Recommendation for Reclassification (Closure) of the Washington South, Kansas, Site

Environmental Science Division

United States Department of Agriculture

Work sponsored by Commodity Credit Corporation,
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by
Applied Geosciences and Environmental Management Section
Environmental Science Division, Argonne National Laboratory

November 2017

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Notation

AGEM	Applied Geosciences and Environmental Management
BGL	below ground level
CCC	Commodity Credit Corporation
EPA	U.S. Environmental Protection Agency
ft	foot (feet)
gpm	gallon(s) per minute
IGA	Intergovernmental Agreement
KDHE	Kansas Department of Health and Environment
KDWW	Kansas Drinking Water Watch
KGS	Kansas Geological Survey
KHEL	KDHE Division of Health and Environmental Laboratories
L	liter(s)
mi	mile(s)
MCL	maximum contaminant level
mL	milliliter(s)
PWS	public water supply
µg/kg	microgram(s) per kilogram
QA/QC	quality assurance/quality control
RWD	Rural Water District
SE	site evaluation
USDA	U.S. Department of Agriculture
VOC	volatile organic compound
WCA	Washington County Assessor

Recommendation for Reclassification (Closure) of the Washington South, Kansas, Site

1 Introduction

The City of Washington is located in central Washington County, Kansas, approximately 50 mi northwest of Manhattan, Kansas, and 22 mi west of Marysville (Figure 1.1). From 1950 until the mid-1970s, the Commodity Credit Corporation (CCC) of the U.S. Department of Agriculture (USDA) operated a grain storage facility on private property located approximately 0.5 mi south of the town, in an area that has subsequently been developed by the city as an industrial park.

The Kansas Department of Health and Environment (KDHE) conducted a site evaluation (SE) at the former Washington South USDA facility in December 2013, and detected carbon tetrachloride contamination in four of seven shallow groundwater samples that were collected on or adjacent to the former facility (KDHE 2014a). The reported concentration of carbon tetrachloride in one sample (5.9 µg/L) exceeded the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) and KDHE risk-based target of 5.0 µg/L for this compound in drinking water.

As a result of these findings, the KDHE requested in May 2014 that the Washington South grain bins site be added to Appendix A, Part A (sites that might require additional investigation) of the Intergovernmental Agreement (IGA) between the KDHE and the Farm Service Agency of the USDA. In response, the CCC/USDA expressed concerns regarding the quality assurance/quality control (QA/QC) procedures for sample handling and analysis during the December 2013 site evaluation. The CCC/USDA requested an opportunity to resample groundwater at the locations where carbon tetrachloride had been detected, before acting on the KDHE's request to add this site to the IGA (CCC/USDA 2014). The KDHE acknowledged the request and approved additional groundwater sampling at the site, prior to a final decision to add Washington South to the IGA (Argonne 2014; KDHE 2014b, 2015a). The approved groundwater sampling was performed by the CCC/USDA in December, 2015.

On the basis of technical information presented in this report, the CCC/USDA is requesting that the former Washington South grain storage facility be reclassified as resolved, in general accord with criteria for site closure set forth in KDHE policy BER-RS-024 (KDHE 2015b).

FIGURE 1.1 Location of Washington, Kansas

2 Site Background

2.1 History of the Former CCC/USDA Facility and Adjacent Properties

The former CCC/USDA grain storage facility was located approximately 0.5 mi south of Washington, on the east side of State Highway 15 (Quivira Road; Figure 2.1). Property records and aerial photographs documenting the history of the former bin site are in Appendix A.

Documentation obtained from the Washington County Register of Deeds indicates that the CCC/USDA initially leased an approximate 3-acre tract of land at this location for the construction of grain bins from property owners Chester and Clara Simon, for the period July 29, 1950, to July 29, 1965. An aerial photograph of the site shows that by July 1957, 48 round grain storage bins had been erected (Appendix A). In 1961, this agreement was replaced by a lease for the same parcel of land, executed between the CCC/USDA and Ralph and Hazel Davison, for the 5-year period from July 31, 1961, to July 31, 1966, with a provision for renewal of the lease for an additional five years. (The Davisons acquired the parcel occupied by the CCC/USDA facility as part of a larger tract of land obtained from Mr. Simon in May 1959.) Extensions of the 1961 lease, first through July 31, 1971, and then through July 31, 1976, were subsequently granted to the CCC/USDA by Davison Grain Company (Hazel Davison, President).

By July 1962, the facility had reached its maximum known capacity of 88 round grain storage bins, in 10 parallel rows, and remained in this configuration until at least September 1969 (Appendix A and Figure 2.2). The bins are reported to have been constructed with metal floors over sand foundations (CCC/USDA 1997).

In Figure 2.2, the boundary of the parcel leased by the CCC/USDA throughout the periods noted above has been plotted as accurately as possible, based on the legal descriptions provided in the leases. Figure 2.2 indicates that, although the areal extent of the property occupied by the CCC/USDA bins is consistent with the legal description of the leased parcel, the location of the bin site appears somewhat offset from the parcel location defined in the leases. This apparent discrepancy cannot be resolved from the legal documents available for the site; however, for the purposes of this report the photograph presented in Figure 2.2 is interpreted to provide the most accurate evidence of the locations of the former CCC/USDA bins as actually constructed.

No additional lease renewal or termination documents (beyond 1976) pertaining to the former CCC/USDA facility are on file with the Register of Deeds; however, aerial photographs

demonstrate that most (73) of the grain storage bins had been removed from the site by September 1978, and by July 1981 the facility had been completely dismantled. The majority of the land formerly occupied by the CCC/USDA facility has remained a vacant, grassy area since that time, although development of several adjacent properties has encroached on the former facility in more recent years (Appendix A).

The land formerly occupied by the CCC/USDA bins, as well as much of the neighboring land, was deeded to the City of Washington by Hazel and Larry Davison in April 1991 (Appendix A) to in part facilitate the development of an industrial park. The industrial park lies outside the main municipal boundary of Washington, but was annexed by the City in 2012. The present distribution of parcels in the immediate vicinity of the former CCC/USDA facility is illustrated in Figure 2.3.

The former CCC/USDA facility occupied portions of two parcels of land that are currently owned by Bradford Built, LLC (B. Portenier, owner), a company that manufactures steel truck beds. A gravel road (Progress Street) running north-south through the Bradford properties crosses the western portion of the former bin site. Aerial photographs indicate that construction of the buildings now occupied by the Bradford plant (west of Progress Street) began between 1996 and 2005; Bradford Built obtained ownership (from the City) of the central, vacant parcel of land formerly occupied by most of the CCC/USDA bins in April 2014. The eastern margin of the former CCC/USDA facility lies on property now owned (since 1996) by Midwest Materials by Mueller, Inc., a sand, gravel, and concrete products manufacturer (Figure 2.3).

Figure 2.3 shows that grain storage structures unrelated to the former CCC/USDA activities are present on two parcels located near the former CCC/USDA facility. To the southeast, several large, circular grain bins and associated warehouse buildings are located on property owned (since 2011) by the United Farmers Cooperative of York, Nebraska; in 2014, United Farmers merged with (and now operates as) Central Valley Ag. Historic aerial photographs show that the construction of these facilities occurred between 1996 and 2005; records on file with the Register of Deeds indicate that in September 1998, NCKP, LLC acquired this parcel from the City. Figure 2.2 shows that several earlier structures, including a possible grain (or feed storage) silo and livestock paddocks, were present at this location by 1969. These facilities remained unchanged until at least 1985, but activities at the site appear to have declined by 1991 (Appendix A). Records indicate that prior to 1991 this property was owned by Davison Grain Company-Hazel Davison; in May 1991, this parcel was included in the land deeded to the City as discussed above.

Figure 2.2 shows that numerous grain storage structures, including several large round grain bins, an elevator, and two Quonset buildings have been present on property on the west side of Highway 15 (Quivira Road), approximately 600-700 ft to the west-southwest and topographically upslope from the former CCC/USDA facility, since at least September 1969; tax information suggests that construction of the facilities at this location began by 1964 (WCA 2017). This property was privately owned by Mr. and Mrs. Richard Johnson from October 1963 until November 1986, at which time it was conveyed to the Farmers Cooperative Elevator Association of Greenleaf, Kansas. In January 2008, the property was conveyed to current owner The Mill, LLC. The detailed history of grain storage and/or potential fumigant usage at this facility is not known; however, the photographic evidence indicates that grain storage structures were present at this location from at least 1969 to the present, and hence during time (until 1986) in which fumigant mixtures containing carbon tetrachloride were commonly used by both the CCC/USDA and the private sector for the treatment of grain in storage.

2.2 Geologic Setting

2.2.1 Regional Geology and Hydrogeology

Detailed information on the hydrogeology of the Washington area is limited; however, more regional data provide an overview of the geologic and hydrogeologic factors influencing the availability of groundwater near the city and the former CCC/USDA facility (Walters 1954; Walters and Bayne 1959; Merriam 1963; Wing 1930). The geology of Washington County is illustrated in Figure 2.4 (KGS 2017a).

Washington County lies at the eastern margin of the Smoky Hills physiographic region of Kansas (Walters and Bayne 1959). In this region, generally westward-dipping Cretaceous shales, limestones, and lesser sandstones of marginal to deep marine origin are exposed at outcrop or locally underlie relatively thin, wind-blown deposits of Quaternary age silt (loess) and/or locally thicker, fluvial and alluvial sand and gravel deposits of Quaternary and Recent age along the larger rivers and streams that dissect the area. Where exposed, the more resistant Cretaceous units cap multiple ridges, buttes, and mounds that are characteristic of this region, within a generally rolling topography. In the easternmost approximate third of Washington County, older shales and limestones of the Permian Sumner and Chase groups comprise the surficial/outcropping bedrock units.

Figure 2.4 shows that a majority of Washington County, including the City of Washington, is directly underlain by the Cretaceous Dakota formation. Although the Dakota formation is frequently identified by the presence of variably thick and laterally discontinuous beds and lenses of sandstone (because of their resistance to erosion and hence topographic expression), it consists predominantly of silty-sandy shale. Both the occurrence and thickness of sandstone lenses in the Dakota formation (together with several localized, underlying Cretaceous shaly to sandy intervals) can vary significantly over short distances, from less than 5% to more than 50% of the total lithologic sequence in these units (Whittemore et al. 2014). The estimated thickness of the Dakota formation in Washington County, extrapolated from data available from adjacent Clay County (to the south), ranges from 0-165 ft (Walters and Bayne 1959). Limited lithologic data available for logs of several deep wells in the vicinity of the former Washington South CCC/USDA facility (Table 2.1, Figure 2.5) indicate that shale, limestone, and sandstone bedrock is locally present to a depth of at least 300 ft below ground level (BGL).

The sandstones of the Dakota formation are recognized as generally capable of producing moderate quantities of relatively good quality groundwater to wells in the Washington County area. Where thicker sandstones are locally developed, greater producing capacities are possible. Across Washington and the adjacent counties, the Dakota aquifer is typically unconfined, and represents the principle source of groundwater that has been developed for municipal, irrigation, and domestic purposes, accounting for more than 80% of the documented groundwater production in Washington County as of 2010 (Whittemore et al. 2014).

2.2.2 Local Geology and Hydrogeology

The former CCC/USDA facility lies along the gently sloping crest (elevation approximately 1,320 ft above mean sea level) of a local, southwest-northeast trending topographic “high” bordered to the north by Mill Creek, and to the south and east by Ash Creek (Figure 2.5). Together, these perennial streams form local surface drainage divides, capturing runoff from the former site to the north, east, and south-southeast.

Investigations at the former facility conducted by the KDHE using direct-push technology identified loamy surficial soils and unconsolidated, predominantly sandy deposits to refusal depths of 22-27 ft BGL, interpreted by the KDHE to represent contact with underlying Dakota formation shale bedrock. At one location only, to the west and topographically upslope from the former facility, a refusal depth of 48 ft BGL was reported (KDHE 2014a). The unconsolidated sediments

penetrated were interpreted by the KDHE to represent possible alluvial deposits associated with the adjacent Mill and Ash Creeks. Lithologic data available for driller's logs from wells in the 9-section area surrounding the former CCC/USDA facility (Figure 2.5, Table 2.1) suggest that unconsolidated clayey to sandy or gravelly materials, ranging in thickness from 7 ft to 53 ft, are variably encountered overlying predominantly shale or limestone bedrock throughout this area. Although the data for deeper wells are limited, significant thicknesses of bedrock sandstones were locally identified at one location only (Carlson Heating and Air geothermal well; Table 2.1 and Figure 2.5).

Groundwater level data for wells in the vicinity of Washington and the former CCC/USDA facility (Figure 2.5, Table 2.1) are limited, and reflect a range of screened depth intervals and dates of measurement, and hence are not suitable for the determination of potential local groundwater flow direction(s) at the former CCC/USDA facility. It may be noted from Table 2.1, however, that reported depths to groundwater throughout the Washington area (Figure 2.5) are fairly shallow (generally less than 32 ft BGL), regardless of well location for wells that are screened in the unconsolidated materials.

The KDHE reported that very little groundwater was encountered in the unconsolidated sediments penetrated beneath and near the former CCC/USDA facility, during sampling performed at the site in 2013. Field notes provided by the KDHE indicate that groundwater entry into the direct-push rods and sampler employed was generally slow, despite the reported sandy character of the sediments, at several locations requiring overnight for sufficient groundwater to accumulate (in the direct-push rods) to permit sampling for volatile organic compounds (VOCs). No stabilized groundwater levels were reported (KDHE 2014a).

In discussing the former CCC/USDA site, the KDHE inferred potential groundwater flow directions to the east-northeast and/or southeast, under the possible influence of local topographic control. Figure 2.5 suggests that downcutting of up to 30 ft or more, relative to the surface elevation of the former CCC/USDA facility, is observed along both of the stream channels (Mill and Ash Creeks) bordering the former site to the north, east, and south. Given the identified shallow depths to bedrock (22-27 ft BGL) and reported lack of groundwater beneath the former facility (KDHE 2014a), it is reasonable to interpret that these streams represent natural hydraulic limits to downgradient groundwater flow in the unconsolidated sediments beneath and in the immediate vicinity of the former facility.

2.3 Washington Water Supply and Private Wells

Residents of Washington and the surrounding area obtain water for domestic use from the Washington municipal distribution system (Kansas water system number KS2020101), from Washington County Rural Water District 1 (RWD #1; KS2020107), or from private wells. Groundwater is the exclusive source of water for domestic use.

The Washington municipal water system obtains groundwater from three public water supply (PWS) wells, located approximately 4 mi northwest of the town (Argonne 2017). The wells are completed to depths of 100-121 ft BGL, with reported pumping capacities for the individual wells ranging from 88-295 gpm (KDWW 2017). The depths of the wells suggest that they are completed in the Dakota formation (or locally deeper Cretaceous deposits), as the underlying Permian shales and limestones in this area are generally recognized as unproductive.

Washington County RWD #1 currently obtains groundwater from 16 wells in three well fields, located (1) approximately 4 mi northwest of Washington, (2) at Lanham, and (3) at Marysville, Kansas.

In 2013, the KDHE identified six domestic wells within one mile of the former Washington South facility, on the basis of water well completion records (Form WWC-5) on file at that time with the Kansas Geologic Survey (KGS; for wells registered in 1979 or later). A current search of these records identified nine private domestic wells that potentially could be used for the supply of drinking water within the approximate nine square mile area surrounding the former CCC/USDA facility (Table 2.1 and Figure 2.5; KGS 2017b). The wells range in reported depth from 35-120 ft BGL. The closest of these wells (J. Fencil and 3MK Pork LLC) are located approximately one third to one half a mile to the south and north, respectively, of the former facility. These wells are separated from the facility by the drainage divides formed by Ash Creek to the south and east and Mill Creek to the north of the former facility, as are all other domestic wells identified in the area illustrated (Figure 2.5).

TABLE 2.1 Summary information for wells identified in the nine-section area surrounding the former Washington South CCC/USDA facility.^a

KGS Well ID	T-R-S ^b	Location ^c	Registered Owner	Well Use	Date	Status	Well Depth ft BGL ^d	Screened Interval		Estimated Depth to Bedrock, ft BGL	Static Depth to Water, ft BGL	Estimated Yield, gpm ^f
								ft BGL	Lithology ^e			
332500	3S-3E-1	NE NE SW	Mid-Continent Farms	Domestic	8/29/02	Constructed	90	30-40/80-90	snd/sh	40	31	40
90345	3S-3E-1	NW SE SE	Rollman, Bob	Domestic	10/29/75	Constructed	40	20-40	snd, grv, cly	32?	12	50
90347	3S-3E-2	NE SW SW	Stigge, John	Domestic	9/12/79	Constructed	56	36-56	snd, cly	45	25	25
399324	3S-3E-2	SE SW SE	Smith, Roger	Domestic	8/4/06	Plugged	47	—	—	—	20	—
90348	3S-3E-2	NE SW SW	Stigge Jr, John	Domestic	11/30/77	Constructed	40	20-40	grv, sh	38	20	10
90366	3S-3E-12	NE NE NE	Moffitt, Jim	Domestic	5/16/85	Constructed	51	31-51	snd- cly, ls	39	30	30
111831	3S-3E-12	SE NW NW	3MK Pork LLC	Domestic	11/27/96	Constructed	60	24-38 / 59-60	snd, sh / sh	28	16	10
111830	3S-3E-12	SW NW NE	3MK Pork LLC	Domestic	12/6/96	Constructed	60	22-37 / 59-60	snd, cly, ls / sh	33	16	12
105324	3S-3E-12	SW NW NE	3MK Pork L.L.C.	Domestic	2/27/96	Constructed	120	71-85 / 119-120	sh, ls / sh	7	62	15
90370	3S-3E-13	NW NW NW	Fencil, Joe	Domestic	6/24/91	Constructed	35	25-35	snd, grv	> 35	22	10
327835	3S-3E-13	NW SW NW	Taylor, Mary J.	Domestic	11/15/01	Plugged	32	—	—	—	16	—
114487	3S-3E-13	S2 NE	Washington County Public Works	Domestic	3/24/97	Plugged	29	—	—	—	18	—
90385	3S-3E-7	SE SE SW	Swain, Larry	Domestic	6/15/93	Constructed	80	65-80	ss?, grv	68?	55	30
314963	3S-3E-1	NE NW NW	Lillie, Ted	Lawn and Garden	7/26/00	Constructed	62	42-62	snd, ls, sh	44	23	15
499754	3S-3E-12	NW SE NW	Keesecker, Dale	Livestock	3/1/16	Constructed	106	10-106	cly, ls, sh	34	6	—
90338	3S-3E-1	SE SE SE	Kansas Department of Transportation	Public Water Supply	12/31/81	Plugged	—	—	—	—	—	—
435854	3S-3E-2	NW NE	Miller, Richard	(unstated)/abandoned	4/22/10	Plugged	37	—	—	—	11	—
305327	3S-3E-2	NE SE SE	Bob Locker Plant	Industrial (coolant water)	5/4/99	Constructed	72	32-72	cly, grv, sh	53	23	22.5
480114	3S-3E-11	NW NW NE NE	Carlson Heating and Air	Geothermal	5/30/14	Constructed	300	none	ss, sh	25	—	—
15 wells	3S-3E-1,2,11,12	Fuel Station	Leiszler Oil	Monitoring well	1991, 2011	Constructed	29.5 to 40	varib 15-40	cly, slt, snd	—	22.4 to 30.3	—
13 wells	3S-3E-2,11	Fuel Station	Gas-n-Shop	Monitoring well	2000	Constructed	30	10-30	slt-cly, snd	—	19.7 to 25.0	—
21 wells	3S-3E-2	Fuel Area	Twin State Energy/Farmers Oil	Monitoring or SVE well	1998, 1999	Constructed	15 to 35	varib 5-35	cly, snd, grv	—	15.5 to 26.9	—

^a Data as reported in the Kansas Geologic Survey Water Well Completion Records (WWC5) Database; available at: <http://www.kgs.ku.edu/Magellan/WaterWell/index.html>. Accessed in August 2017.

