the acceptance criteria for precision
S	Surrogate recovery was outside acceptance criteria
RPD	Relative Percent Difference
Qual	Qualifiers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 2nd Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07 T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: <a href="mailto:jrobb@scsengineers.com">jrobb@scsengineers.com</a>	Pretreatment Program:

Is sample for compliance reporting? YES  Va      Is sample from a chlorinated supply? YES  NO

PWS I.D. #:

SAMPLER NAME (PRINT): M. NGUYEN  
Anthony Minarch      SAMPLER SIGNATURE: [Signature]      Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)							COMMENTS
											VSWMR 3.1A (VOCs, EDB, Metals)	CN SW9012	Herb SW8151 (2,4-D & 2,4,5-TP)	Hg (7470) & Sn (6020)	Sulfide	VOC 3.1B Detects (Dichlorodifluoromethane)	SVOCs (3.1b Detects): (Bis(2-ethylhexyl) phthalate, Diethyl phthalate, Di-n-butyl phthalate, and Phenol)	
1) MW-104 B	X					120522	1456		GW 10	10	X	X	X	X	X	X		
2) MW-104 A	X					120522	1221		GW 10	10	X	X	X	X	X	X		
3) MW-106 A	X					120622	1246		GW 10	10	X	X	X	X	X	X		
4) MW-101	X					↓	1403		GW 10	10	X	X	X	X	X	X		
5) MW-205 B	X					↓	1500		GW 10	10	X	X	X	X	X	X		
6)																		
7)																	277	
8)																	Ice	
9)																	sealed	
10)																	4.0°C	

RELINQUISHED: <u>[Signature]</u>	DATE / TIME: 12/07/22 0914	RECEIVED: <u>LCN</u>	DATE / TIME: 12/08/22 0800
RELINQUISHED: <u>LCN</u>	DATE / TIME:	RECEIVED: <u>mm</u>	DATE / TIME: 12/8/22 0800
RELINQUISHED:	DATE / TIME:	RECEIVED:	DATE / TIME:

SCS-W 22L0423  
Solid Waste Permit #498 & 588 Sen  
Recd: 12/08/2022 Due: 12/22/2022

COOLER TEMP \_\_\_\_\_ °C

7130325002

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 2nd Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07 T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:
Is sample for compliance reporting? YES <input checked="" type="checkbox"/> Va	Is sample from a chlorinated supply? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	PWS I.D. #:

SAMPLER NAME (PRINT): M. NGUYEN  
Anthony Mimick

SAMPLER SIGNATURE: [Signature]

Turn Around Time: 10 Day

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS	
											VSWMR 3.1A (VOCs, EDB, Metals)	VOCs 8260 & 8011						
1) MW-206A	X					120522	1049		GW	6	X							
2) MW-206B	X					↓	1150		GW	6	X							
3) MW-211A	X					120622	1133		GW	6	X							
4) MW-211B	X					↓	1149		GW	6	X							
5) MW-106B	X					↓	1315		GW	6	X							
6) MW-210A	X					120722	924		GW	6	X							277
7) MW-210B	X					↓	9:39		GW	6	X							1ce
8)																		sealed
9)																		4.0°C
10)																		

RELINQUISHED: [Signature] DATE / TIME: 12/07/22 1400

RECEIVED: LCN DATE / TIME: 12/18/22 0500

QC Data Pack

Level I

Level II

**SCS-W**  
Solid Waste Permit #498 & 588 Sen  
Recd: 12/08/2022 Due: 12/22/2022

22L0423

TEMP \_\_\_\_\_ °C

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.07 T1
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: <a href="mailto:jrobb@scsengineers.com">jrobb@scsengineers.com</a>	Pretreatment Program:

Is sample for compliance reporting? YES **Va** Is sample from a chlorinated supply? YES **NO** PWS I.D. #:

SAMPLER NAME (PRINT): **A. MINNICK** SAMPLER SIGNATURE: *[Signature]* Turn Around Time: **10 DAYS**

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)									
											VSWMR 3.1A (VOCs, EDB, Metals)	CN SW9012	Herb SW8151 (2,4-D & 2,4,5-TP)	Hg (7470) & Sn (6020)	Sulfide	VOC 3.1B Detects (Dichlorodifluoromethane)	Alkalinity, Chloride 300.0	MEE RSK 175	SVOCs: (Bis(2-ethylhexyl) phthalate, Diethyl phthalate, Di-n-butyl phthalate, and Phenol)	PLEASE NOTE PRES INTERFERENCE CHEMICAL RATE (L/m)
1) MW-108 / MS / MSD	X					120522	1435		GW	45	X	X	X	X	X	X	X	X		
2) GC OUTFALL	X					120622	1030		GW	15	X	X	X	X	X	X	X	X		
3) GC OUTFALL DUPLICATE						↓	1045		GW	15	X	X	X	X	X	X	X	X		
4) FIELD BLANK	X					↓	1301		GW	15	X	X	X	X	X	X	X	X		
5) TRIP BLANK	X					112922	1100		DI	6	X				X		X		→ VOCs 8Z60	
6)																			8011	
7)																			MEE	
8)																			277	
9)																			100	
10)																			sealed	

RELINQUISHED: <i>[Signature]</i>	DATE / TIME: 12/07/22 1400	RECEIVED: LCN	DATE / TIME:
RELINQUISHED: LCN	DATE / TIME:	RECEIVED: mm	DATE / TIME: 12/8/22 0800
RELINQUISHED:	DATE / TIME:	RECEIVED:	DATE / TIME:

QC Data 22L0423

Level I

Level II

Level III

**SCS-W 22L0423**  
**Solid Waste Permit #498 & 588 Sen**  
**Recd: 12/08/2022 Due: 12/22/2022**

TEMP 4.0 °C

v130325002

Page 196 of 202



# Sample Preservation Log

22L0423

Order ID \_\_\_\_\_

Date Performed: 12/9/22

Analyst Performing Check: CSB

Sample ID	Container ID	Metals			Cyanide			Sulfide			Ammonia			TKN			Phos, Tot			NO3+NO2			DRO			Pesticide (8081/808/508) PCB DW only			SVOC (825/8270/825)			CrVI * **		Pest/PCB (508) / SVOC(825)								
		pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	Received Res. Cl		final + or -	Received Res. Cl		final + or -	Received pH	Final pH	pH as Received		Final pH	pH as Received		Final pH			
		<2	Other		>12	Other		>9	Other		<2	Other		<2	Other		<2	Other		<2	Other		<2	Other		<2	Other		+	-				+	-		<2	Other		Other	Final	Other
01	A			/																																						
01	D																																									
01	E	/																																								
01	F			/																																						
02	A			/																																						
02	D																																									
02	E	/																																								
02	F			/																																						
03	A			/																																						
03	D																																									
03	E	4	<2																																							
03	F			/																																						
04	A			/																																						
04	D																																									
04	E	/																																								

NaOH ID: \_\_\_\_\_ HNO<sub>3</sub> ID: 2K02236 CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
 \*pH must be adjusted between 9.3 - 9.7  
 H<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na<sub>2</sub>SO<sub>3</sub> ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 5N NaOH: \_\_\_\_\_

Metals were received with pH = 3,4,5,7  
 HNO<sub>3</sub> was added at 1000 on 9 December  
 2022 by ATG in the Log-In room to bring  
 pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.



# Sample Preservation Log

Order ID 22L0423

Date Performed: 12/9/22

Analyst Performing Check: CSB

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/508) PCB DW only		SVOC (525/5270/525)			CrVI * **		Pest/PCB (508) / SVOC(525)										
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received Res. Cl	final + or -	Received Res. Cl	final + or -	Received pH	Final pH	pH as Received		pH as Received		pH as Received					
		< 2	Other	> 12	Other	> 6	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	+	-	+	-			< 2	Other	Final pH		Other	Final pH				
04	F																																		
05	A																																		
05	D																																		
05	E	/																																	
05	F																																		
06	D	/																																	
07	D		3 42																																
08	D	/																																	
09	D	/																																	
10	D	/																																	
11	D	/																																	
12	D	/																																	
13	C																																		
13	I																																		
13	J		5 42																																

NaOH ID: \_\_\_\_\_ HNO3 ID: 2K02236 CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 H2SO4 ID: \_\_\_\_\_ Na2S2O3 ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na2SO3 ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 5N NaOH: \_\_\_\_\_

Metals were received with pH = 3,4,5,7  
 HNO3 was added at 1000 on 9 December  
 2022 by ATG in the Log-In room to bring  
 pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.



# Sample Preservation Log

Order ID 22L0423

Date Performed: 12/9/22

Analyst Performing Check: CSR

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/508) PCB DW only			SVOC (525/6270/625)			CrVI * **		Pest/PCB (508) / SVOC(525)											
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received Res. Cl	final + or -	Received Res. Cl	final + or -	Received pH	Final pH	pH as Received		pH as Received		pH as Received							
		<2	Other	>12	Other	>8	Other	<2	Other	<2	Other	<2	Other	<2	Other	<2	Other	<2	Other	+	-	+	-			<2	Other	Other	Final pH	Other	Final pH						
13	K					/																															
13	AJ	5	<2																																		
13	AK	5	<2																																		
13	AN					/																															
13	AO					/																															
13	AP					/																															
13	AQ					/																															
14	C					/																															
14	I																																				
14	J	7	<2																																		
14	K					/																															
15	C					/																															
15	I																																				
15	J	/																																			
15	K					/																															

NaOH ID: \_\_\_\_\_ HNO3 ID: 2KO 2236 CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 H2SO4 ID: \_\_\_\_\_ Na2S2O3 ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na2SO3 ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 5N NaOH: \_\_\_\_\_

Metals were received with pH = 3,4,5,7  
 HNO3 was added at 1000 on 9 December  
 2022 by ATG in the Log-In room to bring  
 pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR138 for waste water.





# Sample Preservation Log

Order ID 22L0423

Date Performed: 12/9/22

Analyst Performing Check: CSB

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (8081/808/508) PCB DW only			SVOC (525/8270/625)			CrVI * **		Pest/PCB (508) / SVOC(525)							
		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		pH as Received		Received Res. Cl	final + or -	Received Res. Cl	final + or -	Received pH	Final pH	pH as Received		pH as Received					
		< 2	Other	> 12	Other	> 8	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	< 2	Other	+	-	+	-			< 2	Other		Other				
16	C			/																													
16	I																																
16	J			/																													
16	K					/																											

NaOH ID: \_\_\_\_\_ HNO<sub>3</sub> ID: 2K022 36 CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
 \* pH must be adjusted between 9.3 - 9.7  
 H<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> ID: \_\_\_\_\_ Buffer Sol'n ID: \_\_\_\_\_  
 HCL ID: \_\_\_\_\_ Na<sub>2</sub>SO<sub>3</sub> ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 5N NaOH: \_\_\_\_\_

Metals were received with pH = 3,4,5,7  
 HNO<sub>3</sub> was added at 1000 on 9 December  
 2022 by ATG in the Log-In room to bring  
 pH = <2.

\*\*W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.

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**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 2nd Semi-Annual  
Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

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## Certificate of Analysis


Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 2nd Semi-Annual  
Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Laboratory Order ID: 22L0423

### Sample Conditions Checklist

Samples Received at:	4.00°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes



Appendix E  
Historical Laboratory Analytical Results

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
<b>COLUMN A METALS</b>												
Antimony	November-2011	ND	ND	ND	0.11 J	ND	---	---	---	---	0.07	0.5
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	0.25	0.5
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	May-2014	ND	---	ND	ND	ND	---	---	---	---	0.5	1
	October-2014	ND	---	ND	ND	ND	---	---	---	---	0.5	1
	April-2015	ND	---	ND	ND	ND	---	---	---	---	0.5	1
	October-2015	ND	---	ND	ND	ND	---	---	---	---	0.5	1
	May-2016	ND	---	ND	ND	ND	1	1.2	---	---	0.5	1
	November-2016	ND	---	ND	ND	ND	0.92 J	ND	---	---	0.5	1
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	0.5	1
	October-2017	ND	---	---	---	---	---	---	---	---	0.1	1
	November-2017	---	---	ND	ND	0.1 J	---	---	---	---	0.1	1
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	3.9	5
	October-2018	ND	---	ND	0.35 J	0.36 J	0.12 J	ND	ND	ND	0.1	1
	April-2019	ND	ND	ND	---	---	ND	ND	0.35 J	---	0.11	1
	May-2019	---	---	---	0.59 J	ND	---	---	---	ND	0.11	1
	October-2019	0.23 J	---	ND	0.59 J	ND	ND	ND	ND	ND	0.11	1
	May-2020	0.18 J	ND	ND	0.48 J	ND	0.18 J	ND	ND	ND	0.11	1
	November-2020	ND	0.57 J,B	ND	0.66 J,B	ND	0.95 J,B	ND	ND	ND	0.5	2
	May-2021	ND	ND	ND	0.98 J,B	ND	ND	ND	ND	ND	0.5	2
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57	6
May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1	
Arsenic	May-2002	ND	ND	---	ND	ND	---	---	---	---	---	10
	November-2002	ND	ND	---	ND	ND	---	---	---	---	---	10
	May-2003	ND	ND	---	ND	ND	---	---	---	---	---	10
	November-2003	ND	ND	---	ND	ND	---	---	---	---	---	10
	May-2004	ND	ND	---	ND	ND	---	---	---	---	---	50
	November-2004	ND	ND	---	ND	ND	---	---	---	---	---	10
	May-2005	ND	ND	---	ND	ND	---	---	---	---	1.32	10
	November-2005	ND	ND	---	ND	ND	---	---	---	---	1.7	10
	May-2006	2.1 B	ND	---	ND	ND	---	---	---	---	1.3	10
	December-2006	1.92 J	4.02 J	---	ND	ND	---	---	---	---	1.3	10
	June-2007	ND	ND	---	3.32 J	ND	---	---	---	---	1.42	10
	November-2007	ND	ND	---	16.6	ND	---	---	---	---	1.42	5
	April-2008	ND	ND	---	10.1	ND	---	---	---	---	1	5
	October-2008	ND	ND	---	17.2	ND	---	---	---	---	2.7	5
	March-2009	6.7 B	3.5 B	---	14.4	3.8 B	---	---	---	---	2.7	5
	October-2009	5	ND	---	8.4	ND	---	---	---	---	2.7	5
	April-2010	9 B	4.8 B	---	12.2 B	5.9 B	---	---	---	---	2.7	5
	November-2010	6.7	ND	---	7.9	4.6 J	---	---	---	---	2.7	5
	May-2011	ND	ND	---	6	ND	---	---	---	---	2.7	5
	November-2011	ND	ND	ND	ND	ND	---	---	---	---	2.7	5
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	2.7	5
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	2.7	10
	May-2013	ND	ND	ND	5.1 J	ND	---	---	---	---	2.7	10
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	2.7	10
	May-2014	ND	---	ND	2.7 J	ND	---	---	---	---	2.7	10
	October-2014	ND	---	ND	ND	ND	---	---	---	---	5	10
	April-2015	ND	---	ND	ND	ND	---	---	---	---	5	10
	October-2015	ND	---	ND	ND	ND	---	---	---	---	5	10
	May-2016	ND	---	ND	ND	ND	10.3	ND	---	---	5	10
	November-2016	ND	---	ND	8.8 J	ND	10.6	ND	---	---	5	10
	May-2017	ND	---	ND	ND	ND	6.7 J	ND	---	---	5	10
	October-2017	ND	---	---	---	---	---	---	---	---	5	10
	November-2017	---	---	ND	ND	ND	9.2 J	ND	---	---	5	10
	May-2018	ND	---	ND	ND	---	8.5 J	ND	ND	ND	5	10
	October-2018	ND	---	ND	ND	ND	10.9	ND	ND	ND	5	10
	April-2019	10.4 B	ND	ND	---	---	17.7 B	ND	ND	---	5	10
May-2019	---	---	---	5.9 J	ND	---	---	---	ND	5	10	
October-2019	ND	---	ND	ND	ND	7.7 J	ND	ND	ND	5	10	
May-2020	7 J	9.6 J	ND	ND	ND	19.6	ND	ND	ND	4.7	10	
July-2020	---	---	---	---	---	8.7	---	---	---	1.3	2	
November-2020	4.4	ND	ND	ND	ND	8.1	ND	ND	ND	1.3	2	
		9.7 J	ND	ND	ND	---	---	ND	ND	4.7	10	
May-2021	---	---	---	---	---	14.2	7.7 J,B	---	---	5	10	
November-2021	ND	ND	ND	ND	ND	7.3 J	ND	ND	ND	4	10	
May-2022	3.2	1	0.56 J	1.5	0.61 J	6.5	ND	ND	ND	0.5	1	
December-2022	3.4	ND	ND	ND	0.53 J	8.2	ND	ND	ND	0.5	1	

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Barium	January-1999	---	120	---	120	ND	---	---	---	---	---	100
	June-1999	280	110	---	100	ND	---	---	---	---	---	100
	September-1999	300	120	---	100	ND	---	---	---	---	---	100
	December-1999	300	ND	---	110	ND	---	---	---	---	---	100
	June-2000	287	102	---	252	ND	---	---	---	---	---	100
	December-2000	279	102	---	101	ND	---	---	---	---	---	100
	May-2001	310	ND	---	100	ND	---	---	---	---	---	100
	November-2001	300	100	---	100	ND	---	---	---	---	---	100
	May-2002	285	ND	---	100	ND	---	---	---	---	---	100
	November-2002	310	ND	---	100	100	---	---	---	---	---	100
	May-2003	312	93	---	100	100	---	---	---	---	---	2
	November-2003	312	90	---	100	ND	---	---	---	---	---	100
	May-2004	291	91	---	ND	110	---	---	---	---	---	10
	November-2004	300	84	---	100	100	---	---	---	---	---	2
	May-2005	302	80.3	---	98.3	124	---	---	---	---	0.13	1
	November-2005	282	78.6	---	94.5	109	---	---	---	---	0.28	1
	May-2006	267	76.1	---	89.2	104	---	---	---	---	0.1	1
	December-2006	292	90	---	96.8	119	---	---	---	---	0.1	1
	June-2007	298	92.2	---	105	114	---	---	---	---	0.05	1
	November-2007	279	100	---	150	115	---	---	---	---	0.05	1
	April-2008	246	76.3	---	133	117	---	---	---	---	0.2	1
	October-2008	244	88.4	---	123	130	---	---	---	---	0.2	5
	March-2009	267	83.7	---	115	115	---	---	---	---	0.2	5
	October-2009	275	101 B	---	108 B	125	---	---	---	---	0.2	5
	April-2010	326	111 B	---	101 B	134	---	---	---	---	0.2	5
	November-2010	321	95.2	---	89.4	133	---	---	---	---	0.2	5
	May-2011	301	97.9	---	118	146	---	---	---	---	2.5	5
	November-2011	306	107	103	94.5	121	---	---	---	---	2.5	5
	May-2012	328	101	107	92.5	118	---	---	---	---	2.5	5
	November-2012	300	102	103	87.3	103	---	---	---	---	2.5	5
	May-2013	322	104	107	96.2	160	---	---	---	---	2.5	5
	November-2013	301	96	112	86.4	101	---	---	---	---	2.5	5
May-2014	303	---	110	94.9	154	---	---	---	---	2.5	5	
October-2014	315	---	106	89.2	126	---	---	---	---	2.5	5	
April-2015	319	---	102	85	169	---	---	---	---	2.5	5	
October-2015	348	---	108	87.9	111	---	---	---	---	2.5	5	
May-2016	326	---	100	78.7	110	65.6	55.2	---	---	2.5	5	
November-2016	331	---	104	81.9	133	60.9	62.8	---	---	2.5	5	
May-2017	341	---	96.1	82.6	168	40.2	61.4	---	---	2.5	5	
October-2017	336	---	---	---	---	---	---	---	---	2.5	5	
November-2017	---	---	98.8	84.7	176	55.9	67.6	---	---	2.5	5	
May-2018	314	---	99.8	77.7	---	20.3	66.2	63.4	112	2.5	5	
October-2018	354	---	109	81.4	129	32.1	67.6	59.5	122	2.5	5	
April-2019	310	78.8	97.7	---	---	25.7	62.3	49.3	---	2.5	5	
May-2019	---	---	---	75.5	125	---	---	---	101	2.5	5	
October-2019	326	---	98.9	72.7	112	32.3	65.1	49.3	93.7	2.5	5	
May-2020	364	102	103	75.9	166	40.6	66.3	48.3	101	1 - 3.5	5 - 5	
November-2020	330	92	97	77	170	46	64	44	94	1.3	5	
May-2021	320	87.8	92.2	74.9	168	45.7	71.6	42.5	92	3.5 - 3.7	5 - 5	
November-2021	310	88	100	75	120	37	59	38	86	2.2	10	
May-2022	290 D10	108	93.3	84.5	136	35.7	68.7	47.5	88.8	1 - 10	5 - 50	
December-2022	274 D10	92.2	103	80.3	170	35.3	70.3	47.6	97.6	1 - 10	5 - 50	
Beryllium	November-2011	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	May-2014	ND	---	ND	ND	ND	---	---	---	---	0.5	1
	October-2014	0.49 J	---	ND	ND	ND	---	---	---	---	0.05	1
	April-2015	ND	---	ND	ND	ND	---	---	---	---	0.05	1
	October-2015	ND	---	ND	ND	ND	---	---	---	---	0.5	1
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.5	1
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.5	1
	May-2017	0.74 J	---	0.54 J	ND	ND	ND	0.64 J	---	---	0.5	1
	October-2017	ND	---	---	---	---	---	---	---	---	0.5	1
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.5	1
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	0.5	1
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	0.5	1
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	0.5	1
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.5	1
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	0.5	1
		ND	ND	ND	---	---	---	---	---	---	0.2	1
	May-2020	---	---	---	ND	ND	ND	ND	ND	ND	0.7	1
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	0.4
	ND	ND	ND	ND	ND	---	---	ND	ND	0.7	1	
May-2021	---	---	---	---	---	ND	ND	---	---	0.75	1	
November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	1	
May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	1	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	1	

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Cadmium	November-2011	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	0.5	1
	May-2014	ND	---	ND	ND	ND	---	---	---	---	0.5	1
	October-2014	ND	---	ND	ND	ND	---	---	---	---	0.05	1
	April-2015	ND	---	ND	ND	ND	---	---	---	---	0.05	1
	October-2015	ND	---	ND	ND	ND	---	---	---	---	0.5	1
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.5	1
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.5	1
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	0.5	1
	October-2017	ND	---	---	---	---	---	---	---	---	0.5	1
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.5	1
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	0.5	1
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	0.5	1
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	0.5	1
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.5	1
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	0.5	1
	May-2020	ND	ND	ND	ND	ND	ND	ND	<b>0.48 J</b>	ND	0.4	1
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	0.5
	May-2021	---	---	---	---	---	---	---	ND	ND	0.4	1
November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.43	1	
May-2022	ND	ND	ND	<b>0.108 J</b>	ND	ND	ND	ND	ND	1.7	5	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	1	
Chromium	November-2011	ND	ND	ND	<b>9.3</b>	ND	---	---	---	---	2	5
	May-2012	ND	ND	ND	<b>6.8</b>	<b>2.3 J</b>	---	---	---	---	2	5
	November-2012	ND	ND	ND	<b>2.9 J</b>	ND	---	---	---	---	2	5
	May-2013	ND	ND	ND	<b>12</b>	ND	---	---	---	---	2	5
	November-2013	ND	ND	ND	<b>3 J</b>	ND	---	---	---	---	2	5
	May-2014	ND	---	ND	<b>10.8</b>	ND	---	---	---	---	2	5
	October-2014	ND	---	ND	ND	ND	---	---	---	---	2.5	5
	April-2015	ND	---	ND	<b>3.6 J</b>	ND	---	---	---	---	2.5	5
	October-2015	ND	---	ND	<b>2.8 J</b>	ND	---	---	---	---	2.5	5
	May-2016	ND	---	ND	<b>8</b>	<b>4.2 J</b>	ND	ND	---	---	2.5	5
	November-2016	ND	---	ND	<b>2.8 J</b>	<b>15.3</b>	ND	<b>4.3 J</b>	---	---	2.5	5
	May-2017	ND	---	ND	ND	<b>10.6</b>	ND	ND	---	---	2.5	5
	October-2017	ND	---	---	---	---	---	---	---	---	2.5	5
	November-2017	---	---	ND	ND	<b>3.1 J</b>	ND	ND	---	---	2.5	5
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	2.5	5
	October-2018	ND	---	ND	ND	<b>15.8</b>	<b>2.6 J</b>	ND	ND	ND	2.5	5
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	2.5	5
	May-2019	---	---	---	<b>3.9 J</b>	ND	---	---	---	ND	2.5	5
	October-2019	ND	---	ND	<b>4.4 J</b>	ND	ND	ND	ND	ND	2.5	5
	May-2020	---	---	---	ND	ND	ND	ND	ND	ND	1	5
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.7	5
	May-2021	---	---	---	---	---	---	---	---	---	1.3	5
November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.7	5	
May-2022	ND	ND	ND	<b>2.34</b>	<b>0.961 J</b>	ND	ND	ND	<b>0.459 J</b>	3.9	5	
December-2022	ND	ND	ND	<b>3.66</b>	ND	ND	<b>0.677 J</b>	ND	ND	3.7	10	
November-2011	<b>5.2</b>	ND	ND	ND	ND	ND	---	---	---	0.4	1	
May-2012	<b>5</b>	<b>0.47 J</b>	<b>0.14 J</b>	ND	ND	---	---	---	---	0.6	1	
November-2012	<b>4.7</b>	ND	ND	<b>1.2 J</b>	<b>0.86 J</b>	---	---	---	---	0.25	4	
May-2013	<b>4.4</b>	<b>0.51 J</b>	ND	<b>1.6 J</b>	<b>1.2 J</b>	---	---	---	---	0.07	4	
November-2013	<b>5.2</b>	ND	ND	<b>0.88 J</b>	ND	---	---	---	---	0.5	4	
May-2014	<b>5.2</b>	---	ND	<b>1.1 J</b>	<b>0.79 J</b>	---	---	---	---	0.5	4	
October-2014	<b>6.4</b>	---	ND	<b>0.98 J</b>	<b>0.85 J</b>	---	---	---	---	0.5	4	
April-2015	<b>6.2</b>	---	ND	ND	<b>1.4</b>	---	---	---	---	0.5	1	
October-2015	<b>6.3</b>	---	ND	<b>4.5</b>	ND	---	---	---	---	0.5	4	
May-2016	<b>6.4</b>	---	ND	<b>1.9 J</b>	<b>0.58 J</b>	ND	ND	---	---	0.5	4	
November-2016	<b>6.8</b>	---	ND	<b>1.1 J</b>	<b>4.2</b>	ND	ND	---	---	0.5	4	
May-2017	<b>6.5</b>	---	ND	<b>1.1 J</b>	<b>3.7 J</b>	ND	ND	---	---	0.5	4	
October-2017	<b>8.2</b>	---	---	---	---	---	---	---	---	0.01	4	
November-2017	---	---	<b>0.053 J</b>	<b>0.64 J</b>	<b>1.7 J</b>	<b>0.33 J</b>	<b>0.46 J</b>	---	---	0.01	4	
May-2018	<b>7.4</b>	---	<b>0.044 J</b>	<b>0.54 J</b>	---	<b>0.13 J</b>	<b>0.36 J</b>	<b>0.42 J</b>	<b>0.11 J</b>	0.01	4	
October-2018	<b>7.4</b>	---	<b>0.055 J</b>	<b>1 J</b>	<b>2.5 J</b>	<b>0.17 J</b>	<b>0.37 J</b>	<b>0.52 J</b>	<b>0.076 J</b>	0.01	4	
April-2019	<b>7.8</b>	<b>0.29 J</b>	<b>0.26 J</b>	---	---	<b>0.47 J</b>	<b>0.61 J</b>	<b>5.2</b>	---	0.05	4	
May-2019	---	---	---	<b>1.3 J</b>	<b>0.8 J</b>	---	---	---	<b>0.13 J</b>	0.05	4	
October-2019	<b>5</b>	---	<b>0.073 J</b>	<b>1 J</b>	<b>0.61 J</b>	<b>0.19 J</b>	<b>0.29 J</b>	<b>0.51 J</b>	ND	0.05	4	
May-2020	<b>4.1</b>	<b>0.32 J</b>	<b>0.23 J</b>	<b>0.14 J</b>	<b>0.99 J</b>	<b>0.16 J</b>	<b>0.23 J</b>	<b>0.34 J</b>	ND	0.05	4	
November-2020	<b>5 J</b>	ND	ND	ND	ND	ND	ND	ND	ND	1.3	5	
May-2021	<b>4.5 J</b>	ND	ND	ND	ND	ND	ND	ND	ND	1.3	5	
November-2021	<b>4.4</b>	<b>0.29 J</b>	ND	<b>0.93 J</b>	<b>0.71 J</b>	ND	<b>0.36 J</b>	ND	ND	0.19	4	
May-2022	<b>5.43</b>	<b>0.472 J</b>	ND	<b>1.65</b>	<b>1.43</b>	ND	<b>0.231 J</b>	<b>0.316 J</b>	ND	0.2	1	
December-2022	<b>5.44</b>	<b>0.264 J</b>	ND	<b>0.895 J</b>	<b>1.13</b>	ND	ND	ND	ND	0.2	1	

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Copper	November-2011	ND	ND	ND	2 J	ND	---	---	---	---	2	5
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	2	5
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	2	5
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	2	5
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	2	5
	May-2014	ND	---	ND	ND	ND	---	---	---	---	2	5
	October-2014	ND	---	ND	ND	ND	---	---	---	---	2.5	5
	April-2015	ND	---	ND	ND	ND	---	---	---	---	2.5	5
	October-2015	ND	---	ND	ND	ND	---	---	---	---	2.5	5
	May-2016	ND	---	ND	ND	ND	ND	3.8 J	---	---	2.5	5
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5
	October-2017	31.2	---	---	---	---	---	---	---	---	2.5	5
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	2.5	5
	May-2018	ND	---	ND	ND	---	ND	ND	ND	3.7 J	2.5	5
	October-2018	2.9 J	---	ND	ND	ND	ND	ND	4.1 J	ND	2.5	5
	April-2019	3 J	ND	ND	---	---	2.6 J	ND	39.5	---	2.5	5
	May-2019	---	---	---	3.1 J	ND	---	---	---	3 J	2.5	5
	July-2019	---	---	---	---	---	---	---	0	---	2.5	4
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	2.5	5
		ND	ND	ND	---	---	---	---	---	---	2.1	5
	May-2020	---	---	---	ND	ND	ND	ND	ND	ND	4.3	5
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3	5
		ND	ND	ND	ND	ND	---	---	ND	ND	4.3	5
May-2021	---	---	---	---	---	ND	ND	---	---	4.5	5	
November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7	5	
May-2022	ND	0.725 J	ND	2.06	1.31	ND	0.636 J	ND	ND	0.3	1	
December-2022	ND	ND	ND	0.969 J	0.634 J	ND	ND	0.39 J	ND	0.3	1	
Lead	November-2011	ND	ND	ND	ND	ND	---	---	---	---	4	5
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	4	5
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	4	5
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	4	5
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	4	5
	May-2014	ND	---	ND	ND	ND	---	---	---	---	4	5
	October-2014	ND	---	ND	ND	ND	---	---	---	---	2.5	5
	April-2015	ND	---	ND	ND	ND	---	---	---	---	2.5	5
	October-2015	ND	---	ND	ND	ND	---	---	---	---	2.5	5
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5
	May-2017	7	---	3.5 J	3.3 J	2.6 J	ND	4.3 J	---	---	2.5	5
	October-2017	ND	---	---	---	---	---	---	---	---	2.5	5
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	2.5	5
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	2.5	5
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	2.5	5
	April-2019	ND	2.6 J	ND	---	---	ND	ND	ND	---	2.5	5
	May-2019	---	---	---	3.6 J	ND	---	---	---	ND	2.5	5
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	2.5	5
		ND	ND	ND	---	---	---	---	---	---	1.6	5
	May-2020	---	---	---	ND	ND	ND	ND	ND	ND	4.5	5
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25	1
		ND	ND	ND	ND	ND	---	---	ND	ND	4.5	5
	May-2021	---	---	---	---	---	ND	ND	---	---	4.8	5
November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.5	10	
May-2022	ND	ND	ND	2	ND	ND	ND	ND	ND	1	1	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1	



Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Nickel	May-2002	ND	ND	---	ND	ND	---	---	---	---	---	100
	November-2002	ND	ND	---	ND	ND	---	---	---	---	---	100
	May-2003	ND	ND	---	ND	ND	---	---	---	---	---	100
	November-2003	ND	ND	---	ND	ND	---	---	---	---	---	100
	May-2004	ND	ND	---	ND	ND	---	---	---	---	---	50
	November-2004	ND	ND	---	20	ND	---	---	---	---	---	10
	May-2005	8.52 J	ND	---	24.8	1.93 J	---	---	---	---	0.8	10
	November-2005	7.6 J	ND	---	22.4	1.3 J	---	---	---	---	0.56	10
	May-2006	ND	ND	---	37.1	1.4	---	---	---	---	0.6	10
	December-2006	8.45 J	ND	---	48.5	1.35 J	---	---	---	---	0.6	10
	June-2007	7.5 J	ND	---	49.2	ND	---	---	---	---	0.67	10
	November-2007	7.73	ND	---	65.9	ND	---	---	---	---	0.67	5
	April-2008	7.07	ND	---	40.9	ND	---	---	---	---	1	5
	October-2008	9	1.7 J	---	40.6	3.6 J	---	---	---	---	1.7	5
	March-2009	6.3	ND	---	26.1	ND	---	---	---	---	1.7	5
	October-2009	7.9	ND	---	39.5	7.6	---	---	---	---	1.7	5
	April-2010	ND	ND	---	10.5	ND	---	---	---	---	1.7	5
	November-2010	ND	ND	---	4.5 J	ND	---	---	---	---	1.7	5
	May-2011	7.2	ND	---	13.1	ND	---	---	---	---	2.5	5
	November-2011	6.8	ND	ND	9.3	ND	---	---	---	---	2.5	5
	May-2012	8	ND	ND	7.8	ND	---	---	---	---	2.5	5
	November-2012	7.5	ND	ND	5.2	ND	---	---	---	---	2.5	5
	May-2013	7.5	ND	ND	16.8	ND	---	---	---	---	2.5	5
	November-2013	8.4	ND	ND	6.1	ND	---	---	---	---	2.5	5
	May-2014	8.4	---	ND	14	ND	---	---	---	---	2.5	5
	October-2014	7.4	---	ND	8.7	ND	---	---	---	---	2.5	5
	April-2015	8.1	---	ND	12.1	ND	---	---	---	---	2.5	5
	October-2015	8.6	---	ND	32.1	ND	---	---	---	---	2.5	5
	May-2016	9	---	ND	18.8	ND	ND	4.9 J	---	---	2.5	5
	November-2016	9.3	---	ND	6.3	14.4	2.7 J	3.5 J	---	---	2.5	5
	May-2017	12.2	---	2.5 J	13	10.5	2.8 J	4.1 J	---	---	2.5	5
	October-2017	8.6	---	---	---	---	---	---	---	---	2.5	5
	November-2017	---	---	ND	9.1	6.4	ND	ND	---	---	2.5	5
	May-2018	8.8	---	ND	9.4	---	ND	ND	ND	2.8 J	2.5	5
	October-2018	8.8	---	ND	14.5	12.1	ND	3.2 J	ND	ND	2.5	5
	April-2019	8.7	ND	ND	---	---	ND	ND	9.3	---	2.5	5
	May-2019	---	---	---	18.9	3.1 J	---	---	---	3.5 J	2.5	5
	October-2019	7.2	---	ND	13.6	2.7 J	ND	ND	ND	ND	2.5	5
			5.8	ND	0.94 J	---	---	---	---	---	0.9	5
	May-2020	---	---	---	10.6	ND	ND	3.8 J	ND	ND	3.5	5
November-2020	7.6	ND	1.3 J	15	2.8 J	ND	2.6 J	ND	1.5 J	1.3	5	
		9.4	ND	4.3 J	9.5	ND	---	ND	ND	3.5	5	
May-2021	---	---	---	---	---	ND	ND	---	---	3.7	5	
November-2021	5.4 J	ND	ND	9.1 J	ND	ND	ND	ND	ND	3.4	10	
May-2022	7.323	ND	ND	14.93	18.9	ND	2.323	ND	ND	1	1	
December-2022	7.568	ND	ND	26.62	2.544	2.794	2.629	ND	ND	1	1	
Selenium	November-2011	ND	ND	ND	ND	ND	---	---	---	---	5	10
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	5	10
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	5	10
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	5	10
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	5	10
	May-2014	ND	---	ND	ND	ND	---	---	---	---	5	10
	October-2014	5.1 J	---	ND	ND	ND	---	---	---	---	5	10
	April-2015	ND	---	ND	ND	ND	---	---	---	---	5	10
	October-2015	ND	---	ND	ND	ND	---	---	---	---	5	10
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	5	10
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	5	10
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	5	10
	October-2017	ND	---	---	---	---	---	---	---	---	5	10
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	5	10
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	5	10
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	5	10
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	5	10
	May-2019	---	---	---	ND	ND	---	---	---	ND	5	10
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	5	10
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.7	10
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3	5
			ND	ND	ND	ND	ND	---	---	ND	ND	4.7
May-2021	---	---	---	---	---	ND	ND	---	---	5	10	
November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	10	
May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.85	1	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.85	1	

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ	
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)	
Silver	November-2011	ND	ND	ND	4.2 J	ND	---	---	---	---	2.5	5	
	May-2012	ND	ND	ND	4.1 J	ND	---	---	---	---	2.5	5	
	November-2012	ND	ND	ND	3 J	ND	---	---	---	---	2.5	5	
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	2.5	5	
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	2.5	5	
	May-2014	ND	---	ND	ND	ND	---	---	---	---	2.5	5	
	October-2014	ND	---	ND	ND	ND	---	---	---	---	2.5	5	
	April-2015	ND	---	ND	ND	ND	---	---	---	---	2.5	5	
	October-2015	ND	---	ND	ND	ND	---	---	---	---	2.5	5	
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5	
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5	
	May-2017	ND	---	ND	ND	ND	4.3 J	ND	---	---	2.5	5	
	October-2017	ND	---	---	---	---	---	---	---	---	2.5	5	
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	2.5	5	
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	2.5	5	
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	2.5	5	
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	2.5	5	
	May-2019	---	---	---	ND	ND	---	---	---	ND	2.5	5	
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	2.5	5	
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5	5	
	November-2020	ND	ND	ND	3.2	ND	ND	ND	ND	1.1	0.25	1	
			ND	ND	ND	ND	ND	---	---	ND	ND	2.5	5
	May-2021	---	---	---	---	---	ND	ND	---	---	2.7	5	
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.2	5	
May-2022	ND	ND	ND	1.79	0.136 J	ND	ND	ND	0.0632 J	0.06	1		
December-2022	ND	ND	ND	0.394 J	ND	0.19 J	ND	0.107 J	0.0722 J	0.06	1		
Thallium	November-2011	ND	ND	ND	0.062 J	ND	---	---	---	---	0.05	2	
	May-2012	ND	ND	ND	0.056 J	ND	---	---	---	---	0.05	2	
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	0.5	2	
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.5	2	
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	0.5	2	
	May-2014	ND	---	ND	ND	ND	---	---	---	---	0.5	2	
	October-2014	ND	---	ND	ND	ND	---	---	---	---	0.5	1	
	April-2015	ND	---	ND	ND	ND	---	---	---	---	0.5	1	
	October-2015	ND	---	ND	ND	ND	---	---	---	---	0.5	2	
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.5	2	
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.5	2	
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	0.5	2	
	October-2017	0.16 J	---	---	---	---	---	---	---	---	0.02	2	
	November-2017	---	---	ND	ND	0.075 J	0.026 J	0.028 J	---	---	0.02	2	
	May-2018	0.16 J	---	ND	0.039 J	---	ND	0.042 J	ND	ND	0.02	2	
	October-2018	0.15 J	---	ND	0.035 J	0.11 J	ND	ND	ND	ND	0.02	2	
	April-2019	0.14 J	ND	ND	---	---	ND	ND	ND	---	0.06	2	
	May-2019	---	---	---	0.072 J	ND	---	---	---	ND	0.06	2	
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	0.06	2	
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.06	2	
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	0.5	
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	0.5	
	November-2021	ND	ND	0.55 J,B	ND	ND	ND	ND	ND	ND	0.2	2	
	May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1		
Vanadium	November-2011	ND	ND	ND	4 J	ND	---	---	---	---	2.5	5	
	May-2012	ND	ND	ND	2.6 J	ND	---	---	---	---	2.5	5	
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	2.5	5	
	May-2013	ND	ND	ND	8.6	ND	---	---	---	---	2.5	5	
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	2.5	5	
	May-2014	ND	---	ND	7.3	ND	---	---	---	---	2.5	5	
	October-2014	ND	---	ND	2.6 J	ND	---	---	---	---	2.5	5	
	April-2015	ND	---	ND	ND	ND	---	---	---	---	2.5	5	
	October-2015	ND	---	ND	ND	ND	---	---	---	---	2.5	5	
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5	
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5	
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	2.5	5	
	October-2017	ND	---	---	---	---	---	---	---	---	2.5	5	
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	2.5	5	
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	2.5	5	
	October-2018	ND	---	ND	ND	3.4 J	ND	ND	ND	ND	2.5	5	
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	2.5	5	
	May-2019	---	---	---	ND	ND	---	---	---	ND	2.5	5	
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	2.5	5	
			ND	ND	ND	---	---	---	---	---	1.3	5	
	May-2020	---	---	---	ND	ND	ND	ND	ND	ND	3.9	5	
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5	5	
			ND	ND	ND	ND	ND	---	---	ND	ND	3.9	5
	May-2021	---	---	---	---	---	ND	ND	---	---	4.2	5	
November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.5	20		
May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5	5		
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5	5		

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Zinc	November-2011	5.3 J	ND	ND	11.6 B	ND	---	---	---	---	5	10
	May-2012	ND	ND	ND	7.6 J	ND	---	---	---	---	5	10
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	5	10
	May-2013	ND	ND	ND	14.5	8.1 J	---	---	---	---	5	10
	November-2013	ND	ND	14.3	ND	ND	---	---	---	---	5	10
	May-2014	ND	---	ND	10.6	ND	---	---	---	---	5	10
	October-2014	ND	---	ND	ND	ND	---	---	---	---	5	10
	April-2015	7.5 J,B	---	6.3 J,B	11 B	8.6 J,B	---	---	---	---	5	10
	October-2015	ND	---	12.1	16.3	8.7 J	---	---	---	---	5	10
	May-2016	ND	---	ND	9 J	5.8 J	8.4 J	9.1 J	---	---	5	10
	November-2016	ND	---	ND	ND	20.4	10.6	ND	---	---	5	10
	May-2017	ND	---	ND	ND	22.2	ND	ND	---	---	5	10
	October-2017	ND	---	---	---	---	---	---	---	---	5	10
	November-2017	---	---	ND	ND	5.1 J	ND	ND	---	---	5	10
	May-2018	ND	---	ND	ND	---	ND	ND	ND	6.7 J	5	10
	October-2018	ND	---	ND	7.9 J	62.7	ND	ND	ND	12	5	10
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	5	10
	May-2019	---	---	---	8.1 J	ND	---	---	---	9.3 J	5	10
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	7.2 J	5	10
	May-2020	ND	ND	ND	---	---	---	---	---	---	3.9	10
	November-2020	ND	2.9 J	ND	3.5 J	ND	13	ND	3.9 J	5.2 J	2.5	10
	May-2021	---	---	---	---	---	11.1	ND	---	---	10	10.1
	November-2021	ND	17 J	ND	ND	ND	ND	ND	15 J	ND	15	30
	May-2022	ND	2.58 J	3.43 J	11.8	15.7	3.69 J	ND	ND	3.52 J	2.5	5
December-2022	ND	ND	ND	6.52	5.07	ND	ND	ND	6.51	2.5	5	

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
<b>COLUMN A VOLATILE ORGANIC COMPOUNDS</b>												
1,1-Dichloroethane	November-2011	1.3	1.7	ND	ND	ND	---	---	---	---	0.32	1
	May-2012	1.3	1.3	ND	ND	ND	---	---	---	---	0.32	1
	November-2012	1.1	1.5	ND	ND	ND	---	---	---	---	0.32	1
	May-2013	1.1	1.4	ND	ND	ND	---	---	---	---	0.32	1
	November-2013	1.3	1.4	ND	ND	ND	---	---	---	---	0.32	1
	May-2014	1.3	---	ND	ND	ND	---	---	---	---	0.32	1
	October-2014	1.3	---	ND	ND	ND	---	---	---	---	0.32	1
	April-2015	1.3	---	ND	ND	ND	---	---	---	---	0.32	1
	October-2015	1.3	---	ND	ND	ND	---	---	---	---	0.32	1
	May-2016	1.2	---	ND	ND	ND	ND	ND	---	---	0.32	1
	November-2016	1.1	---	ND	ND	ND	ND	ND	---	---	0.32	1
	May-2017	1.2	---	ND	ND	ND	ND	ND	---	---	0.32	1
	October-2017	1.3	---	---	---	---	---	---	---	---	0.32	1
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.32	1
	May-2018	0.96 J	---	ND	ND	---	ND	ND	ND	ND	0.32	1
	October-2018	1.1	---	ND	ND	ND	ND	ND	ND	ND	0.32	1
	April-2019	1.1	0.93 J	ND	---	---	ND	ND	ND	---	0.27	1
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.27	1
	October-2019	0.99 J	---	ND	ND	ND	ND	ND	ND	ND	0.27	1
	May-2020	0.95 J	0.57 J	ND	ND	ND	ND	ND	ND	ND	0.27	1
	November-2020	0.91 J	0.83 J	ND	ND	ND	ND	ND	ND	ND	0.27	1
	May-2021	0.94 J	0.79 J	ND	ND	ND	ND	ND	ND	ND	0.37	1
	November-2021	1.1 J	0.98 J	ND	ND	ND	ND	ND	ND	ND	0.5	2
May-2022	1.02	1.11	ND	ND	ND	ND	ND	ND	ND	0.6	1	
December-2022	1.02	ND	ND	ND	ND	ND	ND	ND	ND	0.6	1	
2-Butanone	November-2011	ND	ND	ND	ND	ND	---	---	---	---	0.96	10
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	0.96	10
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	0.96	10
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.96	10
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	0.96	10
	May-2014	ND	---	ND	ND	ND	---	---	---	---	0.96	10
	October-2014	ND	---	ND	ND	ND	---	---	---	---	0.96	10
	April-2015	ND	---	ND	ND	1.7 J	---	---	---	---	0.96	10
	October-2015	ND	---	ND	ND	ND	---	---	---	---	0.96	10
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.96	10
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.96	10
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	0.96	10
	October-2017	ND	---	---	---	---	---	---	---	---	0.96	10
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.96	10
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	0.96	10
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	0.96	10
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	3.3	10
	May-2019	---	---	---	ND	ND	---	---	---	ND	3.3	10
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	3.3	10
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3	5
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3	5
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	5
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	10
May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	10	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	10	
4-Methyl 2-pentanone	November-2011	ND	ND	ND	ND	ND	---	---	---	---	0.33	10
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	0.33	10
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	0.33	10
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.33	10
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	0.33	10
	May-2014	ND	---	ND	ND	ND	---	---	---	---	0.33	10
	October-2014	ND	---	ND	ND	ND	---	---	---	---	0.33	10
	April-2015	ND	---	ND	ND	0.67 J	---	---	---	---	0.33	10
	October-2015	ND	---	ND	86.3	ND	---	---	---	---	0.33	10
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.33	10
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.33	10
	May-2017	ND	---	ND	16.8	ND	ND	ND	---	---	0.33	10
	October-2017	ND	---	---	---	---	---	---	---	---	0.33	10
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.33	10
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	0.33	10
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	0.33	10
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	4.5	10
	May-2019	---	---	---	ND	ND	---	---	---	ND	4.5	10
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	4.5	10
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.5	5
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.5	5
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.7	5
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	10
May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	5	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	5	

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Acetone	November-2011	ND	ND	ND	ND	ND	---	---	---	---	2.2	25
	May-2012	ND	ND	3.3 J,B	3.3 J,B	3.9 J,B	---	---	---	---	2.2	25
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	10	25
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	10	25
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	10	25
	May-2014	ND	---	ND	ND	ND	---	---	---	---	10	25
	October-2014	ND	---	ND	ND	ND	---	---	---	---	10	25
	April-2015	ND	---	13.7 J	ND	27.9	---	---	---	---	10	25
	October-2015	ND	---	ND	ND	ND	---	---	---	---	10	25
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	10	25
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	10	25
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	10	25
	October-2017	ND	---	---	---	---	---	---	---	---	10	25
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	10	25
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	10	25
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	10	25
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	6.2	25
	May-2019	---	---	---	ND	ND	---	---	---	ND	6.2	25
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	6.2	25
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.2	25
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.2	25
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.1	25
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	20
	May-2022	ND	ND	ND	8.56 J,B	ND	ND	7.41 J,B	ND	ND	7	10
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	10	
Benzene	November-2011	ND	ND	ND	ND	0.98 J,B	---	---	---	---	0.25	2
	May-2012	ND	ND	ND	ND	0.66 J	---	---	---	---	0.25	2
	November-2012	ND	ND	ND	ND	0.92 J	---	---	---	---	0.25	2
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.25	2
	November-2013	ND	ND	ND	ND	1.3 J	---	---	---	---	0.25	2
	May-2014	ND	---	ND	ND	1.5 J	---	---	---	---	0.25	2
	October-2014	ND	---	ND	ND	0.82 J,B	---	---	---	---	0.25	2
	April-2015	ND	---	ND	ND	ND	---	---	---	---	0.25	2
	October-2015	ND	---	ND	0.69 J	1.8 J	---	---	---	---	0.25	2
	May-2016	ND	---	ND	0.69 J	1.1 J	ND	ND	---	---	0.25	2
	November-2016	ND	---	ND	0.52 J	0.42 J	ND	ND	---	---	0.25	2
	May-2017	ND	---	ND	ND	0.94 J	ND	ND	---	---	0.25	2
	October-2017	ND	---	---	---	---	---	---	---	---	0.25	2
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.25	2
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	0.25	2
	October-2018	ND	---	ND	ND	1.5 J	ND	ND	ND	ND	0.25	2
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	0.15	2
	May-2019	---	---	---	ND	0.74 J	---	---	---	ND	0.15	2
	October-2019	ND	---	ND	ND	1 J	ND	ND	ND	ND	0.15	2
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	1
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	1
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	1
	November-2021	ND	ND	ND	ND	0.7 J	ND	ND	ND	ND	0.5	5
	May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	1
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	1	
Carbon disulfide	November-2011	ND	ND	ND	ND	ND	---	---	---	---	1.2	2
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	1.2	2
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	1.2	2
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	1.2	2
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	1.2	2
	May-2014	ND	---	ND	ND	ND	---	---	---	---	1.2	2
	October-2014	ND	---	ND	ND	ND	---	---	---	---	1.2	2
	April-2015	ND	---	ND	ND	ND	---	---	---	---	1.2	2
	October-2015	ND	---	ND	1.9 J	ND	---	---	---	---	1.2	2
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	1.2	2
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	1.2	2
	May-2017	ND	---	ND	ND	ND	1.2 J	ND	---	---	1.2	2
	October-2017	ND	---	---	---	---	---	---	---	---	1.2	2
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	1.2	2
	May-2018	ND	---	ND	ND	---	ND	ND	3.4	ND	1.2	2
	July-2018	---	---	---	---	---	---	---	1.2 J	---	1.2	2
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	1.2	2
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	0.4	2
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.4	2
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	0.4	2
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	2
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	2
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.73	2
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	5
May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	10	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	10	

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Chloromethane	November-2011	ND	ND	ND	ND	ND	---	---	---	---	0.11	1
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	0.11	1
	November-2012	ND	ND	ND	ND	ND	---	---	---	---	0.11	1
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.11	1
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	0.11	1
	May-2014	ND	---	ND	ND	ND	---	---	---	---	0.11	1
	October-2014	ND	---	ND	ND	ND	---	---	---	---	0.11	1
	April-2015	ND	---	ND	ND	ND	---	---	---	---	0.11	1
	October-2015	ND	---	ND	ND	ND	---	---	---	---	0.11	1
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.11	1
	November-2016	ND	---	ND	ND	ND	0.12 J	ND	---	---	0.11	1
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	0.11	1
	October-2017	ND	---	---	---	---	---	---	---	---	0.11	1
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.11	1
	May-2018	ND	---	ND	ND	---	ND	ND	0.19 J	ND	0.11	1
	July-2018	---	---	---	---	---	---	---	ND	---	0.11	1
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	0.11	1
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	0.39	1
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.39	1
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	0.39	1
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.39	1
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.39	1
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.54	1
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	5
May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.95	1	
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.95	1	
cis-1,2-Dichloroethene	November-2011	0.59 J	ND	ND	ND	ND	---	---	---	---	0.19	2
	May-2012	0.46 J	ND	ND	ND	ND	---	---	---	---	0.19	2
	November-2012	0.53 J	ND	ND	ND	ND	---	---	---	---	0.19	2
	May-2013	0.44 J	ND	ND	ND	ND	---	---	---	---	0.19	2
	November-2013	0.62 J	ND	ND	ND	ND	---	---	---	---	0.19	2
	May-2014	0.59 J	---	ND	ND	ND	---	---	---	---	0.19	2
	October-2014	0.64 J	---	ND	ND	ND	---	---	---	---	0.19	2
	April-2015	0.58 J	---	ND	ND	ND	---	---	---	---	0.19	2
	October-2015	0.66 J	---	ND	ND	ND	---	---	---	---	0.19	2
	May-2016	0.6 J	---	ND	ND	ND	ND	ND	---	---	0.19	2
	November-2016	0.55 J	---	ND	ND	ND	ND	ND	---	---	0.19	2
	May-2017	0.63 J	---	ND	ND	ND	ND	ND	---	---	0.19	2
	October-2017	0.78 J	---	---	---	---	---	---	---	---	0.19	2
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.19	2
	May-2018	0.55 J	---	ND	ND	---	ND	ND	ND	ND	0.19	2
	October-2018	0.59 J	---	ND	ND	ND	ND	ND	ND	ND	0.19	2
	April-2019	0.61 J	ND	ND	---	---	ND	ND	ND	---	0.29	2
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.29	2
	October-2019	0.57 J	---	ND	ND	ND	ND	ND	ND	ND	0.29	2
	May-2020	0.56 J	ND	ND	ND	ND	ND	ND	ND	ND	0.29	1
	November-2020	0.49 J	ND	ND	ND	ND	ND	ND	ND	ND	0.29	1
	May-2021	0.54 J	ND	ND	ND	ND	ND	ND	ND	ND	0.38	1
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	5
	May-2022	0.56 J	ND	ND	ND	ND	ND	ND	ND	ND	0.4	1
December-2022	0.67 J	ND	ND	ND	ND	ND	ND	ND	ND	0.4	1	
Ethylbenzene	November-2011	ND	ND	ND	ND	0.84 J	---	---	---	---	0.3	2
	May-2012	ND	ND	ND	ND	0.7 J	---	---	---	---	0.3	2
	November-2012	ND	ND	ND	ND	0.98 J	---	---	---	---	0.3	2
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.3	2
	November-2013	ND	ND	ND	ND	1.7 J	---	---	---	---	0.3	2
	May-2014	ND	---	ND	ND	1.6 J	---	---	---	---	0.3	2
	October-2014	ND	---	ND	ND	0.98 J,B	---	---	---	---	0.3	2
	April-2015	ND	---	ND	ND	0.36 J	---	---	---	---	0.3	2
	October-2015	ND	---	ND	0.32 J	2	---	---	---	---	0.3	2
	May-2016	ND	---	ND	0.42 J	1.5 J	ND	ND	---	---	0.3	2
	November-2016	ND	---	ND	0.33 J	0.43 J	ND	ND	---	---	0.3	2
	May-2017	ND	---	ND	ND	0.87 J	ND	ND	---	---	0.3	2
	October-2017	ND	---	---	---	---	---	---	---	---	0.3	2
	November-2017	---	---	ND	ND	0.38 J	ND	ND	---	---	0.3	2
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	0.3	2
	October-2018	ND	---	ND	ND	1.4 J	ND	ND	ND	ND	0.3	2
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	0.26	2
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.26	2
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	0.26	2
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26	1
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26	1
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	1
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	5
	May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	1
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	1	

Historical Laboratory Analytical Results

Well Classification		Background					Compliance				LOD	LOQ
Parameter	Monitoring Event	MW-106A	MW-106B	MW-205B	MW-206A	MW-206B	MW-210A	MW-210B	MW-211A	MW-211B	(ug/L)	(ug/L)
Toluene	November-2011	ND	ND	ND	ND	0.49 J,B	---	---	---	---	0.26	2
	May-2012	ND	ND	ND	ND	0.27 J	---	---	---	---	0.26	2
	November-2012	ND	ND	ND	ND	0.45 J	---	---	---	---	0.26	2
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.26	2
	November-2013	ND	ND	ND	ND	0.61 J,B	---	---	---	---	0.26	2
	May-2014	ND	---	ND	ND	0.59 J,B	---	---	---	---	0.26	2
	October-2014	ND	---	ND	ND	0.28 J,B	---	---	---	---	0.26	2
	April-2015	ND	---	ND	ND	ND	---	---	---	---	0.26	2
	October-2015	ND	---	ND	1.1 J	0.57 J	---	---	---	---	0.26	2
	May-2016	ND	---	ND	0.75 J,B	0.39 J,B	0.31 J,B	ND	---	---	0.26	2
	November-2016	ND	---	ND	0.44 J,B	ND	ND	ND	---	---	0.26	2
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	0.26	2
	October-2017	ND	---	---	---	---	---	---	---	---	0.26	2
	November-2017	---	---	ND	ND	0.41 J	ND	ND	---	---	0.26	2
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	0.26	2
	October-2018	ND	---	ND	ND	0.53 J,B	ND	ND	ND	ND	0.26	2
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	0.24	2
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.24	2
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	0.24	2
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24	1
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24	1
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.48	1
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7	5
	May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	1
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	1	
Xylenes	November-2011	ND	ND	ND	ND	ND	---	---	---	---	0.66	5
	May-2012	ND	ND	ND	ND	ND	---	---	---	---	0.66	5
	November-2012	ND	ND	ND	ND	0.77 J	---	---	---	---	0.66	5
	May-2013	ND	ND	ND	ND	ND	---	---	---	---	0.66	5
	November-2013	ND	ND	ND	ND	ND	---	---	---	---	0.66	5
	May-2014	ND	---	ND	ND	ND	---	---	---	---	0.66	5
	October-2014	ND	---	ND	ND	ND	---	---	---	---	0.66	5
	April-2015	ND	---	ND	ND	ND	---	---	---	---	0.66	5
	October-2015	ND	---	ND	ND	ND	---	---	---	---	0.66	5
	May-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.66	5
	November-2016	ND	---	ND	ND	ND	ND	ND	---	---	0.66	5
	May-2017	ND	---	ND	ND	ND	ND	ND	---	---	0.66	5
	October-2017	ND	---	---	---	---	---	---	---	---	0.66	5
	November-2017	---	---	ND	ND	ND	ND	ND	---	---	0.66	5
	May-2018	ND	---	ND	ND	---	ND	ND	ND	ND	0.66	5
	October-2018	ND	---	ND	ND	ND	ND	ND	ND	ND	0.66	5
	April-2019	ND	ND	ND	---	---	ND	ND	ND	---	0.63	5
	May-2019	---	---	---	ND	ND	---	---	---	ND	0.63	5
	October-2019	ND	---	ND	ND	ND	ND	ND	ND	ND	0.63	5
	May-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.63	1
	November-2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.63	1
	May-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	1
	November-2021	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	6
	May-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	3
December-2022	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	3	

--- = not available/applicable

B = Qualifier used if quantitation of parameter is less than five times that detected in the laboratory's blank. Concentration is considered not validated.

D = Duplicate Sample

D# = # of times sample was diluted


J = Qualifier used if reported concentration is less than the LOQ but greater than the LOD. The concentration is considered to be estimated and not validated.

LOD = Limit of Detection

LOQ = Limit of Quantitation

ND = Not Detected

ug/L = micrograms per liter



# Appendix F

## Statistical Computations



# Rosner's Test for Outliers

Parameter: Arsenic

Location: MW-106A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 5.88895

## 10 most extreme of 38 measurements

by order of magnitude difference from the mean

1	5/26/2004	MW-106A	ND<50 U	44.1111
2	4/8/2008	MW-106A	ND<1 U	-4.88895
3	5/12/2005	MW-106A	ND<1.32 U	-4.56895
4	6/12/2007	MW-106A	ND<1.42 U	-4.46895
5	11/13/2007	MW-106A	ND<1.42 U	-4.46895
6	11/30/2005	MW-106A	ND<1.7 U	-4.18895
7	11/30/2004	MW-106A	ND<10 U	4.11105
8	5/14/2002	MW-106A	ND<10 U	4.11105
9	11/3/2003	MW-106A	ND<10 U	4.11105
10	5/28/2003	MW-106A	ND<10 U	4.11105

---

### Iteration i = 9

Mean of 29 measurements = 4.72138

Std Dev = 2.20142

$x_{(i+1)} = 10$  from measurement 5/28/2003 from location MW-106A

Rosner Statistic  $R = |10 - 4.72138|/2.20142 = 2.39782$

$\Lambda(38, 10, 0.05) = 2.89$

$2.39782 < 2.89$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 30 measurements = 4.89733

Std Dev = 2.36811

$x_{(i+1)} = 10$  from measurement 11/3/2003 from location MW-106A

Rosner Statistic  $R = |10 - 4.89733|/2.36811 = 2.15474$

$\Lambda(38, 9, 0.05) = 2.906$

$2.15474 < 2.906$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 31 measurements = 5.06194

Std Dev = 2.50218

$x_{(i+1)} = 10$  from measurement 5/14/2002 from location MW-106A

Rosner Statistic  $R = |10 - 5.06194|/2.50218 = 1.9735$

$\Lambda(38, 8, 0.05) = 2.922$

$1.9735 < 2.922$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 32 measurements = 5.21625

Std Dev = 2.6117

$x_{(i+1)} = 10$  from measurement 11/30/2004 from location MW-106A

Rosner Statistic  $R = |10 - 5.21625|/2.6117 = 1.83166$

$\Lambda(38, 7, 0.05) = 2.938$

$1.83166 < 2.938$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 33 measurements = 5.1097

Std Dev = 2.64244

$x_{(i+1)} = 1.7$  from measurement 11/30/2005 from location MW-106A

Rosner Statistic  $R = |1.7 - 5.1097|/2.64244 = 1.29036$

$\Lambda(38, 6, 0.05) = 2.954$

$1.29036 < 2.954$  -- No outliers detected for  $i = 5$

---

#### Iteration i = 4

Mean of 34 measurements = 5.00118

Std Dev = 2.67793

$x(i+1) = 1.42$  from measurement 11/13/2007 from location MW-106A

Rosner Statistic  $R = |1.42 - 5.00118|/2.67793 = 1.33729$

$\text{Lambda}(38, 5, 0.05) = 2.97$

$1.33729 < 2.97$  -- No outliers detected for  $i = 4$

---

#### Iteration i = 3

Mean of 35 measurements = 4.89886

Std Dev = 2.70681

$x(i+1) = 1.42$  from measurement 6/12/2007 from location MW-106A

Rosner Statistic  $R = |1.42 - 4.89886|/2.70681 = 1.28523$

$\text{Lambda}(38, 4, 0.05) = 2.98$

$1.28523 < 2.98$  -- No outliers detected for  $i = 3$

---

#### Iteration i = 2

Mean of 36 measurements = 4.79944

Std Dev = 2.73372

$x(i+1) = 1.32$  from measurement 5/12/2005 from location MW-106A

Rosner Statistic  $R = |1.32 - 4.79944|/2.73372 = 1.27279$

$\text{Lambda}(38, 3, 0.05) = 2.99$

$1.27279 < 2.99$  -- No outliers detected for  $i = 2$

---

#### Iteration i = 1

Mean of 37 measurements = 4.69676

Std Dev = 2.76691

$x(i+1) = 1$  from measurement 4/8/2008 from location MW-106A

Rosner Statistic  $R = |1 - 4.69676|/2.76691 = 1.33606$

$\text{Lambda}(38, 2, 0.05) = 3$

$1.33606 < 3$  -- No outliers detected for  $i = 1$

---

#### Iteration i = 0

Mean of 38 measurements = 5.88895

Std Dev = 7.83958

$x(i+1) = 50$  from measurement 5/26/2004 from location MW-106A

Rosner Statistic  $R = |50 - 5.88895|/7.83958 = 5.62671$

$\text{Lambda}(38, 1, 0.05) = 3.01$

$5.62671 > 3.01$  -- Measurement 5/26/2004 for location MW-106A is an outlier

---

# Rosner's Test for Outliers

Parameter: Arsenic

Location: MW-106B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 5.60621

## 10 most extreme of 29 measurements

by order of magnitude difference from the mean

1	5/26/2004	MW-106B	ND<50 U	44.3938
2	12/6/2022	MW-106B	ND<0.5 U	-5.10621
3	5/25/2022	MW-106B	1	-4.60621
4	4/8/2008	MW-106B	ND<1 U	-4.60621
5	5/14/2002	MW-106B	ND<10 U	4.39379
6	11/3/2003	MW-106B	ND<10 U	4.39379
7	5/28/2003	MW-106B	ND<10 U	4.39379
8	11/30/2004	MW-106B	ND<10 U	4.39379
9	11/11/2002	MW-106B	ND<10 U	4.39379
10	11/16/2020	MW-106B	ND<1.3 U	-4.30621

---

### Iteration i = 9

Mean of 20 measurements = 3.004

Std Dev = 1.89993

$x(i+1) = 1.3$  from measurement 11/16/2020 from location MW-106B

Rosner Statistic  $R = |1.3 - 3.004|/1.89993 = 0.896873$

$\Lambda(29, 10, 0.05) = 2.71$

$0.896873 < 2.71$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 21 measurements = 3.33714

Std Dev = 2.39999

$x(i+1) = 10$  from measurement 11/11/2002 from location MW-106B

Rosner Statistic  $R = |10 - 3.33714|/2.39999 = 2.77621$

$\Lambda(29, 9, 0.05) = 2.732$

$2.77621 > 2.732$  -- Measurement 11/11/2002 for location MW-106B is an outlier

---

### Iteration i = 7

Mean of 22 measurements = 3.64

Std Dev = 2.73926

$x(i+1) = 10$  from measurement 11/30/2004 from location MW-106B

Rosner Statistic  $R = |10 - 3.64|/2.73926 = 2.3218$

$\Lambda(29, 8, 0.05) = 2.754$

Measurement 11/30/2004 for location MW-106B is an outlier

---

### Iteration i = 6

Mean of 23 measurements = 3.91652

Std Dev = 2.98683

$x(i+1) = 10$  from measurement 5/28/2003 from location MW-106B

Rosner Statistic  $R = |10 - 3.91652|/2.98683 = 2.03677$

$\Lambda(29, 7, 0.05) = 2.776$

Measurement 5/28/2003 for location MW-106B is an outlier

---

### Iteration i = 5

Mean of 24 measurements = 4.17

Std Dev = 3.17416

$x(i+1) = 10$  from measurement 11/3/2003 from location MW-106B

Rosner Statistic  $R = |10 - 4.17|/3.17416 = 1.83671$

$\Lambda(29, 6, 0.05) = 2.798$

Measurement 11/3/2003 for location MW-106B is an outlier

---

#### Iteration i = 4

Mean of 25 measurements = 4.4032

Std Dev = 3.31889

$x(i+1) = 10$  from measurement 5/14/2002 from location MW-106B

Rosner Statistic  $R = |10 - 4.4032|/3.31889 = 1.68635$

$\text{Lambda}(29, 5, 0.05) = 2.82$

**Measurement 5/14/2002 for location MW-106B is an outlier**

---

#### Iteration i = 3

Mean of 26 measurements = 4.27231

Std Dev = 3.31962

$x(i+1) = 1$  from measurement 4/8/2008 from location MW-106B

Rosner Statistic  $R = |1 - 4.27231|/3.31962 = 0.985746$

$\text{Lambda}(29, 4, 0.05) = 2.84$

**Measurement 4/8/2008 for location MW-106B is an outlier**

---

#### Iteration i = 2

Mean of 27 measurements = 4.15111

Std Dev = 3.31552

$x(i+1) = 1$  from measurement 5/25/2022 from location MW-106B

Rosner Statistic  $R = |1 - 4.15111|/3.31552 = 0.950413$

$\text{Lambda}(29, 3, 0.05) = 2.86$

**Measurement 5/25/2022 for location MW-106B is an outlier**

---

#### Iteration i = 1

Mean of 28 measurements = 4.02071

Std Dev = 3.3259

$x(i+1) = 0.5$  from measurement 12/6/2022 from location MW-106B

Rosner Statistic  $R = |0.5 - 4.02071|/3.3259 = 1.05857$

$\text{Lambda}(29, 2, 0.05) = 2.88$

**Measurement 12/6/2022 for location MW-106B is an outlier**

---

#### Iteration i = 0

Mean of 29 measurements = 5.60621

Std Dev = 9.14146

$x(i+1) = 50$  from measurement 5/26/2004 from location MW-106B

Rosner Statistic  $R = |50 - 5.60621|/9.14146 = 4.85631$

$\text{Lambda}(29, 1, 0.05) = 2.89$

**Measurement 5/26/2004 for location MW-106B is an outlier**

---

# Dixon's Test for Outliers

Parameter: Arsenic

Location: MW-205B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 23 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0	0.177778	0.421	None

Loc.	Date	Conc.	Outlier
MW-205B	11/9/2011	ND<2.7 U	FALSE
	5/14/2012	ND<2.7 U	FALSE
	11/16/2012	ND<2.7 U	FALSE
	5/14/2013	ND<2.7 U	FALSE
	11/6/2013	ND<2.7 U	FALSE
	5/5/2014	ND<2.7 U	FALSE
	10/29/2014	ND<5 U	FALSE
	4/27/2015	ND<5 U	FALSE
	10/26/2015	ND<5 U	FALSE
	5/3/2016	ND<5 U	FALSE
	11/2/2016	ND<5 U	FALSE
	5/2/2017	ND<5 U	FALSE
	11/1/2017	ND<5 U	FALSE
	5/2/2018	ND<5 U	FALSE
	10/30/2018	ND<5 U	FALSE
	4/30/2019	ND<5 U	FALSE
	10/28/2019	ND<5 U	FALSE
	5/4/2020	ND<4.7 U	FALSE
	11/16/2020	ND<1.3 U	FALSE
	5/18/2021	ND<4.7 U	FALSE
	11/9/2021	ND<4 U	FALSE
	5/25/2022	0.56 J	FALSE
	12/6/2022	ND<0.5 U	FALSE

# Rosner's Test for Outliers

Parameter: Arsenic

Location: MW-206A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 6.94

## 10 most extreme of 41 measurements

by order of magnitude difference from the mean

1	5/26/2004	MW-206A	ND<50 U	43.06
2	10/13/2008	MW-206A	17.2	10.26
3	11/13/2007	MW-206A	16.6	9.66
4	3/31/2009	MW-206A	14.4	7.46
5	12/5/2022	MW-206A	ND<0.5 U	-6.44
6	11/17/2020	MW-206A	ND<1.3 U	-5.64
7	5/16/2006	MW-206A	ND<1.3 U	-5.64
8	12/12/2006	MW-206A	ND<1.3 U	-5.64
9	5/12/2005	MW-206A	ND<1.32 U	-5.62
10	5/24/2022	MW-206A	1.5	-5.44

---

### Iteration i = 9

Mean of 32 measurements = 5.64437

Std Dev = 2.70928

$x_{(i+1)} = 1.5$  from measurement 5/24/2022 from location MW-206A

Rosner Statistic  $R = |1.5 - 5.64437|/2.70928 = 1.5297$

$\Lambda(41, 10, 0.05) = 2.94$

$1.5297 < 2.94$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 33 measurements = 5.51333

Std Dev = 2.77082

$x_{(i+1)} = 1.32$  from measurement 5/12/2005 from location MW-206A

Rosner Statistic  $R = |1.32 - 5.51333|/2.77082 = 1.51339$

$\Lambda(41, 9, 0.05) = 2.952$

$1.51339 < 2.952$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 34 measurements = 5.38941

Std Dev = 2.82258

$x_{(i+1)} = 1.3$  from measurement 12/12/2006 from location MW-206A

Rosner Statistic  $R = |1.3 - 5.38941|/2.82258 = 1.44882$

$\Lambda(41, 8, 0.05) = 2.964$

$1.44882 < 2.964$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 35 measurements = 5.27257

Std Dev = 2.86538

$x_{(i+1)} = 1.3$  from measurement 5/16/2006 from location MW-206A

Rosner Statistic  $R = |1.3 - 5.27257|/2.86538 = 1.3864$

$\Lambda(41, 7, 0.05) = 2.976$

$1.3864 < 2.976$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 36 measurements = 5.16222

Std Dev = 2.90073

$x_{(i+1)} = 1.3$  from measurement 11/17/2020 from location MW-206A

Rosner Statistic  $R = |1.3 - 5.16222|/2.90073 = 1.33147$

$\Lambda(41, 6, 0.05) = 2.988$

$1.33147 < 2.988$  -- No outliers detected for  $i = 5$

---

#### Iteration i = 4

Mean of 37 measurements = 5.03622

Std Dev = 2.96107

$x(i+1) = 0.5$  from measurement 12/5/2022 from location MW-206A

Rosner Statistic  $R = |0.5 - 5.03622|/2.96107 = 1.53195$

$\text{Lambda}(41, 5, 0.05) = 3$

$1.53195 < 3$  -- No outliers detected for  $i = 4$

---

#### Iteration i = 3

Mean of 38 measurements = 5.28263

Std Dev = 3.29217

$x(i+1) = 14.4$  from measurement 3/31/2009 from location MW-206A

Rosner Statistic  $R = |14.4 - 5.28263|/3.29217 = 2.76941$

$\text{Lambda}(41, 4, 0.05) = 3.01$

$2.76941 < 3.01$  -- No outliers detected for  $i = 3$

---

#### Iteration i = 2

Mean of 39 measurements = 5.57282

Std Dev = 3.71985

$x(i+1) = 16.6$  from measurement 11/13/2007 from location MW-206A

Rosner Statistic  $R = |16.6 - 5.57282|/3.71985 = 2.96441$

$\text{Lambda}(41, 3, 0.05) = 3.03$

$2.96441 < 3.03$  -- No outliers detected for  $i = 2$

---

#### Iteration i = 1

Mean of 40 measurements = 5.8635

Std Dev = 4.10637

$x(i+1) = 17.2$  from measurement 10/13/2008 from location MW-206A

Rosner Statistic  $R = |17.2 - 5.8635|/4.10637 = 2.76071$

$\text{Lambda}(41, 2, 0.05) = 3.04$

$2.76071 < 3.04$  -- No outliers detected for  $i = 1$

---

#### Iteration i = 0

Mean of 41 measurements = 6.94

Std Dev = 7.9971

$x(i+1) = 50$  from measurement 5/26/2004 from location MW-206A

Rosner Statistic  $R = |50 - 6.94|/7.9971 = 5.38445$

$\text{Lambda}(41, 1, 0.05) = 3.05$

$5.38445 > 3.05$  -- Measurement 5/26/2004 for location MW-206A is an outlier

# Rosner's Test for Outliers

Parameter: Arsenic

Location: MW-206B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 5.2359

## 10 most extreme of 39 measurements

by order of magnitude difference from the mean

1	5/26/2004	MW-206B	ND<50 U	44.7641
2	11/3/2003	MW-206B	ND<10 U	4.7641
3	5/28/2003	MW-206B	ND<10 U	4.7641
4	11/30/2004	MW-206B	ND<10 U	4.7641
5	5/14/2002	MW-206B	ND<10 U	4.7641
6	11/11/2002	MW-206B	ND<10 U	4.7641
7	12/5/2022	MW-206B	0.53 J	-4.7059
8	5/26/2022	MW-206B	0.61 J	-4.6259
9	4/8/2008	MW-206B	ND<1 U	-4.2359
10	12/12/2006	MW-206B	ND<1.3 U	-3.9359

---

### Iteration i = 9

Mean of 30 measurements = 3.402

Std Dev = 1.47948

$x_{(i+1)} = 1.3$  from measurement 12/12/2006 from location MW-206B

Rosner Statistic  $R = |1.3 - 3.402|/1.47948 = 1.42077$

$\Lambda(39, 10, 0.05) = 2.91$

$1.42077 < 2.91$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 31 measurements = 3.32452

Std Dev = 1.51724

$x_{(i+1)} = 1$  from measurement 4/8/2008 from location MW-206B

Rosner Statistic  $R = |1 - 3.32452|/1.51724 = 1.53207$

$\Lambda(39, 9, 0.05) = 2.924$

$1.53207 < 2.924$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 32 measurements = 3.23969

Std Dev = 1.56781

$x_{(i+1)} = 0.61$  from measurement 5/26/2022 from location MW-206B

Rosner Statistic  $R = |0.61 - 3.23969|/1.56781 = 1.6773$

$\Lambda(39, 8, 0.05) = 2.938$

$1.6773 < 2.938$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 33 measurements = 3.15758

Std Dev = 1.6136

$x_{(i+1)} = 0.53$  from measurement 12/5/2022 from location MW-206B

Rosner Statistic  $R = |0.53 - 3.15758|/1.6136 = 1.62839$

$\Lambda(39, 7, 0.05) = 2.952$

$1.62839 < 2.952$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 34 measurements = 3.35882

Std Dev = 1.97531

$x_{(i+1)} = 10$  from measurement 11/11/2002 from location MW-206B

Rosner Statistic  $R = |10 - 3.35882|/1.97531 = 3.3621$

$\Lambda(39, 6, 0.05) = 2.966$

$3.3621 > 2.966$  -- Measurement 11/11/2002 for location MW-206B is an outlier



---

#### Iteration i = 4

Mean of 35 measurements = 3.54857

Std Dev = 2.2466

$x(i+1) = 10$  from measurement 5/14/2002 from location MW-206B

Rosner Statistic  $R = |10 - 3.54857|/2.2466 = 2.87164$

$\text{Lambda}(39, 5, 0.05) = 2.98$

**Measurement 5/14/2002 for location MW-206B is an outlier**

---

#### Iteration i = 3

Mean of 36 measurements = 3.72778

Std Dev = 2.46154

$x(i+1) = 10$  from measurement 11/30/2004 from location MW-206B

Rosner Statistic  $R = |10 - 3.72778|/2.46154 = 2.54809$

$\text{Lambda}(39, 4, 0.05) = 2.99$

**Measurement 11/30/2004 for location MW-206B is an outlier**

---

#### Iteration i = 2

Mean of 37 measurements = 3.8973

Std Dev = 2.63706

$x(i+1) = 10$  from measurement 5/28/2003 from location MW-206B

Rosner Statistic  $R = |10 - 3.8973|/2.63706 = 2.3142$

$\text{Lambda}(39, 3, 0.05) = 3$

**Measurement 5/28/2003 for location MW-206B is an outlier**

---

#### Iteration i = 1

Mean of 38 measurements = 4.05789

Std Dev = 2.78321

$x(i+1) = 10$  from measurement 11/3/2003 from location MW-206B

Rosner Statistic  $R = |10 - 4.05789|/2.78321 = 2.13499$

$\text{Lambda}(39, 2, 0.05) = 3.01$

**Measurement 11/3/2003 for location MW-206B is an outlier**

---

#### Iteration i = 0

Mean of 39 measurements = 5.2359

Std Dev = 7.85254

$x(i+1) = 50$  from measurement 5/26/2004 from location MW-206B

Rosner Statistic  $R = |50 - 5.2359|/7.85254 = 5.70059$

$\text{Lambda}(39, 1, 0.05) = 3.03$

**Measurement 5/26/2004 for location MW-206B is an outlier**

---

# Rosner's Test for Outliers

Parameter: Barium

Location: MW-106A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 304.776

## 10 most extreme of 49 measurements

by order of magnitude difference from the mean

1	10/13/2008	MW-106A	244	-60.7755
2	5/4/2020	MW-106A	364	59.2245
3	4/8/2008	MW-106A	246	-58.7755
4	10/29/2018	MW-106A	354	49.2245
5	10/27/2015	MW-106A	348	43.2245
6	3/31/2009	MW-106A	267	-37.7755
7	5/16/2006	MW-106A	267	-37.7755
8	5/1/2017	MW-106A	341	36.2245
9	10/31/2017	MW-106A	336	31.2245
10	12/6/2022	MW-106A	274	-30.7755

---

### Iteration i = 9

Mean of 40 measurements = 304.175

Std Dev = 16.3078

$x(i+1)$  = 274 from measurement 12/6/2022 from location MW-106A

Rosner Statistic  $R = |274 - 304.175|/16.3078 = 1.85035$

$\Lambda(49, 10, 0.05) = 3.04$

$1.85035 < 3.04$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 41 measurements = 304.951

Std Dev = 16.8522

$x(i+1)$  = 336 from measurement 10/31/2017 from location MW-106A

Rosner Statistic  $R = |336 - 304.951|/16.8522 = 1.84241$

$\Lambda(49, 9, 0.05) = 3.05$

$1.84241 < 3.05$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 42 measurements = 305.81

Std Dev = 17.5503

$x(i+1)$  = 341 from measurement 5/1/2017 from location MW-106A

Rosner Statistic  $R = |341 - 305.81|/17.5503 = 2.00513$

$\Lambda(49, 8, 0.05) = 3.06$

$2.00513 < 3.06$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 43 measurements = 304.907

Std Dev = 18.3223

$x(i+1)$  = 267 from measurement 5/16/2006 from location MW-106A

Rosner Statistic  $R = |267 - 304.907|/18.3223 = 2.0689$

$\Lambda(49, 7, 0.05) = 3.07$

$2.0689 < 3.07$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 44 measurements = 304.045

Std Dev = 18.9883

$x(i+1)$  = 267 from measurement 3/31/2009 from location MW-106A

Rosner Statistic  $R = |267 - 304.045|/18.9883 = 1.95096$

$\Lambda(49, 6, 0.05) = 3.08$

$1.95096 < 3.08$  -- No outliers detected for  $i = 5$

---

#### Iteration i = 4

Mean of 45 measurements = 305.022

Std Dev = 19.882

$x(i+1) = 348$  from measurement 10/27/2015 from location MW-106A

Rosner Statistic  $R = |348 - 305.022|/19.882 = 2.16164$

$\text{Lambda}(49, 5, 0.05) = 3.09$

$2.16164 < 3.09$  -- No outliers detected for  $i = 4$

---

#### Iteration i = 3

Mean of 46 measurements = 306.087

Std Dev = 20.9442

$x(i+1) = 354$  from measurement 10/29/2018 from location MW-106A

Rosner Statistic  $R = |354 - 306.087|/20.9442 = 2.28765$

$\text{Lambda}(49, 4, 0.05) = 3.09$

$2.28765 < 3.09$  -- No outliers detected for  $i = 3$

---

#### Iteration i = 2

Mean of 47 measurements = 304.809

Std Dev = 22.4931

$x(i+1) = 246$  from measurement 4/8/2008 from location MW-106A

Rosner Statistic  $R = |246 - 304.809|/22.4931 = 2.61451$

$\text{Lambda}(49, 3, 0.05) = 3.1$

$2.61451 < 3.1$  -- No outliers detected for  $i = 2$

---

#### Iteration i = 1

Mean of 48 measurements = 306.042

Std Dev = 23.8363

$x(i+1) = 364$  from measurement 5/4/2020 from location MW-106A

Rosner Statistic  $R = |364 - 306.042|/23.8363 = 2.43152$

$\text{Lambda}(49, 2, 0.05) = 3.11$

$2.43152 < 3.11$  -- No outliers detected for  $i = 1$

---

#### Iteration i = 0

Mean of 49 measurements = 304.776

Std Dev = 25.1969

$x(i+1) = 244$  from measurement 10/13/2008 from location MW-106A

Rosner Statistic  $R = |244 - 304.776|/25.1969 = 2.41202$

$\text{Lambda}(49, 1, 0.05) = 3.12$

$2.41202 < 3.12$  -- No outliers detected for  $i = 0$

---

# Rosner's Test for Outliers

Parameter: Barium

Location: MW-106B

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Data set mean = 89.9865

## 10 most extreme of 37 measurements

by order of magnitude difference from the mean

1	5/24/2001	MW-106B	ND<50 U	-39.9865
2	11/11/2002	MW-106B	ND<50 U	-39.9865
3	5/14/2002	MW-106B	ND<50 U	-39.9865
4	12/8/1999	MW-106B	ND<50 U	-39.9865
5	9/22/1999	MW-106B	120	30.0135
6	1/15/1999	MW-106B	120	30.0135
7	6/9/1999	MW-106B	110	20.0135
8	5/25/2022	MW-106B	108	18.0135
9	11/8/2011	MW-106B	107	17.0135
10	5/15/2013	MW-106B	104	14.0135