^b T-R-S, township, range, and section.

^c Location in section as quarter-quarter-quarter.

^d BGL, below ground level.

^e Lithology definitions: snd, sand; slt, silt; grv, gravel; cly, clay; ls, limestone; sh, shale; and ss, sandstone.

^f gpm, gallons per minute.

FIGURE 2.1 Location of the former CCC/USDA facility south of Washington, Kansas

FIGURE 2.2 Distribution of grain storage structures on and near the former Washington South CCC/USDA facility in September 1969, and limits of the CCC/USDA parcel determined from the legal descriptions provided in available lease documents.

Qal₁ - Recent alluvium. Qal₂ - Quaternary alluvium. Ql - Quaternary loess. Qgd - Quaternary glacial drift.
Kgg - Cretaceous Greehorn/Graneros. Kd - Cretaceous Dakota Fm. Ps - Permian Sumner Grp.
Pc - Permian Chase Grp.

FIGURE 2.4 Geologic map of Washington County, Kansas. Modified from KGS (2017).

FIGURE 2.5 Locations of the former CCC/USDA facility and identified wells in the vicinity of Washington, Kansas.

3 Summary of Investigations

3.1 KDHE Routine Sampling of the Washington Municipal Supply (1986-2017)

The KDHE conducts periodic sampling of the PWS systems in Kansas. Under this program, water from the Washington municipal distribution system and from the PWS wells has been historically sampled for multiple contaminants, including VOCs. Since 1996, the water from the distribution system has been sampled for VOCs analyses once every three years. From 1986 to 1996, wells PWS1-3 were sampled individually for VOCs, once every five years. The most recent sampling event for which data are available occurred in July 2017; no carbon tetrachloride contamination has been reported in the municipal supply or at the producing wells to-date (KDWW 2017).

3.2 KDHE Private Well Sampling

As part of a cooperative program implemented by the CCC/USDA and the KDHE to investigate for possible impacts of carbon tetrachloride contamination on private wells located near former CCC/USDA grain storage sites in Kansas, three private wells in the vicinity of the former Washington South facility were sampled by the KDHE for VOCs analyses in April 1998. The three wells are described by the KDHE (2014a) as (1) monitoring well MW-12, associated with a leaking underground storage tank at the Short Stop fuel station (Figure 2.5 and Table 2.1), (2) the Mueller Sand and Gravel industrial well, and (3) the Keesecker domestic well. The exact locations of these wells are unknown to the CCC/USDA; their approximate locations, based on KGS registration data for well MW-12 and information recorded by the KDHE at the time of sampling for the Mueller and Keesecker wells (KGS 2017b; KDHE 1998), are estimated in Figure 3.1. Registration information for the Mueller and Keesecker wells sampled during this event could not be identified in the KGS well registration database. The Mueller well and monitoring well MW-12 were subsequently interpreted by the KDHE as being “side-gradient of the [former CCC/USDA] site,” while the Keesecker well was described as being “in a general downgradient direction” (KDHE 2014a).

The groundwater samples collected in the April 1998 field event were analyzed for VOCs by the KDHE Division of Health and Environmental Laboratories (KHEL); the results of the analyses are in Table 3.1. Carbon tetrachloride and chloroform were not detected in the MW-12 sample. Carbon tetrachloride was detected in the Keesecker well at a concentration of 0.5 µg/L,

and chloroform was identified in the Mueller and Keesecker wells at concentrations of 1.6 µg/L and 39.2 µg/L, respectively (KDHE 1998). The reported concentrations for both carbon tetrachloride and chloroform were in all cases below the respective MCL and KDHE risk-based target levels for these compounds in drinking water (5 µg/L and 80 µg/L). The KDHE interpreted that the detections of carbon tetrachloride and/or chloroform at the Mueller and Keesecker wells may have been an artifact of recent treatment of these wells with chloride, prior to the April 1998 sampling event (KDHE 1998). The Keesecker well was resampled by the KDHE four months later and neither carbon tetrachloride nor chloroform was detected (KDHE 2014a).

3.3 KDHE Site Evaluation (December 2013)

In December 2013, the KDHE conducted a SE at Washington to investigate for possible carbon tetrachloride contamination in the soils and groundwater associated with the former CCC/USDA grain storage facility located approximately 0.5 mi south of the town (KDHE 2014a). The field activities conducted as part of this investigation included the following:

- Use of direct-push (Geoprobe) technologies to sample subsurface soils for VOCs analyses at 18 locations beneath the former CCC/USDA grain storage facility.
- Use of the Geoprobe to collect groundwater samples for VOCs analyses at seven locations at and near the former CCC/USDA facility.
- Collection of a groundwater sample for VOCs analyses from one private well located approximately 0.5 mi northeast of the former CCC/USDA grain storage site.

3.3.1 Soil Sampling Results

Soil samples for VOCs analyses were recovered with the Geoprobe at depths of 7-8 ft and 17-18 ft BGL at locations WS-2 to WS-18 shown in Figure 3.2. The soils encountered at these depths were relatively sandy. At locations WS-12, WS-13, WS-19, and WS-20, samples were also collected at slightly greater depths (18-20 ft BGL) in an effort to penetrate finer-grained soils (KDHE 2014a). The soil sampling locations were distributed across the property to approximately

coincide with the previous locations of the grain storage bins. Aliquots from each sampled location and depth were analyzed on-site by a KDHE mobile laboratory, using a Shimadzu mobile gas chromatograph. Aliquots from five samples were also submitted to Continental Analytical Services, Inc., Salina, Kansas for confirmation VOCs analyses by EPA Method 8260.

The results of the soil analyses are summarized in Table 3.2. No carbon tetrachloride or chloroform was detected by the KDHE mobile or Continental Services laboratories in any of the soil samples (KDHE 2014a).

3.3.2 Direct-Push Groundwater Sampling Results

Groundwater samples for VOCs analyses were collected through the use of a Geoprobe direct-push sampling device, at the seven locations shown in Figure 3.3. The samples were generally retrieved through the use of an inertial pumping system, consisting of polyethylene tubing equipped with a downhole foot-valve, after purging approximately one liter (if possible) of groundwater from the targeted sampling depth. At several locations, however, insufficient groundwater for purging (and in some cases sampling for VOCs analyses) could be obtained from the depth interval(s) targeted for groundwater sampling. The groundwater samples were variably collected into acidified 40-mL vials, or vials without acid depending on the analysis method to be employed.

Aliquots of all samples were analyzed for VOCs by the KDHE on-site mobile laboratory, and (with one exception) by the KHEL using EPA Method 8260 (KDHE 2014a). The results are summarized in Table 3.3.

Trace to low levels of carbon tetrachloride (0.6-3.4 µg/L) were detected by the KDHE mobile laboratory in four of the seven groundwater samples collected with the Geoprobe (Table 3.3). Levels of carbon tetrachloride similar to those reported by the mobile laboratory were identified in aliquots of six of the groundwater samples that were sent to the KHEL for verification analyses of VOCs (insufficient groundwater could be retrieved at location WS-7). At one location only, however, a concentration greater than the MCL and KDHE risk-based target for carbon tetrachloride (5 µg/L) was identified by the KHEL (5.9 µg/L, at WS-3; Table 3.3 and Figure 3.3). Bromodichloromethane was also detected by the KHEL in the sample from location WS-3, at a reported concentration of 1.6 µg/L.

Trace to low concentrations of chloroform (0.9-2.8 µg/L) were detected in three of the seven groundwater samples analyzed by the KDHE mobile laboratory, and in four of the samples analyzed by the KHEL (Table 3.3). Although the absolute concentrations of both carbon tetrachloride and chloroform reported in all of the groundwater samples were generally low, Table 3.3 demonstrates that the ratios of chloroform to carbon tetrachloride in these samples were quite high, ranging from 82% to greater than 100%, and at two locations (WS-2 and WS-7) chloroform was detected in the absence of associated carbon tetrachloride. Chloroform was not a known constituent of chemical formulations containing carbon tetrachloride that were in common use as grain fumigants by the CCC/USDA, as well as by private and commercial grain storage operations, prior to the banning of their use in the mid-1980s; however, chloroform is a recognized product of the degradation of carbon tetrachloride (by reductive dechlorination processes) under oxygen depleted-reducing conditions. The observed concentration relationships noted above suggest that natural degradation of carbon tetrachloride might have occurred (or is occurring) in the shallow groundwater at this site.

3.3.3 Private Well Sampling Results

Groundwater was sampled for VOCs analyses by the KDHE in December 2013 at one private well, identified as the Keesecker well. Little additional information is provided for this sampling location in the KDHE SE report, however, and it is unclear whether the well sampled at this time is the same Keesecker well previously sampled by the KDHE in 1998 (see Section 3.2 and Figure 3.1; KDHE 1998, 2014a).

In Figure 3 of the KDHE SE report, a location for the Keesecker well sampled by the KDHE in 2013 is shown approximately 0.75 mi northeast of the former CCC/USDA facility. Current tax records indicate that this location falls on property owned by D. Keesecker (WCA 2017). Table 1 of the SE report further indicates a depth for the sampled well of 120 ft; however, no other supporting documentation for either the location or depth of the well is provided in the SE report (KDHE 2014a). The well location and depth reported by the KDHE empirically correspond with those of a domestic well installed in 1996 and registered to 3MK Pork, LLC, that is secondarily identified by the KGS as the “Keesecker” well (Table 2.1, Well ID 105324 and Figure 2.5; KGS 2017b). The 3MK Pork corporation is owned by D. Keesecker.

The results of the VOCs analyses for the Keesecker well sampled in 2013 are summarized in Table 3.3. No carbon tetrachloride or chloroform was detected.

3.4 CCC/USDA Groundwater Sampling (December 2015)

In June 2014, the CCC/USDA expressed concerns regarding the QA/QC procedures for sample handling and analysis during the December 2013 KDHE SE. The CCC/USDA received approval from the KDHE to collect equivalent groundwater samples at the four locations (WS-3, WS-5, WS-6, WS-14; Figure 3.3) where carbon tetrachloride was detected by the KDHE (KDHE 2014b). Groundwater sampling at the proposed locations was conducted by the CCC/USDA in December, 2015 in accord with a *Work Plan* approved by the KDHE (Argonne 2014; KDHE 2015a).

The detailed sampling, analysis, and QA/QC procedures employed in the December 2015 sampling event are documented in Appendix B. The results of the analyses for carbon tetrachloride and chloroform for these samples are summarized in Table 3.4 and Figure 3.4.

Carbon tetrachloride and chloroform were not detected above the respective MCL and KDHE risk-based targets for these compounds (5.0 µg/L and 80 µg/L) at any of the four locations sampled by the CCC/USDA. Trace to low levels of carbon tetrachloride were identified by the Applied Geosciences and Environmental Management (AGEM) laboratory at Argonne National Laboratory at two locations only (WS-3; 0.4-2.1 µg/L, and WS-5; 2.7-4.2 µg/L); no carbon tetrachloride was detected in the groundwater samples from WS-6 and WS-14, at a method detection limit of 1 µg/L for these analyses. Low levels of chloroform, ranging from 1.0-3.6 µg/L, were identified by the AGEM lab in the groundwater samples from locations WS-3, WS-5, and WS-14; at WS-14, chloroform was detected in the absence of associated carbon tetrachloride.

The VOCs analyses results outlined above, obtained from the AGEM laboratory, were fully consistent with verification analyses performed with EPA Contract Laboratory Program methods at TestAmerica Laboratories, Inc., South Burlington, Vermont, in accord with QA/QC procedures outlined in the approved *Work Plan* (Argonne 2014).

TABLE 3.1 Analytical results for carbon tetrachloride and chloroform in groundwater samples collected at private wells by the KDHE in April 1998.^a

Date	Well	Carbon Tetrachloride (mg/L)	Chloroform (mg/L)
4/17/1998	Mueller	ND ^b	1.6
4/24/1998	Keesecker	0.5	39.2
4/?/98	MW-12	ND	ND

^a Data as reported in *USDA/CCC Private Well Sampling Program*, KDHE 1998.

^b ND, compound not detected at reported detection limit of 0.5 µg/L.

TABLE 3.2 Analytical results for carbon tetrachloride and chloroform in soil samples collected during the KDHE Site Evaluation, December 2013.^a

Date	Location - Sample No.	Depth (ft BGL)	KDHE Mobile Laboratory		Continental Analytical Services, Inc.	
			Carbon Tetrachloride (mg/L)	Chloroform (mg/L)	Carbon Tetrachloride (mg/L)	Chloroform (mg/L)
12/10/13	WS-2-6	7-8	ND ^b	ND	NA ^c	NA
12/10/13	WS-2-16	17-18	ND	ND	NA	NA
12/10/13	WS-3-6	7-8	ND	ND	NA	NA
12/10/13	WS-3-16	17-18	ND	ND	NA	NA
12/10/13	WS-4-6	7-8	ND	ND	NA	NA
12/10/13	WS-4-16	17-18	ND	ND	ND	ND
12/11/13	WS-5-6	7-8	ND	ND	ND	ND
12/11/13	WS-5-16	17-18	ND	ND	ND	ND
12/11/13	WS-6-6	7-8	ND	ND	NA	NA
12/11/13	WS-6-16	17-18	ND	ND	NA	NA
12/11/13	WS-7-6	7-8	ND	ND	NA	NA
12/11/13	WS-7-16	17-18	ND	ND	NA	NA
12/11/13	WS-8-6	7-8	ND	ND	NA	NA
12/11/13	WS-8-16	17-18	ND	ND	NA	NA
12/11/13	WS-9-6	7-8	ND	ND	NA	NA
12/11/13	WS-9-16	17-18	ND	ND	NA	NA
12/11/13	WS-10-6	7-8	ND	ND	NA	NA
12/11/13	WS-10-16	17-18	ND	ND	NA	NA
12/11/13	WS-11-6	7-8	ND	ND	NA	NA
12/11/13	WS-11-16	17-18	ND	ND	NA	NA
12/11/13	WS-12-6	7-8	ND	ND	NA	NA
12/11/13	WS-12-16	17-18	ND	ND	NA	NA
12/12/13	WS-12-18	19-20	ND	ND	ND	ND
12/11/13	WS-13-6	7-8	ND	ND	NA	NA
12/11/13	WS-13-16	17-18	ND	ND	ND	ND
12/12/13	WS-13-18	18-19	ND	ND	NA	NA
12/11/13	WS-15-6	7-8	ND	ND	NA	NA
12/11/13	WS-15-16	17-18	ND	ND	NA	NA
12/11/13	WS-16-6	7-8	ND	ND	NA	NA
12/11/13	WS-16-16	17-18	ND	ND	NA	NA
12/11/13	WS-17-6	7-8	ND	ND	ND	ND
12/11/13	WS-17-16	17-18	ND	ND	NA	NA
12/11/13	WS-18-6	7-8	ND	ND	NA	NA
12/11/13	WS-18-16	17-18	ND	ND	NA	NA
12/12/13	WS-19-19	18.5-19.5	ND	ND	NA	NA
12/12/13	WS-20-18	19-20	ND	ND	ND	ND

^a Data as reported in KDHE Site Evaluation, Washington South USDA, Washington, Kansas (KDHE 2014a).

^b ND, not detected at an indicated level of 1.0 mg/kg for the KDHE mobile laboratory, or 5.0 mg/kg for Continental Analytical Services.

^c NA, no analysis.

TABLE 3.3 Analytical results for carbon tetrachloride and chloroform in groundwater samples collected during the KDHE Site Evaluation, December 2013.^a

Date	Location - Sample No.	Depth (ft BGL)	Mobile Laboratory		KHEL	
			Carbon Tetrachloride (µg/L)	Chloroform (µg/L)	Carbon Tetrachloride (µg/L)	Chloroform (µg/L)
12/9/13	WS-1GW	48	ND ^b	ND	ND	ND
12/10/13	WS-2GW	27	ND	ND	ND	0.7
12/10/13	WS-3GW	26	2.5	ND	5.9	4.6
12/11/13	WS-5GW	25.5	0.6	0.9	1.1	1.4
12/11/13	WS-6GW	27	0.7	ND	0.6	ND
12/12/13	WS-7GW	22.5	ND	1.5	NA	NA
12/12/13	WS-14GW	25	3.4	2.8	3.4	2.8
12/12/13	Keesecker Well	120	NA	NA	ND	ND

^a Data as reported in KDHE Site Evaluation, Washington South USDA, Washington Kansas (KDHE 2014a).

^b ND, not detected at an indicated level of 0.5 µg/L.

TABLE 3.4 Analytical results for carbon tetrachloride and chloroform in groundwater samples collected during the CCC/USDA resampling event, December 2015.

Location	Sample Date	Depth ft BGL	Concentration (ug/L)	
			Carbon Tetrachloride	Chloroform
WS-3	12/16/15	23-26	0.4 Ja	3.6
	12/20/15		2.1	2.5
WS-5	12/16/15	22.5-25.5	4.2	2.3
	12/20/15		2.7	2.1
WS-6	12/16/15	24-27	ND ^b	ND
	12/20/15		ND	ND
WS-14	12/16/15	22-25	ND	1.2
	12/20/15		ND	1.0

^a J, compound identified with an estimated concentration between the instrument detection limit and the method detection limit.

^b ND, compound analyzed for but not detected at a level greater than or equal to the method detection limit (< 1 µg/L).

FIGURE 3.1 Approximate locations of private wells sampled by the KDHE in 1998 for VOCs analyses.

FIGURE 3.2 Locations of soils sampled by the KDHE in 2013 for VOCs analyses. No carbon tetrachloride or chloroform was detected.

FIGURE 3.3 Locations of groundwater samples and analytical results for the December 2013 KDHE sampling event.

FIGURE 3.4 Locations of groundwater samples and analytical results for the December 2015 CCC/USDA sampling event.