---

### Iteration i = 9

Mean of 28 measurements = 91.5893

Std Dev = 8.58268

$x_{(i+1)} = 104$  from measurement 5/15/2013 from location MW-106B

Rosner Statistic  $R = |104 - 91.5893|/8.58268 = 1.44602$

$\Lambda(37, 10, 0.05) = 2.88$

$1.44602 < 2.88$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 29 measurements = 92.1207

Std Dev = 8.90062

$x_{(i+1)} = 107$  from measurement 11/8/2011 from location MW-106B

Rosner Statistic  $R = |107 - 92.1207|/8.90062 = 1.67172$

$\Lambda(37, 9, 0.05) = 2.894$

$1.67172 < 2.894$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 30 measurements = 92.65

Std Dev = 9.21381

$x_{(i+1)} = 108$  from measurement 5/25/2022 from location MW-106B

Rosner Statistic  $R = |108 - 92.65|/9.21381 = 1.66598$

$\Lambda(37, 8, 0.05) = 2.908$

$1.66598 < 2.908$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 31 measurements = 93.2097

Std Dev = 9.57992

$x_{(i+1)} = 110$  from measurement 6/9/1999 from location MW-106B

Rosner Statistic  $R = |110 - 93.2097|/9.57992 = 1.75266$

$\Lambda(37, 7, 0.05) = 2.922$

$1.75266 < 2.922$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 32 measurements = 94.0469

Std Dev = 10.5472

$x_{(i+1)} = 120$  from measurement 1/15/1999 from location MW-106B

Rosner Statistic  $R = |120 - 94.0469|/10.5472 = 2.46067$

$\Lambda(37, 6, 0.05) = 2.936$

$2.46067 < 2.936$  -- No outliers detected for  $i = 5$

---

#### Iteration i = 4

Mean of 33 measurements = 94.8333

Std Dev = 11.3216

$x(i+1) = 120$  from measurement 9/22/1999 from location MW-106B

Rosner Statistic  $R = |120 - 94.8333|/11.3216 = 2.2229$

$\text{Lambda}(37, 5, 0.05) = 2.95$

$2.2229 < 2.95$  -- No outliers detected for  $i = 4$

---

#### Iteration i = 3

Mean of 34 measurements = 93.5147

Std Dev = 13.543

$x(i+1) = 50$  from measurement 12/8/1999 from location MW-106B

Rosner Statistic  $R = |50 - 93.5147|/13.543 = 3.21308$

$\text{Lambda}(37, 4, 0.05) = 2.97$

$3.21308 > 2.97$  -- Measurement 12/8/1999 for location MW-106B is an outlier

---

#### Iteration i = 2

Mean of 35 measurements = 92.2714

Std Dev = 15.2354

$x(i+1) = 50$  from measurement 5/14/2002 from location MW-106B

Rosner Statistic  $R = |50 - 92.2714|/15.2354 = 2.77455$

$\text{Lambda}(37, 3, 0.05) = 2.98$

Measurement 5/14/2002 for location MW-106B is an outlier

---

#### Iteration i = 1

Mean of 36 measurements = 91.0972

Std Dev = 16.5868

$x(i+1) = 50$  from measurement 11/11/2002 from location MW-106B

Rosner Statistic  $R = |50 - 91.0972|/16.5868 = 2.47771$

$\text{Lambda}(37, 2, 0.05) = 2.99$

Measurement 11/11/2002 for location MW-106B is an outlier

---

#### Iteration i = 0

Mean of 37 measurements = 89.9865

Std Dev = 17.6954

$x(i+1) = 50$  from measurement 5/24/2001 from location MW-106B

Rosner Statistic  $R = |50 - 89.9865|/17.6954 = 2.25971$

$\text{Lambda}(37, 1, 0.05) = 3$

Measurement 5/24/2001 for location MW-106B is an outlier

---

# Dixon's Test for Outliers

Parameter: Barium

Location: MW-205B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 23 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.188679	0.232143	0.421	None

Loc.	Date	Conc.	Outlier
MW-205B	11/9/2011	103	FALSE
	5/14/2012	107	FALSE
	11/16/2012	103	FALSE
	5/14/2013	107	FALSE
	11/6/2013	112	FALSE
	5/5/2014	110	FALSE
	10/29/2014	106	FALSE
	4/27/2015	102	FALSE
	10/26/2015	108	FALSE
	5/3/2016	100	FALSE
	11/2/2016	104	FALSE
	5/2/2017	96.1	FALSE
	11/1/2017	98.8	FALSE
	5/2/2018	99.8	FALSE
	10/30/2018	109	FALSE
	4/30/2019	97.7	FALSE
	10/28/2019	98.9	FALSE
	5/4/2020	103	FALSE
	11/16/2020	97	FALSE
	5/18/2021	92.2	FALSE
	11/9/2021	100	FALSE
	5/25/2022	93.3	FALSE
	12/6/2022	103	FALSE

# Rosner's Test for Outliers

Parameter: Barium

Location: MW-206A

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Data set mean = 96.1854

## 10 most extreme of 48 measurements

by order of magnitude difference from the mean

1	6/21/2000	MW-206A	252	155.815
2	5/26/2004	MW-206A	ND<5 U	-91.1854
3	11/13/2007	MW-206A	150	53.8146
4	4/8/2008	MW-206A	133	36.8146
5	10/13/2008	MW-206A	123	26.8146
6	1/15/1999	MW-206A	120	23.8146
7	10/28/2019	MW-206A	72.7	-23.4854
8	5/2/2011	MW-206A	118	21.8146
9	5/18/2021	MW-206A	74.9	-21.2854
10	11/9/2021	MW-206A	75	-21.1854

---

### Iteration i = 9

Mean of 39 measurements = 91.4949

Std Dev = 10.1155

$x_{(i+1)} = 75$  from measurement 11/9/2021 from location MW-206A

Rosner Statistic  $R = |75 - 91.4949|/10.1155 = 1.63065$

$\Lambda(48, 10, 0.05) = 3.03$

$1.63065 < 3.03$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 40 measurements = 91.08

Std Dev = 10.324

$x_{(i+1)} = 74.9$  from measurement 5/18/2021 from location MW-206A

Rosner Statistic  $R = |74.9 - 91.08|/10.324 = 1.56723$

$\Lambda(48, 9, 0.05) = 3.04$

$1.56723 < 3.04$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 41 measurements = 91.7366

Std Dev = 11.027

$x_{(i+1)} = 118$  from measurement 5/2/2011 from location MW-206A

Rosner Statistic  $R = |118 - 91.7366|/11.027 = 2.38174$

$\Lambda(48, 8, 0.05) = 3.05$

$2.38174 < 3.05$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 42 measurements = 91.2833

Std Dev = 11.2808

$x_{(i+1)} = 72.7$  from measurement 10/28/2019 from location MW-206A

Rosner Statistic  $R = |72.7 - 91.2833|/11.2808 = 1.64733$

$\Lambda(48, 7, 0.05) = 3.06$

$1.64733 < 3.06$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 43 measurements = 91.9512

Std Dev = 11.9752

$x_{(i+1)} = 120$  from measurement 1/15/1999 from location MW-206A

Rosner Statistic  $R = |120 - 91.9512|/11.9752 = 2.34224$

$\Lambda(48, 6, 0.05) = 3.07$

$2.34224 < 3.07$  -- No outliers detected for  $i = 5$

---

### Iteration i = 4

Mean of 44 measurements = 92.6568

Std Dev = 12.7271

$x(i+1) = 123$  from measurement 10/13/2008 from location MW-206A

Rosner Statistic  $R = |123 - 92.6568|/12.7271 = 2.38413$

$\text{Lambda}(48, 5, 0.05) = 3.08$

$2.38413 < 3.08$  -- No outliers detected for  $i = 4$

---

### Iteration i = 3

Mean of 45 measurements = 93.5533

Std Dev = 13.9451

$x(i+1) = 133$  from measurement 4/8/2008 from location MW-206A

Rosner Statistic  $R = |133 - 93.5533|/13.9451 = 2.8287$

$\text{Lambda}(48, 4, 0.05) = 3.09$

$2.8287 < 3.09$  -- No outliers detected for  $i = 3$

---

### Iteration i = 2

Mean of 46 measurements = 94.7804

Std Dev = 16.1063

$x(i+1) = 150$  from measurement 11/13/2007 from location MW-206A

Rosner Statistic  $R = |150 - 94.7804|/16.1063 = 3.42846$

$\text{Lambda}(48, 3, 0.05) = 3.09$

$3.42846 > 3.09$  -- Measurement 11/13/2007 for location MW-206A is an outlier

---

### Iteration i = 1

Mean of 47 measurements = 92.8702

Std Dev = 20.6221

$x(i+1) = 5$  from measurement 5/26/2004 from location MW-206A

Rosner Statistic  $R = |5 - 92.8702|/20.6221 = 4.26097$

$\text{Lambda}(48, 2, 0.05) = 3.1$

Measurement 5/26/2004 for location MW-206A is an outlier

---

### Iteration i = 0

Mean of 48 measurements = 96.1854

Std Dev = 30.7209

$x(i+1) = 252$  from measurement 6/21/2000 from location MW-206A

Rosner Statistic  $R = |252 - 96.1854|/30.7209 = 5.07195$

$\text{Lambda}(48, 1, 0.05) = 3.11$

Measurement 6/21/2000 for location MW-206A is an outlier

---



# Rosner's Test for Outliers

Parameter: Barium

Location: MW-206B

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Data set mean = 113.082

## 10 most extreme of 49 measurements

by order of magnitude difference from the mean

1	5/14/2002	MW-206B	ND<50 U	-63.0816
2	11/5/2001	MW-206B	ND<50 U	-63.0816
3	5/24/2001	MW-206B	ND<50 U	-63.0816
4	12/14/2000	MW-206B	ND<50 U	-63.0816
5	6/21/2000	MW-206B	ND<50 U	-63.0816
6	12/8/1999	MW-206B	ND<50 U	-63.0816
7	9/22/1999	MW-206B	ND<50 U	-63.0816
8	6/9/1999	MW-206B	ND<50 U	-63.0816
9	1/15/1999	MW-206B	ND<50 U	-63.0816
10	11/3/2003	MW-206B	ND<50 U	-63.0816

---

### Iteration i = 9

Mean of 40 measurements = 127.275

Std Dev = 26.4197

$x_{(i+1)} = 50$  from measurement 11/3/2003 from location MW-206B

Rosner Statistic  $R = |50 - 127.275|/26.4197 = 2.9249$

$\Lambda(49, 10, 0.05) = 3.04$

$2.9249 < 3.04$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 41 measurements = 125.39

Std Dev = 28.7436

$x_{(i+1)} = 50$  from measurement 1/15/1999 from location MW-206B

Rosner Statistic  $R = |50 - 125.39|/28.7436 = 2.62285$

$\Lambda(49, 9, 0.05) = 3.05$

$2.62285 < 3.05$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 42 measurements = 123.595

Std Dev = 30.6817

$x_{(i+1)} = 50$  from measurement 6/9/1999 from location MW-206B

Rosner Statistic  $R = |50 - 123.595|/30.6817 = 2.39867$

$\Lambda(49, 8, 0.05) = 3.06$

$2.39867 < 3.06$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 43 measurements = 121.884

Std Dev = 32.3251

$x_{(i+1)} = 50$  from measurement 9/22/1999 from location MW-206B

Rosner Statistic  $R = |50 - 121.884|/32.3251 = 2.22377$

$\Lambda(49, 7, 0.05) = 3.07$

$2.22377 < 3.07$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 44 measurements = 120.25

Std Dev = 33.735

$x_{(i+1)} = 50$  from measurement 12/8/1999 from location MW-206B

Rosner Statistic  $R = |50 - 120.25|/33.735 = 2.08241$

$\Lambda(49, 6, 0.05) = 3.08$

$2.08241 < 3.08$  -- No outliers detected for  $i = 5$

---

#### Iteration i = 4

Mean of 45 measurements = 118.689

Std Dev = 34.9551

$x(i+1) = 50$  from measurement 6/21/2000 from location MW-206B

Rosner Statistic  $R = |50 - 118.689|/34.9551 = 1.96506$

$\text{Lambda}(49, 5, 0.05) = 3.09$

$1.96506 < 3.09$  -- No outliers detected for  $i = 4$

---

#### Iteration i = 3

Mean of 46 measurements = 117.196

Std Dev = 36.0177

$x(i+1) = 50$  from measurement 12/14/2000 from location MW-206B

Rosner Statistic  $R = |50 - 117.196|/36.0177 = 1.86563$

$\text{Lambda}(49, 4, 0.05) = 3.09$

$1.86563 < 3.09$  -- No outliers detected for  $i = 3$

---

#### Iteration i = 2

Mean of 47 measurements = 115.766

Std Dev = 36.9478

$x(i+1) = 50$  from measurement 5/24/2001 from location MW-206B

Rosner Statistic  $R = |50 - 115.766|/36.9478 = 1.77997$

$\text{Lambda}(49, 3, 0.05) = 3.1$

$1.77997 < 3.1$  -- No outliers detected for  $i = 2$

---

#### Iteration i = 1

Mean of 48 measurements = 114.396

Std Dev = 37.7651

$x(i+1) = 50$  from measurement 11/5/2001 from location MW-206B

Rosner Statistic  $R = |50 - 114.396|/37.7651 = 1.70517$

$\text{Lambda}(49, 2, 0.05) = 3.11$

$1.70517 < 3.11$  -- No outliers detected for  $i = 1$

---

#### Iteration i = 0

Mean of 49 measurements = 113.082

Std Dev = 38.4853

$x(i+1) = 50$  from measurement 5/14/2002 from location MW-206B

Rosner Statistic  $R = |50 - 113.082|/38.4853 = 1.63911$

$\text{Lambda}(49, 1, 0.05) = 3.12$

$1.63911 < 3.12$  -- No outliers detected for  $i = 0$

---

# Rosner's Test for Outliers

Parameter: Nickel

Location: MW-106A

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Data set mean = 11.8015

## 10 most extreme of 42 measurements

by order of magnitude difference from the mean

1	11/11/2002	MW-106A	ND<50 U	38.1985
2	5/14/2002	MW-106A	ND<50 U	38.1985
3	11/3/2003	MW-106A	ND<50 U	38.1985
4	5/28/2003	MW-106A	ND<50 U	38.1985
5	5/26/2004	MW-106A	ND<25 U	13.1985
6	5/16/2006	MW-106A	ND<0.3 U	-11.5015
7	11/1/2010	MW-106A	ND<0.85 U	-10.9515
8	4/13/2010	MW-106A	ND<0.85 U	-10.9515
9	11/30/2004	MW-106A	ND<5 U	-6.80145
10	11/8/2021	MW-106A	5.4 J	-6.40145

---

### Iteration i = 9

Mean of 33 measurements = 7.98973

Std Dev = 1.2095

x(i+1) = 5.4 from measurement 11/8/2021 from location MW-106A

Rosner Statistic R =  $|5.4 - 7.98973|/1.2095 = 2.14116$

Lambda(42, 10, 0.05) = 2.95

2.14116 < 2.95 -- No outliers detected for i = 9

---

### Iteration i = 8

Mean of 34 measurements = 7.90179

Std Dev = 1.29671

x(i+1) = 5 from measurement 11/30/2004 from location MW-106A

Rosner Statistic R =  $|5 - 7.90179|/1.29671 = 2.23782$

Lambda(42, 9, 0.05) = 2.962

2.23782 < 2.962 -- No outliers detected for i = 8

---

### Iteration i = 7

Mean of 35 measurements = 7.70031

Std Dev = 1.74722

x(i+1) = 0.85 from measurement 4/13/2010 from location MW-106A

Rosner Statistic R =  $|0.85 - 7.70031|/1.74722 = 3.92069$

Lambda(42, 8, 0.05) = 2.974

3.92069 > 2.974 -- Measurement 4/13/2010 for location MW-106A is an outlier

---

### Iteration i = 6

Mean of 36 measurements = 7.51003

Std Dev = 2.06618

x(i+1) = 0.85 from measurement 11/1/2010 from location MW-106A

Rosner Statistic R =  $|0.85 - 7.51003|/2.06618 = 3.22336$

Lambda(42, 7, 0.05) = 2.986

Measurement 11/1/2010 for location MW-106A is an outlier

---

### Iteration i = 5

Mean of 37 measurements = 7.31516

Std Dev = 2.35701

x(i+1) = 0.3 from measurement 5/16/2006 from location MW-106A

Rosner Statistic R =  $|0.3 - 7.31516|/2.35701 = 2.9763$

Lambda(42, 6, 0.05) = 2.998

Measurement 5/16/2006 for location MW-106A is an outlier

---

#### Iteration i = 4

Mean of 38 measurements = 7.78055

Std Dev = 3.69265

$x(i+1) = 25$  from measurement 5/26/2004 from location MW-106A

Rosner Statistic  $R = |25 - 7.78055|/3.69265 = 4.66316$

$\text{Lambda}(42, 5, 0.05) = 3.01$

**Measurement 5/26/2004 for location MW-106A is an outlier**

---

#### Iteration i = 3

Mean of 39 measurements = 8.8631

Std Dev = 7.67994

$x(i+1) = 50$  from measurement 5/28/2003 from location MW-106A

Rosner Statistic  $R = |50 - 8.8631|/7.67994 = 5.35641$

$\text{Lambda}(42, 4, 0.05) = 3.03$

**Measurement 5/28/2003 for location MW-106A is an outlier**

---

#### Iteration i = 2

Mean of 40 measurements = 9.89153

Std Dev = 9.98876

$x(i+1) = 50$  from measurement 11/3/2003 from location MW-106A

Rosner Statistic  $R = |50 - 9.89153|/9.98876 = 4.01536$

$\text{Lambda}(42, 3, 0.05) = 3.04$

**Measurement 11/3/2003 for location MW-106A is an outlier**

---

#### Iteration i = 1

Mean of 41 measurements = 10.8698

Std Dev = 11.6841

$x(i+1) = 50$  from measurement 5/14/2002 from location MW-106A

Rosner Statistic  $R = |50 - 10.8698|/11.6841 = 3.34903$

$\text{Lambda}(42, 2, 0.05) = 3.05$

**Measurement 5/14/2002 for location MW-106A is an outlier**

---

#### Iteration i = 0

Mean of 42 measurements = 11.8015

Std Dev = 13.0247

$x(i+1) = 50$  from measurement 11/11/2002 from location MW-106A

Rosner Statistic  $R = |50 - 11.8015|/13.0247 = 2.93277$

$\text{Lambda}(42, 1, 0.05) = 3.06$

**Measurement 11/11/2002 for location MW-106A is an outlier**

# Rosner's Test for Outliers

Parameter: Nickel

Location: MW-106B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 16.1935

## 10 most extreme of 31 measurements

by order of magnitude difference from the mean

1	5/14/2002	MW-106B	ND<100 U	83.8065
2	11/3/2003	MW-106B	ND<100 U	83.8065
3	5/28/2003	MW-106B	ND<100 U	83.8065
4	11/11/2002	MW-106B	ND<100 U	83.8065
5	5/26/2004	MW-106B	ND<50 U	33.8065
6	11/30/2005	MW-106B	ND<0.56 U	-15.6335
7	5/16/2006	MW-106B	ND<0.6 U	-15.5935
8	12/12/2006	MW-106B	ND<0.6 U	-15.5935
9	6/12/2007	MW-106B	ND<0.67 U	-15.5235
10	11/13/2007	MW-106B	ND<0.67 U	-15.5235

---

### Iteration i = 9

Mean of 22 measurements = 2.25318

Std Dev = 1.91372

$x_{(i+1)} = 0.67$  from measurement 11/13/2007 from location MW-106B

Rosner Statistic  $R = |0.67 - 2.25318|/1.91372 = 0.82728$

$\Lambda(31, 10, 0.05) = 2.76$

$0.82728 < 2.76$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 23 measurements = 2.18435

Std Dev = 1.89864

$x_{(i+1)} = 0.67$  from measurement 6/12/2007 from location MW-106B

Rosner Statistic  $R = |0.67 - 2.18435|/1.89864 = 0.797597$

$\Lambda(31, 9, 0.05) = 2.78$

$0.797597 < 2.78$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 24 measurements = 2.11833

Std Dev = 1.88486

$x_{(i+1)} = 0.6$  from measurement 12/12/2006 from location MW-106B

Rosner Statistic  $R = |0.6 - 2.11833|/1.88486 = 0.805543$

$\Lambda(31, 8, 0.05) = 2.8$

$0.805543 < 2.8$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 25 measurements = 2.0576

Std Dev = 1.86999

$x_{(i+1)} = 0.6$  from measurement 5/16/2006 from location MW-106B

Rosner Statistic  $R = |0.6 - 2.0576|/1.86999 = 0.779469$

$\Lambda(31, 7, 0.05) = 2.82$

$0.779469 < 2.82$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 26 measurements = 2

Std Dev = 1.8556

$x_{(i+1)} = 0.56$  from measurement 11/30/2005 from location MW-106B

Rosner Statistic  $R = |0.56 - 2|/1.8556 = 0.776029$

$\Lambda(31, 6, 0.05) = 2.84$

$0.776029 < 2.84$  -- No outliers detected for  $i = 5$

---

#### Iteration i = 4

Mean of 27 measurements = 3.77778

Std Dev = 9.4151

$x(i+1) = 50$  from measurement 5/26/2004 from location MW-106B

Rosner Statistic  $R = |50 - 3.77778|/9.4151 = 4.90937$

$\text{Lambda}(31, 5, 0.05) = 2.86$

**4.90937 > 2.86 -- Measurement 5/26/2004 for location MW-106B is an outlier**

---

#### Iteration i = 3

Mean of 28 measurements = 7.21429

Std Dev = 20.3968

$x(i+1) = 100$  from measurement 11/11/2002 from location MW-106B

Rosner Statistic  $R = |100 - 7.21429|/20.3968 = 4.54903$

$\text{Lambda}(31, 4, 0.05) = 2.88$

**Measurement 11/11/2002 for location MW-106B is an outlier**

---

#### Iteration i = 2

Mean of 29 measurements = 10.4138

Std Dev = 26.4204

$x(i+1) = 100$  from measurement 5/28/2003 from location MW-106B

Rosner Statistic  $R = |100 - 10.4138|/26.4204 = 3.39079$

$\text{Lambda}(31, 3, 0.05) = 2.89$

**Measurement 5/28/2003 for location MW-106B is an outlier**

---

#### Iteration i = 1

Mean of 30 measurements = 13.4

Std Dev = 30.6837

$x(i+1) = 100$  from measurement 11/3/2003 from location MW-106B

Rosner Statistic  $R = |100 - 13.4|/30.6837 = 2.82234$

$\text{Lambda}(31, 2, 0.05) = 2.91$

**Measurement 11/3/2003 for location MW-106B is an outlier**

---

#### Iteration i = 0

Mean of 31 measurements = 16.1935

Std Dev = 33.9416

$x(i+1) = 100$  from measurement 5/14/2002 from location MW-106B

Rosner Statistic  $R = |100 - 16.1935|/33.9416 = 2.46914$

$\text{Lambda}(31, 1, 0.05) = 2.92$

**Measurement 5/14/2002 for location MW-106B is an outlier**

---

# Dixon's Test for Outliers

Parameter: Nickel

Location: MW-205B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 23 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.545455	0.0384615	0.421	4.3
2	0.375	0.0384615	0.43	None

Loc.	Date	Conc.	Outlier
MW-205B	11/9/2011	ND<2.5 U	FALSE
	5/14/2012	ND<2.5 U	FALSE
	11/16/2012	ND<2.5 U	FALSE
	5/14/2013	ND<2.5 U	FALSE
	11/6/2013	ND<2.5 U	FALSE
	5/5/2014	ND<2.5 U	FALSE
	10/29/2014	ND<2.5 U	FALSE
	4/27/2015	ND<2.5 U	FALSE
	10/26/2015	ND<2.5 U	FALSE
	5/3/2016	ND<2.5 U	FALSE
	11/2/2016	ND<2.5 U	FALSE
	5/2/2017	2.5 J	FALSE
	11/1/2017	ND<2.5 U	FALSE
	5/2/2018	ND<2.5 U	FALSE
	10/30/2018	ND<2.5 U	FALSE
	4/30/2019	ND<2.5 U	FALSE
	10/28/2019	ND<2.5 U	FALSE
	5/4/2020	0.94 J	FALSE
	11/16/2020	1.3 J	FALSE
	5/18/2021	4.3 J	TRUE
	11/9/2021	ND<3.4 U	FALSE
	5/25/2022	ND<1 U	FALSE
	12/6/2022	ND<1 U	FALSE

# Rosner's Test for Outliers

Parameter: Nickel

Location: MW-206A

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Data set mean = 23.0845

## 10 most extreme of 42 measurements

by order of magnitude difference from the mean

1	11/13/2007	MW-206A	65.9	42.8155
2	5/14/2002	MW-206A	ND<50 U	26.9155
3	11/11/2002	MW-206A	ND<50 U	26.9155
4	5/28/2003	MW-206A	ND<50 U	26.9155
5	11/3/2003	MW-206A	ND<50 U	26.9155
6	6/12/2007	MW-206A	49.2	26.1155
7	12/12/2006	MW-206A	48.5	25.4155
8	11/1/2010	MW-206A	4.5 J	-18.5845
9	11/16/2012	MW-206A	5.2	-17.8845
10	4/8/2008	MW-206A	40.9	17.8155

---

### Iteration i = 9

Mean of 33 measurements = 18.0682

Std Dev = 10.3569

$x_{(i+1)} = 40.9$  from measurement 4/8/2008 from location MW-206A

Rosner Statistic  $R = |40.9 - 18.0682|/10.3569 = 2.2045$

$\Lambda(42, 10, 0.05) = 2.95$

$2.2045 < 2.95$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 34 measurements = 17.6897

Std Dev = 10.4348

$x_{(i+1)} = 5.2$  from measurement 11/16/2012 from location MW-206A

Rosner Statistic  $R = |5.2 - 17.6897|/10.4348 = 1.19692$

$\Lambda(42, 9, 0.05) = 2.962$

$1.19692 < 2.962$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 35 measurements = 17.3129

Std Dev = 10.5192

$x_{(i+1)} = 4.5$  from measurement 11/1/2010 from location MW-206A

Rosner Statistic  $R = |4.5 - 17.3129|/10.5192 = 1.21804$

$\Lambda(42, 8, 0.05) = 2.974$

$1.21804 < 2.974$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 36 measurements = 18.1792

Std Dev = 11.5978

$x_{(i+1)} = 48.5$  from measurement 12/12/2006 from location MW-206A

Rosner Statistic  $R = |48.5 - 18.1792|/11.5978 = 2.61435$

$\Lambda(42, 7, 0.05) = 2.986$

$2.61435 < 2.986$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 37 measurements = 19.0176

Std Dev = 12.5212

$x_{(i+1)} = 49.2$  from measurement 6/12/2007 from location MW-206A

Rosner Statistic  $R = |49.2 - 19.0176|/12.5212 = 2.4105$

$\Lambda(42, 6, 0.05) = 2.998$

$2.4105 < 2.998$  -- No outliers detected for  $i = 5$



---

#### Iteration i = 4

Mean of 38 measurements = 19.8329

Std Dev = 13.3343

$x(i+1) = 50$  from measurement 11/3/2003 from location MW-206A

Rosner Statistic  $R = |50 - 19.8329|/13.3343 = 2.26236$

$\text{Lambda}(42, 5, 0.05) = 3.01$

$2.26236 < 3.01$  -- No outliers detected for  $i = 4$

---

#### Iteration i = 3

Mean of 39 measurements = 20.6064

Std Dev = 14.0164

$x(i+1) = 50$  from measurement 5/28/2003 from location MW-206A

Rosner Statistic  $R = |50 - 20.6064|/14.0164 = 2.09708$

$\text{Lambda}(42, 4, 0.05) = 3.03$

$2.09708 < 3.03$  -- No outliers detected for  $i = 3$

---

#### Iteration i = 2

Mean of 40 measurements = 21.3413

Std Dev = 14.5953

$x(i+1) = 50$  from measurement 11/11/2002 from location MW-206A

Rosner Statistic  $R = |50 - 21.3413|/14.5953 = 1.96356$

$\text{Lambda}(42, 3, 0.05) = 3.04$

$1.96356 < 3.04$  -- No outliers detected for  $i = 2$

---

#### Iteration i = 1

Mean of 41 measurements = 22.0402

Std Dev = 15.0907

$x(i+1) = 50$  from measurement 5/14/2002 from location MW-206A

Rosner Statistic  $R = |50 - 22.0402|/15.0907 = 1.85278$

$\text{Lambda}(42, 2, 0.05) = 3.05$

$1.85278 < 3.05$  -- No outliers detected for  $i = 1$

---

#### Iteration i = 0

Mean of 42 measurements = 23.0845

Std Dev = 16.37

$x(i+1) = 65.9$  from measurement 11/13/2007 from location MW-206A

Rosner Statistic  $R = |65.9 - 23.0845|/16.37 = 2.61548$

$\text{Lambda}(42, 1, 0.05) = 3.06$

$2.61548 < 3.06$  -- No outliers detected for  $i = 0$

---

# Rosner's Test for Outliers

Parameter: Nickel

Location: MW-206B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 14.5357

## 10 most extreme of 41 measurements

by order of magnitude difference from the mean

1	5/14/2002	MW-206B	ND<100 U	85.4643
2	11/11/2002	MW-206B	ND<100 U	85.4643
3	11/3/2003	MW-206B	ND<100 U	85.4643
4	5/28/2003	MW-206B	ND<100 U	85.4643
5	5/26/2004	MW-206B	ND<50 U	35.4643
6	11/13/2007	MW-206B	ND<0.67 U	-13.8657
7	6/12/2007	MW-206B	ND<0.67 U	-13.8657
8	4/8/2008	MW-206B	ND<1 U	-13.5357
9	11/30/2005	MW-206B	1.3 J	-13.2357
10	12/12/2006	MW-206B	1.35 J	-13.1857

---

### Iteration i = 9

Mean of 32 measurements = 4.44762

Std Dev = 4.22017

$x_{(i+1)} = 1.35$  from measurement 12/12/2006 from location MW-206B

Rosner Statistic  $R = |1.35 - 4.44762|/4.22017 = 0.734004$

$\Lambda(41, 10, 0.05) = 2.94$

$0.734004 < 2.94$  -- No outliers detected for  $i = 9$

---

### Iteration i = 8

Mean of 33 measurements = 4.35224

Std Dev = 4.18969

$x_{(i+1)} = 1.3$  from measurement 11/30/2005 from location MW-206B

Rosner Statistic  $R = |1.3 - 4.35224|/4.18969 = 0.728512$

$\Lambda(41, 9, 0.05) = 2.952$

$0.728512 < 2.952$  -- No outliers detected for  $i = 8$

---

### Iteration i = 7

Mean of 34 measurements = 4.25365

Std Dev = 4.16559

$x_{(i+1)} = 1$  from measurement 4/8/2008 from location MW-206B

Rosner Statistic  $R = |1 - 4.25365|/4.16559 = 0.781078$

$\Lambda(41, 8, 0.05) = 2.964$

$0.781078 < 2.964$  -- No outliers detected for  $i = 7$

---

### Iteration i = 6

Mean of 35 measurements = 4.15126

Std Dev = 4.14834

$x_{(i+1)} = 0.67$  from measurement 6/12/2007 from location MW-206B

Rosner Statistic  $R = |0.67 - 4.15126|/4.14834 = 0.839194$

$\Lambda(41, 7, 0.05) = 2.976$

$0.839194 < 2.976$  -- No outliers detected for  $i = 6$

---

### Iteration i = 5

Mean of 36 measurements = 4.05456

Std Dev = 4.12961

$x_{(i+1)} = 0.67$  from measurement 11/13/2007 from location MW-206B

Rosner Statistic  $R = |0.67 - 4.05456|/4.12961 = 0.819583$

$\Lambda(41, 6, 0.05) = 2.988$

$0.819583 < 2.988$  -- No outliers detected for  $i = 5$

---

#### Iteration i = 4

Mean of 37 measurements = 5.29632

Std Dev = 8.581

$x(i+1) = 50$  from measurement 5/26/2004 from location MW-206B

Rosner Statistic  $R = |50 - 5.29632|/8.581 = 5.20961$

$\text{Lambda}(41, 5, 0.05) = 3$

**5.20961 > 3 -- Measurement 5/26/2004 for location MW-206B is an outlier**

---

#### Iteration i = 3

Mean of 38 measurements = 7.78853

Std Dev = 17.5404

$x(i+1) = 100$  from measurement 5/28/2003 from location MW-206B

Rosner Statistic  $R = |100 - 7.78853|/17.5404 = 5.2571$

$\text{Lambda}(41, 4, 0.05) = 3.01$

**Measurement 5/28/2003 for location MW-206B is an outlier**

---

#### Iteration i = 2

Mean of 39 measurements = 10.1529

Std Dev = 22.7507

$x(i+1) = 100$  from measurement 11/3/2003 from location MW-206B

Rosner Statistic  $R = |100 - 10.1529|/22.7507 = 3.94921$

$\text{Lambda}(41, 3, 0.05) = 3.03$

**Measurement 11/3/2003 for location MW-206B is an outlier**

---

#### Iteration i = 1

Mean of 40 measurements = 12.3991

Std Dev = 26.5732

$x(i+1) = 100$  from measurement 11/11/2002 from location MW-206B

Rosner Statistic  $R = |100 - 12.3991|/26.5732 = 3.29659$

$\text{Lambda}(41, 2, 0.05) = 3.04$

**Measurement 11/11/2002 for location MW-206B is an outlier**

---

#### Iteration i = 0

Mean of 41 measurements = 14.5357

Std Dev = 29.5914

$x(i+1) = 100$  from measurement 5/14/2002 from location MW-206B

Rosner Statistic  $R = |100 - 14.5357|/29.5914 = 2.88815$

$\text{Lambda}(41, 1, 0.05) = 3.05$

**Measurement 5/14/2002 for location MW-206B is an outlier**

# Dixon's Test for Outliers

Parameter: Zinc

Location: MW-106A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 22 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.776	0	0.43	15
2	0.642857	0	0.44	9.5
3	0.107143	0	0.45	None

Loc.	Date	Conc.	Outlier
MW-106A	11/8/2011	5.3 J	FALSE
	5/16/2012	ND<5 U	FALSE
	11/14/2012	ND<5 U	FALSE
	5/16/2013	ND<5 U	FALSE
	11/5/2013	ND<5 U	FALSE
	5/6/2014	ND<5 U	FALSE
	10/28/2014	ND<5 U	FALSE
	10/27/2015	ND<5 U	FALSE
	5/3/2016	ND<5 U	FALSE
	11/1/2016	ND<5 U	FALSE
	5/1/2017	ND<5 U	FALSE
	10/31/2017	ND<5 U	FALSE
	5/2/2018	ND<5 U	FALSE
	10/29/2018	ND<5 U	FALSE
	4/30/2019	ND<5 U	FALSE
	10/29/2019	ND<5 U	FALSE
	5/4/2020	ND<3.9 U	FALSE
	11/16/2020	ND<2.5 U	FALSE
	5/17/2021	ND<9.5 U	TRUE
	11/8/2021	ND<15 U	TRUE
	5/25/2022	ND<2.5 U	FALSE
	12/6/2022	ND<2.5 U	FALSE

# Dixon's Test for Outliers

Parameter: Zinc

Location: MW-106B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 12 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.832178	0.0571429	0.546	17
2	0.650289	0.16	0.576	9.5
3	0	0.032	0.477	None

Loc.	Date	Conc.	Outlier
MW-106B	11/8/2011	ND<5 U	FALSE
	5/17/2012	ND<5 U	FALSE
	11/14/2012	ND<5 U	FALSE
	5/15/2013	ND<5 U	FALSE
	11/4/2013	ND<5 U	FALSE
	4/30/2019	ND<5 U	FALSE
	5/4/2020	ND<3.9 U	FALSE
	11/16/2020	2.9 J	FALSE
	5/17/2021	ND<9.5 U	TRUE
	11/8/2021	17 J	TRUE
	5/25/2022	2.58 J	FALSE
	12/6/2022	ND<2.5 U	FALSE

# Dixon's Test for Outliers

Parameter: Zinc

Location: MW-205B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 22 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.250648	0.096875	0.43	None

Loc.	Date	Conc.	Outlier
MW-205B	11/9/2011	ND<5 U	FALSE
	5/14/2012	ND<5 U	FALSE
	11/16/2012	ND<5 U	FALSE
	5/14/2013	ND<5 U	FALSE
	11/6/2013	14.3	FALSE
	5/5/2014	ND<5 U	FALSE
	10/29/2014	ND<5 U	FALSE
	10/26/2015	12.1	FALSE
	5/3/2016	ND<5 U	FALSE
	11/2/2016	ND<5 U	FALSE
	5/2/2017	ND<5 U	FALSE
	11/1/2017	ND<5 U	FALSE
	5/2/2018	ND<5 U	FALSE
	10/30/2018	ND<5 U	FALSE
	4/30/2019	ND<5 U	FALSE
	10/28/2019	ND<5 U	FALSE
	5/4/2020	ND<3.9 U	FALSE
	11/16/2020	ND<2.5 U	FALSE
	5/18/2021	ND<9.5 U	FALSE
	11/9/2021	ND<15 U	FALSE
	5/25/2022	3.43 J	FALSE
	12/6/2022	ND<2.5 U	FALSE

# Dixon's Test for Outliers

Parameter: Zinc

Location: MW-206A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 21 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.159292	0.136364	0.44	None

Loc.	Date	Conc.	Outlier
MW-206A	5/14/2012	7.6 J	FALSE
	11/16/2012	ND<5 U	FALSE
	5/14/2013	14.5	FALSE
	11/7/2013	ND<5 U	FALSE
	5/5/2014	10.6	FALSE
	10/30/2014	ND<5 U	FALSE
	10/26/2015	16.3	FALSE
	5/3/2016	9 J	FALSE
	11/2/2016	ND<5 U	FALSE
	5/3/2017	ND<5 U	FALSE
	11/1/2017	ND<5 U	FALSE
	5/2/2018	ND<5 U	FALSE
	10/30/2018	7.9 J	FALSE
	5/6/2019	8.1 J	FALSE
	10/28/2019	ND<5 U	FALSE
	5/5/2020	ND<9.5 U	FALSE
	11/17/2020	3.5 J	FALSE
	5/18/2021	ND<9.5 U	FALSE
	11/9/2021	ND<15 U	FALSE
	5/24/2022	11.8	FALSE
	12/5/2022	6.52	FALSE

# Dixon's Test for Outliers

Parameter: Zinc

Location: MW-206B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 21 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.733102	0.139665	0.44	62.7
2	0.377907	0.189394	0.45	None

Loc.	Date	Conc.	Outlier
MW-206B	11/9/2011	ND<5 U	FALSE
	5/14/2012	ND<5 U	FALSE
	11/16/2012	ND<5 U	FALSE
	5/14/2013	8.1 J	FALSE
	11/7/2013	ND<5 U	FALSE
	5/5/2014	ND<5 U	FALSE
	10/30/2014	ND<5 U	FALSE
	10/26/2015	8.7 J	FALSE
	5/3/2016	5.8 J	FALSE
	11/2/2016	20.4	FALSE
	5/3/2017	22.2	FALSE
	11/1/2017	5.1 J	FALSE
	10/31/2018	<b>62.7</b>	<b>TRUE</b>
	5/6/2019	ND<5 U	FALSE
	10/28/2019	ND<5 U	FALSE
	5/5/2020	ND<9.5 U	FALSE
	11/17/2020	ND<2.5 U	FALSE
	5/18/2021	ND<9.5 U	FALSE
	11/9/2021	ND<15 U	FALSE
	5/26/2022	15.7	FALSE
	12/5/2022	5.07	FALSE



# Dixon's Test for Outliers

Parameter: Arsenic

Location: MW-210A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 14 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.707317	0.181818	0.546	19.6
2	0.48	0.181818	0.521	None

Loc.	Date	Conc.	Outlier
MW-210A	5/4/2016	10.3	FALSE
	11/3/2016	10.6	FALSE
	5/2/2017	6.7 J	FALSE
	11/2/2017	9.2 J	FALSE
	5/3/2018	8.5 J	FALSE
	10/31/2018	10.9	FALSE
	10/28/2019	7.7 J	FALSE
	5/6/2020	<b>19.6</b>	<b>TRUE</b>
	7/29/2020	8.7	FALSE
	11/17/2020	8.1	FALSE
	5/19/2021	14.2	FALSE
	11/9/2021	7.3 J	FALSE
	5/24/2022	6.5	FALSE
	12/7/2022	8.2	FALSE

# Dixon's Test for Outliers

Parameter: Barium

Location: MW-210A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 14 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.289552	0.331461	0.546	None

Loc.	Date	Conc.	Outlier
MW-210A	5/4/2016	65.6	FALSE
	11/3/2016	60.9	FALSE
	5/2/2017	40.2	FALSE
	11/2/2017	55.9	FALSE
	5/3/2018	20.3	FALSE
	10/31/2018	32.1	FALSE
	4/30/2019	25.7	FALSE
	10/28/2019	32.3	FALSE
	5/6/2020	40.6	FALSE
	11/17/2020	46	FALSE
	5/19/2021	45.7	FALSE
	11/9/2021	37	FALSE
	5/24/2022	35.7	FALSE
	12/7/2022	35.3	FALSE

# Dixon's Test for Outliers

Parameter: Nickel

Location: MW-210A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 14 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.25	0.625	0.546	1
2	0.25	0.545455	0.521	1.3
3	0.25	0	0.546	None

Loc.	Date	Conc.	Outlier
MW-210A	5/4/2016	ND<2.5 U	FALSE
	11/3/2016	2.7 J	FALSE
	5/2/2017	2.8 J	FALSE
	11/2/2017	ND<2.5 U	FALSE
	5/3/2018	ND<2.5 U	FALSE
	10/31/2018	ND<2.5 U	FALSE
	4/30/2019	ND<2.5 U	FALSE
	10/28/2019	ND<2.5 U	FALSE
	5/6/2020	ND<3.5 U	FALSE
	11/17/2020	ND<1.3 U	TRUE
	5/19/2021	ND<3.7 U	FALSE
	11/9/2021	ND<3.4 U	FALSE
	5/24/2022	ND<1 U	TRUE
	12/7/2022	2.794	FALSE

# Dixon's Test for Outliers

Parameter: Barium

Location: MW-210B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 14 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.284314	0.459259	0.546	None

Loc.	Date	Conc.	Outlier
MW-210B	5/4/2016	55.2	FALSE
	11/3/2016	62.8	FALSE
	5/2/2017	61.4	FALSE
	11/1/2017	67.6	FALSE
	5/3/2018	66.2	FALSE
	10/31/2018	67.6	FALSE
	4/30/2019	62.3	FALSE
	10/28/2019	65.1	FALSE
	5/6/2020	66.3	FALSE
	11/17/2020	64	FALSE
	5/19/2021	71.6	FALSE
	11/9/2021	59	FALSE
	5/24/2022	68.7	FALSE
	12/7/2022	70.3	FALSE

# Dixon's Test for Outliers

Parameter: Nickel

Location: MW-210B

Original Data (Not Transformed)

Non-Detects Replaced with 0

For 14 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.22449	0	0.546	None

Loc.	Date	Conc.	Outlier
MW-210B	5/4/2016	4.9 J	FALSE
	11/3/2016	3.5 J	FALSE
	5/2/2017	4.1 J	FALSE
	11/1/2017	ND<0 U	FALSE
	5/3/2018	ND<0 U	FALSE
	10/31/2018	3.2 J	FALSE
	4/30/2019	ND<0 U	FALSE
	10/28/2019	ND<0 U	FALSE
	5/6/2020	3.8 J	FALSE
	11/17/2020	2.6 J	FALSE
	5/19/2021	ND<0 U	FALSE
	11/9/2021	ND<0 U	FALSE
	5/24/2022	2.323	FALSE
	12/7/2022	2.629	FALSE

# Dixon's Test for Outliers

Parameter: Barium

Location: MW-211A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 10 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.186603	0.209302	0.477	None

Loc.	Date	Conc.	Outlier
MW-211A	5/3/2018	63.4	FALSE
	10/30/2018	59.5	FALSE
	4/30/2019	49.3	FALSE
	10/28/2019	49.3	FALSE
	5/6/2020	48.3	FALSE
	11/17/2020	44	FALSE
	5/18/2021	42.5	FALSE
	11/9/2021	38	FALSE
	5/25/2022	47.5	FALSE
	12/6/2022	47.6	FALSE

# Dixon's Test for Outliers

Parameter: Barium

Location: MW-211B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 10 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.301205	0.107692	0.477	None

Loc.	Date	Conc.	Outlier
MW-211B	5/2/2018	112	FALSE
	10/30/2018	122	FALSE
	5/6/2019	101	FALSE
	10/29/2019	93.7	FALSE
	5/6/2020	101	FALSE
	11/17/2020	94	FALSE
	5/18/2021	92	FALSE
	11/9/2021	86	FALSE
	5/26/2022	88.8	FALSE
	12/6/2022	97.6	FALSE

# Dixon's Test for Outliers

Parameter: Zinc

Location: MW-211B

Original Data (Not Transformed)

Non-Detects Replaced with 0

For 10 Measurements...

5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.225	0	0.477	None

Loc.	Date	Conc.	Outlier
MW-211B	5/2/2018	6.7 J	FALSE
	10/30/2018	12	FALSE
	5/6/2019	9.3 J	FALSE
	10/29/2019	7.2 J	FALSE
	5/6/2020	ND<0 U	FALSE
	11/17/2020	5.2 J	FALSE
	5/18/2021	ND<0 U	FALSE
	11/9/2021	ND<0 U	FALSE
	5/26/2022	3.52 J	FALSE
	12/6/2022	6.51	FALSE



## Basic Statistics

### Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	197
Total Non-Detects	160 (81.2183%)
Pooled Mean	4.78558
Pooled Std Dev	3.03461
Compliance Meas.	43
Compliance Mean	5.5186
Compliance Std Dev	2.89007
Background Meas.	154
Background Mean	4.58091
Background Std Dev	3.05138

## Background Locations

There are 5 background location

Location	Meas.	Non-Detects	% ND	Total
MW-106A	36	29	80.5556	170.38
MW-106B	27	24	88.8889	112.08
MW-205B	21	21	100	85.9
MW-206A	39	26	66.6667	234.04
MW-206B	31	30	96.7742	103.06

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-106A	4.73278	2.79735	0	3541.5	98.375
MW-106B	4.15111	3.31552	0	2448	90.6667
MW-205B	4.09048	1.20909	0	1690.5	80.5
MW-206A	6.00103	4.06566	0	4429	113.564
MW-206B	3.32452	1.51724	0	2584	83.3548

## Compliance Locations

There are 4 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-210A	12	0	0	108.7
MW-210B	13	12	92.3077	58.2
MW-211A	9	9	100	35.2
MW-211B	9	9	100	35.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-210A	9.05833	2.17776	4.47742	0.825421	2215	184.583
MW-210B	4.47692	1.79729	-0.103986	0.795424	1146	88.1538
MW-211A	3.91111	1.74817	-0.669798	0.944462	724.5	80.5
MW-211B	3.91111	1.74817	-0.669798	0.944462	724.5	80.5

## Analysis of Variance Statistics

SS Wells	378.987
SS Total	1804.93

## Kruskal-Wallis Statistics

Non-Detect Rank	80.5
Background Rank Sum	14693
Background Rank Mean	95.4091
H Statistic	30.0168
H Adjusted for Ties	64.6554

## Non-Parametric Prediction Interval

### Inter-Well Comparison

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 81.2183%

Number of comparisons = 4

Future Samples (k) = 4

Recent Dates = 1

Background Measurements (n) = 154

Maximum Background Value = 17.2

Confidence Level = 96.2%

False Positive Rate = 3.8%

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Location	Date	Count	Mean	Significant
MW-210A	5/24/2022	1	6.5	FALSE
MW-210B	5/24/2022	1	0.5	FALSE
MW-211A	5/25/2022	1	0.5	FALSE
MW-211B	5/26/2022	1	0.5	FALSE

---

## Basic Statistics

### Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	238
Total Non-Detects	10 (4.20168%)
Pooled Mean	137.201
Pooled Std Dev	89.0451

Compliance Meas.	44
Compliance Mean	61.5477
Compliance Std Dev	23.2912

Background Meas.	194
Background Mean	154.359
Background Std Dev	89.5269

## Background Locations

There are 5 background location

Location	Meas.	Non-Detects	% ND	Total
MW-106A	48	0	0	14660
MW-106B	32	0	0	3037.3
MW-205B	22	0	0	2247.8
MW-206A	44	0	0	4129.6
MW-206B	48	10	20.8333	5871

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-106A	305.417	25.0564	0	10296	214.5
MW-106B	94.9156	11.4927	0	3123	97.5938
MW-205B	102.173	5.3633	0	2661	120.955
MW-206A	93.8545	13.9575	0	4123	93.7045
MW-206B	122.313	23.3759	0	6285	130.938

## Compliance Locations

There are 4 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-210A	13	0	0	538
MW-210B	13	0	0	837.8
MW-211A	9	0	0	441.8
MW-211B	9	0	0	890.5

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-210A	41.3846	13.3252	-112.975	5.08752	263	20.2308
MW-210B	64.4462	4.3594	-89.9131	5.08752	490	37.6923
MW-211A	49.0889	7.97425	-105.27	6.05507	227	25.2222
MW-211B	98.9444	11.6249	-55.4148	6.05507	973	108.111

## Analysis of Variance Statistics

SS Wells	1.80696e+006
SS Total	1.87918e+006

## Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	26488
Background Rank Mean	136.536
H Statistic	74.3805
H Adjusted for Ties	74.3859

# Shapiro-Francia Test of Normality

Parameter: Barium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Number of Measurements = 194

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	50	-2.57583	6.63492	-128.792
2	50	-2.32634	12.0468	-245.109
3	50	-2.17009	16.7561	-353.613
4	50	-2.05375	20.974	-456.301
5	50	-1.95996	24.8154	-554.299
6	50	-1.88079	28.3528	-648.338
7	50	-1.81191	31.6358	-738.934
8	50	-1.7392	34.6606	-825.894
9	50	-1.68494	37.4996	-910.141
10	50	-1.63524	40.1736	-991.903
11	72.7	-1.58927	42.6994	-1107.44
12	74.9	-1.54643	45.0909	-1223.27
13	75	-1.50626	47.3597	-1336.24
14	75.5	-1.46838	49.5158	-1447.1
15	75.9	-1.4325	51.5679	-1555.83
16	76.1	-1.39175	53.5049	-1661.74
17	76.3	-1.35946	55.353	-1765.47
18	77	-1.32854	57.118	-1867.77
19	77.7	-1.29884	58.805	-1968.69
20	78.6	-1.27024	60.4185	-2068.53
21	78.7	-1.24264	61.9627	-2166.32
22	78.8	-1.21596	63.4412	-2262.14
23	80.3	-1.19012	64.8576	-2357.71
24	81.4	-1.16012	66.2035	-2452.14
25	81.9	-1.1359	67.4937	-2545.17
26	82.6	-1.11232	68.731	-2637.05
27	83.7	-1.08935	69.9177	-2728.23
28	84	-1.06694	71.056	-2817.85
29	84.5	-1.04505	72.1482	-2906.16
30	84.7	-1.02365	73.196	-2992.86
31	85	-1.00271	74.2015	-3078.09
32	86.4	-0.97815	75.1582	-3162.6
33	87.3	-0.958125	76.0762	-3246.25
34	87.8	-0.938476	76.957	-3328.64
35	87.9	-0.919183	77.8019	-3409.44
36	88	-0.900227	78.6123	-3488.66
37	88.4	-0.881587	79.3895	-3566.59
38	89.2	-0.863249	80.1347	-3643.59
39	89.2	-0.841621	80.843	-3718.67
40	89.4	-0.823893	81.5218	-3792.32
41	90	-0.806422	82.1721	-3864.9
42	90	-0.789191	82.7949	-3935.93
43	91	-0.772193	83.3912	-4006.2
44	92	-0.755415	83.9619	-4075.7
45	92.2	-0.738846	84.5078	-4143.82
46	92.2	-0.722479	85.0297	-4210.43
47	92.5	-0.703089	85.5241	-4275.47
48	93	-0.687131	85.9962	-4339.37
49	93.3	-0.671346	86.4469	-4402.01
50	94.5	-0.655726	86.8769	-4463.97
51	94.5	-0.640266	87.2868	-4524.48
52	94.9	-0.624956	87.6774	-4583.79
53	95.2	-0.609791	88.0493	-4641.84
54	96	-0.594766	88.403	-4698.94
55	96.1	-0.576911	88.7358	-4754.38
56	96.2	-0.56217	89.0519	-4808.46
57	96.8	-0.547551	89.3517	-4861.46
58	97	-0.533048	89.6358	-4913.17

59	97.7	-0.518658	89.9048	-4963.84
60	97.9	-0.504372	90.1592	-5013.22
61	98.3	-0.490189	90.3995	-5061.4
62	98.8	-0.476105	90.6262	-5108.44
63	98.9	-0.459327	90.8372	-5153.87
64	99.8	-0.445443	91.0356	-5198.32
65	100	-0.431644	91.2219	-5241.49
66	100	-0.417928	91.3966	-5283.28
67	100	-0.40429	91.56	-5323.71
68	100	-0.390726	91.7127	-5362.78
69	100	-0.377233	91.855	-5400.51
70	100	-0.363809	91.9873	-5436.89
71	100	-0.347787	92.1083	-5471.67
72	100	-0.334503	92.2202	-5505.12
73	100	-0.321278	92.3234	-5537.24
74	100	-0.308108	92.4183	-5568.05
75	100	-0.294992	92.5054	-5597.55
76	100	-0.281926	92.5848	-5625.75
77	100	-0.268908	92.6572	-5652.64
78	100	-0.253347	92.7213	-5677.97
79	100	-0.240426	92.7791	-5702.01
80	100	-0.227545	92.8309	-5724.77
81	101	-0.214702	92.877	-5746.45
82	101	-0.201894	92.9178	-5766.85
83	101	-0.189118	92.9535	-5785.95
84	102	-0.176374	92.9847	-5803.94
85	102	-0.163659	93.0114	-5820.63
86	102	-0.148434	93.0335	-5835.77
87	102	-0.135774	93.0519	-5849.62
88	102	-0.123135	93.0671	-5862.18
89	103	-0.110516	93.0793	-5873.56
90	103	-0.0979139	93.0889	-5883.65
91	103	-0.0853288	93.0961	-5892.44
92	103	-0.0727562	93.1014	-5899.93
93	104	-0.0601949	93.1051	-5906.19
94	104	-0.0451348	93.1071	-5910.88
95	104	-0.0325917	93.1082	-5914.27
96	105	-0.0200544	93.1086	-5916.38
97	106	-0.00751925	93.1086	-5917.18
98	107	0.00751925	93.1087	-5916.37
99	107	0.0200544	93.1091	-5914.23
100	107	0.0325917	93.1101	-5910.74
101	108	0.0451348	93.1122	-5905.86
102	108	0.0601949	93.1158	-5899.36
103	109	0.0727562	93.1211	-5891.43
104	109	0.0853288	93.1284	-5882.13
105	110	0.0979139	93.138	-5871.36
106	110	0.110516	93.1502	-5859.2
107	110	0.123135	93.1653	-5845.66
108	110	0.135774	93.1838	-5830.72
109	110	0.148434	93.2058	-5814.4
110	111	0.163659	93.2326	-5796.23
111	112	0.176374	93.2637	-5776.48
112	112	0.189118	93.2995	-5755.3
113	114	0.201894	93.3402	-5732.28
114	115	0.214702	93.3863	-5707.59
115	115	0.227545	93.4381	-5681.42
116	115	0.240426	93.4959	-5653.77
117	117	0.253347	93.5601	-5624.13
118	118	0.268908	93.6324	-5592.4
119	118	0.281926	93.7119	-5559.13
120	119	0.294992	93.7989	-5524.03
121	120	0.308108	93.8938	-5487.05
122	120	0.321278	93.9971	-5448.5
123	120	0.334503	94.1089	-5408.36
124	120	0.347787	94.2299	-5366.63
125	121	0.363809	94.3623	-5322.61

126	123	0.377233	94.5046	-5276.21
127	124	0.390726	94.6572	-5227.76
128	125	0.40429	94.8207	-5177.22
129	125	0.417928	94.9953	-5124.98
130	126	0.431644	95.1817	-5070.59
131	129	0.445443	95.3801	-5013.13
132	130	0.459327	95.5911	-4953.42
133	133	0.476105	95.8177	-4890.1
134	133	0.490189	96.058	-4824.9
135	133	0.504372	96.3124	-4757.82
136	134	0.518658	96.5814	-4688.32
137	136	0.533048	96.8656	-4615.82
138	146	0.547551	97.1654	-4535.88
139	154	0.56217	97.4814	-4449.31
140	160	0.576911	97.8142	-4357
141	166	0.594766	98.168	-4258.27
142	168	0.609791	98.5398	-4155.83
143	168	0.624956	98.9304	-4050.83
144	169	0.640266	99.3403	-3942.63
145	170	0.655726	99.7703	-3831.15
146	176	0.671346	100.221	-3713
147	244	0.687131	100.693	-3545.34
148	246	0.703089	101.188	-3372.38
149	267	0.722479	101.709	-3179.48
150	267	0.738846	102.255	-2982.2
151	275	0.755415	102.826	-2774.46
152	279	0.772193	103.422	-2559.02
153	279	0.789191	104.045	-2338.84
154	280	0.806422	104.695	-2113.04
155	282	0.823893	105.374	-1880.7
156	285	0.841621	106.083	-1640.84
157	287	0.863249	106.828	-1393.09
158	290	0.881587	107.605	-1137.43
159	291	0.900227	108.415	-875.462
160	292	0.919183	109.26	-607.06
161	298	0.938476	110.141	-327.394
162	300	0.958125	111.059	-39.9568
163	300	0.97815	112.016	253.488
164	300	1.00271	113.021	554.302
165	300	1.02365	114.069	861.397
166	300	1.04505	115.161	1174.91
167	301	1.06694	116.3	1496.06
168	301	1.08935	117.486	1823.95
169	302	1.11232	118.724	2159.88
170	303	1.1359	120.014	2504.05
171	306	1.16012	121.36	2859.05
172	310	1.19012	122.776	3227.99
173	310	1.21596	124.255	3604.93
174	310	1.24264	125.799	3990.15
175	310	1.27024	127.412	4383.93
176	312	1.29884	129.099	4789.16
177	312	1.32854	130.864	5203.67
178	314	1.35946	132.712	5630.54
179	315	1.39175	134.649	6068.94
180	319	1.4325	136.701	6525.91
181	320	1.46838	138.858	6995.79
182	321	1.50626	141.126	7479.3
183	322	1.54643	143.518	7977.25
184	326	1.58927	146.044	8495.35
185	326	1.63524	148.718	9028.44
186	326	1.68494	151.557	9577.73
187	328	1.7392	154.581	10148.2
188	330	1.81191	157.864	10746.1
189	331	1.88079	161.402	11368.7
190	336	1.95996	165.243	12027.2
191	341	2.05375	169.461	12727.5
192	348	2.17009	174.17	13482.7

193	354	2.32634	179.582	14306.3
194	364	2.57583	186.217	15243.9

---

Data Set Standard Deviation = 91.7582

Numerator = 2.32375e+008

Denominator = 3.02599e+008

W Statistic = 0.767931 = 2.32375e+008 / 3.02599e+008

**5% Critical value of 0.976 exceeds 0.767931**

**Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.767931**

**Evidence of non-normality at 99% level of significance**

## Non-Parametric Prediction Interval

### Inter-Well Comparison

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 4.20168%

Number of comparisons = 4

Future Samples (k) = 4

Recent Dates = 1

Background Measurements (n) = 194

Maximum Background Value = 364

Confidence Level = 96.2%

False Positive Rate = 3.8%

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Location	Date	Count	Mean	Significant
MW-210A	5/24/2022	1	35.7	FALSE
MW-210B	5/24/2022	1	68.7	FALSE
MW-211A	5/25/2022	1	47.5	FALSE
MW-211B	5/26/2022	1	88.8	FALSE

---



## Basic Statistics

### Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	199
Total Non-Detects	100 (50.2513%)
Pooled Mean	9.07641
Pooled Std Dev	16.2491
Compliance Meas.	44
Compliance Mean	2.92325
Compliance Std Dev	1.30178
Background Meas.	155
Background Mean	10.8231
Background Std Dev	18.0308

## Background Locations

There are 5 background location

Location	Meas.	Non-Detects	% ND	Total
MW-106A	33	1	3.0303	266.093
MW-106B	25	24	96	51
MW-205B	21	18	85.7143	49.14
MW-206A	41	5	12.1951	1167.93
MW-206B	35	21	60	143.42

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-106A	8.06342	1.25619	0	4757.5	144.167
MW-106B	2.04	1.88239	0	1319	52.76
MW-205B	2.34	0.565509	0	1222	58.1905
MW-206A	28.4861	27.9577	0	6540.5	159.524
MW-206B	4.09771	4.18165	0	2932.5	83.7857

## Compliance Locations

There are 4 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-210A	13	11	84.6154	33.4
MW-210B	13	6	46.1538	41.523
MW-211A	9	8	88.8889	29.5
MW-211B	9	6	66.6667	24.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-210A	2.56923	0.764182	-8.25389	3.75139	783.5	60.2692
MW-210B	3.19408	0.792079	-7.62904	3.75139	1130	86.9231
MW-211A	3.27778	2.43145	-7.54534	4.45461	570	63.3333
MW-211B	2.68889	0.923911	-8.13423	4.45461	645	71.6667

## Analysis of Variance Statistics

SS Wells	20208.4
SS Total	52278.8

## Kruskal-Wallis Statistics

Non-Detect Rank	50.5
Background Rank Sum	16771.5
Background Rank Mean	108.203
H Statistic	15.829
H Adjusted for Ties	18.1293

# Shapiro-Francia Test of Normality

Parameter: Nickel

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with 0

Total Number of Measurements = 155

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.51213	6.31081	0
2	0	-2.25713	11.4054	0
3	0	-2.07485	15.7104	0
4	0	-1.95996	19.5519	0
5	0	-1.85218	22.9825	0
6	0	-1.77438	26.1309	0
7	0	-1.70604	29.0415	0
8	0	-1.63524	31.7154	0
9	0	-1.58047	34.2133	0
10	0	-1.52203	36.5299	0
11	0	-1.47579	38.7079	0
12	0	-1.4325	40.7599	0
13	0	-1.38517	42.6786	0
14	0	-1.34694	44.4929	0
15	0	-1.30469	46.1951	0
16	0	-1.27024	47.8086	0
17	0	-1.23724	49.3393	0
18	0	-1.20036	50.7802	0
19	0	-1.17	52.1491	0
20	0	-1.1359	53.4394	0
21	0	-1.10768	54.6663	0
22	0	-1.07584	55.8237	0
23	0	-1.04939	56.925	0
24	0	-1.02365	57.9728	0
25	0	-0.994457	58.9618	0
26	0	-0.970094	59.9029	0
27	0	-0.942375	60.7909	0
28	0	-0.919183	61.6358	0
29	0	-0.896473	62.4395	0
30	0	-0.87055	63.1973	0
31	0	-0.848786	63.9178	0
32	0	-0.823893	64.5966	0
33	0	-0.802956	65.2413	0
34	0	-0.782366	65.8534	0
35	0	-0.758753	66.4291	0
36	0	-0.738846	66.975	0
37	0	-0.715986	67.4877	0
38	0	-0.696684	67.973	0
39	0	-0.67449	68.428	0
40	0	-0.655726	68.8579	0
41	0	-0.637192	69.2639	0
42	0	-0.615839	69.6432	0
43	0	-0.597761	70.0005	0
44	0	-0.576911	70.3334	0
45	0	-0.559237	70.6461	0
46	0	-0.541736	70.9396	0
47	0	-0.521527	71.2116	0
48	0	-0.504372	71.466	0
49	0	-0.484544	71.7007	0
50	0	-0.467699	71.9195	0
51	0	-0.450985	72.1229	0
52	0	-0.431644	72.3092	0
53	0	-0.415193	72.4816	0
54	0	-0.396142	72.6385	0
55	0	-0.379927	72.7828	0
56	0	-0.363809	72.9152	0
57	0	-0.345126	73.0343	0
58	0	-0.329206	73.1427	0

59	0	-0.310738	73.2392	0
60	0	-0.294992	73.3263	0
61	0	-0.276714	73.4028	0
62	0	-0.26112	73.471	0
63	0	-0.24559	73.5313	0
64	0	-0.227545	73.5831	0
65	0	-0.212137	73.6281	0
66	0	-0.194225	73.6658	0
67	0	-0.17892	73.6979	0
68	0	-0.163659	73.7246	0
69	0	-0.1459	73.7459	0
70	0.94	-0.130716	73.763	-0.122873
71	1.3	-0.113039	73.7758	-0.269823
72	1.3	-0.0979139	73.7854	-0.397112
73	1.35	-0.0828129	73.7922	-0.508909
74	1.4	-0.0652187	73.7965	-0.600215
75	1.7	-0.0501541	73.799	-0.685477
76	1.93	-0.0325917	73.8001	-0.748379
77	2.5	-0.0175476	73.8004	-0.792248
78	2.7	0	73.8004	-0.792248
79	2.8	0.0175476	73.8007	-0.743115
80	3.1	0.0325917	73.8017	-0.642081
81	3.6	0.0501541	73.8043	-0.461526
82	4.5	0.0652187	73.8085	-0.168042
83	5.2	0.0828129	73.8154	0.262585
84	5.4	0.0979139	73.825	0.791321
85	5.8	0.113039	73.8377	1.44695
86	6.1	0.130716	73.8548	2.24431
87	6.3	0.1459	73.8761	3.16348
88	6.3	0.163659	73.9029	4.19454
89	6.4	0.17892	73.9349	5.33963
90	6.8	0.194225	73.9726	6.66035
91	7.07	0.212137	74.0176	8.16017
92	7.2	0.227545	74.0694	9.79849
93	7.2	0.24559	74.1297	11.5667
94	7.323	0.26112	74.1979	13.4789
95	7.4	0.276714	74.2745	15.5266
96	7.5	0.294992	74.3615	17.739
97	7.5	0.310738	74.4581	20.0696
98	7.5	0.329206	74.5664	22.5386
99	7.6	0.345126	74.6855	25.1616
100	7.6	0.363809	74.8179	27.9265
101	7.6	0.379927	74.9622	30.814
102	7.73	0.396142	75.1192	33.8762
103	7.8	0.415193	75.2916	37.1147
104	7.9	0.431644	75.4779	40.5247
105	8	0.450985	75.6813	44.1325
106	8.1	0.467699	75.9	47.9209
107	8.4	0.484544	76.1348	51.9911
108	8.4	0.504372	76.3892	56.2278
109	8.45	0.521527	76.6612	60.6347
110	8.52	0.541736	76.9546	65.2503
111	8.6	0.559237	77.2674	70.0597
112	8.6	0.576911	77.6002	75.0211
113	8.7	0.597761	77.9575	80.2217
114	8.7	0.615839	78.3368	85.5795
115	8.8	0.637192	78.7428	91.1868
116	8.8	0.655726	79.1728	96.9571
117	9	0.67449	79.6277	103.028
118	9	0.696684	80.1131	109.298
119	9.1	0.715986	80.6257	115.813
120	9.1	0.738846	81.1716	122.537
121	9.3	0.758753	81.7473	129.593
122	9.3	0.782366	82.3594	136.869
123	9.4	0.802956	83.0042	144.417
124	9.4	0.823893	83.683	152.161
125	9.5	0.848786	84.4034	160.225

126	10.5	0.87055	85.1613	169.366
127	10.5	0.896473	85.9649	178.779
128	10.6	0.919183	86.8098	188.522
129	12.1	0.942375	87.6979	199.925
130	12.1	0.970094	88.639	211.663
131	12.2	0.994457	89.6279	223.795
132	13	1.02365	90.6758	237.103
133	13.1	1.04939	91.777	250.85
134	13.6	1.07584	92.9344	265.481
135	14	1.10768	94.1614	280.989
136	14.4	1.1359	95.4516	297.346
137	14.5	1.17	96.8205	314.311
138	14.93	1.20036	98.2614	332.232
139	15	1.23724	99.7921	350.79
140	16.8	1.27024	101.406	372.13
141	18.8	1.30469	103.108	396.659
142	18.9	1.34694	104.922	422.116
143	18.9	1.38517	106.841	448.295
144	20	1.4325	108.893	476.946
145	22.4	1.47579	111.071	510.003
146	24.8	1.52203	113.387	547.75
147	26.1	1.58047	115.885	589
148	32.1	1.63524	118.559	641.491
149	37.1	1.70604	121.47	704.785
150	39.5	1.77438	124.618	774.873
151	40.6	1.85218	128.049	850.071
152	40.9	1.95996	131.89	930.234
153	48.5	2.07485	136.195	1030.86
154	49.2	2.25713	141.29	1141.91
155	65.9	2.51213	147.601	1307.46

---

Data Set Standard Deviation = 10.7339

Numerator = 1.70946e+006

Denominator = 2.61893e+006

W Statistic = 0.652733 = 1.70946e+006 / 2.61893e+006

**5% Critical value of 0.976 exceeds 0.652733**

**Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.652733**

**Evidence of non-normality at 99% level of significance**

## Non-Parametric Prediction Interval

### Inter-Well Comparison

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with 0

Total Percent Non-Detects = 50.2513%

Number of comparisons = 4

Future Samples (k) = 4

Recent Dates = 1

Background Measurements (n) = 155

Maximum Background Value = 65.9

Confidence Level = 96.2%

False Positive Rate = 3.8%

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Location	Date	Count	Mean	Significant
MW-210A	5/24/2022	1	0	FALSE
MW-210B	5/24/2022	1	2.323	FALSE
MW-211A	5/25/2022	1	0	FALSE
MW-211B	5/26/2022	1	0	FALSE

---

## Basic Statistics

### Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	200
Total Non-Detects	159 (79.5%)
Pooled Mean	4.5923
Pooled Std Dev	3.1723
Compliance Meas.	47
Compliance Mean	5.50851
Compliance Std Dev	3.69217
Background Meas.	153
Background Mean	4.31085
Background Std Dev	2.95134

## Background Locations

There are 5 background location

Location	Meas.	Non-Detects	% ND	Total
MW-206A	40	27	67.5	234.54
MW-106B	20	18	90	60.08
MW-205B	23	22	95.6522	86.96
MW-206B	33	30	90.9091	104.2
MW-106A	37	29	78.3784	173.78

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-206A	5.8635	4.10637	0	4518	112.95
MW-106B	3.004	1.89993	0	1799	89.95
MW-205B	3.78087	1.54315	0	1921	83.5217
MW-206B	3.15758	1.6136	0	2893	87.6667
MW-106A	4.69676	2.76691	0	3707	100.189

## Compliance Locations

There are 4 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-210B	13	13	100	51
MW-211A	10	10	100	35.7
MW-211B	10	10	100	35.7
MW-210A	14	0	0	136.5

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-210B	3.92308	1.83037	-0.387773	0.78351	1040	80
MW-211A	3.57	1.9698	-0.74085	0.88523	800	80
MW-211B	3.57	1.9698	-0.74085	0.88523	800	80
MW-210A	9.75	3.47889	5.43915	0.75728	2622	187.286

## Analysis of Variance Statistics

SS Wells	597.718
SS Total	2002.63

## Kruskal-Wallis Statistics

Non-Detect Rank	80
Background Rank Sum	14838
Background Rank Mean	96.9804
H Statistic	36.1816
H Adjusted for Ties	72.7198

# Non-Parametric Prediction Interval

## Inter-Well Comparison

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 79.5%

Number of comparisons = 4

Future Samples (k) = 4

Recent Dates = 1

Background Measurements (n) = 153

Maximum Background Value = 17.2

Confidence Level = 96.2%

False Positive Rate = 3.8%

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Location	Date	Count	Mean	Significant
MW-210B	12/7/2022	1	0.5	FALSE
MW-211A	12/6/2022	1	0.5	FALSE
MW-211B	12/6/2022	1	0.5	FALSE
MW-210A	12/7/2022	1	8.2	FALSE

---

## Basic Statistics

### Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	247
Total Non-Detects	10 (4.04858%)
Pooled Mean	136.13
Pooled Std Dev	88.5652

Compliance Meas.	48
Compliance Mean	61.6437
Compliance Std Dev	23.332

Background Meas.	199
Background Mean	154.096
Background Std Dev	89.144

## Background Locations

There are 5 background location

Location	Meas.	Non-Detects	% ND	Total
MW-206B	49	10	20.4082	6041
MW-106B	33	0	0	3129.5
MW-206A	45	0	0	4209.9
MW-205B	23	0	0	2350.8
MW-106A	49	0	0	14934

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-206B	123.286	24.1134	0	6682	136.367
MW-106B	94.8333	11.3216	0	3383	102.515
MW-206A	93.5533	13.9451	0	4419	98.2
MW-205B	102.209	5.24282	0	2971	129.174
MW-106A	304.776	25.1969	0	10927	223

## Compliance Locations

There are 4 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-210A	14	0	0	573.3
MW-211A	10	0	0	489.4
MW-210B	14	0	0	908.1
MW-211B	10	0	0	988.1

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-210A	40.95	12.9053	-113.146	4.93016	290	20.7143
MW-211A	48.94	7.53292	-105.156	5.77841	267	26.7
MW-210B	64.8643	4.47104	-89.2322	4.93016	564	40.2857
MW-211B	98.81	10.9683	-55.2865	5.77841	1125	112.5

## Analysis of Variance Statistics

SS Wells	1.85391e+006
SS Total	1.92957e+006

## Kruskal-Wallis Statistics

Non-Detect Rank	5.5
Background Rank Sum	28382
Background Rank Mean	142.623
H Statistic	80.8039
H Adjusted for Ties	80.8092



# Shapiro-Francia Test of Normality

Parameter: Barium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Number of Measurements = 199

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	50	-2.57583	6.63492	-128.792
2	50	-2.32634	12.0468	-245.109
3	50	-2.17009	16.7561	-353.613
4	50	-2.05375	20.974	-456.301
5	50	-1.95996	24.8154	-554.299
6	50	-1.88079	28.3528	-648.338
7	50	-1.81191	31.6358	-738.934
8	50	-1.75069	34.7007	-826.468
9	50	-1.6954	37.5751	-911.238
10	50	-1.64485	40.2806	-993.481
11	72.7	-1.59819	42.8348	-1109.67
12	74.9	-1.55477	45.2522	-1226.12
13	75	-1.5141	47.5447	-1339.68
14	75.5	-1.47579	49.7226	-1451.1
15	75.9	-1.43953	51.7949	-1560.36
16	76.1	-1.40507	53.7691	-1667.29
17	76.3	-1.3722	55.6521	-1771.99
18	77	-1.34075	57.4497	-1875.23
19	77.7	-1.31058	59.1673	-1977.06
20	78.6	-1.28155	60.8097	-2077.79
21	78.7	-1.25357	62.3811	-2176.44
22	78.8	-1.22653	63.8855	-2273.09
23	80.3	-1.20036	65.3263	-2369.48
24	80.3	-1.17499	66.7069	-2463.83
25	81.4	-1.15035	68.0302	-2557.47
26	81.9	-1.12639	69.299	-2649.72
27	82.6	-1.10306	70.5157	-2740.84
28	83.7	-1.08032	71.6828	-2831.26
29	84	-1.05812	72.8025	-2920.14
30	84.5	-1.03643	73.8766	-3007.72
31	84.7	-1.01522	74.9073	-3093.71
32	85	-0.994457	75.8963	-3178.24
33	86.4	-0.974114	76.8452	-3262.4
34	87.3	-0.954165	77.7556	-3345.7
35	87.8	-0.93459	78.6291	-3427.76
36	87.9	-0.919183	79.474	-3508.55
37	88	-0.896473	80.2776	-3587.44
38	88.4	-0.877897	81.0483	-3665.05
39	89.2	-0.859618	81.7873	-3741.73
40	89.2	-0.841621	82.4956	-3816.8
41	89.4	-0.823893	83.1744	-3890.46
42	90	-0.806422	83.8247	-3963.03
43	90	-0.789191	84.4475	-4034.06
44	91	-0.772193	85.0438	-4104.33
45	92	-0.755415	85.6145	-4173.83
46	92.2	-0.738846	86.1604	-4241.95
47	92.2	-0.722479	86.6823	-4308.56
48	92.2	-0.706302	87.1812	-4373.68
49	92.5	-0.690309	87.6577	-4437.54
50	93	-0.67449	88.1127	-4500.27
51	93.3	-0.658838	88.5467	-4561.73
52	94.5	-0.643345	88.9606	-4622.53
53	94.5	-0.628006	89.355	-4681.88
54	94.9	-0.612813	89.7305	-4740.03
55	95.2	-0.597761	90.0879	-4796.94
56	96	-0.582841	90.4276	-4852.89
57	96.1	-0.570999	90.7536	-4907.77
58	96.2	-0.553384	91.0598	-4961

59	96.8	-0.541736	91.3533	-5013.44
60	97	-0.524401	91.6283	-5064.31
61	97.7	-0.51293	91.8914	-5114.42
62	97.9	-0.49585	92.1373	-5162.97
63	98.3	-0.481728	92.3693	-5210.32
64	98.8	-0.467699	92.5881	-5256.53
65	98.9	-0.453763	92.794	-5301.41
66	99.8	-0.439913	92.9875	-5345.31
67	100	-0.426148	93.1691	-5387.92
68	100	-0.412463	93.3392	-5429.17
69	100	-0.398855	93.4983	-5469.06
70	100	-0.385321	93.6468	-5507.59
71	100	-0.371856	93.7851	-5544.77
72	100	-0.358459	93.9136	-5580.62
73	100	-0.345126	94.0327	-5615.13
74	100	-0.331854	94.1428	-5648.32
75	100	-0.318639	94.2443	-5680.18
76	100	-0.305481	94.3377	-5710.73
77	100	-0.292375	94.4231	-5739.97
78	100	-0.279319	94.5012	-5767.9
79	100	-0.266311	94.5721	-5794.53
80	100	-0.253347	94.6363	-5819.86
81	100	-0.240426	94.6941	-5843.91
82	100	-0.230118	94.747	-5866.92
83	101	-0.214702	94.7931	-5888.6
84	101	-0.204452	94.8349	-5909.25
85	101	-0.189118	94.8707	-5928.35
86	102	-0.17892	94.9027	-5946.6
87	102	-0.163659	94.9295	-5963.3
88	102	-0.150969	94.9523	-5978.7
89	102	-0.138305	94.9714	-5992.8
90	102	-0.125661	94.9872	-6005.62
91	103	-0.113039	95	-6017.26
92	103	-0.100433	95.0101	-6027.61
93	103	-0.0878447	95.0178	-6036.66
94	103	-0.0752698	95.0234	-6044.41
95	103	-0.0627062	95.0274	-6050.87
96	104	-0.0501541	95.0299	-6056.08
97	104	-0.0376076	95.0313	-6059.99
98	104	-0.0250691	95.0319	-6062.6
99	105	-0.0125328	95.0321	-6063.92
100	106	0	95.0321	-6063.92
101	107	0.0125328	95.0322	-6062.58
102	107	0.0250691	95.0329	-6059.89
103	107	0.0376076	95.0343	-6055.87
104	108	0.0501541	95.0368	-6050.45
105	108	0.0627062	95.0407	-6043.68
106	109	0.0752698	95.0464	-6035.48
107	109	0.0878447	95.0541	-6025.9
108	110	0.100433	95.0642	-6014.85
109	110	0.113039	95.077	-6002.42
110	110	0.125661	95.0928	-5988.6
111	110	0.138305	95.1119	-5973.38
112	110	0.150969	95.1347	-5956.78
113	111	0.163659	95.1615	-5938.61
114	112	0.176374	95.1926	-5918.86
115	112	0.189118	95.2283	-5897.68
116	114	0.201894	95.2691	-5874.66
117	115	0.214702	95.3152	-5849.97
118	115	0.227545	95.367	-5823.8
119	115	0.240426	95.4248	-5796.15
120	117	0.253347	95.489	-5766.51
121	118	0.266311	95.5599	-5735.09
122	118	0.279319	95.6379	-5702.13
123	119	0.292375	95.7234	-5667.33
124	120	0.305481	95.8167	-5630.68
125	120	0.318639	95.9182	-5592.44

126	120	0.331854	96.0284	-5552.62
127	120	0.345126	96.1475	-5511.2
128	121	0.358459	96.276	-5467.83
129	123	0.371856	96.4143	-5422.09
130	124	0.385321	96.5627	-5374.31
131	125	0.398855	96.7218	-5324.45
132	125	0.412463	96.8919	-5272.9
133	126	0.426148	97.0735	-5219.2
134	129	0.439913	97.2671	-5162.45
135	130	0.453763	97.473	-5103.46
136	133	0.467699	97.6917	-5041.26
137	133	0.481728	97.9238	-4977.19
138	133	0.49585	98.1696	-4911.24
139	134	0.510074	98.4298	-4842.89
140	136	0.524401	98.7048	-4771.57
141	146	0.538836	98.9952	-4692.9
142	154	0.553384	99.3014	-4607.68
143	160	0.568052	99.6241	-4516.79
144	166	0.582841	99.9638	-4420.04
145	168	0.597761	100.321	-4319.62
146	168	0.612813	100.697	-4216.67
147	169	0.628006	101.091	-4110.53
148	170	0.643345	101.505	-4001.16
149	170	0.658838	101.939	-3889.16
150	176	0.67449	102.394	-3770.45
151	244	0.690309	102.87	-3602.02
152	246	0.706302	103.369	-3428.27
153	267	0.722479	103.891	-3235.36
154	267	0.738846	104.437	-3038.09
155	274	0.755415	105.008	-2831.11
156	275	0.772193	105.604	-2618.75
157	279	0.789191	106.227	-2398.57
158	279	0.806422	106.877	-2173.58
159	280	0.823893	107.556	-1942.89
160	282	0.841621	108.264	-1705.55
161	285	0.859618	109.003	-1460.56
162	287	0.877897	109.774	-1208.6
163	290	0.896473	110.578	-948.627
164	291	0.915365	111.416	-682.255
165	292	0.93459	112.289	-409.355
166	298	0.954165	113.199	-125.014
167	300	0.974114	114.148	167.22
168	300	0.994457	115.137	465.557
169	300	1.01522	116.168	770.124
170	300	1.03643	117.242	1081.05
171	300	1.05812	118.362	1398.49
172	301	1.08032	119.529	1723.67
173	301	1.10306	120.746	2055.69
174	302	1.12639	122.014	2395.86
175	303	1.15035	123.338	2744.41
176	306	1.17499	124.718	3103.96
177	310	1.20036	126.159	3476.07
178	310	1.22653	127.664	3856.3
179	310	1.25357	129.235	4244.9
180	310	1.28155	130.877	4642.18
181	312	1.31058	132.595	5051.08
182	312	1.34075	134.393	5469.4
183	314	1.3722	136.276	5900.27
184	315	1.40507	138.25	6342.87
185	319	1.43953	140.322	6802.08
186	320	1.47579	142.5	7274.33
187	321	1.5141	144.792	7760.36
188	322	1.55477	147.21	8261
189	326	1.59819	149.764	8782.01
190	326	1.64485	152.47	9318.23
191	326	1.6954	155.344	9870.93
192	328	1.75069	158.409	10445.2

193	330	1.81191	161.692	11043.1
194	331	1.88079	165.229	11665.6
195	336	1.95996	169.071	12324.2
196	341	2.05375	173.289	13024.5
197	348	2.17009	177.998	13779.7
198	354	2.32634	183.41	14603.2
199	364	2.57583	190.045	15540.8

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Data Set Standard Deviation = 91.3224

Numerator = 2.41517e+008

Denominator = 3.13817e+008

W Statistic = 0.769613 = 2.41517e+008 / 3.13817e+008

**5% Critical value of 0.976 exceeds 0.769613**

**Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.769613**

**Evidence of non-normality at 99% level of significance**

# Non-Parametric Prediction Interval

## Inter-Well Comparison

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 4.04858%

Number of comparisons = 4

Future Samples (k) = 4

Recent Dates = 1

Background Measurements (n) = 199

Maximum Background Value = 364

Confidence Level = 96.2%

False Positive Rate = 3.8%

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Location	Date	Count	Mean	Significant
MW-210A	12/7/2022	1	35.3	FALSE
MW-211A	12/6/2022	1	47.6	FALSE
MW-210B	12/7/2022	1	70.3	FALSE
MW-211B	12/6/2022	1	97.6	FALSE

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## Basic Statistics

### Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	208
Total Non-Detects	104 (50%)
Pooled Mean	8.90558
Pooled Std Dev	15.9963
Compliance Meas.	48
Compliance Mean	2.83429
Compliance Std Dev	1.30458
Background Meas.	160
Background Mean	10.727
Background Std Dev	17.837

## Background Locations

There are 5 background location

Location	Meas.	Non-Detects	% ND	Total
MW-106B	26	25	96.1538	52
MW-106A	34	1	2.94118	273.661
MW-206B	36	21	58.3333	145.964
MW-205B	22	19	86.3636	50.14
MW-206A	42	5	11.9048	1194.55

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-106B	2	1.8556	0	1423.5	54.75
MW-106A	8.04885	1.23992	0	5152.5	151.544
MW-206B	4.05456	4.12961	0	3175.5	88.2083
MW-205B	2.27909	0.621442	0	1323.5	60.1591
MW-206A	28.4417	27.6161	0	7045.5	167.75

## Compliance Locations

There are 4 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-210A	14	11	78.5714	36.194
MW-211A	10	9	90	30.5
MW-211B	10	7	70	25.2
MW-210B	14	6	42.8571	44.152

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-210A	2.58529	0.736656	-8.14168	3.53905	938.5	67.0357
MW-211A	3.05	2.40289	-7.67697	4.13905	646.5	64.65
MW-211B	2.52	1.02176	-8.20697	4.13905	726.5	72.65
MW-210B	3.15371	0.775846	-7.57325	3.53905	1304	93.1429

## Analysis of Variance Statistics

SS Wells	20880.7
SS Total	52967.4

## Kruskal-Wallis Statistics

Non-Detect Rank	52.5
Background Rank Sum	18120.5
Background Rank Mean	113.253
H Statistic	16.4903
H Adjusted for Ties	18.8459

# Shapiro-Francia Test of Normality

Parameter: Nickel

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with 0

Total Number of Measurements = 160

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.51213	6.31081	0
2	0	-2.25713	11.4054	0
3	0	-2.09693	15.8026	0
4	0	-1.97737	19.7126	0
5	0	-1.86629	23.1956	0
6	0	-1.78661	26.3876	0
7	0	-1.71688	29.3353	0
8	0	-1.65463	32.0731	0
9	0	-1.59819	34.6273	0
10	0	-1.5382	36.9933	0
11	0	-1.49085	39.216	0
12	0	-1.44663	41.3087	0
13	0	-1.40507	43.283	0
14	0	-1.36581	45.1484	0
15	0	-1.32251	46.8974	0
16	0	-1.28727	48.5545	0
17	0	-1.25357	50.1259	0
18	0	-1.22123	51.6173	0
19	0	-1.18504	53.0216	0
20	0	-1.15522	54.3562	0
21	0	-1.12639	55.6249	0
22	0	-1.09847	56.8316	0
23	0	-1.07138	57.9794	0
24	0	-1.04073	59.0625	0
25	0	-1.01522	60.0932	0
26	0	-0.990356	61.074	0
27	0	-0.966088	62.0073	0
28	0	-0.942375	62.8954	0
29	0	-0.915365	63.7333	0
30	0	-0.892733	64.5303	0
31	0	-0.87055	65.2881	0
32	0	-0.848786	66.0086	0
33	0	-0.827417	66.6932	0
34	0	-0.802956	67.3379	0
35	0	-0.782366	67.95	0
36	0	-0.7621	68.5308	0
37	0	-0.742143	69.0816	0
38	0	-0.719228	69.5989	0
39	0	-0.699883	70.0887	0
40	0	-0.680797	70.5522	0
41	0	-0.661955	70.9904	0
42	0	-0.643345	71.4043	0
43	0	-0.621911	71.7911	0
44	0	-0.603765	72.1556	0
45	0	-0.585815	72.4988	0
46	0	-0.568052	72.8215	0
47	0	-0.550465	73.1245	0
48	0	-0.530162	73.4055	0
49	0	-0.51293	73.6686	0
50	0	-0.49585	73.9145	0
51	0	-0.478914	74.1439	0
52	0	-0.462114	74.3574	0
53	0	-0.442676	74.5534	0
54	0	-0.426148	74.735	0
55	0	-0.409735	74.9029	0
56	0	-0.393433	75.0576	0
57	0	-0.374544	75.1979	0
58	0	-0.358459	75.3264	0

59	0	-0.342466	75.4437	0
60	0	-0.326561	75.5503	0
61	0	-0.310738	75.6469	0
62	0	-0.292375	75.7324	0
63	0	-0.276714	75.809	0
64	0	-0.26112	75.8771	0
65	0	-0.24559	75.9375	0
66	0	-0.230118	75.9904	0
67	0	-0.212137	76.0354	0
68	0	-0.196779	76.0741	0
69	0	-0.181468	76.1071	0
70	0	-0.166199	76.1347	0
71	0	-0.150969	76.1575	0
72	0.94	-0.133244	76.1752	-0.12525
73	1.3	-0.118085	76.1892	-0.278761
74	1.3	-0.102953	76.1998	-0.412599
75	1.35	-0.0878447	76.2075	-0.531189
76	1.4	-0.0702426	76.2124	-0.629529
77	1.7	-0.0551734	76.2155	-0.723324
78	1.93	-0.0401167	76.2171	-0.800749
79	2.5	-0.0250691	76.2177	-0.863421
80	2.544	-0.0100272	76.2178	-0.888931
81	2.7	0.0100272	76.2179	-0.861857
82	2.8	0.0250691	76.2185	-0.791664
83	3.1	0.0401167	76.2202	-0.667302
84	3.6	0.0551734	76.2232	-0.468678
85	4.5	0.0702426	76.2281	-0.152587
86	5.2	0.0878447	76.2358	0.304206
87	5.4	0.102953	76.2464	0.860149
88	5.8	0.118085	76.2604	1.54504
89	6.1	0.133244	76.2781	2.35784
90	6.3	0.150969	76.3009	3.30894
91	6.3	0.166199	76.3286	4.35599
92	6.4	0.181468	76.3615	5.51739
93	6.8	0.196779	76.4002	6.85549
94	7.07	0.212137	76.4452	8.3553
95	7.2	0.230118	76.4982	10.0122
96	7.2	0.24559	76.5585	11.7804
97	7.323	0.26112	76.6267	13.6926
98	7.4	0.276714	76.7032	15.7403
99	7.5	0.292375	76.7887	17.9331
100	7.5	0.310738	76.8853	20.2636
101	7.5	0.326561	76.9919	22.7128
102	7.568	0.342466	77.1092	25.3046
103	7.6	0.358459	77.2377	28.0289
104	7.6	0.374544	77.378	30.8754
105	7.6	0.393433	77.5328	33.8655
106	7.73	0.409735	77.7006	37.0328
107	7.8	0.426148	77.8823	40.3567
108	7.9	0.442676	78.0782	43.8539
109	8	0.462114	78.2918	47.5508
110	8.1	0.478914	78.5211	51.43
111	8.4	0.49585	78.767	55.5951
112	8.4	0.51293	79.0301	59.9037
113	8.45	0.530162	79.3112	64.3836
114	8.52	0.550465	79.6142	69.0736
115	8.6	0.568052	79.9369	73.9588
116	8.6	0.585815	80.28	78.9968
117	8.7	0.603765	80.6446	84.2496
118	8.7	0.621911	81.0313	89.6602
119	8.8	0.643345	81.4452	95.3216
120	8.8	0.661955	81.8834	101.147
121	9	0.680797	82.3469	107.274
122	9	0.699883	82.8367	113.573
123	9.1	0.719228	83.354	120.118
124	9.1	0.742143	83.9048	126.871
125	9.3	0.7621	84.4856	133.959



126	9.3	0.782366	85.0977	141.235
127	9.4	0.802956	85.7424	148.783
128	9.4	0.827417	86.427	156.56
129	9.5	0.848786	87.1475	164.624
130	10.5	0.87055	87.9053	173.765
131	10.5	0.892733	88.7023	183.138
132	10.6	0.915365	89.5402	192.841
133	12.1	0.942375	90.4283	204.244
134	12.1	0.966088	91.3616	215.934
135	12.2	0.990356	92.3424	228.016
136	13	1.01522	93.3731	241.214
137	13.1	1.04073	94.4562	254.847
138	13.6	1.07138	95.6041	269.418
139	14	1.09847	96.8107	284.797
140	14.4	1.12639	98.0795	301.017
141	14.5	1.15522	99.414	317.768
142	14.93	1.18504	100.818	335.46
143	15	1.22123	102.31	353.779
144	16.8	1.25357	103.881	374.839
145	18.8	1.28727	105.538	399.039
146	18.9	1.32251	107.287	424.035
147	18.9	1.36581	109.153	449.848
148	20	1.40507	111.127	477.95
149	22.4	1.44663	113.22	510.354
150	24.8	1.49085	115.442	547.328
151	26.1	1.5382	117.808	587.475
152	26.62	1.59819	120.363	630.019
153	32.1	1.65463	123.1	683.132
154	37.1	1.71688	126.048	746.828
155	39.5	1.78661	129.24	817.4
156	40.6	1.86629	132.723	893.171
157	40.9	1.97737	136.633	974.045
158	48.5	2.09693	141.03	1075.75
159	49.2	2.25713	146.125	1186.8
160	65.9	2.51213	152.436	1352.35

Data Set Standard Deviation = 10.7126

Numerator = 1.82884e+006

Denominator = 2.78147e+006

W Statistic = 0.657509 = 1.82884e+006 / 2.78147e+006

**5% Critical value of 0.976 exceeds 0.657509**

**Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.657509**

**Evidence of non-normality at 99% level of significance**

# Non-Parametric Prediction Interval

## Inter-Well Comparison

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with 0

Total Percent Non-Detects = 50%

Number of comparisons = 4

Future Samples (k) = 4

Recent Dates = 1

Background Measurements (n) = 160

Maximum Background Value = 65.9

Confidence Level = 96.2%

False Positive Rate = 3.8%

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Location	Date	Count	Mean	Significant
MW-210A	12/7/2022	1	2.794	FALSE
MW-211A	12/6/2022	1	0	FALSE
MW-211B	12/6/2022	1	0	FALSE
MW-210B	12/7/2022	1	2.629	FALSE

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## Basic Statistics

### Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	141
Total Non-Detects	102 (72.3404%)
Pooled Mean	6.67674
Pooled Std Dev	3.81899
Compliance Meas.	48
Compliance Mean	7.02542
Compliance Std Dev	3.66317
Background Meas.	93
Background Mean	6.49677
Background Std Dev	3.90419

## Background Locations

There are 5 background location

Location	Meas.	Non-Detects	% ND	Total
MW-205B	22	19	86.3636	133.23
MW-106A	20	19	95	91.7
MW-206B	20	12	60	167.57
MW-106B	10	8	80	41.88
MW-206A	21	11	52.381	169.82

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-205B	6.05591	3.44201	0	1351.5	61.4318
MW-106A	4.585	0.934866	0	1091.5	54.575
MW-206B	8.3785	5.57206	0	1617	80.85
MW-106B	4.188	1.1122	0	619	61.9
MW-206A	8.08667	3.75035	0	1808.5	86.119

## Compliance Locations

There are 4 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-210B	14	13	92.8571	86.1
MW-211A	10	8	80	62.9
MW-210A	14	9	64.2857	103.79
MW-211B	10	3	30	84.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-210B	6.15	3.5333	-0.346774	1.04084	795.5	56.8214
MW-211A	6.29	3.90966	-0.206774	1.2083	658	65.8
MW-210A	7.41357	3.83096	0.916797	1.04084	1087.5	77.6786
MW-211B	8.443	3.36135	1.94623	1.2083	982.5	98.25

## Analysis of Variance Statistics

SS Wells	301.768
SS Total	2041.86

## Kruskal-Wallis Statistics

Non-Detect Rank	51.5
Background Rank Sum	6487.5
Background Rank Mean	69.7581
H Statistic	6.75958
H Adjusted for Ties	10.8771

# Non-Parametric Prediction Interval

## Inter-Well Comparison

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 72.3404%

Number of comparisons = 4

Future Samples (k) = 4

Recent Dates = 1

Background Measurements (n) = 93

Maximum Background Value = 22.2

Confidence Level = 95.9%

False Positive Rate = 4.1%

---

Location	Date	Count	Mean	Significant
MW-210B	12/7/2022	1	2.5	FALSE
MW-211A	12/6/2022	1	2.5	FALSE
MW-210A	12/7/2022	1	2.5	FALSE
MW-211B	12/6/2022	1	6.51	FALSE

---

# Mann-Kendall Trend Analysis

Parameter: Arsenic

Location: MW-210A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

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Xj	Xk	Xj - Xk	Positives	Negatives
10.6	10.3	0.3	1	0
6.7 J	10.3	-3.6	1	1
9.2 J	10.3	-1.1	1	2
8.5 J	10.3	-1.8	1	3
10.9	10.3	0.6	2	3
7.7 J	10.3	-2.6	2	4
8.7	10.3	-1.6	2	5
8.1	10.3	-2.2	2	6
14.2	10.3	3.9	3	6
7.3 J	10.3	-3	3	7
6.5	10.3	-3.8	3	8
8.2	10.3	-2.1	3	9
6.7 J	10.6	-3.9	3	10
9.2 J	10.6	-1.4	3	11
8.5 J	10.6	-2.1	3	12
10.9	10.6	0.3	4	12
7.7 J	10.6	-2.9	4	13
8.7	10.6	-1.9	4	14
8.1	10.6	-2.5	4	15
14.2	10.6	3.6	5	15
7.3 J	10.6	-3.3	5	16
6.5	10.6	-4.1	5	17
8.2	10.6	-2.4	5	18
9.2 J	6.7 J	2.5	6	18
8.5 J	6.7 J	1.8	7	18
10.9	6.7 J	4.2	8	18
7.7 J	6.7 J	1	9	18
8.7	6.7 J	2	10	18
8.1	6.7 J	1.4	11	18
14.2	6.7 J	7.5	12	18
7.3 J	6.7 J	0.6	13	18
6.5	6.7 J	-0.2	13	19
8.2	6.7 J	1.5	14	19
8.5 J	9.2 J	-0.7	14	20
10.9	9.2 J	1.7	15	20
7.7 J	9.2 J	-1.5	15	21
8.7	9.2 J	-0.5	15	22
8.1	9.2 J	-1.1	15	23
14.2	9.2 J	5	16	23
7.3 J	9.2 J	-1.9	16	24
6.5	9.2 J	-2.7	16	25
8.2	9.2 J	-1	16	26
10.9	8.5 J	2.4	17	26
7.7 J	8.5 J	-0.8	17	27
8.7	8.5 J	0.2	18	27
8.1	8.5 J	-0.4	18	28
14.2	8.5 J	5.7	19	28
7.3 J	8.5 J	-1.2	19	29
6.5	8.5 J	-2	19	30
8.2	8.5 J	-0.3	19	31
7.7 J	10.9	-3.2	19	32
8.7	10.9	-2.2	19	33

8.1	10.9	-2.8	19	34
14.2	10.9	3.3	20	34
7.3 J	10.9	-3.6	20	35
6.5	10.9	-4.4	20	36
8.2	10.9	-2.7	20	37
8.7	7.7 J	1	21	37
8.1	7.7 J	0.4	22	37
14.2	7.7 J	6.5	23	37
7.3 J	7.7 J	-0.4	23	38
6.5	7.7 J	-1.2	23	39
8.2	7.7 J	0.5	24	39
8.1	8.7	-0.6	24	40
14.2	8.7	5.5	25	40
7.3 J	8.7	-1.4	25	41
6.5	8.7	-2.2	25	42
8.2	8.7	-0.5	25	43
14.2	8.1	6.1	26	43
7.3 J	8.1	-0.8	26	44
6.5	8.1	-1.6	26	45
8.2	8.1	0.1	27	45
7.3 J	14.2	-6.9	27	46
6.5	14.2	-7.7	27	47
8.2	14.2	-6	27	48
6.5	7.3 J	-0.8	27	49
8.2	7.3 J	0.9	28	49
8.2	6.5	1.7	29	49

S Statistic = 29 - 49 = -20

---

Tied Group	Value	Members
<b>Time Period</b>		<b>Observations</b>
5/4/2016		1
11/3/2016		1
5/2/2017		1
11/2/2017		1
5/3/2018		1
10/31/2018		1
10/28/2019		1
7/29/2020		1
11/17/2020		1
5/19/2021		1
11/9/2021		1
5/24/2022		1
12/7/2022		1

There are 0 time periods with multiple data

---

A = 0  
 B = 0  
 C = 0  
 D = 0  
 E = 0  
 F = 0  
 a = 4836  
 b = 15444  
 c = 312  
 Group Variance = 268.667  
 Z-Score = -1.15917  
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)  
 |-1.15917| <= 1.97737 indicating no evidence of a trend



# Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-210A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

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<b>Xj</b>	<b>Xk</b>	<b>Xj - Xk</b>	<b>Positives</b>	<b>Negatives</b>
60.9	65.6	-4.7	0	1
40.2	65.6	-25.4	0	2
55.9	65.6	-9.7	0	3
20.3	65.6	-45.3	0	4
32.1	65.6	-33.5	0	5
25.7	65.6	-39.9	0	6
32.3	65.6	-33.3	0	7
40.6	65.6	-25	0	8
46	65.6	-19.6	0	9
45.7	65.6	-19.9	0	10
37	65.6	-28.6	0	11
35.7	65.6	-29.9	0	12
35.3	65.6	-30.3	0	13
40.2	60.9	-20.7	0	14
55.9	60.9	-5	0	15
20.3	60.9	-40.6	0	16
32.1	60.9	-28.8	0	17
25.7	60.9	-35.2	0	18
32.3	60.9	-28.6	0	19
40.6	60.9	-20.3	0	20
46	60.9	-14.9	0	21
45.7	60.9	-15.2	0	22
37	60.9	-23.9	0	23
35.7	60.9	-25.2	0	24
35.3	60.9	-25.6	0	25
55.9	40.2	15.7	1	25
20.3	40.2	-19.9	1	26
32.1	40.2	-8.1	1	27
25.7	40.2	-14.5	1	28
32.3	40.2	-7.9	1	29
40.6	40.2	0.4	2	29
46	40.2	5.8	3	29
45.7	40.2	5.5	4	29
37	40.2	-3.2	4	30
35.7	40.2	-4.5	4	31
35.3	40.2	-4.9	4	32
20.3	55.9	-35.6	4	33
32.1	55.9	-23.8	4	34
25.7	55.9	-30.2	4	35
32.3	55.9	-23.6	4	36
40.6	55.9	-15.3	4	37
46	55.9	-9.9	4	38
45.7	55.9	-10.2	4	39
37	55.9	-18.9	4	40
35.7	55.9	-20.2	4	41
35.3	55.9	-20.6	4	42
32.1	20.3	11.8	5	42
25.7	20.3	5.4	6	42
32.3	20.3	12	7	42
40.6	20.3	20.3	8	42
46	20.3	25.7	9	42
45.7	20.3	25.4	10	42
37	20.3	16.7	11	42



35.7	20.3	15.4	12	42
35.3	20.3	15	13	42
25.7	32.1	-6.4	13	43
32.3	32.1	0.2	14	43
40.6	32.1	8.5	15	43
46	32.1	13.9	16	43
45.7	32.1	13.6	17	43
37	32.1	4.9	18	43
35.7	32.1	3.6	19	43
35.3	32.1	3.2	20	43
32.3	25.7	6.6	21	43
40.6	25.7	14.9	22	43
46	25.7	20.3	23	43
45.7	25.7	20	24	43
37	25.7	11.3	25	43
35.7	25.7	10	26	43
35.3	25.7	9.6	27	43
40.6	32.3	8.3	28	43
46	32.3	13.7	29	43
45.7	32.3	13.4	30	43
37	32.3	4.7	31	43
35.7	32.3	3.4	32	43
35.3	32.3	3	33	43
46	40.6	5.4	34	43
45.7	40.6	5.1	35	43
37	40.6	-3.6	35	44
35.7	40.6	-4.9	35	45
35.3	40.6	-5.3	35	46
45.7	46	-0.3	35	47
37	46	-9	35	48
35.7	46	-10.3	35	49
35.3	46	-10.7	35	50
37	45.7	-8.7	35	51
35.7	45.7	-10	35	52
35.3	45.7	-10.4	35	53
35.7	37	-1.3	35	54
35.3	37	-1.7	35	55
35.3	35.7	-0.4	35	56

S Statistic = 35 - 56 = -21

---

Tied Group	Value	Members
<b>Time Period</b>		<b>Observations</b>
5/4/2016		1
11/3/2016		1
5/2/2017		1
11/2/2017		1
5/3/2018		1
10/31/2018		1
4/30/2019		1
10/28/2019		1
5/6/2020		1
11/17/2020		1
5/19/2021		1
11/9/2021		1
5/24/2022		1
12/7/2022		1

There are 0 time periods with multiple data

---

A = 0  
B = 0  
C = 0  
D = 0  
E = 0  
F = 0  
a = 6006  
b = 19656  
c = 364  
Group Variance = 333.667  
Z-Score = -1.0949  
Comparison Level at  $1.0 - (0.05 / 2) = 97.5\%$  confidence level = 1.97737 (two-tailed)  
|-1.0949| <= 1.97737 indicating no evidence of a trend

# Mann-Kendall Trend Analysis

Parameter: Nickel

Location: MW-210A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
2.7 J	ND<2.5 U	0.2	1	0
2.8 J	ND<2.5 U	0.3	2	0
ND<2.5 U	ND<2.5 U	0	2	0
ND<2.5 U	ND<2.5 U	0	2	0
ND<2.5 U	ND<2.5 U	0	2	0
ND<2.5 U	ND<2.5 U	0	2	0
ND<2.5 U	ND<2.5 U	0	2	0
ND<3.5 U	ND<2.5 U	1	3	0
ND<3.7 U	ND<2.5 U	1.2	4	0
ND<3.4 U	ND<2.5 U	0.9	5	0
2.794	ND<2.5 U	0.294	6	0
2.8 J	2.7 J	0.1	7	0
ND<2.5 U	2.7 J	-0.2	7	1
ND<2.5 U	2.7 J	-0.2	7	2
ND<2.5 U	2.7 J	-0.2	7	3
ND<2.5 U	2.7 J	-0.2	7	4
ND<2.5 U	2.7 J	-0.2	7	5
ND<3.5 U	2.7 J	0.8	8	5
ND<3.7 U	2.7 J	1	9	5
ND<3.4 U	2.7 J	0.7	10	5
2.794	2.7 J	0.094	11	5
ND<2.5 U	2.8 J	-0.3	11	6
ND<2.5 U	2.8 J	-0.3	11	7
ND<2.5 U	2.8 J	-0.3	11	8
ND<2.5 U	2.8 J	-0.3	11	9
ND<2.5 U	2.8 J	-0.3	11	10
ND<3.5 U	2.8 J	0.7	12	10
ND<3.7 U	2.8 J	0.9	13	10
ND<3.4 U	2.8 J	0.6	14	10
2.794	2.8 J	-0.006	14	11
ND<2.5 U	ND<2.5 U	0	14	11
ND<2.5 U	ND<2.5 U	0	14	11
ND<2.5 U	ND<2.5 U	0	14	11
ND<2.5 U	ND<2.5 U	0	14	11
ND<3.5 U	ND<2.5 U	1	15	11
ND<3.7 U	ND<2.5 U	1.2	16	11
ND<3.4 U	ND<2.5 U	0.9	17	11
2.794	ND<2.5 U	0.294	18	11
ND<2.5 U	ND<2.5 U	0	18	11
ND<2.5 U	ND<2.5 U	0	18	11
ND<2.5 U	ND<2.5 U	0	18	11
ND<3.5 U	ND<2.5 U	1	19	11
ND<3.7 U	ND<2.5 U	1.2	20	11
ND<3.4 U	ND<2.5 U	0.9	21	11
2.794	ND<2.5 U	0.294	22	11
ND<2.5 U	ND<2.5 U	0	22	11
ND<2.5 U	ND<2.5 U	0	22	11
ND<3.5 U	ND<2.5 U	1	23	11
ND<3.7 U	ND<2.5 U	1.2	24	11
ND<3.4 U	ND<2.5 U	0.9	25	11
2.794	ND<2.5 U	0.294	26	11

ND<2.5 U	ND<2.5 U	0	26	11
ND<3.5 U	ND<2.5 U	1	27	11
ND<3.7 U	ND<2.5 U	1.2	28	11
ND<3.4 U	ND<2.5 U	0.9	29	11
2.794	ND<2.5 U	0.294	30	11
ND<3.5 U	ND<2.5 U	1	31	11
ND<3.7 U	ND<2.5 U	1.2	32	11
ND<3.4 U	ND<2.5 U	0.9	33	11
2.794	ND<2.5 U	0.294	34	11
ND<3.7 U	ND<3.5 U	0.2	35	11
ND<3.4 U	ND<3.5 U	-0.1	35	12
2.794	ND<3.5 U	-0.706	35	13
ND<3.4 U	ND<3.7 U	-0.3	35	14
2.794	ND<3.7 U	-0.906	35	15
2.794	ND<3.4 U	-0.606	35	16

S Statistic = 35 - 16 = 19

---

Tied Group	Value	Members
1	2.5	6

---

Time Period	Observations
5/4/2016	1
11/3/2016	1
5/2/2017	1
11/2/2017	1
5/3/2018	1
10/31/2018	1
4/30/2019	1
10/28/2019	1
5/6/2020	1
5/19/2021	1
11/9/2021	1
12/7/2022	1

There are 0 time periods with multiple data

---

A = 510

B = 0

C = 120

D = 0

E = 30

F = 0

a = 3828

b = 11880

c = 264

Group Variance = 184.333

Z-Score = 1.32578

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

|1.32578| <= 1.97737 indicating no evidence of a trend

# Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-210B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
62.8	55.2	7.6	1	0
61.4	55.2	6.2	2	0
67.6	55.2	12.4	3	0
66.2	55.2	11	4	0
67.6	55.2	12.4	5	0
62.3	55.2	7.1	6	0
65.1	55.2	9.9	7	0
66.3	55.2	11.1	8	0
64	55.2	8.8	9	0
71.6	55.2	16.4	10	0
59	55.2	3.8	11	0
68.7	55.2	13.5	12	0
70.3	55.2	15.1	13	0
61.4	62.8	-1.4	13	1
67.6	62.8	4.8	14	1
66.2	62.8	3.4	15	1
67.6	62.8	4.8	16	1
62.3	62.8	-0.5	16	2
65.1	62.8	2.3	17	2
66.3	62.8	3.5	18	2
64	62.8	1.2	19	2
71.6	62.8	8.8	20	2
59	62.8	-3.8	20	3
68.7	62.8	5.9	21	3
70.3	62.8	7.5	22	3
67.6	61.4	6.2	23	3
66.2	61.4	4.8	24	3
67.6	61.4	6.2	25	3
62.3	61.4	0.9	26	3
65.1	61.4	3.7	27	3
66.3	61.4	4.9	28	3
64	61.4	2.6	29	3
71.6	61.4	10.2	30	3
59	61.4	-2.4	30	4
68.7	61.4	7.3	31	4
70.3	61.4	8.9	32	4
66.2	67.6	-1.4	32	5
67.6	67.6	0	32	5
62.3	67.6	-5.3	32	6
65.1	67.6	-2.5	32	7
66.3	67.6	-1.3	32	8
64	67.6	-3.6	32	9
71.6	67.6	4	33	9
59	67.6	-8.6	33	10
68.7	67.6	1.1	34	10
70.3	67.6	2.7	35	10
67.6	66.2	1.4	36	10
62.3	66.2	-3.9	36	11
65.1	66.2	-1.1	36	12
66.3	66.2	0.1	37	12
64	66.2	-2.2	37	13
71.6	66.2	5.4	38	13
59	66.2	-7.2	38	14

68.7	66.2	2.5	39	14
70.3	66.2	4.1	40	14
62.3	67.6	-5.3	40	15
65.1	67.6	-2.5	40	16
66.3	67.6	-1.3	40	17
64	67.6	-3.6	40	18
71.6	67.6	4	41	18
59	67.6	-8.6	41	19
68.7	67.6	1.1	42	19
70.3	67.6	2.7	43	19
65.1	62.3	2.8	44	19
66.3	62.3	4	45	19
64	62.3	1.7	46	19
71.6	62.3	9.3	47	19
59	62.3	-3.3	47	20
68.7	62.3	6.4	48	20
70.3	62.3	8	49	20
66.3	65.1	1.2	50	20
64	65.1	-1.1	50	21
71.6	65.1	6.5	51	21
59	65.1	-6.1	51	22
68.7	65.1	3.6	52	22
70.3	65.1	5.2	53	22
64	66.3	-2.3	53	23
71.6	66.3	5.3	54	23
59	66.3	-7.3	54	24
68.7	66.3	2.4	55	24
70.3	66.3	4	56	24
71.6	64	7.6	57	24
59	64	-5	57	25
68.7	64	4.7	58	25
70.3	64	6.3	59	25
59	71.6	-12.6	59	26
68.7	71.6	-2.9	59	27
70.3	71.6	-1.3	59	28
68.7	59	9.7	60	28
70.3	59	11.3	61	28
70.3	68.7	1.6	62	28

S Statistic = 62 - 28 = 34

---

Tied Group	Value	Members
1	67.6	2

---

Time Period	Observations
5/4/2016	1
11/3/2016	1
5/2/2017	1
11/1/2017	1
5/3/2018	1
10/31/2018	1
4/30/2019	1
10/28/2019	1
5/6/2020	1
11/17/2020	1
5/19/2021	1
11/9/2021	1
5/24/2022	1

There are 0 time periods with multiple data

---

A = 18

B = 0

C = 0

D = 0

E = 2

F = 0

a = 6006

b = 19656

c = 364

Group Variance = 332.667

Z-Score = 1.80929

Comparison Level at 95% confidence level = 1.65463 (upward trend)

**1.80929 > 1.65463 indicating an upward trend**

# Mann-Kendall Trend Analysis

Parameter: Nickel

Location: MW-210B

Original Data (Not Transformed)

Non-Detects Replaced with 0

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
3.5 J	4.9 J	-1.4	0	1
4.1 J	4.9 J	-0.8	0	2
ND<0 U	4.9 J	-4.9	0	3
ND<0 U	4.9 J	-4.9	0	4
3.2 J	4.9 J	-1.7	0	5
ND<0 U	4.9 J	-4.9	0	6
ND<0 U	4.9 J	-4.9	0	7
3.8 J	4.9 J	-1.1	0	8
2.6 J	4.9 J	-2.3	0	9
ND<0 U	4.9 J	-4.9	0	10
ND<0 U	4.9 J	-4.9	0	11
2.323	4.9 J	-2.577	0	12
2.629	4.9 J	-2.271	0	13
4.1 J	3.5 J	0.6	1	13
ND<0 U	3.5 J	-3.5	1	14
ND<0 U	3.5 J	-3.5	1	15
3.2 J	3.5 J	-0.3	1	16
ND<0 U	3.5 J	-3.5	1	17
ND<0 U	3.5 J	-3.5	1	18
3.8 J	3.5 J	0.3	2	18
2.6 J	3.5 J	-0.9	2	19
ND<0 U	3.5 J	-3.5	2	20
ND<0 U	3.5 J	-3.5	2	21
2.323	3.5 J	-1.177	2	22
2.629	3.5 J	-0.871	2	23
ND<0 U	4.1 J	-4.1	2	24
ND<0 U	4.1 J	-4.1	2	25
3.2 J	4.1 J	-0.9	2	26
ND<0 U	4.1 J	-4.1	2	27
ND<0 U	4.1 J	-4.1	2	28
3.8 J	4.1 J	-0.3	2	29
2.6 J	4.1 J	-1.5	2	30
ND<0 U	4.1 J	-4.1	2	31
ND<0 U	4.1 J	-4.1	2	32
2.323	4.1 J	-1.777	2	33
2.629	4.1 J	-1.471	2	34
ND<0 U	ND<0 U	0	2	34
3.2 J	ND<0 U	3.2	3	34
ND<0 U	ND<0 U	0	3	34
ND<0 U	ND<0 U	0	3	34
3.8 J	ND<0 U	3.8	4	34
2.6 J	ND<0 U	2.6	5	34
ND<0 U	ND<0 U	0	5	34
ND<0 U	ND<0 U	0	5	34
2.323	ND<0 U	2.323	6	34
2.629	ND<0 U	2.629	7	34
3.2 J	ND<0 U	3.2	8	34
ND<0 U	ND<0 U	0	8	34
ND<0 U	ND<0 U	0	8	34
3.8 J	ND<0 U	3.8	9	34
2.6 J	ND<0 U	2.6	10	34
ND<0 U	ND<0 U	0	10	34
ND<0 U	ND<0 U	0	10	34



2.323	ND<0 U	2.323	11	34
2.629	ND<0 U	2.629	12	34
ND<0 U	3.2 J	-3.2	12	35
ND<0 U	3.2 J	-3.2	12	36
3.8 J	3.2 J	0.6	13	36
2.6 J	3.2 J	-0.6	13	37
ND<0 U	3.2 J	-3.2	13	38
ND<0 U	3.2 J	-3.2	13	39
2.323	3.2 J	-0.877	13	40
2.629	3.2 J	-0.571	13	41
ND<0 U	ND<0 U	0	13	41
3.8 J	ND<0 U	3.8	14	41
2.6 J	ND<0 U	2.6	15	41
ND<0 U	ND<0 U	0	15	41
ND<0 U	ND<0 U	0	15	41
2.323	ND<0 U	2.323	16	41
2.629	ND<0 U	2.629	17	41
3.8 J	ND<0 U	3.8	18	41
2.6 J	ND<0 U	2.6	19	41
ND<0 U	ND<0 U	0	19	41
ND<0 U	ND<0 U	0	19	41
2.323	ND<0 U	2.323	20	41
2.629	ND<0 U	2.629	21	41
2.6 J	3.8 J	-1.2	21	42
ND<0 U	3.8 J	-3.8	21	43
ND<0 U	3.8 J	-3.8	21	44
2.323	3.8 J	-1.477	21	45
2.629	3.8 J	-1.171	21	46
ND<0 U	2.6 J	-2.6	21	47
ND<0 U	2.6 J	-2.6	21	48
2.323	2.6 J	-0.277	21	49
2.629	2.6 J	0.029	22	49
ND<0 U	ND<0 U	0	22	49
2.323	ND<0 U	2.323	23	49
2.629	ND<0 U	2.629	24	49
2.323	ND<0 U	2.323	25	49
2.629	ND<0 U	2.629	26	49
2.629	2.323	0.306	27	49

S Statistic = 27 - 49 = -22

---

Tied Group	Value	Members
1	0	6

---

Time Period	Observations
5/4/2016	1
11/3/2016	1
5/2/2017	1
11/1/2017	1
5/3/2018	1
10/31/2018	1
4/30/2019	1
10/28/2019	1
5/6/2020	1
11/17/2020	1
5/19/2021	1
11/9/2021	1
5/24/2022	1

There are 0 time periods with multiple data

---

A = 510

B = 0

C = 120

D = 0

E = 30

F = 0

a = 6006

b = 19656

c = 364

Group Variance = 305.333

Z-Score = -1.2018

Comparison Level at  $1.0 - (0.05 / 2) = 97.5\%$  confidence level = 1.97737 (two-tailed)

$|-1.2018| \leq 1.97737$  indicating no evidence of a trend

# Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-211A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

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<b>Xj</b>	<b>Xk</b>	<b>Xj - Xk</b>	<b>Positives</b>	<b>Negatives</b>
59.5	63.4	-3.9	0	1
49.3	63.4	-14.1	0	2
49.3	63.4	-14.1	0	3
48.3	63.4	-15.1	0	4
44	63.4	-19.4	0	5
42.5	63.4	-20.9	0	6
38	63.4	-25.4	0	7
47.5	63.4	-15.9	0	8
47.6	63.4	-15.8	0	9
49.3	59.5	-10.2	0	10
49.3	59.5	-10.2	0	11
48.3	59.5	-11.2	0	12
44	59.5	-15.5	0	13
42.5	59.5	-17	0	14
38	59.5	-21.5	0	15
47.5	59.5	-12	0	16
47.6	59.5	-11.9	0	17
49.3	49.3	0	0	17
48.3	49.3	-1	0	18
44	49.3	-5.3	0	19
42.5	49.3	-6.8	0	20
38	49.3	-11.3	0	21
47.5	49.3	-1.8	0	22
47.6	49.3	-1.7	0	23
48.3	49.3	-1	0	24
44	49.3	-5.3	0	25
42.5	49.3	-6.8	0	26
38	49.3	-11.3	0	27
47.5	49.3	-1.8	0	28
47.6	49.3	-1.7	0	29
44	48.3	-4.3	0	30
42.5	48.3	-5.8	0	31
38	48.3	-10.3	0	32
47.5	48.3	-0.8	0	33
47.6	48.3	-0.7	0	34
42.5	44	-1.5	0	35
38	44	-6	0	36
47.5	44	3.5	1	36
47.6	44	3.6	2	36
38	42.5	-4.5	2	37
47.5	42.5	5	3	37
47.6	42.5	5.1	4	37
47.5	38	9.5	5	37
47.6	38	9.6	6	37
47.6	47.5	0.1	7	37

S Statistic = 7 - 37 = -30

Comparing at 95% confidence level (downward trend)

Probability of obtaining  $S \geq 30$  is 0.00345

**$S < 0$  and  $0.00345 < 0.05$  indicating a downward trend**

# Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-211B

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
122	112	10	1	0
101	112	-11	1	1
93.7	112	-18.3	1	2
101	112	-11	1	3
94	112	-18	1	4
92	112	-20	1	5
86	112	-26	1	6
88.8	112	-23.2	1	7
97.6	112	-14.4	1	8
101	122	-21	1	9
93.7	122	-28.3	1	10
101	122	-21	1	11
94	122	-28	1	12
92	122	-30	1	13
86	122	-36	1	14
88.8	122	-33.2	1	15
97.6	122	-24.4	1	16
93.7	101	-7.3	1	17
101	101	0	1	17
94	101	-7	1	18
92	101	-9	1	19
86	101	-15	1	20
88.8	101	-12.2	1	21
97.6	101	-3.4	1	22
101	93.7	7.3	2	22
94	93.7	0.3	3	22
92	93.7	-1.7	3	23
86	93.7	-7.7	3	24
88.8	93.7	-4.9	3	25
97.6	93.7	3.9	4	25
94	101	-7	4	26
92	101	-9	4	27
86	101	-15	4	28
88.8	101	-12.2	4	29
97.6	101	-3.4	4	30
92	94	-2	4	31
86	94	-8	4	32
88.8	94	-5.2	4	33
97.6	94	3.6	5	33
86	92	-6	5	34
88.8	92	-3.2	5	35
97.6	92	5.6	6	35
88.8	86	2.8	7	35
97.6	86	11.6	8	35
97.6	88.8	8.8	9	35

S Statistic = 9 - 35 = -26

Comparing at 95% confidence level (downward trend)

Probability of obtaining  $S \geq 26$  is 0.01115

**$S < 0$  and  $0.01115 < 0.05$  indicating a downward trend**

# Mann-Kendall Trend Analysis

Parameter: Zinc

Location: MW-211B

Original Data (Not Transformed)

Non-Detects Replaced with 0

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
12	6.7 J	5.3	1	0
9.3 J	6.7 J	2.6	2	0
7.2 J	6.7 J	0.5	3	0
ND<0 U	6.7 J	-6.7	3	1
5.2 J	6.7 J	-1.5	3	2
ND<0 U	6.7 J	-6.7	3	3
ND<0 U	6.7 J	-6.7	3	4
3.52 J	6.7 J	-3.18	3	5
6.51	6.7 J	-0.19	3	6
9.3 J	12	-2.7	3	7
7.2 J	12	-4.8	3	8
ND<0 U	12	-12	3	9
5.2 J	12	-6.8	3	10
ND<0 U	12	-12	3	11
ND<0 U	12	-12	3	12
3.52 J	12	-8.48	3	13
6.51	12	-5.49	3	14
7.2 J	9.3 J	-2.1	3	15
ND<0 U	9.3 J	-9.3	3	16
5.2 J	9.3 J	-4.1	3	17
ND<0 U	9.3 J	-9.3	3	18
ND<0 U	9.3 J	-9.3	3	19
3.52 J	9.3 J	-5.78	3	20
6.51	9.3 J	-2.79	3	21
ND<0 U	7.2 J	-7.2	3	22
5.2 J	7.2 J	-2	3	23
ND<0 U	7.2 J	-7.2	3	24
ND<0 U	7.2 J	-7.2	3	25
3.52 J	7.2 J	-3.68	3	26
6.51	7.2 J	-0.69	3	27
5.2 J	ND<0 U	5.2	4	27
ND<0 U	ND<0 U	0	4	27
ND<0 U	ND<0 U	0	4	27
3.52 J	ND<0 U	3.52	5	27
6.51	ND<0 U	6.51	6	27
ND<0 U	5.2 J	-5.2	6	28
ND<0 U	5.2 J	-5.2	6	29
3.52 J	5.2 J	-1.68	6	30
6.51	5.2 J	1.31	7	30
ND<0 U	ND<0 U	0	7	30
3.52 J	ND<0 U	3.52	8	30
6.51	ND<0 U	6.51	9	30
3.52 J	ND<0 U	3.52	10	30
6.51	ND<0 U	6.51	11	30
6.51	3.52 J	2.99	12	30

S Statistic = 12 - 30 = -18

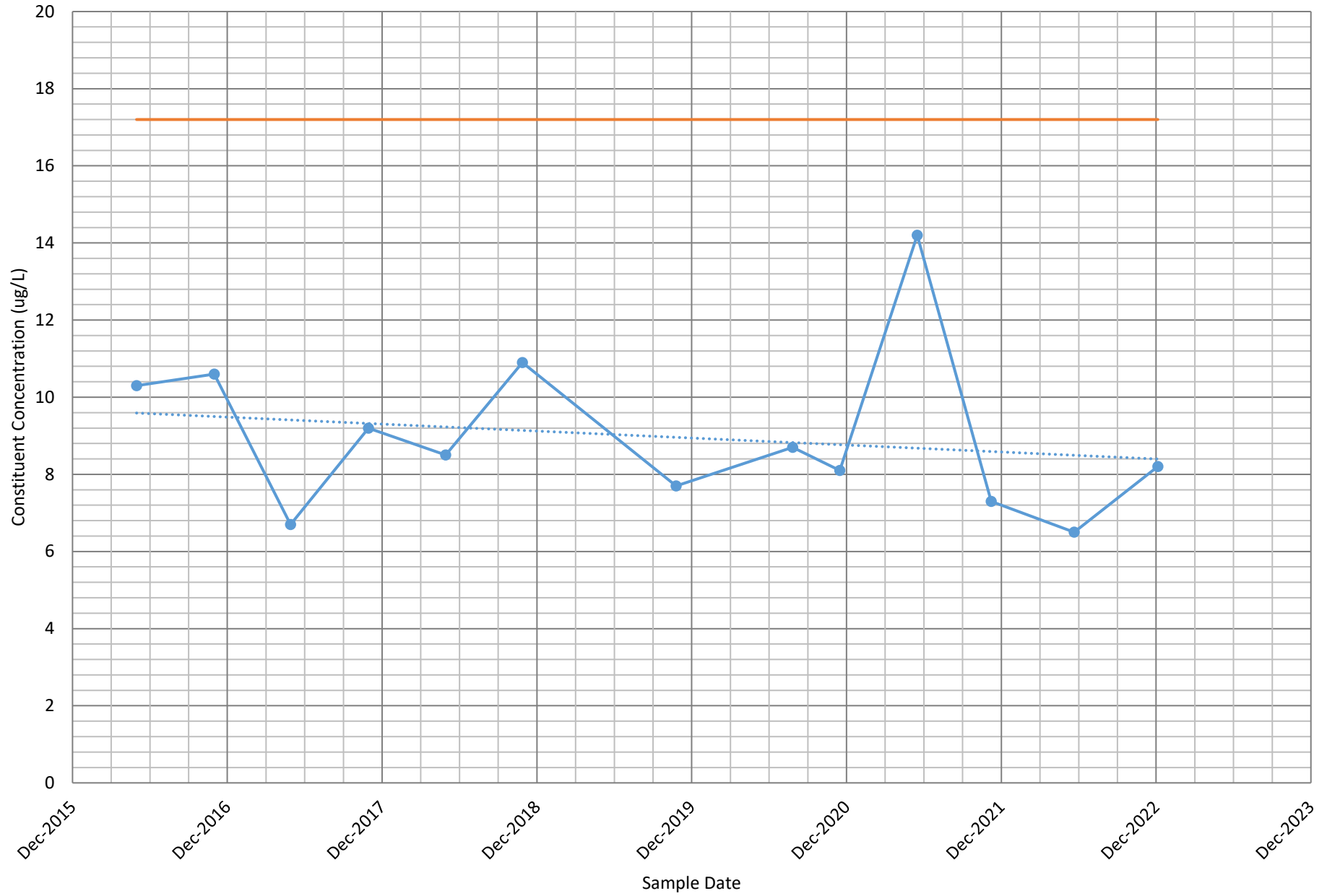
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)

Probability of obtaining  $S \geq |-18|$  is 0.132  
0.132  $\geq$  0.025 indicating no evidence of a trend

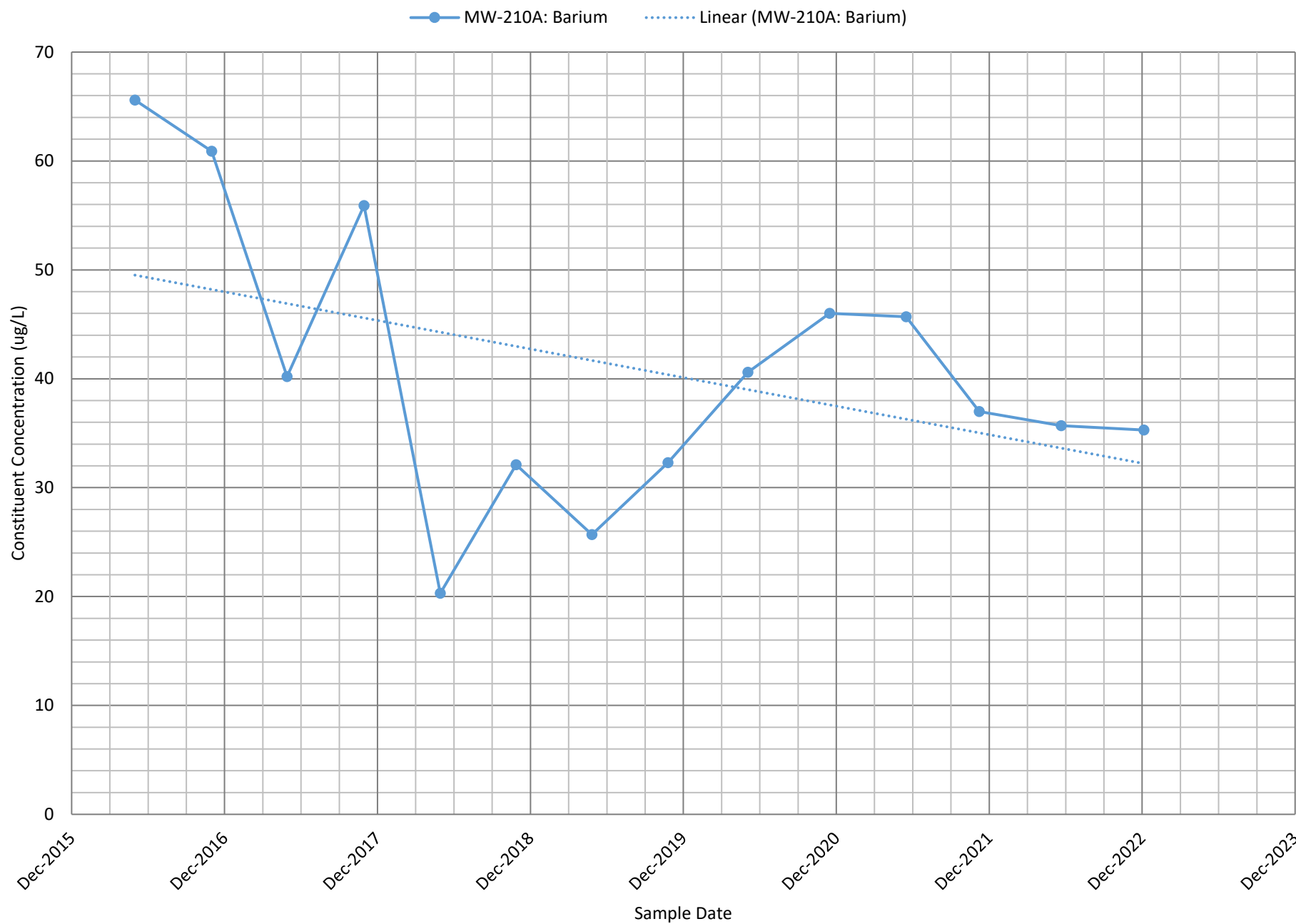


# Time-Series Plot

MW-210A: Arsenic UPL Linear (MW-210A: Arsenic)

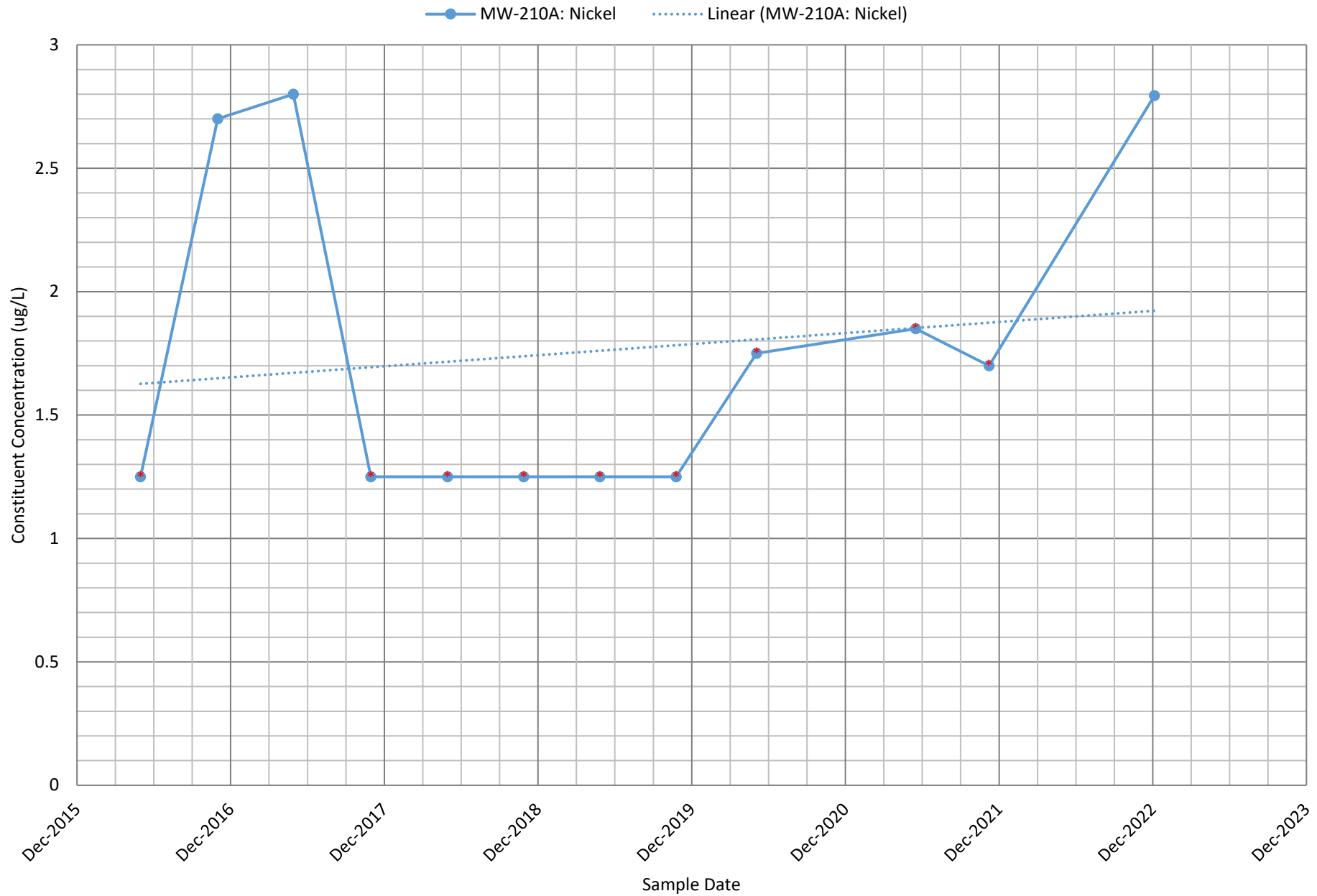


### Time-Series Plot



2022 UPL = 364 ug/L

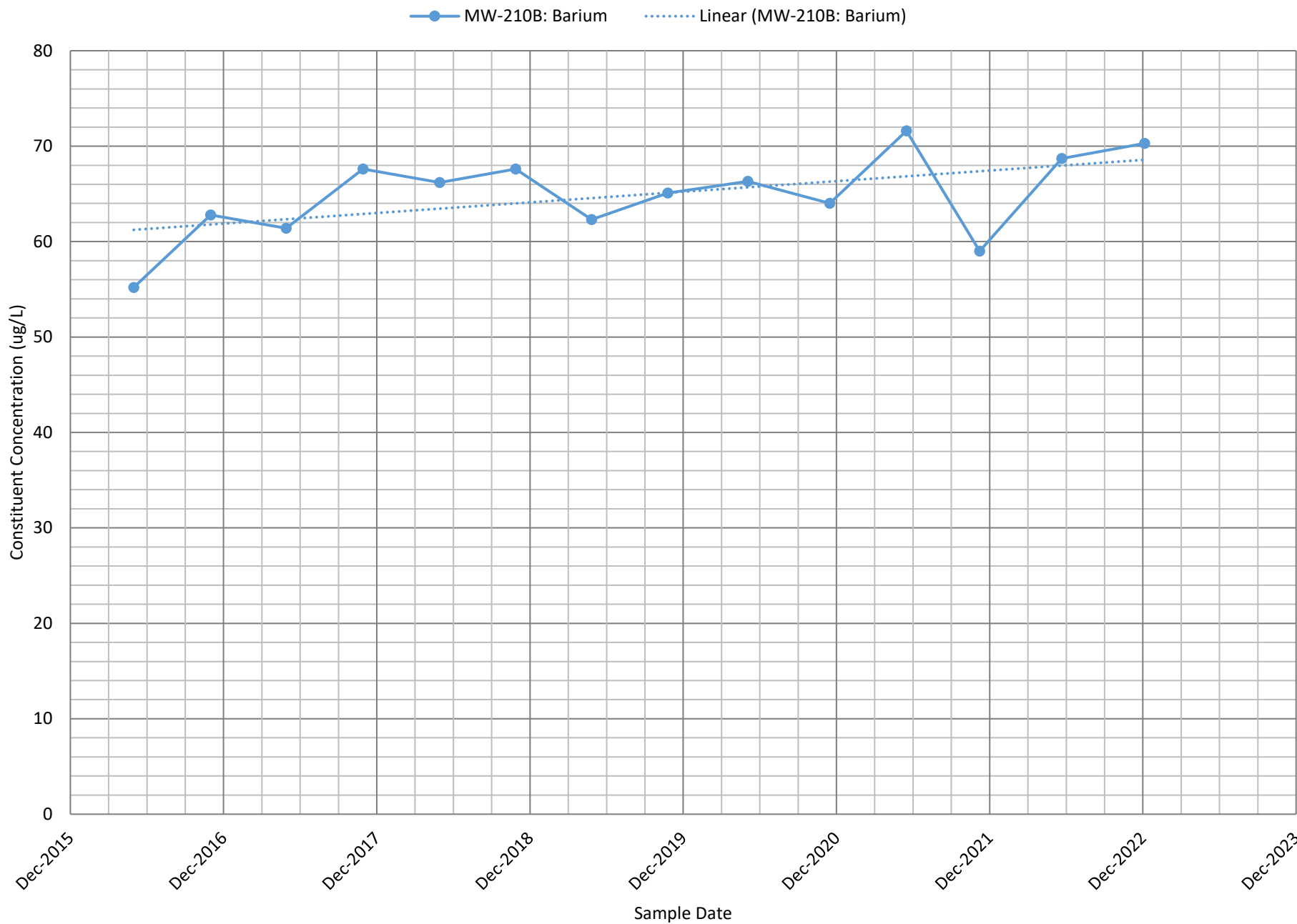
### Time-Series Plot



\*Constituent was not detected. One half the laboratory's limit of detection was utilized as result for time-series plot.

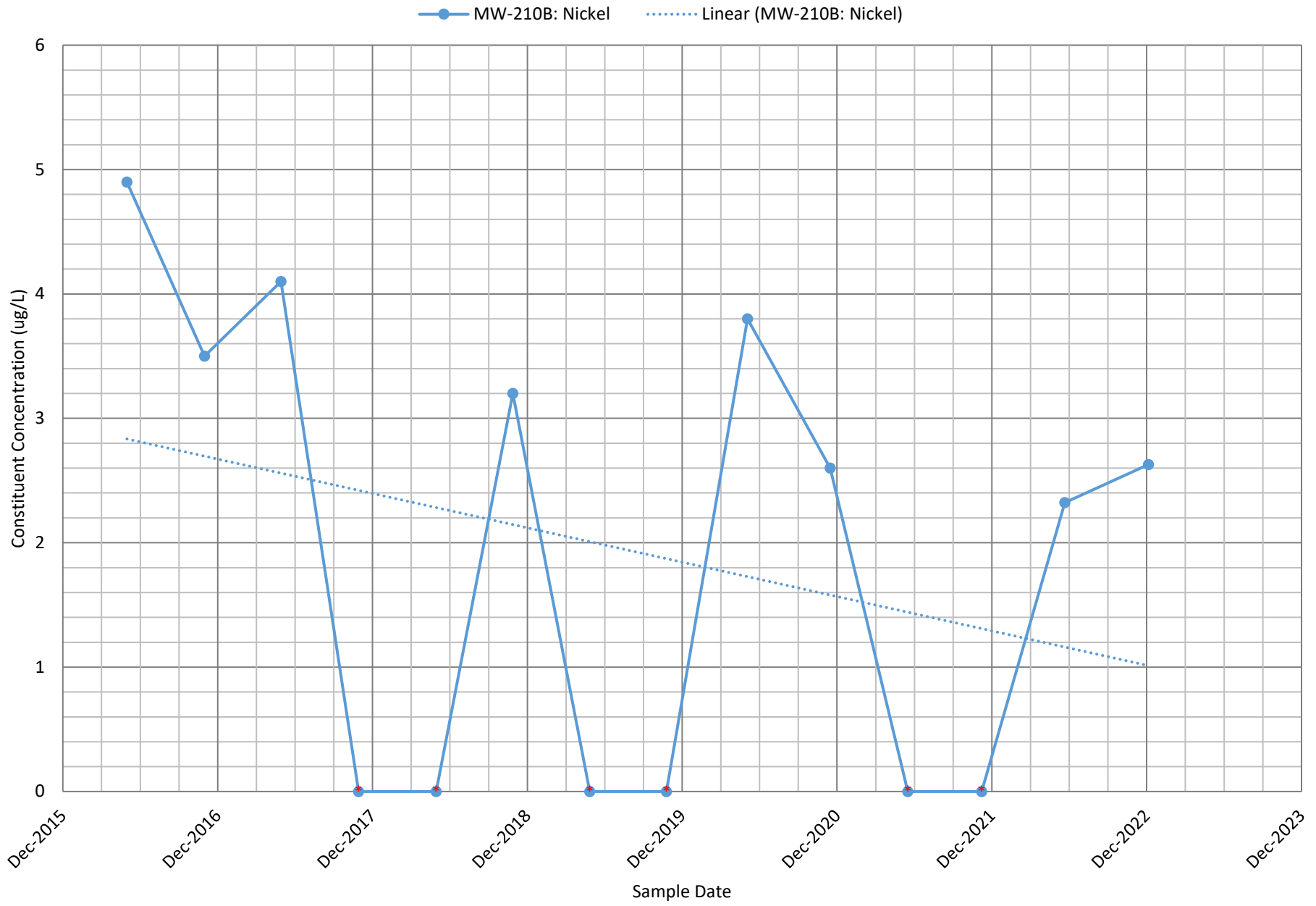
2022 UPL = 65.9 ug/L

### Time-Series Plot



2022 UPL = 364 ug/L

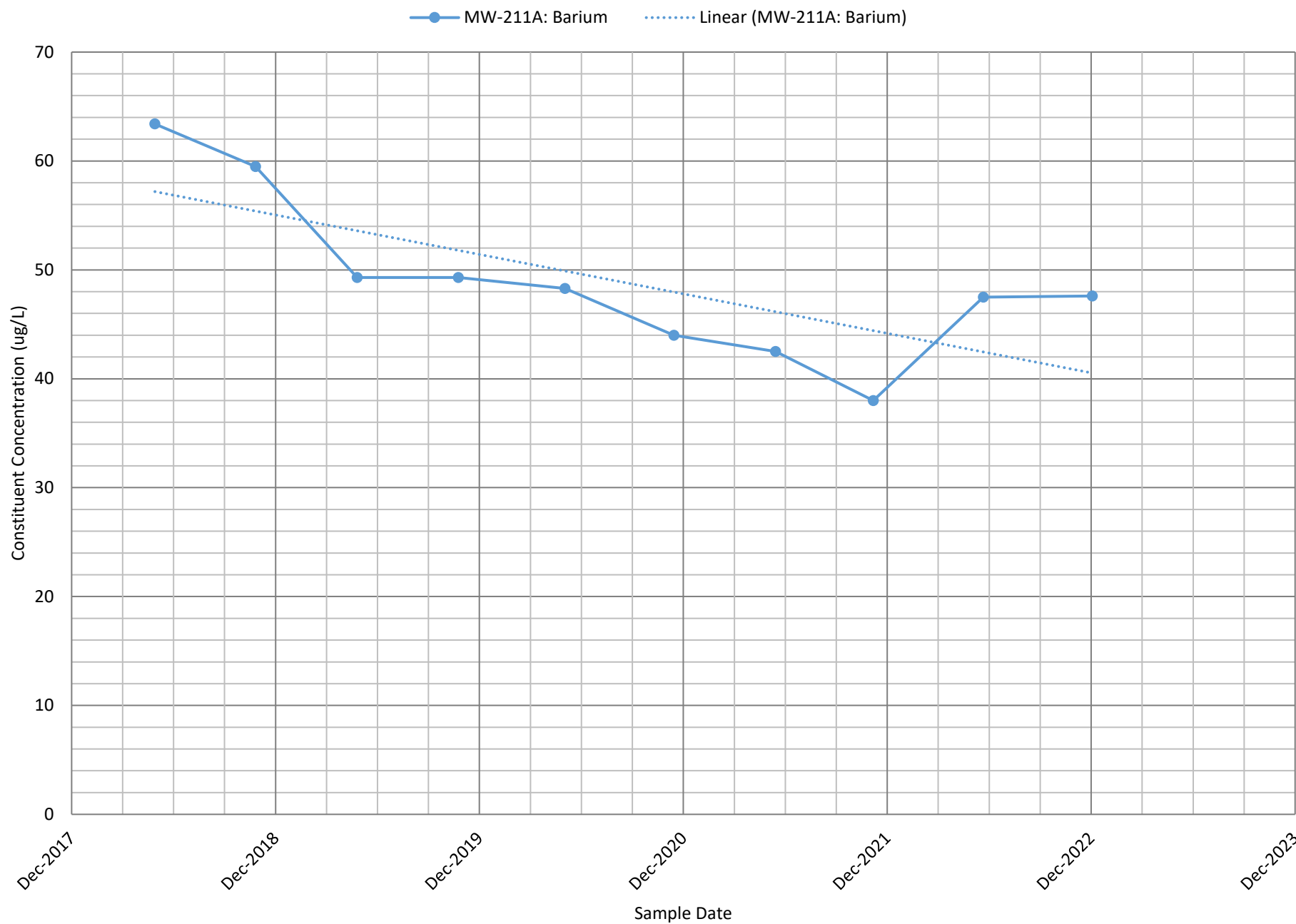
### Time-Series Plot



\*Constituent was not detected. Result set to zero for time-series plot.

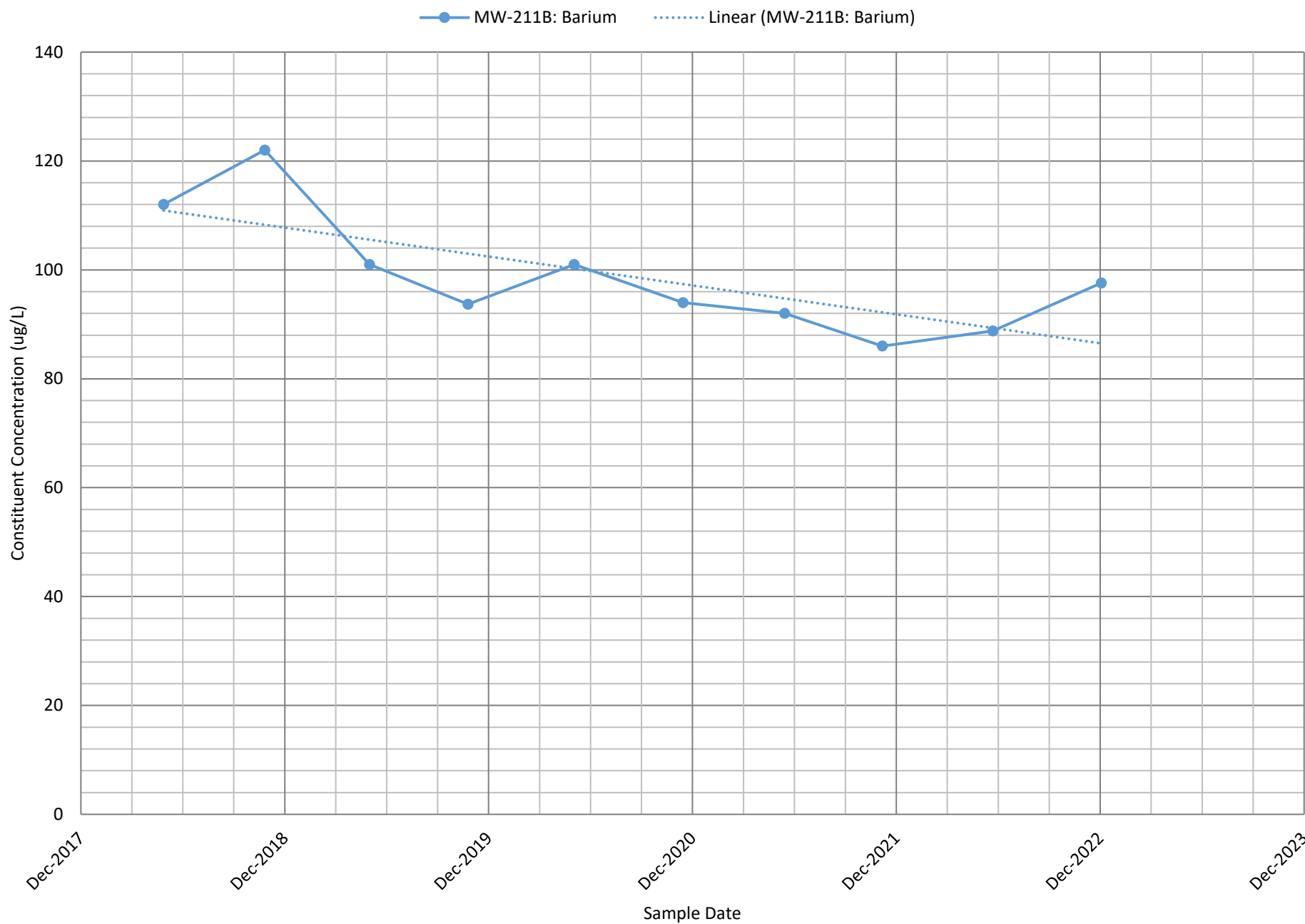
2022 UPL = 65.9 ug/L

### Time-Series Plot



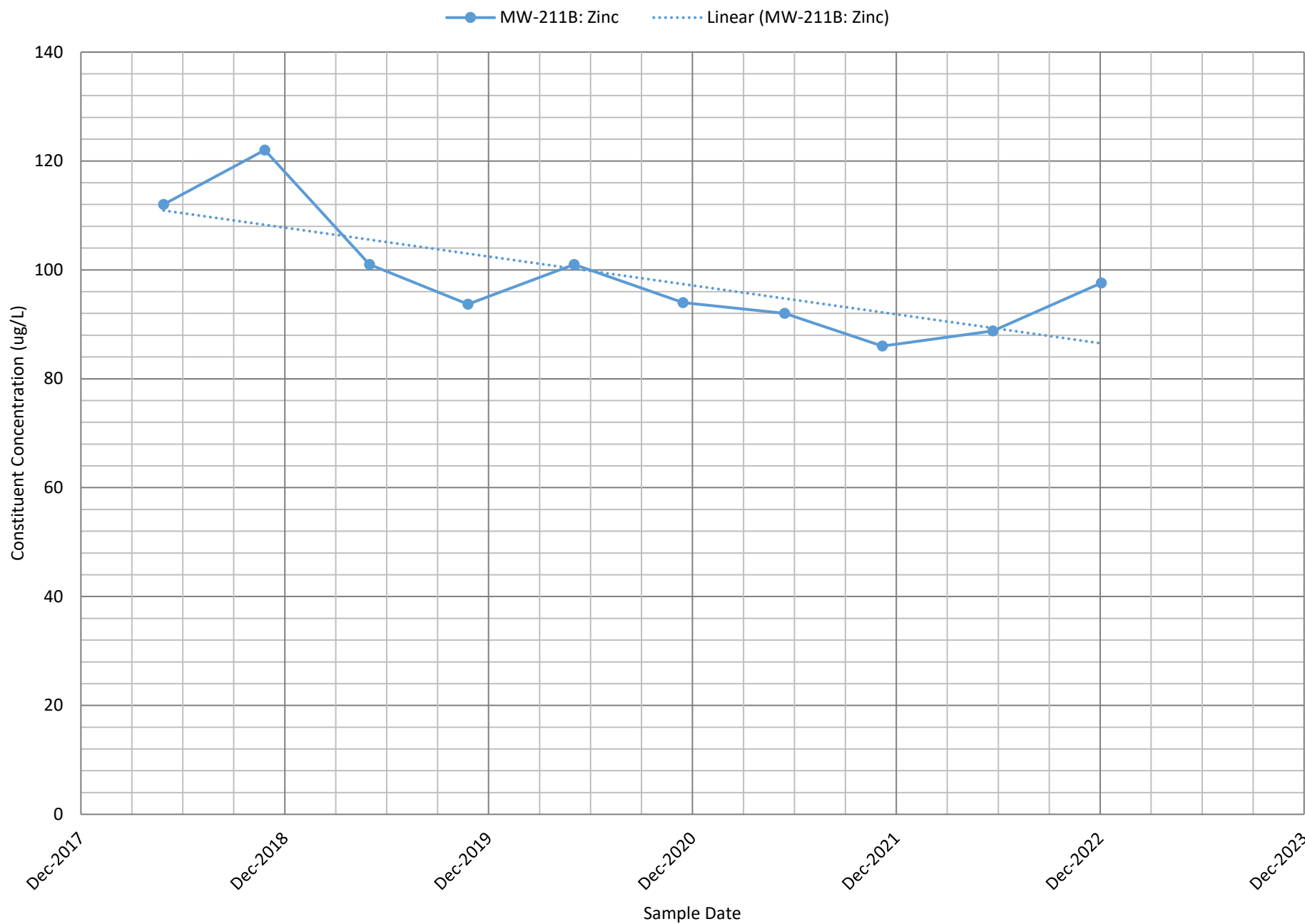
2022 UPL = 364 ug/L

### Time-Series Plot




2022 UPL = 364 ug/L

### Time-Series Plot



2022 UPL = 22.2 ug/L





Appendix G  
QA/QC Data Packages

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1163 - EPA200.8 R5.4**

**Blank (BFE1163-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/02/2022

Antimony	ND	1.0	ug/L							
Arsenic	ND	1.0	ug/L							
Barium	ND	5.00	ug/L							
Beryllium	ND	1.00	ug/L							
Cadmium	ND	1.00	ug/L							
Chromium	ND	1.00	ug/L							
Cobalt	ND	1.00	ug/L							
Copper	ND	1.00	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	1.000	ug/L							
Selenium	ND	1.00	ug/L							
Silver	ND	1.00	ug/L							
Thallium	ND	1.0	ug/L							
Tin	ND	1.00	ug/L							
Vanadium	ND	5.00	ug/L							
Zinc	ND	5.00	ug/L							

**LCS (BFE1163-BS1)**

Prepared: 05/31/2022 Analyzed: 06/02/2022

Antimony	53	1.0	ug/L	50.0	106	80-120
Arsenic	53	1.0	ug/L	50.0	107	80-120
Barium	49.8	5.00	ug/L	50.0	99.6	80-120
Beryllium	49.6	1.00	ug/L	50.0	99.2	80-120
Cadmium	52.5	1.00	ug/L	50.0	105	80-120
Chromium	50.8	1.00	ug/L	50.0	102	80-120
Cobalt	51.0	1.00	ug/L	50.0	102	80-120

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1163 - EPA200.8 R5.4

**LCS (BFE1163-BS1)**

Prepared: 05/31/2022 Analyzed: 06/02/2022

Copper	52.6	1.00	ug/L	50.0		105	80-120			
Lead	52	1.0	ug/L	50.0		104	80-120			
Nickel	51.22	1.000	ug/L	50.0		102	80-120			
Selenium	55.8	1.00	ug/L	50.0		112	80-120			
Silver	9.85	1.00	ug/L	10.0		98.5	80-120			
Thallium	53	1.0	ug/L	50.0		105	80-120			
Tin	50.4	1.00	ug/L	50.0		101	80-120			
Vanadium	50.6	5.00	ug/L	50.0		101	80-120			
Zinc	55.0	5.00	ug/L	50.0		110	80-120			

**Matrix Spike (BFE1163-MS1)**

Source: 22E1388-11

Prepared: 05/31/2022 Analyzed: 06/02/2022

Antimony	54	1.0	ug/L	50.0	BLOD	109	75-125			
Arsenic	56	1.0	ug/L	50.0	3.2	106	75-125			
Beryllium	53.2	1.00	ug/L	50.0	BLOD	106	75-125			
Cadmium	50.3	1.00	ug/L	50.0	BLOD	101	75-125			
Chromium	52.5	1.00	ug/L	50.0	BLOD	105	75-125			
Cobalt	56.0	1.00	ug/L	50.0	5.43	101	75-125			
Copper	49.2	1.00	ug/L	50.0	BLOD	98.5	75-125			
Lead	51	1.0	ug/L	50.0	BLOD	102	75-125			
Nickel	56.90	1.000	ug/L	50.0	7.323	99.1	75-125			
Selenium	51.7	1.00	ug/L	50.0	BLOD	103	75-125			
Silver	9.50	1.00	ug/L	10.0	BLOD	95.0	75-125			
Thallium	53	1.0	ug/L	50.0	BLOD	105	75-125			
Tin	53.4	1.00	ug/L	50.0	BLOD	107	75-125			
Vanadium	54.2	5.00	ug/L	50.0	BLOD	108	75-125			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1163 - EPA200.8 R5.4</b>										
<b>Matrix Spike (BFE1163-MS1)</b>										
			<b>Source: 22E1388-11</b>		Prepared: 05/31/2022 Analyzed: 06/02/2022					
Zinc	49.1	5.00	ug/L	50.0	BLOD	98.1	75-125			
<b>Matrix Spike (BFE1163-MS2)</b>										
			<b>Source: 22E1454-09</b>		Prepared: 05/31/2022 Analyzed: 06/02/2022					
Antimony	53	1.0	ug/L	50.0	BLOD	106	75-125			
Arsenic	53	1.0	ug/L	50.0	BLOD	107	75-125			
Barium	50.6	5.00	ug/L	50.0	BLOD	101	75-125			
Beryllium	53.0	1.00	ug/L	50.0	BLOD	106	75-125			
Cadmium	52.8	1.00	ug/L	50.0	BLOD	106	75-125			
Chromium	52.1	1.00	ug/L	50.0	BLOD	104	75-125			
Cobalt	52.4	1.00	ug/L	50.0	BLOD	105	75-125			
Copper	53.3	1.00	ug/L	50.0	BLOD	107	75-125			
Lead	52	1.0	ug/L	50.0	BLOD	104	75-125			
Nickel	52.59	1.000	ug/L	50.0	BLOD	105	75-125			
Selenium	54.1	1.00	ug/L	50.0	BLOD	108	75-125			
Silver	10.0	1.00	ug/L	10.0	BLOD	100	75-125			
Thallium	53	1.0	ug/L	50.0	BLOD	105	75-125			
Tin	51.3	1.00	ug/L	50.0	BLOD	103	75-125			
Vanadium	52.0	5.00	ug/L	50.0	BLOD	104	75-125			
Zinc	53.3	5.00	ug/L	50.0	14.6	77.6	75-125			
<b>Matrix Spike (BFE1163-MS3)</b>										
			<b>Source: 22E1388-11RE1</b>		Prepared: 05/31/2022 Analyzed: 06/08/2022					
Antimony	54	10	ug/L	50.0	BLOD	107	75-125			
Arsenic	56	10	ug/L	50.0	BLOD	112	75-125			
Barium	351	50.0	ug/L	50.0	290	121	75-125			
Cobalt	56.3	10.0	ug/L	50.0	5.43	102	75-125			
Copper	51.8	10.0	ug/L	50.0	BLOD	104	75-125			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1163 - EPA200.8 R5.4</b>										
<b>Matrix Spike (BFE1163-MS3)</b>										
			<b>Source: 22E1388-11RE1</b>		Prepared: 05/31/2022 Analyzed: 06/08/2022					
Selenium	53.2	10.0	ug/L	50.0	BLOD	106	75-125			
Silver	9.76	10.0	ug/L	10.0	BLOD	97.6	75-125			
Thallium	53	10	ug/L	50.0	BLOD	106	75-125			
<b>Matrix Spike Dup (BFE1163-MSD1)</b>										
			<b>Source: 22E1388-11</b>		Prepared: 05/31/2022 Analyzed: 06/02/2022					
Antimony	51	1.0	ug/L	50.0	BLOD	103	75-125	5.44	20	
Arsenic	54	1.0	ug/L	50.0	3.2	101	75-125	4.55	20	
Beryllium	49.6	1.00	ug/L	50.0	BLOD	99.2	75-125	7.00	20	
Cadmium	48.2	1.00	ug/L	50.0	BLOD	96.3	75-125	4.23	20	
Chromium	49.6	1.00	ug/L	50.0	BLOD	99.3	75-125	5.66	20	
Cobalt	53.8	1.00	ug/L	50.0	5.43	96.8	75-125	4.03	20	
Copper	47.6	1.00	ug/L	50.0	BLOD	95.1	75-125	3.46	20	
Lead	48	1.0	ug/L	50.0	BLOD	96.9	75-125	4.94	20	
Nickel	54.82	1.000	ug/L	50.0	7.323	95.0	75-125	3.71	20	
Selenium	48.2	1.00	ug/L	50.0	BLOD	96.4	75-125	7.03	20	
Silver	9.46	1.00	ug/L	10.0	BLOD	94.6	75-125	0.335	20	
Thallium	50	1.0	ug/L	50.0	BLOD	99.3	75-125	5.83	20	
Tin	52.0	1.00	ug/L	50.0	BLOD	104	75-125	2.63	20	
Vanadium	51.3	5.00	ug/L	50.0	BLOD	103	75-125	5.51	20	
Zinc	46.7	5.00	ug/L	50.0	BLOD	93.4	75-125	4.98	20	
<b>Matrix Spike Dup (BFE1163-MSD2)</b>										
			<b>Source: 22E1454-09</b>		Prepared: 05/31/2022 Analyzed: 06/02/2022					
Antimony	52	1.0	ug/L	50.0	BLOD	104	75-125	2.16	20	
Arsenic	52	1.0	ug/L	50.0	BLOD	104	75-125	2.77	20	
Barium	49.6	5.00	ug/L	50.0	BLOD	99.1	75-125	2.10	20	
Beryllium	50.3	1.00	ug/L	50.0	BLOD	101	75-125	5.08	20	

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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1163 - EPA200.8 R5.4