4 Recommendations and Basis for Site Reclassification

The CCC/USDA recommends that the Washington South former grain bins site be reclassified as “resolved-closed.” The CCC/USDA’s technical justification for this recommendation is based on the site-specific information outlined above, and summarized as follows:

- No carbon tetrachloride or chloroform contamination has been detected in the subsurface soils beneath the former CCC/USDA facility. Therefore, no health or environmental risks can be identified in association with these soils.
- With one exception, no carbon tetrachloride (or chloroform) contamination has been identified in groundwater at the former CCC/USDA facility at concentrations exceeding the EPA and KDHE regulatory targets for these compounds in drinking water. Carbon tetrachloride was reported, on the basis of one analysis for one sample (WS-3GW), in sampling conducted by the KDHE in 2013; however, inadequate QA/QC measures were employed in conducting this sampling event. This result was not substantiated by similar groundwater sampling and analyses performed by the CCC/USDA in 2015 that had no QA/QC issues.
- Relationships among the trace to low levels of chloroform and carbon tetrachloride identified in the groundwater analysis results obtained by both the KDHE (in 2013) and the CCC/USDA (in 2015) suggest that natural degradation of carbon tetrachloride might have occurred, or is occurring, in the shallow groundwater at this site.
- Very limited availability of groundwater has been identified in the unconsolidated sediments underlying and in the immediate vicinity of the former CCC/USDA facility, which overlie predominantly shale and limestone bedrock encountered at depths of 22-27 ft beneath the former facility. Topographic relationships observed at the site strongly suggest that the areal extent of potential groundwater flow, and hence contaminant migration, within these deposits is also extremely limited, as a result of natural hydraulic boundaries formed by downcutting along perennial streams that border the site

downslope (and inferred downgradient) to the north, east, and south of the former facility.

- A trace level of carbon tetrachloride reported in one private well, as a result of sampling conducted by the KDHE in April 1998, was not substantiated in repeat sampling performed by the KDHE at that location four months later (KDHE 2014a). Carbon tetrachloride has not been detected in groundwater sampled from private wells in the vicinity of the former CCC/USDA facility, at locations that potentially lie both cross-gradient and downgradient from the former facility.
- The Washington municipal water system obtains its groundwater supply from three deep PWS wells located approximately 4 mi northwest of the former CCC/USDA facility. Routine, long-term sampling by the KDHE has detected no carbon tetrachloride contamination in these wells or the municipal distribution system to-date.

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Appendix A:

**Property Documents and Aerial Photographs for the Former
Washington South CCC/USDA Facility**

LEASE:

From Chester S.Simon and Clara F.Simon, To Commodity Credit Corporation,
his wife, Lessor Lessee.

THIS LEASE, made and entered into this 29 day of July, 1950, by and between
Chester S.Simon and Clara F.Simon, his wife, of Washington, Kansas, Lessor, and
Commodity Credit Corporation, Lessee.

WITNESSETH That:

1. The Lessor leases to the Lessee, and the Lessee hereby leases from the
Lessor, upon the terms and conditions hereinafter stated, the following described
real estate (hereinafter called "property") situated in the County of Washington
and State of Kansas:

Tract of land approximately three acres (3) described as follows: Commencing
at a point Fifty-two and one-fourth rods (52 $\frac{1}{4}$) south then Nineteen rods (19)
east of the North West corner of the South west quarter (SW $\frac{1}{4}$) of Section
Twelve (12) township three (3) Range three (3) East of the 6th P.M. Thence
running due south eighteen rods (18) thence running east twenty-seven rods
(27), thence running north eighteen rods (18) and thence running west
twenty-seven rods to the point of beginning.

2. The term of the lease shall be for a period of Fifteen (15) years,
commencing the 29 day of July, 1950, and ending the 29 day of July, 1965, with the right
of the Lessee to terminate said lease, and liability for any further rent, on the 29
day of July of any year, by giving Thirty (30) days' previous notice in writing to
the Lessor.

3. As rent for said property, the Lessee shall pay the Lessor Fifty & no/100
(\$50.00 per acre) per year, such rent to be payable annually July 29 of each year.

4. The Lessor warrants that he is the owner of the property, has the right
to give the Lessee possession under this lease, and will, so long as this lease
remains in effect, warrant and defend the Lessee's possession against any and all
persons whomsoever.

5. The Lessee shall have the right to construct or erect storage structures
or facilities on said property and, at the expiration of said lease or any renewal or
extension thereof or at any time this lease is in effect, may remove said storage
structures or facilities or any part thereof, whether or not such structures or
facilities have become legally a fixture.

6. The Lessee shall not assign this lease nor sublet said property or any
part thereof without the written consent of the Lessor.

7. (Special provisions)

C.S.Simon Lessor
Clara F.Simon

(Title)
Commodity Credit Corporation,
Lessee
By Edw.J.Knedlik
Contracting officer.

State of Kansas, County of Washington, SS.

BE IT REMEMBERED, That on this 29 day of July A.D. 1950, before me, the under-
signed, Notary Public in and for the County and State aforesaid, came Chester S.Simon
and Clara F.Simon, his wife, and Edw.J.Knedlik, Chairman Washington County PMA and
Contracting Officer, who are personally known to me to be the same persons who
executed the within instrument of writing, and such persons duly acknowledged the
execution of the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my seal, the
day and year last above written.

Louie Kramer, Notary Public.

(SEAL)

Term expires Sept 28, 1951.

State of Kansas, Washington County, ss.

This instrument was filed for record on the 4th day of August A.D. 1950, at
4 o'clock P.M., and duly recorded in book 128 of Deeds on page 247.

(SEAL)

W.R.Westing, Register of Deeds.

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State of Kansas, Washington County, ss;

BE IT REMEMBERED, That on this 19th day of July, 1961, before me, the undersigned, a Notary Public within and for the County and State aforesaid, came: Paul K. Wilkinson, Cashier of the Washington National Bank of Washington, Kansas, who is personally known to me to be the same person who executed the foregoing Certificate and such person duly acknowledged the execution of the same.

WITNESS MY HAND AND NOTARIAL SEAL.

(SEAL) Nedine Lobaugh Notary Public
(Nedine Lobaugh)

My Commission Expires: Jan. 20, 1965.

State of Kansas, Washington County, ss;

This instrument was filed for record on the 23rd day of August, 1961, at 1 o'clock P.M., and duly recorded in Book 136 of Misc. on Page 144.

(SEAL) W. B. Westing, Register of Deeds

ASSIGNMENT

From F. R. Lobaugh To First National Bank,
Liquidating Agent Washington, Kansas

I, F. R. Lobaugh, the duly elected, qualified, and acting Liquidating Agent of The Washington National Bank of Washington, Kansas, a corporation, for value received, do hereby sell, assign, transfer, and set over unto The First National Bank, of Washington, Kansas, a corporation, all of the assets of The Washington National Bank of Washington, Kansas, including all promissory notes, real estate, and chattel mortgages, cash on hand, furniture and fixtures, and all other property of every nature and kind, belonging to said Bank, The First National Bank of Washington, Kansas, to have and to hold all of said property, absolutely.

Dated this 6th day of August, 1960.

F. R. Lobaugh, Liquidating Agent.
(F. R. Lobaugh)

State of Kansas, Washington County, ss;

BE IT REMEMBERED, That on this 6th day of August, 1960, before me, the undersigned, a Notary Public within and for the County and State aforesaid, came: F. R. Lobaugh, Liquidating Agent of The Washington National Bank of Washington, Kansas, who is personally known to me to be the same person who executed the within assignment, and such person duly acknowledged the execution of the same.

Witness my hand and notarial seal.

(SEAL) Nedine Lobaugh, Notary Public
(Nedine Lobaugh)

My Commission Expires Jan. 20, 1965.

State of Kansas, Washington County, ss;

This instrument was filed for record on the 23rd day of August, 1961, at 2 o'clock P.M., and duly recorded in Book 136 of Misc. on Page 145.

(SEAL) W. B. Westing, Register of Deeds

LEASE OF PROPERTY

From Ralph L. Davison & Hazel N. Davison To Commodity Credit Corporation

THIS LEASE, made and entered into this 23rd day of August, 1961, by and between Ralph L. Davison & Hazel N. Davison of Washington, Kansas, (hereinafter called the "Lessor"), & Commodity Credit Corporation, (hereinafter called the "Lessee").
WITNESSETH THAT:

1. The Lessor leases to the Lessee, and the Lessee hereby leases from the Lessor, upon the terms and conditions hereinafter stated, the following described real estate (hereinafter called "property") situated in the County of Washington and State of Kansas,

Tract of land approximately three (3) acres described as follows:
Commencing at a point fifty-two and one-fourth (52 1/4) rods south, then Nineteen (19) rods east of the North West corner of the South west quarter (SW 1/4) of Section Twelve (12) township three (3) Range three (3) East of the 6th P.M. Thence running due south eighteen rods (18), thence running east twenty-seven rods (27), thence running north eighteen (18) rods and thence running west twenty-seven rods to the point of beginning.

It is agreed that the lessee will be permitted access to the bin site from Highway 15 during the duration of this lease.

It is further agreed that the lessor will not be held responsible for maintaining the access road from Highway 15 to the bin site gate.

(This lease supercedes all other leases) containing 3 acres, more or less.

2. The term of the lease shall be for a period of 5 years, commencing the 31st day of July, 1961, and ending the 31st day of July, 1966, with the right of the Lessee, during such term or any extension thereof, to terminate said lease, and liability for any further rent, on the 31st day of July of any year, by giving 30 days' previous notice in writing to the Lessor.

3. As rent for said property, the Lessee shall pay the Lessor One hundred fifty Dollars (\$ 150.00) per year, such rent to be payable in advance, but to be apportionable in the event the lease is terminated as provided in paragraph 2 hereof.

4. The Lessor warrants that he is the owner of the property, has the right to give the Lessee possession under this lease, and will, so long as this lease remains in effect, warrant and defend the Lessee's possession against any and all persons whomsoever.

5. The Lessee shall have the right, during this lease, to erect storage structures or facilities, make alterations, install scales, fences, or signs, in or upon the premises hereby leased and, at the expiration of said lease or any renewal or extension thereof or at any time this lease is in effect, may remove said storage structures, facilities, scales, fences or signs or any part thereof, whether or not such structures, facilities, scales, fences or signs have become legally a fixture.

6. The Lessee shall not assign this lease without the written consent of the Lessor. The Lessee, may, however, sublet the structures on the premises leased hereunder, or any one or more of them for the term of the lease or any part thereof upon such terms and conditions as Lessee may wish to so sublet.

7. The Lessee, if required by the Lessor, shall upon the expiration of this lease, restore the premises to the same condition as that existing at the time of entering upon the same under this lease, reasonable and ordinary wear and tear and damages by the elements or by circumstances over which the Lessee has no control excepted; Provided, however, That if the Lessor requires such restoration, the Lessor shall give written notice thereof to the Lessee 30 days before the termination of the Lease.

8. The Lessor grants and gives the Lessee the option as a consideration of this lease and for the further consideration of one dollar, the receipt of which is hereby acknowledged, to renew said lease for a period of 5 years from the lessor, his heirs, executors, administrators, and assigns, for the sum of One hundred fifty Dollars (\$ 150.00) per year.

10. In the event any increased tax assessment is made against the Lessor or the property by virtue of the erection of storage structures and facilities thereon by the Lessee, the Lessor agrees to cooperate fully in any contest of such increased assessment which the Lessee feels should be made. The Lessee agrees that the rental hereunder shall be adjusted upward by the amount of any such increased tax assessment which the Lessor and Lessee mutually agree to be proper or which is determined to be legally valid in court proceedings.

11. No member of or Delegate to Congress or Resident Commissioner, shall be admitted to any share or part of this lease or purchase or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this lease or purchase if made with a corporation for its general benefit.

12. The Lessor warrants that he has not employed any person to solicit or secure this lease upon any agreement for a commission, percentage, brokerage, or contingent fee and that no such consideration or payment has been or will be made. Breach of this warranty shall give CCC the right to annul the lease, or, in its discretion, to deduct from the rental or purchase price the amount of such commission, percentage, brokerage, or contingent fees. This warranty shall not apply to commissions payable by the Lessor if the lease is secured or made through a bona-fide agent maintained by the Lessor for the purpose of leasing or selling his property.

COMMODITY CREDIT CORPORATION, LESSEE

(seal) Ralph L. Davison, Lessor
(seal) Hazel N. Davison, Lessor
E. Gibson, Witness

By: John R. Dunmerruth, Chairman,
Washington ASC County Committee
Contracting Officer

State of Kansas, County of Washington, ss.

I, A. D. Chapin, do hereby certify that John R. Dunmerruth, Ralph L. Davison and Hazel N. Davison, to me known to be the persons who executed the foregoing instrument, personally appeared before me and acknowledged that they executed the same as their free act and deed and, in case said instrument was executed on behalf of a corporation, that he Chairman, Washington ASC County Committee was duly authorized by the Board of Directors of said corporation to execute the said instrument on behalf of said corporation and to affix the corporate seal thereto.

Given under my official hand and seal this day of August 25, 1961.

(SEAL)

A. D. Chapin, Notary Public
(A. D. Chapin)

My commission expires: Dec. 8, 1962.

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The above lease of Property was recorded filed for record on
August 28, 1961, at 4:45 o'clock P.M. and recorded in Volume 136, Page 145.
State of Kansas, County of Washington.

(SEAL)

W. B. Westing, Register of Deeds

REAL ESTATE CONSENT

From Davison Grain Company To Brunswick Automatic Finsetter Corp.

Davison Grain Company, (herein called the Undersigned) are the
owners or have an interest in the real estate or bowling lanes on which 8 Brunswick
Automatic Finsetters are to be installed by Henry Johnson d/b/a Washington Lanes
(herein called the Buyer) said real estate being described as:

Lots 12, 13, 14, 15, 16, and 17, except West 2 feet of Lot 17.
All in Block 21, City of Washington, Washington County, Kansas.

In consideration of the extension of credit by THE BRUNSWICK AUTOMATIC
FINSETTER CORPORATION, of 623 South Wabash Avenue, Chicago 5, Illinois, (herein
called Brunswick) to the Buyer for the purchase of Brunswick Automatic Finsetters,
the Undersigned waive in favor of Brunswick any lien, claim or interest,
including but not limited to landlord's lien and right to distress for rent,
which the Undersigned may have or hereafter acquire as to the Automatic Finsetters,
and further consent to the removal of the Automatic Finsetters by Brunswick in
the event the Buyer should default under the terms of his agreement with Brunswick.

The Undersigned further agree that the Automatic Finsetters shall at
all times be considered personal property and not attached to the real estate
or bowling lanes on which they are installed.

This Consent shall also bind and benefit the respective heirs, executors,
administrators, legal representatives, successors and assigns of the parties and
the Undersigned covenant to include in all future documents affecting title to
the real estate described herein a provision that the terms of such documents are
subject and subordinate to this Consent.

Dated this 2nd day of Sept. 1961.

(CORPORATE SEAL)

DAVISON GRAIN COMPANY

ATTEST: Hazel N. Davison,
Secretary

By: Ralph L. Davison, Title Pres.

State of Kansas, County of Washington, ss.

I, A. D. Chapin, a Notary Public, do certify that on this 2nd day of
September, 1961, the foregoing instrument was acknowledged by Ralph L. Davison
and Hazel N. Davison, President and Secretary, respectively, of Davison Grain
Company, a corporation, to be the act and deed of the corporation by them as its
President and Secretary thereunto duly authorized.

(SEAL)

A. D. Chapin, Notary Public

My commission expires: Dec. 8, 1962.

Filed in my office and entered by me this 8th day of September, A. D.
1961, at 10:30 o'clock A.M. in book No. 136 Page No. 147.

(SEAL)

W. B. Westing, Register of Deeds
By: Karel Johnson, Deputy

SEVERANCE AGREEMENT

From V. L. Wranosky to Commodity Credit Corporation

U. S. Department of Agriculture
Commodity Stabilization Service
Commodity Credit Corporation

STATE

Kansas

COUNTY

Washington

SERIAL NO.

49-101-118

Whereas, V. L. Wranosky, of Haddam, Kansas, County of Washington,
State of Kansas, hereinafter called the "Borrower" has applied to the
Commodity Credit Corporation for a loan or for the guarantee of a loan for the
purpose purchasing and erecting or constructing the following storage structure,
to-wit:

TYPE	KIND (Wood, Steel, Etc.)	CAPACITY (Bushels or Tons)
Columbian	Steel	3,000 Bu.
Columbian	Steel	3,000 Bu.

STATE OF KANSAS, Shawnee COUNTY, ss.

BE IT REMEMBERED, That on this 15th day of April, A.D. 1965, before me, the undersigned, a notary public in and for said County and State, came R.V. Smrha, Chief Engineer, Division of Water Resources of the Kansas State Board of Agriculture who is personally known to me to be such duly appointed, qualified and acting official, and who is personally known to me to be the same person who executed the within instrument of writing as such official and such person duly acknowledged the execution of the same as such Chief Engineer.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

(SEAL)

Signature; Carmelita Hutton
Notary Public

My commission expires April 5, 1969.

State of Kansas,
Washington County, SS:

Filed for record this 23rd day of April, 1965 at 8:15 o'clock A.M. and recorded in Book 136 Page 374.

(SEAL)

W.B. Westing
Register of Deeds

EXTENSION OF LEASE

FROM Davison Grain Company
Hazel N. Davison

TO Commodity Credit Corporation

THIS EXTENSION OF LEASE made and entered into this 14 day of April, 1965 by and between Davison Grain Company, Hazel N. Davison, hereinafter called Lessor, and Commodity Credit Corporation, hereinafter called Lessee.

WITNESSETH

WHEREAS, the parties hereto have heretofore entered into a certain lease dated August 23rd, 1961, wherein the Lessor leased to the Lessee the following described property: (Enter Legal description of the property)

Tract of land approximately three (3) acres described as follows:
Commencing at a point Fifty-two and one-fourth (52 1/4) rods south, then Nineteen (19) rods east of the North West corner of the South west quarter (SW 1/4) of Section Twelve (12) Township three (3) Range three (3) East of the 6th P.M. Thence running due south eighteen rods (18), thence running east twenty-seven rods (27), thence running north eighteen (18) rods and thence running west twenty-seven rods to the point of beginning.

It is agreed that the lessee will be permitted access to the bin site from Highway 15 during the duration of this lease.
It is further agreed that the lessor will not be held responsible for maintaining the access road from Highway 15 to the bin site gate.

for a term ending July 31st, 1966, and

WHEREAS, it is desired by the parties hereto to extend the said lease for an additional term under the same and conditions:

NOW, THEREFORE, it is mutually understood and agreed by and between the parties hereto as follows:

(1) The said lease is hereby extended for an additional term beginning July 31st, 1966, and ending July 31st, 1971.

(2) Lessors grant and give to the Lessee the option of further renewal of the lease for an additional period of five (5) years ending July 31st, 1976, under the same terms and conditions of the lease as extended herein provided the Lessee gives the Lessors written notice to renew at least thirty (30) days prior to the time the lease, as extended, would otherwise expire.

(3) The option to purchase included as paragraph 9 of the said lease is hereby made expressly applicable to this extension and to any renewal of the lease provided for herein.

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IN WITNESS WHEREOF, the parties hereto have executed this Extension of
Lease on the day first above written.

Davison Grain Co.
By: Hazel N. Davison, Pres.
(Lessor) (Hazel N. Davison)

None
(Lessor's Spouse)

COMMODITY CREDIT CORPORATION

By John R. Dummermuth
Chairman Washington ASC
County Committee
(John R. Dummermuth)

ACKNOWLEDGMENT

I, Paul K. Wilkinson, do hereby certify that Hazel N. Davison, Pres. &
John R. Dummermuth, to me known to be the person (or persons) who executed
the foregoing instrument, personally appeared before me and acknowledged that
he (she or they) executed the same as his (her or their) free act and deed and,
in case said instrument was executed the same as his (her or their) free act
and deed and, in case said instrument was executed on behalf of a corporation,
that he (she or they) as Chairman ASC County Committee and President of Davison
Grain Co. was (were) duly authorized by the Board of Directors of said
corporation to execute the said instrument on behalf of said corporation and
to affix the corporate seal thereto.