Matrix Spike Dup (BFE1163-MSD2)	Source: 22E1454-09			Prepared: 05/31/2022 Analyzed: 06/02/2022						
Cadmium	51.6	1.00	ug/L	50.0	BLOD	103	75-125	2.21	20	
Chromium	50.5	1.00	ug/L	50.0	BLOD	101	75-125	3.17	20	
Cobalt	50.7	1.00	ug/L	50.0	BLOD	101	75-125	3.37	20	
Copper	51.9	1.00	ug/L	50.0	BLOD	104	75-125	2.67	20	
Lead	51	1.0	ug/L	50.0	BLOD	102	75-125	2.03	20	
Nickel	51.97	1.000	ug/L	50.0	BLOD	104	75-125	1.17	20	
Selenium	52.9	1.00	ug/L	50.0	BLOD	106	75-125	2.38	20	
Silver	9.79	1.00	ug/L	10.0	BLOD	97.9	75-125	2.29	20	
Thallium	51	1.0	ug/L	50.0	BLOD	103	75-125	2.62	20	
Tin	50.2	1.00	ug/L	50.0	BLOD	100	75-125	2.17	20	
Vanadium	50.2	5.00	ug/L	50.0	BLOD	100	75-125	3.66	20	
Zinc	53.0	5.00	ug/L	50.0	14.6	76.9	75-125	0.592	20	

Matrix Spike Dup (BFE1163-MSD3)	Source: 22E1388-11RE1			Prepared: 05/31/2022 Analyzed: 06/08/2022						
Antimony	53	10	ug/L	50.0	BLOD	105	75-125	1.78	20	
Arsenic	54	10	ug/L	50.0	BLOD	108	75-125	3.84	20	
Barium	347	50.0	ug/L	50.0	290	114	75-125	1.03	20	
Cobalt	56.1	10.0	ug/L	50.0	5.43	101	75-125	0.204	20	
Copper	49.6	10.0	ug/L	50.0	BLOD	99.2	75-125	4.26	20	
Selenium	51.8	10.0	ug/L	50.0	BLOD	104	75-125	2.68	20	
Silver	9.97	10.0	ug/L	10.0	BLOD	99.7	75-125	2.14	20	
Thallium	53	10	ug/L	50.0	BLOD	107	75-125	0.660	20	

### Batch BFF0266 - SW7470A

Blank (BFF0266-BLK1)	Prepared & Analyzed: 06/07/2022										
Mercury	ND	0.00020	mg/L								

## Certificate of Analysis

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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0266 - SW7470A</b>										
<b>Blank (BFF0266-BLK1)</b>				Prepared & Analyzed: 06/07/2022						
<b>LCS (BFF0266-BS1)</b>				Prepared & Analyzed: 06/07/2022						
Mercury	0.00265	0.00020	mg/L	0.00250		106	80-120			
<b>Matrix Spike (BFF0266-MS1)</b>				Source: 22E1280-07		Prepared & Analyzed: 06/07/2022				
Mercury	0.00270	0.00020	mg/L	0.00250	BLOD	108	80-120			
<b>Matrix Spike (BFF0266-MS2)</b>				Source: 22E1388-01		Prepared & Analyzed: 06/07/2022				
Mercury	0.00275	0.00020	mg/L	0.00250	BLOD	110	80-120			
<b>Matrix Spike Dup (BFF0266-MSD1)</b>				Source: 22E1280-07		Prepared & Analyzed: 06/07/2022				
Mercury	0.00262	0.00020	mg/L	0.00250	BLOD	105	80-120	3.04	20	
<b>Matrix Spike Dup (BFF0266-MSD2)</b>				Source: 22E1388-01		Prepared & Analyzed: 06/07/2022				
Mercury	0.00266	0.00020	mg/L	0.00250	BLOD	107	80-120	3.16	20	
<b>Batch BFF0393 - SW7470A</b>										
<b>Blank (BFF0393-BLK1)</b>				Prepared & Analyzed: 06/09/2022						
Mercury	ND	0.00020	mg/L							
<b>LCS (BFF0393-BS1)</b>				Prepared & Analyzed: 06/09/2022						
Mercury	0.00251	0.00020	mg/L	0.00250		100	80-120			
<b>Matrix Spike (BFF0393-MS1)</b>				Source: 22E1463-02		Prepared & Analyzed: 06/09/2022				
Mercury	0.00274	0.00020	mg/L	0.00250	BLOD	110	80-120			

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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0393 - SW7470A</b>										
<b>Matrix Spike (BFF0393-MS2)</b>										
					<b>Source: 22E1463-03</b>					Prepared & Analyzed: 06/09/2022
Mercury	0.00244	0.00020	mg/L	0.00250	BLOD	97.7	80-120			
<b>Matrix Spike Dup (BFF0393-MSD1)</b>										
					<b>Source: 22E1463-02</b>					Prepared & Analyzed: 06/09/2022
Mercury	0.00263	0.00020	mg/L	0.00250	BLOD	105	80-120	3.98	20	
<b>Matrix Spike Dup (BFF0393-MSD2)</b>										
					<b>Source: 22E1463-03</b>					Prepared & Analyzed: 06/09/2022
Mercury	0.00259	0.00020	mg/L	0.00250	BLOD	104	80-120	5.84	20	



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1119 - SW5030B-MS**

**Blank (BFE1119-BLK1)**

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1119 - SW5030B-MS**

**Blank (BFE1119-BLK1)**

Prepared & Analyzed: 05/27/2022

Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.00	ug/L							
cis-1,2-Dichloroethylene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Iodomethane	ND	10.0	ug/L							
m+p-Xylenes	ND	2.00	ug/L							
Methylene chloride	ND	4.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>48.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.0</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>46.9</i>		<i>ug/L</i>	<i>50.0</i>		<i>93.8</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.2</i>	<i>70-130</i>			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

**Blank (BFE1119-BLK1)**

Prepared & Analyzed: 05/27/2022

<i>Surr: Toluene-d8 (Surr)</i>	49.9		ug/L	50.0		99.8	70-130
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**LCS (BFE1119-BS1)**

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	55.0	0.4	ug/L	50.0		110	80-130
1,1,1-Trichloroethane	52.0	1	ug/L	50.0		104	65-130
1,1,2,2-Tetrachloroethane	51.1	0.4	ug/L	50.0		102	65-130
1,1,2-Trichloroethane	55.2	1	ug/L	50.0		110	75-125
1,1-Dichloroethane	51.5	1	ug/L	50.0		103	70-135
1,1-Dichloroethylene	45.5	1	ug/L	50.0		91.0	70-130
1,2,3-Trichloropropane	51.1	1	ug/L	50.0		102	75-125
1,2-Dichlorobenzene	53.0	0.5	ug/L	50.0		106	70-120
1,2-Dichloroethane	49.2	1	ug/L	50.0		98.5	70-130
1,2-Dichloropropane	53.6	0.5	ug/L	50.0		107	75-125
1,4-Dichlorobenzene	53.8	1	ug/L	50.0		108	75-125
2-Butanone (MEK)	42.8	10	ug/L	50.0		85.7	30-150
2-Hexanone (MBK)	45.3	5	ug/L	50.0		90.6	55-130
4-Methyl-2-pentanone (MIBK)	44.5	5	ug/L	50.0		88.9	60-135
Acetone	64.8	10	ug/L	50.0		130	40-140
Acrylonitrile	0.00	5	ug/L	250			70-130
Benzene	53.1	1	ug/L	50.0		106	80-120
Bromochloromethane	52.8	1	ug/L	50.0		106	65-130
Bromodichloromethane	57.6	0.5	ug/L	50.0		115	75-120
Bromoform	54.5	1	ug/L	50.0		109	70-130
Bromomethane	34.8	1	ug/L	50.0		69.6	30-145
Carbon disulfide	38.8	10	ug/L	50.0		77.6	35-160

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

**LCS (BFE1119-BS1)**

Prepared &amp; Analyzed: 05/27/2022

Carbon tetrachloride	52.6	1	ug/L	50.0		105	65-140			
Chlorobenzene	54.1	1	ug/L	50.0		108	80-120			
Chloroethane	47.1	1	ug/L	50.0		94.2	60-135			
Chloroform	49.4	0.5	ug/L	50.0		98.8	65-135			
Chloromethane	38.8	1	ug/L	50.0		77.6	40-125			
cis-1,2-Dichloroethylene	51.3	1	ug/L	50.0		103	70-125			
cis-1,3-Dichloropropene	46.2	1	ug/L	50.0		92.5	70-130			
Dibromochloromethane	54.2	0.5	ug/L	50.0		108	60-135			
Dibromomethane	52.7	1	ug/L	50.0		105	75-125			
Ethylbenzene	55.0	1	ug/L	50.0		110	75-125			
m+p-Xylenes	104	2	ug/L	100		104	75-130			
Methylene chloride	55.7	4	ug/L	50.0		111	55-140			
o-Xylene	53.6	1	ug/L	50.0		107	80-120			
Styrene	51.7	1	ug/L	50.0		103	65-135			
Tetrachloroethylene (PCE)	81.4	1	ug/L	50.0		163	45-150			L
Toluene	53.9	1	ug/L	50.0		108	75-120			
trans-1,2-Dichloroethylene	51.2	1	ug/L	50.0		102	60-140			
trans-1,3-Dichloropropene	46.2	1	ug/L	50.0		92.5	55-140			
Trichloroethylene	52.5	1	ug/L	50.0		105	70-125			
Trichlorofluoromethane	47.6	1	ug/L	50.0		95.2	60-145			
Vinyl chloride	47.7	0.5	ug/L	50.0		95.3	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>48.2</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.4</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>49.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>98.9</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>97.2</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.8</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.7</i>	<i>70-130</i>			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

**LCS (BFE1119-BS1)**

Prepared &amp; Analyzed: 05/27/2022

**Matrix Spike (BFE1119-MS1)**

Source: 22E1293-02

Prepared &amp; Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	49.7	0.4	ug/L	50.0	BLOD	99.4	80-130			
1,1,1-Trichloroethane	44.0	1	ug/L	50.0	BLOD	88.0	65-130			
1,1,2,2-Tetrachloroethane	47.7	0.4	ug/L	50.0	BLOD	95.4	65-130			
1,1,2-Trichloroethane	51.9	1	ug/L	50.0	BLOD	104	75-125			
1,1-Dichloroethane	44.2	1	ug/L	50.0	BLOD	88.3	70-135			
1,1-Dichloroethylene	36.3	1	ug/L	50.0	BLOD	72.5	70-130			
1,2,3-Trichloropropane	48.9	1	ug/L	50.0	BLOD	97.9	75-125			
1,2-Dichlorobenzene	49.2	0.5	ug/L	50.0	BLOD	98.3	70-120			
1,2-Dichloroethane	45.4	1	ug/L	50.0	BLOD	90.9	70-130			
1,2-Dichloropropane	48.2	0.5	ug/L	50.0	BLOD	96.4	75-125			
1,4-Dichlorobenzene	49.4	1	ug/L	50.0	BLOD	98.8	75-125			
2-Butanone (MEK)	40.2	10	ug/L	50.0	BLOD	80.4	30-150			
2-Hexanone (MBK)	41.4	5	ug/L	50.0	BLOD	82.8	55-130			
4-Methyl-2-pentanone (MIBK)	40.5	5	ug/L	50.0	BLOD	81.1	60-135			
Acetone	55.1	10	ug/L	50.0	BLOD	97.3	40-140			
Acrylonitrile	0.00	5	ug/L	250	BLOD		70-130			M
Benzene	46.8	1	ug/L	50.0	BLOD	93.5	80-120			
Bromochloromethane	48.3	1	ug/L	50.0	BLOD	96.6	65-130			
Bromodichloromethane	52.3	0.5	ug/L	50.0	BLOD	105	75-120			
Bromoform	51.5	1	ug/L	50.0	BLOD	103	70-130			
Bromomethane	28.5	1	ug/L	50.0	BLOD	57.1	30-145			
Carbon disulfide	33.7	10	ug/L	50.0	BLOD	67.4	35-160			
Carbon tetrachloride	45.1	1	ug/L	50.0	BLOD	90.2	65-140			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

Matrix Spike (BFE1119-MS1)

Source: 22E1293-02

Prepared &amp; Analyzed: 05/27/2022

Chlorobenzene	48.7	1	ug/L	50.0	BLOD	97.4	80-120			
Chloroethane	35.8	1	ug/L	50.0	BLOD	71.6	60-135			
Chloroform	42.7	0.5	ug/L	50.0	BLOD	85.5	65-135			
Chloromethane	26.2	1	ug/L	50.0	BLOD	52.4	40-125			
cis-1,2-Dichloroethylene	44.9	1	ug/L	50.0	BLOD	89.7	70-125			
cis-1,3-Dichloropropene	41.9	1	ug/L	50.0	BLOD	83.9	70-130			
Dibromochloromethane	49.1	0.5	ug/L	50.0	BLOD	98.2	60-135			
Dibromomethane	50.0	1	ug/L	50.0	BLOD	100	75-125			
Ethylbenzene	47.7	1	ug/L	50.0	BLOD	95.4	75-125			
m+p-Xylenes	92.2	2	ug/L	100	BLOD	92.2	75-130			
Methylene chloride	47.5	4	ug/L	50.0	27.4	40.2	55-140			M
o-Xylene	47.5	1	ug/L	50.0	BLOD	95.1	80-120			
Styrene	46.5	1	ug/L	50.0	BLOD	93.0	65-135			
Tetrachloroethylene (PCE)	74.0	1	ug/L	50.0	BLOD	148	45-150			
Toluene	47.5	1	ug/L	50.0	BLOD	95.0	75-120			
trans-1,2-Dichloroethylene	44.2	1	ug/L	50.0	BLOD	88.3	60-140			
trans-1,3-Dichloropropene	41.9	1	ug/L	50.0	BLOD	83.9	55-140			
Trichloroethylene	45.4	1	ug/L	50.0	BLOD	90.9	70-125			
Trichlorofluoromethane	36.0	1	ug/L	50.0	BLOD	72.1	60-145			
Vinyl chloride	18.7	0.5	ug/L	50.0	BLOD	37.5	50-145			M
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>47.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>95.2</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>47.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>95.2</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.3</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.6</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.4</i>	<i>70-130</i>			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

Matrix Spike Dup (BFE1119-MSD1)	Source: 22E1293-02		Prepared & Analyzed: 05/27/2022							
1,1,1,2-Tetrachloroethane	46.3	0.4	ug/L	50.0	BLOD	92.6	80-130	7.06	30	
1,1,1-Trichloroethane	41.9	1	ug/L	50.0	BLOD	83.8	65-130	4.94	30	
1,1,2,2-Tetrachloroethane	44.9	0.4	ug/L	50.0	BLOD	89.9	65-130	6.02	30	
1,1,2-Trichloroethane	47.8	1	ug/L	50.0	BLOD	95.7	75-125	8.18	30	
1,1-Dichloroethane	41.0	1	ug/L	50.0	BLOD	82.1	70-135	7.33	30	
1,1-Dichloroethylene	34.7	1	ug/L	50.0	BLOD	69.5	70-130	4.28	30	M
1,2,3-Trichloropropane	45.6	1	ug/L	50.0	BLOD	91.2	75-125	7.09	30	
1,2-Dichlorobenzene	45.1	0.5	ug/L	50.0	BLOD	90.2	70-120	8.59	30	
1,2-Dichloroethane	42.1	1	ug/L	50.0	BLOD	84.2	70-130	7.61	30	
1,2-Dichloropropane	44.2	0.5	ug/L	50.0	BLOD	88.4	75-125	8.72	30	
1,4-Dichlorobenzene	45.1	1	ug/L	50.0	BLOD	90.2	75-125	9.12	30	
2-Butanone (MEK)	39.3	10	ug/L	50.0	BLOD	78.6	30-150		30	
2-Hexanone (MBK)	40.5	5	ug/L	50.0	BLOD	80.9	55-130		30	
4-Methyl-2-pentanone (MIBK)	38.8	5	ug/L	50.0	BLOD	77.6	60-135	4.41	30	
Acetone	52.8	10	ug/L	50.0	BLOD	92.8	40-140		30	
Acrylonitrile	0.00	5	ug/L	250	BLOD		70-130		30	M
Benzene	43.3	1	ug/L	50.0	BLOD	86.5	80-120	7.75	30	
Bromochloromethane	44.0	1	ug/L	50.0	BLOD	87.9	65-130	9.39	30	
Bromodichloromethane	47.4	0.5	ug/L	50.0	BLOD	94.8	75-120	9.89	30	
Bromoform	48.3	1	ug/L	50.0	BLOD	96.6	70-130	6.41	30	
Bromomethane	29.1	1	ug/L	50.0	BLOD	58.2	30-145	1.94	30	
Carbon disulfide	33.4	10	ug/L	50.0	BLOD	66.8	35-160		30	
Carbon tetrachloride	42.1	1	ug/L	50.0	BLOD	84.2	65-140	6.88	30	
Chlorobenzene	44.8	1	ug/L	50.0	BLOD	89.5	80-120	8.41	30	
Chloroethane	34.2	1	ug/L	50.0	BLOD	68.5	60-135	4.51	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1119 - SW5030B-MS

Matrix Spike Dup (BFE1119-MSD1)	Source: 22E1293-02		Prepared & Analyzed: 05/27/2022							
Chloroform	39.7	0.5	ug/L	50.0	BLOD	79.3	65-135	7.45	30	
Chloromethane	24.4	1	ug/L	50.0	BLOD	48.9	40-125	6.99	30	
cis-1,2-Dichloroethylene	41.0	1	ug/L	50.0	BLOD	82.1	70-125	8.92	30	
cis-1,3-Dichloropropene	39.0	1	ug/L	50.0	BLOD	78.0	70-130	7.32	30	
Dibromochloromethane	45.8	0.5	ug/L	50.0	BLOD	91.7	60-135	6.91	30	
Dibromomethane	45.8	1	ug/L	50.0	BLOD	91.7	75-125	8.68	30	
Ethylbenzene	45.1	1	ug/L	50.0	BLOD	90.3	75-125	5.52	30	
m+p-Xylenes	86.7	2	ug/L	100	BLOD	86.7	75-130	6.08	30	
Methylene chloride	42.6	4	ug/L	50.0	27.4	30.4	55-140		30	M
o-Xylene	44.3	1	ug/L	50.0	BLOD	88.5	80-120	7.12	30	
Styrene	43.6	1	ug/L	50.0	BLOD	87.1	65-135	6.53	30	
Tetrachloroethylene (PCE)	70.0	1	ug/L	50.0	BLOD	140	45-150	5.56	30	
Toluene	44.3	1	ug/L	50.0	BLOD	88.6	75-120	6.97	30	
trans-1,2-Dichloroethylene	40.7	1	ug/L	50.0	BLOD	81.3	60-140	8.25	30	
trans-1,3-Dichloropropene	39.0	1	ug/L	50.0	BLOD	78.0	55-140	7.32	30	
Trichloroethylene	42.3	1	ug/L	50.0	BLOD	84.6	70-125	7.16	30	
Trichlorofluoromethane	34.2	1	ug/L	50.0	BLOD	68.4	60-145	5.15	30	
Vinyl chloride	29.3	0.5	ug/L	50.0	BLOD	58.5	50-145	43.9	30	M
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>47.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>94.1</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>48.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>97.4</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>96.3</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>100</i>	<i>70-130</i>			

### Batch BFE1120 - SW5030B-MS

Blank (BFE1120-BLK1)	Prepared & Analyzed: 05/27/2022									
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## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1120 - SW5030B-MS**

**Blank (BFE1120-BLK1)**

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,1-Dichloropropene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2,4-Trichlorobenzene	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,3-Dichlorobenzene	ND	1.00	ug/L
1,3-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2,2-Dichloropropane	ND	2.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acetonitrile	ND	10.0	ug/L
Acrolein	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Allyl chloride	ND	1.00	ug/L
Benzene	ND	1.00	ug/L

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1120 - SW5030B-MS**

**Blank (BFE1120-BLK1)**

Prepared & Analyzed: 05/27/2022

Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L
Chloromethane	ND	1.00	ug/L
Chloroprene	ND	5.00	ug/L
cis-1,2-Dichloroethylene	ND	1.00	ug/L
cis-1,3-Dichloropropene	ND	1.00	ug/L
Dibromochloromethane	ND	0.50	ug/L
Dibromomethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Ethyl methacrylate	ND	5.00	ug/L
Ethylbenzene	ND	1.00	ug/L
Iodomethane	ND	10.0	ug/L
Isobutyl Alcohol	ND	40.0	ug/L
m+p-Xylenes	ND	2.00	ug/L
Methacrylonitrile	ND	1.50	ug/L
Methyl methacrylate	ND	2.00	ug/L
Methylene chloride	ND	4.00	ug/L
Naphthalene	ND	1.00	ug/L

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Enthalpy Analytical

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### Batch BFE1120 - SW5030B-MS

#### Blank (BFE1120-BLK1)

Prepared & Analyzed: 05/27/2022

o-Xylene	ND	1.00	ug/L							
Propionitrile	ND	40.0	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	51.7		ug/L	50.0		103	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	49.3		ug/L	50.0		98.6	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	49.8		ug/L	50.0		99.6	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.1		ug/L	50.0		100	70-130			

#### LCS (BFE1120-BS1)

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	53.9	0.4	ug/L	50.0		108	80-130			
1,1,1-Trichloroethane	54.5	1	ug/L	50.0		109	65-130			
1,1,2,2-Tetrachloroethane	50.2	0.4	ug/L	50.0		100	65-130			
1,1,2-Trichloroethane	49.2	1	ug/L	50.0		98.3	75-125			
1,1-Dichloroethane	50.1	1	ug/L	50.0		100	70-135			
1,1-Dichloroethylene	42.7	1	ug/L	50.0		85.3	70-130			

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Enthalpy Analytical

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**Batch BFE1120 - SW5030B-MS**

**LCS (BFE1120-BS1)**

Prepared & Analyzed: 05/27/2022

1,1-Dichloropropene	52.4	1	ug/L	50.0		105	75-135			
1,2,3-Trichloropropane	51.4	1	ug/L	50.0		103	75-125			
1,2,4-Trichlorobenzene	50.9	1	ug/L	50.0		102	65-135			
1,2-Dichlorobenzene	54.8	0.5	ug/L	50.0		110	70-120			
1,2-Dichloroethane	50.8	1	ug/L	50.0		102	70-130			
1,2-Dichloropropane	49.2	0.5	ug/L	50.0		98.5	75-125			
1,3-Dichlorobenzene	55.8	1	ug/L	50.0		112	75-125			
1,3-Dichloropropane	50.8	1	ug/L	50.0		102	75-125			
1,4-Dichlorobenzene	55.2	1	ug/L	50.0		110	75-125			
2,2-Dichloropropane	45.7	1	ug/L	50.0		91.4	70-135			
2-Butanone (MEK)	43.3	10	ug/L	50.0		86.5	30-150			
2-Hexanone (MBK)	53.6	5	ug/L	50.0		107	55-130			
4-Methyl-2-pentanone (MIBK)	49.6	5	ug/L	50.0		99.2	60-135			
Acetone	50.2	10	ug/L	50.0		100	40-140			
Acrylonitrile	301	5	ug/L	250		120	70-130			
Benzene	51.1	1	ug/L	50.0		102	80-120			
Bromochloromethane	48.0	1	ug/L	50.0		96.0	65-130			
Bromodichloromethane	55.5	0.5	ug/L	50.0		111	75-120			
Bromoform	49.7	1	ug/L	50.0		99.4	70-130			
Bromomethane	40.4	1	ug/L	50.0		80.9	30-145			
Carbon disulfide	55.4	10	ug/L	50.0		111	35-160			
Carbon tetrachloride	53.9	1	ug/L	50.0		108	65-140			
Chlorobenzene	52.6	1	ug/L	50.0		105	80-120			
Chloroethane	42.9	1	ug/L	50.0		85.9	60-135			
Chloroform	47.2	0.5	ug/L	50.0		94.5	65-135			

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFE1120 - SW5030B-MS

**LCS (BFE1120-BS1)**

Prepared &amp; Analyzed: 05/27/2022

Chloromethane	36.6	1	ug/L	50.0		73.2	40-125			
cis-1,2-Dichloroethylene	47.5	1	ug/L	50.0		95.0	70-125			
cis-1,3-Dichloropropene	38.8	1	ug/L	50.0		77.7	70-130			
Dibromochloromethane	49.3	0.5	ug/L	50.0		98.6	60-135			
Dibromomethane	46.3	1	ug/L	50.0		92.5	75-125			
Dichlorodifluoromethane	15.0	1	ug/L	50.0		30.0	30-155			
Ethylbenzene	56.9	1	ug/L	50.0		114	75-125			
m+p-Xylenes	105	2	ug/L	100		105	75-130			
Methylene chloride	47.3	4	ug/L	50.0		94.7	55-140			
Naphthalene	48.7	1	ug/L	50.0		97.4	55-140			
o-Xylene	54.6	1	ug/L	50.0		109	80-120			
Styrene	52.2	1	ug/L	50.0		104	65-135			
Tetrachloroethylene (PCE)	88.2	1	ug/L	50.0		176	45-150			L
Toluene	53.0	1	ug/L	50.0		106	75-120			
trans-1,2-Dichloroethylene	48.5	1	ug/L	50.0		97.0	60-140			
trans-1,3-Dichloropropene	42.6	1	ug/L	50.0		85.2	55-140			
Trichloroethylene	52.1	1	ug/L	50.0		104	70-125			
Trichlorofluoromethane	49.9	1	ug/L	50.0		99.7	60-145			
Vinyl chloride	39.6	0.5	ug/L	50.0		79.2	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>50.2</i>		<i>ug/L</i>	<i>50.0</i>		<i>100</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>102</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-130</i>			

**Matrix Spike (BFE1120-MS1)**

Source: 22E1388-02

Prepared &amp; Analyzed: 05/27/2022

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**Matrix Spike (BFE1120-MS1)**
**Source: 22E1388-02**
**Prepared & Analyzed: 05/27/2022**

1,1,1,2-Tetrachloroethane	52.8	0.4	ug/L	50.0	BLOD	106	80-130			
1,1,1-Trichloroethane	52.7	1	ug/L	50.0	BLOD	105	65-130			
1,1,2,2-Tetrachloroethane	52.0	0.4	ug/L	50.0	BLOD	104	65-130			
1,1,2-Trichloroethane	51.0	1	ug/L	50.0	BLOD	102	75-125			
1,1-Dichloroethane	49.1	1	ug/L	50.0	BLOD	98.1	70-135			
1,1-Dichloroethylene	42.6	1	ug/L	50.0	BLOD	85.1	70-130			
1,1-Dichloropropene	48.5	1	ug/L	50.0	BLOD	97.0	75-135			
1,2,3-Trichloropropane	52.4	1	ug/L	50.0	BLOD	105	75-125			
1,2,4-Trichlorobenzene	52.3	1	ug/L	50.0	BLOD	105	65-135			
1,2-Dichlorobenzene	54.7	0.5	ug/L	50.0	BLOD	109	70-120			
1,2-Dichloroethane	51.0	1	ug/L	50.0	BLOD	102	70-130			
1,2-Dichloropropane	48.4	0.5	ug/L	50.0	BLOD	96.8	75-125			
1,3-Dichlorobenzene	55.1	1	ug/L	50.0	BLOD	110	75-125			
1,3-Dichloropropane	51.0	1	ug/L	50.0	BLOD	102	75-125			
1,4-Dichlorobenzene	54.9	1	ug/L	50.0	BLOD	110	75-125			
2,2-Dichloropropane	44.5	1	ug/L	50.0	BLOD	89.1	70-135			
2-Butanone (MEK)	44.0	10	ug/L	50.0	BLOD	87.9	30-150			
2-Hexanone (MBK)	53.8	5	ug/L	50.0	BLOD	108	55-130			
4-Methyl-2-pentanone (MIBK)	51.4	5	ug/L	50.0	BLOD	103	60-135			
Acetone	51.7	10	ug/L	50.0	BLOD	92.3	40-140			
Acrylonitrile	318	5	ug/L	250	BLOD	127	70-130			
Benzene	50.1	1	ug/L	50.0	BLOD	100	80-120			
Bromochloromethane	46.2	1	ug/L	50.0	BLOD	92.4	65-130			
Bromodichloromethane	54.7	0.5	ug/L	50.0	BLOD	109	75-120			
Bromoform	50.2	1	ug/L	50.0	BLOD	100	70-130			

### Certificate of Analysis

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Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFE1120 - SW5030B-MS

Matrix Spike (BFE1120-MS1)	Source: 22E1388-02			Prepared & Analyzed: 05/27/2022						
Bromomethane	38.6	1	ug/L	50.0	BLOD	77.1	30-145			
Carbon disulfide	51.8	10	ug/L	50.0	BLOD	104	35-160			
Carbon tetrachloride	52.0	1	ug/L	50.0	BLOD	104	65-140			
Chlorobenzene	51.9	1	ug/L	50.0	BLOD	104	80-120			
Chloroethane	43.0	1	ug/L	50.0	BLOD	86.0	60-135			
Chloroform	46.2	0.5	ug/L	50.0	BLOD	92.5	65-135			
Chloromethane	35.9	1	ug/L	50.0	BLOD	71.8	40-125			
cis-1,2-Dichloroethylene	46.9	1	ug/L	50.0	BLOD	93.8	70-125			
cis-1,3-Dichloropropene	37.7	1	ug/L	50.0	BLOD	75.5	70-130			
Dibromochloromethane	49.2	0.5	ug/L	50.0	BLOD	98.4	60-135			
Dibromomethane	46.7	1	ug/L	50.0	BLOD	93.5	75-125			
Dichlorodifluoromethane	14.5	1	ug/L	50.0	BLOD	28.9	30-155			M
Ethylbenzene	55.8	1	ug/L	50.0	BLOD	112	75-125			
m+p-Xylenes	103	2	ug/L	100	BLOD	103	75-130			
Methylene chloride	45.5	4	ug/L	50.0	BLOD	91.0	55-140			
Naphthalene	53.2	1	ug/L	50.0	BLOD	106	55-140			
o-Xylene	52.8	1	ug/L	50.0	BLOD	106	80-120			
Styrene	51.6	1	ug/L	50.0	BLOD	103	65-135			
Tetrachloroethylene (PCE)	87.1	1	ug/L	50.0	BLOD	174	45-150			M
Toluene	51.2	1	ug/L	50.0	BLOD	102	75-120			
trans-1,2-Dichloroethylene	47.3	1	ug/L	50.0	BLOD	94.6	60-140			
trans-1,3-Dichloropropene	41.5	1	ug/L	50.0	BLOD	82.9	55-140			
Trichloroethylene	51.4	1	ug/L	50.0	BLOD	103	70-125			
Trichlorofluoromethane	47.7	1	ug/L	50.0	BLOD	95.3	60-145			
Vinyl chloride	37.8	0.5	ug/L	50.0	BLOD	75.5	50-145			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1120 - SW5030B-MS

**Matrix Spike (BFE1120-MS1)**

Source: 22E1388-02

Prepared & Analyzed: 05/27/2022

<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	53.5		ug/L	50.0		107	70-120		
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	49.4		ug/L	50.0		98.8	75-120		
<i>Surr: Dibromofluoromethane (Surr)</i>	51.5		ug/L	50.0		103	70-130		
<i>Surr: Toluene-d8 (Surr)</i>	50.5		ug/L	50.0		101	70-130		

**Matrix Spike Dup (BFE1120-MSD1)**

Source: 22E1388-02

Prepared & Analyzed: 05/27/2022

1,1,1,2-Tetrachloroethane	49.4	0.4	ug/L	50.0	BLOD	98.8	80-130	6.69	30
1,1,1-Trichloroethane	49.2	1	ug/L	50.0	BLOD	98.3	65-130	6.97	30
1,1,2,2-Tetrachloroethane	49.2	0.4	ug/L	50.0	BLOD	98.3	65-130	5.60	30
1,1,2-Trichloroethane	46.5	1	ug/L	50.0	BLOD	93.0	75-125	9.17	30
1,1-Dichloroethane	44.7	1	ug/L	50.0	BLOD	89.4	70-135	9.37	30
1,1-Dichloroethylene	38.8	1	ug/L	50.0	BLOD	77.6	70-130	9.29	30
1,1-Dichloropropene	47.0	1	ug/L	50.0	BLOD	93.9	75-135	3.21	30
1,2,3-Trichloropropane	50.2	1	ug/L	50.0	BLOD	100	75-125	4.27	30
1,2,4-Trichlorobenzene	48.0	1	ug/L	50.0	BLOD	96.1	65-135	8.45	30
1,2-Dichlorobenzene	50.6	0.5	ug/L	50.0	BLOD	101	70-120	7.65	30
1,2-Dichloroethane	46.5	1	ug/L	50.0	BLOD	93.1	70-130	9.17	30
1,2-Dichloropropane	44.1	0.5	ug/L	50.0	BLOD	88.2	75-125	9.32	30
1,3-Dichlorobenzene	51.9	1	ug/L	50.0	BLOD	104	75-125	6.04	30
1,3-Dichloropropane	45.5	1	ug/L	50.0	BLOD	90.9	75-125	11.4	30
1,4-Dichlorobenzene	51.0	1	ug/L	50.0	BLOD	102	75-125	7.50	30
2,2-Dichloropropane	40.0	1	ug/L	50.0	BLOD	80.1	70-135	10.6	30
2-Butanone (MEK)	40.3	10	ug/L	50.0	BLOD	80.6	30-150	8.74	30
2-Hexanone (MBK)	52.7	5	ug/L	50.0	BLOD	105	55-130	1.97	30
4-Methyl-2-pentanone (MIBK)	46.7	5	ug/L	50.0	BLOD	93.3	60-135	9.57	30



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFE1120 - SW5030B-MS**

Matrix Spike Dup (BFE1120-MSD1)	Source: 22E1388-02			Prepared & Analyzed: 05/27/2022						
Acetone	51.2	10	ug/L	50.0	BLOD	91.3	40-140	0.914	30	
Acrylonitrile	299	5	ug/L	250	BLOD	120	70-130	6.04	30	
Benzene	45.5	1	ug/L	50.0	BLOD	91.0	80-120	9.60	30	
Bromochloromethane	42.1	1	ug/L	50.0	BLOD	84.1	65-130	9.36	30	
Bromodichloromethane	47.2	0.5	ug/L	50.0	BLOD	94.5	75-120	14.7	30	
Bromoform	46.5	1	ug/L	50.0	BLOD	93.1	70-130	7.57	30	
Bromomethane	35.3	1	ug/L	50.0	BLOD	70.7	30-145	8.69	30	
Carbon disulfide	47.2	10	ug/L	50.0	BLOD	94.3	35-160	9.44	30	
Carbon tetrachloride	49.7	1	ug/L	50.0	BLOD	99.4	65-140	4.48	30	
Chlorobenzene	47.8	1	ug/L	50.0	BLOD	95.5	80-120	8.25	30	
Chloroethane	38.8	1	ug/L	50.0	BLOD	77.6	60-135	10.3	30	
Chloroform	42.2	0.5	ug/L	50.0	BLOD	84.3	65-135	9.21	30	
Chloromethane	32.6	1	ug/L	50.0	BLOD	65.2	40-125	9.64	30	
cis-1,2-Dichloroethylene	42.1	1	ug/L	50.0	BLOD	84.1	70-125	10.9	30	
cis-1,3-Dichloropropene	33.5	1	ug/L	50.0	BLOD	67.0	70-130	11.9	30	M
Dibromochloromethane	45.8	0.5	ug/L	50.0	BLOD	91.5	60-135	7.20	30	
Dibromomethane	40.6	1	ug/L	50.0	BLOD	81.3	75-125	13.9	30	
Dichlorodifluoromethane	14.6	1	ug/L	50.0	BLOD	29.2	30-155	0.826	30	M
Ethylbenzene	51.2	1	ug/L	50.0	BLOD	102	75-125	8.62	30	
m+p-Xylenes	94.1	2	ug/L	100	BLOD	94.1	75-130	9.15	30	
Methylene chloride	40.7	4	ug/L	50.0	BLOD	81.4	55-140	11.1	30	
Naphthalene	50.5	1	ug/L	50.0	BLOD	101	55-140	5.15	30	
o-Xylene	49.6	1	ug/L	50.0	BLOD	99.2	80-120	6.36	30	
Styrene	47.0	1	ug/L	50.0	BLOD	94.1	65-135	9.19	30	
Tetrachloroethylene (PCE)	79.4	1	ug/L	50.0	BLOD	159	45-150	9.22	30	M

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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### Batch BFE1120 - SW5030B-MS

**Matrix Spike Dup (BFE1120-MSD1)**

Source: 22E1388-02

Prepared & Analyzed: 05/27/2022

Toluene	46.6	1	ug/L	50.0	BLOD	93.1	75-120	9.40	30	
trans-1,2-Dichloroethylene	42.8	1	ug/L	50.0	BLOD	85.5	60-140	10.1	30	
trans-1,3-Dichloropropene	37.1	1	ug/L	50.0	BLOD	74.3	55-140	11.0	30	
Trichloroethylene	46.4	1	ug/L	50.0	BLOD	92.8	70-125	10.2	30	
Trichlorofluoromethane	46.4	1	ug/L	50.0	BLOD	92.9	60-145	2.64	30	
Vinyl chloride	34.9	0.5	ug/L	50.0	BLOD	69.8	50-145	7.96	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>51.5</i>		<i>ug/L</i>	<i>50.0</i>		<i>103</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>102</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.5</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.1</i>	<i>70-130</i>			

### Batch BFE1173 - SW5030B-MS

**Blank (BFE1173-BLK1)**

Prepared & Analyzed: 05/31/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L							
1,1,1-Trichloroethane	ND	1.00	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L							
1,1,2-Trichloroethane	ND	1.00	ug/L							
1,1-Dichloroethane	ND	1.00	ug/L							
1,1-Dichloroethylene	ND	1.00	ug/L							
1,1-Dichloropropene	ND	1.00	ug/L							
1,2,3-Trichloropropane	ND	1.00	ug/L							
1,2,4-Trichlorobenzene	ND	1.00	ug/L							
1,2-Dichlorobenzene	ND	1.00	ug/L							
1,2-Dichloroethane	ND	1.00	ug/L							
1,2-Dichloropropane	ND	1.00	ug/L							

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1173 - SW5030B-MS**

**Blank (BFE1173-BLK1)**

Prepared & Analyzed: 05/31/2022

1,3-Dichlorobenzene	ND	1.00	ug/L
1,3-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2,2-Dichloropropane	ND	2.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acetonitrile	ND	10.0	ug/L
Acrolein	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Allyl chloride	ND	1.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L
Chloromethane	ND	1.00	ug/L
Chloroprene	ND	5.00	ug/L
cis-1,2-Dichloroethylene	ND	1.00	ug/L

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**Batch BFE1173 - SW5030B-MS**

**Blank (BFE1173-BLK1)**

Prepared & Analyzed: 05/31/2022

cis-1,3-Dichloropropene	ND	1.00	ug/L
Dibromochloromethane	ND	0.50	ug/L
Dibromomethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Ethyl methacrylate	ND	5.00	ug/L
Ethylbenzene	ND	1.00	ug/L
Iodomethane	ND	10.0	ug/L
Isobutyl Alcohol	ND	40.0	ug/L
m+p-Xylenes	ND	2.00	ug/L
Methacrylonitrile	ND	1.50	ug/L
Methyl methacrylate	ND	2.00	ug/L
Methylene chloride	ND	4.00	ug/L
Naphthalene	ND	1.00	ug/L
o-Xylene	ND	1.00	ug/L
Propionitrile	ND	40.0	ug/L
Styrene	ND	1.00	ug/L
Tetrachloroethylene (PCE)	ND	1.00	ug/L
Toluene	ND	1.00	ug/L
trans-1,2-Dichloroethylene	ND	1.00	ug/L
trans-1,3-Dichloropropene	ND	1.00	ug/L
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L
Trichloroethylene	ND	1.00	ug/L
Trichlorofluoromethane	ND	1.00	ug/L
Vinyl acetate	ND	10.0	ug/L
Vinyl chloride	ND	0.50	ug/L

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Enthalpy Analytical

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<b>Batch BFE1173 - SW5030B-MS</b>										
<b>Blank (BFE1173-BLK1)</b>										
Prepared & Analyzed: 05/31/2022										
Xylenes, Total	ND	3.00	ug/L							
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	49.8		ug/L	50.0		99.5	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	50.1		ug/L	50.0		100	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	50.1		ug/L	50.0		100	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.5		ug/L	50.0		101	70-130			
<b>LCS (BFE1173-BS1)</b>										
Prepared & Analyzed: 05/31/2022										
1,1,1,2-Tetrachloroethane	55.1	0.4	ug/L	50.0		110	80-130			
1,1,1-Trichloroethane	58.2	1	ug/L	50.0		116	65-130			
1,1,2,2-Tetrachloroethane	51.4	0.4	ug/L	50.0		103	65-130			
1,1,2-Trichloroethane	49.9	1	ug/L	50.0		99.7	75-125			
1,1-Dichloroethane	53.0	1	ug/L	50.0		106	70-135			
1,1-Dichloroethylene	53.3	1	ug/L	50.0		107	70-130			
1,1-Dichloropropene	53.7	1	ug/L	50.0		107	75-135			
1,2,3-Trichloropropane	52.9	1	ug/L	50.0		106	75-125			
1,2,4-Trichlorobenzene	51.3	1	ug/L	50.0		103	65-135			
1,2-Dichlorobenzene	53.4	0.5	ug/L	50.0		107	70-120			
1,2-Dichloroethane	51.4	1	ug/L	50.0		103	70-130			
1,2-Dichloropropane	50.1	0.5	ug/L	50.0		100	75-125			
1,3-Dichlorobenzene	53.8	1	ug/L	50.0		108	75-125			
1,3-Dichloropropane	51.2	1	ug/L	50.0		102	75-125			
1,4-Dichlorobenzene	54.4	1	ug/L	50.0		109	75-125			
2,2-Dichloropropane	52.1	1	ug/L	50.0		104	70-135			
2-Butanone (MEK)	46.9	10	ug/L	50.0		93.8	30-150			
2-Hexanone (MBK)	59.9	5	ug/L	50.0		120	55-130			

### Certificate of Analysis

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFE1173 - SW5030B-MS

**LCS (BFE1173-BS1)**

Prepared &amp; Analyzed: 05/31/2022

4-Methyl-2-pentanone (MIBK)	53.5	5	ug/L	50.0		107	60-135			
Acetone	53.1	10	ug/L	50.0		106	40-140			
Acrylonitrile	116	5	ug/L	250		46.4	70-130			L
Benzene	52.0	1	ug/L	50.0		104	80-120			
Bromochloromethane	48.8	1	ug/L	50.0		97.6	65-130			
Bromodichloromethane	52.9	0.5	ug/L	50.0		106	75-120			
Bromoform	48.9	1	ug/L	50.0		97.8	70-130			
Bromomethane	40.3	1	ug/L	50.0		80.6	30-145			
Carbon disulfide	66.6	10	ug/L	50.0		133	35-160			
Carbon tetrachloride	59.6	1	ug/L	50.0		119	65-140			
Chlorobenzene	52.5	1	ug/L	50.0		105	80-120			
Chloroethane	50.6	1	ug/L	50.0		101	60-135			
Chloroform	48.5	0.5	ug/L	50.0		97.0	65-135			
Chloromethane	44.0	1	ug/L	50.0		88.1	40-125			
cis-1,2-Dichloroethylene	50.5	1	ug/L	50.0		101	70-125			
cis-1,3-Dichloropropene	53.4	1	ug/L	50.0		107	70-130			
Dibromochloromethane	52.4	0.5	ug/L	50.0		105	60-135			
Dibromomethane	47.3	1	ug/L	50.0		94.6	75-125			
Dichlorodifluoromethane	47.1	1	ug/L	50.0		94.1	30-155			
Ethylbenzene	56.4	1	ug/L	50.0		113	75-125			
m+p-Xylenes	108	2	ug/L	100		108	75-130			
Methylene chloride	47.8	4	ug/L	50.0		95.6	55-140			
Naphthalene	49.5	1	ug/L	50.0		99.1	55-140			
o-Xylene	53.7	1	ug/L	50.0		107	80-120			
Styrene	55.9	1	ug/L	50.0		112	65-135			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1173 - SW5030B-MS

**LCS (BFE1173-BS1)**

Prepared & Analyzed: 05/31/2022

Tetrachloroethylene (PCE)	55.7	1	ug/L	50.0		111	45-150			
Toluene	52.2	1	ug/L	50.0		104	75-120			
trans-1,2-Dichloroethylene	51.4	1	ug/L	50.0		103	60-140			
trans-1,3-Dichloropropene	54.4	1	ug/L	50.0		109	55-140			
Trichloroethylene	53.1	1	ug/L	50.0		106	70-125			
Trichlorofluoromethane	62.7	1	ug/L	50.0		125	60-145			
Vinyl chloride	53.0	0.5	ug/L	50.0		106	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	48.7		ug/L	50.0		97.4	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	51.6		ug/L	50.0		103	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	50.9		ug/L	50.0		102	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.8		ug/L	50.0		102	70-130			

**Matrix Spike (BFE1173-MS1)**

Source: 22E1478-03

Prepared & Analyzed: 05/31/2022

1,1,1,2-Tetrachloroethane	53.6	0.4	ug/L	50.0	BLOD	107	80-130			
1,1,1-Trichloroethane	57.2	1	ug/L	50.0	BLOD	114	65-130			
1,1,2,2-Tetrachloroethane	50.0	0.4	ug/L	50.0	BLOD	99.9	65-130			
1,1,2-Trichloroethane	49.5	1	ug/L	50.0	BLOD	99.0	75-125			
1,1-Dichloroethane	51.8	1	ug/L	50.0	BLOD	104	70-135			
1,1-Dichloroethylene	51.4	1	ug/L	50.0	BLOD	103	70-130			
1,1-Dichloropropene	53.6	1	ug/L	50.0	BLOD	107	75-135			
1,2,3-Trichloropropane	51.1	1	ug/L	50.0	BLOD	102	75-125			
1,2,4-Trichlorobenzene	51.3	1	ug/L	50.0	BLOD	103	65-135			
1,2-Dichlorobenzene	52.9	0.5	ug/L	50.0	BLOD	106	70-120			
1,2-Dichloroethane	51.3	1	ug/L	50.0	BLOD	103	70-130			
1,2-Dichloropropane	48.6	0.5	ug/L	50.0	BLOD	97.1	75-125			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1173 - SW5030B-MS**

**Matrix Spike (BFE1173-MS1)**

**Source: 22E1478-03**

**Prepared & Analyzed: 05/31/2022**

1,3-Dichlorobenzene	53.1	1	ug/L	50.0	BLOD	106	75-125			
1,3-Dichloropropane	51.1	1	ug/L	50.0	BLOD	102	75-125			
1,4-Dichlorobenzene	53.0	1	ug/L	50.0	BLOD	106	75-125			
2,2-Dichloropropane	50.2	1	ug/L	50.0	BLOD	100	70-135			
2-Butanone (MEK)	46.2	10	ug/L	50.0	BLOD	92.3	30-150			
2-Hexanone (MBK)	56.2	5	ug/L	50.0	BLOD	112	55-130			
4-Methyl-2-pentanone (MIBK)	54.7	5	ug/L	50.0	BLOD	109	60-135			
Acetone	47.4	10	ug/L	50.0	8.35	78.2	40-140			
Acrylonitrile	281	5	ug/L	250	BLOD	112	70-130			
Benzene	51.0	1	ug/L	50.0	BLOD	102	80-120			
Bromochloromethane	48.1	1	ug/L	50.0	BLOD	96.3	65-130			
Bromodichloromethane	50.7	0.5	ug/L	50.0	BLOD	101	75-120			
Bromoform	48.3	1	ug/L	50.0	BLOD	96.6	70-130			
Bromomethane	41.3	1	ug/L	50.0	BLOD	82.7	30-145			
Carbon disulfide	64.3	10	ug/L	50.0	BLOD	129	35-160			
Carbon tetrachloride	57.0	1	ug/L	50.0	BLOD	114	65-140			
Chlorobenzene	50.9	1	ug/L	50.0	BLOD	102	80-120			
Chloroethane	51.1	1	ug/L	50.0	BLOD	102	60-135			
Chloroform	47.5	0.5	ug/L	50.0	BLOD	95.0	65-135			
Chloromethane	45.5	1	ug/L	50.0	BLOD	89.4	40-125			
cis-1,2-Dichloroethylene	49.2	1	ug/L	50.0	BLOD	98.5	70-125			
cis-1,3-Dichloropropene	51.5	1	ug/L	50.0	BLOD	103	70-130			
Dibromochloromethane	51.0	0.5	ug/L	50.0	BLOD	102	60-135			
Dibromomethane	46.5	1	ug/L	50.0	BLOD	93.0	75-125			
Dichlorodifluoromethane	44.1	1	ug/L	50.0	BLOD	88.2	30-155			



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1173 - SW5030B-MS

**Matrix Spike (BFE1173-MS1)**

Source: 22E1478-03

Prepared &amp; Analyzed: 05/31/2022

Ethylbenzene	54.6	1	ug/L	50.0	BLOD	109	75-125			
m+p-Xylenes	105	2	ug/L	100	BLOD	105	75-130			
Methylene chloride	46.8	4	ug/L	50.0	BLOD	93.7	55-140			
Naphthalene	52.7	1	ug/L	50.0	BLOD	105	55-140			
o-Xylene	53.1	1	ug/L	50.0	BLOD	106	80-120			
Styrene	53.5	1	ug/L	50.0	BLOD	107	65-135			
Tetrachloroethylene (PCE)	52.3	1	ug/L	50.0	BLOD	105	45-150			
Toluene	51.5	1	ug/L	50.0	BLOD	103	75-120			
trans-1,2-Dichloroethylene	50.6	1	ug/L	50.0	BLOD	101	60-140			
trans-1,3-Dichloropropene	51.3	1	ug/L	50.0	BLOD	103	55-140			
Trichloroethylene	51.3	1	ug/L	50.0	BLOD	103	70-125			
Trichlorofluoromethane	59.5	1	ug/L	50.0	BLOD	119	60-145			
Vinyl chloride	50.6	0.5	ug/L	50.0	BLOD	101	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	48.6		ug/L	50.0		97.1	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	51.1		ug/L	50.0		102	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	51.4		ug/L	50.0		103	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.4		ug/L	50.0		101	70-130			

**Matrix Spike Dup (BFE1173-MSD1)**

Source: 22E1478-03

Prepared &amp; Analyzed: 05/31/2022

1,1,1,2-Tetrachloroethane	53.6	0.4	ug/L	50.0	BLOD	107	80-130	0.0186	30	
1,1,1-Trichloroethane	55.8	1	ug/L	50.0	BLOD	112	65-130	2.48	30	
1,1,2,2-Tetrachloroethane	51.0	0.4	ug/L	50.0	BLOD	102	65-130	2.14	30	
1,1,2-Trichloroethane	48.7	1	ug/L	50.0	BLOD	97.4	75-125	1.63	30	
1,1-Dichloroethane	51.8	1	ug/L	50.0	BLOD	104	70-135	0.154	30	
1,1-Dichloroethylene	49.9	1	ug/L	50.0	BLOD	99.8	70-130	2.88	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1173 - SW5030B-MS**

Matrix Spike Dup (BFE1173-MSD1)	Source: 22E1478-03			Prepared & Analyzed: 05/31/2022						
1,1-Dichloropropene	52.3	1	ug/L	50.0	BLOD	105	75-135	2.51	30	
1,2,3-Trichloropropane	51.8	1	ug/L	50.0	BLOD	104	75-125	1.19	30	
1,2,4-Trichlorobenzene	49.8	1	ug/L	50.0	BLOD	99.7	65-135	2.89	30	
1,2-Dichlorobenzene	53.2	0.5	ug/L	50.0	BLOD	106	70-120	0.509	30	
1,2-Dichloroethane	51.2	1	ug/L	50.0	BLOD	102	70-130	0.117	30	
1,2-Dichloropropane	49.4	0.5	ug/L	50.0	BLOD	98.7	75-125	1.63	30	
1,3-Dichlorobenzene	53.5	1	ug/L	50.0	BLOD	107	75-125	0.882	30	
1,3-Dichloropropane	50.5	1	ug/L	50.0	BLOD	101	75-125	1.14	30	
1,4-Dichlorobenzene	54.5	1	ug/L	50.0	BLOD	109	75-125	2.68	30	
2,2-Dichloropropane	49.9	1	ug/L	50.0	BLOD	99.9	70-135	0.440	30	
2-Butanone (MEK)	46.4	10	ug/L	50.0	BLOD	92.9	30-150	0.626	30	
2-Hexanone (MBK)	54.4	5	ug/L	50.0	BLOD	109	55-130	3.18	30	
4-Methyl-2-pentanone (MIBK)	55.0	5	ug/L	50.0	BLOD	110	60-135	0.419	30	
Acetone	46.1	10	ug/L	50.0	8.35	75.5	40-140	2.89	30	
Acrylonitrile	281	5	ug/L	250	BLOD	112	70-130	0.0213	30	
Benzene	51.2	1	ug/L	50.0	BLOD	102	80-120	0.587	30	
Bromochloromethane	47.9	1	ug/L	50.0	BLOD	95.9	65-130	0.416	30	
Bromodichloromethane	52.2	0.5	ug/L	50.0	BLOD	104	75-120	2.84	30	
Bromoform	48.1	1	ug/L	50.0	BLOD	96.2	70-130	0.436	30	
Bromomethane	42.4	1	ug/L	50.0	BLOD	84.8	30-145	2.53	30	
Carbon disulfide	62.5	10	ug/L	50.0	BLOD	125	35-160	2.74	30	
Carbon tetrachloride	55.8	1	ug/L	50.0	BLOD	112	65-140	1.97	30	
Chlorobenzene	50.9	1	ug/L	50.0	BLOD	102	80-120	0.118	30	
Chloroethane	49.8	1	ug/L	50.0	BLOD	99.6	60-135	2.60	30	
Chloroform	47.8	0.5	ug/L	50.0	BLOD	95.5	65-135	0.546	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1173 - SW5030B-MS**

Matrix Spike Dup (BFE1173-MSD1)	Source: 22E1478-03			Prepared & Analyzed: 05/31/2022						
Chloromethane	46.8	1	ug/L	50.0	BLOD	92.0	40-125	2.88	30	
cis-1,2-Dichloroethylene	49.6	1	ug/L	50.0	BLOD	99.1	70-125	0.648	30	
cis-1,3-Dichloropropene	52.4	1	ug/L	50.0	BLOD	105	70-130	1.67	30	
Dibromochloromethane	51.0	0.5	ug/L	50.0	BLOD	102	60-135	0.0196	30	
Dibromomethane	47.6	1	ug/L	50.0	BLOD	95.3	75-125	2.42	30	
Dichlorodifluoromethane	44.0	1	ug/L	50.0	BLOD	88.1	30-155	0.0681	30	
Ethylbenzene	54.2	1	ug/L	50.0	BLOD	108	75-125	0.827	30	
m+p-Xylenes	105	2	ug/L	100	BLOD	105	75-130	0.438	30	
Methylene chloride	46.1	4	ug/L	50.0	BLOD	92.2	55-140	1.55	30	
Naphthalene	52.7	1	ug/L	50.0	BLOD	105	55-140	0.0380	30	
o-Xylene	52.6	1	ug/L	50.0	BLOD	105	80-120	0.870	30	
Styrene	53.6	1	ug/L	50.0	BLOD	107	65-135	0.261	30	
Tetrachloroethylene (PCE)	51.9	1	ug/L	50.0	BLOD	104	45-150	0.787	30	
Toluene	51.2	1	ug/L	50.0	BLOD	102	75-120	0.565	30	
trans-1,2-Dichloroethylene	50.1	1	ug/L	50.0	BLOD	100	60-140	0.913	30	
trans-1,3-Dichloropropene	53.5	1	ug/L	50.0	BLOD	107	55-140	4.24	30	
Trichloroethylene	50.0	1	ug/L	50.0	BLOD	99.9	70-125	2.55	30	
Trichlorofluoromethane	56.6	1	ug/L	50.0	BLOD	113	60-145	5.07	30	
Vinyl chloride	49.4	0.5	ug/L	50.0	BLOD	98.9	50-145	2.36	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>47.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>95.4</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>50.5</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.3</i>	<i>70-130</i>			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1145 - SW3580A-MS**

**Blank (BFE1145-BLK1)**

Prepared & Analyzed: 05/31/2022

1,2,4,5-Tetrachlorobenzene	ND	10.0	ug/L
1,3,5-Trinitrobenzene	ND	5.00	ug/L
1,3-Dinitrobenzene	ND	2.50	ug/L
1,4-Naphthoquinone	ND	10.0	ug/L
1-Naphthylamine	ND	10.0	ug/L
2,3,4,6-Tetrachlorophenol	ND	10.0	ug/L
2,4,5-Trichlorophenol	ND	10.0	ug/L
2,4,6-Trichlorophenol	ND	10.0	ug/L
2,4-Dichlorophenol	ND	10.0	ug/L
2,4-Dimethylphenol	ND	5.00	ug/L
2,4-Dinitrophenol	ND	50.0	ug/L
2,4-Dinitrotoluene	ND	10.0	ug/L
2,6-Dichlorophenol	ND	10.0	ug/L
2,6-Dinitrotoluene	ND	10.0	ug/L
2-Acetylaminofluorene	ND	2.50	ug/L
2-Chloronaphthalene	ND	10.0	ug/L
2-Chlorophenol	ND	10.0	ug/L
2-Methylnaphthalene	ND	10.0	ug/L
2-Naphthylamine	ND	10.0	ug/L
2-Nitroaniline	ND	20.0	ug/L
2-Nitrophenol	ND	10.0	ug/L
3,3'-Dichlorobenzidine	ND	10.0	ug/L
3,3'-Dimethylbenzidine	ND	2.50	ug/L
3-Methylcholanthrene	ND	10.0	ug/L
3-Nitroaniline	ND	20.0	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFE1145 - SW3580A-MS**

**Blank (BFE1145-BLK1)**

Prepared & Analyzed: 05/31/2022

4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Aminobiphenyl	ND	10.0	ug/L
4-Bromophenyl phenyl ether	ND	10.0	ug/L
4-Chloroaniline	ND	10.0	ug/L
4-Chlorophenyl phenyl ether	ND	10.0	ug/L
4-Nitroaniline	ND	20.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
5-Nitro-o-toluidine	ND	10.0	ug/L
7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/L
Acenaphthene	ND	10.0	ug/L
Acenaphthylene	ND	10.0	ug/L
Acetophenone	ND	20.0	ug/L
Anthracene	ND	10.0	ug/L
Benzo (a) anthracene	ND	10.0	ug/L
Benzo (a) pyrene	ND	10.0	ug/L
Benzo (b) fluoranthene	ND	10.0	ug/L
Benzo (g,h,i) perylene	ND	10.0	ug/L
Benzo (k) fluoranthene	ND	10.0	ug/L
Benzyl alcohol	ND	20.0	ug/L
bis (2-Chloroethoxy) methane	ND	10.0	ug/L
bis (2-Chloroethyl) ether	ND	10.0	ug/L
2,2'-Oxybis (1-chloropropane)	ND	10.0	ug/L
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L
Butyl benzyl phthalate	ND	10.0	ug/L
Chlorobenzilate	ND	2.50	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFE1145 - SW3580A-MS**

**Blank (BFE1145-BLK1)**

Prepared & Analyzed: 05/31/2022

Chrysene	ND	10.0	ug/L
Diallate	ND	2.50	ug/L
Dibenz (a,h) anthracene	ND	10.0	ug/L
Dibenzofuran	ND	5.00	ug/L
Diethyl phthalate	ND	10.0	ug/L
Dimethoate	ND	2.50	ug/L
Dimethyl phthalate	ND	10.0	ug/L
Di-n-butyl phthalate	ND	10.0	ug/L
Di-n-octyl phthalate	ND	10.0	ug/L
Diphenylamine	ND	10.0	ug/L
Disulfoton	ND	2.50	ug/L
Ethyl methanesulfonate	ND	20.0	ug/L
Ethyl parathion	ND	2.50	ug/L
Famphur	ND	2.50	ug/L
Fluoranthene	ND	10.0	ug/L
Fluorene	ND	10.0	ug/L
Hexachlorobenzene	ND	1.00	ug/L
Hexachlorobutadiene	ND	10.0	ug/L
Hexachlorocyclopentadiene	ND	10.0	ug/L
Hexachloroethane	ND	10.0	ug/L
Hexachloropropene	ND	2.50	ug/L
Indeno (1,2,3-cd) pyrene	ND	10.0	ug/L
Isodrin	ND	10.0	ug/L
Isophorone	ND	10.0	ug/L
Isosafrole	ND	10.0	ug/L

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1145 - SW3580A-MS**

**Blank (BFE1145-BLK1)**

Prepared & Analyzed: 05/31/2022

Kepone	ND	10.0	ug/L							
m+p-Cresols	ND	10.0	ug/L							
Methapyrilene	ND	10.0	ug/L							
Methyl methanesulfonate	ND	10.0	ug/L							
Methyl parathion	ND	2.50	ug/L							
Naphthalene	0.38	0.10	ug/L							B
Nitrobenzene	ND	10.0	ug/L							
n-Nitrosodiethylamine	ND	2.50	ug/L							
n-Nitrosodimethylamine	ND	10.0	ug/L							
n-Nitrosodi-n-butylamine	ND	10.0	ug/L							
n-Nitrosodi-n-propylamine	ND	10.0	ug/L							
n-Nitrosodiphenylamine	ND	10.0	ug/L							
n-Nitrosomethylethylamine	ND	2.50	ug/L							
n-Nitrosopiperidine	ND	10.0	ug/L							
n-Nitrosopyrrolidine	ND	2.50	ug/L							
o,o,o-Triethyl phosphorothioate	ND	10.0	ug/L							
o,o-Diethyl o-2-pyrazinyl phosphorothioate	ND	10.0	ug/L							
o+m+p-Cresols	ND	10.0	ug/L							
o-Cresol	ND	10.0	ug/L							
o-Toluidine	ND	2.50	ug/L							
p-(Dimethylamino) azobenzene	ND	2.50	ug/L							
p-Chloro-m-cresol	ND	10.0	ug/L							
Pentachlorobenzene	ND	10.0	ug/L							
Pentachloronitrobenzene (quintozene)	ND	10.0	ug/L							
Phenacetin	ND	10.0	ug/L							

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Enthalpy Analytical

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### Batch BFE1145 - SW3580A-MS

**Blank (BFE1145-BLK1)**

Prepared &amp; Analyzed: 05/31/2022

Phenanthrene	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Phorate	ND	2.50	ug/L							
p-Phenylenediamine	ND	10.0	ug/L							
Pronamide	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Safrole	ND	2.50	ug/L							
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	58.1		ug/L	100		58.1	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	37.6		ug/L	50.0		75.3	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	44.8		ug/L	100		44.8	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	41.5		ug/L	50.0		83.0	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	30.6		ug/L	100		30.6	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	41.1		ug/L	50.0		82.3	27-133			

**LCS (BFE1145-BS1)**

Prepared &amp; Analyzed: 05/31/2022

1,2,4-Trichlorobenzene	33.3	10.0	ug/L	50.0		66.6	22-135			
1,2-Dichlorobenzene	21.2	10.0	ug/L	50.0		42.4	22-115			
1,3-Dichlorobenzene	18.3	10.0	ug/L	50.0		36.6	22-112			
1,4-Dichlorobenzene	19.1	10.0	ug/L	50.0		38.1	13-112			
2,4,6-Trichlorophenol	33.0	10.0	ug/L	50.0		66.0	11-145			
2,4-Dichlorophenol	41.5	10.0	ug/L	50.0		83.0	11-75			L
2,4-Dimethylphenol	35.7	5.00	ug/L	50.0		71.4	11-121			
2,4-Dinitrophenol	68.9	50.0	ug/L	50.0		138	11-165			
2,4-Dinitrotoluene	45.8	10.0	ug/L	50.0		91.5	17-155			
2,6-Dinitrotoluene	35.4	10.0	ug/L	50.0		70.7	15-125			



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFE1145 - SW3580A-MS**

**LCS (BFE1145-BS1)**

Prepared & Analyzed: 05/31/2022

2-Chloronaphthalene	29.8	10.0	ug/L	50.0		59.6	27-89			
2-Chlorophenol	26.2	10.0	ug/L	50.0		52.4	15-110			
2-Nitrophenol	35.9	10.0	ug/L	50.0		71.8	11-115			
3,3'-Dichlorobenzidine	24.1	10.0	ug/L	50.0		48.3	25-95			
4,6-Dinitro-2-methylphenol	59.9	50.0	ug/L	50.0		120	25-130			
4-Bromophenyl phenyl ether	31.9	10.0	ug/L	50.0		63.8	15-110			
4-Chlorophenyl phenyl ether	34.8	10.0	ug/L	50.0		69.6	15-110			
4-Nitrophenol	20.6	50.0	ug/L	50.0		41.3	12-70			
Acenaphthene	29.7	10.0	ug/L	50.0		59.5	18-85			
Acenaphthylene	28.3	10.0	ug/L	50.0		56.6	20-75			
Acetophenone	29.4	20.0	ug/L	50.0		58.8	0-200			
alpha-Terpineol	25.1	2.50	ug/L	50.0		50.3	0-200			
Anthracene	30.4	10.0	ug/L	50.0		60.8	35-95			
Benzo (a) anthracene	36.6	10.0	ug/L	50.0		73.2	25-95			
Benzo (a) pyrene	37.8	10.0	ug/L	50.0		75.7	37-110			
Benzo (b) fluoranthene	42.1	10.0	ug/L	50.0		84.3	25-75			L
Benzo (g,h,i) perylene	35.7	10.0	ug/L	50.0		71.4	25-90			
Benzo (k) fluoranthene	37.9	10.0	ug/L	50.0		75.8	25-95			
bis (2-Chloroethoxy) methane	35.2	10.0	ug/L	50.0		70.4	25-110			
bis (2-Chloroethyl) ether	26.8	10.0	ug/L	50.0		53.6	25-85			
2,2'-Oxybis (1-chloropropane)	27.1	10.0	ug/L	50.0		54.1	25-95			
bis (2-Ethylhexyl) phthalate	38.8	5.00	ug/L	50.0		77.7	30-125			
Butyl benzyl phthalate	37.9	10.0	ug/L	50.0		75.7	30-115			
Carbazole	36.4	2.50	ug/L	50.0		72.8	0-200			
Chrysene	38.3	10.0	ug/L	50.0		76.6	20-90			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1145 - SW3580A-MS**

**LCS (BFE1145-BS1)**

Prepared & Analyzed: 05/31/2022

Dibenz (a,h) anthracene	41.9	10.0	ug/L	50.0		83.8	27-125			
Diethyl phthalate	33.2	10.0	ug/L	50.0		66.3	25-120			
Dimethyl phthalate	33.4	10.0	ug/L	50.0		66.8	25-125			
Di-n-butyl phthalate	33.1	10.0	ug/L	50.0		66.1	35-115			
Di-n-octyl phthalate	37.9	10.0	ug/L	50.0		75.7	25-105			
Fluoranthene	42.0	10.0	ug/L	50.0		84.0	33-95			
Fluorene	31.7	10.0	ug/L	50.0		63.4	15-97			
Hexachlorobenzene	32.9	1.00	ug/L	50.0		65.8	25-125			
Hexachlorobutadiene	39.8	10.0	ug/L	50.0		79.5	25-125			
Hexachlorocyclopentadiene	29.0	10.0	ug/L	50.0		57.9	25-125			
Hexachloroethane	25.6	10.0	ug/L	50.0		51.1	25-125			
Indeno (1,2,3-cd) pyrene	40.6	10.0	ug/L	50.0		81.1	25-125			
Isophorone	25.5	10.0	ug/L	50.0		51.0	10-110			
Naphthalene	27.6	0.10	ug/L	50.0		55.1	12-100			
Nitrobenzene	38.4	10.0	ug/L	50.0		76.9	30-97			
n-Nitrosodimethylamine	18.2	10.0	ug/L	50.0		36.4	10-85			
n-Nitrosodi-n-propylamine	30.3	10.0	ug/L	50.0		60.5	12-97			
n-Nitrosodiphenylamine	27.4	10.0	ug/L	50.0		54.8	12-97			
p-Chloro-m-cresol	47.9	10.0	ug/L	50.0		95.7	10-91			L
Pentachlorophenol	33.3	20.0	ug/L	50.0		66.5	30-109			
Phenanthrene	33.6	10.0	ug/L	50.0		67.1	30-88			
Phenol	14.0	10.0	ug/L	50.5		27.8	10-70			
Pyrene	36.9	10.0	ug/L	50.0		73.8	27-110			
Pyridine	28.6	10.0	ug/L	50.0		57.3	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>58.5</i>		ug/L	<i>100</i>		<i>58.5</i>	<i>10-86</i>			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1145 - SW3580A-MS

#### LCS (BFE1145-BS1)

Prepared & Analyzed: 05/31/2022

<i>Surr: 2-Fluorobiphenyl (Surr)</i>	32.2		ug/L	50.0		64.4	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	33.6		ug/L	100		33.6	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	33.5		ug/L	50.0		67.0	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	25.7		ug/L	100		25.7	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	41.8		ug/L	50.0		83.7	27-133			

#### Matrix Spike (BFE1145-MS1)

Source: 22E1478-02

Prepared: 05/31/2022 Analyzed: 06/01/2022

1,2,4-Trichlorobenzene	33.4	10.0	ug/L	52.6	BLOD	63.4	22-65			
1,2-Dichlorobenzene	24.3	10.0	ug/L	52.6	BLOD	46.2	22-60			
1,3-Dichlorobenzene	22.6	10.0	ug/L	52.6	BLOD	43.0	22-60			
1,4-Dichlorobenzene	23.7	10.0	ug/L	52.6	BLOD	45.1	13-60			
2,4,6-Trichlorophenol	32.2	10.0	ug/L	52.6	BLOD	61.2	11-75			
2,4-Dichlorophenol	37.7	10.0	ug/L	52.6	BLOD	71.6	11-75			
2,4-Dimethylphenol	30.2	2.63	ug/L	52.6	BLOD	57.5	11-65			
2,4-Dinitrophenol	61.2	50.0	ug/L	52.6	BLOD	116	11-110			M
2,4-Dinitrotoluene	41.0	10.0	ug/L	52.6	BLOD	78.0	17-95			
2,6-Dinitrotoluene	31.9	10.0	ug/L	52.6	BLOD	60.6	15-125			
2-Chloronaphthalene	28.8	10.0	ug/L	52.6	BLOD	54.7	27-89			
2-Chlorophenol	27.0	10.0	ug/L	52.6	BLOD	51.2	19-64			
2-Nitrophenol	32.3	10.0	ug/L	52.6	BLOD	61.4	11-75			
3,3'-Dichlorobenzidine	14.3	10.0	ug/L	52.6	BLOD	27.2	10-85			
4,6-Dinitro-2-methylphenol	59.3	50.0	ug/L	52.6	BLOD	113	40-130			
4-Bromophenyl phenyl ether	33.4	10.0	ug/L	52.6	BLOD	63.5	15-110			
4-Chlorophenyl phenyl ether	33.8	10.0	ug/L	52.6	BLOD	64.2	15-110			
4-Nitrophenol	27.7	50.0	ug/L	52.6	BLOD	52.7	12-70			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1145 - SW3580A-MS**

**Matrix Spike (BFE1145-MS1)**

**Source: 22E1478-02**

Prepared: 05/31/2022 Analyzed: 06/01/2022

Acenaphthene	30.2	10.0	ug/L	52.6	BLOD	57.4	15-90			
Acenaphthylene	26.9	10.0	ug/L	52.6	BLOD	51.2	15-99			
Acetophenone	29.6	20.0	ug/L	52.6	BLOD	56.2	0-200			
alpha-Terpineol	21.4	2.50	ug/L	52.6	BLOD	40.7	0-200			
Anthracene	32.0	10.0	ug/L	52.6	BLOD	60.7	20-95			
Benzo (a) anthracene	34.1	5.26	ug/L	52.6	BLOD	64.7	25-95			
Benzo (a) pyrene	35.8	5.26	ug/L	52.6	BLOD	68.0	25-82			
Benzo (b) fluoranthene	42.0	10.0	ug/L	52.6	BLOD	79.8	25-75			M
Benzo (g,h,i) perylene	24.0	10.0	ug/L	52.6	BLOD	45.5	25-90			
Benzo (k) fluoranthene	39.2	10.0	ug/L	52.6	BLOD	74.4	25-95			
bis (2-Chloroethoxy) methane	31.1	10.0	ug/L	52.6	BLOD	59.1	25-85			
bis (2-Chloroethyl) ether	26.4	10.0	ug/L	52.6	BLOD	50.2	25-85			
2,2'-Oxybis (1-chloropropane)	28.2	10.0	ug/L	52.6	BLOD	53.6	25-87			
bis (2-Ethylhexyl) phthalate	32.7	5.00	ug/L	52.6	BLOD	62.2	30-125			
Butyl benzyl phthalate	33.4	10.0	ug/L	52.6	BLOD	63.5	30-115			
Carbazole	35.9	2.50	ug/L	52.6	BLOD	68.3	0-200			
Chrysene	30.3	10.0	ug/L	52.6	BLOD	57.7	20-90			
Dibenz (a,h) anthracene	32.2	10.0	ug/L	52.6	BLOD	61.2	27-125			
Diethyl phthalate	30.6	10.0	ug/L	52.6	BLOD	58.0	25-120			
Dimethyl phthalate	31.8	10.0	ug/L	52.6	BLOD	60.4	25-125			
Di-n-butyl phthalate	33.2	10.0	ug/L	52.6	BLOD	63.2	25-115			
Di-n-octyl phthalate	33.8	10.0	ug/L	52.6	BLOD	64.2	22-105			
Fluoranthene	37.6	10.0	ug/L	52.6	BLOD	71.5	25-96			
Fluorene	31.6	10.0	ug/L	52.6	BLOD	60.0	15-97			
Hexachlorobenzene	33.9	0.53	ug/L	52.6	BLOD	64.5	25-125			

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#### Batch BFE1145 - SW3580A-MS

**Matrix Spike (BFE1145-MS1)**

Source: 22E1478-02

Prepared: 05/31/2022 Analyzed: 06/01/2022

Hexachlorobutadiene	43.6	10.0	ug/L	52.6	BLOD	82.8	25-125			
Hexachlorocyclopentadiene	31.4	10.0	ug/L	52.6	BLOD	59.6	10-90			
Hexachloroethane	30.6	10.0	ug/L	52.6	BLOD	58.2	25-125			
Indeno (1,2,3-cd) pyrene	29.9	10.0	ug/L	52.6	BLOD	56.8	25-125			
Isophorone	23.4	10.0	ug/L	52.6	BLOD	44.4	10-110			
Naphthalene	30.0	0.10	ug/L	52.6	0.32	56.4	12-100			
Nitrobenzene	39.1	10.0	ug/L	52.6	BLOD	74.3	27-77			
n-Nitrosodimethylamine	18.2	10.0	ug/L	52.6	BLOD	34.7	10-85			
n-Nitrosodi-n-propylamine	29.0	10.0	ug/L	52.6	BLOD	55.1	12-97			
n-Nitrosodiphenylamine	25.8	10.0	ug/L	52.6	BLOD	48.9	12-97			
p-Chloro-m-cresol	41.1	10.0	ug/L	52.6	BLOD	78.1	10-91			
Pentachlorophenol	39.3	20.0	ug/L	52.6	BLOD	74.6	27-109			
Phenanthrene	36.8	10.0	ug/L	52.6	BLOD	70.0	35-115			
Phenol	13.3	10.0	ug/L	53.2	BLOD	25.0	10-70			
Pyrene	30.8	10.0	ug/L	52.6	BLOD	58.5	23-110			
Pyridine	29.8	10.0	ug/L	52.6	BLOD	56.6	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	75.7		ug/L	105		72.0	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	30.7		ug/L	52.6		58.3	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	33.0		ug/L	105		31.3	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	34.8		ug/L	52.6		66.1	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	25.0		ug/L	105		23.8	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	34.7		ug/L	52.6		65.9	27-133			

**Matrix Spike Dup (BFE1145-MSD1)**

Source: 22E1478-02

Prepared: 05/31/2022 Analyzed: 06/01/2022

1,2,4-Trichlorobenzene	31.9	10.0	ug/L	51.5	BLOD	61.8	22-65	4.51	20	
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**Batch BFE1145 - SW3580A-MS**

Matrix Spike Dup (BFE1145-MSD1)	Source: 22E1478-02		Prepared: 05/31/2022 Analyzed: 06/01/2022							
1,2-Dichlorobenzene	21.7	10.0	ug/L	51.5	BLOD	42.2	22-60	11.1	20	
1,3-Dichlorobenzene	20.8	10.0	ug/L	51.5	BLOD	40.4	22-60	8.46	20	
1,4-Dichlorobenzene	21.8	10.0	ug/L	51.5	BLOD	42.3	13-60	8.58	20	
2,4,6-Trichlorophenol	31.3	10.0	ug/L	51.5	BLOD	60.7	11-75	2.94	20	
2,4-Dichlorophenol	36.0	10.0	ug/L	51.5	BLOD	69.9	11-75	4.58	20	
2,4-Dimethylphenol	27.7	2.58	ug/L	51.5	BLOD	53.6	11-65	8.94	20	
2,4-Dinitrophenol	57.0	50.0	ug/L	51.5	BLOD	111	11-110	7.09	20	M
2,4-Dinitrotoluene	37.8	10.0	ug/L	51.5	BLOD	73.3	17-95	8.32	20	
2,6-Dinitrotoluene	30.9	10.0	ug/L	51.5	BLOD	60.0	15-125	3.11	20	
2-Chloronaphthalene	27.4	10.0	ug/L	51.5	BLOD	53.1	27-89	5.11	20	
2-Chlorophenol	24.8	10.0	ug/L	51.5	BLOD	48.1	19-64	8.48	20	
2-Nitrophenol	30.8	10.0	ug/L	51.5	BLOD	59.7	11-75	4.87	20	
3,3'-Dichlorobenzidine	12.5	10.0	ug/L	51.5	BLOD	24.2	10-85	13.6	20	
4,6-Dinitro-2-methylphenol	54.3	50.0	ug/L	51.5	BLOD	105	40-130	8.74	20	
4-Bromophenyl phenyl ether	32.0	10.0	ug/L	51.5	BLOD	62.0	15-110	4.47	20	
4-Chlorophenyl phenyl ether	32.9	10.0	ug/L	51.5	BLOD	63.8	15-110	2.65	20	
4-Nitrophenol	24.0	50.0	ug/L	51.5	BLOD	46.6	12-70	14.3	20	
Acenaphthene	28.4	10.0	ug/L	51.5	BLOD	55.0	15-90	6.35	20	
Acenaphthylene	25.9	10.0	ug/L	51.5	BLOD	50.2	15-99	4.04	20	
Acetophenone	27.6	20.0	ug/L	51.5	BLOD	53.6	0-200	6.74	20	
alpha-Terpineol	20.6	2.50	ug/L	51.5	BLOD	40.0	0-200	3.72	20	
Anthracene	30.7	10.0	ug/L	51.5	BLOD	59.5	20-95	4.21	20	
Benzo (a) anthracene	30.5	5.15	ug/L	51.5	BLOD	59.2	25-95	10.9	20	
Benzo (a) pyrene	32.6	5.15	ug/L	51.5	BLOD	63.3	25-82	9.23	20	
Benzo (b) fluoranthene	37.0	10.0	ug/L	51.5	BLOD	71.7	25-75	12.8	20	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1145 - SW3580A-MS**

Matrix Spike Dup (BFE1145-MSD1)	Source: 22E1478-02		Prepared: 05/31/2022 Analyzed: 06/01/2022							
Benzo (g,h,i) perylene	19.6	10.0	ug/L	51.5	BLOD	38.1	25-90	19.8	20	
Benzo (k) fluoranthene	36.3	10.0	ug/L	51.5	BLOD	70.5	25-95	7.49	20	
bis (2-Chloroethoxy) methane	29.9	10.0	ug/L	51.5	BLOD	57.9	25-85	4.05	20	
bis (2-Chloroethyl) ether	23.6	10.0	ug/L	51.5	BLOD	45.8	25-85	11.1	20	
2,2'-Oxybis (1-chloropropane)	24.8	10.0	ug/L	51.5	BLOD	48.0	25-87	13.1	20	
bis (2-Ethylhexyl) phthalate	28.8	5.00	ug/L	51.5	BLOD	55.9	30-125	12.7	20	
Butyl benzyl phthalate	28.5	10.0	ug/L	51.5	BLOD	55.3	30-115	15.9	20	
Carbazole	33.0	2.50	ug/L	51.5	BLOD	64.0	0-200	8.54	20	
Chrysene	27.0	10.0	ug/L	51.5	BLOD	52.3	20-90	11.8	20	
Dibenz (a,h) anthracene	27.6	10.0	ug/L	51.5	BLOD	53.6	27-125	15.4	20	
Diethyl phthalate	29.9	10.0	ug/L	51.5	BLOD	58.0	25-120	2.12	20	
Dimethyl phthalate	30.1	10.0	ug/L	51.5	BLOD	58.4	25-125	5.47	20	
Di-n-butyl phthalate	31.1	10.0	ug/L	51.5	BLOD	60.4	25-115	6.65	20	
Di-n-octyl phthalate	29.0	10.0	ug/L	51.5	BLOD	56.2	22-105	15.5	20	
Fluoranthene	36.1	10.0	ug/L	51.5	BLOD	70.0	25-96	4.16	20	
Fluorene	30.9	10.0	ug/L	51.5	BLOD	59.9	15-97	2.22	20	
Hexachlorobenzene	32.3	0.52	ug/L	51.5	BLOD	62.7	25-125	4.82	20	
Hexachlorobutadiene	41.8	10.0	ug/L	51.5	BLOD	81.0	25-125	4.22	20	
Hexachlorocyclopentadiene	30.6	10.0	ug/L	51.5	BLOD	59.3	10-90	2.57	20	
Hexachloroethane	28.6	10.0	ug/L	51.5	BLOD	55.5	25-125	6.82	20	
Indeno (1,2,3-cd) pyrene	25.2	10.0	ug/L	51.5	BLOD	48.9	25-125	17.0	20	
Isophorone	22.6	10.0	ug/L	51.5	BLOD	43.8	10-110	3.56	20	
Naphthalene	28.4	0.10	ug/L	51.5	0.32	54.5	12-100	5.37	20	
Nitrobenzene	36.4	10.0	ug/L	51.5	BLOD	70.6	27-77	7.19	20	
n-Nitrosodimethylamine	16.9	10.0	ug/L	51.5	BLOD	32.8	10-85	7.57	20	

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1145 - SW3580A-MS

Matrix Spike Dup (BFE1145-MSD1)	Source: 22E1478-02		Prepared: 05/31/2022 Analyzed: 06/01/2022							
n-Nitrosodi-n-propylamine	26.7	10.0	ug/L	51.5	BLOD	51.7	12-97	8.46	20	
n-Nitrosodiphenylamine	22.5	10.0	ug/L	51.5	BLOD	43.6	12-97	13.5	20	
p-Chloro-m-cresol	40.2	10.0	ug/L	51.5	BLOD	78.0	10-91	2.17	20	
Pentachlorophenol	35.7	20.0	ug/L	51.5	BLOD	69.3	27-109	9.40	20	
Phenanthrene	35.1	10.0	ug/L	51.5	BLOD	68.2	35-115	4.72	20	
Phenol	12.5	10.0	ug/L	52.1	BLOD	24.0	10-70	6.12	20	
Pyrene	26.4	10.0	ug/L	51.5	BLOD	51.3	23-110	15.3	20	
Pyridine	24.7	10.0	ug/L	51.5	BLOD	47.8	0-200	18.9	20	
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	71.7		ug/L	103		69.5	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	29.1		ug/L	51.5		56.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	30.5		ug/L	103		29.6	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	32.0		ug/L	51.5		62.1	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	23.7		ug/L	103		23.0	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	29.4		ug/L	51.5		57.1	27-133			