Given under my official hand and seal, this day 14th April, 1965, my
commission expires August 7, 1966.

(SEAL)

Paul K. Wilkinson
(Paul K. Wilkinson)
Notary Public

STATE OF KANSAS

This instrument was filed for record on the 23rd day of April 1965 at
11 o'clock A.M., and duly recorded in Book 136 of Misc. on Page 375.

(SEAL)

W.B. Westing
Register of Deeds

CERTIFIED COPY

FROM City of Washington

TO ORDINANCE 480 A

ORDINANCE 480 A.

AN ORDINANCE PROVIDING FOR THE ENLARGEMENT OF THE BOUNDARIES
OF THE CITY OF WASHINGTON, KANSAS, BY THE ADDITION OF A TRACT
OWNED BY A.C. McLEOD AND BESSIE O. McLEOD.

WHEREAS, A.C. McLeod and Bessie O. McLeod, owners of the following described
real property, to-wit:

Beginning at a point 1025.4 feet East of the Southwest Corner of the North
West Quarter of Section 1, Township 3 South, Range 3 East, Thence North
330 feet. Thence East 118.8 feet; Thence South 330 feet, Thence West
118.8 feet to the place of beginning, all in Washington County, Kansas;

have filed a petition with the Governing Body of said City to enlarge the limits
of said City to include the aforesaid tract, which is adjacent to said City;

NOW, THEREFORE, BE IT ORDAINED, by the Governing Body of the City of Washington,
Kansas:

Section 1. That the limits of said City be, and they are enlarged to include
the aforesaid tract and said tract is brought into the City as an addition thereto.

Section 2. That this Ordinance take effect and be in force from and after its
publication in The Washington County News, the official city paper.

Passed by the Council, the Governing Body of said City, and approved by the
Mayor this 6th day of April, 1964.

(SEAL)

ATTEST: Leo Walter
(LEO WALTER)
City Clerk

TOM BUCHANAN
Mayor.
(Tom Buchanan)

LEASE OF PROPERTY

FROM Davison Grain Company

To Commodity Credit Corporation

THIS LEASE, made and entered into this 10th day of February, 1971, by and between Davison Grain Company by Hazel N. Davison of Washington Kansas (hereinafter called the "Lessor"), and Commodity Credit Corporation, (hereinafter called the "Lessee"),

WITNESSETH THAT:

1. The Lessor leases to the Lessee, and the Lessee hereby leases from the Lessor, upon the terms and conditions hereinafter stated, the following described real estate, (hereinafter called "property"), situated in the County of Washington and State of Kansas.

Tract of land approximately three (3) acres described as follows: Commencing at a point fifty-two and one-fourth (52 $\frac{1}{4}$) rods south, then Nineteen (19) rods east of the Northwest corner of the Southwest quarter (SW $\frac{1}{4}$) of Section Twelve (12), township three (3) Range three (3) East of the 6th P.M. Thence running due south eighteen rods (18), thence running east twenty-seven rods (27), thence running north eighteen (18) rods and thence running west twenty-seven rods to the point of beginning. It is agreed that the lessee will be permitted access to the bin site from Highway 15 during the duration of this lease. It is further agreed that the lessor will not be held responsible for maintaining the access road from Highway 15 to the bin site gate, containing 3 acres, more or less.

2. The term of the lease shall be for a period of 5 years, commencing the 31st day of July, 1971 and ending the 31st day of July, 1976, with the right of the lessee at any time during such term or any extension thereof, to terminate said lease, and liability for any further rent, by giving 30 days' previous notice in writing to the Lessor.

3. As rent for said property, the Lessee shall pay the Lessor One Hundred & Fifty Dollars (\$150.00) per year, such rent to be payable in advance, but to be apportionable in the event the lease is terminated as provided in paragraph 2 hereof.

4. The Lessor warrants that he is the owner of the property, has the right to give the Lessee possession under this lease, and will, so long as this lease remains in effect, warrant and defend the Lessee's possession against any and all persons whomsoever.

5. The Lessee shall have the right, during this lease, to erect storage structures or facilities, make alterations, install scales, fences, or signs, in or upon the premises hereby leased and, at the expiration of said lease or any renewal or extension thereof or at any time this lease is in effect, may remove said storage structures, facilities, scales, fences or signs or any part thereof, whether or not such structures, facilities, scales, fences or signs have become legally a fixture.

6. The Lessee shall not assign this lease without the written consent of the Lessor. The Lessee, may, however, sublet the structures on the premises leased hereunder, or any one or more of them for the term of the lease or any part thereof upon such terms and conditions as Lessee may wish to so sublet.

7. The Lessee, if required by the Lessor, shall upon the expiration of this lease, restore the premises to the same condition as that existing at the time of first entering upon the same under this lease or under any prior lease from the Lessor to the Lessee which has been continuous, reasonable and ordinary wear and tear and damages by the elements or by circumstances over which the Lessee has no control excepted: Provided, however, That if the Lessor requires such restoration, the Lessor shall give written notice thereof to the Lessee 30 days before the termination of the lease.

8. The Lessor grants and gives the Lessee the option as a consideration of this lease and for the further consideration of one dollar, the receipt of which is hereby acknowledged, to renew said lease for a period of 5 years from the Lessor, his heirs, executors, administrators, and assigns, for the sum of One Hundred & Fifty Dollars (\$150.00) per year.

9. As a consideration of this lease and for the further consideration of one dollar, the receipt of which is hereby acknowledged, the Lessor grants and gives the Lessee the option, at any time while this lease is in effect, to purchase said property from the Lessor, his heirs, executors, administrators, and assigns, for the sum of _____ Dollars, (\$ _____). In the event the Lessee shall exercise this option to purchase said property, the Lessor agrees to furnish at his own expense an abstract of title, certificate of title, or other evidence of title satisfactory to CCC and to execute a good and sufficient warranty deed conveying fee simple title to said property free and clear of all taxes, liens, or encumbrances except for the following, and no others.

10. In the event any increased tax assessment is made against the Lessor or the property by virtue of the erection of storage structures and facilities thereon by the Lessee, the Lessor agrees to cooperate fully in any contest of such increased assessment which the Lessee feels should be made. The Lessee agrees that the rental hereunder shall be adjusted upward by the amount of any such increased tax assessment which the Lessor and Lessee mutually agree to be proper or which is determined to be legally valid in court proceedings.

11. No member of or Delegate to Congress or Resident Commissioner, shall be admitted to any share or part of this lease or purchase or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this lease or purchase if made with a corporation for its general benefit.

12. The Lessor warrants that he has not employed any person to solicit or secure this lease upon any agreement for a commission, percentage, brokerage, or contingent fee and that no such consideration or payment has been or will be made. Breach of this warranty shall give CCC the right to annul the lease, or, in its discretion, to deduct from the rental or purchase price the amount of such commission, percentage,

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brokerage, or contingent fees. This warranty shall not apply to commissions payable by the Lessor if the lease is secured or made through a bona-fide agent maintained by the Lessor for the purpose of leasing or selling his property.

COMMODITY CREDIT CORPORATION, LESSEE

(SEAL) Davison Grain Company, Lessor
(Davison Grain Company)

By: Emil Peters
(Emil Peters)

(SEAL) By: Hazel N. Davison, Pres. Lessor
By: (Hazel N. Davison, Pres.)

Chairman, Washington ASC County
Committee Contracting Officer.

Ermon E. Gibson, Witness
(Ermon E. Gibson)

I, H.N. Hyland, do hereby certify that Hazel N. Davison to me known to be the person who executed the foregoing instrument, personally appeared before me and acknowledged that she executed the same as her free act and deed and, in case said instrument was executed on behalf of a corporation, that she as President of Davison Grain Co. was duly authorized by the Board of Directors of said corporation to execute the said instrument on behalf of said corporation and to affix the corporate seal thereto.
Given under my official hand and seal this day of February 10, 1971.

(SEAL)
My commission expires: October 9, 1972.

H.N. Hyland
(H.N. Hyland) Notary Public.

The above Lease of Property was recorded & filed for record on March 8, 1971 at 10 o'clock A.M., and duly recorded in Volume 136, page 533.
State of Kansas, County of Washington.

(SEAL)

W.B. Westing
Register of Deeds

LEASE OF PROPERTY

FROM Christian E. Sawyer & Clara
E. Sawyer.

TO Commodity Credit Corporation

THIS LEASE, made and entered into this 17th day of February, 1971, by and between Christian E. Sawyer & Clara E. Sawyer of Morrowville, Ks. 66958 (hereinafter called the "Lessor") and Commodity Credit Corporation, (hereinafter called the "Lessee"),

WITNESSETH THAT:

1. The Lessor leases to the Lessee, and the Lessee hereby leases from the Lessor, upon the terms and conditions hereinafter stated, the following described real estate (hereinafter called "property") situated in the County of Washington and State of Kansas.

Commencing at a point Five Hundred Eighty (580) feet east of the South West corner of the South West Quarter of the South East Quarter (SW $\frac{1}{4}$ SE $\frac{1}{4}$); in Section Twenty-six (26); in Township Two (2); Range Two (2). Then running due north following the East line of the City of Morrowville, Kans. Three Hundred Twenty-three (323) feet; then running due East Four Hundred Six (406) feet; then running due South Three Hundred Twenty-three (323) feet; then running due West Four Hundred Six (406) feet to the point of beginning. This tract composed of Three (3) acres, located in Washington County, Kansas.

(This lease supersedes all other leases) containing 3 acres, more or less.

2. The term of the lease shall be for a period of 5 years, commencing the 31st day of July, 1971 and ending the 31st day of July, 1976, with the right of the Lessee, at any time during such term or any extension thereof, to terminate said lease, and liability for any further rent, by giving 30 days' previous notice in writing to the Lessor.

3. As rent for said property, the Lessee shall pay the Lessor One Hundred Fifty Dollars (\$150.00), per year, such rent to be payable in advance, but to be apportionable in the event the lease is terminated as provided in paragraph 2 hereof.

4. The Lessor warrants that he is the owner of the property, has the right to give the Lessee possession under this lease, and will, so long as this lease remains in effect, warrant and defend the Lessee's possession against any and all persons whomsoever.

5. The Lessee shall have the right, during this lease, to erect storage structures or facilities, make alterations, install scales, fences, or signs, in or upon the premises hereby leased, and, at the expiration of said lease or any renewal or extension thereof or at any time this lease is in effect, may remove

WARRANTY DEED

THE GRANTORS: Hazel N. Davison, a single woman, and
Larry A. Davison, a single man,

HEREBY CONVEY AND WARRANT TO: The City of Washington, Kansas,
the following-described real estate situate in the County of
Washington and State of Kansas, to-wit:

All right, title and interest in and to:

A tract of land located in the Southwest Quarter (SW 1/4) of
Section Twelve (12), in Township Three (3) South, of Range
Three (3), East of the 6th P.M., in Washington County,
Kansas, containing 30.03 acres, more or less, more
particularly described as follows:

Beginning at a point on the West line of the Southwest
Quarter of said Section 12, 495.00 feet North (North being
an assumed bearing) of the Southwest corner of said Section
12, said point of beginning being the northwest corner of a
tract conveyed to Joe Fencil recorded on Page 64 in Book 180
at the Washington County Register of Deeds, being Corner 1,
marked by a 1/2" iron bar; thence along the West line of the
Southwest Quarter of said Section 12 North 1300.39 feet to
Corner 2, marked by a 1/2" iron bar; thence S.88 degrees
19'22"E. 1015.97 feet to Corner 3, marked by a 1/2" iron
bar; thence parallel to the West line of the Southwest
Quarter of said Section 12 South 1275.76 feet to a point on
the North line of a tract conveyed to William Wineinger on
Page 378 in Book 165 at the Washington County Register of
Deeds, said point being Corner 4, marked by a 1/2" iron bar;
thence along the North line of the said Wineinger tract and
along the North line of the said Fencil tract N. 89 degrees
42'39" E. 1015.55 feet to the point of beginning;

subject to a right of access upon, over and across the
northeast portion of said property upon which an access road
currently exists, which access road provides ingress and
egress to real property owned by the Sellers and others
adjacent to said tract,

all in Washington County, Kansas,

In consideration of One Dollar (\$1.00) and other valuable considerations.

Dated this 12th day of April, 1991.

Hazel N. Davison
Hazel N. Davison

Larry A. Davison
Larry A. Davison

State of Kansas, Washington County, ss:

The foregoing instrument was acknowledged before me on this the 12th day of April, 1991 by:

Hazel N. Davison, a single woman.

H. N. Hyland
Notary Public

My Commission expires:

State of Kansas, Washington County, ss:

The foregoing instrument was acknowledged before me on this the 12th day of April, 1991 by:

Larry A. Davison, a single man.

H. N. Hyland
Notary Public

My Commission expires:

WARRDEED.WPS

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RECEIVED
NUMBERED
GRANTOR
GRANTEE
TRANS CD

SEAL
WASHINGTON COUNTY, KANSAS

PHOTOGRAPHED

Entered in Transfer Record
in my office this 7th day
of May 1991
La Von Clark
County Clerk
Washington County, Kansas

State of Kansas
Washington County

SS

This Warranty Deed was filed for record
on the 7th day of May 1991 at 1:30 P.M.,
and duly recorded in Book 196 of Deeds
at Pages 273 to 275 inc.

Maureen R. Hall
(Register of Deeds
Washington County, Ks.

Filing Fee: \$10.00

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FIGURE A.1 Location of the former CCC/USDA facility in July, 1957. Source of aerial photograph: USDA (1957).

FIGURE A.2 Location of the former CCC/USDA facility in July, 1962. Source of aerial photograph: USDA (1962).

FIGURE A.3 Location of the former CCC/USDA facility in September, 1969. Source of aerial photograph: USDA (1969).

FIGURE A.4 Location of the former CCC/USDA facility in September, 1978. Source of aerial photograph: USDA (1978).

FIGURE A.5 Location of the former CCC/USDA facility in May, 1985. Source of aerial photograph: USDA (1985).

FIGURE A.6 Location of the former CCC/USDA facility in October, 1991. Source of aerial photograph: USDA (1991).

FIGURE A.7 Location of the former CCC/USDA facility in March, 1996. Source of aerial photograph: USDA (1996).

FIGURE A.8 Location of the former CCC/USDA facility in 2005. Source of aerial photograph: USDA (2005).

Appendix B:

**Report of Selective Groundwater Sampling by the CCC/USDA to Confirm Potential
Carbon Tetrachloride Contamination in Groundwater at Washington, Kansas**

Appendix B:

Report of Selective Groundwater Sampling by the CCC/USDA to Confirm Potential Carbon Tetrachloride Contamination in Groundwater at Washington, Kansas

This report summarizes the results of the sampling event conducted by the CCC/USDA at Washington on December 16, 2015, and December 20, 2015, per the *Work Plan* (Argonne 2014) approved by the KDHE. The activities are described in Section B.1, and the results are discussed in Section B.4. Conclusions are presented in Section B.5.

B.1 Sampling and Analysis Activities

B.1.1 Groundwater Sampling and Analysis

The CCC/USDA conducted a groundwater sampling event to confirm the analytical results reported in the site evaluation report for the Washington South USDA site (KDHE 2014a). On December 16, 2015, CCC/USDA sampled the four locations where carbon tetrachloride was detected in groundwater (locations WS-3, WS-5, WS-6, and WS-14, according to the KDHE identifiers; shown in Figure 1). The CCC/USDA collected groundwater samples at comparable depths by using the direct-push capability of a Geoprobe Model 5400 and duplicated the conditions of the KDHE sampling event to the extent possible. The groundwater sampling was performed in accordance with the procedures described in the *Master Work Plan* (Argonne 2002) and in the site-specific *Work Plan* (Argonne 2014). After the shipment of the first set of samples (collected on December 16, 2015) was received late by the AGEM Laboratory, all four locations were sampled for a second time on December 20, 2015. The results of the analyses are in Table B.1. The sequence of groundwater sampling activities during the December 2015 event is summarized in Table B.2.

The groundwater samples were labeled, packaged, and chilled to 4°C by placement in ice-filled coolers. The samples were shipped overnight to the AGEM Laboratory at Argonne for VOCs analyses with EPA Method 524.2 (EPA 1995). Aliquots of selected samples (chosen in the field) were also shipped directly to TestAmerica Laboratories, Inc., South Burlington, Vermont, for verification VOCs analyses according to EPA Contract Laboratory Program protocols.

The results of the groundwater analyses are presented in Section B.4.

B.2 Handling and Disposal of Investigation-Derived Waste

There was no investigation-derived waste generated during the Washington sampling event. Field staff collected enough water from the sampling locations to fill sample vials, but there was no purge water resulting from this sampling event.

B.3 Quality Control for Sample Collection, Handling, and Analysis

The QA/QC procedures followed during the December 2015 sampling event for collection, handling, and analysis of samples are described in detail in the *Master Work Plan* (Argonne 2002) and in the site-specific *Work Plan* (Argonne 2014). Results of these activities are summarized as follows:

- Sample collection and handling activities were monitored by the documentation of samples as they were collected and the use of chain-of-custody forms and custody seals to ensure sample integrity during handling and shipment.
- Samples designated for VOCs analyses were received with custody seals intact and at the appropriate preservation temperature. All samples were analyzed within the required holding times.
- Quality control samples collected to monitor sample-handling activities (four equipment rinsates and two trip blanks; Table B.3) and method blanks analyzed with the samples to monitor analytical methodologies were all free of carbon tetrachloride and chloroform contamination.
- Groundwater samples were analyzed for VOCs at the AGEM Laboratory by the purge-and-trap method on a gas chromatograph-mass spectrometer system. Calibration checks analyzed with each sample delivery group were required to be within $\pm 20\%$ of the standard. Surrogate standard determinations performed on samples and blanks were within the specified range of 80-120% for all samples in either the initial analysis or a successful reanalysis, with the exception of rinsate WSQCIR-W-38726 and trip blank WSQCTB-W-38727.

- Accuracy and precision of the analytical methodology were evident in the duplicate analysis of one sample (from location WS-3), with relative percent difference values of 5% and 4% for carbon tetrachloride and chloroform, respectively (Table B.3). The analytical data from the AGEM Laboratory for groundwater are acceptable for quantitative determination of contaminant distribution.
- In accordance with the procedures defined in the *Master Work Plan* (Argonne 2002), selected samples were submitted to a second laboratory (TestAmerica; see Attachment 1) for verification analysis according to the protocols of the EPA's Contract Laboratory Program. The results from the two laboratories compare favorably over the range of contaminant concentrations detected (Table B.4).
- Although the shipment of the first set of samples (collected on December 16, 2015) was received late by the AGEM Laboratory resulting in the resampling of all locations on December 20, 2015, all QC parameters for both sets of samples were within acceptable ranges. Therefore, both sets of results are included in Section 3.

B.4 Results and Discussion

The analytical data for VOCs in the groundwater samples collected on December 16, 2015, and December 20, 2015, from the AGEM Laboratory are in Table 1 and are illustrated in Figure 1.

Carbon tetrachloride and chloroform were not detected above the respective MCLs (5.0 µg/L and 80 µg/L) for these contaminants at any of the four locations sampled by CCC/USDA. For location WS-3, carbon tetrachloride and chloroform were detected by the AGEM Laboratory at maximum concentrations of 2.1 µg/L and 3.6 µg/L, respectively. For location WS-5, carbon tetrachloride and chloroform were detected by the AGEM Laboratory at maximum concentrations of 4.2 µg/L and 2.3 µg/L, respectively. For location WS-14, chloroform was detected by the AGEM Laboratory at a maximum concentration of 1.2 µg/L; carbon tetrachloride was not detected in either sample from this location. Finally for location WS-6, carbon tetrachloride and chloroform were not detected by the AGEM Laboratory above a method detection limit of < 1 µg/L.

B.5 Conclusions

Carbon tetrachloride and chloroform were not detected above the respective MCLs (5.0 µg/L and 80 µg/L) for these contaminants at any location sampled by CCC/USDA. The MCL exceedance for carbon tetrachloride at location WS-3 (5.9 µg/L) detected by KDHE (2014) during the site evaluation at the site was not replicated. Therefore, no further investigative action by CCC/USDA is warranted at the Washington South, Kansas, site.

TABLE B.1 Analytical results for VOCs in groundwater samples collected in December 2015.

Location	Sample ID	Sample Date	Depth (ft BGL)	Concentration (µg/L)		
				Carbon Tetrachloride	Chloroform	Methylene Chloride
WS-3	WS-3-W-38714	12/16/15	23-26	0.4 J ^a	3.6	ND
WS-3	WS-3-W-38721	12/20/15	23-26	2.1	2.5	ND
WS-5	WS-5-W-38715	12/16/15	22.5-25.5	4.2	2.3	ND
WS-5	WS-5-W-38722	12/20/15	22.5-25.5	2.7	2.1	ND
WS-6	WS-6-W-38716	12/16/15	24-27	ND ^b	ND	ND
WS-6	WS-6-W-38723	12/20/15	24-27	ND	ND	ND
WS-14	WS-14-W-38717	12/16/15	22-25	ND	1.2	ND
WS-14	WS-14-W-38724	12/20/15	22-25	ND	1.0	ND

^a J, compound identified with an estimated concentration between the instrument detection limit and the method detection limit.

^b ND, compound analyzed for but not detected at a level greater than or equal to the method detection limit (< 1 µg/L).

TABLE B.2 Samples collected during the December 2015 sampling event.

Sample Date and Time	Location	Sample ID	Sample Type ^a	Depth (ft BGL)	Matrix ^b	Chain of Custody	Shipping Date	Sample Description
12/16/15 11:00	QC	WSQCTB-W-38720	TB	–	WQC	WS1217151305	12/17/15	Trip blank with water samples for VOCs analyses shipped to AGEM Laboratory.
12/16/15 11:00	QC	WSQCTB-W-38720VER	VER	–	WQC	WS1217151310	12/17/15	Verification sample to Test America, Inc., Burlington, VT.
12/16/15 11:55	WS-3	WS-3-W-38714	N	23-26	WG	WS1217151305	12/17/15	GPS used to locate sampling point. Geoprobe used with SP16 groundwater sampler and SS screen. Sample collected using a bailer and sampling through the rods.
12/16/15 11:55	WS-3	WS-3-W-38714VER	VER	23-26	WG	WS1217151310	12/17/15	Verification sample to Test America, Inc., Burlington, VT.
12/16/15 13:30	QC	WSQCIR-W-38718	RI	–	WQC	WS1217151305	12/17/15	Rinsate of decontaminated sampling line after collection of sample WS-3-W-38714.
12/16/15 14:45	WS-5	WS-5-W-38715	N	22.5-25.5	WG	WS1217151305	12/17/15	Use a GPS to locate sampling point. Use the Geoprobe with SP16 groundwater sampler and SS screen. Sample collected using a bailer and sampling through the rods.
12/16/15 14:45	WS-5	WS-5-W-38715VER	VER	22.5-25.5	WG	WS1217151310	12/17/15	Verification sample to Test America, Inc., Burlington, VT.
12/16/15 15:15	QC	WSQCIR-W-38719	RI	–	WQC	WS1217151305	12/17/15	Rinsate of decontaminated sampling line after collection of sample WS-5-W-38715.
12/16/15 16:00	WS-6	WS-6-W-38716	N	24-27	WG	WS1217151305	12/17/15	GPS used to locate sampling point. Geoprobe used with SP16 groundwater sampler and SS screen. Sample collected using a bailer and sampling through the rods.
12/16/15 16:00	WS-6	WS-6-W-38716VER	VER	24-27	WG	WS1217151310	12/17/15	Verification sample to Test America, Inc., Burlington, VT.

TABLE B.2 (Cont.)

Sample Date and Time		Location	Sample ID	Sample Type ^a	Depth (ft BGL)	Matrix ^b	Chain of Custody	Shipping Date	Sample Description
12/16/15	17:55	WS-14	WS-14-W-38717	N	22-25	WG	WS1217151305	12/17/15	GPS used to locate sampling point. Geoprobe used with SP16 groundwater sampler and SS screen. Sample collected using a bailer and sampling through the rods.
12/16/15	17:55	WS-14	WS-14-W-38717VER	VER	22-25	WG	WS1217151310	12/17/15	Verification sample to Test America, Inc., Burlington, VT.
12/20/15	11:00	QC	WSQCTB-W-38727	TB	–	WQC	WS1221151805	12/21/15	Trip blank with water samples for VOCs analyses shipped to AGEM Laboratory.
12/20/15	11:30	WS-3	WS-3-W-38721	N	23-26	WG	WS1221151805	12/21/15	GPS used to locate sampling point. Geoprobe used with SP16 groundwater sampler and SS screen. Sample collected using a bailer and sampling through the rods.
12/20/15	11:30	WS-3	WS-3-W-38721DUP	DUP-L	23-26	WG	WS1221151805	12/21/15	Duplicate laboratory analysis.
12/20/15	13:15	QC	WSQCIR-W-38725	RI	–	WQC	WS1221151805	12/21/15	Rinsate of decontaminated sampling line after collection of sample WS-3-W-38721.
12/20/15	14:08	WS-5	WS-5-W-38722	N	22.5-25.5	WG	WS1221151805	12/21/15	GPS used to locate sampling point. Geoprobe used with SP16 groundwater sampler and SS screen. Sample collected using a bailer and sampling through the rods.
12/20/15	15:45	QC	WSQCIR-W-38726	RI	–	WQC	WS1221151805	12/21/15	Rinsate of decontaminated sampling line after collection of sample WS-5-W-38722.
12/20/15	16:15	WS-6	WS-6-W-38723	N	24-27	WG	WS1221151805	12/21/15	GPS used to locate sampling point. Geoprobe used with SP16 groundwater sampler and SS screen. Sample collected using a bailer and sampling through the rods.

TABLE B.2 (Cont.)

Sample Date and Time		Location	Sample ID	Sample Type ^a	Depth (ft BGL)	Matrix ^b	Chain of Custody	Shipping Date	Sample Description
12/20/15	20:40	WS-14	WS-14-W-38724	N	22-25	WG	WS1221151805	12/21/15	GPS used to locate sampling point. Geoprobe used with SP16 groundwater sampler and SS screen. Sample collected using a bailer and sampling through the rods.

^a Sample type codes: DUP-L, laboratory duplicate; N, primary sample; RI, rinsate; TB, trip blank; VER, verification sample.

^b Matrix type codes: WG, groundwater; WQC, quality control water sample, e.g., trip blank.

TABLE B.3 Analytical results from the AGEM Laboratory for quality control samples collected during the sampling event in December 2015.

Location	Sample ID	Sample Date	Sample Type ^a	Depth (ft BGL)	Concentration (µg/L)		
					Carbon Tetrachloride	Chloroform	Methylene Chloride
WS-3	WS-3-W-38721	12/20/2015	N	23-26	2.1	2.5	ND
WS-3	WS-3-W-38721DUP	12/20/2015	DUP-L	23-26	2.2	2.4	ND
QC	WSQCIR-W-38718	12/16/2015	RI	–	ND ^b	ND	ND
QC	WSQCIR-W-38719	12/16/2015	RI	–	ND	ND	ND
QC	WSQCIR-W-38725	12/20/2015	RI	–	ND	ND	ND
QC	WSQCIR-W-38726	12/20/2015	RI	–	ND S ^c	ND S	ND S
QC	WSQCTB-W-38720	12/16/2015	TB	–	ND	ND	ND
QC	WSQCTB-W-38727	12/20/2015	TB	–	ND S	ND S	ND S

^a Sample types: DUP-L, duplicate lab analysis; N, primary sample; RI, rinsate; TB, trip blank.

^b ND, compound analyzed for but not detected at a level greater than or equal to the method detection limit (< 1 µg/L for water).

^c S, surrogate recoveries for sample were outside QC range (± 20%).

TABLE B.4 Analytical results for verification groundwater samples collected during the sampling event in December 2015.

Location	Sample ID	Sample Date	Depth (ft BGL)	Analytical Laboratory	Concentration (µg/L)		
					Carbon Tetrachloride	Chloroform	Methylene Chloride
WS-3	WS-3-W-38714	12/16/15	23-26	AGEM	0.4 J ^a	3.6	ND
WS-3	WS-3-W-38714VER	12/16/15	23-26	TestAmerica	0.2 J	3.6	0.07 J
WS-5	WS-5-W-38715	12/16/15	22.5-25.5	AGEM	4.2	2.3	ND
WS-5	WS-5-W-38715VER	12/16/15	22.5-25.5	TestAmerica	4.5	2.5	0.06 JB ^c
WS-6	WS-6-W-38716	12/16/15	24-27	AGEM	ND ^b	ND	ND
WS-6	WS-6-W-38716VER	12/16/15	24-27	TestAmerica	ND	0.3 J	ND
WS-14	WS-14-W-38717	12/16/15	22-25	AGEM	ND	1.2	ND
WS-14	WS-14-W-38717VER	12/16/15	22-25	TestAmerica	0.1 J	1.2	ND
QC	WSQCTB-W-38720	12/16/15	–	AGEM	ND	ND	ND
QC	WSQCTB-W-38720VER	12/16/15	–	TestAmerica	ND	ND	ND

^a J, compound identified with an estimated concentration between the instrument detection limit and the method detection limit.

^b ND, compound analyzed for but not detected at a level greater than or equal to the method detection limit (< 1 µg/L for analyses at AGEM and < 0.5 µg/L for analyses at TestAmerica, Inc.).

^c B, compound detected in associated laboratory blank.

Attachment 1:

TestAmerica, Inc. Analytical Report

ANALYTICAL REPORT

Job Number: 200-31247-1

SDG Number: 31247

Job Description: Washington South (200-31247)

Contract Number: 1E-30401

For:

Argonne National Laboratory
9700 South Cass Avenue
Building 203
Office B-141
Argonne, IL 60439

Attention: Ms. Esther Bowen

Approved for release.
Kathryn A Kelly
Project Manager I
1/6/2016 9:39 AM

Kathryn A Kelly, Project Manager I
30 Community Drive, South Burlington, VT, 05403
kathryn.kelly@testamericainc.com
01/06/2016

The test results in this report relate only to sample(s) as received by the laboratory. These test results were derived under a quality system that adheres to the requirements of NELAC. Pursuant to NELAC, this report may not be produced in full without written approval from the laboratory

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Sample Login Acknowledgement

Job 200-31247-1

Client Job Description:	Washington South (200-31247)	Report To:	Argonne National Laboratory
Purchase Order #:	1E-30401		Jorge Alvarado
Work Order #:	1E-30401		9700 South Cass Avenue
Project Manager:	Kathryn A Kelly		Building 203
Job Due Date:	1/1/2016		Office B-141
Job TAT:	14 Days		Argonne, IL 60439
Max Deliverable Level:	IV	Bill To:	Argonne National Laboratory
			Accounts Payable
Earliest Deliverable Due:	1/1/2016		Chief Financial Offices
			9700 S. Cass Ave.
			Building 201
			Argonne, IL 60439

Login 200-31247

Sample Receipt:	12/18/2015 10:30:00 AM	Number of Coolers:	1
Method of Delivery:	FedEx Priority Overnight	Cooler Temperature(s) (C°):	2.5;

Lab Sample # Method	Client Sample ID Method Description / Work Location	Date Sampled	Matrix	Rpt Basis	Dry / Wet **
200-31247-1	WS-3-W-38714	12/16/2015 11:55:00 AM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-31247-2	WS-5-W-38715	12/16/2015 2:45:00 PM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-31247-3	WS-6-W-38716	12/16/2015 4:00:00 PM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-31247-4	WS-14-W-38717	12/16/2015 5:55:00 PM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-31247-5	WSQCTB-W-38720	12/16/2015 11:00:00 AM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-31247-6	VHBLK01	12/18/2015 12:00:00 AM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet

* Method on-hold

** Wet/Dry indicates whether the reported results will be corrected for moisture and based on sample Wet weight or Dry weight.

ORIGIN ID:ENLA (402) 416-7255
TRAVIS KAMLER
ARGONNE NATIONAL LAB
9700 S CASS AVE
LEMONT, IL 60439
UNITED STATES US

SHIP DATE: 17DEC15
ACTWGT: 15.00 LB
CAD: 104734835/NET3670
DIMS: 13x9x10 IN
BILL SENDER

TO KATHRYN KELLY
TEST AMERICA
30 COMMUNITY DR
STE 11

SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: 8A727-88-167
INV.

PO: WASHINGTON SOUTH WATERS DEPT:

4153011001001010

FRI - 18 DEC 10:30A
PRIORITY OVERNIGHT

TRK# 7752 3636 2710
0201

NB BTVA
VT-US 05403 BTV

After printing this label:
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Shipping and Receiving Documents

Login Sample Receipt Checklist

Client: Argonne National Laboratory

Job Number: 200-31247-1

SDG Number: 31247

Login Number: 31247

List Number: 1

Creator: Atherton, Joel E

List Source: TestAmerica Burlington

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.5°C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Burlington

Job No.: 200-31247-1

SDG No.: 31247

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
VMFBFw_00018	12/22/15	06/23/15	METHANOL, Lot 147358	25 mL	VMBFBs_00014	125 uL	BFB	25 ug/mL
.VMBFBs_00014	12/22/15		RESTEK, Lot A0106759		(Purchased Reagent)		BFB	5000 ug/mL
VMFBFw_00020	06/22/16	12/22/15	METHANOL, Lot 147358	25 mL	VMBFBs_00015	125 uL	BFB	25 ug/mL
.VMBFBs_00015	12/22/16		RESTEK, Lot A0106759		(Purchased Reagent)		BFB	5000 ug/mL
VMSOMTRCALw_00097	01/18/16	12/18/15	METHANOL, Lot 151278	4000 uL	VM8260CALbs_00181	42 uL	Bromomethane	21 ug/mL
							Chloroethane	21 ug/mL
							Chloromethane	21 ug/mL
							Dichlorodifluoromethane	21 ug/mL
							Trichlorofluoromethane	21 ug/mL
							Vinyl chloride	21 ug/mL
					VMSOMCALas_00027	42 uL	1,1,1-Trichloroethane	21 ug/mL
							1,1,2,2-Tetrachloroethane	21 ug/mL
							1,1,2-Trichloro-1,2,2-trifluor oethane	21 ug/mL
							1,1,2-Trichloroethane	21 ug/mL
							1,1-Dichloroethane	21 ug/mL
							1,1-Dichloroethene	21 ug/mL
							1,2,3-Trichlorobenzene	21 ug/mL
							1,2,4-Trichlorobenzene	21 ug/mL
							1,2-Dibromo-3-Chloropropane	21 ug/mL
							1,2-Dibromoethane	21 ug/mL
							1,2-Dichlorobenzene	21 ug/mL
							1,2-Dichloroethane	21 ug/mL
							1,2-Dichloropropane	21 ug/mL
							1,3-Dichlorobenzene	21 ug/mL
							1,4-Dichlorobenzene	21 ug/mL
							Benzene	21 ug/mL
							Bromochloromethane	21 ug/mL
							Bromodichloromethane	21 ug/mL
							Bromoform	21 ug/mL
							Carbon disulfide	21 ug/mL
							Carbon tetrachloride	21 ug/mL
							Chlorobenzene	21 ug/mL
							Chloroform	21 ug/mL
							cis-1,2-Dichloroethene	21 ug/mL
							cis-1,3-Dichloropropene	21 ug/mL
							Cyclohexane	21 ug/mL
							Dibromochloromethane	21 ug/mL
							Ethylbenzene	21 ug/mL
							Isopropylbenzene	21 ug/mL
							m,p-Xylene	21 ug/mL
							Methyl acetate	21 ug/mL
							Methyl tert-butyl ether	21 ug/mL
							Methylcyclohexane	21 ug/mL
							Methylene Chloride	21 ug/mL
							o-Xylene	21 ug/mL
							Styrene	21 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1

SDG No.: 31247

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Tetrachloroethene	21 ug/mL
							Toluene	21 ug/mL
							trans-1,2-Dichloroethene	21 ug/mL
							trans-1,3-Dichloropropene	21 ug/mL
							Trichloroethene	21 ug/mL
					VMSOMCALbs_00033	168 uL	2-Butanone	210 ug/mL
							2-Hexanone	210 ug/mL
							4-Methyl-2-pentanone	210 ug/mL
							Acetone	210 ug/mL
					VMSOMSUas_00077	42 uL	Chloroethane-d5	21 ug/mL
					VMSOMSUs_00142	336 uL	Vinyl Chloride-d3	21 ug/mL
							2-Butanone-d5	210 ug/mL
					VMSOMSUcs_00055	42 uL	2-Hexanone-d5	210 ug/mL
							1,1,2,2-Tetrachloroethane-d2	21 ug/mL
							1,1-Dichloroethene-d2	21 ug/mL
							1,2-Dichlorobenzene-d4	21 ug/mL
							1,2-Dichloroethane-d4	21 ug/mL
							1,2-Dichloropropane-d6	21 ug/mL
Benzene-d6	21 ug/mL							
Chloroform-d	21 ug/mL							
		Toluene-d8	21 ug/mL					
		trans-1,3-Dichloropropene-d4	21 ug/mL					
.VM8260CALbs_00181	01/18/16	RESTEK, Lot A0112834			(Purchased Reagent)		Bromomethane	2000 ug/mL
							Chloroethane	2000 ug/mL
							Chloromethane	2000 ug/mL
							Dichlorodifluoromethane	2000 ug/mL
							Trichlorofluoromethane	2000 ug/mL
							Vinyl chloride	2000 ug/mL
.VMSOMCALas_00027	10/22/16	Restek, Lot A0102833			(Purchased Reagent)		1,1,1-Trichloroethane	2000 ug/mL
							1,1,2,2-Tetrachloroethane	2000 ug/mL
							1,1,2-Trichloro-1,2,2-trifluor oethane	2000 ug/mL
							1,1,2-Trichloroethane	2000 ug/mL
							1,1-Dichloroethane	2000 ug/mL
							1,1-Dichloroethene	2000 ug/mL
							1,2,3-Trichlorobenzene	2000 ug/mL
							1,2,4-Trichlorobenzene	2000 ug/mL
							1,2-Dibromo-3-Chloropropane	2000 ug/mL
							1,2-Dibromoethane	2000 ug/mL
							1,2-Dichlorobenzene	2000 ug/mL
							1,2-Dichloroethane	2000 ug/mL
							1,2-Dichloropropane	2000 ug/mL
							1,3-Dichlorobenzene	2000 ug/mL
							1,4-Dichlorobenzene	2000 ug/mL
							Benzene	2000 ug/mL
							Bromochloromethane	2000 ug/mL
							Bromodichloromethane	2000 ug/mL
							Bromoform	2000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Burlington