### Batch BFF0013 - SW3580A-MS

Blank (BFF0013-BLK1)	Prepared & Analyzed: 06/01/2022									
1,2,4,5-Tetrachlorobenzene	ND	10.0	ug/L							
1,3,5-Trinitrobenzene	ND	5.00	ug/L							
1,3-Dinitrobenzene	ND	2.50	ug/L							
1,4-Naphthoquinone	ND	10.0	ug/L							
1-Naphthylamine	ND	10.0	ug/L							
2,3,4,6-Tetrachlorophenol	ND	10.0	ug/L							
2,4,5-Trichlorophenol	ND	10.0	ug/L							
2,4,6-Trichlorophenol	ND	10.0	ug/L							



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

2,4-Dichlorophenol	ND	10.0	ug/L
2,4-Dimethylphenol	ND	5.00	ug/L
2,4-Dinitrophenol	ND	50.0	ug/L
2,4-Dinitrotoluene	ND	10.0	ug/L
2,6-Dichlorophenol	ND	10.0	ug/L
2,6-Dinitrotoluene	ND	10.0	ug/L
2-Acetylaminofluorene	ND	2.50	ug/L
2-Chloronaphthalene	ND	10.0	ug/L
2-Chlorophenol	ND	10.0	ug/L
2-Methylnaphthalene	ND	10.0	ug/L
2-Naphthylamine	ND	10.0	ug/L
2-Nitroaniline	ND	20.0	ug/L
2-Nitrophenol	ND	10.0	ug/L
3,3'-Dichlorobenzidine	ND	10.0	ug/L
3,3'-Dimethylbenzidine	ND	2.50	ug/L
3-Methylcholanthrene	ND	10.0	ug/L
3-Nitroaniline	ND	20.0	ug/L
4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Aminobiphenyl	ND	10.0	ug/L
4-Bromophenyl phenyl ether	ND	10.0	ug/L
4-Chloroaniline	ND	10.0	ug/L
4-Chlorophenyl phenyl ether	ND	10.0	ug/L
4-Nitroaniline	ND	20.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
5-Nitro-o-toluidine	ND	10.0	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/L
Acenaphthene	ND	10.0	ug/L
Acenaphthylene	ND	10.0	ug/L
Acetophenone	ND	20.0	ug/L
Anthracene	ND	10.0	ug/L
Benzo (a) anthracene	ND	10.0	ug/L
Benzo (a) pyrene	ND	10.0	ug/L
Benzo (b) fluoranthene	ND	10.0	ug/L
Benzo (g,h,i) perylene	ND	10.0	ug/L
Benzo (k) fluoranthene	ND	10.0	ug/L
Benzyl alcohol	ND	20.0	ug/L
bis (2-Chloroethoxy) methane	ND	10.0	ug/L
bis (2-Chloroethyl) ether	ND	10.0	ug/L
2,2'-Oxybis (1-chloropropane)	ND	10.0	ug/L
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L
Butyl benzyl phthalate	ND	10.0	ug/L
Chlorobenzilate	ND	2.50	ug/L
Chrysene	ND	10.0	ug/L
Diallate	ND	2.50	ug/L
Dibenz (a,h) anthracene	ND	10.0	ug/L
Dibenzofuran	ND	5.00	ug/L
Diethyl phthalate	ND	10.0	ug/L
Dimethoate	ND	2.50	ug/L
Dimethyl phthalate	ND	10.0	ug/L
Di-n-butyl phthalate	ND	10.0	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

Di-n-octyl phthalate	ND	10.0	ug/L
Diphenylamine	ND	10.0	ug/L
Disulfoton	ND	2.50	ug/L
Ethyl methanesulfonate	ND	20.0	ug/L
Ethyl parathion	ND	2.50	ug/L
Famphur	ND	2.50	ug/L
Fluoranthene	ND	10.0	ug/L
Fluorene	ND	10.0	ug/L
Hexachlorobenzene	ND	1.00	ug/L
Hexachlorobutadiene	ND	10.0	ug/L
Hexachlorocyclopentadiene	ND	10.0	ug/L
Hexachloroethane	ND	10.0	ug/L
Hexachloropropene	ND	2.50	ug/L
Indeno (1,2,3-cd) pyrene	ND	10.0	ug/L
Isodrin	ND	10.0	ug/L
Isophorone	ND	10.0	ug/L
Isosafrole	ND	10.0	ug/L
Kepone	ND	10.0	ug/L
m+p-Cresols	ND	10.0	ug/L
Methapyrilene	ND	10.0	ug/L
Methyl methanesulfonate	ND	10.0	ug/L
Methyl parathion	ND	2.50	ug/L
Naphthalene	0.26	0.10	ug/L
Nitrobenzene	ND	10.0	ug/L
n-Nitrosodiethylamine	ND	2.50	ug/L

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## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

n-Nitrosodimethylamine	ND	10.0	ug/L							
n-Nitrosodi-n-butylamine	ND	10.0	ug/L							
n-Nitrosodi-n-propylamine	ND	10.0	ug/L							
n-Nitrosodiphenylamine	ND	10.0	ug/L							
n-Nitrosomethylethylamine	ND	2.50	ug/L							
n-Nitrosopiperidine	ND	10.0	ug/L							
n-Nitrosopyrrolidine	ND	2.50	ug/L							
o,o,o-Triethyl phosphorothioate	ND	10.0	ug/L							
o,o-Diethyl o-2-pyrazinyl phosphorothioate	ND	10.0	ug/L							
o+m+p-Cresols	ND	10.0	ug/L							
o-Cresol	ND	10.0	ug/L							
o-Toluidine	ND	2.50	ug/L							
p-(Dimethylamino) azobenzene	ND	2.50	ug/L							
p-Chloro-m-cresol	ND	10.0	ug/L							
Pentachlorobenzene	ND	10.0	ug/L							
Pentachloronitrobenzene (quintozene)	ND	10.0	ug/L							
Phenacetin	ND	10.0	ug/L							
Phenanthrene	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Phorate	ND	2.50	ug/L							
p-Phenylenediamine	ND	10.0	ug/L							
Pronamide	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Safrole	ND	2.50	ug/L							
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.4		ug/L	100		55.4	10-86			

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#### Batch BFF0013 - SW3580A-MS

**Blank (BFF0013-BLK1)**

Prepared &amp; Analyzed: 06/01/2022

<i>Surr: 2-Fluorobiphenyl (Surr)</i>	33.8		ug/L	50.0		67.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	45.2		ug/L	100		45.2	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	34.4		ug/L	50.0		68.9	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	31.6		ug/L	100		31.6	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	40.5		ug/L	50.0		81.0	27-133			

**LCS (BFF0013-BS1)**

Prepared &amp; Analyzed: 06/01/2022

1,2,4-Trichlorobenzene	17.2	10.0	ug/L	50.0		34.5	22-135			
1,2-Dichlorobenzene	12.3	10.0	ug/L	50.0		24.7	22-115			
1,3-Dichlorobenzene	10.7	10.0	ug/L	50.0		21.5	22-112			L
1,4-Dichlorobenzene	11.7	10.0	ug/L	50.0		23.3	13-112			
2,4,6-Trichlorophenol	26.0	10.0	ug/L	50.0		51.9	11-145			
2,4-Dichlorophenol	28.3	10.0	ug/L	50.0		56.7	11-75			
2,4-Dimethylphenol	23.8	5.00	ug/L	50.0		47.5	11-121			
2,4-Dinitrophenol	31.7	50.0	ug/L	50.0		63.4	11-165			
2,4-Dinitrotoluene	35.6	10.0	ug/L	50.0		71.1	17-155			
2,6-Dinitrotoluene	26.7	10.0	ug/L	50.0		53.4	15-125			
2-Chloronaphthalene	25.8	10.0	ug/L	50.0		51.5	27-89			
2-Chlorophenol	20.5	10.0	ug/L	50.0		41.1	15-110			
2-Nitrophenol	22.9	10.0	ug/L	50.0		45.8	11-115			
3,3'-Dichlorobenzidine	19.7	10.0	ug/L	50.0		39.4	25-95			
4,6-Dinitro-2-methylphenol	36.0	50.0	ug/L	50.0		72.1	25-130			
4-Bromophenyl phenyl ether	23.7	10.0	ug/L	50.0		47.4	15-110			
4-Chlorophenyl phenyl ether	25.2	10.0	ug/L	50.0		50.4	15-110			
4-Nitrophenol	13.7	50.0	ug/L	50.0		27.4	12-70			

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**Batch BFF0013 - SW3580A-MS**

**LCS (BFF0013-BS1)**

Prepared & Analyzed: 06/01/2022

Acenaphthene	27.2	10.0	ug/L	50.0		54.5	18-85			
Acenaphthylene	30.0	10.0	ug/L	50.0		60.1	20-75			
Acetophenone	20.9	20.0	ug/L	50.0		41.8	0-200			
alpha-Terpineol	19.8	2.50	ug/L	50.0		39.6	0-200			
Anthracene	33.3	10.0	ug/L	50.0		66.6	35-95			
Benzo (a) anthracene	40.2	10.0	ug/L	50.0		80.3	25-95			
Benzo (a) pyrene	46.3	10.0	ug/L	50.0		92.7	37-110			
Benzo (b) fluoranthene	49.3	10.0	ug/L	50.0		98.5	25-75			L
Benzo (g,h,i) perylene	16.2	10.0	ug/L	50.0		32.4	25-90			
Benzo (k) fluoranthene	42.8	10.0	ug/L	50.0		85.6	25-95			
bis (2-Chloroethoxy) methane	23.6	10.0	ug/L	50.0		47.1	25-110			
bis (2-Chloroethyl) ether	19.4	10.0	ug/L	50.0		38.8	25-85			
2,2'-Oxybis (1-chloropropane)	20.4	10.0	ug/L	50.0		40.9	25-95			
bis (2-Ethylhexyl) phthalate	46.0	5.00	ug/L	50.0		91.9	30-125			
Butyl benzyl phthalate	45.3	10.0	ug/L	50.0		90.6	30-115			
Carbazole	42.8	2.50	ug/L	50.0		85.5	0-200			
Chrysene	42.6	10.0	ug/L	50.0		85.2	20-90			
Dibenz (a,h) anthracene	21.5	10.0	ug/L	50.0		43.1	27-125			
Diethyl phthalate	32.9	10.0	ug/L	50.0		65.8	25-120			
Dimethyl phthalate	32.1	10.0	ug/L	50.0		64.3	25-125			
Di-n-butyl phthalate	44.7	10.0	ug/L	50.0		89.4	35-115			
Di-n-octyl phthalate	73.4	10.0	ug/L	50.0		147	25-105			L
Fluoranthene	42.7	10.0	ug/L	50.0		85.3	33-95			
Fluorene	30.3	10.0	ug/L	50.0		60.5	15-97			
Hexachlorobenzene	26.3	1.00	ug/L	50.0		52.6	25-125			

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**LCS (BFF0013-BS1)**

Prepared &amp; Analyzed: 06/01/2022

Hexachlorobutadiene	15.4	10.0	ug/L	50.0		30.8	25-125			
Hexachlorocyclopentadiene	10.3	10.0	ug/L	50.0		20.6	25-125			L
Hexachloroethane	9.46	10.0	ug/L	50.0		18.9	25-125			L
Indeno (1,2,3-cd) pyrene	21.8	10.0	ug/L	50.0		43.6	25-125			
Isophorone	16.4	10.0	ug/L	50.0		32.9	10-110			
Naphthalene	19.0	0.10	ug/L	50.0		38.0	12-100			
Nitrobenzene	21.8	10.0	ug/L	50.0		43.5	30-97			
n-Nitrosodimethylamine	11.6	10.0	ug/L	50.0		23.2	10-85			
n-Nitrosodi-n-propylamine	24.8	10.0	ug/L	50.0		49.6	12-97			
n-Nitrosodiphenylamine	23.0	10.0	ug/L	50.0		46.0	12-97			
p-Chloro-m-cresol	28.5	10.0	ug/L	50.0		57.0	10-91			
Pentachlorophenol	28.8	20.0	ug/L	50.0		57.6	30-109			
Phenanthrene	35.8	10.0	ug/L	50.0		71.7	30-88			
Phenol	9.42	10.0	ug/L	50.5		18.7	10-70			
Pyrene	44.5	10.0	ug/L	50.0		89.0	27-110			
Pyridine	18.9	10.0	ug/L	50.0		37.8	0-200			
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<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.7		ug/L	100		55.7	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	28.0		ug/L	50.0		56.0	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	26.7		ug/L	100		26.7	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	24.7		ug/L	50.0		49.4	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	22.5		ug/L	100		22.5	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	46.9		ug/L	50.0		93.8	27-133			

**Matrix Spike (BFF0013-MS1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2,4-Trichlorobenzene	20.1	10.0	ug/L	46.7	BLOD	43.0	22-65			
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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Matrix Spike (BFF0013-MS1)**

**Source: 22E1463-02**

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2-Dichlorobenzene	18.0	10.0	ug/L	46.7	BLOD	38.6	22-60			
1,3-Dichlorobenzene	16.8	10.0	ug/L	46.7	BLOD	36.0	22-60			
1,4-Dichlorobenzene	18.1	10.0	ug/L	46.7	BLOD	38.7	13-60			
2,4,6-Trichlorophenol	23.1	10.0	ug/L	46.7	BLOD	49.4	11-75			
2,4-Dichlorophenol	25.3	10.0	ug/L	46.7	BLOD	54.1	11-75			
2,4-Dimethylphenol	22.0	4.67	ug/L	46.7	BLOD	47.1	11-65			
2,4-Dinitrophenol	31.6	50.0	ug/L	46.7	BLOD	67.7	11-110			
2,4-Dinitrotoluene	35.6	10.0	ug/L	46.7	BLOD	76.3	17-95			
2,6-Dinitrotoluene	28.1	10.0	ug/L	46.7	BLOD	60.2	15-125			
2-Chloronaphthalene	25.3	10.0	ug/L	46.7	BLOD	54.1	27-89			
2-Chlorophenol	22.8	10.0	ug/L	46.7	BLOD	48.9	19-64			
2-Nitrophenol	23.1	10.0	ug/L	46.7	BLOD	49.4	11-75			
3,3'-Dichlorobenzidine	14.1	10.0	ug/L	46.7	BLOD	30.2	10-85			
4,6-Dinitro-2-methylphenol	32.2	50.0	ug/L	46.7	BLOD	69.0	40-130			
4-Bromophenyl phenyl ether	24.5	10.0	ug/L	46.7	BLOD	52.4	15-110			
4-Chlorophenyl phenyl ether	26.4	10.0	ug/L	46.7	BLOD	56.5	15-110			
4-Nitrophenol	11.8	50.0	ug/L	46.7	BLOD	25.3	12-70			
Acenaphthene	27.4	10.0	ug/L	46.7	BLOD	58.6	15-90			
Acenaphthylene	29.9	10.0	ug/L	46.7	BLOD	63.9	15-99			
Acetophenone	20.5	20.0	ug/L	46.7	BLOD	43.9	0-200			
alpha-Terpineol	16.7	2.50	ug/L	46.7	BLOD	35.8	0-200			
Anthracene	34.4	10.0	ug/L	46.7	BLOD	73.7	20-95			
Benzo (a) anthracene	36.4	9.35	ug/L	46.7	BLOD	77.9	25-95			
Benzo (a) pyrene	43.9	9.35	ug/L	46.7	BLOD	94.0	25-82			M
Benzo (b) fluoranthene	44.4	10.0	ug/L	46.7	BLOD	95.0	25-75			M



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike (BFF0013-MS1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
Benzo (g,h,i) perylene	14.2	10.0	ug/L	46.7	BLOD	30.4	25-90			
Benzo (k) fluoranthene	47.9	10.0	ug/L	46.7	BLOD	102	25-95			M
bis (2-Chloroethoxy) methane	22.1	10.0	ug/L	46.7	BLOD	47.3	25-85			
bis (2-Chloroethyl) ether	22.1	10.0	ug/L	46.7	BLOD	47.3	25-85			
2,2'-Oxybis (1-chloropropane)	21.8	10.0	ug/L	46.7	BLOD	46.7	25-87			
bis (2-Ethylhexyl) phthalate	42.8	5.00	ug/L	46.7	BLOD	91.6	30-125			
Butyl benzyl phthalate	42.3	10.0	ug/L	46.7	BLOD	90.6	30-115			
Carbazole	38.9	2.50	ug/L	46.7	BLOD	83.1	0-200			
Chrysene	38.8	10.0	ug/L	46.7	BLOD	83.0	20-90			
Dibenz (a,h) anthracene	18.9	10.0	ug/L	46.7	BLOD	40.5	27-125			
Diethyl phthalate	33.6	10.0	ug/L	46.7	BLOD	71.9	25-120			
Dimethyl phthalate	33.3	10.0	ug/L	46.7	BLOD	71.3	25-125			
Di-n-butyl phthalate	40.6	10.0	ug/L	46.7	BLOD	87.0	25-115			
Di-n-octyl phthalate	84.0	10.0	ug/L	46.7	BLOD	180	22-105			M
Fluoranthene	38.7	10.0	ug/L	46.7	BLOD	82.9	25-96			
Fluorene	32.6	10.0	ug/L	46.7	BLOD	69.8	15-97			
Hexachlorobenzene	26.0	0.93	ug/L	46.7	BLOD	55.6	25-125			
Hexachlorobutadiene	19.2	10.0	ug/L	46.7	BLOD	41.0	25-125			
Hexachlorocyclopentadiene	8.53	10.0	ug/L	46.7	BLOD	18.3	10-90			
Hexachloroethane	16.5	10.0	ug/L	46.7	BLOD	35.4	25-125			
Indeno (1,2,3-cd) pyrene	19.1	10.0	ug/L	46.7	BLOD	40.9	25-125			
Isophorone	14.3	10.0	ug/L	46.7	BLOD	30.7	10-110			
Naphthalene	21.3	0.10	ug/L	46.7	0.20	45.1	12-100			
Nitrobenzene	22.5	10.0	ug/L	46.7	BLOD	48.1	27-77			
n-Nitrosodimethylamine	13.9	10.0	ug/L	46.7	BLOD	29.8	10-85			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**Matrix Spike (BFF0013-MS1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

n-Nitrosodi-n-propylamine	21.8	10.0	ug/L	46.7	BLOD	46.6	12-97			
n-Nitrosodiphenylamine	24.1	10.0	ug/L	46.7	BLOD	51.6	12-97			
p-Chloro-m-cresol	25.6	10.0	ug/L	46.7	BLOD	54.8	10-91			
Pentachlorophenol	25.4	20.0	ug/L	46.7	BLOD	54.4	27-109			
Phenanthrene	38.2	10.0	ug/L	46.7	BLOD	81.8	35-115			
Phenol	8.69	10.0	ug/L	47.2	BLOD	18.4	10-70			
Pyrene	43.1	10.0	ug/L	46.7	BLOD	92.2	23-110			
Pyridine	5.50	10.0	ug/L	46.7	BLOD	11.8	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.4		ug/L	93.5		59.3	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	27.7		ug/L	46.7		59.3	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	33.1		ug/L	93.5		35.4	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	26.7		ug/L	46.7		57.1	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	22.0		ug/L	93.5		23.5	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	44.7		ug/L	46.7		95.6	27-133			

**Matrix Spike Dup (BFF0013-MSD1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2,4-Trichlorobenzene	28.4	10.0	ug/L	46.7	BLOD	60.7	22-65	34.2	20	P
1,2-Dichlorobenzene	27.2	10.0	ug/L	46.7	BLOD	58.2	22-60	40.5	20	P
1,3-Dichlorobenzene	25.6	10.0	ug/L	46.7	BLOD	54.8	22-60	41.4	20	P
1,4-Dichlorobenzene	27.3	10.0	ug/L	46.7	BLOD	58.4	13-60	40.6	20	P
2,4,6-Trichlorophenol	31.5	10.0	ug/L	46.7	BLOD	67.3	11-75	30.7	20	P
2,4-Dichlorophenol	36.4	10.0	ug/L	46.7	BLOD	77.9	11-75	36.1	20	M, P
2,4-Dimethylphenol	30.1	4.67	ug/L	46.7	BLOD	64.5	11-65	31.2	20	P
2,4-Dinitrophenol	51.7	50.0	ug/L	46.7	BLOD	111	11-110	48.2	20	M, P
2,4-Dinitrotoluene	47.6	10.0	ug/L	46.7	BLOD	102	17-95	28.8	20	M, P

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
2,6-Dinitrotoluene	36.4	10.0	ug/L	46.7	BLOD	77.9	15-125	25.6	20	P
2-Chloronaphthalene	37.7	10.0	ug/L	46.7	BLOD	80.6	27-89	39.4	20	P
2-Chlorophenol	33.9	10.0	ug/L	46.7	BLOD	72.4	19-64	38.8	20	M, P
2-Nitrophenol	32.2	10.0	ug/L	46.7	BLOD	68.8	11-75	33.0	20	P
3,3'-Dichlorobenzidine	20.7	10.0	ug/L	46.7	BLOD	44.4	10-85	37.9	20	P
4,6-Dinitro-2-methylphenol	47.4	50.0	ug/L	46.7	BLOD	102	40-130	38.2	20	P
4-Bromophenyl phenyl ether	29.5	10.0	ug/L	46.7	BLOD	63.2	15-110	18.7	20	
4-Chlorophenyl phenyl ether	36.6	10.0	ug/L	46.7	BLOD	78.2	15-110	32.3	20	P
4-Nitrophenol	16.9	50.0	ug/L	46.7	BLOD	36.1	12-70	35.1	20	P
Acenaphthene	38.7	10.0	ug/L	46.7	BLOD	82.9	15-90	34.4	20	P
Acenaphthylene	43.8	10.0	ug/L	46.7	BLOD	93.8	15-99	37.8	20	P
Acetophenone	29.1	20.0	ug/L	46.7	BLOD	62.2	0-200	34.6	20	P
alpha-Terpineol	22.6	2.50	ug/L	46.7	BLOD	48.4	0-200	30.0	20	P
Anthracene	44.9	10.0	ug/L	46.7	BLOD	96.1	20-95	26.4	20	M, P
Benzo (a) anthracene	48.0	9.35	ug/L	46.7	BLOD	103	25-95	27.5	20	M, P
Benzo (a) pyrene	57.3	9.35	ug/L	46.7	BLOD	123	25-82	26.4	20	M, P
Benzo (b) fluoranthene	55.7	10.0	ug/L	46.7	BLOD	119	25-75	22.6	20	M, P
Benzo (g,h,i) perylene	20.7	10.0	ug/L	46.7	BLOD	44.2	25-90	37.2	20	P
Benzo (k) fluoranthene	71.2	10.0	ug/L	46.7	BLOD	152	25-95	39.3	20	M, P
bis (2-Chloroethoxy) methane	32.4	10.0	ug/L	46.7	BLOD	69.2	25-85	37.7	20	P
bis (2-Chloroethyl) ether	32.8	10.0	ug/L	46.7	BLOD	70.3	25-85	39.2	20	P
2,2'-Oxybis (1-chloropropane)	33.5	10.0	ug/L	46.7	BLOD	71.7	25-87	42.2	20	P
bis (2-Ethylhexyl) phthalate	51.1	5.00	ug/L	46.7	BLOD	109	30-125	17.7	20	
Butyl benzyl phthalate	51.7	10.0	ug/L	46.7	BLOD	111	30-115	19.9	20	
Carbazole	52.1	2.50	ug/L	46.7	BLOD	112	0-200	29.2	20	P

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
Chrysene	51.6	10.0	ug/L	46.7	BLOD	110	20-90	28.4	20	M, P
Dibenz (a,h) anthracene	27.6	10.0	ug/L	46.7	BLOD	59.0	27-125	37.3	20	P
Diethyl phthalate	44.1	10.0	ug/L	46.7	BLOD	94.3	25-120	26.9	20	P
Dimethyl phthalate	45.5	10.0	ug/L	46.7	BLOD	97.3	25-125	30.9	20	P
Di-n-butyl phthalate	55.3	10.0	ug/L	46.7	BLOD	118	25-115	30.5	20	M, P
Di-n-octyl phthalate	69.6	10.0	ug/L	46.7	BLOD	149	22-105	18.8	20	M
Fluoranthene	52.7	10.0	ug/L	46.7	BLOD	113	25-96	30.6	20	M, P
Fluorene	44.8	10.0	ug/L	46.7	BLOD	95.9	15-97	31.5	20	P
Hexachlorobenzene	32.1	0.93	ug/L	46.7	BLOD	68.7	25-125	21.2	20	P
Hexachlorobutadiene	27.3	10.0	ug/L	46.7	BLOD	58.4	25-125	35.0	20	P
Hexachlorocyclopentadiene	14.2	10.0	ug/L	46.7	BLOD	30.5	10-90	50.1	20	P
Hexachloroethane	26.0	10.0	ug/L	46.7	BLOD	55.5	25-125	44.4	20	P
Indeno (1,2,3-cd) pyrene	28.0	10.0	ug/L	46.7	BLOD	59.9	25-125	37.7	20	P
Isophorone	22.1	10.0	ug/L	46.7	BLOD	47.3	10-110	42.7	20	P
Naphthalene	31.0	0.10	ug/L	46.7	0.20	66.0	12-100	37.4	20	P
Nitrobenzene	34.1	10.0	ug/L	46.7	BLOD	73.1	27-77	41.3	20	P
n-Nitrosodimethylamine	18.5	10.0	ug/L	46.7	BLOD	39.6	10-85	28.1	20	P
n-Nitrosodi-n-propylamine	31.0	10.0	ug/L	46.7	BLOD	66.4	12-97	35.0	20	P
n-Nitrosodiphenylamine	30.0	10.0	ug/L	46.7	BLOD	64.3	12-97	21.9	20	P
p-Chloro-m-cresol	35.9	10.0	ug/L	46.7	BLOD	76.9	10-91	33.6	20	P
Pentachlorophenol	36.1	20.0	ug/L	46.7	BLOD	77.3	27-109	34.8	20	P
Phenanthrene	50.0	10.0	ug/L	46.7	BLOD	107	35-115	26.7	20	P
Phenol	14.5	10.0	ug/L	47.2	BLOD	30.6	10-70	49.8	20	P
Pyrene	51.4	10.0	ug/L	46.7	BLOD	110	23-110	17.5	20	
Pyridine	27.2	10.0	ug/L	46.7	BLOD	58.2	0-200	133	20	P

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Matrix Spike Dup (BFF0013-MSD1)**      **Source: 22E1463-02**      Prepared: 06/01/2022 Analyzed: 06/02/2022

<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	67.0		ug/L	93.5		71.7	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	38.8		ug/L	46.7		82.9	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	45.7		ug/L	93.5		48.9	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	36.8		ug/L	46.7		78.8	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	31.7		ug/L	93.5		33.9	5-33			S
<i>Surr: p-Terphenyl-d14 (Surr)</i>	51.6		ug/L	46.7		110	27-133			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:30:28PM

Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1147 - SW3510C/EPA600-ECD**

**Blank (BFE1147-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

PCB as Aroclor 1016	ND	0.200	ug/L
4,4'-DDD	ND	0.050	ug/L
PCB as Aroclor 1221	ND	0.200	ug/L
PCB as Aroclor 1232	ND	0.200	ug/L
4,4'-DDE	ND	0.050	ug/L
PCB as Aroclor 1242	ND	0.200	ug/L
PCB as Aroclor 1248	ND	0.200	ug/L
4,4'-DDT	ND	0.050	ug/L
PCB as Aroclor 1254	ND	0.200	ug/L
PCB as Aroclor 1260	ND	0.200	ug/L
Aldrin	ND	0.050	ug/L
alpha-BHC	ND	0.050	ug/L
alpha-Chlordane	ND	0.050	ug/L
beta-BHC	ND	0.050	ug/L
Chlordane	ND	0.200	ug/L
delta-BHC	ND	0.050	ug/L
Dieldrin	ND	0.050	ug/L
Endosulfan I	ND	0.050	ug/L
Endosulfan II	ND	0.050	ug/L
Endosulfan sulfate	ND	0.050	ug/L
Endrin	ND	0.050	ug/L
Endrin aldehyde	ND	0.050	ug/L
Endrin ketone	ND	0.050	ug/L
gamma-BHC (Lindane)	ND	0.050	ug/L
gamma-Chlordane	ND	0.050	ug/L

### Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1147 - SW3510C/EPA600-ECD**

**Blank (BFE1147-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

Heptachlor	ND	0.050	ug/L							
Heptachlor epoxide	ND	0.050	ug/L							
Methoxychlor	ND	0.050	ug/L							
Toxaphene	ND	1.00	ug/L							
<i>Surr: DCB</i>	<i>0.158</i>		ug/L	<i>0.200</i>		<i>79.2</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.126</i>		ug/L	<i>0.200</i>		<i>63.2</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.117</i>		ug/L	<i>0.200</i>		<i>58.5</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.154</i>		ug/L	<i>0.200</i>		<i>76.9</i>	<i>27-131</i>			

**LCS (BFE1147-BS1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

4,4'-DDD	0.108	0.050	ug/L	0.100		108	23-134			
4,4'-DDE	0.096	0.050	ug/L	0.100		96.5	23-134			
4,4'-DDT	0.101	0.050	ug/L	0.100		101	23-134			
Aldrin	0.061	0.050	ug/L	0.100		61.4	23-134			
alpha-BHC	0.070	0.050	ug/L	0.100		69.8	23-134			
beta-BHC	0.068	0.050	ug/L	0.100		68.2	23-134			
delta-BHC	0.080	0.050	ug/L	0.100		79.9	23-134			
Dieldrin	0.091	0.050	ug/L	0.100		90.7	23-134			
Endosulfan I	0.085	0.050	ug/L	0.100		85.0	23-134			
Endosulfan II	0.097	0.050	ug/L	0.100		96.9	23-134			
Endosulfan sulfate	0.103	0.050	ug/L	0.100		103	23-134			
Endrin	0.100	0.050	ug/L	0.100		100	23-134			
Endrin aldehyde	0.107	0.050	ug/L	0.100		107	23-134			
gamma-BHC (Lindane)	0.069	0.050	ug/L	0.100		69.5	23-134			
Heptachlor	0.071	0.050	ug/L	0.100		71.3	23-134			

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>LCS (BFE1147-BS1)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Heptachlor epoxide	0.090	0.050	ug/L	0.100		90.4	23-134			
Methoxychlor	0.111	0.050	ug/L	0.100		111	23-134			
Mirex	0.104	0.050	ug/L	0.100		104	23-134			
<i>Surr: TCMX</i>	<i>0.0998</i>		ug/L	<i>0.200</i>		<i>49.9</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.222</i>		ug/L	<i>0.200</i>		<i>111</i>	<i>27-131</i>			
<b>LCS (BFE1147-BS2)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
PCB as Aroclor 1016	0.831	0.200	ug/L	1.00		83.1	70-130			
PCB as Aroclor 1260	0.780	0.200	ug/L	1.00		78.0	70-130			
<i>Surr: DCB</i>	<i>0.170</i>		ug/L	<i>0.200</i>		<i>84.9</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.123</i>		ug/L	<i>0.200</i>		<i>61.3</i>	<i>30-105</i>			
<b>LCS (BFE1147-BS3)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Toxaphene	1.94	1.00	ug/L	2.50		77.5	23-134			
<i>Surr: TCMX</i>	<i>0.136</i>		ug/L	<i>0.200</i>		<i>68.2</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.174</i>		ug/L	<i>0.200</i>		<i>86.9</i>	<i>27-131</i>			
<b>LCS (BFE1147-BS4)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Chlordane	1.80	0.200	ug/L	2.50		71.9	23-134			
<i>Surr: TCMX</i>	<i>0.136</i>		ug/L	<i>0.200</i>		<i>68.2</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.152</i>		ug/L	<i>0.200</i>		<i>76.2</i>	<i>27-131</i>			
<b>Matrix Spike (BFE1147-MS1)</b>		<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/01/2022						
4,4'-DDD	0.125	0.050	ug/L	0.0935	BLOD	133	23-134			
4,4'-DDE	0.116	0.050	ug/L	0.0935	BLOD	124	23-134			
4,4'-DDT	0.119	0.050	ug/L	0.0935	BLOD	127	23-134			



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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>Matrix Spike (BFE1147-MS1)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
Aldrin	0.083	0.050	ug/L	0.0935	BLOD	89.3	23-134			
alpha-BHC	0.095	0.050	ug/L	0.0935	BLOD	102	23-134			
beta-BHC	0.085	0.050	ug/L	0.0935	BLOD	91.3	23-134			
delta-BHC	0.116	0.050	ug/L	0.0935	BLOD	125	23-134			
Dieldrin	0.110	0.050	ug/L	0.0935	BLOD	118	23-134			
Endosulfan I	0.101	0.050	ug/L	0.0935	BLOD	108	23-134			
Endosulfan II	0.118	0.050	ug/L	0.0935	BLOD	126	23-134			
Endosulfan sulfate	0.121	0.050	ug/L	0.0935	BLOD	129	23-134			
Endrin	0.120	0.050	ug/L	0.0935	BLOD	129	23-134			
Endrin aldehyde	0.117	0.050	ug/L	0.0935	BLOD	126	23-134			
gamma-BHC (Lindane)	0.094	0.050	ug/L	0.0935	BLOD	101	23-134			
Heptachlor	0.097	0.050	ug/L	0.0935	BLOD	104	23-134			
Heptachlor epoxide	0.111	0.050	ug/L	0.0935	BLOD	118	23-134			
Methoxychlor	0.125	0.050	ug/L	0.0935	BLOD	134	23-134			
Mirex	0.078	0.050	ug/L	0.0935	BLOD	83.5	23-134			
<i>Surr: TCMX</i>	<i>0.0951</i>		ug/L	<i>0.187</i>		<i>50.9</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.125</i>		ug/L	<i>0.187</i>		<i>67.0</i>	<i>27-131</i>			
<b>Matrix Spike (BFE1147-MS2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
PCB as Aroclor 1016	1.27	0.200	ug/L	0.935	BLOD	135	70-130			M
PCB as Aroclor 1260	0.990	0.200	ug/L	0.935	BLOD	106	70-130			
<i>Surr: DCB</i>	<i>0.202</i>		ug/L	<i>0.187</i>		<i>108</i>	<i>30-105</i>			S
<i>Surr: TCMX</i>	<i>0.102</i>		ug/L	<i>0.187</i>		<i>54.6</i>	<i>30-105</i>			
<b>Matrix Spike Dup (BFE1147-MSD1)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
4,4'-DDD	0.140	0.050	ug/L	0.0935	BLOD	150	23-134	11.5	20	M

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1147 - SW3510C/EPA600-ECD

Matrix Spike Dup (BFE1147-MSD1)		Source: 22E1463-02		Prepared & Analyzed: 06/01/2022							
4,4'-DDE	0.125	0.050	ug/L	0.0935	BLOD	134	23-134	7.64	20	M	
4,4'-DDT	0.137	0.050	ug/L	0.0935	BLOD	147	23-134	14.3	20	M	
Aldrin	0.094	0.050	ug/L	0.0935	BLOD	101	23-134	12.2	20		
alpha-BHC	0.104	0.050	ug/L	0.0935	BLOD	111	23-134	8.82	20		
beta-BHC	0.102	0.050	ug/L	0.0935	BLOD	109	23-134	17.7	20		
delta-BHC	0.116	0.050	ug/L	0.0935	BLOD	125	23-134	0.0401	20		
Dieldrin	0.119	0.050	ug/L	0.0935	BLOD	127	23-134	7.17	20		
Endosulfan I	0.110	0.050	ug/L	0.0935	BLOD	117	23-134	8.63	20		
Endosulfan II	0.132	0.050	ug/L	0.0935	BLOD	142	23-134	11.8	20	M	
Endosulfan sulfate	0.139	0.050	ug/L	0.0935	BLOD	148	23-134	13.7	20	M	
Endrin	0.129	0.050	ug/L	0.0935	BLOD	138	23-134	6.84	20	M	
Endrin aldehyde	0.130	0.050	ug/L	0.0935	BLOD	139	23-134	10.0	20	M	
gamma-BHC (Lindane)	0.103	0.050	ug/L	0.0935	BLOD	110	23-134	8.44	20		
Heptachlor	0.097	0.050	ug/L	0.0935	BLOD	104	23-134	0.154	20		
Heptachlor epoxide	0.108	0.050	ug/L	0.0935	BLOD	115	23-134	2.53	20		
Methoxychlor	0.145	0.050	ug/L	0.0935	BLOD	155	23-134	14.7	20	M	
Mirex	0.094	0.050	ug/L	0.0935	BLOD	101	23-134	18.6	20		
<i>Surr: TCMX</i>		<i>0.102</i>	<i>ug/L</i>	<i>0.187</i>		<i>54.7</i>	<i>18-112</i>				
<i>Surr: DCB</i>		<i>0.140</i>	<i>ug/L</i>	<i>0.187</i>		<i>74.7</i>	<i>27-131</i>				
Matrix Spike Dup (BFE1147-MSD2)		Source: 22E1463-02		Prepared & Analyzed: 06/01/2022							
PCB as Aroclor 1016	0.839	0.200	ug/L	0.935	BLOD	89.8	70-130	40.5	20	P	
PCB as Aroclor 1260	0.760	0.200	ug/L	0.935	BLOD	81.3	70-130	26.3	20	P	
<i>Surr: DCB</i>		<i>0.163</i>	<i>ug/L</i>	<i>0.187</i>		<i>87.0</i>	<i>30-105</i>				
<i>Surr: TCMX</i>		<i>0.130</i>	<i>ug/L</i>	<i>0.187</i>		<i>69.6</i>	<i>30-105</i>				

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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1204 - SW8151A/EPA600</b>										
<b>Blank (BFE1204-BLK1)</b>										
				Prepared: 05/31/2022 Analyzed: 06/09/2022						
2,4,5-T	ND	0.500	ug/L							
2,4,5-TP (Silvex)	ND	0.500	ug/L							
2,4-D	ND	0.500	ug/L							
Dinoseb	ND	0.500	ug/L							
Pentachlorophenol	ND	0.500	ug/L							
<i>Surr: DCAA (Surr)</i>	<i>1.01</i>		ug/L	<i>1.11</i>		<i>90.5</i>	<i>48.5-134</i>			
<b>LCS (BFE1204-BS1)</b>										
				Prepared: 05/31/2022 Analyzed: 06/09/2022						
2,4,5-T	0.548	0.500	ug/L	0.556		98.7	62-145			
2,4,5-TP (Silvex)	0.601	0.500	ug/L	0.556		108	62-132			
2,4-D	0.652	0.500	ug/L	0.556		117	74-139			
Dinoseb	0.467	0.500	ug/L	0.556		84.0	59-136			
Pentachlorophenol	0.523	0.500	ug/L	0.556		94.1	62-118			
<i>Surr: DCAA (Surr)</i>	<i>1.00</i>		ug/L	<i>1.11</i>		<i>90.4</i>	<i>70-130</i>			
<b>Matrix Spike (BFE1204-MS1)</b>										
				<b>Source: 22E1463-02</b>		Prepared: 06/01/2022 Analyzed: 06/09/2022				
2,4,5-T	0.530	0.500	ug/L	0.556	BLOD	95.3	53-144			
2,4,5-TP (Silvex)	0.576	0.500	ug/L	0.556	BLOD	104	52-129			
2,4-D	0.502	0.500	ug/L	0.556	BLOD	90.3	53-126			
Dinoseb	0.446	0.500	ug/L	0.556	BLOD	80.3	60-137			
Pentachlorophenol	0.602	0.500	ug/L	0.556	BLOD	108	52-124			
<i>Surr: DCAA (Surr)</i>	<i>1.08</i>		ug/L	<i>1.11</i>		<i>97.5</i>	<i>70-130</i>			
<b>Matrix Spike Dup (BFE1204-MSD1)</b>										
				<b>Source: 22E1463-02</b>		Prepared: 06/01/2022 Analyzed: 06/09/2022				
2,4,5-T	0.511	0.500	ug/L	0.556	BLOD	91.9	53-144	3.63	20	
2,4,5-TP (Silvex)	0.528	0.500	ug/L	0.556	BLOD	94.9	52-129	8.76	20	

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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFE1204 - SW8151A/EPA600**

Matrix Spike Dup (BFE1204-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/09/2022							
2,4-D	0.411	0.500	ug/L	0.556	BLOD	74.0	53-126	19.8	20	
Dinoseb	0.423	0.500	ug/L	0.556	BLOD	76.2	60-137	5.20	20	
Pentachlorophenol	0.521	0.500	ug/L	0.556	BLOD	93.7	52-124	14.4	20	
<i>Surr: DCAA (Surr)</i>	<i>1.06</i>		ug/L	<i>1.11</i>		<i>95.7</i>	<i>70-130</i>			

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Micro-extractables by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0016 - SW8011</b>										
<b>Blank (BFF0016-BLK1)</b>				Prepared: 06/01/2022 Analyzed: 06/02/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L							
1,2,3-Trichloropropane	ND	0.010	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L							
<b>LCS (BFF0016-BS1)</b>				Prepared: 06/01/2022 Analyzed: 06/02/2022						
1,2-Dibromoethane (EDB)	0.300	0.010	ug/L	0.250		120	65-135			
1,2,3-Trichloropropane	0.265	0.010	ug/L	0.250		106	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.318	0.010	ug/L	0.250		127	65-135			
<b>Matrix Spike (BFF0016-MS1)</b>				<b>Source: 22E1280-03</b>		Prepared: 06/01/2022 Analyzed: 06/02/2022				
1,2-Dibromoethane (EDB)	0.312	0.010	ug/L	0.250	BLOD	125	65-135			
1,2,3-Trichloropropane	0.271	0.010	ug/L	0.250	BLOD	108	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.319	0.010	ug/L	0.250	BLOD	127	65-135			
<b>Matrix Spike Dup (BFF0016-MSD1)</b>				<b>Source: 22E1280-03</b>		Prepared: 06/01/2022 Analyzed: 06/02/2022				
1,2-Dibromoethane (EDB)	0.303	0.010	ug/L	0.250	BLOD	121	65-135	2.75	20	
1,2,3-Trichloropropane	0.253	0.010	ug/L	0.250	BLOD	101	65-135	6.97	20	
1,2-Dibromo-3-chloropropane (DBCP)	0.316	0.010	ug/L	0.250	BLOD	126	65-135	0.870	20	

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0087 - No Prep VOC</b>										
<b>Blank (BFF0087-BLK1)</b>										
				Prepared & Analyzed: 06/02/2022						
Ethane	ND	5.00	ug/L							
Ethene	ND	5.00	ug/L							
Methane	ND	5.00	ug/L							
<i>Surr: Acetylene (Surr)</i>	449		ug/L	432		104	70-130			
<b>LCS (BFF0087-BS1)</b>										
				Prepared & Analyzed: 06/02/2022						
Ethane	540	5.00	ug/L	500		108	70-130			
Ethene	488	5.00	ug/L	464		105	70-130			
Methane	276	5.00	ug/L	266		104	70-130			
<i>Surr: Acetylene (Surr)</i>	496		ug/L	432		115	70-130			
<b>Duplicate (BFF0087-DUP1)</b>										
				<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/02/2022			
Ethane	ND	5.00	ug/L		BLOD			NA	20	
Ethene	ND	5.00	ug/L		BLOD			NA	20	
Methane	379	5.00	ug/L		378			0.346	20	
<i>Surr: Acetylene (Surr)</i>	510		ug/L	432		118	70-130			
<b>Matrix Spike (BFF0087-MS1)</b>										
				<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/02/2022			
Ethane	612	5.00	ug/L	500	BLOD	122	70-130			
Ethene	544	5.00	ug/L	464	BLOD	117	70-130			
Methane	547	5.00	ug/L	266	378	63.7	70-130			M
<i>Surr: Acetylene (Surr)</i>	489		ug/L	432		113	70-130			
<b>Matrix Spike Dup (BFF0087-MSD1)</b>										
				<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/02/2022			
Ethane	716	5.00	ug/L	500	BLOD	143	70-130	15.7	20	M
Ethene	635	5.00	ug/L	464	BLOD	137	70-130	15.4	20	M

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0087 - No Prep VOC**

Matrix Spike Dup (BFF0087-MSD1)	Source: 22E1463-02		Prepared & Analyzed: 06/02/2022							
Methane	597	5.00	ug/L	266	378	82.5	70-130	8.74	20	
<i>Surr: Acetylene (Surr)</i>	591		ug/L	432		137	70-130			S

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1123 - No Prep IC</b>										
<b>Blank (BFE1123-BLK1)</b>				Prepared & Analyzed: 05/27/2022						
Chloride	ND	1.0	mg/L							
<b>LCS (BFE1123-BS1)</b>				Prepared & Analyzed: 05/27/2022						
Chloride	18.6	1	mg/L	20.0		92.8	90-110			
<b>LCS Dup (BFE1123-BSD1)</b>				Prepared & Analyzed: 05/27/2022						
Chloride	18.8	1	mg/L	20.0		93.8	90-110	1.06	15	
<b>Matrix Spike (BFE1123-MS1)</b>				Source: 22E1388-01 Prepared & Analyzed: 05/27/2022						
Chloride	33.3	1.0	mg/L	11.1	21.7	104	90-110			
<b>Matrix Spike (BFE1123-MS2)</b>				Source: 22E1388-05 Prepared & Analyzed: 05/28/2022						
Chloride	14.1	1.0	mg/L	11.1	4.0	90.9	90-110			
<b>Matrix Spike Dup (BFE1123-MSD1)</b>				Source: 22E1388-01 Prepared & Analyzed: 05/27/2022						
Chloride	32.0	1.0	mg/L	11.1	21.7	92.5	90-110	4.03	15	
<b>Matrix Spike Dup (BFE1123-MSD2)</b>				Source: 22E1388-05 Prepared & Analyzed: 05/28/2022						
Chloride	15.1	1.0	mg/L	11.1	4.0	100	90-110	6.89	15	
<b>Batch BFE1151 - No Prep Wet Chem</b>										
<b>Blank (BFE1151-BLK1)</b>				Prepared & Analyzed: 05/27/2022						
Sulfide	ND	1.00	mg/L							
<b>LCS (BFE1151-BS1)</b>				Prepared & Analyzed: 05/27/2022						
Sulfide	4.89	1	mg/L	5.00		97.8	80-120			



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Wet Chemistry Analysis - Quality Control  
 Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1151 - No Prep Wet Chem</b>										
<b>Matrix Spike (BFE1151-MS1)</b>		<b>Source: 22E1249-01</b>			<b>Prepared &amp; Analyzed: 05/27/2022</b>					
Sulfide	5.21	1.00	mg/L	5.00	BLOD	104	75-125			
<b>Matrix Spike Dup (BFE1151-MSD1)</b>		<b>Source: 22E1249-01</b>			<b>Prepared &amp; Analyzed: 05/27/2022</b>					
Sulfide	5.29	1.00	mg/L	5.00	BLOD	106	75-125	1.52	20	
<b>Batch BFF0256 - No Prep Wet Chem</b>										
<b>LCS (BFF0256-BS1)</b>		<b>Prepared &amp; Analyzed: 06/06/2022</b>								
Cyanide	0.27	0.01	mg/L	0.250		109	80-120			
<b>Matrix Spike (BFF0256-MS1)</b>		<b>Source: 22E1249-12</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.25	0.01	mg/L	0.250	BLOD	98.4	80-120			
<b>Matrix Spike (BFF0256-MS2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.23	0.01	mg/L	0.250	BLOD	90.0	80-120			
<b>Matrix Spike Dup (BFF0256-MSD1)</b>		<b>Source: 22E1249-12</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.25	0.01	mg/L	0.250	BLOD	101	80-120	2.93	20	
<b>Matrix Spike Dup (BFF0256-MSD2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/06/2022</b>					
Cyanide	0.23	0.01	mg/L	0.250	BLOD	92.4	80-120	2.54	20	
<b>Batch BFF0313 - No Prep Wet Chem</b>										
<b>Blank (BFF0313-BLK1)</b>		<b>Prepared &amp; Analyzed: 06/07/2022</b>								
Alkalinity	ND	5.0	mg/L							

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0313 - No Prep Wet Chem</b>										
<b>LCS (BFF0313-BS1)</b>				Prepared & Analyzed: 06/07/2022						
Alkalinity	51.0	5.0	mg/L	50.0		102	80-120			
<b>Duplicate (BFF0313-DUP1)</b>				Source: 22E1303-03 Prepared & Analyzed: 06/07/2022						
Alkalinity	33.0	5.0	mg/L		34.0			2.99	20	
<b>Batch BFF0367 - No Prep Wet Chem</b>										
<b>Blank (BFF0367-BLK1)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	ND	5.0	mg/L							
<b>LCS (BFF0367-BS1)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	47.0	5.0	mg/L	50.0		94.0	80-120			
<b>Duplicate (BFF0367-DUP1)</b>				Source: 22E1388-05 Prepared & Analyzed: 06/08/2022						
Alkalinity	144	5.0	mg/L		148			2.74	20	
<b>Duplicate (BFF0367-DUP2)</b>				Source: 22E1463-02 Prepared & Analyzed: 06/08/2022						
Alkalinity	313	5.0	mg/L		309			1.29	20	

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### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
22E1388-01	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-02	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-03	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-04	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-05	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-06	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-07	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-08	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-09	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-10	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-11	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
22E1388-11RE1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0327	AF20045

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
22E1388-01	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
22E1388-02	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
22E1388-03	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
22E1388-04	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
22E1388-05	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
22E1388-01	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1388-02	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
22E1388-03	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1388-04	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1388-05	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1388-12	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
22E1388-07	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
22E1388-08	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
22E1388-09	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
22E1388-11	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
22E1388-07	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1388-08	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1388-09	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1388-11	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1388-01	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
22E1388-02	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
22E1388-03	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
22E1388-04	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
22E1388-05	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
22E1388-07	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1388-08	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1388-09	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1388-11	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method: SW3510C/EPA600-ECD</b>		
22E1388-07	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1388-08	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1388-09	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1388-11	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW3580A-MS</b>		
22E1388-01	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-02	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-03	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-04	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-05	1070 mL / 1.00 mL	SW8270E	BFE1098	SFF0213	AE20006
22E1388-07	1070 mL / 1.00 mL	SW8270E	BFE1145	SFF0004	AC20134
22E1388-08	1070 mL / 1.00 mL	SW8270E	BFE1145	SFF0004	AC20134
22E1388-09	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
22E1388-11	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22E1388-01	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
22E1388-04	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
22E1388-05	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
22E1388-02	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-03	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-06	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-07	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-08	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22E1388-09	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-10	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-11	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-12	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
22E1388-12RE1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
22E1388-01	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
22E1388-02	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-03	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-04	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-05	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-07	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-08	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-09	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1388-11	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
22E1388-02	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-03	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-06	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-07	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-08	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-09	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-10	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
22E1388-11	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
22E1388-12	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22E1388-07	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
22E1388-08	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
22E1388-09	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
22E1388-11	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0386	AE20149

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### QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
BFE1163-BLK1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-BS1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MS1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MS2	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MS3		SW6020B	BFE1163	SFF0327	AF20045
BFE1163-MS3	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0327	AF20045
BFE1163-MSD1	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MSD2	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0106	AF20015
BFE1163-MSD3		SW6020B	BFE1163	SFF0327	AF20045
BFE1163-MSD3	50.0 mL / 50.0 mL	SW6020B	BFE1163	SFF0327	AF20045

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
BFE1123-BLK1	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-BS1	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-BSD1	1.00 mL / 1.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-MS1	4.50 mL / 5.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-MS2	4.50 mL / 5.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-MSD1	4.50 mL / 5.00 mL	SW9056A	BFE1123	SFF0018	AB20130
BFE1123-MSD2	4.50 mL / 5.00 mL	SW9056A	BFE1123	SFF0018	AB20130

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	



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<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
BFF0087-BLK1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-BS1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-DUP1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MRL1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MS1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MSD1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFE1151-BLK1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFE1151-BS1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFE1151-MRL1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFE1151-MS1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFE1151-MSD1	6.00 mL / 6.00 mL	SW9215	BFE1151	SFE1072	
BFF0256-BLK1		SW9012B	BFF0256	SFF0305	AF20043
BFF0256-BS1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MS1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MS2	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MSD1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MSD2	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0313-BLK1	200 mL / 200 mL	SM22 2320B-2011	BFF0313	SFF0270	
BFF0313-BS1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
BFF0313-DUP1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0313	SFF0270	
BFF0367-BLK1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-BS1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-DUP1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-DUP2	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
BFE1147-BLK1	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS1	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-BS3	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS4	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MS1	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MS2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-MSD1	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MSD2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-BLK1	1000 mL / 1.00 mL	SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS2	1000 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
BFE1147-BS3		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS4		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MS1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MS2	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
BFE1147-MSD1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MSD2	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3580A-MS</b>	
BFE1098-BLK1		SW8270E	BFE1098	SFF0012	AE20006
BFE1098-BS1		SW8270E	BFE1098	SFF0012	AE20006
BFE1098-BS2		SW8270E	BFE1098	SFF0013	AE20034
BFE1145-BLK1	1000 mL / 1.00 mL	SW8270E	BFE1145	SFF0004	AC20134
BFE1145-BS1	1000 mL / 1.00 mL	SW8270E	BFE1145	SFF0004	AC20134
BFE1145-MS1	950 mL / 0.500 mL	SW8270E	BFE1145	SFF0004	AC20134
BFE1145-MSD1	970 mL / 0.500 mL	SW8270E	BFE1145	SFF0004	AC20134

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<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3580A-MS</b>	
BFF0013-BLK1	1000 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-BS1	1000 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-MS1	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-MSD1	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
BFE1119-BLK1	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1119-BLK2		SW8260D	BFE1119	SFE1046	AE20123
BFE1119-BS1	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1119-BS2	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1119-MS1	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1119-MSD1	5.00 mL / 5.00 mL	SW8260D	BFE1119	SFE1046	AE20123
BFE1120-BLK1	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
BFE1120-BS1	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
BFE1120-MS1	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
BFE1120-MSD1	5.00 mL / 5.00 mL	SW8260D	BFE1120	SFE1047	AE20066
BFE1173-BLK1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066
BFE1173-BS1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066
BFE1173-MS1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066
BFE1173-MSD1	5.00 mL / 5.00 mL	SW8260D	BFE1173	SFE1103	AE20066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW7470A</b>	
BFF0266-BLK1	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0266-BS1	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0266-MS1	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW7470A</b>	
BFF0266-MS2	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0266-MSD1	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0266-MSD2	20.0 mL / 20.0 mL	SW7470A	BFF0266	SFF0265	AF20037
BFF0393-BLK1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-BS1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MS1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MS2	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MSD1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MSD2	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW8011</b>	
BFF0016-BLK1	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
BFF0016-BS1	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
BFF0016-MS1	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047
BFF0016-MSD1	60.0 mL / 2.00 mL	SW8011	BFF0016	SFF0088	AE20047

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW8151A/EPA600</b>	
BFE1204-BLK1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-BS1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-MS1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-MSD1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156

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### Certified Analyses included in this Report

Analyte	Certifications
<b><i>RSK175M in Non-Potable Water</i></b>	
Ethane	VELAP
Ethene	VELAP
Methane	VELAP
<b><i>SM22 2320B-2011 in Non-Potable Water</i></b>	
Alkalinity	VELAP,PADEP,WVDEP,NHDES,MADEP
<b><i>SW6020B in Non-Potable Water</i></b>	
Antimony	VELAP,NCDEQ,WVDEP,NHDES
Arsenic	VELAP,WVDEP,NHDES
Barium	VELAP,WVDEP,NHDES
Beryllium	VELAP,WVDEP,NHDES
Cadmium	VELAP,WVDEP,NHDES
Chromium	VELAP,WVDEP,NHDES
Cobalt	VELAP,WVDEP,NHDES
Copper	VELAP,WVDEP,NHDES
Lead	VELAP,WVDEP,NHDES
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP,NHDES
Silver	VELAP,WVDEP,NHDES
Thallium	VELAP,WVDEP,NHDES
Tin	VELAP,WVDEP
Vanadium	VELAP,WVDEP,NHDES
Zinc	VELAP,WVDEP,NHDES
<b><i>SW7470A in Non-Potable Water</i></b>	
Mercury	VELAP,NCDEQ,WVDEP,NHDES
<b><i>SW8011 in Non-Potable Water</i></b>	

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Analyte	Certifications
1,2-Dibromoethane (EDB)	VELAP,NCDEQ
1,2,3-Trichloropropane	VELAP,NCDEQ
1,2-Dibromo-3-chloropropane (DBCP)	VELAP,NCDEQ
<b>SW8081B in Non-Potable Water</b>	
4,4'-DDD	NCDEQ,VELAP,WVDEP,PADEP,NHDES
4,4'-DDE	NCDEQ,VELAP,WVDEP,PADEP,NHDES
4,4'-DDT	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Aldrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
alpha-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
alpha-Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
beta-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
delta-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Dieldrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan I	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan II	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan sulfate	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin aldehyde	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-BHC (Lindane)	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor epoxide	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Methoxychlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Toxaphene	NCDEQ,VELAP,WVDEP,PADEP,NHDES
<b>SW8082A in Non-Potable Water</b>	
PCB as Aroclor 1016	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1221	VELAP,PADEP,NCDEQ,WVDEP,NHDES

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Analyte	Certifications
PCB as Aroclor 1232	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1242	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1248	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1254	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1260	VELAP,PADEP,NCDEQ,WVDEP,NHDES
<b>SW8151A in Non-Potable Water</b>	
2,4,5-T	VELAP,PADEP,NCDEQ,WVDEP
2,4,5-TP (Silvex)	VELAP,PADEP,NCDEQ,WVDEP
2,4-D	VELAP,PADEP,NCDEQ,WVDEP
Dinoseb	VELAP,PADEP,NCDEQ,WVDEP
Pentachlorophenol	VELAP,PADEP,NCDEQ,WVDEP
<b>SW8260D in Non-Potable Water</b>	
1,1,1,2-Tetrachloroethane	NCDEQ,WVDEP,VELAP
1,1,1-Trichloroethane	NCDEQ,WVDEP,VELAP
1,1,2,2-Tetrachloroethane	NCDEQ,WVDEP,VELAP
1,1,2-Trichloroethane	NCDEQ,WVDEP,VELAP
1,1-Dichloroethane	NCDEQ,WVDEP,VELAP
1,1-Dichloroethylene	NCDEQ,WVDEP,VELAP
1,1-Dichloropropene	NCDEQ,WVDEP,VELAP
1,2,3-Trichloropropane	NCDEQ,WVDEP,VELAP
1,2,4-Trichlorobenzene	NCDEQ,WVDEP,VELAP
1,2-Dichlorobenzene	NCDEQ,WVDEP,VELAP
1,2-Dichloroethane	NCDEQ,WVDEP,VELAP
1,2-Dichloropropane	NCDEQ,WVDEP,VELAP
1,3-Dichlorobenzene	NCDEQ,WVDEP,VELAP
1,3-Dichloropropane	NCDEQ,WVDEP,VELAP
1,4-Dichlorobenzene	NCDEQ,WVDEP,VELAP
2,2-Dichloropropane	NCDEQ,WVDEP,VELAP



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### Certified Analyses included in this Report

Analyte	Certifications
2-Butanone (MEK)	NCDEQ, WVDEP, VELAP
2-Hexanone (MBK)	NCDEQ, WVDEP, VELAP
4-Methyl-2-pentanone (MIBK)	NCDEQ, WVDEP, VELAP
Acetone	NCDEQ, WVDEP, VELAP
Acetonitrile	NCDEQ, WVDEP, VELAP
Acrolein	NCDEQ, WVDEP, VELAP
Acrylonitrile	NCDEQ, WVDEP, VELAP
Allyl chloride	NCDEQ, WVDEP, VELAP
Benzene	NCDEQ, WVDEP, VELAP
Bromochloromethane	NCDEQ, WVDEP, VELAP
Bromodichloromethane	NCDEQ, WVDEP, VELAP
Bromoform	NCDEQ, WVDEP, VELAP
Bromomethane	NCDEQ, WVDEP, VELAP
Carbon disulfide	NCDEQ, WVDEP, VELAP
Carbon tetrachloride	NCDEQ, WVDEP, VELAP
Chlorobenzene	NCDEQ, WVDEP, VELAP
Chloroethane	NCDEQ, WVDEP, VELAP
Chloroform	NCDEQ, WVDEP, VELAP
Chloromethane	NCDEQ, WVDEP, VELAP
Chloroprene	NCDEQ, WVDEP, VELAP
cis-1,2-Dichloroethylene	NCDEQ, WVDEP, VELAP
cis-1,3-Dichloropropene	NCDEQ, WVDEP, VELAP
Dibromochloromethane	NCDEQ, WVDEP, VELAP
Dibromomethane	NCDEQ, WVDEP, VELAP
Dichlorodifluoromethane	NCDEQ, WVDEP, VELAP
Ethyl methacrylate	NCDEQ, WVDEP, VELAP
Ethylbenzene	NCDEQ, WVDEP, VELAP
Iodomethane	NCDEQ, WVDEP, VELAP

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Analyte	Certifications
Isobutyl Alcohol	NCDEQ, WVDEP, VELAP
m+p-Xylenes	NCDEQ, WVDEP, VELAP
Methacrylonitrile	NCDEQ, WVDEP, VELAP
Methyl methacrylate	NCDEQ, WVDEP, VELAP
Methylene chloride	NCDEQ, WVDEP, VELAP
Naphthalene	NCDEQ, WVDEP, VELAP
o-Xylene	NCDEQ, WVDEP, VELAP
Propionitrile	NCDEQ, WVDEP, VELAP
Styrene	NCDEQ, WVDEP, VELAP
Tetrachloroethylene (PCE)	NCDEQ, WVDEP, VELAP
Toluene	NCDEQ, WVDEP, VELAP
trans-1,2-Dichloroethylene	NCDEQ, WVDEP, VELAP
trans-1,3-Dichloropropene	NCDEQ, WVDEP, VELAP
trans-1,4-Dichloro-2-butene	NCDEQ, WVDEP, VELAP
Trichloroethylene	NCDEQ, WVDEP, VELAP
Trichlorofluoromethane	NCDEQ, WVDEP, VELAP
Vinyl acetate	NCDEQ, WVDEP, VELAP
Vinyl chloride	NCDEQ, WVDEP, VELAP
Xylenes, Total	NCDEQ, WVDEP, VELAP
<b>SW8270E in Non-Potable Water</b>	
1,2,4,5-Tetrachlorobenzene	VELAP, NCDEQ, WVDEP
1,3,5-Trinitrobenzene	VELAP, NCDEQ, WVDEP
1,3-Dinitrobenzene	VELAP, NCDEQ, WVDEP
1,4-Naphthoquinone	VELAP, NCDEQ, WVDEP
1-Naphthylamine	VELAP, NCDEQ, WVDEP
2,3,4,6-Tetrachlorophenol	VELAP, NCDEQ, WVDEP
2,4,5-Trichlorophenol	VELAP, NCDEQ, WVDEP
2,4,6-Trichlorophenol	VELAP, NCDEQ, WVDEP

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Analyte	Certifications
2,4-Dichlorophenol	VELAP,NCDEQ,WVDEP
2,4-Dimethylphenol	VELAP,NCDEQ,WVDEP
2,4-Dinitrophenol	VELAP,NCDEQ,WVDEP
2,4-Dinitrotoluene	VELAP,NCDEQ,WVDEP
2,6-Dichlorophenol	VELAP,NCDEQ,WVDEP
2,6-Dinitrotoluene	VELAP,NCDEQ,WVDEP
2-Acetylaminofluorene	VELAP,NCDEQ,WVDEP
2-Chloronaphthalene	VELAP,NCDEQ,WVDEP
2-Chlorophenol	VELAP,NCDEQ,WVDEP
2-Methylnaphthalene	VELAP,NCDEQ,WVDEP
2-Naphthylamine	VELAP,NCDEQ,WVDEP
2-Nitroaniline	VELAP,NCDEQ,WVDEP
2-Nitrophenol	VELAP,NCDEQ,WVDEP
3,3'-Dichlorobenzidine	VELAP,NCDEQ,WVDEP
3,3'-Dimethylbenzidine	VELAP,NCDEQ,WVDEP
3-Methylcholanthrene	VELAP,NCDEQ,WVDEP
3-Nitroaniline	VELAP,NCDEQ,WVDEP
4,6-Dinitro-2-methylphenol	VELAP,NCDEQ,WVDEP
4-Aminobiphenyl	VELAP,NCDEQ,WVDEP
4-Bromophenyl phenyl ether	VELAP,NCDEQ,WVDEP
4-Chloroaniline	VELAP,NCDEQ,WVDEP
4-Chlorophenyl phenyl ether	VELAP,NCDEQ,WVDEP
4-Nitroaniline	VELAP,NCDEQ,WVDEP
4-Nitrophenol	VELAP,NCDEQ,WVDEP
5-Nitro-o-toluidine	VELAP,NCDEQ,WVDEP
7,12-Dimethylbenz (a) anthracene	VELAP,NCDEQ,WVDEP
Acenaphthene	VELAP,NCDEQ,WVDEP
Acenaphthylene	VELAP,NCDEQ,WVDEP

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Analyte	Certifications
Acetophenone	VELAP,NCDEQ,WVDEP
Anthracene	VELAP,NCDEQ,WVDEP
Benzo (a) anthracene	VELAP,NCDEQ,WVDEP
Benzo (a) pyrene	VELAP,NCDEQ,WVDEP
Benzo (b) fluoranthene	VELAP,NCDEQ,WVDEP
Benzo (g,h,i) perylene	VELAP,NCDEQ,WVDEP
Benzo (k) fluoranthene	VELAP,NCDEQ,WVDEP
Benzyl alcohol	VELAP,NCDEQ,WVDEP
bis (2-Chloroethoxy) methane	VELAP,NCDEQ,WVDEP
bis (2-Chloroethyl) ether	VELAP,NCDEQ,WVDEP
2,2'-Oxybis (1-chloropropane)	VELAP,NCDEQ,WVDEP
bis (2-Ethylhexyl) phthalate	VELAP,NCDEQ,WVDEP
Butyl benzyl phthalate	VELAP,NCDEQ,WVDEP
Chlorobenzilate	VELAP,NCDEQ,WVDEP
Chrysene	VELAP,NCDEQ,WVDEP
Diallate	VELAP,NCDEQ,WVDEP
Dibenz (a,h) anthracene	VELAP,NCDEQ,WVDEP
Dibenzofuran	VELAP,NCDEQ,WVDEP
Diethyl phthalate	VELAP,NCDEQ,WVDEP
Dimethoate	VELAP,NCDEQ,WVDEP
Dimethyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-butyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-octyl phthalate	VELAP,NCDEQ,WVDEP
Diphenylamine	VELAP,NCDEQ,WVDEP
Disulfoton	VELAP,NCDEQ,WVDEP
Ethyl methanesulfonate	VELAP,NCDEQ,WVDEP
Ethyl parathion	VELAP,NCDEQ,WVDEP
Famphur	VELAP,NCDEQ,WVDEP

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
Fluoranthene	VELAP,NCDEQ,WVDEP
Fluorene	VELAP,NCDEQ,WVDEP
Hexachlorobenzene	VELAP,NCDEQ,WVDEP
Hexachlorobutadiene	VELAP,NCDEQ,WVDEP
Hexachlorocyclopentadiene	VELAP,NCDEQ,WVDEP
Hexachloroethane	VELAP,NCDEQ,WVDEP
Hexachloropropene	VELAP,NCDEQ,WVDEP
Indeno (1,2,3-cd) pyrene	VELAP,NCDEQ,WVDEP
Isodrin	VELAP,NCDEQ,WVDEP
Isophorone	VELAP,NCDEQ,WVDEP
Isosafrole	VELAP,NCDEQ,WVDEP
Kepone	VELAP,NCDEQ,WVDEP
m+p-Cresols	VELAP,NCDEQ,WVDEP
Methapyrilene	VELAP,NCDEQ,WVDEP
Methyl methanesulfonate	VELAP,NCDEQ,WVDEP
Methyl parathion	VELAP,NCDEQ,WVDEP
Nitrobenzene	VELAP,NCDEQ,WVDEP
n-Nitrosodiethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodimethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodi-n-butylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodi-n-propylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodiphenylamine	VELAP,NCDEQ,WVDEP
n-Nitrosomethylethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosopiperidine	VELAP,NCDEQ,WVDEP
n-Nitrosopyrrolidine	VELAP,NCDEQ,WVDEP
o,o,o-Triethyl phosphorothioate	VELAP,NCDEQ,WVDEP
o,o-Diethyl o-2-pyrazinyl phosphorothioate	VELAP,NCDEQ,WVDEP
o+m+p-Cresols	VELAP,WVDEP

## Certificate of Analysis

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Date Issued: 7/12/2022 2:30:28PM

### Certified Analyses included in this Report

Analyte	Certifications
o-Cresol	VELAP,NCDEQ,WVDEP
o-Toluidine	VELAP,NCDEQ,WVDEP
p-(Dimethylamino) azobenzene	VELAP,NCDEQ,WVDEP
p-Chloro-m-cresol	VELAP,NCDEQ,WVDEP
Pentachlorobenzene	VELAP,NCDEQ,WVDEP
Pentachloronitrobenzene (quintozene)	VELAP,NCDEQ,WVDEP
Phenacetin	VELAP,NCDEQ,WVDEP
Phenanthrene	VELAP,NCDEQ,WVDEP
Phenol	VELAP,NCDEQ,WVDEP
Phorate	VELAP,NCDEQ,WVDEP
p-Phenylenediamine	VELAP,NCDEQ,WVDEP
Pronamide	VELAP,NCDEQ,WVDEP
Pyrene	VELAP,NCDEQ,WVDEP
Safrole	VELAP,NCDEQ,WVDEP
<b>SW9012B in Non-Potable Water</b>	
Cyanide	VELAP,WVDEP
<b>SW9056A in Non-Potable Water</b>	
Chloride	VELAP
<b>SW9215 in Non-Potable Water</b>	
Sulfide	VELAP

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**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
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Date Issued: 7/12/2022 2:30:28PM

Code	Description	Laboratory ID	Expires
MADEP	Massachusetts DEP	M-VA913	06/30/2022
MdDOE	Maryland DE Drinking Water	341	12/31/2022
NC	North Carolina DENR	495	07/31/2022
NCDEQ	North Carolina DEQ	495	12/31/2022
NCDOH	North Carolina Department of Health	51714	07/31/2022
NJDEP	NELAP-New Jersey DEP	VA015	06/30/2022
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #007	68-03503	10/31/2022
VELAP	NELAP-Virginia Certificate #11900	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2022

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## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:30:28PM

### Qualifiers and Definitions

B	Blank contamination. The recorded result is associated with a contaminated blank.
C	Continuing calibration verification response for this analyte is outside specifications.
Cl	Residual Chlorine or other oxidizing agent was detected in the container used to analyze this sample.
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
P	Duplicate analysis does not meet the acceptance criteria for precision
S	Surrogate recovery was outside acceptance criteria
RPD	Relative Percent Difference
Qual	Qualifiers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
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Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0097 - EPA200.8 R5.4**

**Blank (BFF0097-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/07/2022

Antimony	ND	1.0	ug/L							
Arsenic	ND	1.0	ug/L							
Barium	ND	5.00	ug/L							
Beryllium	ND	1.00	ug/L							
Cadmium	ND	1.00	ug/L							
Chromium	ND	1.00	ug/L							
Cobalt	ND	1.00	ug/L							
Copper	ND	1.00	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	1.000	ug/L							
Selenium	ND	1.00	ug/L							
Silver	ND	1.00	ug/L							
Thallium	ND	1.0	ug/L							
Tin	ND	1.00	ug/L							
Vanadium	ND	5.00	ug/L							
Zinc	ND	5.00	ug/L							

**LCS (BFF0097-BS1)**

Prepared: 06/02/2022 Analyzed: 06/07/2022

Antimony	50	1.0	ug/L	50.0		99.6	80-120			
Arsenic	50	1.0	ug/L	50.0		100	80-120			
Barium	46.7	5.00	ug/L	50.0		93.4	80-120			
Beryllium	50.6	1.00	ug/L	50.0		101	80-120			
Cadmium	49.0	1.00	ug/L	50.0		98.1	80-120			
Chromium	48.4	1.00	ug/L	50.0		96.8	80-120			
Cobalt	47.7	1.00	ug/L	50.0		95.4	80-120			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0097 - EPA200.8 R5.4

**LCS (BFF0097-BS1)**

Prepared: 06/02/2022 Analyzed: 06/07/2022

Copper	48.0	1.00	ug/L	50.0		96.0	80-120			
Lead	50	1.0	ug/L	50.0		99.0	80-120			
Nickel	47.49	1.000	ug/L	50.0		95.0	80-120			
Selenium	52.6	1.00	ug/L	50.0		105	80-120			
Silver	9.44	1.00	ug/L	10.0		94.4	80-120			
Thallium	50	1.0	ug/L	50.0		100	80-120			
Tin	49.0	1.00	ug/L	50.0		98.0	80-120			
Vanadium	48.5	5.00	ug/L	50.0		96.9	80-120			
Zinc	51.9	5.00	ug/L	50.0		104	80-120			

**Matrix Spike (BFF0097-MS1)**

Source: 22E1463-02

Prepared: 06/02/2022 Analyzed: 06/07/2022

Antimony	50	1.0	ug/L	50.0	BLOD	99.8	75-125			
Arsenic	50	1.0	ug/L	50.0	0.56	99.0	75-125			
Barium	143	5.00	ug/L	50.0	93.3	100	75-125			
Beryllium	52.8	1.00	ug/L	50.0	BLOD	106	75-125			
Cadmium	47.9	1.00	ug/L	50.0	BLOD	95.8	75-125			
Chromium	49.2	1.00	ug/L	50.0	BLOD	98.3	75-125			
Cobalt	46.1	1.00	ug/L	50.0	BLOD	92.1	75-125			
Copper	45.4	1.00	ug/L	50.0	BLOD	90.7	75-125			
Lead	49	1.0	ug/L	50.0	BLOD	97.4	75-125			
Nickel	46.48	1.000	ug/L	50.0	BLOD	93.0	75-125			
Selenium	51.6	1.00	ug/L	50.0	BLOD	103	75-125			
Silver	9.00	1.00	ug/L	10.0	BLOD	90.0	75-125			
Thallium	51	1.0	ug/L	50.0	BLOD	101	75-125			
Tin	50.3	1.00	ug/L	50.0	BLOD	101	75-125			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0097 - EPA200.8 R5.4</b>										
<b>Matrix Spike (BFF0097-MS1)</b>		<b>Source: 22E1463-02</b>			Prepared: 06/02/2022 Analyzed: 06/07/2022					
Vanadium	50.5	5.00	ug/L	50.0	BLOD	101	75-125			
Zinc	50.2	5.00	ug/L	50.0	3.43	93.6	75-125			
<b>Matrix Spike (BFF0097-MS2)</b>		<b>Source: 22F0064-03</b>			Prepared: 06/02/2022 Analyzed: 06/07/2022					
Antimony	51	1.0	ug/L	50.0	BLOD	102	75-125			
Arsenic	51	1.0	ug/L	50.0	BLOD	103	75-125			
Barium	82.0	5.00	ug/L	50.0	33.6	96.8	75-125			
Beryllium	57.3	1.00	ug/L	50.0	BLOD	115	75-125			
Cadmium	50.2	1.00	ug/L	50.0	BLOD	100	75-125			
Chromium	50.7	1.00	ug/L	50.0	BLOD	101	75-125			
Cobalt	49.1	1.00	ug/L	50.0	BLOD	98.2	75-125			
Copper	48.4	1.00	ug/L	50.0	BLOD	96.9	75-125			
Lead	49	1.0	ug/L	50.0	BLOD	98.4	75-125			
Nickel	49.03	1.000	ug/L	50.0	BLOD	98.1	75-125			
Selenium	54.5	1.00	ug/L	50.0	BLOD	109	75-125			
Silver	9.39	1.00	ug/L	10.0	BLOD	93.9	75-125			
Thallium	50	1.0	ug/L	50.0	BLOD	101	75-125			
Tin	51.8	1.00	ug/L	50.0	BLOD	104	75-125			
Vanadium	52.4	5.00	ug/L	50.0	BLOD	105	75-125			
Zinc	51.4	5.00	ug/L	50.0	BLOD	103	75-125			
<b>Matrix Spike Dup (BFF0097-MSD1)</b>		<b>Source: 22E1463-02</b>			Prepared: 06/02/2022 Analyzed: 06/07/2022					
Antimony	51	1.0	ug/L	50.0	BLOD	101	75-125	1.62	20	
Arsenic	51	1.0	ug/L	50.0	0.56	102	75-125	2.82	20	
Barium	144	5.00	ug/L	50.0	93.3	101	75-125	0.458	20	
Beryllium	50.1	1.00	ug/L	50.0	BLOD	100	75-125	5.20	20	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:25:23PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0097 - EPA200.8 R5.4

Matrix Spike Dup (BFF0097-MSD1)	Source: 22E1463-02			Prepared: 06/02/2022 Analyzed: 06/07/2022						
Cadmium	48.3	1.00	ug/L	50.0	BLOD	96.5	75-125	0.752	20	
Chromium	50.2	1.00	ug/L	50.0	BLOD	100	75-125	1.99	20	
Cobalt	46.9	1.00	ug/L	50.0	BLOD	93.8	75-125	1.81	20	
Copper	45.8	1.00	ug/L	50.0	BLOD	91.6	75-125	0.892	20	
Lead	48	1.0	ug/L	50.0	BLOD	96.6	75-125	0.831	20	
Nickel	46.90	1.000	ug/L	50.0	BLOD	93.8	75-125	0.903	20	
Selenium	52.2	1.00	ug/L	50.0	BLOD	104	75-125	1.26	20	
Silver	8.96	1.00	ug/L	10.0	BLOD	89.6	75-125	0.376	20	
Thallium	50	1.0	ug/L	50.0	BLOD	101	75-125	0.565	20	
Tin	51.0	1.00	ug/L	50.0	BLOD	102	75-125	1.25	20	
Vanadium	50.8	5.00	ug/L	50.0	BLOD	102	75-125	0.608	20	
Zinc	51.3	5.00	ug/L	50.0	3.43	95.8	75-125	2.20	20	
Matrix Spike Dup (BFF0097-MSD2)	Source: 22F0064-03			Prepared: 06/02/2022 Analyzed: 06/07/2022						
Antimony	50	1.0	ug/L	50.0	BLOD	99.2	75-125	3.13	20	
Arsenic	50	1.0	ug/L	50.0	BLOD	99.2	75-125	3.30	20	
Barium	80.9	5.00	ug/L	50.0	33.6	94.7	75-125	1.33	20	
Beryllium	54.3	1.00	ug/L	50.0	BLOD	109	75-125	5.32	20	
Cadmium	48.6	1.00	ug/L	50.0	BLOD	97.2	75-125	3.34	20	
Chromium	49.5	1.00	ug/L	50.0	BLOD	98.9	75-125	2.43	20	
Cobalt	47.0	1.00	ug/L	50.0	BLOD	94.0	75-125	4.42	20	
Copper	47.0	1.00	ug/L	50.0	BLOD	94.0	75-125	3.02	20	
Lead	48	1.0	ug/L	50.0	BLOD	96.7	75-125	1.74	20	
Nickel	47.05	1.000	ug/L	50.0	BLOD	94.1	75-125	4.11	20	
Selenium	52.5	1.00	ug/L	50.0	BLOD	105	75-125	3.65	20	

## Certificate of Analysis

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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0097 - EPA200.8 R5.4</b>										
<b>Matrix Spike Dup (BFF0097-MSD2)</b>		<b>Source: 22F0064-03</b>		Prepared: 06/02/2022 Analyzed: 06/07/2022						
Silver	9.07	1.00	ug/L	10.0	BLOD	90.7	75-125	3.47	20	
Thallium	49	1.0	ug/L	50.0	BLOD	98.2	75-125	2.67	20	
Tin	50.3	1.00	ug/L	50.0	BLOD	101	75-125	2.87	20	
Vanadium	50.9	5.00	ug/L	50.0	BLOD	102	75-125	2.82	20	
Zinc	50.3	5.00	ug/L	50.0	BLOD	101	75-125	2.17	20	
<b>Batch BFF0393 - SW7470A</b>										
<b>Blank (BFF0393-BLK1)</b>		Prepared & Analyzed: 06/09/2022								
Mercury	ND	0.00020	mg/L							
<b>LCS (BFF0393-BS1)</b>		Prepared & Analyzed: 06/09/2022								
Mercury	0.00251	0.00020	mg/L	0.00250		100	80-120			
<b>Matrix Spike (BFF0393-MS1)</b>		<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/09/2022						
Mercury	0.00274	0.00020	mg/L	0.00250	BLOD	110	80-120			
<b>Matrix Spike (BFF0393-MS2)</b>		<b>Source: 22E1463-03</b>		Prepared & Analyzed: 06/09/2022						
Mercury	0.00244	0.00020	mg/L	0.00250	BLOD	97.7	80-120			
<b>Matrix Spike Dup (BFF0393-MSD1)</b>		<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/09/2022						
Mercury	0.00263	0.00020	mg/L	0.00250	BLOD	105	80-120	3.98	20	
<b>Matrix Spike Dup (BFF0393-MSD2)</b>		<b>Source: 22E1463-03</b>		Prepared & Analyzed: 06/09/2022						
Mercury	0.00259	0.00020	mg/L	0.00250	BLOD	104	80-120	5.84	20	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Blank (BFF0032-BLK1)**

Prepared & Analyzed: 06/02/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,1-Dichloropropene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2,4-Trichlorobenzene	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,3-Dichlorobenzene	ND	1.00	ug/L
1,3-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2,2-Dichloropropane	ND	2.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acetonitrile	ND	10.0	ug/L
Acrolein	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Allyl chloride	ND	1.00	ug/L
Benzene	ND	1.00	ug/L

## Certificate of Analysis

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Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Blank (BFF0032-BLK1)**

Prepared & Analyzed: 06/02/2022

Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L
Chloromethane	ND	1.00	ug/L
Chloroprene	ND	5.00	ug/L
cis-1,2-Dichloroethylene	ND	1.00	ug/L
cis-1,3-Dichloropropene	ND	1.00	ug/L
Dibromochloromethane	ND	0.50	ug/L
Dibromomethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Ethyl methacrylate	ND	5.00	ug/L
Ethylbenzene	ND	1.00	ug/L
Iodomethane	ND	10.0	ug/L
Isobutyl Alcohol	ND	40.0	ug/L
m+p-Xylenes	ND	2.00	ug/L
Methacrylonitrile	ND	1.50	ug/L
Methyl methacrylate	ND	2.00	ug/L
Methylene chloride	ND	4.00	ug/L

## Certificate of Analysis

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Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0032 - SW5030B-MS

**Blank (BFF0032-BLK1)**

Prepared & Analyzed: 06/02/2022

o-Xylene	ND	1.00	ug/L							
Propionitrile	ND	40.0	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	49.1		ug/L	50.0		98.2	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	47.5		ug/L	50.0		95.0	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	49.0		ug/L	50.0		98.1	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	50.8		ug/L	50.0		102	70-130			

**LCS (BFF0032-BS1)**

Prepared & Analyzed: 06/02/2022

1,1,1,2-Tetrachloroethane	45.8	0.4	ug/L	50.0		91.6	80-130			
1,1,1-Trichloroethane	50.4	1	ug/L	50.0		101	65-130			
1,1,2,2-Tetrachloroethane	47.8	0.4	ug/L	50.0		95.6	65-130			
1,1,2-Trichloroethane	50.5	1	ug/L	50.0		101	75-125			
1,1-Dichloroethane	48.6	1	ug/L	50.0		97.3	70-135			
1,1-Dichloroethylene	41.3	1	ug/L	50.0		82.6	70-130			