Job No.: 200-31247-1

SDG No.: 31247

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Carbon disulfide	2000 ug/mL
							Carbon tetrachloride	2000 ug/mL
							Chlorobenzene	2000 ug/mL
							Chloroform	2000 ug/mL
							cis-1,2-Dichloroethene	2000 ug/mL
							cis-1,3-Dichloropropene	2000 ug/mL
							Cyclohexane	2000 ug/mL
							Dibromochloromethane	2000 ug/mL
							Ethylbenzene	2000 ug/mL
							Isopropylbenzene	2000 ug/mL
							m,p-Xylene	2000 ug/mL
							Methyl acetate	2000 ug/mL
							Methyl tert-butyl ether	2000 ug/mL
							Methylcyclohexane	2000 ug/mL
							Methylene Chloride	2000 ug/mL
							o-Xylene	2000 ug/mL
							Styrene	2000 ug/mL
							Tetrachloroethene	2000 ug/mL
							Toluene	2000 ug/mL
							trans-1,2-Dichloroethene	2000 ug/mL
							trans-1,3-Dichloropropene	2000 ug/mL
							Trichloroethene	2000 ug/mL
.VMSOMCALbs_00033	11/24/16		Restek, Lot A0104748		(Purchased Reagent)		2-Butanone	5000 ug/mL
							2-Hexanone	5000 ug/mL
							4-Methyl-2-pentanone	5000 ug/mL
							Acetone	5000 ug/mL
.VMSOMSUas_00077	12/17/16		Absolute, Lot 082015		(Purchased Reagent)		Chloroethane-d5	2000 ug/mL
							Vinyl Chloride-d3	2000 ug/mL
.VMSOMSUbs_00142	12/18/16		Absolute, Lot 071518		(Purchased Reagent)		2-Butanone-d5	2500 ug/mL
							2-Hexanone-d5	2500 ug/mL
.VMSOMSUcs_00055	12/17/16		Absolute, Lot 011614		(Purchased Reagent)		1,1,2,2-Tetrachloroethane-d2	2000 ug/mL
							1,1-Dichloroethene-d2	2000 ug/mL
							1,2-Dichlorobenzene-d4	2000 ug/mL
							1,2-Dichloroethane-d4	2000 ug/mL
							1,2-Dichloropropane-d6	2000 ug/mL
							Benzene-d6	2000 ug/mL
							Chloroform-d	2000 ug/mL
							Toluene-d8	2000 ug/mL
							trans-1,3-Dichloropropene-d4	2000 ug/mL
VMSOMTRISw_00108	01/18/16	12/18/15	METHANOL, Lot 151278	4000 uL	VMSOMISS_00027	33.6 uL	1,4-Dichlorobenzene-d4	21 ug/mL
							1,4-Difluorobenzene	21 ug/mL
							Chlorobenzene-d5	21 ug/mL
.VMSOMISS_00027	10/22/16		RESTEK, Lot A0110554		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2500 ug/mL
							1,4-Difluorobenzene	2500 ug/mL
							Chlorobenzene-d5	2500 ug/mL
VMSOMTRSUw_00103	01/18/16	12/18/15	METHANOL, Lot 151278	4000 uL	VMSOMSUas_00079	42 uL	Chloroethane-d5	21 ug/mL
							Vinyl Chloride-d3	21 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1

SDG No.: 31247

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					VMSOMSUs_00142	336 uL	2-Butanone-d5	210 ug/mL
							2-Hexanone-d5	210 ug/mL
					VMSOMSUs_00053	42 uL	1,1,2,2-Tetrachloroethane-d2	21 ug/mL
							1,1-Dichloroethene-d2	21 ug/mL
							1,2-Dichlorobenzene-d4	21 ug/mL
							1,2-Dichloroethane-d4	21 ug/mL
							1,2-Dichloropropane-d6	21 ug/mL
							Benzene-d6	21 ug/mL
							Chloroform-d	21 ug/mL
							Toluene-d8	21 ug/mL
						trans-1,3-Dichloropropene-d4	21 ug/mL	
.VMSOMSUs_00079	11/19/16	Absolute, Lot 082015			(Purchased Reagent)		Chloroethane-d5	2000 ug/mL
							Vinyl Chloride-d3	2000 ug/mL
.VMSOMSUs_00142	12/18/16	Absolute, Lot 071518			(Purchased Reagent)		2-Butanone-d5	2500 ug/mL
							2-Hexanone-d5	2500 ug/mL
.VMSOMSUs_00053	11/19/16	Absolute, Lot 011614			(Purchased Reagent)		1,1,2,2-Tetrachloroethane-d2	2000 ug/mL
							1,1-Dichloroethene-d2	2000 ug/mL
							1,2-Dichlorobenzene-d4	2000 ug/mL
							1,2-Dichloroethane-d4	2000 ug/mL
							1,2-Dichloropropane-d6	2000 ug/mL
							Benzene-d6	2000 ug/mL
							Chloroform-d	2000 ug/mL
							Toluene-d8	2000 ug/mL
							trans-1,3-Dichloropropene-d4	2000 ug/mL

REAGENT TRACEABILITY CROSS-REFERENCE

Lab Name: TestAmerica Burlington Job No.: 200-31247-1
 SDG No.: 31247

Reagent Container	Reagent ID	Reagent Description	Preparation Date	Expiration Date
807558	VMBFBw_00018	BFB TUNE 25 PPM	06/23/2015	12/22/2015
885836	VMSOMTRISw_00108	SOM TR ISTD 21 PPM	12/18/2015	01/18/2016
885837	VMSOMTRSUw_00103	SOM TR DMC 21 PPM	12/18/2015	01/18/2016
885843	VMSOMTRCALw_00097	SOM TR CAL 21 - 210 PPM	12/18/2015	01/18/2016
886995	VMBFBw_00020	BFB TUNE 25 PPM	12/22/2015	06/22/2016

METHODOLOGY SUMMARY

Laboratory: TestAmerica Laboratories

Project No:

Location: South Burlington, Vermont

SDG No: 31247

VOA

Volatile Organics Trace - USEPA CLP SOM01.2

CASE NARRATIVE

Client: Argonne National Laboratory

Project: Washington South (200-31247)

Report Number: 200-31247-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 12/18/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.5 C.

VOLATILE ORGANIC COMPOUNDS - TRACE

Samples WS-3-W-38714, WS-5-W-38715, WS-6-W-38716, WS-14-W-38717, WSQCTB-W-38720 and VHBLK01 were analyzed for Volatile Organic Compounds - Trace in accordance with EPA SOW SOM01.2. The samples were analyzed on 01/05/2016, 12/21/2015 and 12/22/2015.

Several analytes were detected in method blank MB 200-98757/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Several analytes were detected in method blank MB 200-98810/5 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Several analytes were detected in method blank MB 200-99149/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

A non-target constituent that represents a compound related to the DMC formulation is present in the samples in this set. The derived results for that compound have been qualified with an "X" qualifier to reflect the source of the contamination.

Samples WS-3-W-38714[1.43X], WS-5-W-38715[1.62X], WS-6-W-38716[1.32X] and WS-14-W-38717[1.3X] required dilution prior to analysis. The reporting limits have been adjusted accordingly. The samples were diluted due to the large presence of sediment in each of the vials.

Sample WS-5-W-38715 was analyzed outside of analytical holding time due to lab oversight.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1SDG No.: 31247Instrument ID: CHD.i Analysis Batch Number: 98658Lab Sample ID: ICIS 200-98658/7 Client Sample ID: _____Date Analyzed: 12/18/15 17:56 Lab File ID: 17400_007.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dichlorodifluoromethane	1.45	Incomplete Integration	wilburj	12/31/15 17:08
1,2-Dichloropropane-d6	6.35	Split Peak	wilburj	12/31/15 17:08

Lab Sample ID: IC 200-98658/8 Client Sample ID: _____Date Analyzed: 12/18/15 18:21 Lab File ID: 17400_008.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dichlorodifluoromethane	1.45	Incomplete Integration	wilburj	12/31/15 17:09
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	12/31/15 17:09

Lab Sample ID: IC 200-98658/9 Client Sample ID: _____Date Analyzed: 12/18/15 18:46 Lab File ID: 17400_009.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dichlorodifluoromethane	1.45	Incomplete Integration	wilburj	12/31/15 17:09
Bromomethane	1.95	Split Peak	wilburj	12/31/15 17:11
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	12/31/15 17:11

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1SDG No.: 31247Instrument ID: CHD.i Analysis Batch Number: 98757Lab Sample ID: CCVIS 200-98757/4 Client Sample ID: _____Date Analyzed: 12/21/15 14:27 Lab File ID: 17439_004.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	12/31/15 17:42

Lab Sample ID: CCVC 200-98757/19 Client Sample ID: _____Date Analyzed: 12/21/15 21:03 Lab File ID: 17439_019.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	12/31/15 17:58

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1SDG No.: 31247Instrument ID: CHD.i Analysis Batch Number: 98810Lab Sample ID: MB 200-98810/5 Client Sample ID: _____Date Analyzed: 12/22/15 12:11 Lab File ID: 17459_005.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,4-Trichlorobenzene	14.19	Assign Peak	wilburj	01/04/16 14:13

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1SDG No.: 31247Instrument ID: CHD.i Analysis Batch Number: 99149Lab Sample ID: CCVIS 200-99149/5 Client Sample ID: _____Date Analyzed: 01/05/16 13:21 Lab File ID: 17602_005.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	01/05/16 16:42

Lab Sample ID: CCVC 200-99149/11 Client Sample ID: _____Date Analyzed: 01/05/16 15:56 Lab File ID: 17602_011.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	01/05/16 16:53

DATA REPORTING QUALIFIERS

Client: Argonne National Laboratory

Job Number: 200-31247-1

Sdg Number: 31247

Lab Section	Qualifier	Description
GC/MS VOA	U	Analyzed for but not detected.
	J	Indicates an Estimated Value for TICs
	J	Indicates an estimated value.
	X	See case narrative notes for explanation of the 'X' flag
	B	The analyte was found in an associated blank, as well as in the sample.
	N	This flag indicates the presumptive evidence of a compound.

2A - FORM II VOA-1
WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Level: (TRACE or LOW) TRACE

	EPA SAMPLE NO.	VDMC1 (VCL) #	VDMC2 (CLA) #	VDMC3 (DCE) #	VDMC4 (BUT) #	VDMC5 (CLF) #	VDMC6 (DCA) #	VDMC7 (BEN) #
01	VBLKDT	120	125	79	112	102	110	113
02	WS-14-W-38717	102	107	77	116	98	109	102
03	VBLKDU	101	106	76	109	98	107	94
04	WS-3-W-38714	101	105	74	102	94	105	99
05	WS-6-W-38716	111	115	82	110	100	112	103
06	WSQCTB-W-38720	110	115	79	112	102	115	100
07	VBLKDY	110	116	74	105	106	115	106
08	WS-5-W-38715	106	113	82	104	105	114	103
09	VHBLK01	97	107	74	99	97	105	99

		QC LIMITS
VDMC1	(VCL) = Vinyl Chloride-d3	(65-131)
VDMC2	(CLA) = Chloroethane-d5	(71-131)
VDMC3	(DCE) = 1,1-Dichloroethene-d2	(55-104)
VDMC4	(BUT) = 2-Butanone-d5	(49-155)
VDMC5	(CLF) = Chloroform-d	(78-121)
VDMC6	(DCA) = 1,2-Dichloroethane-d4	(78-129)
VDMC7	(BEN) = Benzene-d6	(77-124)

Column to be used to flag recovery values
* Values outside of contract required QC limits

2B - FORM II VOA-2
WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Level: (TRACE or LOW) TRACE

	EPA SAMPLE NO.	VDMC8 (DPA) #	VDMC9 (TOL) #	VDMC10 (TDP) #	VDMC11 (HEX) #	VDMC12 (TCA) #	VDMC13 (DCZ) #	OTHER	TOT OUT
01	VBLKDT	107	109	104	114	104	126		0
02	WS-14-W-38717	100	106	102	119	119	120		0
03	VBLKDU	99	102	93	103	103	118		0
04	WS-3-W-38714	97	100	92	111	107	113		0
05	WS-6-W-38716	102	100	96	110	105	105		0
06	WSQCTB-W-38720	99	103	99	111	109	123		0
07	VBLKDY	106	110	107	104	98	110		0
08	WS-5-W-38715	101	103	99	101	99	111		0
09	VHBLK01	96	97	91	98	87	103		0

		<u>QC LIMITS</u>
VDMC8	(DPA) = 1,2-Dichloropropane-d6	(79-124)
VDMC9	(TOL) = Toluene-d8	(77-121)
VDMC10	(TDP) = trans-1,3-Dichloropropene-d4	(73-121)
VDMC11	(HEX) = 2-Hexanone-d5	(28-135)
VDMC12	(TCA) = 1,1,2,2-Tetrachloroethane-d2	(73-125)
VDMC13	(DCZ) = 1,2-Dichlorobenzene-d4	(80-131)

Column to be used to flag recovery values

* Values outside of contract required QC limits

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

EPA SAMPLE NO.

VBLKDT

Contract: 8E-00302

SDG No.: 31247

Lab Sample ID: MB 200-98757/6

Instrument ID: CHD.i

Date Analyzed: 12/21/2015

Time Analyzed: 1517

Heated Purge: (Y/N) N

01

4A - FORM IV VOA
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKDU

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247

Lab File ID: 17459_005.D

Lab Sample ID: MB 200-98810/5

Instrument ID: CHD.i

Matrix: (SOIL/SED/WATER) Water

Date Analyzed: 12/22/2015

Level: (TRACE or LOW/MED) TRACE

Time Analyzed: 1211

GC Column: DB-624 ID: 0.20 (mm)

Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	WS-3-W-38714	200-31247-1	17459_017. D	1727
02	WS-6-W-38716	200-31247-3	17459_018. D	1752
03	WSQCTB-W-387 20	200-31247-5	17459_019. D	1817

COMMENTS: _____

4A - FORM IV VOA
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKDY

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247

Lab File ID: 17602_006.D

Lab Sample ID: MB 200-99149/6

Instrument ID: CHD.i

Matrix: (SOIL/SED/WATER) Water

Date Analyzed: 01/05/2016

Level: (TRACE or LOW/MED) TRACE

Time Analyzed: 1345

GC Column: DB-624 ID: 0.20 (mm)

Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	WS-5-W-38715	200-31247-2	17602_007. D	1418
02	VHBLK01	200-31247-6	17602_008. D	1442

COMMENTS: _____

5A - FORM V VOA
VOLATILE ORGANICS INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

EPA SAMPLE NO.

BFBDS

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Lab File Id: 17400_002.D BFB Injection Date: 12/18/2015
Instrument Id: CHD.i BFB Injection Time: 1550
GC Column: DB-624 ID: 0.20 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.9
75	30.0 - 80.0% of mass 95	54.7
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.5 (0.7)1
174	50.0 - 120% of mass 95	78.3
175	5.0 - 9.0% of mass 174	5.4 (6.9)1
176	95.0 - 101% of mass 174	74.9 (95.7)1
177	5.0 - 9.0% of mass 176	4.7 (6.3)2

1 - Value is %mass 174

2 - Value is %mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0.5DS	IC 200-98658/5	17400_005.D	12/18/2015	1706
02	VSTD001DS	IC 200-98658/6	17400_006.D	12/18/2015	1731
03	VSTD005DS	ICIS 200-98658/7	17400_007.D	12/18/2015	1756
04	VSTD010DS	IC 200-98658/8	17400_008.D	12/18/2015	1821
05	VSTD020DS	IC 200-98658/9	17400_009.D	12/18/2015	1846

5A - FORM V VOA
VOLATILE ORGANICS INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

EPA SAMPLE NO.

BFBBDT

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Lab File Id: 17439_002.D BFB Injection Date: 12/21/2015
Instrument Id: CHD.i BFB Injection Time: 1340
GC Column: DB-624 ID: 0.20 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.6
75	30.0 - 80.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.7 (1.0)1
174	50.0 - 120% of mass 95	77.3
175	5.0 - 9.0% of mass 174	5.1 (6.6)1
176	95.0 - 101% of mass 174	74.9 (96.9)1
177	5.0 - 9.0% of mass 176	5.0 (6.7)2

1 - Value is %mass 174

2 - Value is %mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005DT	CCVIS 200-98757/4	17439_004.D	12/21/2015	1427
02	VBLKDT	MB 200-98757/6	17439_006.D	12/21/2015	1517
03	WS-14-W-38 717	200-31247-4	17439_017.D	12/21/2015	2013
04	VSTD005TD	CCVC 200-98757/19	17439_019.D	12/21/2015	2103

5A - FORM V VOA
VOLATILE ORGANICS INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

EPA SAMPLE NO.

BFB DU

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Lab File Id: 17459_001.D BFB Injection Date: 12/22/2015
Instrument Id: CHD.i BFB Injection Time: 1033
GC Column: DB-624 ID: 0.20 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.5
75	30.0 - 80.0% of mass 95	51.5
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.6 (0.7)1
174	50.0 - 120% of mass 95	82.6
175	5.0 - 9.0% of mass 174	5.8 (7.0)1
176	95.0 - 101% of mass 174	80.2 (97.0)1
177	5.0 - 9.0% of mass 176	5.0 (6.2)2

1 - Value is %mass 174

2 - Value is %mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005DU	CCVIS 200-98810/3	17459_003.D	12/22/2015	1121
02	VBLKDU	MB 200-98810/5	17459_005.D	12/22/2015	1211
03	WS-3-W-387 14	200-31247-1	17459_017.D	12/22/2015	1727
04	WS-6-W-387 16	200-31247-3	17459_018.D	12/22/2015	1752
05	WSQCTB-W-3 8720	200-31247-5	17459_019.D	12/22/2015	1817
06	VSTD005UD	CCVC 200-98810/23	17459_023.D	12/22/2015	1956

5A - FORM V VOA
VOLATILE ORGANICS INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

EPA SAMPLE NO.