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**LCS (BFF0032-BS1)**

Prepared & Analyzed: 06/02/2022

1,1-Dichloropropene	49.6	1	ug/L	50.0		99.1	75-135			
1,2,3-Trichloropropane	45.7	1	ug/L	50.0		91.4	75-125			
1,2,4-Trichlorobenzene	49.5	1	ug/L	50.0		98.9	65-135			
1,2-Dichlorobenzene	45.9	0.5	ug/L	50.0		91.8	70-120			
1,2-Dichloroethane	45.2	1	ug/L	50.0		90.5	70-130			
1,2-Dichloropropane	48.8	0.5	ug/L	50.0		97.6	75-125			
1,3-Dichlorobenzene	45.2	1	ug/L	50.0		90.4	75-125			
1,3-Dichloropropane	47.0	1	ug/L	50.0		94.0	75-125			
1,4-Dichlorobenzene	45.3	1	ug/L	50.0		90.6	75-125			
2,2-Dichloropropane	49.7	1	ug/L	50.0		99.5	70-135			
2-Butanone (MEK)	49.0	10	ug/L	50.0		98.0	30-150			
2-Hexanone (MBK)	44.5	5	ug/L	50.0		89.0	55-130			
4-Methyl-2-pentanone (MIBK)	47.8	5	ug/L	50.0		95.6	60-135			
Acetone	56.1	10	ug/L	50.0		112	40-140			
Acrylonitrile	252	5	ug/L	250		101	70-130			
Benzene	46.8	1	ug/L	50.0		93.5	80-120			
Bromochloromethane	43.0	1	ug/L	50.0		86.1	65-130			
Bromodichloromethane	53.1	0.5	ug/L	50.0		106	75-120			
Bromoform	41.6	1	ug/L	50.0		83.1	70-130			
Bromomethane	57.0	1	ug/L	50.0		114	30-145			
Carbon disulfide	43.4	10	ug/L	50.0		86.8	35-160			
Carbon tetrachloride	51.2	1	ug/L	50.0		102	65-140			
Chlorobenzene	45.3	1	ug/L	50.0		90.5	80-120			
Chloroethane	50.9	1	ug/L	50.0		102	60-135			
Chloroform	48.0	0.5	ug/L	50.0		96.0	65-135			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFF0032 - SW5030B-MS

**LCS (BFF0032-BS1)**

Prepared &amp; Analyzed: 06/02/2022

Chloromethane	50.0	1	ug/L	50.0		100	40-125			
cis-1,2-Dichloroethylene	44.2	1	ug/L	50.0		88.5	70-125			
cis-1,3-Dichloropropene	38.5	1	ug/L	50.0		77.0	70-130			
Dibromochloromethane	42.3	0.5	ug/L	50.0		84.6	60-135			
Dibromomethane	46.2	1	ug/L	50.0		92.4	75-125			
Dichlorodifluoromethane	45.5	1	ug/L	50.0		91.1	30-155			
Dichlorodifluoromethane	45.5	1	ug/L	50.0		91.1	30-155			
Ethylbenzene	51.1	1	ug/L	50.0		102	75-125			
m+p-Xylenes	92.9	2	ug/L	100		92.9	75-130			
Methylene chloride	47.0	4	ug/L	50.0		94.0	55-140			
o-Xylene	48.0	1	ug/L	50.0		96.0	80-120			
Styrene	41.4	1	ug/L	50.0		82.7	65-135			
Tetrachloroethylene (PCE)	77.4	1	ug/L	50.0		155	45-150			L
Toluene	46.0	1	ug/L	50.0		92.1	75-120			
trans-1,2-Dichloroethylene	47.0	1	ug/L	50.0		94.1	60-140			
trans-1,3-Dichloropropene	36.1	1	ug/L	50.0		72.2	55-140			
Trichloroethylene	47.9	1	ug/L	50.0		95.7	70-125			
Trichlorofluoromethane	54.1	1	ug/L	50.0		108	60-145			
Vinyl chloride	56.8	0.5	ug/L	50.0		114	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>49.1</i>		ug/L	<i>50.0</i>		<i>98.3</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>51.4</i>		ug/L	<i>50.0</i>		<i>103</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>46.8</i>		ug/L	<i>50.0</i>		<i>93.6</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.9</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-130</i>			

**Duplicate (BFF0032-DUP1)**

Source: 22E1463-08

Prepared &amp; Analyzed: 06/02/2022

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Duplicate (BFF0032-DUP1)**

**Source: 22E1463-08**

**Prepared & Analyzed: 06/02/2022**

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,1-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,2-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethane	6.12	1.00	ug/L		6.28			2.58	30	
1,1-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,2,4-Trichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,3-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,3-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,4-Dichlorobenzene	1.93	1.00	ug/L		BLOD			NA	30	
2,2-Dichloropropane	ND	2.00	ug/L		BLOD			NA	30	
2-Butanone (MEK)	ND	10.0	ug/L		BLOD			NA	30	
2-Hexanone (MBK)	ND	5.00	ug/L		BLOD			NA	30	
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L		BLOD			NA	30	
Acetone	ND	10.0	ug/L		BLOD			NA	30	
Acetonitrile	ND	10.0	ug/L		BLOD			NA	30	
Acrolein	ND	10.0	ug/L		BLOD			NA	30	
Acrylonitrile	ND	5.00	ug/L		BLOD			NA	30	
Allyl chloride	ND	1.00	ug/L		BLOD			NA	30	
Benzene	7.46	1.00	ug/L		7.30			2.17	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

**Duplicate (BFF0032-DUP1)**

**Source: 22E1463-08**

**Prepared & Analyzed: 06/02/2022**

Bromochloromethane	ND	1.00	ug/L		BLOD			NA	30	
Bromodichloromethane	ND	0.50	ug/L		BLOD			NA	30	
Bromoform	ND	1.00	ug/L		BLOD			NA	30	
Bromomethane	ND	1.00	ug/L		BLOD			NA	30	
Carbon disulfide	ND	10.0	ug/L		BLOD			NA	30	
Carbon tetrachloride	ND	1.00	ug/L		BLOD			NA	30	
Chlorobenzene	1.35	1.00	ug/L		1.31			3.01	30	
Chloroethane	1.36	1.00	ug/L		1.07			23.9	30	
Chloroform	ND	0.50	ug/L		BLOD			NA	30	
Chloromethane	ND	1.00	ug/L		BLOD			NA	30	
Chloroprene	ND	5.00	ug/L		BLOD			NA	30	
cis-1,2-Dichloroethylene	59.9	1.00	ug/L		61.3			2.41	30	
cis-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Dibromochloromethane	ND	0.50	ug/L		BLOD			NA	30	
Dibromomethane	ND	1.00	ug/L		BLOD			NA	30	
Dichlorodifluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Dichlorodifluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Ethyl methacrylate	ND	5.00	ug/L		BLOD			NA	30	
Ethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Iodomethane	ND	10.0	ug/L		BLOD			NA	30	
Isobutyl Alcohol	ND	40.0	ug/L		BLOD			NA	30	
m+p-Xylenes	ND	2.00	ug/L		BLOD			NA	30	
Methacrylonitrile	ND	1.50	ug/L		BLOD			NA	30	
Methyl methacrylate	ND	2.00	ug/L		BLOD			NA	30	
Methylene chloride	ND	4.00	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0032 - SW5030B-MS

**Duplicate (BFF0032-DUP1)**

Source: 22E1463-08

Prepared &amp; Analyzed: 06/02/2022

o-Xylene	ND	1.00	ug/L		BLOD			NA	30	
Propionitrile	ND	40.0	ug/L		BLOD			NA	30	
Styrene	ND	1.00	ug/L		BLOD			NA	30	
Tetrachloroethylene (PCE)	ND	1.00	ug/L		BLOD			NA	30	
Toluene	10.8	1.00	ug/L		10.9			0.551	30	
trans-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L		BLOD			NA	30	
Trichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
Trichlorofluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Vinyl acetate	ND	10.0	ug/L		BLOD			NA	30	
Vinyl chloride	7.56	0.50	ug/L		7.98			5.41	30	
Xylenes, Total	ND	3.00	ug/L		BLOD			NA	30	
Tetrahydrofuran	ND	10.0	ug/L		BLOD			NA	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	48.4		ug/L	50.0		96.9	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	47.5		ug/L	50.0		95.0	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	44.8		ug/L	50.0		89.6	70-130			
<i>Surr: Toluene-d8 (Surr)</i>	51.3		ug/L	50.0		103	70-130			

**Matrix Spike (BFF0032-MS1)**

Source: 22E1463-08

Prepared &amp; Analyzed: 06/02/2022

1,1,1,2-Tetrachloroethane	50.7	0.4	ug/L	50.0	BLOD	101	80-130			
1,1,1-Trichloroethane	50.8	1	ug/L	50.0	BLOD	102	65-130			
1,1,2,2-Tetrachloroethane	48.6	0.4	ug/L	50.0	BLOD	97.2	65-130			
1,1,2-Trichloroethane	51.6	1	ug/L	50.0	BLOD	103	75-125			
1,1-Dichloroethane	53.2	1	ug/L	50.0	6.28	93.9	70-135			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0032 - SW5030B-MS

**Matrix Spike (BFF0032-MS1)**

Source: 22E1463-08

Prepared &amp; Analyzed: 06/02/2022

1,1-Dichloroethylene	40.7	1	ug/L	50.0	BLOD	81.4	70-130			
1,1-Dichloropropene	49.1	1	ug/L	50.0	BLOD	98.3	75-135			
1,2,3-Trichloropropane	47.5	1	ug/L	50.0	BLOD	95.0	75-125			
1,2,4-Trichlorobenzene	52.3	1	ug/L	50.0	BLOD	105	65-135			
1,2-Dichlorobenzene	48.3	0.5	ug/L	50.0	BLOD	96.7	70-120			
1,2-Dichloroethane	45.6	1	ug/L	50.0	BLOD	91.3	70-130			
1,2-Dichloropropane	49.4	0.5	ug/L	50.0	BLOD	98.9	75-125			
1,3-Dichlorobenzene	50.8	1	ug/L	50.0	BLOD	102	75-125			
1,3-Dichloropropane	47.7	1	ug/L	50.0	BLOD	95.4	75-125			
1,4-Dichlorobenzene	51.2	1	ug/L	50.0	BLOD	102	75-125			
2,2-Dichloropropane	50.4	1	ug/L	50.0	BLOD	101	70-135			
2-Butanone (MEK)	39.5	10	ug/L	50.0	BLOD	79.0	30-150			
2-Hexanone (MBK)	41.6	5	ug/L	50.0	BLOD	83.3	55-130			
4-Methyl-2-pentanone (MIBK)	44.6	5	ug/L	50.0	BLOD	89.1	60-135			
Acetone	44.2	10	ug/L	50.0	BLOD	80.7	40-140			
Acrylonitrile	224	5	ug/L	250	BLOD	89.8	70-130			
Benzene	57.7	1	ug/L	50.0	7.30	101	80-120			
Bromochloromethane	43.2	1	ug/L	50.0	BLOD	86.3	65-130			
Bromodichloromethane	54.2	0.5	ug/L	50.0	BLOD	108	75-120			
Bromoform	43.8	1	ug/L	50.0	BLOD	87.6	70-130			
Bromomethane	46.4	1	ug/L	50.0	BLOD	92.8	30-145			
Carbon disulfide	42.1	10	ug/L	50.0	BLOD	84.1	35-160			
Carbon tetrachloride	53.7	1	ug/L	50.0	BLOD	107	65-140			
Chlorobenzene	50.3	1	ug/L	50.0	1.31	97.9	80-120			
Chloroethane	47.1	1	ug/L	50.0	1.07	92.0	60-135			

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Enthalpy Analytical

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### Batch BFF0032 - SW5030B-MS

**Matrix Spike (BFF0032-MS1)**

Source: 22E1463-08

Prepared &amp; Analyzed: 06/02/2022

Chloroform	47.6	0.5	ug/L	50.0	BLOD	95.2	65-135			
Chloromethane	55.1	1	ug/L	50.0	BLOD	110	40-125			
cis-1,2-Dichloroethylene	103	1	ug/L	50.0	61.3	83.7	70-125			
cis-1,2-Dichloroethylene	103	1	ug/L	50.0	61.3	83.7	70-125			M
cis-1,3-Dichloropropene	39.6	1	ug/L	50.0	BLOD	79.1	70-130			
Dibromochloromethane	43.9	0.5	ug/L	50.0	BLOD	87.7	60-135			
Dibromomethane	46.2	1	ug/L	50.0	BLOD	92.5	75-125			
Dichlorodifluoromethane	45.2	1	ug/L	50.0	BLOD	90.3	30-155			
Dichlorodifluoromethane	45.2	1	ug/L	50.0	BLOD	90.3	30-155			
Ethylbenzene	54.6	1	ug/L	50.0	BLOD	109	75-125			
m+p-Xylenes	100	2	ug/L	100	BLOD	100	75-130			
Methylene chloride	45.2	4	ug/L	50.0	BLOD	90.3	55-140			
o-Xylene	51.1	1	ug/L	50.0	BLOD	102	80-120			
Styrene	44.8	1	ug/L	50.0	BLOD	89.5	65-135			
Tetrachloroethylene (PCE)	84.1	1	ug/L	50.0	BLOD	168	45-150			M
Toluene	59.3	1	ug/L	50.0	10.9	96.9	75-120			
trans-1,2-Dichloroethylene	45.8	1	ug/L	50.0	BLOD	90.6	60-140			
trans-1,3-Dichloropropene	37.3	1	ug/L	50.0	BLOD	74.5	55-140			
Trichloroethylene	50.0	1	ug/L	50.0	BLOD	99.9	70-125			
Trichlorofluoromethane	51.9	1	ug/L	50.0	BLOD	104	60-145			
Vinyl chloride	64.3	0.5	ug/L	50.0	7.98	113	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>49.1</i>		ug/L	<i>50.0</i>		<i>98.2</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>54.3</i>		ug/L	<i>50.0</i>		<i>109</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>44.9</i>		ug/L	<i>50.0</i>		<i>89.9</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.8</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-130</i>			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0032 - SW5030B-MS**

Matrix Spike (BFF0032-MS1)                      Source: 22E1463-08                      Prepared & Analyzed: 06/02/2022

**Batch BFF0033 - SW5030B-MS**

Blank (BFF0033-BLK1)    Prepared & Analyzed: 06/01/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,1-Dichloropropene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2,4-Trichlorobenzene	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,3-Dichlorobenzene	ND	1.00	ug/L
1,3-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2,2-Dichloropropane	ND	2.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acetonitrile	ND	10.0	ug/L
Acrolein	ND	10.0	ug/L



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

**Blank (BFF0033-BLK1)**

Prepared & Analyzed: 06/01/2022

Acrylonitrile	ND	5.00	ug/L
Allyl chloride	ND	1.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L
Chloromethane	ND	1.00	ug/L
Chloroprene	ND	5.00	ug/L
cis-1,2-Dichloroethylene	ND	1.00	ug/L
cis-1,3-Dichloropropene	ND	1.00	ug/L
Dibromochloromethane	ND	0.50	ug/L
Dibromomethane	ND	1.00	ug/L
Dichlorodifluoromethane	ND	1.00	ug/L
Ethyl methacrylate	ND	5.00	ug/L
Ethylbenzene	ND	1.00	ug/L
Iodomethane	ND	10.0	ug/L
Isobutyl Alcohol	ND	40.0	ug/L
m+p-Xylenes	ND	2.00	ug/L
Methacrylonitrile	ND	1.50	ug/L

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

**Blank (BFF0033-BLK1)**

Prepared & Analyzed: 06/01/2022

Methyl methacrylate	ND	2.00	ug/L							
Methylene chloride	ND	4.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Propionitrile	ND	40.0	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>54.1</i>		ug/L	<i>50.0</i>		<i>108</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>49.6</i>		ug/L	<i>50.0</i>		<i>99.2</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.5</i>		ug/L	<i>50.0</i>		<i>103</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>51.0</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>70-130</i>			

**LCS (BFF0033-BS1)**

Prepared & Analyzed: 06/01/2022

1,1,1,2-Tetrachloroethane	52.8	0.4	ug/L	50.0		106	80-130			
1,1,1-Trichloroethane	53.9	1	ug/L	50.0		108	65-130			
1,1,2,2-Tetrachloroethane	53.5	0.4	ug/L	50.0		107	65-130			
1,1,2-Trichloroethane	49.2	1	ug/L	50.0		98.4	75-125			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0033 - SW5030B-MS**

**LCS (BFF0033-BS1)**

Prepared & Analyzed: 06/01/2022

1,1-Dichloroethane	48.4	1	ug/L	50.0		96.9	70-135			
1,1-Dichloroethylene	42.1	1	ug/L	50.0		84.2	70-130			
1,1-Dichloropropene	50.6	1	ug/L	50.0		101	75-135			
1,2,3-Trichloropropane	55.1	1	ug/L	50.0		110	75-125			
1,2,4-Trichlorobenzene	48.7	1	ug/L	50.0		97.4	65-135			
1,2-Dichlorobenzene	51.2	0.5	ug/L	50.0		102	70-120			
1,2-Dichloroethane	50.4	1	ug/L	50.0		101	70-130			
1,2-Dichloropropane	47.2	0.5	ug/L	50.0		94.5	75-125			
1,3-Dichlorobenzene	52.0	1	ug/L	50.0		104	75-125			
1,3-Dichloropropane	48.3	1	ug/L	50.0		96.6	75-125			
1,4-Dichlorobenzene	51.3	1	ug/L	50.0		103	75-125			
2,2-Dichloropropane	44.8	1	ug/L	50.0		89.6	70-135			
2-Butanone (MEK)	41.1	10	ug/L	50.0		82.1	30-150			
2-Hexanone (MBK)	58.8	5	ug/L	50.0		118	55-130			
4-Methyl-2-pentanone (MIBK)	48.6	5	ug/L	50.0		97.2	60-135			
Acetone	48.0	10	ug/L	50.0		96.0	40-140			
Acrylonitrile	301	5	ug/L	250		120	70-130			
Benzene	47.3	1	ug/L	50.0		94.6	80-120			
Bromochloromethane	44.1	1	ug/L	50.0		88.2	65-130			
Bromodichloromethane	53.0	0.5	ug/L	50.0		106	75-120			
Bromoform	50.6	1	ug/L	50.0		101	70-130			
Bromomethane	42.6	1	ug/L	50.0		85.3	30-145			
Carbon disulfide	51.3	10	ug/L	50.0		103	35-160			
Carbon tetrachloride	53.1	1	ug/L	50.0		106	65-140			
Chlorobenzene	52.4	1	ug/L	50.0		105	80-120			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

**LCS (BFF0033-BS1)**

Prepared &amp; Analyzed: 06/01/2022

Chloroethane	48.2	1	ug/L	50.0		96.5	60-135			
Chloroform	45.4	0.5	ug/L	50.0		90.9	65-135			
Chloromethane	49.8	1	ug/L	50.0		99.5	40-125			
cis-1,2-Dichloroethylene	45.3	1	ug/L	50.0		90.5	70-125			
cis-1,3-Dichloropropene	35.9	1	ug/L	50.0		71.8	70-130			
Dibromochloromethane	47.7	0.5	ug/L	50.0		95.5	60-135			
Dibromomethane	44.6	1	ug/L	50.0		89.3	75-125			
Dichlorodifluoromethane	42.1	1	ug/L	50.0		84.2	30-155			
Ethylbenzene	56.7	1	ug/L	50.0		113	75-125			
m+p-Xylenes	104	2	ug/L	100		104	75-130			
Methylene chloride	44.8	4	ug/L	50.0		89.7	55-140			
o-Xylene	53.6	1	ug/L	50.0		107	80-120			
Styrene	52.2	1	ug/L	50.0		104	65-135			
Tetrachloroethylene (PCE)	90.5	1	ug/L	50.0		181	45-150			L
Toluene	49.1	1	ug/L	50.0		98.1	75-120			
trans-1,2-Dichloroethylene	45.8	1	ug/L	50.0		91.7	60-140			
trans-1,3-Dichloropropene	39.4	1	ug/L	50.0		78.8	55-140			
Trichloroethylene	49.0	1	ug/L	50.0		98.0	70-125			
Trichlorofluoromethane	61.1	1	ug/L	50.0		122	60-145			
Vinyl chloride	50.6	0.5	ug/L	50.0		101	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>52.9</i>		<i>ug/L</i>	<i>50.0</i>		<i>106</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>55.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>111</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>52.3</i>		<i>ug/L</i>	<i>50.0</i>		<i>105</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.7</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-130</i>			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0033 - SW5030B-MS**

**Matrix Spike (BFF0033-MS1)**

Source: 22E1463-02

Prepared & Analyzed: 06/01/2022

1,1,1,2-Tetrachloroethane	47.9	0.4	ug/L	50.0	BLOD	95.8	80-130			
1,1,1-Trichloroethane	52.0	1	ug/L	50.0	BLOD	104	65-130			
1,1,2,2-Tetrachloroethane	48.1	0.4	ug/L	50.0	BLOD	96.2	65-130			
1,1,2-Trichloroethane	46.6	1	ug/L	50.0	BLOD	93.2	75-125			
1,1-Dichloroethane	47.1	1	ug/L	50.0	BLOD	94.3	70-135			
1,1-Dichloroethylene	41.4	1	ug/L	50.0	BLOD	82.9	70-130			
1,1-Dichloropropene	49.3	1	ug/L	50.0	BLOD	98.7	75-135			
1,2,3-Trichloropropane	49.5	1	ug/L	50.0	BLOD	99.0	75-125			
1,2,4-Trichlorobenzene	46.5	1	ug/L	50.0	BLOD	92.9	65-135			
1,2-Dichlorobenzene	49.1	0.5	ug/L	50.0	BLOD	98.2	70-120			
1,2-Dichloroethane	48.4	1	ug/L	50.0	BLOD	96.9	70-130			
1,2-Dichloropropane	44.7	0.5	ug/L	50.0	BLOD	89.5	75-125			
1,3-Dichlorobenzene	49.6	1	ug/L	50.0	BLOD	99.3	75-125			
1,3-Dichloropropane	48.2	1	ug/L	50.0	BLOD	96.4	75-125			
1,4-Dichlorobenzene	50.0	1	ug/L	50.0	BLOD	100	75-125			
2,2-Dichloropropane	44.6	1	ug/L	50.0	BLOD	89.2	70-135			
2-Butanone (MEK)	40.6	10	ug/L	50.0	BLOD	81.3	30-150			
2-Hexanone (MBK)	51.7	5	ug/L	50.0	BLOD	103	55-130			
4-Methyl-2-pentanone (MIBK)	48.0	5	ug/L	50.0	BLOD	96.0	60-135			
Acetone	50.0	10	ug/L	50.0	BLOD	92.9	40-140			
Acrylonitrile	290	5	ug/L	250	BLOD	116	70-130			
Benzene	46.7	1	ug/L	50.0	BLOD	93.4	80-120			
Bromochloromethane	43.9	1	ug/L	50.0	BLOD	87.8	65-130			
Bromodichloromethane	48.8	0.5	ug/L	50.0	BLOD	97.5	75-120			
Bromoform	45.7	1	ug/L	50.0	BLOD	91.4	70-130			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0033 - SW5030B-MS**

Matrix Spike (BFF0033-MS1)	Source: 22E1463-02			Prepared & Analyzed: 06/01/2022						
Bromomethane	44.0	1	ug/L	50.0	BLOD	88.1	30-145			
Carbon disulfide	48.0	10	ug/L	50.0	BLOD	96.0	35-160			
Carbon tetrachloride	52.0	1	ug/L	50.0	BLOD	104	65-140			
Chlorobenzene	47.4	1	ug/L	50.0	BLOD	94.8	80-120			
Chloroethane	47.8	1	ug/L	50.0	BLOD	95.7	60-135			
Chloroform	43.4	0.5	ug/L	50.0	BLOD	86.8	65-135			
Chloromethane	50.3	1	ug/L	50.0	BLOD	101	40-125			
cis-1,2-Dichloroethylene	43.9	1	ug/L	50.0	BLOD	87.8	70-125			
cis-1,3-Dichloropropene	35.2	1	ug/L	50.0	BLOD	70.4	70-130			
Dibromochloromethane	46.0	0.5	ug/L	50.0	BLOD	92.0	60-135			
Dibromomethane	43.2	1	ug/L	50.0	BLOD	86.5	75-125			
Dichlorodifluoromethane	42.5	1	ug/L	50.0	BLOD	84.9	30-155			
Ethylbenzene	51.8	1	ug/L	50.0	BLOD	104	75-125			
m+p-Xylenes	94.8	2	ug/L	100	BLOD	94.8	75-130			
Methylene chloride	42.4	4	ug/L	50.0	BLOD	84.9	55-140			
o-Xylene	49.1	1	ug/L	50.0	BLOD	98.3	80-120			
Styrene	47.1	1	ug/L	50.0	BLOD	94.2	65-135			
Tetrachloroethylene (PCE)	84.9	1	ug/L	50.0	BLOD	170	45-150			M
Toluene	47.6	1	ug/L	50.0	BLOD	95.2	75-120			
trans-1,2-Dichloroethylene	45.5	1	ug/L	50.0	BLOD	91.1	60-140			
trans-1,3-Dichloropropene	38.7	1	ug/L	50.0	BLOD	77.5	55-140			
Trichloroethylene	46.9	1	ug/L	50.0	BLOD	93.8	70-125			
Trichlorofluoromethane	59.4	1	ug/L	50.0	BLOD	119	60-145			
Vinyl chloride	50.3	0.5	ug/L	50.0	BLOD	101	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>55.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>110</i>	<i>70-120</i>			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0033 - SW5030B-MS

**Matrix Spike (BFF0033-MS1)**

Source: 22E1463-02

Prepared & Analyzed: 06/01/2022

<i>Surr: 4-Bromofluorobenzene (Surr)</i>	50.8		ug/L	50.0		102	75-120		
<i>Surr: Dibromofluoromethane (Surr)</i>	50.6		ug/L	50.0		101	70-130		
<i>Surr: Toluene-d8 (Surr)</i>	50.7		ug/L	50.0		101	70-130		

**Matrix Spike Dup (BFF0033-MSD1)**

Source: 22E1463-02

Prepared & Analyzed: 06/01/2022

1,1,1,2-Tetrachloroethane	48.7	0.4	ug/L	50.0	BLOD	97.4	80-130	1.72	30
1,1,1-Trichloroethane	51.4	1	ug/L	50.0	BLOD	103	65-130	1.10	30
1,1,2,2-Tetrachloroethane	48.7	0.4	ug/L	50.0	BLOD	97.4	65-130	1.24	30
1,1,2-Trichloroethane	47.6	1	ug/L	50.0	BLOD	95.3	75-125	2.19	30
1,1-Dichloroethane	46.2	1	ug/L	50.0	BLOD	92.3	70-135	2.08	30
1,1-Dichloroethylene	39.9	1	ug/L	50.0	BLOD	79.8	70-130	3.76	30
1,1-Dichloropropene	47.7	1	ug/L	50.0	BLOD	95.5	75-135	3.30	30
1,2,3-Trichloropropane	49.8	1	ug/L	50.0	BLOD	99.5	75-125	0.564	30
1,2,4-Trichlorobenzene	49.0	1	ug/L	50.0	BLOD	98.1	65-135	5.38	30
1,2-Dichlorobenzene	49.9	0.5	ug/L	50.0	BLOD	99.8	70-120	1.58	30
1,2-Dichloroethane	48.0	1	ug/L	50.0	BLOD	95.9	70-130	0.975	30
1,2-Dichloropropane	45.6	0.5	ug/L	50.0	BLOD	91.2	75-125	1.95	30
1,3-Dichlorobenzene	50.4	1	ug/L	50.0	BLOD	101	75-125	1.58	30
1,3-Dichloropropane	46.9	1	ug/L	50.0	BLOD	93.9	75-125	2.69	30
1,4-Dichlorobenzene	50.3	1	ug/L	50.0	BLOD	101	75-125	0.618	30
2,2-Dichloropropane	42.4	1	ug/L	50.0	BLOD	84.8	70-135	5.01	30
2-Butanone (MEK)	43.4	10	ug/L	50.0	BLOD	86.7	30-150	6.45	30
2-Hexanone (MBK)	56.8	5	ug/L	50.0	BLOD	114	55-130	9.36	30
4-Methyl-2-pentanone (MIBK)	53.0	5	ug/L	50.0	BLOD	106	60-135	9.79	30
Acetone	48.7	10	ug/L	50.0	BLOD	90.2	40-140	2.70	30

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### Batch BFF0033 - SW5030B-MS

Matrix Spike Dup (BFF0033-MSD1)	Source: 22E1463-02			Prepared & Analyzed: 06/01/2022						
Acrylonitrile	294	5	ug/L	250	BLOD	118	70-130	1.41	30	
Benzene	46.4	1	ug/L	50.0	BLOD	92.7	80-120	0.752	30	
Bromochloromethane	41.9	1	ug/L	50.0	BLOD	83.8	65-130	4.64	30	
Bromodichloromethane	50.3	0.5	ug/L	50.0	BLOD	101	75-120	3.13	30	
Bromoform	46.7	1	ug/L	50.0	BLOD	93.5	70-130	2.23	30	
Bromomethane	44.6	1	ug/L	50.0	BLOD	89.3	30-145	1.40	30	
Carbon disulfide	51.1	10	ug/L	50.0	BLOD	102	35-160	6.23	30	
Carbon tetrachloride	50.5	1	ug/L	50.0	BLOD	101	65-140	2.85	30	
Chlorobenzene	47.5	1	ug/L	50.0	BLOD	95.0	80-120	0.211	30	
Chloroethane	46.9	1	ug/L	50.0	BLOD	93.7	60-135	2.05	30	
Chloroform	43.7	0.5	ug/L	50.0	BLOD	87.5	65-135	0.780	30	
Chloromethane	48.7	1	ug/L	50.0	BLOD	97.5	40-125	3.21	30	
cis-1,2-Dichloroethylene	43.6	1	ug/L	50.0	BLOD	87.2	70-125	0.617	30	
cis-1,3-Dichloropropene	35.5	1	ug/L	50.0	BLOD	70.9	70-130	0.679	30	
Dibromochloromethane	45.2	0.5	ug/L	50.0	BLOD	90.4	60-135	1.82	30	
Dibromomethane	42.3	1	ug/L	50.0	BLOD	84.6	75-125	2.17	30	
Dichlorodifluoromethane	37.0	1	ug/L	50.0	BLOD	74.0	30-155	13.7	30	
Ethylbenzene	51.9	1	ug/L	50.0	BLOD	104	75-125	0.328	30	
m+p-Xylenes	95.3	2	ug/L	100	BLOD	95.3	75-130	0.558	30	
Methylene chloride	42.5	4	ug/L	50.0	BLOD	85.0	55-140	0.0942	30	
o-Xylene	49.8	1	ug/L	50.0	BLOD	99.6	80-120	1.35	30	
Styrene	46.5	1	ug/L	50.0	BLOD	93.0	65-135	1.26	30	
Tetrachloroethylene (PCE)	81.8	1	ug/L	50.0	BLOD	164	45-150	3.80	30	M
Toluene	47.3	1	ug/L	50.0	BLOD	94.7	75-120	0.506	30	
trans-1,2-Dichloroethylene	44.3	1	ug/L	50.0	BLOD	88.7	60-140	2.67	30	



## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0033 - SW5030B-MS**

Matrix Spike Dup (BFF0033-MSD1)	Source: 22E1463-02			Prepared & Analyzed: 06/01/2022						
trans-1,3-Dichloropropene	38.6	1	ug/L	50.0	BLOD	77.2	55-140	0.362	30	
Trichloroethylene	47.1	1	ug/L	50.0	BLOD	94.2	70-125	0.447	30	
Trichlorofluoromethane	54.2	1	ug/L	50.0	BLOD	108	60-145	9.18	30	
Vinyl chloride	47.2	0.5	ug/L	50.0	BLOD	94.4	50-145	6.34	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>50.3</i>		ug/L	<i>50.0</i>		<i>101</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.8</i>		ug/L	<i>50.0</i>		<i>102</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.9</i>		ug/L	<i>50.0</i>		<i>104</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.4</i>		ug/L	<i>50.0</i>		<i>101</i>	<i>70-130</i>			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

1,2,4,5-Tetrachlorobenzene	ND	10.0	ug/L
1,3,5-Trinitrobenzene	ND	5.00	ug/L
1,3-Dinitrobenzene	ND	2.50	ug/L
1,4-Naphthoquinone	ND	10.0	ug/L
1-Naphthylamine	ND	10.0	ug/L
2,3,4,6-Tetrachlorophenol	ND	10.0	ug/L
2,4,5-Trichlorophenol	ND	10.0	ug/L
2,4,6-Trichlorophenol	ND	10.0	ug/L
2,4-Dichlorophenol	ND	10.0	ug/L
2,4-Dimethylphenol	ND	5.00	ug/L
2,4-Dinitrophenol	ND	50.0	ug/L
2,4-Dinitrotoluene	ND	10.0	ug/L
2,6-Dichlorophenol	ND	10.0	ug/L
2,6-Dinitrotoluene	ND	10.0	ug/L
2-Acetylaminofluorene	ND	2.50	ug/L
2-Chloronaphthalene	ND	10.0	ug/L
2-Chlorophenol	ND	10.0	ug/L
2-Methylnaphthalene	ND	10.0	ug/L
2-Naphthylamine	ND	10.0	ug/L
2-Nitroaniline	ND	20.0	ug/L
2-Nitrophenol	ND	10.0	ug/L
3,3'-Dichlorobenzidine	ND	10.0	ug/L
3,3'-Dimethylbenzidine	ND	2.50	ug/L
3-Methylcholanthrene	ND	10.0	ug/L
3-Nitroaniline	ND	20.0	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Aminobiphenyl	ND	10.0	ug/L
4-Bromophenyl phenyl ether	ND	10.0	ug/L
4-Chloroaniline	ND	10.0	ug/L
4-Chlorophenyl phenyl ether	ND	10.0	ug/L
4-Nitroaniline	ND	20.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
5-Nitro-o-toluidine	ND	10.0	ug/L
7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/L
Acenaphthene	ND	10.0	ug/L
Acenaphthylene	ND	10.0	ug/L
Acetophenone	ND	20.0	ug/L
Anthracene	ND	10.0	ug/L
Benzo (a) anthracene	ND	10.0	ug/L
Benzo (a) pyrene	ND	10.0	ug/L
Benzo (b) fluoranthene	ND	10.0	ug/L
Benzo (g,h,i) perylene	ND	10.0	ug/L
Benzo (k) fluoranthene	ND	10.0	ug/L
Benzyl alcohol	ND	20.0	ug/L
bis (2-Chloroethoxy) methane	ND	10.0	ug/L
bis (2-Chloroethyl) ether	ND	10.0	ug/L
2,2'-Oxybis (1-chloropropane)	ND	10.0	ug/L
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L
Butyl benzyl phthalate	ND	10.0	ug/L
Chlorobenzilate	ND	2.50	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

Chrysene	ND	10.0	ug/L
Diallate	ND	2.50	ug/L
Dibenz (a,h) anthracene	ND	10.0	ug/L
Dibenzofuran	ND	5.00	ug/L
Diethyl phthalate	ND	10.0	ug/L
Dimethoate	ND	2.50	ug/L
Dimethyl phthalate	ND	10.0	ug/L
Di-n-butyl phthalate	ND	10.0	ug/L
Di-n-octyl phthalate	ND	10.0	ug/L
Diphenylamine	ND	10.0	ug/L
Disulfoton	ND	2.50	ug/L
Ethyl methanesulfonate	ND	20.0	ug/L
Ethyl parathion	ND	2.50	ug/L
Famphur	ND	2.50	ug/L
Fluoranthene	ND	10.0	ug/L
Fluorene	ND	10.0	ug/L
Hexachlorobenzene	ND	1.00	ug/L
Hexachlorobutadiene	ND	10.0	ug/L
Hexachlorocyclopentadiene	ND	10.0	ug/L
Hexachloroethane	ND	10.0	ug/L
Hexachloropropene	ND	2.50	ug/L
Indeno (1,2,3-cd) pyrene	ND	10.0	ug/L
Isodrin	ND	10.0	ug/L
Isophorone	ND	10.0	ug/L
Isosafrole	ND	10.0	ug/L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**Blank (BFF0013-BLK1)**

Prepared & Analyzed: 06/01/2022

Kepone	ND	10.0	ug/L							
m+p-Cresols	ND	10.0	ug/L							
Methapyrilene	ND	10.0	ug/L							
Methyl methanesulfonate	ND	10.0	ug/L							
Methyl parathion	ND	2.50	ug/L							
Naphthalene	0.26	0.10	ug/L							B
Nitrobenzene	ND	10.0	ug/L							
n-Nitrosodiethylamine	ND	2.50	ug/L							
n-Nitrosodimethylamine	ND	10.0	ug/L							
n-Nitrosodi-n-butylamine	ND	10.0	ug/L							
n-Nitrosodi-n-propylamine	ND	10.0	ug/L							
n-Nitrosodiphenylamine	ND	10.0	ug/L							
n-Nitrosomethylethylamine	ND	2.50	ug/L							
n-Nitrosopiperidine	ND	10.0	ug/L							
n-Nitrosopyrrolidine	ND	2.50	ug/L							
o,o,o-Triethyl phosphorothioate	ND	10.0	ug/L							
o,o-Diethyl o-2-pyrazinyl phosphorothioate	ND	10.0	ug/L							
o+m+p-Cresols	ND	10.0	ug/L							
o-Cresol	ND	10.0	ug/L							
o-Toluidine	ND	2.50	ug/L							
p-(Dimethylamino) azobenzene	ND	2.50	ug/L							
p-Chloro-m-cresol	ND	10.0	ug/L							
Pentachlorobenzene	ND	10.0	ug/L							
Pentachloronitrobenzene (quintozene)	ND	10.0	ug/L							
Phenacetin	ND	10.0	ug/L							

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Enthalpy Analytical

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### Batch BFF0013 - SW3580A-MS

**Blank (BFF0013-BLK1)**

Prepared &amp; Analyzed: 06/01/2022

Phenanthrene	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Phorate	ND	2.50	ug/L							
p-Phenylenediamine	ND	10.0	ug/L							
Pronamide	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Safrole	ND	2.50	ug/L							
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.4		ug/L	100		55.4	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	33.8		ug/L	50.0		67.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	45.2		ug/L	100		45.2	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	34.4		ug/L	50.0		68.9	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	31.6		ug/L	100		31.6	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	40.5		ug/L	50.0		81.0	27-133			

**LCS (BFF0013-BS1)**

Prepared &amp; Analyzed: 06/01/2022

1,2,4-Trichlorobenzene	17.2	10.0	ug/L	50.0		34.5	22-135			
1,2-Dichlorobenzene	12.3	10.0	ug/L	50.0		24.7	22-115			
1,3-Dichlorobenzene	10.7	10.0	ug/L	50.0		21.5	22-112			L
1,4-Dichlorobenzene	11.7	10.0	ug/L	50.0		23.3	13-112			
2,4,6-Trichlorophenol	26.0	10.0	ug/L	50.0		51.9	11-145			
2,4-Dichlorophenol	28.3	10.0	ug/L	50.0		56.7	11-75			
2,4-Dimethylphenol	23.8	5.00	ug/L	50.0		47.5	11-121			
2,4-Dinitrophenol	31.7	50.0	ug/L	50.0		63.4	11-165			
2,4-Dinitrotoluene	35.6	10.0	ug/L	50.0		71.1	17-155			
2,6-Dinitrotoluene	26.7	10.0	ug/L	50.0		53.4	15-125			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

**LCS (BFF0013-BS1)**

Prepared & Analyzed: 06/01/2022

2-Chloronaphthalene	25.8	10.0	ug/L	50.0		51.5	27-89			
2-Chlorophenol	20.5	10.0	ug/L	50.0		41.1	15-110			
2-Nitrophenol	22.9	10.0	ug/L	50.0		45.8	11-115			
3,3'-Dichlorobenzidine	19.7	10.0	ug/L	50.0		39.4	25-95			
4,6-Dinitro-2-methylphenol	36.0	50.0	ug/L	50.0		72.1	25-130			
4-Bromophenyl phenyl ether	23.7	10.0	ug/L	50.0		47.4	15-110			
4-Chlorophenyl phenyl ether	25.2	10.0	ug/L	50.0		50.4	15-110			
4-Nitrophenol	13.7	50.0	ug/L	50.0		27.4	12-70			
Acenaphthene	27.2	10.0	ug/L	50.0		54.5	18-85			
Acenaphthylene	30.0	10.0	ug/L	50.0		60.1	20-75			
Acetophenone	20.9	20.0	ug/L	50.0		41.8	0-200			
alpha-Terpineol	19.8	2.50	ug/L	50.0		39.6	0-200			
Anthracene	33.3	10.0	ug/L	50.0		66.6	35-95			
Benzo (a) anthracene	40.2	10.0	ug/L	50.0		80.3	25-95			
Benzo (a) pyrene	46.3	10.0	ug/L	50.0		92.7	37-110			
Benzo (b) fluoranthene	49.3	10.0	ug/L	50.0		98.5	25-75			L
Benzo (g,h,i) perylene	16.2	10.0	ug/L	50.0		32.4	25-90			
Benzo (k) fluoranthene	42.8	10.0	ug/L	50.0		85.6	25-95			
bis (2-Chloroethoxy) methane	23.6	10.0	ug/L	50.0		47.1	25-110			
bis (2-Chloroethyl) ether	19.4	10.0	ug/L	50.0		38.8	25-85			
2,2'-Oxybis (1-chloropropane)	20.4	10.0	ug/L	50.0		40.9	25-95			
bis (2-Ethylhexyl) phthalate	46.0	5.00	ug/L	50.0		91.9	30-125			
Butyl benzyl phthalate	45.3	10.0	ug/L	50.0		90.6	30-115			
Carbazole	42.8	2.50	ug/L	50.0		85.5	0-200			
Chrysene	42.6	10.0	ug/L	50.0		85.2	20-90			

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**LCS (BFF0013-BS1)**

Prepared &amp; Analyzed: 06/01/2022

Dibenz (a,h) anthracene	21.5	10.0	ug/L	50.0		43.1	27-125			
Diethyl phthalate	32.9	10.0	ug/L	50.0		65.8	25-120			
Dimethyl phthalate	32.1	10.0	ug/L	50.0		64.3	25-125			
Di-n-butyl phthalate	44.7	10.0	ug/L	50.0		89.4	35-115			
Di-n-octyl phthalate	73.4	10.0	ug/L	50.0		147	25-105			L
Fluoranthene	42.7	10.0	ug/L	50.0		85.3	33-95			
Fluorene	30.3	10.0	ug/L	50.0		60.5	15-97			
Hexachlorobenzene	26.3	1.00	ug/L	50.0		52.6	25-125			
Hexachlorobutadiene	15.4	10.0	ug/L	50.0		30.8	25-125			
Hexachlorocyclopentadiene	10.3	10.0	ug/L	50.0		20.6	25-125			L
Hexachloroethane	9.46	10.0	ug/L	50.0		18.9	25-125			L
Indeno (1,2,3-cd) pyrene	21.8	10.0	ug/L	50.0		43.6	25-125			
Isophorone	16.4	10.0	ug/L	50.0		32.9	10-110			
Naphthalene	19.0	0.10	ug/L	50.0		38.0	12-100			
Nitrobenzene	21.8	10.0	ug/L	50.0		43.5	30-97			
n-Nitrosodimethylamine	11.6	10.0	ug/L	50.0		23.2	10-85			
n-Nitrosodi-n-propylamine	24.8	10.0	ug/L	50.0		49.6	12-97			
n-Nitrosodiphenylamine	23.0	10.0	ug/L	50.0		46.0	12-97			
p-Chloro-m-cresol	28.5	10.0	ug/L	50.0		57.0	10-91			
Pentachlorophenol	28.8	20.0	ug/L	50.0		57.6	30-109			
Phenanthrene	35.8	10.0	ug/L	50.0		71.7	30-88			
Phenol	9.42	10.0	ug/L	50.5		18.7	10-70			
Pyrene	44.5	10.0	ug/L	50.0		89.0	27-110			
Pyridine	18.9	10.0	ug/L	50.0		37.8	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>55.7</i>		ug/L	<i>100</i>		<i>55.7</i>	<i>10-86</i>			



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

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**Batch BFF0013 - SW3580A-MS**

**LCS (BFF0013-BS1)**

Prepared & Analyzed: 06/01/2022

<i>Surr: 2-Fluorobiphenyl (Surr)</i>	28.0		ug/L	50.0		56.0	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	26.7		ug/L	100		26.7	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	24.7		ug/L	50.0		49.4	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	22.5		ug/L	100		22.5	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	46.9		ug/L	50.0		93.8	27-133			

**Matrix Spike (BFF0013-MS1)**

**Source: 22E1463-02**

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2,4-Trichlorobenzene	20.1	10.0	ug/L	46.7	BLOD	43.0	22-65			
1,2-Dichlorobenzene	18.0	10.0	ug/L	46.7	BLOD	38.6	22-60			
1,3-Dichlorobenzene	16.8	10.0	ug/L	46.7	BLOD	36.0	22-60			
1,4-Dichlorobenzene	18.1	10.0	ug/L	46.7	BLOD	38.7	13-60			
2,4,6-Trichlorophenol	23.1	10.0	ug/L	46.7	BLOD	49.4	11-75			
2,4-Dichlorophenol	25.3	10.0	ug/L	46.7	BLOD	54.1	11-75			
2,4-Dimethylphenol	22.0	4.67	ug/L	46.7	BLOD	47.1	11-65			
2,4-Dinitrophenol	31.6	50.0	ug/L	46.7	BLOD	67.7	11-110			
2,4-Dinitrotoluene	35.6	10.0	ug/L	46.7	BLOD	76.3	17-95			
2,6-Dinitrotoluene	28.1	10.0	ug/L	46.7	BLOD	60.2	15-125			
2-Chloronaphthalene	25.3	10.0	ug/L	46.7	BLOD	54.1	27-89			
2-Chlorophenol	22.8	10.0	ug/L	46.7	BLOD	48.9	19-64			
2-Nitrophenol	23.1	10.0	ug/L	46.7	BLOD	49.4	11-75			
3,3'-Dichlorobenzidine	14.1	10.0	ug/L	46.7	BLOD	30.2	10-85			
4,6-Dinitro-2-methylphenol	32.2	50.0	ug/L	46.7	BLOD	69.0	40-130			
4-Bromophenyl phenyl ether	24.5	10.0	ug/L	46.7	BLOD	52.4	15-110			
4-Chlorophenyl phenyl ether	26.4	10.0	ug/L	46.7	BLOD	56.5	15-110			
4-Nitrophenol	11.8	50.0	ug/L	46.7	BLOD	25.3	12-70			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**Matrix Spike (BFF0013-MS1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

Acenaphthene	27.4	10.0	ug/L	46.7	BLOD	58.6	15-90			
Acenaphthylene	29.9	10.0	ug/L	46.7	BLOD	63.9	15-99			
Acetophenone	20.5	20.0	ug/L	46.7	BLOD	43.9	0-200			
alpha-Terpineol	16.7	2.50	ug/L	46.7	BLOD	35.8	0-200			
Anthracene	34.4	10.0	ug/L	46.7	BLOD	73.7	20-95			
Benzo (a) anthracene	36.4	9.35	ug/L	46.7	BLOD	77.9	25-95			
Benzo (a) pyrene	43.9	9.35	ug/L	46.7	BLOD	94.0	25-82			M
Benzo (b) fluoranthene	44.4	10.0	ug/L	46.7	BLOD	95.0	25-75			M
Benzo (g,h,i) perylene	14.2	10.0	ug/L	46.7	BLOD	30.4	25-90			
Benzo (k) fluoranthene	47.9	10.0	ug/L	46.7	BLOD	102	25-95			M
bis (2-Chloroethoxy) methane	22.1	10.0	ug/L	46.7	BLOD	47.3	25-85			
bis (2-Chloroethyl) ether	22.1	10.0	ug/L	46.7	BLOD	47.3	25-85			
2,2'-Oxybis (1-chloropropane)	21.8	10.0	ug/L	46.7	BLOD	46.7	25-87			
bis (2-Ethylhexyl) phthalate	42.8	5.00	ug/L	46.7	BLOD	91.6	30-125			
Butyl benzyl phthalate	42.3	10.0	ug/L	46.7	BLOD	90.6	30-115			
Carbazole	38.9	2.50	ug/L	46.7	BLOD	83.1	0-200			
Chrysene	38.8	10.0	ug/L	46.7	BLOD	83.0	20-90			
Dibenz (a,h) anthracene	18.9	10.0	ug/L	46.7	BLOD	40.5	27-125			
Diethyl phthalate	33.6	10.0	ug/L	46.7	BLOD	71.9	25-120			
Dimethyl phthalate	33.3	10.0	ug/L	46.7	BLOD	71.3	25-125			
Di-n-butyl phthalate	40.6	10.0	ug/L	46.7	BLOD	87.0	25-115			
Di-n-octyl phthalate	84.0	10.0	ug/L	46.7	BLOD	180	22-105			M
Fluoranthene	38.7	10.0	ug/L	46.7	BLOD	82.9	25-96			
Fluorene	32.6	10.0	ug/L	46.7	BLOD	69.8	15-97			
Hexachlorobenzene	26.0	0.93	ug/L	46.7	BLOD	55.6	25-125			

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

**Matrix Spike (BFF0013-MS1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

Hexachlorobutadiene	19.2	10.0	ug/L	46.7	BLOD	41.0	25-125			
Hexachlorocyclopentadiene	8.53	10.0	ug/L	46.7	BLOD	18.3	10-90			
Hexachloroethane	16.5	10.0	ug/L	46.7	BLOD	35.4	25-125			
Indeno (1,2,3-cd) pyrene	19.1	10.0	ug/L	46.7	BLOD	40.9	25-125			
Isophorone	14.3	10.0	ug/L	46.7	BLOD	30.7	10-110			
Naphthalene	21.3	0.10	ug/L	46.7	0.20	45.1	12-100			
Nitrobenzene	22.5	10.0	ug/L	46.7	BLOD	48.1	27-77			
n-Nitrosodimethylamine	13.9	10.0	ug/L	46.7	BLOD	29.8	10-85			
n-Nitrosodi-n-propylamine	21.8	10.0	ug/L	46.7	BLOD	46.6	12-97			
n-Nitrosodiphenylamine	24.1	10.0	ug/L	46.7	BLOD	51.6	12-97			
p-Chloro-m-cresol	25.6	10.0	ug/L	46.7	BLOD	54.8	10-91			
Pentachlorophenol	25.4	20.0	ug/L	46.7	BLOD	54.4	27-109			
Phenanthrene	38.2	10.0	ug/L	46.7	BLOD	81.8	35-115			
Phenol	8.69	10.0	ug/L	47.2	BLOD	18.4	10-70			
Pyrene	43.1	10.0	ug/L	46.7	BLOD	92.2	23-110			
Pyridine	5.50	10.0	ug/L	46.7	BLOD	11.8	0-200			
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<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	55.4		ug/L	93.5		59.3	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	27.7		ug/L	46.7		59.3	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	33.1		ug/L	93.5		35.4	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	26.7		ug/L	46.7		57.1	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	22.0		ug/L	93.5		23.5	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	44.7		ug/L	46.7		95.6	27-133			

**Matrix Spike Dup (BFF0013-MSD1)**

Source: 22E1463-02

Prepared: 06/01/2022 Analyzed: 06/02/2022

1,2,4-Trichlorobenzene	28.4	10.0	ug/L	46.7	BLOD	60.7	22-65	34.2	20	P
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## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
1,2-Dichlorobenzene	27.2	10.0	ug/L	46.7	BLOD	58.2	22-60	40.5	20	P
1,3-Dichlorobenzene	25.6	10.0	ug/L	46.7	BLOD	54.8	22-60	41.4	20	P
1,4-Dichlorobenzene	27.3	10.0	ug/L	46.7	BLOD	58.4	13-60	40.6	20	P
2,4,6-Trichlorophenol	31.5	10.0	ug/L	46.7	BLOD	67.3	11-75	30.7	20	P
2,4-Dichlorophenol	36.4	10.0	ug/L	46.7	BLOD	77.9	11-75	36.1	20	M, P
2,4-Dimethylphenol	30.1	4.67	ug/L	46.7	BLOD	64.5	11-65	31.2	20	P
2,4-Dinitrophenol	51.7	50.0	ug/L	46.7	BLOD	111	11-110	48.2	20	M, P
2,4-Dinitrotoluene	47.6	10.0	ug/L	46.7	BLOD	102	17-95	28.8	20	M, P
2,6-Dinitrotoluene	36.4	10.0	ug/L	46.7	BLOD	77.9	15-125	25.6	20	P
2-Chloronaphthalene	37.7	10.0	ug/L	46.7	BLOD	80.6	27-89	39.4	20	P
2-Chlorophenol	33.9	10.0	ug/L	46.7	BLOD	72.4	19-64	38.8	20	M, P
2-Nitrophenol	32.2	10.0	ug/L	46.7	BLOD	68.8	11-75	33.0	20	P
3,3'-Dichlorobenzidine	20.7	10.0	ug/L	46.7	BLOD	44.4	10-85	37.9	20	P
4,6-Dinitro-2-methylphenol	47.4	50.0	ug/L	46.7	BLOD	102	40-130	38.2	20	P
4-Bromophenyl phenyl ether	29.5	10.0	ug/L	46.7	BLOD	63.2	15-110	18.7	20	
4-Chlorophenyl phenyl ether	36.6	10.0	ug/L	46.7	BLOD	78.2	15-110	32.3	20	P
4-Nitrophenol	16.9	50.0	ug/L	46.7	BLOD	36.1	12-70	35.1	20	P
Acenaphthene	38.7	10.0	ug/L	46.7	BLOD	82.9	15-90	34.4	20	P
Acenaphthylene	43.8	10.0	ug/L	46.7	BLOD	93.8	15-99	37.8	20	P
Acetophenone	29.1	20.0	ug/L	46.7	BLOD	62.2	0-200	34.6	20	P
alpha-Terpineol	22.6	2.50	ug/L	46.7	BLOD	48.4	0-200	30.0	20	P
Anthracene	44.9	10.0	ug/L	46.7	BLOD	96.1	20-95	26.4	20	M, P
Benzo (a) anthracene	48.0	9.35	ug/L	46.7	BLOD	103	25-95	27.5	20	M, P
Benzo (a) pyrene	57.3	9.35	ug/L	46.7	BLOD	123	25-82	26.4	20	M, P
Benzo (b) fluoranthene	55.7	10.0	ug/L	46.7	BLOD	119	25-75	22.6	20	M, P

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0013 - SW3580A-MS**

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
Benzo (g,h,i) perylene	20.7	10.0	ug/L	46.7	BLOD	44.2	25-90	37.2	20	P
Benzo (k) fluoranthene	71.2	10.0	ug/L	46.7	BLOD	152	25-95	39.3	20	M, P
bis (2-Chloroethoxy) methane	32.4	10.0	ug/L	46.7	BLOD	69.2	25-85	37.7	20	P
bis (2-Chloroethyl) ether	32.8	10.0	ug/L	46.7	BLOD	70.3	25-85	39.2	20	P
2,2'-Oxybis (1-chloropropane)	33.5	10.0	ug/L	46.7	BLOD	71.7	25-87	42.2	20	P
bis (2-Ethylhexyl) phthalate	51.1	5.00	ug/L	46.7	BLOD	109	30-125	17.7	20	
Butyl benzyl phthalate	51.7	10.0	ug/L	46.7	BLOD	111	30-115	19.9	20	
Carbazole	52.1	2.50	ug/L	46.7	BLOD	112	0-200	29.2	20	P
Chrysene	51.6	10.0	ug/L	46.7	BLOD	110	20-90	28.4	20	M, P
Dibenz (a,h) anthracene	27.6	10.0	ug/L	46.7	BLOD	59.0	27-125	37.3	20	P
Diethyl phthalate	44.1	10.0	ug/L	46.7	BLOD	94.3	25-120	26.9	20	P
Dimethyl phthalate	45.5	10.0	ug/L	46.7	BLOD	97.3	25-125	30.9	20	P
Di-n-butyl phthalate	55.3	10.0	ug/L	46.7	BLOD	118	25-115	30.5	20	M, P
Di-n-octyl phthalate	69.6	10.0	ug/L	46.7	BLOD	149	22-105	18.8	20	M
Fluoranthene	52.7	10.0	ug/L	46.7	BLOD	113	25-96	30.6	20	M, P
Fluorene	44.8	10.0	ug/L	46.7	BLOD	95.9	15-97	31.5	20	P
Hexachlorobenzene	32.1	0.93	ug/L	46.7	BLOD	68.7	25-125	21.2	20	P
Hexachlorobutadiene	27.3	10.0	ug/L	46.7	BLOD	58.4	25-125	35.0	20	P
Hexachlorocyclopentadiene	14.2	10.0	ug/L	46.7	BLOD	30.5	10-90	50.1	20	P
Hexachloroethane	26.0	10.0	ug/L	46.7	BLOD	55.5	25-125	44.4	20	P
Indeno (1,2,3-cd) pyrene	28.0	10.0	ug/L	46.7	BLOD	59.9	25-125	37.7	20	P
Isophorone	22.1	10.0	ug/L	46.7	BLOD	47.3	10-110	42.7	20	P
Naphthalene	31.0	0.10	ug/L	46.7	0.20	66.0	12-100	37.4	20	P
Nitrobenzene	34.1	10.0	ug/L	46.7	BLOD	73.1	27-77	41.3	20	P
n-Nitrosodimethylamine	18.5	10.0	ug/L	46.7	BLOD	39.6	10-85	28.1	20	P

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0013 - SW3580A-MS

Matrix Spike Dup (BFF0013-MSD1)	Source: 22E1463-02		Prepared: 06/01/2022 Analyzed: 06/02/2022							
n-Nitrosodi-n-propylamine	31.0	10.0	ug/L	46.7	BLOD	66.4	12-97	35.0	20	P
n-Nitrosodiphenylamine	30.0	10.0	ug/L	46.7	BLOD	64.3	12-97	21.9	20	P
p-Chloro-m-cresol	35.9	10.0	ug/L	46.7	BLOD	76.9	10-91	33.6	20	P
Pentachlorophenol	36.1	20.0	ug/L	46.7	BLOD	77.3	27-109	34.8	20	P
Phenanthrene	50.0	10.0	ug/L	46.7	BLOD	107	35-115	26.7	20	P
Phenol	14.5	10.0	ug/L	47.2	BLOD	30.6	10-70	49.8	20	P
Pyrene	51.4	10.0	ug/L	46.7	BLOD	110	23-110	17.5	20	
Pyridine	27.2	10.0	ug/L	46.7	BLOD	58.2	0-200	133	20	P
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>67.0</i>		ug/L	<i>93.5</i>		<i>71.7</i>	<i>10-86</i>			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>38.8</i>		ug/L	<i>46.7</i>		<i>82.9</i>	<i>9-87</i>			
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>45.7</i>		ug/L	<i>93.5</i>		<i>48.9</i>	<i>10-52</i>			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>36.8</i>		ug/L	<i>46.7</i>		<i>78.8</i>	<i>10-98.5</i>			
<i>Surr: Phenol-d5 (Surr)</i>	<i>31.7</i>		ug/L	<i>93.5</i>		<i>33.9</i>	<i>5-33</i>			S
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>51.6</i>		ug/L	<i>46.7</i>		<i>110</i>	<i>27-133</i>			

### Batch BFF0088 - SW3580A-MS

Blank (BFF0088-BLK1)	Prepared: 06/02/2022 Analyzed: 06/03/2022									
1,2,4,5-Tetrachlorobenzene	ND	10.0	ug/L							
1,3,5-Trinitrobenzene	ND	5.00	ug/L							
1,3-Dinitrobenzene	ND	2.50	ug/L							
1,4-Naphthoquinone	ND	10.0	ug/L							
1-Naphthylamine	ND	10.0	ug/L							
2,3,4,6-Tetrachlorophenol	ND	10.0	ug/L							
2,4,5-Trichlorophenol	ND	10.0	ug/L							
2,4,6-Trichlorophenol	ND	10.0	ug/L							

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**Batch BFF0088 - SW3580A-MS**

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

2,4-Dichlorophenol	ND	10.0	ug/L
2,4-Dimethylphenol	ND	5.00	ug/L
2,4-Dinitrophenol	ND	50.0	ug/L
2,4-Dinitrotoluene	ND	10.0	ug/L
2,6-Dichlorophenol	ND	10.0	ug/L
2,6-Dinitrotoluene	ND	10.0	ug/L
2-Acetylaminofluorene	ND	2.50	ug/L
2-Chloronaphthalene	ND	10.0	ug/L
2-Chlorophenol	ND	10.0	ug/L
2-Methylnaphthalene	ND	10.0	ug/L
2-Naphthylamine	ND	10.0	ug/L
2-Nitroaniline	ND	20.0	ug/L
2-Nitrophenol	ND	10.0	ug/L
3,3'-Dichlorobenzidine	ND	10.0	ug/L
3,3'-Dimethylbenzidine	ND	2.50	ug/L
3-Methylcholanthrene	ND	10.0	ug/L
3-Nitroaniline	ND	20.0	ug/L
4,6-Dinitro-2-methylphenol	ND	50.0	ug/L
4-Aminobiphenyl	ND	10.0	ug/L
4-Bromophenyl phenyl ether	ND	10.0	ug/L
4-Chloroaniline	ND	10.0	ug/L
4-Chlorophenyl phenyl ether	ND	10.0	ug/L
4-Nitroaniline	ND	20.0	ug/L
4-Nitrophenol	ND	50.0	ug/L
5-Nitro-o-toluidine	ND	10.0	ug/L

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0088 - SW3580A-MS**

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/L
Acenaphthene	ND	10.0	ug/L
Acenaphthylene	ND	10.0	ug/L
Acetophenone	ND	20.0	ug/L
Anthracene	ND	10.0	ug/L
Benzo (a) anthracene	ND	10.0	ug/L
Benzo (a) pyrene	ND	10.0	ug/L
Benzo (b) fluoranthene	ND	10.0	ug/L
Benzo (g,h,i) perylene	ND	10.0	ug/L
Benzo (k) fluoranthene	ND	10.0	ug/L
Benzyl alcohol	ND	20.0	ug/L
bis (2-Chloroethoxy) methane	ND	10.0	ug/L
bis (2-Chloroethyl) ether	ND	10.0	ug/L
2,2'-Oxybis (1-chloropropane)	ND	10.0	ug/L
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L
Butyl benzyl phthalate	ND	10.0	ug/L
Chlorobenzilate	ND	2.50	ug/L
Chrysene	ND	10.0	ug/L
Diallate	ND	2.50	ug/L
Dibenz (a,h) anthracene	ND	10.0	ug/L
Dibenzofuran	ND	5.00	ug/L
Diethyl phthalate	ND	10.0	ug/L
Dimethoate	ND	2.50	ug/L
Dimethyl phthalate	ND	10.0	ug/L
Di-n-butyl phthalate	ND	10.0	ug/L



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0088 - SW3580A-MS**

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

Di-n-octyl phthalate	ND	10.0	ug/L							
Diphenylamine	ND	10.0	ug/L							
Disulfoton	ND	2.50	ug/L							
Ethyl methanesulfonate	ND	20.0	ug/L							
Ethyl parathion	ND	2.50	ug/L							
Famphur	ND	2.50	ug/L							
Fluoranthene	ND	10.0	ug/L							
Fluorene	ND	10.0	ug/L							
Hexachlorobenzene	ND	1.00	ug/L							
Hexachlorobutadiene	ND	10.0	ug/L							
Hexachlorocyclopentadiene	ND	10.0	ug/L							
Hexachloroethane	ND	10.0	ug/L							
Hexachloropropene	ND	2.50	ug/L							
Indeno (1,2,3-cd) pyrene	ND	10.0	ug/L							
Isodrin	ND	10.0	ug/L							
Isophorone	ND	10.0	ug/L							
Isosafrole	ND	10.0	ug/L							
Kepone	ND	10.0	ug/L							
m+p-Cresols	ND	10.0	ug/L							
Methapyrilene	ND	10.0	ug/L							
Methyl methanesulfonate	ND	10.0	ug/L							
Methyl parathion	ND	2.50	ug/L							
Naphthalene	0.28	0.10	ug/L							B
Nitrobenzene	ND	10.0	ug/L							
n-Nitrosodiethylamine	ND	2.50	ug/L							

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0088 - SW3580A-MS

Blank (BFF0088-BLK1)

Prepared: 06/02/2022 Analyzed: 06/03/2022

n-Nitrosodimethylamine	ND	10.0	ug/L							
n-Nitrosodi-n-butylamine	ND	10.0	ug/L							
n-Nitrosodi-n-propylamine	ND	10.0	ug/L							
n-Nitrosodiphenylamine	ND	10.0	ug/L							
n-Nitrosomethylethylamine	ND	2.50	ug/L							
n-Nitrosopiperidine	ND	10.0	ug/L							
n-Nitrosopyrrolidine	ND	2.50	ug/L							
o,o,o-Triethyl phosphorothioate	ND	10.0	ug/L							
o,o-Diethyl o-2-pyrazinyl phosphorothioate	ND	10.0	ug/L							
o+m+p-Cresols	ND	10.0	ug/L							
o-Cresol	ND	10.0	ug/L							
o-Toluidine	ND	2.50	ug/L							
p-(Dimethylamino) azobenzene	ND	2.50	ug/L							
p-Chloro-m-cresol	ND	10.0	ug/L							
Pentachlorobenzene	ND	10.0	ug/L							
Pentachloronitrobenzene (quintozene)	ND	10.0	ug/L							
Phenacetin	ND	10.0	ug/L							
Phenanthrene	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Phorate	ND	2.50	ug/L							
p-Phenylenediamine	ND	10.0	ug/L							
Pronamide	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Safrole	ND	2.50	ug/L							
Surr: 2,4,6-Tribromophenol (Surr)	49.8		ug/L	100		49.8	10-86			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0088 - SW3580A-MS

**Blank (BFF0088-BLK1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

<i>Surr: 2-Fluorobiphenyl (Surr)</i>	38.6		ug/L	50.0		77.1	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	38.8		ug/L	100		38.8	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	37.4		ug/L	50.0		74.7	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	29.9		ug/L	100		29.9	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	38.5		ug/L	50.0		76.9	27-133			

**LCS (BFF0088-BS1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

1,2,4-Trichlorobenzene	13.2	10.0	ug/L	50.0		26.5	22-135			
1,2-Dichlorobenzene	12.2	10.0	ug/L	50.0		24.4	22-115			
1,3-Dichlorobenzene	11.7	10.0	ug/L	50.0		23.3	22-112			
1,4-Dichlorobenzene	12.4	10.0	ug/L	50.0		24.7	13-112			
2,4,6-Trichlorophenol	17.4	10.0	ug/L	50.0		34.9	11-145			
2,4-Dichlorophenol	17.0	10.0	ug/L	50.0		34.0	11-75			
2,4-Dimethylphenol	14.4	5.00	ug/L	50.0		28.8	11-121			
2,4-Dinitrophenol	26.8	50.0	ug/L	50.0		53.6	11-165			
2,4-Dinitrotoluene	27.5	10.0	ug/L	50.0		55.1	17-155			
2,6-Dinitrotoluene	19.0	10.0	ug/L	50.0		38.1	15-125			
2-Chloronaphthalene	17.0	10.0	ug/L	50.0		33.9	27-89			
2-Chlorophenol	15.7	10.0	ug/L	50.0		31.4	15-110			
2-Nitrophenol	15.9	10.0	ug/L	50.0		31.7	11-115			
3,3'-Dichlorobenzidine	13.5	10.0	ug/L	50.0		27.0	25-95			
4,6-Dinitro-2-methylphenol	28.9	50.0	ug/L	50.0		57.8	25-130			
4-Bromophenyl phenyl ether	18.4	10.0	ug/L	50.0		36.8	15-110			
4-Chlorophenyl phenyl ether	18.0	10.0	ug/L	50.0		36.0	15-110			
4-Nitrophenol	9.83	50.0	ug/L	50.0		19.7	12-70			

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Enthalpy Analytical

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**Batch BFF0088 - SW3580A-MS**

**LCS (BFF0088-BS1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

Acenaphthene	17.8	10.0	ug/L	50.0		35.6	18-85			
Acenaphthylene	19.2	10.0	ug/L	50.0		38.5	20-75			
Acetophenone	16.4	20.0	ug/L	50.0		32.9	0-200			
alpha-Terpineol	16.0	2.50	ug/L	50.0		32.1	0-200			
Anthracene	24.7	10.0	ug/L	50.0		49.4	35-95			
Benzo (a) anthracene	35.6	10.0	ug/L	50.0		71.2	25-95			
Benzo (a) pyrene	46.0	10.0	ug/L	50.0		91.9	37-110			
Benzo (b) fluoranthene	44.1	10.0	ug/L	50.0		88.2	25-75			L
Benzo (g,h,i) perylene	39.4	10.0	ug/L	50.0		78.8	25-90			
Benzo (k) fluoranthene	41.2	10.0	ug/L	50.0		82.5	25-95			
bis (2-Chloroethoxy) methane	16.8	10.0	ug/L	50.0		33.5	25-110			
bis (2-Chloroethyl) ether	16.4	10.0	ug/L	50.0		32.8	25-85			
2,2'-Oxybis (1-chloropropane)	14.9	10.0	ug/L	50.0		29.7	25-95			
bis (2-Ethylhexyl) phthalate	41.7	5.00	ug/L	50.0		83.3	30-125			
Butyl benzyl phthalate	38.6	10.0	ug/L	50.0		77.3	30-115			
Carbazole	34.3	2.50	ug/L	50.0		68.7	0-200			
Chrysene	41.2	10.0	ug/L	50.0		82.3	20-90			
Dibenz (a,h) anthracene	40.5	10.0	ug/L	50.0		80.9	27-125			
Diethyl phthalate	27.4	10.0	ug/L	50.0		54.7	25-120			
Dimethyl phthalate	22.0	10.0	ug/L	50.0		43.9	25-125			
Di-n-butyl phthalate	43.3	10.0	ug/L	50.0		86.6	35-115			
Di-n-octyl phthalate	55.5	10.0	ug/L	50.0		111	25-105			L
Fluoranthene	38.1	10.0	ug/L	50.0		76.2	33-95			
Fluorene	21.5	10.0	ug/L	50.0		43.0	15-97			
Hexachlorobenzene	22.4	1.00	ug/L	50.0		44.8	25-125			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0088 - SW3580A-MS

**LCS (BFF0088-BS1)**

Prepared: 06/02/2022 Analyzed: 06/03/2022

Hexachlorobutadiene	13.5	10.0	ug/L	50.0		27.0	25-125			
Hexachlorocyclopentadiene	ND	10.0	ug/L	50.0			25-125			L
Hexachloroethane	12.2	10.0	ug/L	50.0		24.3	25-125			L
Indeno (1,2,3-cd) pyrene	42.0	10.0	ug/L	50.0		84.0	25-125			
Isophorone	9.44	10.0	ug/L	50.0		18.9	10-110			
Naphthalene	15.2	0.10	ug/L	50.0		30.5	12-100			
Nitrobenzene	17.8	10.0	ug/L	50.0		35.6	30-97			
n-Nitrosodimethylamine	10.6	10.0	ug/L	50.0		21.1	10-85			
n-Nitrosodi-n-propylamine	19.1	10.0	ug/L	50.0		38.1	12-97			
n-Nitrosodiphenylamine	18.4	10.0	ug/L	50.0		36.8	12-97			
p-Chloro-m-cresol	17.6	10.0	ug/L	50.0		35.3	10-91			
Pentachlorophenol	20.2	20.0	ug/L	50.0		40.5	30-109			
Phenanthrene	31.2	10.0	ug/L	50.0		62.3	30-88			
Phenol	5.34	10.0	ug/L	50.5		10.6	10-70			
Pyrene	41.7	10.0	ug/L	50.0		83.4	27-110			
Pyridine	5.10	10.0	ug/L	50.0		10.2	0-200			
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<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	38.1		ug/L	100		38.1	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	17.8		ug/L	50.0		35.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	19.8		ug/L	100		19.8	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	18.9		ug/L	50.0		37.8	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	13.8		ug/L	100		13.8	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	37.4		ug/L	50.0		74.9	27-133			

**Matrix Spike (BFF0088-MS1)**

Source: 22F0103-05

Prepared &amp; Analyzed: 06/03/2022

1,2,4-Trichlorobenzene	45.1	10.0	ug/L	48.5	BLOD	92.8	22-65			M
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## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0088 - SW3580A-MS**

**Matrix Spike (BFF0088-MS1)**

**Source: 22F0103-05**

**Prepared & Analyzed: 06/03/2022**

1,2-Dichlorobenzene	33.2	10.0	ug/L	48.5	BLOD	68.3	22-60			M
1,3-Dichlorobenzene	30.8	10.0	ug/L	48.5	BLOD	63.4	22-60			M
1,4-Dichlorobenzene	31.9	10.0	ug/L	48.5	BLOD	65.8	13-60			M
2,4,6-Trichlorophenol	38.8	10.0	ug/L	48.5	BLOD	79.8	11-75			M
2,4-Dichlorophenol	49.6	10.0	ug/L	48.5	BLOD	102	11-75			M
2,4-Dimethylphenol	39.9	4.85	ug/L	48.5	BLOD	82.1	11-65			M
2,4-Dinitrophenol	63.9	50.0	ug/L	48.5	BLOD	132	11-110			M
2,4-Dinitrotoluene	50.3	10.0	ug/L	48.5	BLOD	104	17-95			M
2,6-Dinitrotoluene	43.4	10.0	ug/L	48.5	BLOD	89.4	15-125			
2-Chloronaphthalene	38.3	10.0	ug/L	48.5	BLOD	78.8	27-89			
2-Chlorophenol	38.5	10.0	ug/L	48.5	BLOD	79.3	19-64			M
2-Nitrophenol	45.3	10.0	ug/L	48.5	BLOD	93.2	11-75			M
3,3'-Dichlorobenzidine	28.8	10.0	ug/L	48.5	BLOD	59.3	10-85			
4,6-Dinitro-2-methylphenol	60.3	50.0	ug/L	48.5	BLOD	124	40-130			
4-Bromophenyl phenyl ether	41.1	10.0	ug/L	48.5	BLOD	84.6	15-110			
4-Chlorophenyl phenyl ether	42.0	10.0	ug/L	48.5	BLOD	86.6	15-110			
4-Nitrophenol	24.2	50.0	ug/L	48.5	BLOD	49.9	12-70			
Acenaphthene	38.0	10.0	ug/L	48.5	BLOD	78.2	15-90			
Acenaphthylene	36.0	10.0	ug/L	48.5	BLOD	74.2	15-99			
Acetophenone	40.2	20.0	ug/L	48.5	BLOD	82.8	0-200			
alpha-Terpineol	30.2	2.50	ug/L	48.5	BLOD	62.3	0-200			
Anthracene	38.1	10.0	ug/L	48.5	BLOD	78.4	20-95			
Benzo (a) anthracene	43.9	9.71	ug/L	48.5	BLOD	90.4	25-95			
Benzo (a) pyrene	41.8	9.71	ug/L	48.5	BLOD	86.2	25-82			M
Benzo (b) fluoranthene	46.3	10.0	ug/L	48.5	BLOD	95.4	25-75			M

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Enthalpy Analytical

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**Batch BFF0088 - SW3580A-MS**

Matrix Spike (BFF0088-MS1)	Source: 22F0103-05			Prepared & Analyzed: 06/03/2022						
Benzo (g,h,i) perylene	31.1	10.0	ug/L	48.5	BLOD	64.1	25-90			
Benzo (k) fluoranthene	46.1	10.0	ug/L	48.5	BLOD	94.9	25-95			
bis (2-Chloroethoxy) methane	44.2	10.0	ug/L	48.5	BLOD	91.0	25-85			M
bis (2-Chloroethyl) ether	39.1	10.0	ug/L	48.5	BLOD	80.6	25-85			
2,2'-Oxybis (1-chloropropane)	39.1	10.0	ug/L	48.5	BLOD	80.6	25-87			
bis (2-Ethylhexyl) phthalate	41.7	5.00	ug/L	48.5	BLOD	85.9	30-125			
Butyl benzyl phthalate	38.8	10.0	ug/L	48.5	BLOD	80.0	30-115			
Carbazole	42.3	2.50	ug/L	48.5	BLOD	87.1	0-200			
Chrysene	43.0	10.0	ug/L	48.5	BLOD	88.7	20-90			
Dibenz (a,h) anthracene	39.8	10.0	ug/L	48.5	BLOD	82.1	27-125			
Diethyl phthalate	39.5	10.0	ug/L	48.5	BLOD	81.3	25-120			
Dimethyl phthalate	42.3	10.0	ug/L	48.5	BLOD	87.0	25-125			
Di-n-butyl phthalate	39.9	10.0	ug/L	48.5	BLOD	82.1	25-115			
Di-n-octyl phthalate	41.5	10.0	ug/L	48.5	BLOD	85.5	22-105			
Fluoranthene	48.9	10.0	ug/L	48.5	BLOD	101	25-96			M
Fluorene	39.1	10.0	ug/L	48.5	BLOD	80.6	15-97			
Hexachlorobenzene	39.6	0.97	ug/L	48.5	BLOD	81.6	25-125			
Hexachlorobutadiene	57.9	10.0	ug/L	48.5	BLOD	119	25-125			
Hexachlorocyclopentadiene	25.5	10.0	ug/L	48.5	BLOD	52.5	10-90			
Hexachloroethane	42.9	10.0	ug/L	48.5	BLOD	88.4	25-125			
Indeno (1,2,3-cd) pyrene	37.3	10.0	ug/L	48.5	BLOD	76.9	25-125			
Isophorone	30.1	10.0	ug/L	48.5	BLOD	62.0	10-110			
Naphthalene	37.4	0.10	ug/L	48.5	0.28	76.5	12-100			
Nitrobenzene	56.4	10.0	ug/L	48.5	BLOD	116	27-77			M
n-Nitrosodimethylamine	23.3	10.0	ug/L	48.5	BLOD	48.1	10-85			

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFF0088 - SW3580A-MS

**Matrix Spike (BFF0088-MS1)**

Source: 22F0103-05

Prepared &amp; Analyzed: 06/03/2022

n-Nitrosodi-n-propylamine	39.3	10.0	ug/L	48.5	BLOD	80.9	12-97			
n-Nitrosodiphenylamine	32.5	10.0	ug/L	48.5	BLOD	66.9	12-97			
p-Chloro-m-cresol	53.5	10.0	ug/L	48.5	BLOD	110	10-91			M
Pentachlorophenol	36.2	20.0	ug/L	48.5	BLOD	74.6	27-109			
Phenanthrene	41.8	10.0	ug/L	48.5	BLOD	86.1	35-115			
Phenol	17.8	10.0	ug/L	49.0	BLOD	36.3	10-70			
Pyrene	39.5	10.0	ug/L	48.5	BLOD	81.4	23-110			
Pyridine	35.9	10.0	ug/L	48.5	BLOD	73.9	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	73.8		ug/L	97.1		76.0	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	40.1		ug/L	48.5		82.6	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	45.3		ug/L	97.1		46.7	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	49.3		ug/L	48.5		101	10-98.5			M
<i>Surr: Phenol-d5 (Surr)</i>	33.0		ug/L	97.1		34.0	5-33			M
<i>Surr: p-Terphenyl-d14 (Surr)</i>	37.6		ug/L	48.5		77.5	27-133			

**Matrix Spike Dup (BFF0088-MSD1)**

Source: 22F0103-05

Prepared: 06/03/2022 Analyzed: 06/04/2022

1,2,4-Trichlorobenzene	42.4	10.0	ug/L	48.5	BLOD	87.4	22-65	6.06	20	M
1,2-Dichlorobenzene	30.8	10.0	ug/L	48.5	BLOD	63.5	22-60	7.41	20	M
1,3-Dichlorobenzene	28.9	10.0	ug/L	48.5	BLOD	59.6	22-60	6.11	20	
1,4-Dichlorobenzene	29.9	10.0	ug/L	48.5	BLOD	61.5	13-60	6.73	20	M
2,4,6-Trichlorophenol	37.7	10.0	ug/L	48.5	BLOD	77.6	11-75	2.87	20	M
2,4-Dichlorophenol	48.0	10.0	ug/L	48.5	BLOD	98.8	11-75	3.26	20	M
2,4-Dimethylphenol	38.6	4.85	ug/L	48.5	BLOD	79.6	11-65	3.14	20	M
2,4-Dinitrophenol	69.1	50.0	ug/L	48.5	BLOD	142	11-110	7.84	20	M
2,4-Dinitrotoluene	48.9	10.0	ug/L	48.5	BLOD	101	17-95	2.70	20	M



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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0088 - SW3580A-MS**

Matrix Spike Dup (BFF0088-MSD1)	Source: 22F0103-05			Prepared: 06/03/2022 Analyzed: 06/04/2022						
2,6-Dinitrotoluene	41.0	10.0	ug/L	48.5	BLOD	84.4	15-125	5.73	20	
2-Chloronaphthalene	36.0	10.0	ug/L	48.5	BLOD	74.1	27-89	6.20	20	
2-Chlorophenol	36.2	10.0	ug/L	48.5	BLOD	74.7	19-64	5.98	20	M
2-Nitrophenol	44.0	10.0	ug/L	48.5	BLOD	90.7	11-75	2.74	20	M
3,3'-Dichlorobenzidine	28.0	10.0	ug/L	48.5	BLOD	57.7	10-85	2.67	20	
4,6-Dinitro-2-methylphenol	57.7	50.0	ug/L	48.5	BLOD	119	40-130	4.46	20	
4-Bromophenyl phenyl ether	38.9	10.0	ug/L	48.5	BLOD	80.1	15-110	5.51	20	
4-Chlorophenyl phenyl ether	39.7	10.0	ug/L	48.5	BLOD	81.7	15-110	5.77	20	
4-Nitrophenol	23.3	50.0	ug/L	48.5	BLOD	47.9	12-70	4.13	20	
Acenaphthene	36.0	10.0	ug/L	48.5	BLOD	74.2	15-90	5.25	20	
Acenaphthylene	33.9	10.0	ug/L	48.5	BLOD	69.8	15-99	6.11	20	
Acetophenone	38.1	20.0	ug/L	48.5	BLOD	78.6	0-200	5.23	20	
alpha-Terpineol	29.2	2.50	ug/L	48.5	BLOD	60.1	0-200	3.63	20	
Anthracene	36.0	10.0	ug/L	48.5	BLOD	74.1	20-95	5.74	20	
Benzo (a) anthracene	42.9	9.71	ug/L	48.5	BLOD	88.4	25-95	2.28	20	
Benzo (a) pyrene	41.9	9.71	ug/L	48.5	BLOD	86.4	25-82	0.209	20	M
Benzo (b) fluoranthene	43.1	10.0	ug/L	48.5	BLOD	88.9	25-75	7.03	20	M
Benzo (g,h,i) perylene	33.9	10.0	ug/L	48.5	BLOD	69.9	25-90	8.60	20	
Benzo (k) fluoranthene	43.6	10.0	ug/L	48.5	BLOD	89.7	25-95	5.59	20	
bis (2-Chloroethoxy) methane	41.2	10.0	ug/L	48.5	BLOD	84.9	25-85	6.94	20	
bis (2-Chloroethyl) ether	36.4	10.0	ug/L	48.5	BLOD	75.1	25-85	7.07	20	
2,2'-Oxybis (1-chloropropane)	35.2	10.0	ug/L	48.5	BLOD	72.5	25-87	10.7	20	
bis (2-Ethylhexyl) phthalate	43.4	5.00	ug/L	48.5	BLOD	89.4	30-125	4.01	20	
Butyl benzyl phthalate	40.2	10.0	ug/L	48.5	BLOD	82.8	30-115	3.44	20	
Carbazole	39.2	2.50	ug/L	48.5	BLOD	80.7	0-200	7.58	20	