BFB DY

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Lab File Id: 17602_001.D BFB Injection Date: 01/05/2016
Instrument Id: CHD.i BFB Injection Time: 1143
GC Column: DB-624 ID: 0.20 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.9
75	30.0 - 80.0% of mass 95	52.7
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.6 (0.7)1
174	50.0 - 120% of mass 95	82.6
175	5.0 - 9.0% of mass 174	5.4 (6.6)1
176	95.0 - 101% of mass 174	79.0 (95.7)1
177	5.0 - 9.0% of mass 176	5.2 (6.6)2

1 - Value is %mass 174

2 - Value is %mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005DY	CCVIS 200-99149/5	17602_005.D	01/05/2016	1321
02	VBLKDY	MB 200-99149/6	17602_006.D	01/05/2016	1345
03	WS-5-W-387 15	200-31247-2	17602_007.D	01/05/2016	1418
04	VHBLK01	200-31247-6	17602_008.D	01/05/2016	1442
05	VSTD005YD	CCVC 200-99149/11	17602_011.D	01/05/2016	1556

8A - FORM VIII VOA
VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 GC Column: DB-624 ID: 0.20 (mm) Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD#####): VSTD005DT Date Analyzed: 12/21/2015
 Lab File ID (Standard): 17439_004.D Time Analyzed: 1427
 Instrument ID: CHD.i Heated Purge: (Y/N) N

	IS1 (CBZ)		IS2 (DFB)		IS3 (DCB)	
	AREA	# RT #	AREA	# RT #	AREA	# RT #
12 HOUR STD	818390	9.27	904056	5.90	437630	12.09
UPPER LIMIT	1145746	9.60	1265678	6.23	612682	12.42
LOWER LIMIT	491034	8.94	542434	5.57	262578	11.76
EPA SAMPLE NO.						
01 VBLKDT	672122	9.27	718549	5.90	313593	12.09
02 WS-14-W-38717	666184	9.27	693193	5.90	339495	12.09

IS1 (CBZ) = Chlorobenzene-d5
 IS2 (DFB) = 1,4-Difluorobenzene
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = 140% (Trace Volatiles) of internal standard area
 AREA LOWER LIMIT = 60% (Trace Volatiles) of internal standard area
 RT UPPER LIMIT = + 0.33 (Trace Volatiles) minutes of internal standard RT
 RT LOWER LIMIT = - 0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8A - FORM VIII VOA
VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 GC Column: DB-624 ID: 0.20 (mm) Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD#####): VSTD005DU Date Analyzed: 12/22/2015
 Lab File ID (Standard): 17459_003.D Time Analyzed: 1121
 Instrument ID: CHD.i Heated Purge: (Y/N) N

	IS1 (CBZ)		IS2 (DFB)		IS3 (DCB)	
	AREA	# RT #	AREA	# RT #	AREA	# RT #
12 HOUR STD	678783	9.27	688526	5.90	366293	12.09
UPPER LIMIT	950296	9.60	963936	6.23	512810	12.42
LOWER LIMIT	407270	8.94	413116	5.57	219776	11.76
EPA SAMPLE NO.						
01 VBLKDU	533221	9.27	546916	5.90	237769	12.09
02 WS-3-W-38714	590260	9.27	634584	5.90	297790	12.09
03 WS-6-W-38716	596966	9.27	620542	5.90	312596	12.09
04 WSQCTB-W-38720	640725	9.27	648812	5.90	302748	12.09

IS1 (CBZ) = Chlorobenzene-d5
 IS2 (DFB) = 1,4-Difluorobenzene
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = 140% (Trace Volatiles) of internal standard area
 AREA LOWER LIMIT = 60% (Trace Volatiles) of internal standard area
 RT UPPER LIMIT = + 0.33 (Trace Volatiles) minutes of internal standard RT
 RT LOWER LIMIT = - 0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8A - FORM VIII VOA
VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 GC Column: DB-624 ID: 0.20 (mm) Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD#####): VSTD005DY Date Analyzed: 01/05/2016
 Lab File ID (Standard): 17602_005.D Time Analyzed: 1321
 Instrument ID: CHD.i Heated Purge: (Y/N) N

	IS1 (CBZ)		RT #	IS2 (DFB)		RT #	IS3 (DCB)	
	AREA	#		AREA	#		AREA	#
12 HOUR STD	626496		9.27	676888		5.90	327968	12.09
UPPER LIMIT	877094		9.60	947643		6.23	459155	12.42
LOWER LIMIT	375898		8.94	406133		5.57	196781	11.76
EPA SAMPLE NO.								
01 VBLKDY	595909		9.27	639009		5.90	283943	12.09
02 WS-5-W-38715	512201		9.27	540836		5.90	235958	12.09
03 VHBLK01	548228		9.27	586507		5.90	252692	12.09

IS1 (CBZ) = Chlorobenzene-d5
 IS2 (DFB) = 1,4-Difluorobenzene
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = 140% (Trace Volatiles) of internal standard area
 AREA LOWER LIMIT = 60% (Trace Volatiles) of internal standard area
 RT UPPER LIMIT = + 0.33 (Trace Volatiles) minutes of internal standard RT
 RT LOWER LIMIT = - 0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WS-14-W-38717

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-4

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17439_017.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/21/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.3

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
75-71-8	Dichlorodifluoromethane	0.65	U
74-87-3	Chloromethane	0.65	U
75-01-4	Vinyl chloride	0.65	U
74-83-9	Bromomethane	0.65	U
75-00-3	Chloroethane	0.65	U
75-69-4	Trichlorofluoromethane	0.65	U
75-35-4	1,1-Dichloroethene	0.65	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.65	U
67-64-1	Acetone	16	B
75-15-0	Carbon disulfide	0.096	J B
79-20-9	Methyl acetate	1.4	
75-09-2	Methylene Chloride	0.65	U
156-60-5	trans-1,2-Dichloroethene	0.65	U
1634-04-4	Methyl tert-butyl ether	0.65	U
75-34-3	1,1-Dichloroethane	0.65	U
156-59-2	cis-1,2-Dichloroethene	0.56	J
78-93-3	2-Butanone	3.5	J
74-97-5	Bromochloromethane	0.65	U
67-66-3	Chloroform	1.2	
71-55-6	1,1,1-Trichloroethane	0.65	U
110-82-7	Cyclohexane	0.65	U
56-23-5	Carbon tetrachloride	0.10	J
71-43-2	Benzene	0.40	J B
107-06-2	1,2-Dichloroethane	0.65	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WS-14-W-38717

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-4

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17439_017.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/21/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.3

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
79-01-6	Trichloroethene	0.073	J
108-87-2	Methylcyclohexane	0.65	U
78-87-5	1,2-Dichloropropane	0.65	U
75-27-4	Bromodichloromethane	0.65	U
10061-01-5	cis-1,3-Dichloropropene	0.65	U
108-10-1	4-Methyl-2-pentanone	6.5	U
108-88-3	Toluene	0.29	J B
10061-02-6	trans-1,3-Dichloropropene	0.65	U
79-00-5	1,1,2-Trichloroethane	0.65	U
127-18-4	Tetrachloroethene	0.034	J
591-78-6	2-Hexanone	6.5	U
124-48-1	Dibromochloromethane	0.65	U
106-93-4	1,2-Dibromoethane	0.65	U
108-90-7	Chlorobenzene	0.65	U
100-41-4	Ethylbenzene	0.050	J B
95-47-6	o-Xylene	0.042	J
179601-23-1	m,p-Xylene	0.089	J B
100-42-5	Styrene	0.029	J
75-25-2	Bromoform	0.65	U
98-82-8	Isopropylbenzene	0.65	U
79-34-5	1,1,2,2-Tetrachloroethane	0.65	U
541-73-1	1,3-Dichlorobenzene	0.65	U
106-46-7	1,4-Dichlorobenzene	0.65	U
95-50-1	1,2-Dichlorobenzene	0.65	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.65	U
120-82-1	1,2,4-Trichlorobenzene	0.65	U
87-61-6	1,2,3-Trichlorobenzene	0.65	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

WS-14-W-38717

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-4

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17439_017.D

Level: (TRACE or LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/21/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.3

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	1.42	13	J
02		Unknown	2.31	0.89	J
03		Unknown	7.23	4.6	J B X
04	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WS-3-W-38714

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-1

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_017.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.4

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
75-71-8	Dichlorodifluoromethane	0.72	U
74-87-3	Chloromethane	0.72	U
75-01-4	Vinyl chloride	0.72	U
74-83-9	Bromomethane	0.72	U
75-00-3	Chloroethane	0.72	U
75-69-4	Trichlorofluoromethane	0.72	U
75-35-4	1,1-Dichloroethene	0.72	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.72	U
67-64-1	Acetone	9.1	B
75-15-0	Carbon disulfide	0.72	U
79-20-9	Methyl acetate	1.1	
75-09-2	Methylene Chloride	0.068	J
156-60-5	trans-1,2-Dichloroethene	0.72	U
1634-04-4	Methyl tert-butyl ether	0.72	U
75-34-3	1,1-Dichloroethane	0.72	U
156-59-2	cis-1,2-Dichloroethene	0.72	U
78-93-3	2-Butanone	7.2	U
74-97-5	Bromochloromethane	0.72	U
67-66-3	Chloroform	3.6	
71-55-6	1,1,1-Trichloroethane	0.72	U
110-82-7	Cyclohexane	0.72	U
56-23-5	Carbon tetrachloride	0.24	J
71-43-2	Benzene	0.21	J B
107-06-2	1,2-Dichloroethane	0.72	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WS-3-W-38714

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-1

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_017.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.4

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
79-01-6	Trichloroethene	0.034	J B
108-87-2	Methylcyclohexane	0.72	U
78-87-5	1,2-Dichloropropane	0.72	U
75-27-4	Bromodichloromethane	0.72	U
10061-01-5	cis-1,3-Dichloropropene	0.72	U
108-10-1	4-Methyl-2-pentanone	7.2	U
108-88-3	Toluene	0.15	J B
10061-02-6	trans-1,3-Dichloropropene	0.72	U
79-00-5	1,1,2-Trichloroethane	0.72	U
127-18-4	Tetrachloroethene	0.72	U
591-78-6	2-Hexanone	7.2	U
124-48-1	Dibromochloromethane	0.72	U
106-93-4	1,2-Dibromoethane	0.72	U
108-90-7	Chlorobenzene	0.72	U
100-41-4	Ethylbenzene	0.034	J
95-47-6	o-Xylene	0.035	J
179601-23-1	m,p-Xylene	0.081	J B
100-42-5	Styrene	0.019	J
75-25-2	Bromoform	0.72	U
98-82-8	Isopropylbenzene	0.72	U
79-34-5	1,1,2,2-Tetrachloroethane	0.72	U
541-73-1	1,3-Dichlorobenzene	0.72	U
106-46-7	1,4-Dichlorobenzene	0.72	U
95-50-1	1,2-Dichlorobenzene	0.72	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.72	U
120-82-1	1,2,4-Trichlorobenzene	0.72	U
87-61-6	1,2,3-Trichlorobenzene	0.72	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

WS-3-W-38714

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-31247-1
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 17459_017.D
Level: (TRACE or LOW/MED) TRACE Date Received: 12/18/2015
% Moisture: not dec. Date Analyzed: 12/22/2015
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.4
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	1.42	11	J
02		Unknown	7.23	4.4	J B X
03	541-05-9	Cyclotrisiloxane, hexamethyl-	8.16	0.76	J N B
04	556-67-2	Cyclotetrasiloxane, octamethyl-	10.98	0.83	J N B
05	124-19-6	Nonanal	13.27	1.4	J N
06	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WS-5-W-38715

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-2

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17602_007.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 01/05/2016

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.6

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
75-71-8	Dichlorodifluoromethane	0.81	U
74-87-3	Chloromethane	0.81	U
75-01-4	Vinyl chloride	0.81	U
74-83-9	Bromomethane	0.22	J
75-00-3	Chloroethane	0.81	U
75-69-4	Trichlorofluoromethane	0.81	U
75-35-4	1,1-Dichloroethene	0.81	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.81	U
67-64-1	Acetone	8.3	
75-15-0	Carbon disulfide	0.16	J B
79-20-9	Methyl acetate	0.81	U
75-09-2	Methylene Chloride	0.063	J B
156-60-5	trans-1,2-Dichloroethene	0.043	J B
1634-04-4	Methyl tert-butyl ether	0.81	U
75-34-3	1,1-Dichloroethane	0.81	U
156-59-2	cis-1,2-Dichloroethene	0.81	U
78-93-3	2-Butanone	8.1	U
74-97-5	Bromochloromethane	0.81	U
67-66-3	Chloroform	2.5	
71-55-6	1,1,1-Trichloroethane	0.81	U
110-82-7	Cyclohexane	0.81	U
56-23-5	Carbon tetrachloride	4.5	
71-43-2	Benzene	0.15	J B
107-06-2	1,2-Dichloroethane	0.81	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WS-5-W-38715

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-2

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17602_007.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 01/05/2016

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.6

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
79-01-6	Trichloroethene	0.034	J B
108-87-2	Methylcyclohexane	0.81	U
78-87-5	1,2-Dichloropropane	0.81	U
75-27-4	Bromodichloromethane	0.81	U
10061-01-5	cis-1,3-Dichloropropene	0.81	U
108-10-1	4-Methyl-2-pentanone	8.1	U
108-88-3	Toluene	0.15	J B
10061-02-6	trans-1,3-Dichloropropene	0.81	U
79-00-5	1,1,2-Trichloroethane	0.81	U
127-18-4	Tetrachloroethene	0.81	U
591-78-6	2-Hexanone	8.1	U
124-48-1	Dibromochloromethane	0.81	U
106-93-4	1,2-Dibromoethane	0.81	U
108-90-7	Chlorobenzene	0.81	U
100-41-4	Ethylbenzene	0.030	J B
95-47-6	o-Xylene	0.018	J B
179601-23-1	m,p-Xylene	0.051	J B
100-42-5	Styrene	0.81	U
75-25-2	Bromoform	0.81	U
98-82-8	Isopropylbenzene	0.81	U
79-34-5	1,1,2,2-Tetrachloroethane	0.81	U
541-73-1	1,3-Dichlorobenzene	0.037	J B
106-46-7	1,4-Dichlorobenzene	0.81	U
95-50-1	1,2-Dichlorobenzene	0.81	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.81	U
120-82-1	1,2,4-Trichlorobenzene	0.095	J B
87-61-6	1,2,3-Trichlorobenzene	0.11	J B

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

WS-5-W-38715

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-31247-2
 Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 17602_007.D
 Level: (TRACE or LOW/MED) TRACE Date Received: 12/18/2015
 % Moisture: not dec. Date Analyzed: 01/05/2016
 GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.6
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
 CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	7.23	5.2	J B X
02	541-05-9	Cyclotrisiloxane, hexamethyl-	8.15	3.6	J N B
03	556-67-2	Cyclotetrasiloxane, octamethyl-	10.98	3.9	J N B
04		Unknown	13.13	1.1	J B
05	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WS-6-W-38716

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-3

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_018.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.3

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
75-71-8	Dichlorodifluoromethane	0.66	U
74-87-3	Chloromethane	0.66	U
75-01-4	Vinyl chloride	0.66	U
74-83-9	Bromomethane	0.66	U
75-00-3	Chloroethane	0.66	U
75-69-4	Trichlorofluoromethane	0.66	U
75-35-4	1,1-Dichloroethene	0.66	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.66	U
67-64-1	Acetone	10	B
75-15-0	Carbon disulfide	0.66	U
79-20-9	Methyl acetate	0.66	U
75-09-2	Methylene Chloride	0.66	U
156-60-5	trans-1,2-Dichloroethene	0.66	U
1634-04-4	Methyl tert-butyl ether	0.66	U
75-34-3	1,1-Dichloroethane	0.66	U
156-59-2	cis-1,2-Dichloroethene	0.66	U
78-93-3	2-Butanone	2.1	J
74-97-5	Bromochloromethane	0.66	U
67-66-3	Chloroform	0.33	J
71-55-6	1,1,1-Trichloroethane	0.66	U
110-82-7	Cyclohexane	0.66	U
56-23-5	Carbon tetrachloride	0.66	U
71-43-2	Benzene	0.22	J B
107-06-2	1,2-Dichloroethane	0.66	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WS-6-W-38716

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-3

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_018.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.3

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
79-01-6	Trichloroethene	0.66	U
108-87-2	Methylcyclohexane	0.66	U
78-87-5	1,2-Dichloropropane	0.66	U
75-27-4	Bromodichloromethane	0.66	U
10061-01-5	cis-1,3-Dichloropropene	0.66	U
108-10-1	4-Methyl-2-pentanone	6.6	U
108-88-3	Toluene	0.16	J B
10061-02-6	trans-1,3-Dichloropropene	0.66	U
79-00-5	1,1,2-Trichloroethane	0.66	U
127-18-4	Tetrachloroethene	0.66	U
591-78-6	2-Hexanone	6.6	U
124-48-1	Dibromochloromethane	0.66	U
106-93-4	1,2-Dibromoethane	0.66	U
108-90-7	Chlorobenzene	0.66	U
100-41-4	Ethylbenzene	0.029	J
95-47-6	o-Xylene	0.024	J
179601-23-1	m,p-Xylene	0.058	J B
100-42-5	Styrene	0.015	J
75-25-2	Bromoform	0.66	U
98-82-8	Isopropylbenzene	0.66	U
79-34-5	1,1,2,2-Tetrachloroethane	0.66	U
541-73-1	1,3-Dichlorobenzene	0.66	U
106-46-7	1,4-Dichlorobenzene	0.66	U
95-50-1	1,2-Dichlorobenzene	0.66	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.66	U
120-82-1	1,2,4-Trichlorobenzene	0.66	U
87-61-6	1,2,3-Trichlorobenzene	0.66	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

WS-6-W-38716

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-3

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_018.D

Level: (TRACE or LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.3

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	1.42	15	J
02		Unknown	2.09	1.4	J
03		Unknown	2.31	1.4	J
04		Unknown	7.23	4.4	J B X
05	124-19-6	Nonanal	13.26	0.83	J N
06	E966796 ¹	Total Alkanes	N/A	0.92	J

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WSQCTB-W-38720

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-5

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_019.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	3.4	J B
75-15-0	Carbon disulfide	0.025	J B
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.060	J B
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WSQCTB-W-38720

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-5

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_019.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 12/18/2015

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
79-01-6	Trichloroethene	0.036	J B
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.15	J B
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.015	J
95-47-6	o-Xylene	0.12	J
179601-23-1	m,p-Xylene	0.059	J B
100-42-5	Styrene	0.032	J
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.017	J B
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

WSQCTB-W-38720

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-31247-5
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 17459_019.D
Level: (TRACE or LOW/MED) TRACE Date Received: 12/18/2015
% Moisture: not dec. Date Analyzed: 12/22/2015
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	7.23	3.5	J B X
02	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

6A - FORM VI VOA-1
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 Instrument ID: CHD.i Calibration Date(s): 12/18/2015 12/18/2015
 Heated Purge: (Y/N) N Calibration Time(s): 1706 1846
 Purge Volume: 25.0 (mL)
 GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)