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0088 - SW3580A-MS</b>										
<b>Matrix Spike Dup (BFF0088-MSD1)</b>	<b>Source: 22F0103-05</b>			<b>Prepared: 06/03/2022 Analyzed: 06/04/2022</b>						
Chrysene	42.8	10.0	ug/L	48.5	BLOD	88.1	20-90	0.611	20	
Dibenz (a,h) anthracene	42.4	10.0	ug/L	48.5	BLOD	87.4	27-125	6.30	20	
Diethyl phthalate	38.5	10.0	ug/L	48.5	BLOD	79.3	25-120	2.57	20	
Dimethyl phthalate	39.8	10.0	ug/L	48.5	BLOD	82.1	25-125	5.87	20	
Di-n-butyl phthalate	37.5	10.0	ug/L	48.5	BLOD	77.2	25-115	6.20	20	
Di-n-octyl phthalate	41.5	10.0	ug/L	48.5	BLOD	85.6	22-105	0.0702	20	
Fluoranthene	47.4	10.0	ug/L	48.5	BLOD	97.7	25-96	3.00	20	M
Fluorene	36.5	10.0	ug/L	48.5	BLOD	75.2	15-97	6.93	20	
Hexachlorobenzene	37.7	0.97	ug/L	48.5	BLOD	77.6	25-125	5.05	20	
Hexachlorobutadiene	55.3	10.0	ug/L	48.5	BLOD	114	25-125	4.53	20	
Hexachlorocyclopentadiene	24.8	10.0	ug/L	48.5	BLOD	51.2	10-90	2.62	20	
Hexachloroethane	41.9	10.0	ug/L	48.5	BLOD	86.3	25-125	2.34	20	
Indeno (1,2,3-cd) pyrene	40.4	10.0	ug/L	48.5	BLOD	83.2	25-125	7.97	20	
Isophorone	27.8	10.0	ug/L	48.5	BLOD	57.3	10-110	7.81	20	
Naphthalene	34.6	0.10	ug/L	48.5	0.28	70.6	12-100	7.95	20	
Nitrobenzene	52.8	10.0	ug/L	48.5	BLOD	109	27-77	6.72	20	M
n-Nitrosodimethylamine	24.3	10.0	ug/L	48.5	BLOD	50.0	10-85	4.04	20	
n-Nitrosodi-n-propylamine	37.3	10.0	ug/L	48.5	BLOD	76.9	12-97	5.02	20	
n-Nitrosodiphenylamine	30.4	10.0	ug/L	48.5	BLOD	62.7	12-97	6.48	20	
p-Chloro-m-cresol	50.2	10.0	ug/L	48.5	BLOD	104	10-91	6.29	20	M
Pentachlorophenol	33.1	20.0	ug/L	48.5	BLOD	68.2	27-109	9.02	20	
Phenanthrene	38.0	10.0	ug/L	48.5	BLOD	78.4	35-115	9.44	20	
Phenol	16.4	10.0	ug/L	49.0	BLOD	33.4	10-70	8.25	20	
Pyrene	43.1	10.0	ug/L	48.5	BLOD	88.8	23-110	8.72	20	
Pyridine	32.4	10.0	ug/L	48.5	BLOD	66.8	0-200	10.1	20	

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0088 - SW3580A-MS**

**Matrix Spike Dup (BFF0088-MSD1)**      **Source: 22F0103-05**      Prepared: 06/03/2022 Analyzed: 06/04/2022

<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	64.2		ug/L	97.1		66.1	10-86
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	36.9		ug/L	48.5		76.0	9-87
<i>Surr: 2-Fluorophenol (Surr)</i>	45.0		ug/L	97.1		46.3	10-52
<i>Surr: Nitrobenzene-d5 (Surr)</i>	42.8		ug/L	48.5		88.2	10-98.5
<i>Surr: Phenol-d5 (Surr)</i>	29.0		ug/L	97.1		29.9	5-33
<i>Surr: p-Terphenyl-d14 (Surr)</i>	38.7		ug/L	48.5		79.8	27-133

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1147 - SW3510C/EPA600-ECD

**Blank (BFE1147-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

4,4'-DDD	ND	0.050	ug/L							
PCB as Aroclor 1016	ND	0.200	ug/L							
PCB as Aroclor 1221	ND	0.200	ug/L							
4,4'-DDE	ND	0.050	ug/L							
PCB as Aroclor 1232	ND	0.200	ug/L							
PCB as Aroclor 1242	ND	0.200	ug/L							
4,4'-DDT	ND	0.050	ug/L							
PCB as Aroclor 1248	ND	0.200	ug/L							
PCB as Aroclor 1254	ND	0.200	ug/L							
Aldrin	ND	0.050	ug/L							
PCB as Aroclor 1260	ND	0.200	ug/L							
alpha-BHC	ND	0.050	ug/L							
alpha-Chlordane	ND	0.050	ug/L							
beta-BHC	ND	0.050	ug/L							
Chlordane	ND	0.200	ug/L							
delta-BHC	ND	0.050	ug/L							
Dieldrin	ND	0.050	ug/L							
Endosulfan I	ND	0.050	ug/L							
Endosulfan II	ND	0.050	ug/L							
Endosulfan sulfate	ND	0.050	ug/L							
Endrin	ND	0.050	ug/L							
Endrin aldehyde	ND	0.050	ug/L							
Endrin ketone	ND	0.050	ug/L							
gamma-BHC (Lindane)	ND	0.050	ug/L							
gamma-Chlordane	ND	0.050	ug/L							

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFE1147 - SW3510C/EPA600-ECD

**Blank (BFE1147-BLK1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

Heptachlor	ND	0.050	ug/L							
Heptachlor epoxide	ND	0.050	ug/L							
Methoxychlor	ND	0.050	ug/L							
Toxaphene	ND	1.00	ug/L							
<i>Surr: DCB</i>	<i>0.158</i>		ug/L	<i>0.200</i>		<i>79.2</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.117</i>		ug/L	<i>0.200</i>		<i>58.5</i>	<i>18-112</i>			
<i>Surr: TCMX</i>	<i>0.126</i>		ug/L	<i>0.200</i>		<i>63.2</i>	<i>30-105</i>			
<i>Surr: DCB</i>	<i>0.154</i>		ug/L	<i>0.200</i>		<i>76.9</i>	<i>27-131</i>			

**LCS (BFE1147-BS1)**

Prepared: 05/31/2022 Analyzed: 06/01/2022

4,4'-DDD	0.108	0.050	ug/L	0.100		108	23-134			
4,4'-DDE	0.096	0.050	ug/L	0.100		96.5	23-134			
4,4'-DDT	0.101	0.050	ug/L	0.100		101	23-134			
Aldrin	0.061	0.050	ug/L	0.100		61.4	23-134			
alpha-BHC	0.070	0.050	ug/L	0.100		69.8	23-134			
beta-BHC	0.068	0.050	ug/L	0.100		68.2	23-134			
delta-BHC	0.080	0.050	ug/L	0.100		79.9	23-134			
Dieldrin	0.091	0.050	ug/L	0.100		90.7	23-134			
Endosulfan I	0.085	0.050	ug/L	0.100		85.0	23-134			
Endosulfan II	0.097	0.050	ug/L	0.100		96.9	23-134			
Endosulfan sulfate	0.103	0.050	ug/L	0.100		103	23-134			
Endrin	0.100	0.050	ug/L	0.100		100	23-134			
Endrin aldehyde	0.107	0.050	ug/L	0.100		107	23-134			
gamma-BHC (Lindane)	0.069	0.050	ug/L	0.100		69.5	23-134			
Heptachlor	0.071	0.050	ug/L	0.100		71.3	23-134			

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>LCS (BFE1147-BS1)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Heptachlor epoxide	0.090	0.050	ug/L	0.100		90.4	23-134			
Methoxychlor	0.111	0.050	ug/L	0.100		111	23-134			
Mirex	0.104	0.050	ug/L	0.100		104	23-134			
<i>Surr: TCMX</i>	<i>0.0998</i>		ug/L	<i>0.200</i>		<i>49.9</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.222</i>		ug/L	<i>0.200</i>		<i>111</i>	<i>27-131</i>			
<b>LCS (BFE1147-BS2)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
PCB as Aroclor 1016	0.831	0.200	ug/L	1.00		83.1	70-130			
PCB as Aroclor 1260	0.780	0.200	ug/L	1.00		78.0	70-130			
<i>Surr: DCB</i>	<i>0.170</i>		ug/L	<i>0.200</i>		<i>84.9</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.123</i>		ug/L	<i>0.200</i>		<i>61.3</i>	<i>30-105</i>			
<b>LCS (BFE1147-BS3)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Toxaphene	1.94	1.00	ug/L	2.50		77.5	23-134			
<i>Surr: TCMX</i>	<i>0.136</i>		ug/L	<i>0.200</i>		<i>68.2</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.174</i>		ug/L	<i>0.200</i>		<i>86.9</i>	<i>27-131</i>			
<b>LCS (BFE1147-BS4)</b>				Prepared: 05/31/2022 Analyzed: 06/01/2022						
Chlordane	1.80	0.200	ug/L	2.50		71.9	23-134			
<i>Surr: TCMX</i>	<i>0.136</i>		ug/L	<i>0.200</i>		<i>68.2</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.152</i>		ug/L	<i>0.200</i>		<i>76.2</i>	<i>27-131</i>			
<b>Matrix Spike (BFE1147-MS1)</b>				<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/01/2022				
4,4'-DDD	0.125	0.050	ug/L	0.0935	BLOD	133	23-134			
4,4'-DDE	0.116	0.050	ug/L	0.0935	BLOD	124	23-134			
4,4'-DDT	0.119	0.050	ug/L	0.0935	BLOD	127	23-134			

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>Matrix Spike (BFE1147-MS1)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
Aldrin	0.083	0.050	ug/L	0.0935	BLOD	89.3	23-134			
alpha-BHC	0.095	0.050	ug/L	0.0935	BLOD	102	23-134			
beta-BHC	0.085	0.050	ug/L	0.0935	BLOD	91.3	23-134			
delta-BHC	0.116	0.050	ug/L	0.0935	BLOD	125	23-134			
Dieldrin	0.110	0.050	ug/L	0.0935	BLOD	118	23-134			
Endosulfan I	0.101	0.050	ug/L	0.0935	BLOD	108	23-134			
Endosulfan II	0.118	0.050	ug/L	0.0935	BLOD	126	23-134			
Endosulfan sulfate	0.121	0.050	ug/L	0.0935	BLOD	129	23-134			
Endrin	0.120	0.050	ug/L	0.0935	BLOD	129	23-134			
Endrin aldehyde	0.117	0.050	ug/L	0.0935	BLOD	126	23-134			
gamma-BHC (Lindane)	0.094	0.050	ug/L	0.0935	BLOD	101	23-134			
Heptachlor	0.097	0.050	ug/L	0.0935	BLOD	104	23-134			
Heptachlor epoxide	0.111	0.050	ug/L	0.0935	BLOD	118	23-134			
Methoxychlor	0.125	0.050	ug/L	0.0935	BLOD	134	23-134			
Mirex	0.078	0.050	ug/L	0.0935	BLOD	83.5	23-134			
<i>Surr: TCMX</i>	<i>0.0951</i>		ug/L	<i>0.187</i>		<i>50.9</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.125</i>		ug/L	<i>0.187</i>		<i>67.0</i>	<i>27-131</i>			
<b>Matrix Spike (BFE1147-MS2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
PCB as Aroclor 1016	1.27	0.200	ug/L	0.935	BLOD	135	70-130			M
PCB as Aroclor 1260	0.990	0.200	ug/L	0.935	BLOD	106	70-130			
<i>Surr: DCB</i>	<i>0.202</i>		ug/L	<i>0.187</i>		<i>108</i>	<i>30-105</i>			S
<i>Surr: TCMX</i>	<i>0.102</i>		ug/L	<i>0.187</i>		<i>54.6</i>	<i>30-105</i>			
<b>Matrix Spike Dup (BFE1147-MSD1)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
4,4'-DDD	0.140	0.050	ug/L	0.0935	BLOD	150	23-134	11.5	20	M

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Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1147 - SW3510C/EPA600-ECD</b>										
<b>Matrix Spike Dup (BFE1147-MSD1)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
4,4'-DDE	0.125	0.050	ug/L	0.0935	BLOD	134	23-134	7.64	20	M
4,4'-DDT	0.137	0.050	ug/L	0.0935	BLOD	147	23-134	14.3	20	M
Aldrin	0.094	0.050	ug/L	0.0935	BLOD	101	23-134	12.2	20	
alpha-BHC	0.104	0.050	ug/L	0.0935	BLOD	111	23-134	8.82	20	
beta-BHC	0.102	0.050	ug/L	0.0935	BLOD	109	23-134	17.7	20	
delta-BHC	0.116	0.050	ug/L	0.0935	BLOD	125	23-134	0.0401	20	
Dieldrin	0.119	0.050	ug/L	0.0935	BLOD	127	23-134	7.17	20	
Endosulfan I	0.110	0.050	ug/L	0.0935	BLOD	117	23-134	8.63	20	
Endosulfan II	0.132	0.050	ug/L	0.0935	BLOD	142	23-134	11.8	20	M
Endosulfan sulfate	0.139	0.050	ug/L	0.0935	BLOD	148	23-134	13.7	20	M
Endrin	0.129	0.050	ug/L	0.0935	BLOD	138	23-134	6.84	20	M
Endrin aldehyde	0.130	0.050	ug/L	0.0935	BLOD	139	23-134	10.0	20	M
gamma-BHC (Lindane)	0.103	0.050	ug/L	0.0935	BLOD	110	23-134	8.44	20	
Heptachlor	0.097	0.050	ug/L	0.0935	BLOD	104	23-134	0.154	20	
Heptachlor epoxide	0.108	0.050	ug/L	0.0935	BLOD	115	23-134	2.53	20	
Methoxychlor	0.145	0.050	ug/L	0.0935	BLOD	155	23-134	14.7	20	M
Mirex	0.094	0.050	ug/L	0.0935	BLOD	101	23-134	18.6	20	
<i>Surr: TCMX</i>	<i>0.102</i>		ug/L	<i>0.187</i>		<i>54.7</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.140</i>		ug/L	<i>0.187</i>		<i>74.7</i>	<i>27-131</i>			
<b>Matrix Spike Dup (BFE1147-MSD2)</b>		<b>Source: 22E1463-02</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
PCB as Aroclor 1016	0.839	0.200	ug/L	0.935	BLOD	89.8	70-130	40.5	20	P
PCB as Aroclor 1260	0.760	0.200	ug/L	0.935	BLOD	81.3	70-130	26.3	20	P
<i>Surr: DCB</i>	<i>0.163</i>		ug/L	<i>0.187</i>		<i>87.0</i>	<i>30-105</i>			
<i>Surr: TCMX</i>	<i>0.130</i>		ug/L	<i>0.187</i>		<i>69.6</i>	<i>30-105</i>			



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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1204 - SW8151A/EPA600</b>										
<b>Blank (BFE1204-BLK1)</b>										
				Prepared: 05/31/2022 Analyzed: 06/09/2022						
2,4,5-T	ND	0.500	ug/L							
2,4,5-TP (Silvex)	ND	0.500	ug/L							
2,4-D	ND	0.500	ug/L							
Dinoseb	ND	0.500	ug/L							
Pentachlorophenol	ND	0.500	ug/L							
<i>Surr: DCAA (Surr)</i>	<i>1.01</i>		ug/L	<i>1.11</i>		<i>90.5</i>	<i>48.5-134</i>			
<b>LCS (BFE1204-BS1)</b>										
				Prepared: 05/31/2022 Analyzed: 06/09/2022						
2,4,5-T	0.548	0.500	ug/L	0.556		98.7	62-145			
2,4,5-TP (Silvex)	0.601	0.500	ug/L	0.556		108	62-132			
2,4-D	0.652	0.500	ug/L	0.556		117	74-139			
Dinoseb	0.467	0.500	ug/L	0.556		84.0	59-136			
Pentachlorophenol	0.523	0.500	ug/L	0.556		94.1	62-118			
<i>Surr: DCAA (Surr)</i>	<i>1.00</i>		ug/L	<i>1.11</i>		<i>90.4</i>	<i>70-130</i>			
<b>Matrix Spike (BFE1204-MS1)</b>										
		<b>Source: 22E1463-02</b>		Prepared: 06/01/2022 Analyzed: 06/09/2022						
2,4,5-T	0.530	0.500	ug/L	0.556	BLOD	95.3	53-144			
2,4,5-TP (Silvex)	0.576	0.500	ug/L	0.556	BLOD	104	52-129			
2,4-D	0.502	0.500	ug/L	0.556	BLOD	90.3	53-126			
Dinoseb	0.446	0.500	ug/L	0.556	BLOD	80.3	60-137			
Pentachlorophenol	0.602	0.500	ug/L	0.556	BLOD	108	52-124			
<i>Surr: DCAA (Surr)</i>	<i>1.08</i>		ug/L	<i>1.11</i>		<i>97.5</i>	<i>70-130</i>			
<b>Matrix Spike Dup (BFE1204-MSD1)</b>										
		<b>Source: 22E1463-02</b>		Prepared: 06/01/2022 Analyzed: 06/09/2022						
2,4,5-T	0.511	0.500	ug/L	0.556	BLOD	91.9	53-144	3.63	20	
2,4,5-TP (Silvex)	0.528	0.500	ug/L	0.556	BLOD	94.9	52-129	8.76	20	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1204 - SW8151A/EPA600</b>										
<b>Matrix Spike Dup (BFE1204-MSD1)</b>										
			<b>Source: 22E1463-02</b>		<b>Prepared: 06/01/2022 Analyzed: 06/09/2022</b>					
2,4-D	0.411	0.500	ug/L	0.556	BLOD	74.0	53-126	19.8	20	
Dinoseb	0.423	0.500	ug/L	0.556	BLOD	76.2	60-137	5.20	20	
Pentachlorophenol	0.521	0.500	ug/L	0.556	BLOD	93.7	52-124	14.4	20	
<i>Surr: DCAA (Surr)</i>	<i>1.06</i>		ug/L	<i>1.11</i>		<i>95.7</i>	<i>70-130</i>			
<b>Batch BFF0117 - SW8151A/EPA600</b>										
<b>Blank (BFF0117-BLK1)</b>										
			<b>Prepared: 06/02/2022 Analyzed: 06/09/2022</b>							
2,4,5-T	ND	0.500	ug/L							
2,4,5-TP (Silvex)	ND	0.500	ug/L							
2,4-D	ND	0.500	ug/L							
Dinoseb	ND	0.500	ug/L							
Pentachlorophenol	ND	0.500	ug/L							
<i>Surr: DCAA (Surr)</i>	<i>1.06</i>		ug/L	<i>1.11</i>		<i>95.5</i>	<i>48.5-134</i>			
<b>LCS (BFF0117-BS1)</b>										
			<b>Prepared: 06/02/2022 Analyzed: 06/09/2022</b>							
2,4,5-T	0.633	0.500	ug/L	0.556		114	62-145			
2,4,5-TP (Silvex)	0.562	0.500	ug/L	0.556		101	62-132			
2,4-D	0.579	0.500	ug/L	0.556		104	74-139			
Dinoseb	0.530	0.500	ug/L	0.556		95.4	59-136			
Pentachlorophenol	0.607	0.500	ug/L	0.556		109	62-118			
<i>Surr: DCAA (Surr)</i>	<i>1.04</i>		ug/L	<i>1.11</i>		<i>93.4</i>	<i>70-130</i>			
<b>Matrix Spike (BFF0117-MS1)</b>										
			<b>Source: 22F0103-05</b>		<b>Prepared: 06/03/2022 Analyzed: 06/09/2022</b>					
2,4,5-T	0.469	0.500	ug/L	0.556	BLOD	84.4	53-144			
2,4,5-TP (Silvex)	0.470	0.500	ug/L	0.556	BLOD	84.6	52-129			

## Certificate of Analysis

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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFF0117 - SW8151A/EPA600

<b>Matrix Spike (BFF0117-MS1)</b>		<b>Source: 22F0103-05</b>		<b>Prepared: 06/03/2022 Analyzed: 06/09/2022</b>						
2,4-D	0.486	0.500	ug/L	0.556	BLOD	87.5	53-126			
Dinoseb	0.440	0.500	ug/L	0.556	BLOD	79.2	60-137			
Pentachlorophenol	0.482	0.500	ug/L	0.556	BLOD	86.8	52-124			
<i>Surr: DCAA (Surr)</i>	<i>1.08</i>		ug/L	<i>1.11</i>		<i>96.9</i>	<i>70-130</i>			
<b>Matrix Spike Dup (BFF0117-MSD1)</b>		<b>Source: 22F0103-05</b>		<b>Prepared: 06/03/2022 Analyzed: 06/09/2022</b>						
2,4,5-T	0.414	0.500	ug/L	0.556	BLOD	74.4	53-144	12.5	20	
2,4,5-TP (Silvex)	0.455	0.500	ug/L	0.556	BLOD	81.9	52-129	3.24	20	
2,4-D	0.484	0.500	ug/L	0.556	BLOD	87.2	53-126	0.389	20	
Dinoseb	0.392	0.500	ug/L	0.556	BLOD	70.6	60-137	11.5	20	
Pentachlorophenol	0.470	0.500	ug/L	0.556	BLOD	84.6	52-124	2.49	20	
<i>Surr: DCAA (Surr)</i>	<i>1.02</i>		ug/L	<i>1.11</i>		<i>91.4</i>	<i>70-130</i>			

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Micro-extractables by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0301 - SW8011</b>										
<b>Blank (BFF0301-BLK1)</b>				Prepared & Analyzed: 06/07/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L							
1,2,3-Trichloropropane	ND	0.010	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L							
<b>LCS (BFF0301-BS1)</b>				Prepared & Analyzed: 06/07/2022						
1,2-Dibromoethane (EDB)	0.324	0.010	ug/L	0.250		130	65-135			
1,2,3-Trichloropropane	0.265	0.010	ug/L	0.250		106	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.333	0.010	ug/L	0.250		133	65-135			
<b>Matrix Spike (BFF0301-MS1)</b>				<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/07/2022				
1,2-Dibromoethane (EDB)	0.247	0.010	ug/L	0.253	BLOD	97.7	65-135			
1,2,3-Trichloropropane	0.197	0.010	ug/L	0.253	BLOD	78.1	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.243	0.010	ug/L	0.253	BLOD	96.4	65-135			
<b>Matrix Spike (BFF0301-MS2)</b>				<b>Source: 22F0064-03</b>		Prepared: 06/07/2022 Analyzed: 06/08/2022				
1,2-Dibromoethane (EDB)	0.201	0.010	ug/L	0.251	BLOD	80.3	65-135			
1,2,3-Trichloropropane	0.176	0.010	ug/L	0.251	BLOD	70.0	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.188	0.010	ug/L	0.251	BLOD	74.8	65-135			
<b>Matrix Spike Dup (BFF0301-MSD1)</b>				<b>Source: 22E1463-02</b>		Prepared & Analyzed: 06/07/2022				
1,2-Dibromoethane (EDB)	0.261	0.010	ug/L	0.252	BLOD	104	65-135	5.73	20	
1,2,3-Trichloropropane	0.242	0.010	ug/L	0.252	BLOD	96.2	65-135	20.5	20	P
1,2-Dibromo-3-chloropropane (DBCP)	0.257	0.010	ug/L	0.252	BLOD	102	65-135	5.29	20	
<b>Matrix Spike Dup (BFF0301-MSD2)</b>				<b>Source: 22F0064-03</b>		Prepared: 06/07/2022 Analyzed: 06/08/2022				
1,2-Dibromoethane (EDB)	0.235	0.010	ug/L	0.254	BLOD	92.7	65-135	15.5	20	
1,2,3-Trichloropropane	0.206	0.010	ug/L	0.254	BLOD	81.0	65-135	15.6	20	
1,2-Dibromo-3-chloropropane (DBCP)	0.221	0.010	ug/L	0.254	BLOD	87.2	65-135	16.5	20	

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0087 - No Prep VOC</b>										
<b>Blank (BFF0087-BLK1)</b>										
				Prepared & Analyzed: 06/02/2022						
Ethane	ND	5.00	ug/L							
Ethene	ND	5.00	ug/L							
Methane	ND	5.00	ug/L							
<i>Surr: Acetylene (Surr)</i>	449		ug/L	432		104	70-130			
<b>LCS (BFF0087-BS1)</b>										
				Prepared & Analyzed: 06/02/2022						
Ethane	540	5.00	ug/L	500		108	70-130			
Ethene	488	5.00	ug/L	464		105	70-130			
Methane	276	5.00	ug/L	266		104	70-130			
<i>Surr: Acetylene (Surr)</i>	496		ug/L	432		115	70-130			
<b>Duplicate (BFF0087-DUP1)</b>										
				<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/02/2022			
Ethane	ND	5.00	ug/L		BLOD			NA	20	
Ethene	ND	5.00	ug/L		BLOD			NA	20	
Methane	379	5.00	ug/L		378			0.346	20	
<i>Surr: Acetylene (Surr)</i>	510		ug/L	432		118	70-130			
<b>Matrix Spike (BFF0087-MS1)</b>										
				<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/02/2022			
Ethane	612	5.00	ug/L	500	BLOD	122	70-130			
Ethene	544	5.00	ug/L	464	BLOD	117	70-130			
Methane	547	5.00	ug/L	266	378	63.7	70-130			M
<i>Surr: Acetylene (Surr)</i>	489		ug/L	432		113	70-130			
<b>Matrix Spike Dup (BFF0087-MSD1)</b>										
				<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/02/2022			
Ethane	716	5.00	ug/L	500	BLOD	143	70-130	15.7	20	M
Ethene	635	5.00	ug/L	464	BLOD	137	70-130	15.4	20	M

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFF0087 - No Prep VOC**

Matrix Spike Dup (BFF0087-MSD1)	Source: 22E1463-02		Prepared & Analyzed: 06/02/2022							
Methane	597	5.00	ug/L	266	378	82.5	70-130	8.74	20	
<i>Surr: Acetylene (Surr)</i>	591		ug/L	432		137	70-130			S

### Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:25:23PM

Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFE1202 - No Prep IC</b>										
<b>Blank (BFE1202-BLK1)</b>				Prepared & Analyzed: 05/31/2022						
Chloride	ND	1.0	mg/L							
<b>LCS (BFE1202-BS1)</b>				Prepared & Analyzed: 05/31/2022						
Chloride	18.0	1	mg/L	20.0		90.2	90-110			
<b>LCS Dup (BFE1202-BSD1)</b>				Prepared & Analyzed: 05/31/2022						
Chloride	18.9	1	mg/L	20.0		94.3	90-110	4.48	15	
<b>Matrix Spike (BFE1202-MS1)</b>				Source: 22E1463-02 Prepared & Analyzed: 05/31/2022						
Chloride	20.8	1.0	mg/L	11.1	8.3	112	90-110			M
<b>Matrix Spike (BFE1202-MS2)</b>				Source: 22E1463-04 Prepared & Analyzed: 06/01/2022						
Chloride	11.8	1.0	mg/L	11.1	1.0	97.3	90-110			
<b>Matrix Spike Dup (BFE1202-MSD1)</b>				Source: 22E1463-02 Prepared & Analyzed: 05/31/2022						
Chloride	19.6	1.0	mg/L	11.1	8.3	101	90-110	6.12	15	
<b>Matrix Spike Dup (BFE1202-MSD2)</b>				Source: 22E1463-04 Prepared & Analyzed: 06/01/2022						
Chloride	11.8	1.0	mg/L	11.1	1.0	97.1	90-110	0.170	15	
<b>Batch BFF0002 - No Prep Wet Chem</b>										
<b>Blank (BFF0002-BLK1)</b>				Prepared & Analyzed: 05/31/2022						
Sulfide	ND	1.00	mg/L							
<b>LCS (BFF0002-BS1)</b>				Prepared & Analyzed: 05/31/2022						
Sulfide	4.90	1	mg/L	5.00		98.0	80-120			

## Certificate of Analysis

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0002 - No Prep Wet Chem</b>										
<b>Matrix Spike (BFF0002-MS1)</b>		<b>Source: 22E1463-02</b>			Prepared & Analyzed: 05/31/2022					
Sulfide	4.83	1.00	mg/L	5.00	BLOD	96.6	75-125			
<b>Matrix Spike Dup (BFF0002-MSD1)</b>		<b>Source: 22E1463-02</b>			Prepared & Analyzed: 05/31/2022					
Sulfide	4.87	1.00	mg/L	5.00	BLOD	97.4	75-125	0.825	20	
<b>Batch BFF0256 - No Prep Wet Chem</b>										
<b>LCS (BFF0256-BS1)</b>		Prepared & Analyzed: 06/06/2022								
Cyanide	0.27	0.01	mg/L	0.250		109	80-120			
<b>Matrix Spike (BFF0256-MS1)</b>		<b>Source: 22E1249-12</b>			Prepared & Analyzed: 06/06/2022					
Cyanide	0.25	0.01	mg/L	0.250	BLOD	98.4	80-120			
<b>Matrix Spike (BFF0256-MS2)</b>		<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/06/2022					
Cyanide	0.23	0.01	mg/L	0.250	BLOD	90.0	80-120			
<b>Matrix Spike Dup (BFF0256-MSD1)</b>		<b>Source: 22E1249-12</b>			Prepared & Analyzed: 06/06/2022					
Cyanide	0.25	0.01	mg/L	0.250	BLOD	101	80-120	2.93	20	
<b>Matrix Spike Dup (BFF0256-MSD2)</b>		<b>Source: 22E1463-02</b>			Prepared & Analyzed: 06/06/2022					
Cyanide	0.23	0.01	mg/L	0.250	BLOD	92.4	80-120	2.54	20	
<b>Batch BFF0367 - No Prep Wet Chem</b>										
<b>Blank (BFF0367-BLK1)</b>		Prepared & Analyzed: 06/08/2022								
Alkalinity	ND	5.0	mg/L							



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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0367 - No Prep Wet Chem</b>										
<b>LCS (BFF0367-BS1)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	47.0	5.0	mg/L	50.0		94.0	80-120			
<b>Duplicate (BFF0367-DUP1)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	144	5.0	mg/L		148			2.74	20	
<b>Duplicate (BFF0367-DUP2)</b>				Prepared & Analyzed: 06/08/2022						
Alkalinity	313	5.0	mg/L		309			1.29	20	

## Certificate of Analysis

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 Submitted To: Jennifer Robb

Date Issued: 7/12/2022 2:25:23PM

### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
22E1463-02	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-03	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-04	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-05	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-06	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-07	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-07RE1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0327	AF20045
22E1463-08	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
22E1463-08RE1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0327	AF20045

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
22E1463-02	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-03	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-04	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-05	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-06	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-07	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
22E1463-08	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
22E1463-02	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-03	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-04	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

## Certificate of Analysis

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
22E1463-05	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-06	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-07	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-07RE1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-08	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
22E1463-08RE1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
22E1463-02	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
22E1463-03	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
22E1463-07	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
22E1463-08	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
22E1463-02	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1463-03	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1463-07	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1463-08	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
22E1463-02	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-03	200 mL / 200 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-04	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-05	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-06	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-07	10.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
22E1463-08	10.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	

## Certificate of Analysis

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method: SW3510C/EPA600-ECD</b>		
22E1463-02	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0066	AE20143
22E1463-03	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1463-07	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1463-08	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
22E1463-02	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1463-02RE1	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1463-03	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1463-07	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
22E1463-08	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW3580A-MS</b>		
22E1463-02	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
22E1463-03	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0079	AC20134
22E1463-04	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0079	AC20134
22E1463-06	1070 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
22E1463-07	1070 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
22E1463-08	1070 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22E1463-01	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-03	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-04	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-05	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-06	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-07	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
22E1463-08	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22E1463-02	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
22E1463-02	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-03	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-04	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-06	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-07	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
22E1463-08	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
22E1463-01	59.8 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-02	59.2 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-03	59.3 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-04	59.6 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-05	60.0 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-06	59.5 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-07	59.8 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
22E1463-08	58.7 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22E1463-02	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
22E1463-03	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22E1463-07	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156
22E1463-08	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156

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### QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
BFF0097-BLK1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-BS1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-BS2		SW6020B	BFF0097		
BFF0097-MS1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-MS2	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-MSD1	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035
BFF0097-MSD2	50.0 mL / 50.0 mL	SW6020B	BFF0097	SFF0273	AF20035

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
BFE1202-BLK1	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-BS1	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-BSD1	1.00 mL / 1.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-MS1	4.50 mL / 5.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-MS2	4.50 mL / 5.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-MSD1	4.50 mL / 5.00 mL	SW9056A	BFE1202	SFF0117	AB20130
BFE1202-MSD2	4.50 mL / 5.00 mL	SW9056A	BFE1202	SFF0117	AB20130

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
BFF0087-BLK1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-BS1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-DUP1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Head Space Analysis by GC</b>			<b>Preparation Method:</b>	<b>No Prep VOC</b>	
BFF0087-MRL1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MS1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185
BFF0087-MSD1	5.00 mL / 5.00 mL	RSK175M	BFF0087	SFF0075	AB20185

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFF0002-BLK1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0002-BS1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0002-MRL1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0002-MS1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0002-MSD1	6.00 mL / 6.00 mL	SW9215	BFF0002	SFF0002	
BFF0256-BLK1		SW9012B	BFF0256	SFF0305	AF20043
BFF0256-BS1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MS1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MS2	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MSD1	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0256-MSD2	6.00 mL / 6.00 mL	SW9012B	BFF0256	SFF0305	AF20043
BFF0367-BLK1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-BS1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-DUP1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	
BFF0367-DUP2	50.0 mL / 50.0 mL	SM22 2320B-2011	BFF0367	SFF0426	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
BFE1147-BLK1	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS1	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS2		SW8081B	BFE1147	SFF0059	AC20077



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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
BFE1147-BS3	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-BS4	1000 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MS1	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MS2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-MSD1	1070 mL / 1.00 mL	SW8081B	BFE1147	SFF0056	AE20143
BFE1147-MSD2		SW8081B	BFE1147	SFF0059	AC20077
BFE1147-BLK1	1000 mL / 1.00 mL	SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS2	1000 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
BFE1147-BS3		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-BS4		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MS1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MS2	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077
BFE1147-MSD1		SW8082A	BFE1147	SFF0056	AE20143
BFE1147-MSD2	1070 mL / 1.00 mL	SW8082A	BFE1147	SFF0059	AC20077

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3580A-MS</b>	
BFF0013-BLK1	1000 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-BS1	1000 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-MS1	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0013-MSD1	1070 mL / 1.00 mL	SW8270E	BFF0013	SFF0089	AE20006
BFF0088-BLK1	1000 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
BFF0088-BS1	1000 mL / 1.00 mL	SW8270E	BFF0088	SFF0213	AE20006
BFF0088-MS1	1030 mL / 1.00 mL	SW8270E	BFF0088	SFF0188	AC20134
BFF0088-MSD1	1030 mL / 1.00 mL	SW8270E	BFF0088	SFF0188	AC20134

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
BFF0032-BLK1	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
BFF0032-BS1	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
BFF0032-DUP1	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
BFF0032-MS1	5.00 mL / 5.00 mL	SW8260D	BFF0032	SFF0038	AE20157
BFF0033-BLK1	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066
BFF0033-BS1	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066
BFF0033-MS1	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066
BFF0033-MSD1	5.00 mL / 5.00 mL	SW8260D	BFF0033	SFF0030	AE20066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW7470A</b>	
BFF0393-BLK1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-BS1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MS1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MS2	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MSD1	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056
BFF0393-MSD2	20.0 mL / 20.0 mL	SW7470A	BFF0393	SFF0385	AF20056

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW8011</b>	
BFF0301-BLK1	60.0 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-BS1	60.0 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-MS1	59.4 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-MS2	59.8 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-MSD1	59.6 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047
BFF0301-MSD2	59.1 mL / 2.00 mL	SW8011	BFF0301	SFF0286	AE20047

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW8151A/EPA600</b>	
BFE1204-BLK1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-BS1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-MS1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFE1204-MSD1	900 mL / 5.00 mL	SW8151A	BFE1204	SFF0393	AD20156
BFF0117-BLK1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156
BFF0117-BS1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156
BFF0117-MRL1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0915	AD20156
BFF0117-MRL2		SW8151A	BFF0117		
BFF0117-MS1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156
BFF0117-MSD1	900 mL / 5.00 mL	SW8151A	BFF0117	SFF0393	AD20156

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### Certified Analyses included in this Report

Analyte	Certifications
<b><i>RSK175M in Non-Potable Water</i></b>	
Ethane	VELAP
Ethene	VELAP
Methane	VELAP
<b><i>SM22 2320B-2011 in Non-Potable Water</i></b>	
Alkalinity	VELAP,PADEP,WVDEP,NHDES,MADEP
<b><i>SW6020B in Non-Potable Water</i></b>	
Antimony	VELAP,NCDEQ,WVDEP,NHDES
Arsenic	VELAP,WVDEP,NHDES
Barium	VELAP,WVDEP,NHDES
Beryllium	VELAP,WVDEP,NHDES
Cadmium	VELAP,WVDEP,NHDES
Chromium	VELAP,WVDEP,NHDES
Cobalt	VELAP,WVDEP,NHDES
Copper	VELAP,WVDEP,NHDES
Lead	VELAP,WVDEP,NHDES
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP,NHDES
Silver	VELAP,WVDEP,NHDES
Thallium	VELAP,WVDEP,NHDES
Tin	VELAP,WVDEP
Vanadium	VELAP,WVDEP,NHDES
Zinc	VELAP,WVDEP,NHDES
<b><i>SW7470A in Non-Potable Water</i></b>	
Mercury	VELAP,NCDEQ,WVDEP,NHDES
<b><i>SW8011 in Non-Potable Water</i></b>	

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### Certified Analyses included in this Report

Analyte	Certifications
1,2-Dibromoethane (EDB)	VELAP,NCDEQ
1,2,3-Trichloropropane	VELAP,NCDEQ
1,2-Dibromo-3-chloropropane (DBCP)	VELAP,NCDEQ
<b>SW8081B in Non-Potable Water</b>	
4,4'-DDD	NCDEQ,VELAP,WVDEP,PADEP,NHDES
4,4'-DDE	NCDEQ,VELAP,WVDEP,PADEP,NHDES
4,4'-DDT	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Aldrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
alpha-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
alpha-Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
beta-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
delta-BHC	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Dieldrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan I	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan II	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endosulfan sulfate	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin aldehyde	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-BHC (Lindane)	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor epoxide	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Methoxychlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Toxaphene	NCDEQ,VELAP,WVDEP,PADEP,NHDES
<b>SW8082A in Non-Potable Water</b>	
PCB as Aroclor 1016	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1221	VELAP,PADEP,NCDEQ,WVDEP,NHDES

## Certificate of Analysis

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 Client Site I.D.: City of Bristol 1st Semi-Annual 2022  
 Submitted To: Jennifer Robb

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### Certified Analyses included in this Report

Analyte	Certifications
PCB as Aroclor 1232	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1242	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1248	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1254	VELAP,PADEP,NCDEQ,WVDEP,NHDES
PCB as Aroclor 1260	VELAP,PADEP,NCDEQ,WVDEP,NHDES
<b>SW8151A in Non-Potable Water</b>	
2,4,5-T	VELAP,PADEP,NCDEQ,WVDEP
2,4,5-TP (Silvex)	VELAP,PADEP,NCDEQ,WVDEP
2,4-D	VELAP,PADEP,NCDEQ,WVDEP
Dinoseb	VELAP,PADEP,NCDEQ,WVDEP
Pentachlorophenol	VELAP,PADEP,NCDEQ,WVDEP
<b>SW8260D in Non-Potable Water</b>	
1,1,1,2-Tetrachloroethane	NCDEQ,WVDEP,VELAP
1,1,1-Trichloroethane	NCDEQ,WVDEP,VELAP
1,1,2,2-Tetrachloroethane	NCDEQ,WVDEP,VELAP
1,1,2-Trichloroethane	NCDEQ,WVDEP,VELAP
1,1-Dichloroethane	NCDEQ,WVDEP,VELAP
1,1-Dichloroethylene	NCDEQ,WVDEP,VELAP
1,1-Dichloropropene	NCDEQ,WVDEP,VELAP
1,2,3-Trichloropropane	NCDEQ,WVDEP,VELAP
1,2,4-Trichlorobenzene	NCDEQ,WVDEP,VELAP
1,2-Dichlorobenzene	NCDEQ,WVDEP,VELAP
1,2-Dichloroethane	NCDEQ,WVDEP,VELAP
1,2-Dichloropropane	NCDEQ,WVDEP,VELAP
1,3-Dichlorobenzene	NCDEQ,WVDEP,VELAP
1,3-Dichloropropane	NCDEQ,WVDEP,VELAP
1,4-Dichlorobenzene	NCDEQ,WVDEP,VELAP
2,2-Dichloropropane	NCDEQ,WVDEP,VELAP

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### Certified Analyses included in this Report

Analyte	Certifications
2-Butanone (MEK)	NCDEQ, WVDEP, VELAP
2-Hexanone (MBK)	NCDEQ, WVDEP, VELAP
4-Methyl-2-pentanone (MIBK)	NCDEQ, WVDEP, VELAP
Acetone	NCDEQ, WVDEP, VELAP
Acetonitrile	NCDEQ, WVDEP, VELAP
Acrolein	NCDEQ, WVDEP, VELAP
Acrylonitrile	NCDEQ, WVDEP, VELAP
Allyl chloride	NCDEQ, WVDEP, VELAP
Benzene	NCDEQ, WVDEP, VELAP
Bromochloromethane	NCDEQ, WVDEP, VELAP
Bromodichloromethane	NCDEQ, WVDEP, VELAP
Bromoform	NCDEQ, WVDEP, VELAP
Bromomethane	NCDEQ, WVDEP, VELAP
Carbon disulfide	NCDEQ, WVDEP, VELAP
Carbon tetrachloride	NCDEQ, WVDEP, VELAP
Chlorobenzene	NCDEQ, WVDEP, VELAP
Chloroethane	NCDEQ, WVDEP, VELAP
Chloroform	NCDEQ, WVDEP, VELAP
Chloromethane	NCDEQ, WVDEP, VELAP
Chloroprene	NCDEQ, WVDEP, VELAP
cis-1,2-Dichloroethylene	NCDEQ, WVDEP, VELAP
cis-1,3-Dichloropropene	NCDEQ, WVDEP, VELAP
Dibromochloromethane	NCDEQ, WVDEP, VELAP
Dibromomethane	NCDEQ, WVDEP, VELAP
Dichlorodifluoromethane	NCDEQ, WVDEP, VELAP
Ethyl methacrylate	NCDEQ, WVDEP, VELAP
Ethylbenzene	NCDEQ, WVDEP, VELAP
Iodomethane	NCDEQ, WVDEP, VELAP

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### Certified Analyses included in this Report

Analyte	Certifications
Isobutyl Alcohol	NCDEQ, WVDEP, VELAP
m+p-Xylenes	NCDEQ, WVDEP, VELAP
Methacrylonitrile	NCDEQ, WVDEP, VELAP
Methyl methacrylate	NCDEQ, WVDEP, VELAP
Methylene chloride	NCDEQ, WVDEP, VELAP
Naphthalene	NCDEQ, WVDEP, VELAP
o-Xylene	NCDEQ, WVDEP, VELAP
Propionitrile	NCDEQ, WVDEP, VELAP
Styrene	NCDEQ, WVDEP, VELAP
Tetrachloroethylene (PCE)	NCDEQ, WVDEP, VELAP
Toluene	NCDEQ, WVDEP, VELAP
trans-1,2-Dichloroethylene	NCDEQ, WVDEP, VELAP
trans-1,3-Dichloropropene	NCDEQ, WVDEP, VELAP
trans-1,4-Dichloro-2-butene	NCDEQ, WVDEP, VELAP
Trichloroethylene	NCDEQ, WVDEP, VELAP
Trichlorofluoromethane	NCDEQ, WVDEP, VELAP
Vinyl acetate	NCDEQ, WVDEP, VELAP
Vinyl chloride	NCDEQ, WVDEP, VELAP
Xylenes, Total	NCDEQ, WVDEP, VELAP
<b>SW8270E in Non-Potable Water</b>	
1,2,4,5-Tetrachlorobenzene	VELAP, NCDEQ, WVDEP
1,3,5-Trinitrobenzene	VELAP, NCDEQ, WVDEP
1,3-Dinitrobenzene	VELAP, NCDEQ, WVDEP
1,4-Naphthoquinone	VELAP, NCDEQ, WVDEP
1-Naphthylamine	VELAP, NCDEQ, WVDEP
2,3,4,6-Tetrachlorophenol	VELAP, NCDEQ, WVDEP
2,4,5-Trichlorophenol	VELAP, NCDEQ, WVDEP
2,4,6-Trichlorophenol	VELAP, NCDEQ, WVDEP



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### Certified Analyses included in this Report

Analyte	Certifications
2,4-Dichlorophenol	VELAP,NCDEQ,WVDEP
2,4-Dimethylphenol	VELAP,NCDEQ,WVDEP
2,4-Dinitrophenol	VELAP,NCDEQ,WVDEP
2,4-Dinitrotoluene	VELAP,NCDEQ,WVDEP
2,6-Dichlorophenol	VELAP,NCDEQ,WVDEP
2,6-Dinitrotoluene	VELAP,NCDEQ,WVDEP
2-Acetylaminofluorene	VELAP,NCDEQ,WVDEP
2-Chloronaphthalene	VELAP,NCDEQ,WVDEP
2-Chlorophenol	VELAP,NCDEQ,WVDEP
2-Methylnaphthalene	VELAP,NCDEQ,WVDEP
2-Naphthylamine	VELAP,NCDEQ,WVDEP
2-Nitroaniline	VELAP,NCDEQ,WVDEP
2-Nitrophenol	VELAP,NCDEQ,WVDEP
3,3'-Dichlorobenzidine	VELAP,NCDEQ,WVDEP
3,3'-Dimethylbenzidine	VELAP,NCDEQ,WVDEP
3-Methylcholanthrene	VELAP,NCDEQ,WVDEP
3-Nitroaniline	VELAP,NCDEQ,WVDEP
4,6-Dinitro-2-methylphenol	VELAP,NCDEQ,WVDEP
4-Aminobiphenyl	VELAP,NCDEQ,WVDEP
4-Bromophenyl phenyl ether	VELAP,NCDEQ,WVDEP
4-Chloroaniline	VELAP,NCDEQ,WVDEP
4-Chlorophenyl phenyl ether	VELAP,NCDEQ,WVDEP
4-Nitroaniline	VELAP,NCDEQ,WVDEP
4-Nitrophenol	VELAP,NCDEQ,WVDEP
5-Nitro-o-toluidine	VELAP,NCDEQ,WVDEP
7,12-Dimethylbenz (a) anthracene	VELAP,NCDEQ,WVDEP
Acenaphthene	VELAP,NCDEQ,WVDEP
Acenaphthylene	VELAP,NCDEQ,WVDEP

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### Certified Analyses included in this Report

Analyte	Certifications
Acetophenone	VELAP,NCDEQ,WVDEP
Anthracene	VELAP,NCDEQ,WVDEP
Benzo (a) anthracene	VELAP,NCDEQ,WVDEP
Benzo (a) pyrene	VELAP,NCDEQ,WVDEP
Benzo (b) fluoranthene	VELAP,NCDEQ,WVDEP
Benzo (g,h,i) perylene	VELAP,NCDEQ,WVDEP
Benzo (k) fluoranthene	VELAP,NCDEQ,WVDEP
Benzyl alcohol	VELAP,NCDEQ,WVDEP
bis (2-Chloroethoxy) methane	VELAP,NCDEQ,WVDEP
bis (2-Chloroethyl) ether	VELAP,NCDEQ,WVDEP
2,2'-Oxybis (1-chloropropane)	VELAP,NCDEQ,WVDEP
bis (2-Ethylhexyl) phthalate	VELAP,NCDEQ,WVDEP
Butyl benzyl phthalate	VELAP,NCDEQ,WVDEP
Chlorobenzilate	VELAP,NCDEQ,WVDEP
Chrysene	VELAP,NCDEQ,WVDEP
Diallate	VELAP,NCDEQ,WVDEP
Dibenz (a,h) anthracene	VELAP,NCDEQ,WVDEP
Dibenzofuran	VELAP,NCDEQ,WVDEP
Diethyl phthalate	VELAP,NCDEQ,WVDEP
Dimethoate	VELAP,NCDEQ,WVDEP
Dimethyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-butyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-octyl phthalate	VELAP,NCDEQ,WVDEP
Diphenylamine	VELAP,NCDEQ,WVDEP
Disulfoton	VELAP,NCDEQ,WVDEP
Ethyl methanesulfonate	VELAP,NCDEQ,WVDEP
Ethyl parathion	VELAP,NCDEQ,WVDEP
Famphur	VELAP,NCDEQ,WVDEP

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### Certified Analyses included in this Report

Analyte	Certifications
Fluoranthene	VELAP,NCDEQ,WVDEP
Fluorene	VELAP,NCDEQ,WVDEP
Hexachlorobenzene	VELAP,NCDEQ,WVDEP
Hexachlorobutadiene	VELAP,NCDEQ,WVDEP
Hexachlorocyclopentadiene	VELAP,NCDEQ,WVDEP
Hexachloroethane	VELAP,NCDEQ,WVDEP
Hexachloropropene	VELAP,NCDEQ,WVDEP
Indeno (1,2,3-cd) pyrene	VELAP,NCDEQ,WVDEP
Isodrin	VELAP,NCDEQ,WVDEP
Isophorone	VELAP,NCDEQ,WVDEP
Isosafrole	VELAP,NCDEQ,WVDEP
Kepone	VELAP,NCDEQ,WVDEP
m+p-Cresols	VELAP,NCDEQ,WVDEP
Methapyrilene	VELAP,NCDEQ,WVDEP
Methyl methanesulfonate	VELAP,NCDEQ,WVDEP
Methyl parathion	VELAP,NCDEQ,WVDEP
Nitrobenzene	VELAP,NCDEQ,WVDEP
n-Nitrosodiethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodimethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodi-n-butylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodi-n-propylamine	VELAP,NCDEQ,WVDEP
n-Nitrosodiphenylamine	VELAP,NCDEQ,WVDEP
n-Nitrosomethylethylamine	VELAP,NCDEQ,WVDEP
n-Nitrosopiperidine	VELAP,NCDEQ,WVDEP
n-Nitrosopyrrolidine	VELAP,NCDEQ,WVDEP
o,o,o-Triethyl phosphorothioate	VELAP,NCDEQ,WVDEP
o,o-Diethyl o-2-pyrazinyl phosphorothioate	VELAP,NCDEQ,WVDEP
o+m+p-Cresols	VELAP,WVDEP

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### Certified Analyses included in this Report

Analyte	Certifications
o-Cresol	VELAP,NCDEQ,WVDEP
o-Toluidine	VELAP,NCDEQ,WVDEP
p-(Dimethylamino) azobenzene	VELAP,NCDEQ,WVDEP
p-Chloro-m-cresol	VELAP,NCDEQ,WVDEP
Pentachlorobenzene	VELAP,NCDEQ,WVDEP
Pentachloronitrobenzene (quintozene)	VELAP,NCDEQ,WVDEP
Phenacetin	VELAP,NCDEQ,WVDEP
Phenanthrene	VELAP,NCDEQ,WVDEP
Phenol	VELAP,NCDEQ,WVDEP
Phorate	VELAP,NCDEQ,WVDEP
p-Phenylenediamine	VELAP,NCDEQ,WVDEP
Pronamide	VELAP,NCDEQ,WVDEP
Pyrene	VELAP,NCDEQ,WVDEP
Safrole	VELAP,NCDEQ,WVDEP
<b>SW9012B in Non-Potable Water</b>	
Cyanide	VELAP,WVDEP
<b>SW9056A in Non-Potable Water</b>	
Chloride	VELAP
<b>SW9215 in Non-Potable Water</b>	
Sulfide	VELAP

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**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
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Date Issued: 7/12/2022 2:25:23PM

Code	Description	Laboratory ID	Expires
MADEP	Massachusetts DEP	M-VA913	06/30/2022
MdDOE	Maryland DE Drinking Water	341	12/31/2022
NC	North Carolina DENR	495	07/31/2022
NCDEQ	North Carolina DEQ	495	12/31/2022
NCDOH	North Carolina Department of Health	51714	07/31/2022
NJDEP	NELAP-New Jersey DEP	VA015	06/30/2022
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #007	68-03503	10/31/2022
VELAP	NELAP-Virginia Certificate #11900	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2022

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## Certificate of Analysis

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### Qualifiers and Definitions

B	Blank contamination. The recorded result is associated with a contaminated blank.
C	Continuing calibration verification response for this analyte is outside specifications.
Cl	Residual Chlorine or other oxidizing agent was detected in the container used to analyze this sample.
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
P	Duplicate analysis does not meet the acceptance criteria for precision
pH	The container used to analyze this sample had a pH measurement of greater than 2 s.u.
S	Surrogate recovery was outside acceptance criteria
RPD	Relative Percent Difference
Qual	Qualifiers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0428 - EPA200.8 R5.4

**Blank (BFL0428-BLK1)**

Prepared: 12/12/2022 Analyzed: 12/18/2022

Antimony	ND	1.0	ug/L
Arsenic	ND	1.0	ug/L
Barium	ND	5.00	ug/L
Beryllium	ND	1.00	ug/L
Cadmium	ND	1.00	ug/L
Chromium	ND	1.00	ug/L
Cobalt	ND	1.00	ug/L
Copper	ND	1.00	ug/L
Lead	ND	1.0	ug/L
Nickel	ND	1.000	ug/L
Selenium	ND	1.00	ug/L
Silver	ND	1.00	ug/L
Thallium	ND	1.0	ug/L
Vanadium	ND	5.00	ug/L
Zinc	ND	5.00	ug/L

**LCS (BFL0428-BS1)**

Prepared: 12/12/2022 Analyzed: 12/18/2022

Antimony	52	1.0	ug/L	50.0	104	80-120
Arsenic	49	1.0	ug/L	50.0	98.3	80-120
Barium	50.5	5.00	ug/L	50.0	101	80-120
Beryllium	55.8	1.00	ug/L	50.0	112	80-120
Cadmium	50.3	1.00	ug/L	50.0	101	80-120
Chromium	51.2	1.00	ug/L	50.0	102	80-120
Cobalt	48.9	1.00	ug/L	50.0	97.8	80-120
Copper	50.1	1.00	ug/L	50.0	100	80-120

## Certificate of Analysis

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Date Issued: 12/30/2022 11:56:27AM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0428 - EPA200.8 R5.4

**LCS (BFL0428-BS1)**

Prepared: 12/12/2022 Analyzed: 12/18/2022

Lead	50	1.0	ug/L	50.0		101	80-120			
Nickel	49.02	1.000	ug/L	50.0		98.0	80-120			
Selenium	51.7	1.00	ug/L	50.0		103	80-120			
Silver	9.38	1.00	ug/L	10.0		93.8	80-120			E
Thallium	52	1.0	ug/L	50.0		104	80-120			
Vanadium	49.9	5.00	ug/L	50.0		99.7	80-120			
Zinc	52.2	5.00	ug/L	50.0		104	80-120			

**Matrix Spike (BFL0428-MS1)**

Source: 22L0423-13

Prepared: 12/12/2022 Analyzed: 12/18/2022

Antimony	52	1.0	ug/L	50.0	BLOD	103	75-125			
Arsenic	60	1.0	ug/L	50.0	12	95.6	75-125			
Barium	827	5.00	ug/L	50.0	787	80.8	75-125			M, E
Beryllium	46.2	1.00	ug/L	50.0	BLOD	92.4	75-125			
Cadmium	47.8	1.00	ug/L	50.0	0.563	94.4	75-125			
Chromium	49.4	1.00	ug/L	50.0	1.81	95.1	75-125			
Cobalt	74.2	1.00	ug/L	50.0	27.8	92.8	75-125			M
Copper	45.3	1.00	ug/L	50.0	0.904	88.8	75-125			
Lead	50	1.0	ug/L	50.0	1.5	96.6	75-125			
Nickel	67.04	1.000	ug/L	50.0	22.52	89.0	75-125			M
Selenium	45.2	1.00	ug/L	50.0	BLOD	90.4	75-125			
Silver	9.09	1.00	ug/L	10.0	BLOD	90.9	75-125			E
Thallium	51	1.0	ug/L	50.0	BLOD	102	75-125			
Vanadium	49.9	5.00	ug/L	50.0	BLOD	99.7	75-125			
Zinc	139	5.00	ug/L	50.0	96.1	85.5	75-125			M

**Matrix Spike (BFL0428-MS2)**

Source: 22L0423-16

Prepared: 12/12/2022 Analyzed: 12/18/2022



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
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Date Issued: 12/30/2022 11:56:27AM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0428 - EPA200.8 R5.4**

Matrix Spike (BFL0428-MS2)	Source: 22L0423-16			Prepared: 12/12/2022 Analyzed: 12/18/2022						
Antimony	52	1.0	ug/L	50.0	BLOD	104	75-125			
Arsenic	49	1.0	ug/L	50.0	BLOD	97.9	75-125			
Barium	51.9	5.00	ug/L	50.0	BLOD	104	75-125			
Beryllium	50.6	1.00	ug/L	50.0	BLOD	101	75-125			
Cadmium	49.5	1.00	ug/L	50.0	BLOD	99.0	75-125			
Chromium	48.6	1.00	ug/L	50.0	BLOD	97.3	75-125			
Cobalt	48.6	1.00	ug/L	50.0	BLOD	97.3	75-125			
Copper	48.7	1.00	ug/L	50.0	BLOD	97.4	75-125			
Lead	50	1.0	ug/L	50.0	BLOD	100	75-125			
Nickel	48.02	1.000	ug/L	50.0	BLOD	96.0	75-125			
Selenium	50.1	1.00	ug/L	50.0	BLOD	100	75-125			
Silver	9.52	1.00	ug/L	10.0	BLOD	95.2	75-125			E
Thallium	50	1.0	ug/L	50.0	BLOD	101	75-125			
Vanadium	48.4	5.00	ug/L	50.0	BLOD	96.7	75-125			
Zinc	51.1	5.00	ug/L	50.0	BLOD	102	75-125			

Matrix Spike Dup (BFL0428-MSD1)	Source: 22L0423-13			Prepared: 12/12/2022 Analyzed: 12/18/2022						
Antimony	51	1.0	ug/L	50.0	BLOD	103	75-125	0.620	20	
Arsenic	59	1.0	ug/L	50.0	12	94.5	75-125	0.948	20	
Barium	831	5.00	ug/L	50.0	787	89.1	75-125	0.501	20	E
Beryllium	46.3	1.00	ug/L	50.0	BLOD	92.5	75-125	0.134	20	
Cadmium	48.0	1.00	ug/L	50.0	0.563	94.9	75-125	0.565	20	
Chromium	49.7	1.00	ug/L	50.0	1.81	95.9	75-125	0.758	20	
Cobalt	72.8	1.00	ug/L	50.0	27.8	90.0	75-125	1.92	20	
Copper	45.9	1.00	ug/L	50.0	0.904	89.9	75-125	1.27	20	

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0428 - EPA200.8 R5.4

Matrix Spike Dup (BFL0428-MSD1)	Source: 22L0423-13			Prepared: 12/12/2022 Analyzed: 12/18/2022						
Lead	52	1.0	ug/L	50.0	1.5	100	75-125	3.47	20	
Nickel	66.64	1.000	ug/L	50.0	22.52	88.2	75-125	0.601	20	
Selenium	45.7	1.00	ug/L	50.0	BLOD	91.3	75-125	1.02	20	
Silver	9.24	1.00	ug/L	10.0	BLOD	92.4	75-125	1.55	20	E
Thallium	51	1.0	ug/L	50.0	BLOD	103	75-125	0.153	20	
Vanadium	49.8	5.00	ug/L	50.0	BLOD	99.5	75-125	0.220	20	
Zinc	137	5.00	ug/L	50.0	96.1	82.8	75-125	0.977	20	

Matrix Spike Dup (BFL0428-MSD2)	Source: 22L0423-16			Prepared: 12/12/2022 Analyzed: 12/18/2022						
Antimony	52	1.0	ug/L	50.0	BLOD	105	75-125	0.342	20	
Arsenic	49	1.0	ug/L	50.0	BLOD	98.7	75-125	0.881	20	
Barium	50.8	5.00	ug/L	50.0	BLOD	102	75-125	2.15	20	
Beryllium	54.7	1.00	ug/L	50.0	BLOD	109	75-125	7.93	20	
Cadmium	50.2	1.00	ug/L	50.0	BLOD	100	75-125	1.47	20	
Chromium	50.8	1.00	ug/L	50.0	BLOD	102	75-125	4.43	20	
Cobalt	48.3	1.00	ug/L	50.0	BLOD	96.6	75-125	0.720	20	
Copper	48.7	1.00	ug/L	50.0	BLOD	97.5	75-125	0.0287	20	
Lead	51	1.0	ug/L	50.0	BLOD	102	75-125	1.80	20	
Nickel	48.16	1.000	ug/L	50.0	BLOD	96.3	75-125	0.290	20	
Selenium	51.5	1.00	ug/L	50.0	BLOD	103	75-125	2.72	20	
Silver	9.40	1.00	ug/L	10.0	BLOD	94.0	75-125	1.37	20	E
Thallium	51	1.0	ug/L	50.0	BLOD	103	75-125	2.07	20	
Vanadium	49.4	5.00	ug/L	50.0	BLOD	98.7	75-125	2.07	20	
Zinc	51.5	5.00	ug/L	50.0	BLOD	103	75-125	0.916	20	

### Batch BFL0592 - SW7470A

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0592 - SW7470A</b>										
<b>Blank (BFL0592-BLK1)</b>				Prepared & Analyzed: 12/15/2022						
Mercury	ND	0.00020	mg/L							
<b>LCS (BFL0592-BS1)</b>				Prepared & Analyzed: 12/15/2022						
Mercury	0.00255	0.00020	mg/L	0.00250		102	80-120			
<b>Matrix Spike (BFL0592-MS1)</b>				Source: 22L0423-13		Prepared & Analyzed: 12/15/2022				
Mercury	0.00376	0.00020	mg/L	0.00250	0.00125	100	80-120			
<b>Matrix Spike Dup (BFL0592-MSD1)</b>				Source: 22L0423-13		Prepared & Analyzed: 12/15/2022				
Mercury	0.00387	0.00020	mg/L	0.00250	0.00125	105	80-120	2.88	20	
<b>Batch BFL0762 - EPA200.8 R5.4</b>										
<b>Blank (BFL0762-BLK1)</b>				Prepared & Analyzed: 12/20/2022						
Tin	ND	1.00	ug/L							
<b>LCS (BFL0762-BS1)</b>				Prepared & Analyzed: 12/20/2022						
Tin	56.3	1.00	ug/L	50.0		113	80-120			
<b>Matrix Spike (BFL0762-MS1)</b>				Source: 22L0205-10RE2		Prepared & Analyzed: 12/20/2022				
Tin	56.1	1.00	ug/L	50.0	BLOD	112	75-125			
<b>Matrix Spike Dup (BFL0762-MSD1)</b>				Source: 22L0205-10RE2		Prepared & Analyzed: 12/20/2022				
Tin	56.4	1.00	ug/L	50.0	BLOD	113	75-125	0.473	20	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**Blank (BFL0391-BLK1)**

Prepared & Analyzed: 12/09/2022

1,1,1,2-Tetrachloroethane	ND	0.40	ug/L
1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0391 - SW5030B-MS

**Blank (BFL0391-BLK1)**

Prepared &amp; Analyzed: 12/09/2022

Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.00	ug/L							
cis-1,2-Dichloroethylene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	1.00	ug/L							
Dichlorodifluoromethane	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Iodomethane	ND	10.0	ug/L							
m+p-Xylenes	ND	2.00	ug/L							
Methylene chloride	ND	4.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
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Surr: 1,2-Dichloroethane-d4 (Surr)	51.3		ug/L	50.0		103	70-120			
Surr: 4-Bromofluorobenzene (Surr)	47.9		ug/L	50.0		95.8	75-120			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0391 - SW5030B-MS

**Blank (BFL0391-BLK1)**

Prepared & Analyzed: 12/09/2022

<i>Surr: Dibromofluoromethane (Surr)</i>	50.0		ug/L	50.0		100	70-130
<i>Surr: Toluene-d8 (Surr)</i>	49.9		ug/L	50.0		99.8	70-130

**LCS (BFL0391-BS1)**

Prepared & Analyzed: 12/09/2022

1,1,1,2-Tetrachloroethane	50.0	0.4	ug/L	50.0		99.9	80-130
1,1,1,2-Tetrachloroethane	50.0	0.4	ug/L	50.0		99.9	80-130
1,1,1-Trichloroethane	44.5	1	ug/L	50.0		89.0	65-130
1,1,1-Trichloroethane	44.5	1	ug/L	50.0		89.0	65-130
1,1,2,2-Tetrachloroethane	44.9	0.4	ug/L	50.0		89.7	65-130
1,1,2,2-Tetrachloroethane	44.9	0.4	ug/L	50.0		89.7	65-130
1,1,2-Trichloroethane	46.9	1	ug/L	50.0		93.7	75-125
1,1,2-Trichloroethane	46.9	1	ug/L	50.0		93.7	75-125
1,1-Dichloroethane	41.8	1	ug/L	50.0		83.5	70-135
1,1-Dichloroethane	41.8	1	ug/L	50.0		83.5	70-135
1,1-Dichloroethylene	37.1	1	ug/L	50.0		74.3	70-130
1,1-Dichloroethylene	37.1	1	ug/L	50.0		74.3	70-130
1,1-Dichloropropene	44.1	1	ug/L	50.0		88.2	75-135
1,2,3-Trichloropropane	45.2	1	ug/L	50.0		90.5	75-125
1,2,3-Trichloropropane	45.2	1	ug/L	50.0		90.5	75-125
1,2,4-Trichlorobenzene	51.8	1	ug/L	50.0		104	65-135
1,2-Dichlorobenzene	52.4	0.5	ug/L	50.0		105	70-120
1,2-Dichlorobenzene	52.4	0.5	ug/L	50.0		105	70-120
1,2-Dichloroethane	38.9	1	ug/L	50.0		77.8	70-130
1,2-Dichloroethane	38.9	1	ug/L	50.0		77.8	70-130
1,2-Dichloropropane	46.0	0.5	ug/L	50.0		92.1	75-125

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**LCS (BFL0391-BS1)**

Prepared & Analyzed: 12/09/2022

1,2-Dichloropropane	46.0	0.5	ug/L	50.0		92.1	75-125			
1,3-Dichlorobenzene	51.5	1	ug/L	50.0		103	75-125			
1,3-Dichloropropane	45.1	1	ug/L	50.0		90.1	75-125			
1,4-Dichlorobenzene	51.6	1	ug/L	50.0		103	75-125			
1,4-Dichlorobenzene	51.6	1	ug/L	50.0		103	75-125			
2,2-Dichloropropane	44.6	1	ug/L	50.0		89.1	70-135			
2-Butanone (MEK)	43.9	10	ug/L	50.0		87.9	30-150			
2-Butanone (MEK)	43.9	10	ug/L	50.0		87.9	30-150			
2-Hexanone (MBK)	49.6	5	ug/L	50.0		99.2	55-130			
2-Hexanone (MBK)	49.6	5	ug/L	50.0		99.2	55-130			
4-Methyl-2-pentanone (MIBK)	49.2	5	ug/L	50.0		98.3	60-135			
4-Methyl-2-pentanone (MIBK)	49.2	5	ug/L	50.0		98.3	60-135			
Acetone	39.6	10	ug/L	50.0		79.2	40-140			
Acetone	39.6	10	ug/L	50.0		79.2	40-140			
Acrylonitrile	234	5	ug/L	250		93.6	70-130			
Acrylonitrile	234	5	ug/L	250		93.6	70-130			
Benzene	45.6	1	ug/L	50.0		91.2	80-120			
Benzene	45.6	1	ug/L	50.0		91.2	80-120			
Bromochloromethane	49.6	1	ug/L	50.0		99.3	65-130			
Bromochloromethane	49.6	1	ug/L	50.0		99.3	65-130			
Bromodichloromethane	49.6	0.5	ug/L	50.0		99.1	75-120			
Bromodichloromethane	49.6	0.5	ug/L	50.0		99.1	75-120			
Bromoform	49.4	1	ug/L	50.0		98.8	70-130			
Bromoform	49.4	1	ug/L	50.0		98.8	70-130			
Bromomethane	40.9	1	ug/L	50.0		81.8	30-145			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**LCS (BFL0391-BS1)**

Prepared & Analyzed: 12/09/2022

Bromomethane	40.9	1	ug/L	50.0		81.8	30-145			
Carbon disulfide	41.1	10	ug/L	50.0		82.1	35-160			
Carbon disulfide	41.1	10	ug/L	50.0		82.1	35-160			
Carbon tetrachloride	45.7	1	ug/L	50.0		91.4	65-140			
Carbon tetrachloride	45.7	1	ug/L	50.0		91.4	65-140			
Chlorobenzene	48.5	1	ug/L	50.0		97.0	80-120			
Chlorobenzene	48.5	1	ug/L	50.0		97.0	80-120			
Chloroethane	39.7	1	ug/L	50.0		79.4	60-135			
Chloroethane	39.7	1	ug/L	50.0		79.4	60-135			
Chloroform	39.0	0.5	ug/L	50.0		78.1	65-135			
Chloroform	39.0	0.5	ug/L	50.0		78.1	65-135			
Chloromethane	45.0	1	ug/L	50.0		89.9	40-125			
Chloromethane	45.0	1	ug/L	50.0		89.9	40-125			
cis-1,2-Dichloroethylene	39.0	1	ug/L	50.0		78.0	70-125			
cis-1,2-Dichloroethylene	39.0	1	ug/L	50.0		78.0	70-125			
cis-1,3-Dichloropropene	41.4	1	ug/L	50.0		82.7	70-130			
cis-1,3-Dichloropropene	41.4	1	ug/L	50.0		82.7	70-130			
Dibromochloromethane	47.0	0.5	ug/L	50.0		94.0	60-135			
Dibromochloromethane	47.0	0.5	ug/L	50.0		94.0	60-135			
Dibromomethane	42.9	1	ug/L	50.0		85.9	75-125			
Dibromomethane	42.9	1	ug/L	50.0		85.9	75-125			
Dichlorodifluoromethane	32.1	1	ug/L	50.0		64.1	30-155			
Ethylbenzene	51.8	1	ug/L	50.0		104	75-125			
Ethylbenzene	51.8	1	ug/L	50.0		104	75-125			
m+p-Xylenes	98.5	2	ug/L	100		98.5	75-130			



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0391 - SW5030B-MS

**LCS (BFL0391-BS1)**

Prepared &amp; Analyzed: 12/09/2022

m+p-Xylenes	98.5	2	ug/L	100		98.5	75-130			
Methylene chloride	42.0	4	ug/L	50.0		84.0	55-140			
Methylene chloride	42.0	4	ug/L	50.0		84.0	55-140			
o-Xylene	49.9	1	ug/L	50.0		99.7	80-120			
o-Xylene	49.9	1	ug/L	50.0		99.7	80-120			
Styrene	50.6	1	ug/L	50.0		101	65-135			
Styrene	50.6	1	ug/L	50.0		101	65-135			
Tetrachloroethylene (PCE)	79.7	1	ug/L	50.0		159	45-150			L
Tetrachloroethylene (PCE)	79.7	1	ug/L	50.0		159	45-150			L
Toluene	46.8	1	ug/L	50.0		93.6	75-120			
Toluene	46.8	1	ug/L	50.0		93.6	75-120			
trans-1,2-Dichloroethylene	39.5	1	ug/L	50.0		78.9	60-140			
trans-1,2-Dichloroethylene	39.5	1	ug/L	50.0		78.9	60-140			
trans-1,3-Dichloropropene	43.9	1	ug/L	50.0		87.9	55-140			
trans-1,3-Dichloropropene	43.9	1	ug/L	50.0		87.9	55-140			
Trichloroethylene	43.5	1	ug/L	50.0		87.0	70-125			
Trichloroethylene	43.5	1	ug/L	50.0		87.0	70-125			
Trichlorofluoromethane	45.7	1	ug/L	50.0		91.4	60-145			
Trichlorofluoromethane	45.7	1	ug/L	50.0		91.4	60-145			
Vinyl chloride	41.5	0.5	ug/L	50.0		83.0	50-145			
Vinyl chloride	41.5	0.5	ug/L	50.0		83.0	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>50.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>49.2</i>		<i>ug/L</i>	<i>50.0</i>		<i>98.4</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>46.9</i>		<i>ug/L</i>	<i>50.0</i>		<i>93.9</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>51.4</i>		<i>ug/L</i>	<i>50.0</i>		<i>103</i>	<i>70-130</i>			

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Enthalpy Analytical

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**Batch BFL0391 - SW5030B-MS**

**LCS (BFL0391-BS1)**

Prepared & Analyzed: 12/09/2022

**Matrix Spike (BFL0391-MS1)**

**Source: 22L0423-13**

Prepared & Analyzed: 12/09/2022

1,1,1,2-Tetrachloroethane	50.3	0.4	ug/L	50.0	BLOD	101	80-130			
1,1,1,2-Tetrachloroethane	50.3	0.4	ug/L	50.0	BLOD	101	80-130			
1,1,1-Trichloroethane	50.6	1	ug/L	50.0	BLOD	101	65-130			
1,1,1-Trichloroethane	50.6	1	ug/L	50.0	BLOD	101	65-130			
1,1,2,2-Tetrachloroethane	46.0	0.4	ug/L	50.0	BLOD	92.1	65-130			
1,1,2,2-Tetrachloroethane	46.0	0.4	ug/L	50.0	BLOD	92.1	65-130			
1,1,2-Trichloroethane	47.1	1	ug/L	50.0	BLOD	94.3	75-125			
1,1,2-Trichloroethane	47.1	1	ug/L	50.0	BLOD	94.3	75-125			
1,1-Dichloroethane	53.9	1	ug/L	50.0	5.19	97.4	70-135			
1,1-Dichloroethane	53.9	1	ug/L	50.0	5.19	97.4	70-135			
1,1-Dichloroethylene	41.0	1	ug/L	50.0	BLOD	82.1	70-130			
1,1-Dichloroethylene	41.0	1	ug/L	50.0	BLOD	82.1	70-130			
1,1-Dichloropropene	49.9	1	ug/L	50.0	BLOD	99.8	75-135			
1,2,3-Trichloropropane	46.0	1	ug/L	50.0	BLOD	92.1	75-125			
1,2,3-Trichloropropane	46.0	1	ug/L	50.0	BLOD	92.1	75-125			
1,2,4-Trichlorobenzene	57.4	1	ug/L	50.0	BLOD	115	65-135			
1,2-Dichlorobenzene	52.8	0.5	ug/L	50.0	BLOD	106	70-120			
1,2-Dichlorobenzene	52.8	0.5	ug/L	50.0	BLOD	106	70-120			
1,2-Dichloroethane	40.2	1	ug/L	50.0	BLOD	80.4	70-130			
1,2-Dichloroethane	40.2	1	ug/L	50.0	BLOD	80.4	70-130			
1,2-Dichloropropane	45.8	0.5	ug/L	50.0	BLOD	91.6	75-125			
1,2-Dichloropropane	45.8	0.5	ug/L	50.0	BLOD	91.6	75-125			
1,3-Dichlorobenzene	52.2	1	ug/L	50.0	BLOD	104	75-125			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0391 - SW5030B-MS

**Matrix Spike (BFL0391-MS1)**
**Source: 22L0423-13**
**Prepared & Analyzed: 12/09/2022**

1,3-Dichloropropane	45.4	1	ug/L	50.0	BLOD	90.9	75-125			
1,4-Dichlorobenzene	52.5	1	ug/L	50.0	1.65	102	75-125			
1,4-Dichlorobenzene	52.5	1	ug/L	50.0	1.65	102	75-125			
2,2-Dichloropropane	48.2	1	ug/L	50.0	BLOD	96.4	70-135			
2-Butanone (MEK)	42.5	10	ug/L	50.0	BLOD	85.0	30-150			
2-Butanone (MEK)	42.5	10	ug/L	50.0	BLOD	85.0	30-150			
2-Hexanone (MBK)	46.4	5	ug/L	50.0	BLOD	92.8	55-130			
2-Hexanone (MBK)	46.4	5	ug/L	50.0	BLOD	92.8	55-130			
4-Methyl-2-pentanone (MIBK)	47.2	5	ug/L	50.0	BLOD	94.4	60-135			
4-Methyl-2-pentanone (MIBK)	47.2	5	ug/L	50.0	BLOD	94.4	60-135			
Acetone	44.4	10	ug/L	50.0	BLOD	79.8	40-140			
Acetone	44.4	10	ug/L	50.0	BLOD	79.8	40-140			
Acrylonitrile	237	5	ug/L	250	BLOD	94.8	70-130			
Acrylonitrile	237	5	ug/L	250	BLOD	94.8	70-130			
Benzene	84.4	1	ug/L	50.0	39.3	90.4	80-120			
Benzene	84.4	1	ug/L	50.0	39.3	90.4	80-120			
Bromochloromethane	48.8	1	ug/L	50.0	BLOD	97.6	65-130			
Bromochloromethane	48.8	1	ug/L	50.0	BLOD	97.6	65-130			
Bromodichloromethane	48.8	0.5	ug/L	50.0	BLOD	97.5	75-120			
Bromodichloromethane	48.8	0.5	ug/L	50.0	BLOD	97.5	75-120			
Bromoform	49.7	1	ug/L	50.0	BLOD	99.5	70-130			
Bromoform	49.7	1	ug/L	50.0	BLOD	99.5	70-130			
Bromomethane	35.8	1	ug/L	50.0	BLOD	71.5	30-145			
Bromomethane	35.8	1	ug/L	50.0	BLOD	71.5	30-145			
Carbon disulfide	43.6	10	ug/L	50.0	BLOD	87.1	35-160			

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**Matrix Spike (BFL0391-MS1)**

**Source: 22L0423-13**

Prepared & Analyzed: 12/09/2022

Carbon disulfide	43.6	10	ug/L	50.0	BLOD	87.1	35-160			
Carbon tetrachloride	50.8	1	ug/L	50.0	BLOD	102	65-140			
Carbon tetrachloride	50.8	1	ug/L	50.0	BLOD	102	65-140			
Chlorobenzene	51.8	1	ug/L	50.0	1.25	101	80-120			
Chlorobenzene	51.8	1	ug/L	50.0	1.25	101	80-120			
Chloroethane	44.3	1	ug/L	50.0	BLOD	88.6	60-135			
Chloroethane	44.3	1	ug/L	50.0	BLOD	88.6	60-135			
Chloroform	40.1	0.5	ug/L	50.0	BLOD	80.1	65-135			
Chloroform	40.1	0.5	ug/L	50.0	BLOD	80.1	65-135			
Chloromethane	45.1	1	ug/L	50.0	BLOD	90.2	40-125			
Chloromethane	45.1	1	ug/L	50.0	BLOD	90.2	40-125			
cis-1,2-Dichloroethylene	90.0	1	ug/L	50.0	44.8	90.4	70-125			
cis-1,2-Dichloroethylene	90.0	1	ug/L	50.0	44.8	90.4	70-125			
cis-1,3-Dichloropropene	40.3	1	ug/L	50.0	BLOD	80.6	70-130			
cis-1,3-Dichloropropene	40.3	1	ug/L	50.0	BLOD	80.6	70-130			
Dibromochloromethane	46.1	0.5	ug/L	50.0	BLOD	92.1	60-135			
Dibromochloromethane	46.1	0.5	ug/L	50.0	BLOD	92.1	60-135			
Dibromomethane	48.1	1	ug/L	50.0	BLOD	96.3	75-125			
Dibromomethane	48.1	1	ug/L	50.0	BLOD	96.3	75-125			
Dichlorodifluoromethane	32.3	1	ug/L	50.0	BLOD	64.6	30-155			
Ethylbenzene	52.2	1	ug/L	50.0	BLOD	104	75-125			
Ethylbenzene	52.2	1	ug/L	50.0	BLOD	104	75-125			
m+p-Xylenes	100	2	ug/L	100	BLOD	100	75-130			
m+p-Xylenes	100	2	ug/L	100	BLOD	100	75-130			
Methylene chloride	41.7	4	ug/L	50.0	BLOD	83.4	55-140			

## Certificate of Analysis

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Date Issued: 12/30/2022 11:56:27AM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

**Matrix Spike (BFL0391-MS1)**

Source: 22L0423-13

Prepared & Analyzed: 12/09/2022

Methylene chloride	41.7	4	ug/L	50.0	BLOD	83.4	55-140			
o-Xylene	51.3	1	ug/L	50.0	BLOD	103	80-120			
o-Xylene	51.3	1	ug/L	50.0	BLOD	103	80-120			
Styrene	51.5	1	ug/L	50.0	BLOD	103	65-135			
Styrene	51.5	1	ug/L	50.0	BLOD	103	65-135			
Tetrachloroethylene (PCE)	81.9	1	ug/L	50.0	BLOD	164	45-150			M
Tetrachloroethylene (PCE)	81.9	1	ug/L	50.0	BLOD	164	45-150			M
Toluene	46.6	1	ug/L	50.0	BLOD	92.4	75-120			
Toluene	46.6	1	ug/L	50.0	BLOD	92.4	75-120			
trans-1,2-Dichloroethylene	46.0	1	ug/L	50.0	BLOD	92.1	60-140			
trans-1,2-Dichloroethylene	46.0	1	ug/L	50.0	BLOD	92.1	60-140			
trans-1,3-Dichloropropene	42.8	1	ug/L	50.0	BLOD	85.6	55-140			
trans-1,3-Dichloropropene	42.8	1	ug/L	50.0	BLOD	85.6	55-140			
Trichloroethylene	45.5	1	ug/L	50.0	BLOD	91.0	70-125			
Trichloroethylene	45.5	1	ug/L	50.0	BLOD	91.0	70-125			
Trichlorofluoromethane	47.1	1	ug/L	50.0	BLOD	94.2	60-145			
Trichlorofluoromethane	47.1	1	ug/L	50.0	BLOD	94.2	60-145			
Vinyl chloride	51.3	0.5	ug/L	50.0	11.9	78.7	50-145			
Vinyl chloride	51.3	0.5	ug/L	50.0	11.9	78.7	50-145			
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>52.1</i>		ug/L	<i>50.0</i>		<i>104</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>49.0</i>		ug/L	<i>50.0</i>		<i>98.0</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>51.9</i>		ug/L	<i>50.0</i>		<i>104</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.2</i>		ug/L	<i>50.0</i>		<i>98.5</i>	<i>70-130</i>			

**Matrix Spike Dup (BFL0391-MSD1)**

Source: 22L0423-13

Prepared & Analyzed: 12/09/2022

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0391 - SW5030B-MS**

Matrix Spike Dup (BFL0391-MSD1)	Source: 22L0423-13			Prepared & Analyzed: 12/09/2022						
1,1,1,2-Tetrachloroethane	51.1	0.4	ug/L	50.0	BLOD	102	80-130	1.46	30	
1,1,1,2-Tetrachloroethane	51.1	0.4	ug/L	50.0	BLOD	102	80-130	1.46	30	
1,1,1-Trichloroethane	45.8	1	ug/L	50.0	BLOD	91.7	65-130	9.97	30	
1,1,1-Trichloroethane	45.8	1	ug/L	50.0	BLOD	91.7	65-130	9.97	30	
1,1,2,2-Tetrachloroethane	46.9	0.4	ug/L	50.0	BLOD	93.8	65-130	1.83	30	
1,1,2,2-Tetrachloroethane	46.9	0.4	ug/L	50.0	BLOD	93.8	65-130	1.83	30	
1,1,2-Trichloroethane	46.1	1	ug/L	50.0	BLOD	92.2	75-125	2.27	30	
1,1,2-Trichloroethane	46.1	1	ug/L	50.0	BLOD	92.2	75-125	2.27	30	
1,1-Dichloroethane	51.0	1	ug/L	50.0	5.19	91.6	70-135	5.49	30	
1,1-Dichloroethane	51.0	1	ug/L	50.0	5.19	91.6	70-135	5.49	30	
1,1-Dichloroethylene	40.6	1	ug/L	50.0	BLOD	81.2	70-130	1.13	30	
1,1-Dichloroethylene	40.6	1	ug/L	50.0	BLOD	81.2	70-130	1.13	30	
1,1-Dichloropropene	45.2	1	ug/L	50.0	BLOD	90.5	75-135	9.84	30	
1,2,3-Trichloropropane	48.9	1	ug/L	50.0	BLOD	97.9	75-125	6.06	30	
1,2,3-Trichloropropane	48.9	1	ug/L	50.0	BLOD	97.9	75-125	6.06	30	
1,2,4-Trichlorobenzene	53.8	1	ug/L	50.0	BLOD	108	65-135	6.55	30	
1,2-Dichlorobenzene	51.4	0.5	ug/L	50.0	BLOD	103	70-120	2.76	30	
1,2-Dichlorobenzene	51.4	0.5	ug/L	50.0	BLOD	103	70-120	2.76	30	
1,2-Dichloroethane	38.7	1	ug/L	50.0	BLOD	77.3	70-130	3.93	30	
1,2-Dichloroethane	38.7	1	ug/L	50.0	BLOD	77.3	70-130	3.93	30	
1,2-Dichloropropane	44.5	0.5	ug/L	50.0	BLOD	89.0	75-125	2.86	30	
1,2-Dichloropropane	44.5	0.5	ug/L	50.0	BLOD	89.0	75-125	2.86	30	
1,3-Dichlorobenzene	50.9	1	ug/L	50.0	BLOD	102	75-125	2.54	30	
1,3-Dichloropropane	44.2	1	ug/L	50.0	BLOD	88.5	75-125	2.72	30	
1,4-Dichlorobenzene	51.3	1	ug/L	50.0	1.65	99.2	75-125	2.31	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0391 - SW5030B-MS

Matrix Spike Dup (BFL0391-MSD1)	Source: 22L0423-13			Prepared & Analyzed: 12/09/2022						
1,4-Dichlorobenzene	51.3	1	ug/L	50.0	1.65	99.2	75-125	2.31	30	
2,2-Dichloropropane	45.2	1	ug/L	50.0	BLOD	90.4	70-135	6.47	30	
2-Butanone (MEK)	50.5	10	ug/L	50.0	BLOD	101	30-150	17.2	30	
2-Butanone (MEK)	50.5	10	ug/L	50.0	BLOD	101	30-150	17.2	30	
2-Hexanone (MBK)	57.7	5	ug/L	50.0	BLOD	115	55-130	21.6	30	
2-Hexanone (MBK)	57.7	5	ug/L	50.0	BLOD	115	55-130	21.6	30	
4-Methyl-2-pentanone (MIBK)	55.3	5	ug/L	50.0	BLOD	111	60-135	15.8	30	
4-Methyl-2-pentanone (MIBK)	55.3	5	ug/L	50.0	BLOD	111	60-135	15.8	30	
Acetone	49.0	10	ug/L	50.0	BLOD	89.0	40-140	9.86	30	
Acetone	49.0	10	ug/L	50.0	BLOD	89.0	40-140	9.86	30	
Acrylonitrile	249	5	ug/L	250	BLOD	99.8	70-130	5.07	30	
Acrylonitrile	249	5	ug/L	250	BLOD	99.8	70-130	5.07	30	
Benzene	82.8	1	ug/L	50.0	39.3	87.1	80-120	1.92	30	
Benzene	82.8	1	ug/L	50.0	39.3	87.1	80-120	1.92	30	
Bromochloromethane	40.6	1	ug/L	50.0	BLOD	81.3	65-130	18.3	30	
Bromochloromethane	40.6	1	ug/L	50.0	BLOD	81.3	65-130	18.3	30	
Bromodichloromethane	47.5	0.5	ug/L	50.0	BLOD	94.9	75-120	2.68	30	
Bromodichloromethane	47.5	0.5	ug/L	50.0	BLOD	94.9	75-120	2.68	30	
Bromoform	50.1	1	ug/L	50.0	BLOD	100	70-130	0.681	30	
Bromoform	50.1	1	ug/L	50.0	BLOD	100	70-130	0.681	30	
Bromomethane	40.8	1	ug/L	50.0	BLOD	81.6	30-145	13.2	30	
Bromomethane	40.8	1	ug/L	50.0	BLOD	81.6	30-145	13.2	30	
Carbon disulfide	47.4	10	ug/L	50.0	BLOD	94.8	35-160	8.40	30	
Carbon disulfide	47.4	10	ug/L	50.0	BLOD	94.8	35-160	8.40	30	
Carbon tetrachloride	48.8	1	ug/L	50.0	BLOD	97.5	65-140	4.14	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFL0391 - SW5030B-MS

Matrix Spike Dup (BFL0391-MSD1)

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

Carbon tetrachloride	48.8	1	ug/L	50.0	BLOD	97.5	65-140	4.14	30	
Chlorobenzene	51.0	1	ug/L	50.0	1.25	99.6	80-120	1.52	30	
Chlorobenzene	51.0	1	ug/L	50.0	1.25	99.6	80-120	1.52	30	
Chloroethane	38.9	1	ug/L	50.0	BLOD	77.7	60-135	13.1	30	
Chloroethane	38.9	1	ug/L	50.0	BLOD	77.7	60-135	13.1	30	
Chloroform	38.3	0.5	ug/L	50.0	BLOD	76.7	65-135	4.39	30	
Chloroform	38.3	0.5	ug/L	50.0	BLOD	76.7	65-135	4.39	30	
Chloromethane	43.0	1	ug/L	50.0	BLOD	86.0	40-125	4.81	30	
Chloromethane	43.0	1	ug/L	50.0	BLOD	86.0	40-125	4.81	30	
cis-1,2-Dichloroethylene	89.4	1	ug/L	50.0	44.8	89.2	70-125	0.669	30	
cis-1,2-Dichloroethylene	89.4	1	ug/L	50.0	44.8	89.2	70-125	0.669	30	
cis-1,3-Dichloropropene	39.4	1	ug/L	50.0	BLOD	78.7	70-130	2.38	30	
cis-1,3-Dichloropropene	39.4	1	ug/L	50.0	BLOD	78.7	70-130	2.38	30	
Dibromochloromethane	45.3	0.5	ug/L	50.0	BLOD	90.7	60-135	1.58	30	
Dibromochloromethane	45.3	0.5	ug/L	50.0	BLOD	90.7	60-135	1.58	30	
Dibromomethane	47.6	1	ug/L	50.0	BLOD	95.2	75-125	1.15	30	
Dibromomethane	47.6	1	ug/L	50.0	BLOD	95.2	75-125	1.15	30	
Dichlorodifluoromethane	30.3	1	ug/L	50.0	BLOD	60.5	30-155	6.49	30	
Ethylbenzene	51.7	1	ug/L	50.0	BLOD	103	75-125	1.08	30	
Ethylbenzene	51.7	1	ug/L	50.0	BLOD	103	75-125	1.08	30	
m+p-Xylenes	99.2	2	ug/L	100	BLOD	99.2	75-130	0.983	30	
m+p-Xylenes	99.2	2	ug/L	100	BLOD	99.2	75-130	0.983	30	
Methylene chloride	40.2	4	ug/L	50.0	BLOD	80.4	55-140	3.64	30	
Methylene chloride	40.2	4	ug/L	50.0	BLOD	80.4	55-140	3.64	30	
o-Xylene	50.3	1	ug/L	50.0	BLOD	101	80-120	1.97	30	



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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFL0391 - SW5030B-MS

Matrix Spike Dup (BFL0391-MSD1)	Source: 22L0423-13			Prepared & Analyzed: 12/09/2022						
o-Xylene	50.3	1	ug/L	50.0	BLOD	101	80-120	1.97	30	
Styrene	50.8	1	ug/L	50.0	BLOD	102	65-135	1.47	30	
Styrene	50.8	1	ug/L	50.0	BLOD	102	65-135	1.47	30	
Tetrachloroethylene (PCE)	81.8	1	ug/L	50.0	BLOD	164	45-150	0.134	30	M
Tetrachloroethylene (PCE)	81.8	1	ug/L	50.0	BLOD	164	45-150	0.134	30	M
Toluene	45.6	1	ug/L	50.0	BLOD	90.3	75-120	2.21	30	
Toluene	45.6	1	ug/L	50.0	BLOD	90.3	75-120	2.21	30	
trans-1,2-Dichloroethylene	39.9	1	ug/L	50.0	BLOD	79.9	60-140	14.2	30	
trans-1,2-Dichloroethylene	39.9	1	ug/L	50.0	BLOD	79.9	60-140	14.2	30	
trans-1,3-Dichloropropene	42.4	1	ug/L	50.0	BLOD	84.7	55-140	1.01	30	
trans-1,3-Dichloropropene	42.4	1	ug/L	50.0	BLOD	84.7	55-140	1.01	30	
Trichloroethylene	43.7	1	ug/L	50.0	BLOD	87.4	70-125	4.01	30	
Trichloroethylene	43.7	1	ug/L	50.0	BLOD	87.4	70-125	4.01	30	
Trichlorofluoromethane	44.9	1	ug/L	50.0	BLOD	89.8	60-145	4.78	30	
Trichlorofluoromethane	44.9	1	ug/L	50.0	BLOD	89.8	60-145	4.78	30	
Vinyl chloride	53.4	0.5	ug/L	50.0	11.9	82.8	50-145	3.92	30	
Vinyl chloride	53.4	0.5	ug/L	50.0	11.9	82.8	50-145	3.92	30	
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Surr: 1,2-Dichloroethane-d4 (Surr)	51.0		ug/L	50.0		102	70-120			
Surr: 4-Bromofluorobenzene (Surr)	49.9		ug/L	50.0		99.9	75-120			
Surr: Dibromofluoromethane (Surr)	51.8		ug/L	50.0		104	70-130			
Surr: Toluene-d8 (Surr)	49.0		ug/L	50.0		98.0	70-130			

#### Batch BFL0436 - SW5030B-MS

Blank (BFL0436-BLK1)	Prepared & Analyzed: 12/12/2022										
1,1,1,2-Tetrachloroethane	ND	0.40	ug/L								

## Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0436 - SW5030B-MS

**Blank (BFL0436-BLK1)**

Prepared &amp; Analyzed: 12/12/2022

1,1,1-Trichloroethane	ND	1.00	ug/L
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L
1,1,2-Trichloroethane	ND	1.00	ug/L
1,1-Dichloroethane	ND	1.00	ug/L
1,1-Dichloroethylene	ND	1.00	ug/L
1,2,3-Trichloropropane	ND	1.00	ug/L
1,2-Dichlorobenzene	ND	1.00	ug/L
1,2-Dichloroethane	ND	1.00	ug/L
1,2-Dichloropropane	ND	1.00	ug/L
1,4-Dichlorobenzene	ND	1.00	ug/L
2-Butanone (MEK)	ND	10.0	ug/L
2-Hexanone (MBK)	ND	5.00	ug/L
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L
Acetone	ND	10.0	ug/L
Acrylonitrile	ND	5.00	ug/L
Benzene	ND	1.00	ug/L
Bromochloromethane	ND	1.00	ug/L
Bromodichloromethane	ND	0.50	ug/L
Bromoform	ND	1.00	ug/L
Bromomethane	ND	1.00	ug/L
Carbon disulfide	ND	10.0	ug/L
Carbon tetrachloride	ND	1.00	ug/L
Chlorobenzene	ND	1.00	ug/L
Chloroethane	ND	1.00	ug/L
Chloroform	ND	0.50	ug/L

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Enthalpy Analytical

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### Batch BFL0436 - SW5030B-MS

**Blank (BFL0436-BLK1)**

Prepared &amp; Analyzed: 12/12/2022

Chloromethane	ND	1.00	ug/L							
cis-1,2-Dichloroethylene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Iodomethane	ND	10.0	ug/L							
m+p-Xylenes	ND	2.00	ug/L							
Methylene chloride	ND	4.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
Tetrachloroethylene (PCE)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
trans-1,2-Dichloroethylene	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L							
Trichloroethylene	ND	1.00	ug/L							
Trichlorofluoromethane	ND	1.00	ug/L							
Vinyl acetate	ND	10.0	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Xylenes, Total	ND	3.00	ug/L							
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>54.2</i>		<i>ug/L</i>	<i>50.0</i>		<i>108</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>48.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>97.1</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>47.5</i>		<i>ug/L</i>	<i>50.0</i>		<i>95.1</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.8</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.6</i>	<i>70-130</i>			

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**Batch BFL0436 - SW5030B-MS**

**Blank (BFL0436-BLK1)**

Prepared & Analyzed: 12/12/2022

**LCS (BFL0436-BS1)**

Prepared & Analyzed: 12/12/2022

1,1,1,2-Tetrachloroethane	54.2	0.4	ug/L	50.0		108	80-130			
1,1,1-Trichloroethane	49.0	1	ug/L	50.0		98.0	65-130			
1,1,2,2-Tetrachloroethane	46.8	0.4	ug/L	50.0		93.6	65-130			
1,1,2-Trichloroethane	48.9	1	ug/L	50.0		97.8	75-125			
1,1-Dichloroethane	45.7	1	ug/L	50.0		91.4	70-135			
1,1-Dichloroethylene	44.0	1	ug/L	50.0		87.9	70-130			
1,2,3-Trichloropropane	47.6	1	ug/L	50.0		95.1	75-125			
1,2-Dichlorobenzene	53.6	0.5	ug/L	50.0		107	70-120			
1,2-Dichloroethane	41.0	1	ug/L	50.0		82.1	70-130			
1,2-Dichloropropane	47.0	0.5	ug/L	50.0		94.1	75-125			
1,4-Dichlorobenzene	54.3	1	ug/L	50.0		109	75-125			
2-Butanone (MEK)	48.5	10	ug/L	50.0		96.9	30-150			
2-Hexanone (MBK)	53.9	5	ug/L	50.0		108	55-130			
4-Methyl-2-pentanone (MIBK)	49.7	5	ug/L	50.0		99.4	60-135			
Acetone	50.9	10	ug/L	50.0		102	40-140			
Acrylonitrile	262	5	ug/L	250		105	70-130			
Benzene	46.4	1	ug/L	50.0		92.9	80-120			
Bromochloromethane	47.1	1	ug/L	50.0		94.1	65-130			
Bromodichloromethane	50.5	0.5	ug/L	50.0		101	75-120			
Bromoform	53.1	1	ug/L	50.0		106	70-130			
Bromomethane	50.3	1	ug/L	50.0		101	30-145			
Carbon disulfide	47.9	10	ug/L	50.0		95.7	35-160			
Carbon tetrachloride	45.8	1	ug/L	50.0		91.5	65-140			

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0436 - SW5030B-MS**

**LCS (BFL0436-BS1)**

Prepared & Analyzed: 12/12/2022

Chlorobenzene	51.0	1	ug/L	50.0		102	80-120			
Chloroethane	43.2	1	ug/L	50.0		86.5	60-135			
Chloroform	42.6	0.5	ug/L	50.0		85.2	65-135			
Chloromethane	49.1	1	ug/L	50.0		98.2	40-125			
cis-1,2-Dichloroethylene	44.0	1	ug/L	50.0		88.0	70-125			
cis-1,3-Dichloropropene	43.1	1	ug/L	50.0		86.1	70-130			
Dibromochloromethane	48.8	0.5	ug/L	50.0		97.5	60-135			
Dibromomethane	49.4	1	ug/L	50.0		98.8	75-125			
Ethylbenzene	53.8	1	ug/L	50.0		108	75-125			
m+p-Xylenes	103	2	ug/L	100		103	75-130			
Methylene chloride	45.4	4	ug/L	50.0		90.9	55-140			
o-Xylene	52.6	1	ug/L	50.0		105	80-120			
Styrene	53.5	1	ug/L	50.0		107	65-135			
Tetrachloroethylene (PCE)	84.1	1	ug/L	50.0		168	45-150			L
Toluene	48.1	1	ug/L	50.0		96.2	75-120			
trans-1,2-Dichloroethylene	44.0	1	ug/L	50.0		88.0	60-140			
trans-1,3-Dichloropropene	46.7	1	ug/L	50.0		93.4	55-140			
Trichloroethylene	44.8	1	ug/L	50.0		89.5	70-125			
Trichlorofluoromethane	49.3	1	ug/L	50.0		98.5	60-145			
Vinyl chloride	43.4	0.5	ug/L	50.0		86.9	50-145			
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<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>55.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>110</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>100</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>48.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>97.2</i>	<i>70-130</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>49.1</i>		<i>ug/L</i>	<i>50.0</i>		<i>98.3</i>	<i>70-130</i>			

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0436 - SW5030B-MS**

Duplicate (BFL0436-DUP1)	Source: 22L0557-02			Prepared & Analyzed: 12/12/2022						
1,1,1,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,1-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,2-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,4-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
2-Butanone (MEK)	ND	10.0	ug/L		BLOD			NA	30	
2-Hexanone (MBK)	ND	5.00	ug/L		BLOD			NA	30	
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L		BLOD			NA	30	
Acetone	ND	10.0	ug/L		BLOD			NA	30	
Acrylonitrile	ND	5.00	ug/L		BLOD			NA	30	
Benzene	ND	1.00	ug/L		BLOD			NA	30	
Bromochloromethane	ND	1.00	ug/L		BLOD			NA	30	
Bromodichloromethane	ND	0.50	ug/L		BLOD			NA	30	
Bromoform	ND	1.00	ug/L		BLOD			NA	30	
Bromomethane	ND	1.00	ug/L		BLOD			NA	30	
Carbon disulfide	ND	10.0	ug/L		BLOD			NA	30	
Carbon tetrachloride	ND	1.00	ug/L		BLOD			NA	30	
Chlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
Chloroethane	ND	1.00	ug/L		BLOD			NA	30	

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0436 - SW5030B-MS

Duplicate (BFL0436-DUP1)

Source: 22L0557-02

Prepared &amp; Analyzed: 12/12/2022

Chloroform	ND	0.50	ug/L		BLOD			NA	30	
Chloromethane	ND	1.00	ug/L		BLOD			NA	30	
cis-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
cis-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Dibromochloromethane	ND	0.50	ug/L		BLOD			NA	30	
Dibromomethane	ND	1.00	ug/L		BLOD			NA	30	
Ethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Iodomethane	ND	10.0	ug/L		BLOD			NA	30	
m+p-Xylenes	ND	2.00	ug/L		BLOD			NA	30	
Methylene chloride	ND	4.00	ug/L		BLOD			NA	30	
o-Xylene	ND	1.00	ug/L		BLOD			NA	30	
Styrene	ND	1.00	ug/L		BLOD			NA	30	
Tetrachloroethylene (PCE)	ND	1.00	ug/L		BLOD			NA	30	
Toluene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,4-Dichloro-2-butene	ND	4.00	ug/L		BLOD			NA	30	
Trichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
Trichlorofluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Vinyl acetate	ND	10.0	ug/L		BLOD			NA	30	
Vinyl chloride	ND	0.50	ug/L		BLOD			NA	30	
Xylenes, Total	ND	3.00	ug/L		BLOD			NA	30	
Tetrahydrofuran	ND	10.0	ug/L		BLOD			NA	30	
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Surr: 1,2-Dichloroethane-d4 (Surr)	52.3		ug/L	50.0		105	70-120			
Surr: 4-Bromofluorobenzene (Surr)	48.6		ug/L	50.0		97.1	75-120			

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### Batch BFL0436 - SW5030B-MS

**Duplicate (BFL0436-DUP1)**

Source: 22L0557-02

Prepared & Analyzed: 12/12/2022

<i>Surr: Dibromofluoromethane (Surr)</i>	57.0		ug/L	50.0		114	70-130
<i>Surr: Toluene-d8 (Surr)</i>	50.2		ug/L	50.0		100	70-130

**Matrix Spike (BFL0436-MS1)**

Source: 22L0557-01

Prepared & Analyzed: 12/12/2022

1,1,1,2-Tetrachloroethane	53.2	0.4	ug/L	50.0	BLOD	106	80-130
1,1,1-Trichloroethane	48.6	1	ug/L	50.0	BLOD	97.1	65-130
1,1,2,2-Tetrachloroethane	48.2	0.4	ug/L	50.0	BLOD	96.4	65-130
1,1,2-Trichloroethane	46.2	1	ug/L	50.0	BLOD	92.5	75-125
1,1-Dichloroethane	45.5	1	ug/L	50.0	BLOD	91.1	70-135
1,1-Dichloroethylene	39.1	1	ug/L	50.0	BLOD	78.2	70-130
1,2,3-Trichloropropane	48.9	1	ug/L	50.0	BLOD	97.9	75-125
1,2-Dichlorobenzene	53.7	0.5	ug/L	50.0	BLOD	107	70-120
1,2-Dichloroethane	36.9	1	ug/L	50.0	BLOD	73.8	70-130
1,2-Dichloropropane	45.5	0.5	ug/L	50.0	BLOD	90.9	75-125
1,4-Dichlorobenzene	53.0	1	ug/L	50.0	BLOD	106	75-125
2-Butanone (MEK)	50.3	10	ug/L	50.0	BLOD	101	30-150
2-Hexanone (MBK)	58.5	5	ug/L	50.0	BLOD	117	55-130
4-Methyl-2-pentanone (MIBK)	52.8	5	ug/L	50.0	BLOD	106	60-135
Acetone	49.0	10	ug/L	50.0	BLOD	92.1	40-140
Acrylonitrile	236	5	ug/L	250	BLOD	94.2	70-130
Benzene	45.8	1	ug/L	50.0	BLOD	91.5	80-120
Bromochloromethane	42.1	1	ug/L	50.0	BLOD	84.1	65-130
Bromodichloromethane	48.4	0.5	ug/L	50.0	BLOD	96.7	75-120
Bromoform	52.6	1	ug/L	50.0	BLOD	105	70-130
Bromomethane	40.1	1	ug/L	50.0	BLOD	80.1	30-145



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### Batch BFL0436 - SW5030B-MS

**Matrix Spike (BFL0436-MS1)**
**Source: 22L0557-01**
**Prepared & Analyzed: 12/12/2022**

Carbon disulfide	44.2	10	ug/L	50.0	BLOD	88.4	35-160			
Carbon tetrachloride	49.0	1	ug/L	50.0	BLOD	98.0	65-140			
Chlorobenzene	50.9	1	ug/L	50.0	BLOD	102	80-120			
Chloroethane	40.3	1	ug/L	50.0	BLOD	80.6	60-135			
Chloroform	37.9	0.5	ug/L	50.0	BLOD	75.7	65-135			
Chloromethane	40.6	1	ug/L	50.0	BLOD	81.1	40-125			
cis-1,2-Dichloroethylene	46.3	1	ug/L	50.0	BLOD	92.5	70-125			
cis-1,3-Dichloropropene	41.6	1	ug/L	50.0	BLOD	83.2	70-130			
Dibromochloromethane	45.6	0.5	ug/L	50.0	BLOD	91.3	60-135			
Dibromomethane	47.7	1	ug/L	50.0	BLOD	95.3	75-125			
Ethylbenzene	52.4	1	ug/L	50.0	BLOD	105	75-125			
m+p-Xylenes	103	2	ug/L	100	BLOD	103	75-130			
Methylene chloride	39.7	4	ug/L	50.0	BLOD	79.4	55-140			
o-Xylene	52.0	1	ug/L	50.0	BLOD	104	80-120			
Styrene	51.9	1	ug/L	50.0	BLOD	104	65-135			
Tetrachloroethylene (PCE)	83.4	1	ug/L	50.0	BLOD	167	45-150			M
Toluene	45.6	1	ug/L	50.0	BLOD	91.2	75-120			
trans-1,2-Dichloroethylene	44.7	1	ug/L	50.0	BLOD	89.3	60-140			
trans-1,3-Dichloropropene	43.2	1	ug/L	50.0	BLOD	86.3	55-140			
Trichloroethylene	44.9	1	ug/L	50.0	BLOD	89.8	70-125			
Trichlorofluoromethane	42.3	1	ug/L	50.0	BLOD	84.6	60-145			
Vinyl chloride	39.2	0.5	ug/L	50.0	BLOD	78.4	50-145			
<hr/>										
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>49.6</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.2</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>50.0</i>		<i>ug/L</i>	<i>50.0</i>		<i>99.9</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>50.3</i>		<i>ug/L</i>	<i>50.0</i>		<i>101</i>	<i>70-130</i>			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0436 - SW5030B-MS**

**Matrix Spike (BFL0436-MS1)**

**Source: 22L0557-01**

Prepared & Analyzed: 12/12/2022

<i>Surr: Toluene-d8 (Surr)</i>	49.2	ug/L	50.0	98.5	70-130
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## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

Date Issued: 12/30/2022 11:56:27AM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

**Blank (BFL0373-BLK1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L							
Diethyl phthalate	ND	10.0	ug/L							
Di-n-butyl phthalate	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	81.4		ug/L	100		81.4	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	42.7		ug/L	50.0		85.5	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	43.2		ug/L	100		43.2	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	44.5		ug/L	50.0		89.0	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	31.4		ug/L	100		31.4	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	48.8		ug/L	50.0		97.7	27-133			

**LCS (BFL0373-BS1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

1,2,4-Trichlorobenzene	25.9	10.0	ug/L	50.0		51.8	22-135			
1,2-Dichlorobenzene	25.3	10.0	ug/L	50.0		50.6	22-115			
1,3-Dichlorobenzene	24.0	10.0	ug/L	50.0		48.1	22-112			
1,4-Dichlorobenzene	25.7	10.0	ug/L	50.0		51.4	13-112			
2,4,6-Trichlorophenol	29.9	10.0	ug/L	50.0		59.8	11-145			
2,4-Dichlorophenol	28.2	10.0	ug/L	50.0		56.5	11-75			
2,4-Dimethylphenol	24.1	5.00	ug/L	50.0		48.2	11-121			
2,4-Dinitrophenol	33.4	50.0	ug/L	50.0		66.7	11-165			
2,4-Dinitrotoluene	40.3	10.0	ug/L	50.0		80.6	17-155			
2,6-Dinitrotoluene	35.5	10.0	ug/L	50.0		71.0	15-125			
2-Chloronaphthalene	30.4	10.0	ug/L	50.0		60.8	27-89			
2-Chlorophenol	28.9	10.0	ug/L	50.0		57.8	15-110			
2-Nitrophenol	30.7	10.0	ug/L	50.0		61.4	11-115			

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0373 - SW3510C/EPA600-MS**

**LCS (BFL0373-BS1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

3,3'-Dichlorobenzidine	18.7	10.0	ug/L	50.0		37.4	25-95			
4,6-Dinitro-2-methylphenol	41.6	50.0	ug/L	50.0		83.2	25-130			
4-Bromophenyl phenyl ether	31.4	10.0	ug/L	50.0		62.9	15-110			
4-Chlorophenyl phenyl ether	30.5	10.0	ug/L	50.0		61.0	15-110			
4-Nitrophenol	14.6	50.0	ug/L	50.0		29.1	12-70			
Acenaphthene	31.2	10.0	ug/L	50.0		62.5	18-85			
Acenaphthylene	32.4	10.0	ug/L	50.0		64.8	20-75			
Acetophenone	30.2	20.0	ug/L	50.0		60.5	0-200			
alpha-Terpineol	31.9	2.50	ug/L	50.0		63.7	0-200			
Anthracene	36.6	10.0	ug/L	50.0		73.2	35-95			
Benzo (a) anthracene	38.5	10.0	ug/L	50.0		77.0	25-95			
Benzo (a) pyrene	44.7	0.20	ug/L	50.0		89.4	37-110			
Benzo (b) fluoranthene	50.4	10.0	ug/L	50.0		101	25-75			L
Benzo (g,h,i) perylene	29.8	10.0	ug/L	50.0		59.7	25-90			
Benzo (k) fluoranthene	45.4	10.0	ug/L	50.0		90.8	25-95			
bis (2-Chloroethoxy) methane	26.9	10.0	ug/L	50.0		53.9	25-110			
bis (2-Chloroethyl) ether	28.8	10.0	ug/L	50.0		57.7	25-85			
2,2'-Oxybis (1-chloropropane)	31.8	10.0	ug/L	50.0		63.6	25-95			
bis (2-Ethylhexyl) phthalate	39.5	5.00	ug/L	50.0		78.9	30-125			
Butyl benzyl phthalate	37.1	10.0	ug/L	50.0		74.2	30-115			
Carbazole	37.1	2.50	ug/L	50.0		74.2	0-200			
Chrysene	37.3	10.0	ug/L	50.0		74.6	20-90			
Dibenz (a,h) anthracene	35.6	10.0	ug/L	50.0		71.1	27-125			
Diethyl phthalate	39.6	10.0	ug/L	50.0		79.2	25-120			
Dimethyl phthalate	39.7	10.0	ug/L	50.0		79.4	25-125			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0373 - SW3510C/EPA600-MS**

**LCS (BFL0373-BS1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

Di-n-butyl phthalate	39.3	10.0	ug/L	50.0		78.6	35-115			
Di-n-octyl phthalate	64.9	10.0	ug/L	50.0		130	25-105			L
Fluoranthene	38.9	10.0	ug/L	50.0		77.9	33-95			
Fluorene	35.1	10.0	ug/L	50.0		70.3	15-97			
Hexachlorobenzene	40.0	1.00	ug/L	50.0		80.0	25-125			
Hexachlorobutadiene	28.3	10.0	ug/L	50.0		56.7	25-125			
Hexachlorocyclopentadiene	13.3	10.0	ug/L	50.0		26.5	25-125			
Hexachloroethane	27.1	10.0	ug/L	50.0		54.2	25-125			
Indeno (1,2,3-cd) pyrene	34.3	10.0	ug/L	50.0		68.7	25-125			
Isophorone	21.4	10.0	ug/L	50.0		42.8	10-110			
Naphthalene	29.7	0.10	ug/L	50.0		59.4	12-100			
Nitrobenzene	33.9	10.0	ug/L	50.0		67.7	30-97			
n-Nitrosodimethylamine	18.3	10.0	ug/L	50.0		36.7	10-85			
n-Nitrosodi-n-propylamine	30.5	10.0	ug/L	50.0		61.1	12-97			
n-Nitrosodiphenylamine	28.6	10.0	ug/L	50.0		57.3	12-97			
p-Chloro-m-cresol	29.8	10.0	ug/L	50.0		59.6	10-91			
Pentachlorophenol	31.1	20.0	ug/L	50.0		62.2	30-109			
Phenanthrene	42.8	10.0	ug/L	50.0		85.7	30-88			
Phenol	10.4	10.0	ug/L	50.5		20.5	10-70			
Pyrene	41.6	10.0	ug/L	50.0		83.3	27-110			
Pyridine	21.2	10.0	ug/L	50.0		42.3	0-200			
<hr/>										
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	75.2		ug/L	100		75.2	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	32.2		ug/L	50.0		64.4	9-87			
<i>Surr: 2-Fluorophenol (Surr)</i>	35.0		ug/L	100		35.0	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	35.7		ug/L	50.0		71.3	10-98.5			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

**LCS (BFL0373-BS1)**

Prepared: 12/09/2022 Analyzed: 12/12/2022

Surr: Phenol-d5 (Surr)	25.2	ug/L	100	25.2	5-33
Surr: p-Terphenyl-d14 (Surr)	43.0	ug/L	50.0	85.9	27-133

**Matrix Spike (BFL0373-MS1)**

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	32.6	10.0	ug/L	46.7	BLOD	69.7	22-65			M
1,2-Dichlorobenzene	33.0	10.0	ug/L	46.7	BLOD	70.7	22-60			M
1,3-Dichlorobenzene	32.1	10.0	ug/L	46.7	BLOD	68.8	22-60			M
1,4-Dichlorobenzene	36.1	10.0	ug/L	46.7	BLOD	77.3	13-60			M
1,4-Dioxane	11.1	50.0	ug/L		12.2		0-200			
2,4,6-Trichlorophenol	36.5	10.0	ug/L	46.7	BLOD	78.1	11-75			M
2,4-Dichlorophenol	33.8	10.0	ug/L	46.7	BLOD	72.3	11-75			
2,4-Dimethylphenol	32.5	4.67	ug/L	46.7	BLOD	69.5	11-65			M
2,4-Dinitrophenol	10.2	50.0	ug/L	46.7	BLOD	21.8	11-110			
2,4-Dinitrotoluene	42.2	10.0	ug/L	46.7	BLOD	90.2	17-95			
2,6-Dinitrotoluene	39.1	10.0	ug/L	46.7	BLOD	83.7	15-125			
2-Chloronaphthalene	39.2	10.0	ug/L	46.7	BLOD	83.9	27-89			
2-Chlorophenol	35.0	10.0	ug/L	46.7	BLOD	75.0	19-64			M
2-Nitrophenol	36.0	10.0	ug/L	46.7	BLOD	77.1	11-75			M
3,3'-Dichlorobenzidine	19.7	10.0	ug/L	46.7	BLOD	42.1	10-85			
4,6-Dinitro-2-methylphenol	44.0	50.0	ug/L	46.7	BLOD	94.1	40-130			
4-Bromophenyl phenyl ether	32.3	10.0	ug/L	46.7	BLOD	69.2	15-110			
4-Chlorophenyl phenyl ether	34.5	10.0	ug/L	46.7	BLOD	73.8	15-110			
4-Nitrophenol	14.2	50.0	ug/L	46.7	BLOD	30.4	12-70			
Acenaphthene	38.9	10.0	ug/L	46.7	BLOD	83.3	15-90			
Acenaphthylene	41.9	10.0	ug/L	46.7	BLOD	89.6	15-99			

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

**Matrix Spike (BFL0373-MS1)**

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

Acetophenone	31.6	20.0	ug/L	46.7	BLOD	67.6	0-200			
alpha-Terpineol	37.1	2.50	ug/L	46.7	BLOD	79.4	0-200			
Anthracene	42.7	10.0	ug/L	46.7	BLOD	91.4	20-95			
Benzo (a) anthracene	42.5	9.35	ug/L	46.7	BLOD	90.9	25-95			
Benzo (a) pyrene	44.4	0.20	ug/L	46.7	BLOD	95.0	25-82			M
Benzo (b) fluoranthene	49.9	10.0	ug/L	46.7	BLOD	107	25-75			M
Benzo (g,h,i) perylene	35.3	10.0	ug/L	46.7	BLOD	75.5	25-90			
Benzo (k) fluoranthene	44.7	10.0	ug/L	46.7	BLOD	95.7	25-95			M
bis (2-Chloroethoxy) methane	32.6	10.0	ug/L	46.7	BLOD	69.8	25-85			
bis (2-Chloroethyl) ether	36.3	10.0	ug/L	46.7	BLOD	77.7	25-85			
2,2'-Oxybis (1-chloropropane)	39.3	10.0	ug/L	46.7	BLOD	84.2	25-87			
bis (2-Ethylhexyl) phthalate	42.9	5.00	ug/L	46.7	BLOD	91.7	30-125			
Butyl benzyl phthalate	37.7	10.0	ug/L	46.7	BLOD	80.8	30-115			
Carbazole	40.3	2.50	ug/L	46.7	BLOD	86.2	0-200			
Chrysene	40.4	10.0	ug/L	46.7	BLOD	86.5	20-90			
Dibenz (a,h) anthracene	42.4	10.0	ug/L	46.7	BLOD	90.7	27-125			
Diethyl phthalate	45.6	10.0	ug/L	46.7	BLOD	97.6	25-120			
Dimethyl phthalate	45.9	10.0	ug/L	46.7	BLOD	98.2	25-125			
Di-n-butyl phthalate	36.9	10.0	ug/L	46.7	BLOD	79.0	25-115			
Di-n-octyl phthalate	70.9	10.0	ug/L	46.7	BLOD	152	22-105			M
Fluoranthene	46.4	10.0	ug/L	46.7	BLOD	99.4	25-96			M
Fluorene	41.6	10.0	ug/L	46.7	BLOD	88.9	15-97			
Hexachlorobenzene	40.3	0.93	ug/L	46.7	BLOD	86.3	25-125			
Hexachlorobutadiene	34.5	10.0	ug/L	46.7	BLOD	73.8	25-125			
Hexachlorocyclopentadiene	24.8	10.0	ug/L	46.7	BLOD	53.1	10-90			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

**Matrix Spike (BFL0373-MS1)**

Source: 22L0423-13

Prepared &amp; Analyzed: 12/09/2022

Hexachloroethane	34.2	10.0	ug/L	46.7	BLOD	73.2	25-125			
Indeno (1,2,3-cd) pyrene	39.7	10.0	ug/L	46.7	BLOD	85.1	25-125			
Isophorone	26.9	10.0	ug/L	46.7	BLOD	57.7	10-110			
Naphthalene	38.6	0.10	ug/L	46.7	BLOD	82.7	12-100			
Nitrobenzene	40.3	10.0	ug/L	46.7	BLOD	86.2	27-77			M
n-Nitrosodimethylamine	21.6	10.0	ug/L	46.7	BLOD	46.1	10-85			
n-Nitrosodi-n-propylamine	37.9	10.0	ug/L	46.7	BLOD	81.0	12-97			
n-Nitrosodiphenylamine	31.6	10.0	ug/L	46.7	BLOD	67.7	12-97			
p-Chloro-m-cresol	36.1	10.0	ug/L	46.7	BLOD	77.2	10-91			
Pentachlorophenol	36.9	20.0	ug/L	46.7	BLOD	78.9	27-109			
Phenanthrene	48.2	10.0	ug/L	46.7	BLOD	103	35-115			
Phenol	12.9	10.0	ug/L	47.2	BLOD	27.4	10-70			
Pyrene	45.6	10.0	ug/L	46.7	BLOD	97.7	23-110			
Pyridine	30.6	10.0	ug/L	46.7	BLOD	65.4	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	80.1		ug/L	93.5		85.7	10-86			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	43.6		ug/L	46.7		93.3	9-87			S
<i>Surr: 2-Fluorophenol (Surr)</i>	42.2		ug/L	93.5		45.2	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	42.9		ug/L	46.7		91.7	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	30.8		ug/L	93.5		32.9	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	41.3		ug/L	46.7		88.5	27-133			

**Matrix Spike Dup (BFL0373-MSD1)**

Source: 22L0423-13

Prepared: 12/09/2022 Analyzed: 12/12/2022

1,2,4-Trichlorobenzene	35.5	10.0	ug/L	46.7	BLOD	75.9	22-65	8.57	20	M
1,2-Dichlorobenzene	32.1	10.0	ug/L	46.7	BLOD	68.8	22-60	2.72	20	M
1,3-Dichlorobenzene	31.2	10.0	ug/L	46.7	BLOD	66.8	22-60	2.92	20	M



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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0373 - SW3510C/EPA600-MS

Matrix Spike Dup (BFL0373-MSD1)	Source: 22L0423-13			Prepared: 12/09/2022 Analyzed: 12/12/2022						
1,4-Dichlorobenzene	34.7	10.0	ug/L	46.7	BLOD	74.2	13-60	4.01	20	M
1,4-Dioxane	11.9	50.0	ug/L		12.2		0-200	6.91	20	
2,4,6-Trichlorophenol	38.9	10.0	ug/L	46.7	BLOD	83.3	11-75	6.49	20	M
2,4-Dichlorophenol	36.9	10.0	ug/L	46.7	BLOD	78.9	11-75	8.76	20	M
2,4-Dimethylphenol	32.5	4.67	ug/L	46.7	BLOD	69.5	11-65	0.0288	20	M
2,4-Dinitrophenol	12.0	50.0	ug/L	46.7	BLOD	25.6	11-110	16.0	20	
2,4-Dinitrotoluene	46.1	10.0	ug/L	46.7	BLOD	98.6	17-95	8.89	20	M
2,6-Dinitrotoluene	41.9	10.0	ug/L	46.7	BLOD	89.6	15-125	6.76	20	
2-Chloronaphthalene	39.0	10.0	ug/L	46.7	BLOD	83.5	27-89	0.550	20	
2-Chlorophenol	32.3	10.0	ug/L	46.7	BLOD	69.2	19-64	8.10	20	M
2-Nitrophenol	40.0	10.0	ug/L	46.7	BLOD	85.5	11-75	10.4	20	M
3,3'-Dichlorobenzidine	16.6	10.0	ug/L	46.7	BLOD	35.5	10-85	17.1	20	
4,6-Dinitro-2-methylphenol	47.1	50.0	ug/L	46.7	BLOD	101	40-130	6.93	20	
4-Bromophenyl phenyl ether	35.7	10.0	ug/L	46.7	BLOD	76.4	15-110	9.95	20	
4-Chlorophenyl phenyl ether	35.9	10.0	ug/L	46.7	BLOD	76.8	15-110	3.99	20	
4-Nitrophenol	16.9	50.0	ug/L	46.7	BLOD	36.1	12-70	17.2	20	
Acenaphthene	39.7	10.0	ug/L	46.7	BLOD	85.0	15-90	2.02	20	
Acenaphthylene	39.7	10.0	ug/L	46.7	BLOD	85.0	15-99	5.27	20	
Acetophenone	35.5	20.0	ug/L	46.7	BLOD	76.0	0-200	11.6	20	
alpha-Terpineol	40.2	2.50	ug/L	46.7	BLOD	86.0	0-200	7.98	20	
Anthracene	39.9	10.0	ug/L	46.7	BLOD	85.4	20-95	6.72	20	
Benzo (a) anthracene	41.0	9.35	ug/L	46.7	BLOD	87.8	25-95	3.42	20	
Benzo (a) pyrene	46.1	0.20	ug/L	46.7	BLOD	98.8	25-82	3.92	20	M
Benzo (b) fluoranthene	52.4	10.0	ug/L	46.7	BLOD	112	25-75	4.77	20	M
Benzo (g,h,i) perylene	36.3	10.0	ug/L	46.7	BLOD	77.7	25-90	2.98	20	

## Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0373 - SW3510C/EPA600-MS</b>										
<b>Matrix Spike Dup (BFL0373-MSD1)</b>	<b>Source: 22L0423-13</b>			<b>Prepared: 12/09/2022 Analyzed: 12/12/2022</b>						
Benzo (k) fluoranthene	44.5	10.0	ug/L	46.7	BLOD	95.2	25-95	0.503	20	M
bis (2-Chloroethoxy) methane	35.7	10.0	ug/L	46.7	BLOD	76.4	25-85	9.11	20	
bis (2-Chloroethyl) ether	35.0	10.0	ug/L	46.7	BLOD	74.9	25-85	3.69	20	
2,2'-Oxybis (1-chloropropane)	40.7	10.0	ug/L	46.7	BLOD	87.2	25-87	3.50	20	M
bis (2-Ethylhexyl) phthalate	42.5	5.00	ug/L	46.7	BLOD	91.0	30-125	0.766	20	
Butyl benzyl phthalate	38.9	10.0	ug/L	46.7	BLOD	83.2	30-115	2.98	20	
Carbazole	38.1	2.50	ug/L	46.7	BLOD	81.6	0-200	5.43	20	
Chrysene	38.7	10.0	ug/L	46.7	BLOD	82.9	20-90	4.30	20	
Dibenz (a,h) anthracene	42.9	10.0	ug/L	46.7	BLOD	91.8	27-125	1.21	20	
Diethyl phthalate	44.8	10.0	ug/L	46.7	BLOD	95.8	25-120	1.90	20	
Dimethyl phthalate	45.6	10.0	ug/L	46.7	BLOD	97.5	25-125	0.654	20	
Di-n-butyl phthalate	37.3	10.0	ug/L	46.7	BLOD	79.9	25-115	1.06	20	
Di-n-octyl phthalate	28.1	10.0	ug/L	46.7	BLOD	60.1	22-105	86.5	20	P
Fluoranthene	38.7	10.0	ug/L	46.7	BLOD	82.9	25-96	18.1	20	
Fluorene	41.8	10.0	ug/L	46.7	BLOD	89.4	15-97	0.516	20	
Hexachlorobenzene	43.7	0.93	ug/L	46.7	BLOD	93.6	25-125	8.16	20	
Hexachlorobutadiene	38.1	10.0	ug/L	46.7	BLOD	81.5	25-125	9.89	20	
Hexachlorocyclopentadiene	20.4	10.0	ug/L	46.7	BLOD	43.7	10-90	19.5	20	
Hexachloroethane	34.8	10.0	ug/L	46.7	BLOD	74.5	25-125	1.73	20	
Indeno (1,2,3-cd) pyrene	40.5	10.0	ug/L	46.7	BLOD	86.6	25-125	1.84	20	
Isophorone	29.8	10.0	ug/L	46.7	BLOD	63.8	10-110	10.1	20	
Naphthalene	38.3	0.10	ug/L	46.7	BLOD	82.0	12-100	0.850	20	
Nitrobenzene	39.8	10.0	ug/L	46.7	BLOD	85.1	27-77	1.28	20	M
n-Nitrosodimethylamine	25.3	10.0	ug/L	46.7	BLOD	54.1	10-85	15.9	20	
n-Nitrosodi-n-propylamine	38.7	10.0	ug/L	46.7	BLOD	82.9	12-97	2.24	20	

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFL0373 - SW3510C/EPA600-MS

Matrix Spike Dup (BFL0373-MSD1)	Source: 22L0423-13		Prepared: 12/09/2022 Analyzed: 12/12/2022							
n-Nitrosodiphenylamine	32.5	10.0	ug/L	46.7	BLOD	69.5	12-97	2.65	20	
p-Chloro-m-cresol	38.9	10.0	ug/L	46.7	BLOD	83.3	10-91	7.58	20	
Pentachlorophenol	43.1	20.0	ug/L	46.7	BLOD	92.2	27-109	15.6	20	
Phenanthrene	45.1	10.0	ug/L	46.7	BLOD	96.4	35-115	6.75	20	
Phenol	13.1	10.0	ug/L	47.2	BLOD	27.9	10-70	1.58	20	
Pyrene	43.3	10.0	ug/L	46.7	BLOD	92.6	23-110	5.30	20	
Pyridine	29.6	10.0	ug/L	46.7	BLOD	63.3	0-200	3.36	20	
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	86.7		ug/L	93.5		92.8	10-86			M
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	41.8		ug/L	46.7		89.5	9-87			M
<i>Surr: 2-Fluorophenol (Surr)</i>	39.9		ug/L	93.5		42.6	10-52			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	42.8		ug/L	46.7		91.6	10-98.5			
<i>Surr: Phenol-d5 (Surr)</i>	30.3		ug/L	93.5		32.4	5-33			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	42.6		ug/L	46.7		91.1	27-133			

#### Batch BFL0423 - SW3510C/EPA600-MS

Blank (BFL0423-BLK1)	Prepared & Analyzed: 12/12/2022									
bis (2-Ethylhexyl) phthalate	ND	5.00	ug/L							
Diethyl phthalate	ND	10.0	ug/L							
Di-n-butyl phthalate	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	175		ug/L	100		175	10-86			S
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	79.2		ug/L	50.0		158	9-87			S
<i>Surr: 2-Fluorophenol (Surr)</i>	95.2		ug/L	100		95.2	10-52			S
<i>Surr: Nitrobenzene-d5 (Surr)</i>	87.4		ug/L	50.0		175	10-98.5			S

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0423 - SW3510C/EPA600-MS

**Blank (BFL0423-BLK1)**

Prepared &amp; Analyzed: 12/12/2022

<i>Surr: Phenol-d5 (Surr)</i>	66.0		ug/L	100		66.0	5-33			S
<i>Surr: p-Terphenyl-d14 (Surr)</i>	90.0		ug/L	50.0		180	27-133			S

**LCS (BFL0423-BS1)**

Prepared: 12/12/2022 Analyzed: 12/13/2022

1,2,4-Trichlorobenzene	45.2	10.0	ug/L	50.0		90.5	22-135			
1,2-Dichlorobenzene	48.3	10.0	ug/L	50.0		96.6	22-115			
1,3-Dichlorobenzene	44.3	10.0	ug/L	50.0		88.6	22-112			
1,4-Dichlorobenzene	49.9	10.0	ug/L	50.0		99.8	13-112			
1-Chloronaphthalene	51.8	10.0	ug/L				0-200			
2,3,4,6-Tetrachlorophenol	1.20	10.0	ug/L				0-200			
2,4,6-Trichlorophenol	54.0	10.0	ug/L	50.0		108	11-145			
2,4-Dichlorophenol	54.7	10.0	ug/L	50.0		109	11-75			
2,4-Dimethylphenol	55.8	5.00	ug/L	50.0		112	11-121			
2,4-Dinitrophenol	37.6	50.0	ug/L	50.0		75.1	11-165			
2,4-Dinitrotoluene	77.0	10.0	ug/L	50.0		154	17-155			
2,6-Dinitrotoluene	69.9	10.0	ug/L	50.0		140	15-125			L
2-Chloronaphthalene	49.4	10.0	ug/L	50.0		98.7	27-89			L
2-Chlorophenol	58.7	10.0	ug/L	50.0		117	15-110			L
2-Nitrophenol	68.3	10.0	ug/L	50.0		137	11-115			L
3,3'-Dichlorobenzidine	44.4	10.0	ug/L	50.0		88.8	25-95			
4,6-Dinitro-2-methylphenol	74.7	50.0	ug/L	50.0		149	25-130			L
4-Aminobiphenyl	2.97	10.0	ug/L				0-200			
4-Bromophenyl phenyl ether	62.2	10.0	ug/L	50.0		124	15-110			L
4-Chlorophenyl phenyl ether	51.7	10.0	ug/L	50.0		103	15-110			
4-Nitrophenol	26.3	50.0	ug/L	50.0		52.5	12-70			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0423 - SW3510C/EPA600-MS

**LCS (BFL0423-BS1)**

Prepared: 12/12/2022 Analyzed: 12/13/2022

Acenaphthene	54.6	10.0	ug/L	50.0		109	18-85			L
Acenaphthylene	54.6	10.0	ug/L	50.0		109	20-75			L
Acetophenone	56.2	20.0	ug/L	50.0		112	0-200			
alpha-Terpineol	53.8	2.50	ug/L	50.0		108	0-200			
Anthracene	65.1	10.0	ug/L	50.0		130	35-95			L
Benzo (a) anthracene	76.2	10.0	ug/L	50.0		152	25-95			L
Benzo (a) pyrene	85.4	0.20	ug/L	50.0		171	37-110			L
Benzo (b) fluoranthene	77.8	10.0	ug/L	50.0		156	25-75			L
Benzo (g,h,i) perylene	82.8	10.0	ug/L	50.0		166	25-90			L
Benzo (k) fluoranthene	77.4	10.0	ug/L	50.0		155	25-95			L
bis (2-Chloroethoxy) methane	56.3	10.0	ug/L	50.0		113	25-110			L
bis (2-Chloroethyl) ether	59.4	10.0	ug/L	50.0		119	25-85			L
2,2'-Oxybis (1-chloropropane)	60.2	10.0	ug/L	50.0		120	25-95			L
bis (2-Ethylhexyl) phthalate	93.3	5.00	ug/L	50.0		187	30-125			L
Butyl benzyl phthalate	98.9	10.0	ug/L	50.0		198	30-115			L
Carbazole	69.6	2.50	ug/L	50.0		139	0-200			
Chrysene	76.5	10.0	ug/L	50.0		153	20-90			L
Dibenz (a,h) anthracene	91.4	10.0	ug/L	50.0		183	27-125			L
Dibenzofuran	ND	5.00	ug/L				0-200			
Diethyl phthalate	64.5	10.0	ug/L	50.0		129	25-120			L
Dimethyl phthalate	61.8	10.0	ug/L	50.0		124	25-125			
Di-n-butyl phthalate	50.9	10.0	ug/L	50.0		102	35-115			
Di-n-octyl phthalate	85.6	10.0	ug/L	50.0		171	25-105			L
Fluoranthene	67.3	10.0	ug/L	50.0		135	33-95			L
Fluorene	58.9	10.0	ug/L	50.0		118	15-97			L

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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### Batch BFL0423 - SW3510C/EPA600-MS

**LCS (BFL0423-BS1)**

Prepared: 12/12/2022 Analyzed: 12/13/2022

Hexachlorobenzene	63.8	1.00	ug/L	50.0		128	25-125			L
Hexachlorobutadiene	43.9	10.0	ug/L	50.0		87.9	25-125			
Hexachlorocyclopentadiene	32.7	10.0	ug/L	50.0		65.5	25-125			
Hexachloroethane	46.4	10.0	ug/L	50.0		92.8	25-125			
Indeno (1,2,3-cd) pyrene	92.5	10.0	ug/L	50.0		185	25-125			L
Isophorone	40.8	10.0	ug/L	50.0		81.5	10-110			
Naphthalene	45.1	0.10	ug/L	50.0		90.1	12-100			
Nitrobenzene	64.1	10.0	ug/L	50.0		128	30-97			
n-Nitrosodimethylamine	46.9	10.0	ug/L	50.0		93.7	10-85			L
n-Nitrosodi-n-propylamine	63.3	10.0	ug/L	50.0		127	12-97			L
n-Nitrosodiphenylamine	52.1	10.0	ug/L	50.0		104	12-97			L
p-Chloro-m-cresol	59.0	10.0	ug/L	50.0		118	10-91			
Pentachlorophenol	65.6	20.0	ug/L	50.0		131	30-109			L
Phenanthrene	75.5	10.0	ug/L	50.0		151	30-88			L
Phenol	29.7	10.0	ug/L	50.5		58.8	10-70			
Pyrene	79.7	10.0	ug/L	50.0		159	27-110			L
Pyridine	50.3	10.0	ug/L	50.0		101	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>132</i>		ug/L	<i>100</i>		<i>132</i>	<i>10-86</i>			<i>S</i>
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>52.6</i>		ug/L	<i>50.0</i>		<i>105</i>	<i>9-87</i>			<i>S</i>
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>84.9</i>		ug/L	<i>100</i>		<i>84.9</i>	<i>10-52</i>			<i>S</i>
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>69.7</i>		ug/L	<i>50.0</i>		<i>139</i>	<i>10-98.5</i>			<i>S</i>
<i>Surr: Phenol-d5 (Surr)</i>	<i>58.5</i>		ug/L	<i>100</i>		<i>58.5</i>	<i>5-33</i>			<i>S</i>
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>86.4</i>		ug/L	<i>50.0</i>		<i>173</i>	<i>27-133</i>			<i>S</i>

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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0446 - SW8151A/EPA600</b>										
<b>Blank (BFL0446-BLK1)</b> Prepared: 12/12/2022 Analyzed: 12/16/2022										
2,4,5-TP (Silvex)	ND	0.500	ug/L							
2,4-D	ND	0.500	ug/L							
<i>Surr: DCAA (Surr)</i>	<i>0.892</i>		ug/L	<i>1.11</i>		<i>80.3</i>	<i>48.5-134</i>			
<b>LCS (BFL0446-BS1)</b> Prepared: 12/12/2022 Analyzed: 12/16/2022										
2,4,5-T	0.526	0.500	ug/L	0.556		94.8	62-145			
2,4,5-TP (Silvex)	0.474	0.500	ug/L	0.556		85.4	62-132			
2,4-D	0.547	0.500	ug/L	0.556		98.4	74-139			
Dinoseb	0.575	0.500	ug/L	0.556		103	59-136			
Pentachlorophenol	0.600	0.500	ug/L	0.556		108	62-118			
<i>Surr: DCAA (Surr)</i>	<i>1.07</i>		ug/L	<i>1.11</i>		<i>96.2</i>	<i>70-130</i>			
<b>Matrix Spike (BFL0446-MS1)</b> Source: 22L0423-13 Prepared: 12/12/2022 Analyzed: 12/16/2022										
2,4,5-T	0.552	0.500	ug/L	0.556	BLOD	99.3	53-144			
2,4,5-TP (Silvex)	0.624	0.500	ug/L	0.556	BLOD	112	52-129			
2,4-D	0.815	0.500	ug/L	0.556	BLOD	147	53-126			M
Dinoseb	0.731	0.500	ug/L	0.556	BLOD	132	60-137			
Pentachlorophenol	0.690	0.500	ug/L	0.556	BLOD	124	52-124			M
<i>Surr: DCAA (Surr)</i>	<i>1.24</i>		ug/L	<i>1.11</i>		<i>112</i>	<i>70-130</i>			
<b>Matrix Spike Dup (BFL0446-MSD1)</b> Source: 22L0423-13 Prepared: 12/12/2022 Analyzed: 12/16/2022										
2,4,5-T	0.548	0.500	ug/L	0.556	BLOD	98.6	53-144	0.808	20	
2,4,5-TP (Silvex)	0.548	0.500	ug/L	0.556	BLOD	98.7	52-129	13.0	20	
2,4-D	0.791	0.500	ug/L	0.556	BLOD	142	53-126	3.02	20	M
Dinoseb	0.611	0.500	ug/L	0.556	BLOD	110	60-137	17.8	20	
Pentachlorophenol	0.578	0.500	ug/L	0.556	BLOD	104	52-124	17.6	20	

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Organochlorine Herbicides by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0446 - SW8151A/EPA600**

**Matrix Spike Dup (BFL0446-MSD1)**      **Source: 22L0423-13**      Prepared: 12/12/2022 Analyzed: 12/16/2022

<i>Surr: DCAA (Surr)</i>	1.08	ug/L	1.11	97.1	70-130
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Micro-extractables by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0454 - SW8011</b>										
<b>Blank (BFL0454-BLK1)</b>				Prepared & Analyzed: 12/12/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L							
1,2,3-Trichloropropane	ND	0.010	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L							
<b>LCS (BFL0454-BS1)</b>				Prepared & Analyzed: 12/12/2022						
1,2-Dibromoethane (EDB)	0.224	0.010	ug/L	0.250		89.5	65-135			
1,2,3-Trichloropropane	0.206	0.010	ug/L	0.250		82.4	65-135			
1,2-Dibromo-3-chloropropane (DBCP)	0.241	0.010	ug/L	0.250		96.4	65-135			
<b>Matrix Spike (BFL0454-MS1)</b>		<b>Source: 22L0423-13</b>		Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	0.207	0.010	ug/L	0.251	BLOD	82.5	65-135			
1,2,3-Trichloropropane	0.752	0.010	ug/L	0.251	BLOD	300	65-135			M
1,2-Dibromo-3-chloropropane (DBCP)	0.195	0.010	ug/L	0.251	BLOD	77.6	65-135			
<b>Matrix Spike Dup (BFL0454-MSD1)</b>		<b>Source: 22L0423-13</b>		Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	0.213	0.010	ug/L	0.256	BLOD	83.2	65-135	2.64	20	
1,2,3-Trichloropropane	0.759	0.010	ug/L	0.256	BLOD	297	65-135	0.849	20	M
1,2-Dibromo-3-chloropropane (DBCP)	0.201	0.010	ug/L	0.256	BLOD	78.5	65-135	3.07	20	
<b>Batch BFL0456 - SW8011</b>										
<b>Blank (BFL0456-BLK1)</b>				Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L							
1,2,3-Trichloropropane	ND	0.010	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L							
<b>LCS (BFL0456-BS1)</b>				Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	0.215	0.010	ug/L	0.250		85.9	65-135			
1,2,3-Trichloropropane	0.193	0.010	ug/L	0.250		77.2	65-135			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol 2nd Semi-Annual  
 Submitted To: Jennifer Robb

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Micro-extractables by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0456 - SW8011</b>										
<b>LCS (BFL0456-BS1)</b>										
				Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromo-3-chloropropane (DBCP)	0.219	0.010	ug/L	0.250		87.8	65-135			
<b>Duplicate (BFL0456-DUP1)</b>										
				Source: 22L0480-03 Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	ND	0.010	ug/L		BLOD			NA	20	
1,2,3-Trichloropropane	ND	0.010	ug/L		BLOD			NA	20	
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.010	ug/L		BLOD			NA	20	
<b>Matrix Spike (BFL0456-MS1)</b>										
				Source: 22L0480-01 Prepared: 12/12/2022 Analyzed: 12/13/2022						
1,2-Dibromoethane (EDB)	0.245	0.010	ug/L	0.254	BLOD	96.5	65-135			
1,2,3-Trichloropropane	0.645	0.010	ug/L	0.254	BLOD	254	65-135			M
1,2-Dibromo-3-chloropropane (DBCP)	0.248	0.010	ug/L	0.254	BLOD	97.6	65-135			

## Certificate of Analysis

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Head Space Analysis by GC - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0394 - SW5030B-MS</b>										
<b>Blank (BFL0394-BLK1)</b>			Prepared & Analyzed: 12/09/2022							
Ethane	ND	5.0	ug/L							
Ethene	ND	5.0	ug/L							
Methane	ND	5.0	ug/L							
<i>Surr: Acetylene (Surr)</i>	466		ug/L	432		108	70-130			
<i>Surr: Acetylene (Surr)</i>	466		ug/L	432		108	70-130			
<b>LCS (BFL0394-BS1)</b>			Prepared & Analyzed: 12/09/2022							
Methane	262	5.0	ug/L	266		98.6	70-130			
Ethene	467	5.0	ug/L	464		101	70-130			
Ethane	518	5.0	ug/L	500		104	70-130			
<i>Surr: Acetylene (Surr)</i>	462		ug/L	432		107	70-130			
<i>Surr: Acetylene (Surr)</i>	462		ug/L	432		107	70-130			
<b>Matrix Spike (BFL0394-MS1)</b>			<b>Source: 22L0423-13</b>		Prepared & Analyzed: 12/09/2022					
Methane	2450	5.0	ug/L	266	2280	64.3	70-130			M
Ethane	677	5.0	ug/L	500	BLOD	135	70-130			M
Ethene	607	5.0	ug/L	464	BLOD	131	70-130			M
<i>Surr: Acetylene (Surr)</i>	611		ug/L	432		141	70-130			S
<i>Surr: Acetylene (Surr)</i>	611		ug/L	432		141	70-130			S
<b>Matrix Spike Dup (BFL0394-MSD1)</b>			<b>Source: 22L0423-13</b>		Prepared & Analyzed: 12/09/2022					
Methane	2930	5.0	ug/L	266	2280	242	70-130	17.6	20	M
Ethene	622	5.0	ug/L	464	BLOD	134	70-130	2.46	20	M
Ethane	694	5.0	ug/L	500	BLOD	139	70-130	2.47	20	M
<i>Surr: Acetylene (Surr)</i>	612		ug/L	432		142	70-130			S
<i>Surr: Acetylene (Surr)</i>	612		ug/L	432		142	70-130			S

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0382 - No Prep Wet Chem</b>										
<b>Blank (BFL0382-BLK1)</b>				Prepared & Analyzed: 12/09/2022						
Sulfide	ND	1.00	mg/L							
<b>LCS (BFL0382-BS1)</b>				Prepared & Analyzed: 12/09/2022						
Sulfide	5.25	1	mg/L	5.00		105	80-120			
<b>Matrix Spike (BFL0382-MS1)</b>				Source: 22L0423-13 Prepared & Analyzed: 12/09/2022						
Sulfide	5.43	1.00	mg/L	5.00	BLOD	109	75-125			
<b>Matrix Spike Dup (BFL0382-MSD1)</b>				Source: 22L0423-13 Prepared & Analyzed: 12/09/2022						
Sulfide	5.11	1.00	mg/L	5.00	BLOD	102	75-125	6.07	20	
<b>Batch BFL0440 - No Prep IC</b>										
<b>Blank (BFL0440-BLK1)</b>				Prepared & Analyzed: 12/09/2022						
Chloride	ND	1.0	mg/L							
<b>LCS (BFL0440-BS1)</b>				Prepared & Analyzed: 12/09/2022						
Chloride	21.0	1	mg/L	20.0		105	90-110			
<b>LCS Dup (BFL0440-BSD1)</b>				Prepared & Analyzed: 12/09/2022						
Chloride	21.4	1	mg/L	20.0		107	90-110	1.87	15	
<b>Matrix Spike (BFL0440-MS1)</b>				Source: 22L0294-01RE1 Prepared & Analyzed: 12/09/2022						
Chloride	357	11.1	mg/L	111	242	104	90-110			
<b>Matrix Spike (BFL0440-MS2)</b>				Source: 22L0436-02 Prepared & Analyzed: 12/10/2022						
Chloride	100	1.1	mg/L	11.1	90.6	87.3	90-110			M

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0440 - No Prep IC</b>										
<b>Matrix Spike Dup (BFL0440-MSD1)</b>		<b>Source: 22L0294-01RE1</b>			<b>Prepared &amp; Analyzed: 12/09/2022</b>					
Chloride	329	11.1	mg/L	111	242	78.7	90-110	8.15	15	M
<b>Matrix Spike Dup (BFL0440-MSD2)</b>		<b>Source: 22L0436-02</b>			<b>Prepared &amp; Analyzed: 12/10/2022</b>					
Chloride	98.9	1.1	mg/L	11.1	90.6	73.9	90-110	1.50	15	M
<b>Batch BFL0447 - No Prep IC</b>										
<b>Blank (BFL0447-BLK1)</b>		<b>Prepared &amp; Analyzed: 12/12/2022</b>								
Chloride	ND	1.0	mg/L							
<b>LCS (BFL0447-BS1)</b>		<b>Prepared &amp; Analyzed: 12/12/2022</b>								
Chloride	19.9	1	mg/L	20.0		99.3	90-110			
<b>LCS Dup (BFL0447-BSD1)</b>		<b>Prepared &amp; Analyzed: 12/12/2022</b>								
Chloride	21.5	1	mg/L	20.0		108	90-110	8.18	15	
<b>Matrix Spike (BFL0447-MS1)</b>		<b>Source: 22L0423-13</b>			<b>Prepared &amp; Analyzed: 12/12/2022</b>					
Chloride	155	11.1	mg/L	111	37.0	106	90-110			
<b>Matrix Spike (BFL0447-MS2)</b>		<b>Source: 22L0482-03</b>			<b>Prepared &amp; Analyzed: 12/13/2022</b>					
Chloride	13.3	1.1	mg/L	11.1	2.6	96.5	90-110			
<b>Matrix Spike Dup (BFL0447-MSD1)</b>		<b>Source: 22L0423-13</b>			<b>Prepared &amp; Analyzed: 12/12/2022</b>					
Chloride	153	11.1	mg/L	111	37.0	105	90-110	1.18	15	
<b>Matrix Spike Dup (BFL0447-MSD2)</b>		<b>Source: 22L0482-03</b>			<b>Prepared &amp; Analyzed: 12/13/2022</b>					
Chloride	11.8	1.1	mg/L	11.1	2.6	83.3	90-110	11.8	15	M

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0553 - No Prep Wet Chem</b>										
<b>Blank (BFL0553-BLK1)</b>				Prepared & Analyzed: 12/14/2022						
Cyanide	ND	0.01	mg/L							
<b>LCS (BFL0553-BS1)</b>				Prepared & Analyzed: 12/14/2022						
Cyanide	0.26	0.01	mg/L	0.250		105	80-120			
<b>Matrix Spike (BFL0553-MS1)</b>				Source: 22L0495-03 Prepared & Analyzed: 12/14/2022						
Cyanide	0.22	0.01	mg/L	0.250	BLOD	88.1	80-120			
<b>Matrix Spike (BFL0553-MS2)</b>				Source: 22L0423-13 Prepared & Analyzed: 12/14/2022						
Cyanide	0.23	0.01	mg/L	0.250	BLOD	91.4	80-120			
<b>Matrix Spike Dup (BFL0553-MSD1)</b>				Source: 22L0495-03 Prepared & Analyzed: 12/14/2022						
Cyanide	0.24	0.01	mg/L	0.250	BLOD	96.4	80-120	8.97	20	
<b>Matrix Spike Dup (BFL0553-MSD2)</b>				Source: 22L0423-13 Prepared & Analyzed: 12/14/2022						
Cyanide	0.24	0.01	mg/L	0.250	BLOD	96.8	80-120	5.74	20	
<b>Batch BFL0614 - No Prep Wet Chem</b>										
<b>Blank (BFL0614-BLK1)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>Blank (BFL0614-BLK2)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>Blank (BFL0614-BLK3)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFL0614 - No Prep Wet Chem</b>										
<b>Blank (BFL0614-BLK4)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>Blank (BFL0614-BLK5)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>Blank (BFL0614-BLK6)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	ND	0.01	mg/L							
<b>LCS (BFL0614-BS1)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	0.24	0.01	mg/L	0.250		97.3	80-120			
<b>LCS (BFL0614-BS2)</b>				Prepared & Analyzed: 12/15/2022						
Cyanide	0.23	0.01	mg/L	0.250		93.9	80-120			
<b>Matrix Spike (BFL0614-MS1)</b>				Source: 22L0722-03 Prepared & Analyzed: 12/15/2022						
Cyanide	0.23	0.01	mg/L	0.250	BLOD	91.3	80-120			
<b>Matrix Spike (BFL0614-MS2)</b>				Source: 22L0480-07 Prepared & Analyzed: 12/15/2022						
Cyanide	0.22	0.01	mg/L	0.250	BLOD	87.7	80-120			
<b>Matrix Spike Dup (BFL0614-MSD1)</b>				Source: 22L0722-03 Prepared & Analyzed: 12/15/2022						
Cyanide	0.24	0.01	mg/L	0.250	BLOD	95.1	80-120	4.03	20	
<b>Matrix Spike Dup (BFL0614-MSD2)</b>				Source: 22L0480-07 Prepared & Analyzed: 12/15/2022						
Cyanide	0.24	0.01	mg/L	0.250	BLOD	95.6	80-120	8.64	20	

### Batch BFL0645 - No Prep Wet Chem

**Blank (BFL0645-BLK1)** Prepared & Analyzed: 12/15/2022

Alkalinity	ND	5.0	mg/L							
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## Certificate of Analysis

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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**Batch BFL0645 - No Prep Wet Chem**

**LCS (BFL0645-BS1)**

Prepared & Analyzed: 12/15/2022

Alkalinity	51.0	5.0	mg/L	50.0		102	80-120			
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**Duplicate (BFL0645-DUP1)**

**Source: 22L0423-13**

Prepared & Analyzed: 12/15/2022

Alkalinity	651	5.0	mg/L		647			0.616	20	
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## Certificate of Analysis

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### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
22L0423-01	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-02	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-03	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-03RE1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0673	AL20109
22L0423-04	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-05	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-06	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-07	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-08	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-09	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-10	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-11	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-12	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-13	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-13RE1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0673	AL20109
22L0423-14	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-14RE1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0673	AL20109
22L0423-15	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-15RE1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0673	AL20109
22L0423-16	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
22L0423-01RE1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-02RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-03RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-04RE1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-05RE1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-13RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-14RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: EPA200.8 R5.4</b>		
22L0423-15RE3	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
22L0423-16RE2	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method: No Prep IC</b>		
22L0423-14	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
22L0423-15	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
22L0423-16	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
22L0423-13	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method: No Prep Wet Chem</b>		
22L0423-01	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-02	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-03	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-04	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-05	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-13	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-14	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-15	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-16	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
22L0423-01	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
22L0423-02	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
22L0423-03	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
22L0423-13	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
22L0423-04	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
22L0423-05	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
22L0423-14	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
22L0423-15	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
22L0423-16	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
22L0423-13	50.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
22L0423-14	10.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
22L0423-15	10.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
22L0423-16	200 mL / 200 mL	SM22 2320B-2011	BFL0645	SFL0595	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-MS</b>	
22L0423-01	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-02	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-03	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-04	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-13	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
22L0423-05	1070 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040
22L0423-14	1070 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040
22L0423-15	1070 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040
22L0423-16	1070 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
22L0423-01	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-02	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-03	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-04	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-05	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
22L0423-06	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-07	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-08	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-09	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-10	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-11	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-12	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-13	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-14	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-15	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-16	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-17	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
22L0423-13	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-14	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-15	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-16	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-17	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
22L0423-14RE1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034
22L0423-15RE1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
22L0423-01	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-02	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-03	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-04	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-05	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-13	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
22L0423-14	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-15	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
22L0423-16	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
22L0423-01	59.8 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-02	59.4 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-03	59.5 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-04	60.1 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-05	60.1 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-06	58.9 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-07	58.7 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-08	58.3 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-09	58.5 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-10	58.7 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-11	58.9 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-12	58.5 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-13	59.8 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-14	59.1 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-15	59.4 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
22L0423-16	59.6 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178
22L0423-17	59.5 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22L0423-01	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-02	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
22L0423-03	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-04	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-05	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-13	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
22L0423-14	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0766	AK20122
22L0423-15	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0766	AK20122
22L0423-16	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122

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### QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>EPA200.8 R5.4</b>	
BFL0428-BLK1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-BS1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-MS1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-MS2	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-MSD1	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0428-MSD2	50.0 mL / 50.0 mL	SW6020B	BFL0428	SFL0657	AL20106
BFL0762-BLK1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
BFL0762-BS1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
BFL0762-MS1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
BFL0762-MS2		SW6020B	BFL0762		
BFL0762-MSD1	50.0 mL / 50.0 mL	SW6020B	BFL0762	SFL0744	AL20119
BFL0762-MSD2		SW6020B	BFL0762		

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
BFL0440-BLK1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-BS1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-BSD1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-MS1	0.450 mL / 5.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-MS2	4.50 mL / 5.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-MSD1	0.450 mL / 5.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0440-MSD2	4.50 mL / 5.00 mL	EPA300.0 R2.1	BFL0440	SFL0392	AB20157
BFL0447-BLK1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep IC</b>	
BFL0447-BS1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-BSD1	1.00 mL / 1.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-MS1	0.450 mL / 5.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-MS2	4.50 mL / 5.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-MSD1	0.450 mL / 5.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157
BFL0447-MSD2	4.50 mL / 5.00 mL	EPA300.0 R2.1	BFL0447	SFL0436	AB20157

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFL0382-BLK1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0382-BS1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0382-MRL1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0382-MS1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0382-MSD1	6.00 mL / 6.00 mL	SW9215	BFL0382	SFL0339	
BFL0553-BLK1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-BS1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MRL1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MS1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MS2	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MSD1	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0553-MSD2	6.00 mL / 6.00 mL	SW9012B	BFL0553	SFL0524	AL20085
BFL0614-BLK1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK3	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK4	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK5	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BLK6	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-BS1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095



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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFL0614-BS2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL3	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL4	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MRL5	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MS1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MS2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MSD1	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0614-MSD2	6.00 mL / 6.00 mL	SW9012B	BFL0614	SFL0571	AL20095
BFL0645-BLK1	200 mL / 200 mL	SM22 2320B-2011	BFL0645	SFL0595	
BFL0645-BS1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
BFL0645-DUP1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	
BFL0645-MRL1	50.0 mL / 50.0 mL	SM22 2320B-2011	BFL0645	SFL0595	

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-MS</b>	
BFL0373-BLK1	1000 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
BFL0373-BS1	1000 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
BFL0373-MS1	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0426	AI20189
BFL0373-MSD1	1070 mL / 1.00 mL	SW8270E	BFL0373	SFL0425	AI20189
BFL0423-BLK1	1000 mL / 1.00 mL	SW8270E	BFL0423	SFL0372	AL20040
BFL0423-BS1	1000 mL / 1.00 mL	SW8270E	BFL0423	SFL0470	AL20040

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
BFL0391-BLK1	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
BFL0391-BS1	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
BFL0391-MS1	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
BFL0391-MSD1	5.00 mL / 5.00 mL	SW8260D	BFL0391	SFL0352	AL20034
BFL0394-BLK1	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
BFL0394-BS1	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
BFL0394-MS1	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
BFL0394-MSD1	5.00 mL / 5.00 mL	RSK175M	BFL0394	SFL0366	AI20005
BFL0436-BLK1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034
BFL0436-BS1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034
BFL0436-DUP1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034
BFL0436-MS1	5.00 mL / 5.00 mL	SW8260D	BFL0436	SFL0414	AL20034

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Metals (Total) by EPA 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
BFL0592-BLK1	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
BFL0592-BS1	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
BFL0592-MS1	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100
BFL0592-MSD1	20.0 mL / 20.0 mL	SW7470A	BFL0592	SFL0594	AL20100

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
BFL0454-BLK1	60.0 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
BFL0454-BS1	60.0 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
BFL0454-MS1	59.8 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
BFL0454-MSD1	58.7 mL / 2.00 mL	SW8011	BFL0454	SFL0424	AJ20178
BFL0456-BLK1	60.0 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178
BFL0456-BS1	60.0 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Micro-extractables by GC/ECD</b>			<b>Preparation Method: SW8011</b>		
BFL0456-DUP1	59.4 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178
BFL0456-MS1	59.1 mL / 2.00 mL	SW8011	BFL0456	SFL0474	AJ20178
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
BFL0446-BLK1	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
BFL0446-BS1	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
BFL0446-MS1	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122
BFL0446-MSD1	900 mL / 5.00 mL	SW8151A	BFL0446	SFL0672	AK20122

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### Certified Analyses included in this Report

Analyte	Certifications
<b><i>EPA300.0 R2.1 in Non-Potable Water</i></b>	
Chloride	VELAP,NCDEQ,PADEP,WVDEP
<b><i>RSK175M in Non-Potable Water</i></b>	
Ethane	VELAP
Ethene	VELAP
Methane	VELAP
<b><i>SM22 2320B-2011 in Non-Potable Water</i></b>	
Alkalinity	VELAP,WVDEP,PADEP
<b><i>SW6020B in Non-Potable Water</i></b>	
Antimony	VELAP,NCDEQ,WVDEP
Arsenic	VELAP,WVDEP
Barium	VELAP,WVDEP
Beryllium	VELAP,WVDEP
Cadmium	VELAP,WVDEP
Chromium	VELAP,WVDEP
Cobalt	VELAP,WVDEP
Copper	VELAP,WVDEP
Lead	VELAP,WVDEP
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP
Silver	VELAP,WVDEP
Thallium	VELAP,WVDEP
Tin	VELAP,WVDEP
Vanadium	VELAP,WVDEP
Zinc	VELAP,WVDEP
<b><i>SW7470A in Non-Potable Water</i></b>	

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Date Issued: 12/30/2022 11:56:27AM

### Certified Analyses included in this Report

Analyte	Certifications
Mercury	VELAP,NCDEQ,WVDEP
<b>SW8011 in Non-Potable Water</b>	
1,2-Dibromoethane (EDB)	VELAP,NCDEQ
1,2,3-Trichloropropane	VELAP,NCDEQ
1,2-Dibromo-3-chloropropane (DBCP)	VELAP,NCDEQ
<b>SW8151A in Non-Potable Water</b>	
2,4,5-TP (Silvex)	VELAP,PADEP,NCDEQ,WVDEP
2,4-D	VELAP,PADEP,NCDEQ,WVDEP
<b>SW8260D in Non-Potable Water</b>	
1,1,1,2-Tetrachloroethane	VELAP,NCDEQ,WVDEP
1,1,1-Trichloroethane	VELAP,NCDEQ,WVDEP
1,1,2,2-Tetrachloroethane	VELAP,NCDEQ,WVDEP
1,1,2-Trichloroethane	VELAP,NCDEQ,WVDEP
1,1-Dichloroethane	VELAP,NCDEQ,WVDEP
1,1-Dichloroethylene	VELAP,NCDEQ,WVDEP
1,2,3-Trichloropropane	VELAP,NCDEQ,WVDEP
1,2-Dichlorobenzene	VELAP,NCDEQ,WVDEP
1,2-Dichloroethane	VELAP,NCDEQ,WVDEP
1,2-Dichloropropane	VELAP,NCDEQ,WVDEP
1,4-Dichlorobenzene	VELAP,NCDEQ,WVDEP
2-Butanone (MEK)	VELAP,NCDEQ,WVDEP
2-Hexanone (MBK)	VELAP,NCDEQ,WVDEP
4-Methyl-2-pentanone (MIBK)	VELAP,NCDEQ,WVDEP
Acetone	VELAP,NCDEQ,WVDEP
Acrylonitrile	VELAP,NCDEQ,WVDEP
Benzene	VELAP,NCDEQ,WVDEP
Bromochloromethane	VELAP,NCDEQ,WVDEP

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Analyte	Certifications
Bromodichloromethane	VELAP,NCDEQ,WVDEP
Bromoform	VELAP,NCDEQ,WVDEP
Bromomethane	VELAP,NCDEQ,WVDEP
Carbon disulfide	VELAP,NCDEQ,WVDEP
Carbon tetrachloride	VELAP,NCDEQ,WVDEP
Chlorobenzene	VELAP,NCDEQ,WVDEP
Chloroethane	VELAP,NCDEQ,WVDEP
Chloroform	VELAP,NCDEQ,WVDEP
Chloromethane	VELAP,NCDEQ,WVDEP
cis-1,2-Dichloroethylene	VELAP,NCDEQ,WVDEP
cis-1,3-Dichloropropene	VELAP,NCDEQ,WVDEP
Dibromochloromethane	VELAP,NCDEQ,WVDEP
Dibromomethane	VELAP,NCDEQ,WVDEP
Dichlorodifluoromethane	VELAP,NCDEQ,WVDEP
Ethylbenzene	VELAP,NCDEQ,WVDEP
Iodomethane	VELAP,NCDEQ,WVDEP
m+p-Xylenes	VELAP,NCDEQ,WVDEP
Methylene chloride	VELAP,NCDEQ,WVDEP
o-Xylene	VELAP,NCDEQ,WVDEP
Styrene	VELAP,NCDEQ,WVDEP
Tetrachloroethylene (PCE)	VELAP,NCDEQ,WVDEP
Toluene	VELAP,NCDEQ,WVDEP
trans-1,2-Dichloroethylene	VELAP,NCDEQ,WVDEP
trans-1,3-Dichloropropene	VELAP,NCDEQ,WVDEP
trans-1,4-Dichloro-2-butene	VELAP,NCDEQ,WVDEP
Trichloroethylene	VELAP,NCDEQ,WVDEP
Trichlorofluoromethane	VELAP,NCDEQ,WVDEP
Vinyl acetate	VELAP,NCDEQ,WVDEP

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Analyte	Certifications
Vinyl chloride	VELAP,NCDEQ,WVDEP
Xylenes, Total	VELAP,NCDEQ,WVDEP
<b>SW8270E in Non-Potable Water</b>	
bis (2-Ethylhexyl) phthalate	VELAP,NCDEQ,WVDEP
Diethyl phthalate	VELAP,NCDEQ,WVDEP
Di-n-butyl phthalate	VELAP,NCDEQ,WVDEP
Phenol	VELAP,NCDEQ,WVDEP
<b>SW9012B in Non-Potable Water</b>	
Cyanide	VELAP,WVDEP
<b>SW9215 in Non-Potable Water</b>	
Sulfide	VELAP

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2023
NC	North Carolina DENR	495	07/31/2023
NCDEQ	North Carolina DEQ	495	07/31/2023
NCDOH	North Carolina Department of Health	51714	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

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### Qualifiers and Definitions

CI	Residual Chlorine or other oxidizing agent was detected in the container used to analyze this sample.
DS	Surrogate concentration reflects a dilution factor.
E	Estimated concentration, outside calibration range
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
P	Duplicate analysis does not meet the acceptance criteria for precision
S	Surrogate recovery was outside acceptance criteria
RPD	Relative Percent Difference
Qual	Qualifiers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.