LAB FILE ID: <u> </u>		RRF0.5 = <u>17400_005.D</u>		RRF1.0 = <u>17400_006.D</u>			
RRF5.0 = <u>17400_007.D</u>		RRF10 = <u>17400_008.D</u>		RRF20 = <u>17400_009.D</u>			
COMPOUND	RRF0.5	RRF1.0	RRF5.0	RRF10	RRF20	RRF	%RSD
Dichlorodifluoromethane	0.770	0.775	0.754	0.781	0.785	0.773	1.6
Chloromethane	0.684	0.584	0.504	0.491	0.491	0.551	15.3
Vinyl chloride	0.398	0.418	0.422	0.425	0.437	0.420	3.3
Bromomethane	0.127	0.117	0.115	0.130	0.142	0.126	8.7
Chloroethane	0.182	0.288	0.240	0.230	0.214	0.231	16.8
Trichlorofluoromethane	0.704	0.685	0.695	0.713	0.736	0.707	2.8
1,1-Dichloroethene	0.259	0.255	0.250	0.249	0.258	0.254	1.8
1,1,2-Trichloro- 1,2,2-trifluoroethane	0.292	0.295	0.299	0.304	0.303	0.299	1.7
Acetone	0.041	0.039	0.032	0.033	0.034	0.036	11.8
Carbon disulfide	0.623	0.558	0.580	0.619	0.662	0.609	6.7
Methyl acetate	0.074	0.084	0.079	0.082	0.071	0.078	7.0
Methylene Chloride	0.272	0.268	0.250	0.325	0.302	0.283	10.6
trans-1,2-Dichloroethene	0.297	0.302	0.322	0.336	0.346	0.321	6.6
Methyl tert-butyl ether	0.409	0.425	0.457	0.497	0.538	0.465	11.3
1,1-Dichloroethane	0.628	0.637	0.649	0.654	0.684	0.651	3.3
cis-1,2-Dichloroethene	0.288	0.298	0.332	0.345	0.363	0.325	9.8
2-Butanone	0.050	0.052	0.062	0.063	0.064	0.058	11.7
Bromochloromethane	0.104	0.112	0.115	0.123	0.128	0.117	7.9
Chloroform	0.564	0.583	0.626	0.639	0.654	0.613	6.2
1,1,1-Trichloroethane	0.503	0.511	0.583	0.620	0.618	0.567	10.0
Cyclohexane	0.490	0.543	0.667	0.701	0.707	0.622	15.9
Carbon tetrachloride	0.421	0.446	0.509	0.539	0.551	0.493	11.6
Benzene	1.578	1.577	1.611	1.600	1.540	1.581	1.7
1,2-Dichloroethane	0.343	0.360	0.360	0.373	0.364	0.360	3.0
Trichloroethene	0.361	0.352	0.390	0.386	0.390	0.376	4.7
Methylcyclohexane	0.416	0.419	0.522	0.546	0.538	0.488	13.4

Report 1,4-Dioxane for Low-Medium VOA analysis only

6B - FORM VI VOA-2
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 Instrument ID: CHD.i Calibration Date(s): 12/18/2015 12/18/2015
 Heated Purge: (Y/N) N Calibration Time(s): 1706 1846
 Purge Volume: 25.0 (mL)
 GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)

LAB FILE ID: <u> </u>		RRF0.5 = <u>17400_005.D</u>		RRF1.0 = <u>17400_006.D</u>			
RRF5.0 = <u>17400_007.D</u>		RRF10 = <u>17400_008.D</u>		RRF20 = <u>17400_009.D</u>			
COMPOUND	RRF0.5	RRF1.0	RRF5.0	RRF10	RRF20	RRF	%RSD
1,2-Dichloropropane	0.318	0.324	0.355	0.361	0.362	0.344	6.1
Bromodichloromethane	0.313	0.312	0.360	0.391	0.413	0.358	12.7
cis-1,3-Dichloropropene	0.297	0.333	0.474	0.508	0.533	0.429	25.0
4-Methyl-2-pentanone	0.098	0.112	0.151	0.153	0.157	0.134	20.2
Toluene	1.344	1.460	1.669	1.667	1.618	1.552	9.3
trans-1,3-Dichloropropene	0.229	0.238	0.349	0.389	0.399	0.321	25.5
1,1,2-Trichloroethane	0.196	0.169	0.187	0.193	0.190	0.187	5.8
Tetrachloroethene	0.292	0.293	0.321	0.326	0.328	0.312	5.7
2-Hexanone	0.063	0.084	0.107	0.109	0.108	0.094	21.5
Dibromochloromethane	0.144	0.144	0.186	0.204	0.212	0.178	18.1
1,2-Dibromoethane	0.141	0.152	0.172	0.176	0.179	0.164	10.1
Chlorobenzene	0.910	0.961	1.011	1.022	1.015	0.984	4.9
Ethylbenzene	1.471	1.597	1.911	1.968	1.920	1.773	12.6
o-Xylene	0.429	0.496	0.656	0.690	0.675	0.589	20.2
m,p-Xylene	0.508	0.572	0.705	0.724	0.710	0.644	15.2
Styrene	0.648	0.755	1.029	1.056	1.056	0.909	21.3
Bromoform	0.099	0.116	0.126	0.140	0.158	0.128	17.8
Isopropylbenzene	1.163	1.363	1.852	1.932	1.905	1.643	21.6
1,1,2,2-Tetrachloroethane	0.168	0.177	0.194	0.202	0.202	0.189	8.2
1,3-Dichlorobenzene	1.232	1.293	1.456	1.565	1.592	1.428	11.3
1,4-Dichlorobenzene	1.661	1.642	1.571	1.617	1.610	1.620	2.1
1,2-Dichlorobenzene	1.268	1.313	1.340	1.375	1.374	1.334	3.4
1,2-Dibromo-3-Chloropropane	0.051	0.036	0.039	0.047	0.050	0.045	14.8
1,2,4-Trichlorobenzene	0.577	0.555	0.651	0.760	0.790	0.667	15.9
1,2,3-Trichlorobenzene	0.438	0.418	0.497	0.562	0.568	0.497	13.9

6C - FORM VI VOA-3
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 Instrument ID: CHD.i Calibration Date(s): 12/18/2015 12/18/2015
 Heated Purge: (Y/N) N Calibration Time(s): 1706 1846
 Purge Volume: 25.0 (mL)
 GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)

LAB FILE ID: <u> </u>		RRF0.5 = <u>17400_005.D</u>		RRF1.0 = <u>17400_006.D</u>			
RRF5.0 = <u>17400_007.D</u>		RRF10 = <u>17400_008.D</u>		RRF20 = <u>17400_009.D</u>			
COMPOUND	RRF0.5	RRF1.0	RRF5.0	RRF10	RRF20	RRF	%RSD
Vinyl Chloride-d3	0.323	0.350	0.345	0.347	0.359	0.345	3.8
Chloroethane-d5	0.219	0.232	0.253	0.250	0.250	0.240	6.2
1,1-Dichloroethene-d2	0.606	0.624	0.637	0.652	0.669	0.638	3.8
2-Butanone-d5	0.045	0.046	0.052	0.056	0.060	0.052	12.2
Chloroform-d	0.624	0.632	0.680	0.686	0.704	0.665	5.3
1,2-Dichloroethane-d4	0.292	0.286	0.289	0.300	0.311	0.296	3.4
Benzene-d6	1.304	1.413	1.482	1.486	1.473	1.432	5.4
1,2-Dichloropropane-d6	0.393	0.390	0.410	0.413	0.405	0.402	2.5
Toluene-d8	1.090	1.251	1.441	1.438	1.397	1.323	11.5
trans-1,3-Dichloropropene-d4	0.215	0.219	0.305	0.338	0.359	0.287	23.3
2-Hexanone-d5	0.025	0.030	0.043	0.047	0.048	0.039	26.9
1,1,2,2-Tetrachloroethane-d2	0.170	0.180	0.199	0.203	0.205	0.191	8.2
1,2-Dichlorobenzene-d4	0.883	0.818	0.827	0.867	0.875	0.854	3.4

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/21/2015 Time: 1427
 Lab File Id: 17439_004.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DT Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.773	0.710	0.010	-8.2	40.0
Chloromethane	0.551	0.495	0.010	-10.1	40.0
Vinyl chloride	0.420	0.419	0.100	-0.2	30.0
Bromomethane	0.126	0.153	0.100	21.6	30.0
Chloroethane	0.231	0.223	0.010	-3.4	40.0
Trichlorofluoromethane	0.707	0.631	0.010	-10.7	40.0
1,1-Dichloroethene	0.254	0.242	0.100	-4.9	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.299	0.275	0.010	-7.9	40.0
Acetone	0.036	0.028	0.010	-21.9	40.0
Carbon disulfide	0.609	0.617	0.010	1.4	40.0
Methyl acetate	0.078	0.065	0.010	-16.2	40.0
Methylene Chloride	0.283	0.255	0.010	-10.0	40.0
trans-1,2-Dichloroethene	0.321	0.294	0.010	-8.2	40.0
Methyl tert-butyl ether	0.465	0.418	0.010	-10.1	40.0
1,1-Dichloroethane	0.651	0.597	0.200	-8.2	30.0
cis-1,2-Dichloroethene	0.325	0.320	0.010	-1.6	40.0
2-Butanone	0.058	0.052	0.010	-10.2	40.0
Bromochloromethane	0.117	0.107	0.050	-8.6	30.0
Chloroform	0.613	0.582	0.200	-5.1	30.0
1,1,1-Trichloroethane	0.567	0.549	0.100	-3.2	30.0
Cyclohexane	0.622	0.655	0.010	5.3	40.0
Carbon tetrachloride	0.493	0.464	0.100	-6.0	30.0
Benzene	1.581	1.547	0.400	-2.1	30.0
1,2-Dichloroethane	0.360	0.329	0.100	-8.6	30.0
Trichloroethene	0.376	0.369	0.300	-1.9	30.0
Methylcyclohexane	0.488	0.495	0.010	1.5	40.0

Report 1,4-Dioxane for Low/Medium VOA analysis only

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/21/2015 Time: 1427
 Lab File Id: 17439_004.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DT Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.344	0.343	0.010	-0.3	40.0
Bromodichloromethane	0.358	0.343	0.200	-4.1	30.0
cis-1,3-Dichloropropene	0.429	0.459	0.200	7.1	30.0
4-Methyl-2-pentanone	0.134	0.132	0.010	-1.4	40.0
Toluene	1.552	1.593	0.400	2.7	30.0
trans-1,3-Dichloropropene	0.321	0.323	0.100	0.7	30.0
1,1,2-Trichloroethane	0.187	0.181	0.100	-3.2	30.0
Tetrachloroethene	0.312	0.322	0.100	3.1	30.0
2-Hexanone	0.094	0.096	0.010	2.3	40.0
Dibromochloromethane	0.178	0.177	0.100	-0.7	30.0
1,2-Dibromoethane	0.164	0.157	0.010	-4.1	40.0
Chlorobenzene	0.984	1.003	0.500	1.9	30.0
Ethylbenzene	1.773	1.848	0.100	4.2	30.0
o-Xylene	0.589	0.642	0.300	9.0	30.0
m,p-Xylene	0.644	0.701	0.300	8.9	30.0
Styrene	0.909	0.995	0.300	9.5	30.0
Bromoform	0.128	0.125	0.050	-2.5	30.0
Isopropylbenzene	1.643	1.834	0.010	11.6	40.0
1,1,2,2-Tetrachloroethane	0.189	0.184	0.100	-2.8	30.0
1,3-Dichlorobenzene	1.428	1.493	0.400	4.6	30.0
1,4-Dichlorobenzene	1.620	1.580	0.400	-2.5	30.0
1,2-Dichlorobenzene	1.334	1.346	0.400	0.9	30.0
1,2-Dibromo-3-Chloropropane	0.045	0.040	0.010	-10.8	40.0
1,2,4-Trichlorobenzene	0.667	0.678	0.200	1.7	30.0
1,2,3-Trichlorobenzene	0.497	0.502	0.200	1.0	30.0

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/21/2015 Time: 1427
 Lab File Id: 17439_004.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DT Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Vinyl Chloride-d3	0.345	0.342	0.010	-0.9	30.0
Chloroethane-d5	0.240	0.251	0.010	4.4	40.0
1,1-Dichloroethene-d2	0.638	0.591	0.010	-7.3	30.0
2-Butanone-d5	0.052	0.045	0.010	-12.8	40.0
Chloroform-d	0.665	0.609	0.010	-8.4	30.0
1,2-Dichloroethane-d4	0.296	0.267	0.010	-9.8	30.0
Benzene-d6	1.432	1.410	0.010	-1.5	30.0
1,2-Dichloropropane-d6	0.402	0.381	0.010	-5.3	40.0
Toluene-d8	1.323	1.375	0.010	3.9	30.0
trans-1,3-Dichloropropene-d4	0.287	0.291	0.010	1.5	30.0
2-Hexanone-d5	0.039	0.039	0.010	2.4	40.0
1,1,2,2-Tetrachloroethane-d2	0.191	0.186	0.010	-2.8	30.0
1,2-Dichlorobenzene-d4	0.854	0.832	0.010	-2.6	30.0

Report 1,4-Dioxane-d8 for Low/Medium VOA analysis only

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/21/2015 Time: 2103
 Lab File Id: 17439_019.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005TD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.773	0.795	0.010	2.9	50.0
Chloromethane	0.551	0.522	0.010	-5.2	50.0
Vinyl chloride	0.420	0.421	0.010	0.1	50.0
Bromomethane	0.126	0.120	0.010	-4.5	50.0
Chloroethane	0.231	0.209	0.010	-9.4	50.0
Trichlorofluoromethane	0.707	0.702	0.010	-0.6	50.0
1,1-Dichloroethene	0.254	0.245	0.010	-3.6	50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.299	0.297	0.010	-0.6	50.0
Acetone	0.036	0.035	0.010	-1.8	50.0
Carbon disulfide	0.609	0.612	0.010	0.6	50.0
Methyl acetate	0.078	0.087	0.010	11.3	50.0
Methylene Chloride	0.283	0.328	0.010	15.9	50.0
trans-1,2-Dichloroethene	0.321	0.333	0.010	3.8	50.0
Methyl tert-butyl ether	0.465	0.489	0.010	5.2	50.0
1,1-Dichloroethane	0.651	0.669	0.010	2.8	50.0
cis-1,2-Dichloroethene	0.325	0.389	0.010	19.7	50.0
2-Butanone	0.058	0.069	0.010	19.2	50.0
Bromochloromethane	0.117	0.125	0.010	6.8	50.0
Chloroform	0.613	0.680	0.010	10.9	50.0
1,1,1-Trichloroethane	0.567	0.573	0.010	1.2	50.0
Cyclohexane	0.622	0.669	0.010	7.6	50.0
Carbon tetrachloride	0.493	0.519	0.010	5.2	50.0
Benzene	1.581	1.667	0.010	5.5	50.0
1,2-Dichloroethane	0.360	0.403	0.010	12.0	50.0
Trichloroethene	0.376	0.356	0.010	-5.3	50.0
Methylcyclohexane	0.488	0.503	0.010	3.1	50.0

Report 1,4-Dioxane for Low/Medium VOA analysis only

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/21/2015 Time: 2103
 Lab File Id: 17439_019.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005TD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.344	0.371	0.010	7.8	50.0
Bromodichloromethane	0.358	0.380	0.010	6.0	50.0
cis-1,3-Dichloropropene	0.429	0.499	0.010	16.2	50.0
4-Methyl-2-pentanone	0.134	0.168	0.010	24.8	50.0
Toluene	1.552	1.747	0.010	12.6	50.0
trans-1,3-Dichloropropene	0.321	0.353	0.010	10.2	50.0
1,1,2-Trichloroethane	0.187	0.197	0.010	5.1	50.0
Tetrachloroethene	0.312	0.333	0.010	6.9	50.0
2-Hexanone	0.094	0.121	0.010	28.5	50.0
Dibromochloromethane	0.178	0.217	0.010	21.8	50.0
1,2-Dibromoethane	0.164	0.183	0.010	11.6	50.0
Chlorobenzene	0.984	1.083	0.010	10.1	50.0
Ethylbenzene	1.773	1.972	0.010	11.2	50.0
o-Xylene	0.589	0.684	0.010	16.2	50.0
m,p-Xylene	0.644	0.743	0.010	15.5	50.0
Styrene	0.909	1.144	0.010	25.8	50.0
Bromoform	0.128	0.147	0.010	15.0	50.0
Isopropylbenzene	1.643	1.938	0.010	18.0	50.0
1,1,2,2-Tetrachloroethane	0.189	0.220	0.010	16.6	50.0
1,3-Dichlorobenzene	1.428	1.425	0.010	-0.2	50.0
1,4-Dichlorobenzene	1.620	1.549	0.010	-4.4	50.0
1,2-Dichlorobenzene	1.334	1.419	0.010	6.4	50.0
1,2-Dibromo-3-Chloropropane	0.045	0.045	0.010	0.5	50.0
1,2,4-Trichlorobenzene	0.667	0.666	0.010	0.0	50.0
1,2,3-Trichlorobenzene	0.497	0.516	0.010	3.9	50.0

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/21/2015 Time: 2103
 Lab File Id: 17439_019.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005TD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Vinyl Chloride-d3	0.345	0.352	0.010	2.2	50.0
Chloroethane-d5	0.240	0.268	0.010	11.3	50.0
1,1-Dichloroethene-d2	0.638	0.633	0.010	-0.7	50.0
2-Butanone-d5	0.052	0.059	0.010	14.3	50.0
Chloroform-d	0.665	0.700	0.010	5.3	50.0
1,2-Dichloroethane-d4	0.296	0.324	0.010	9.7	50.0
Benzene-d6	1.432	1.509	0.010	5.4	50.0
1,2-Dichloropropane-d6	0.402	0.418	0.010	3.9	50.0
Toluene-d8	1.323	1.532	0.010	15.8	50.0
trans-1,3-Dichloropropene-d4	0.287	0.315	0.010	9.8	50.0
2-Hexanone-d5	0.039	0.049	0.010	26.8	50.0
1,1,2,2-Tetrachloroethane-d2	0.191	0.235	0.010	22.7	50.0
1,2-Dichlorobenzene-d4	0.854	0.847	0.010	-0.8	50.0

Report 1,4-Dioxane-d8 for Low/Medium VOA analysis only

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/22/2015 Time: 1121
 Lab File Id: 17459_003.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DU Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.773	0.623	0.010	-19.5	40.0
Chloromethane	0.551	0.396	0.010	-28.0	40.0
Vinyl chloride	0.420	0.337	0.100	-19.8	30.0
Bromomethane	0.126	0.112	0.100	-10.7	30.0
Chloroethane	0.231	0.162	0.010	-29.8	40.0
Trichlorofluoromethane	0.707	0.533	0.010	-24.6	40.0
1,1-Dichloroethene	0.254	0.189	0.100	-25.7	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.299	0.241	0.010	-19.2	40.0
Acetone	0.036	0.026	0.010	-27.7	40.0
Carbon disulfide	0.609	0.474	0.010	-22.1	40.0
Methyl acetate	0.078	0.076	0.010	-3.0	40.0
Methylene Chloride	0.283	0.252	0.010	-10.8	40.0
trans-1,2-Dichloroethene	0.321	0.268	0.010	-16.4	40.0
Methyl tert-butyl ether	0.465	0.364	0.010	-21.7	40.0
1,1-Dichloroethane	0.651	0.512	0.200	-21.3	30.0
cis-1,2-Dichloroethene	0.325	0.282	0.010	-13.3	40.0
2-Butanone	0.058	0.049	0.010	-16.0	40.0
Bromochloromethane	0.117	0.098	0.050	-16.3	30.0
Chloroform	0.613	0.517	0.200	-15.8	30.0
1,1,1-Trichloroethane	0.567	0.436	0.100	-23.1	30.0
Cyclohexane	0.622	0.503	0.010	-19.1	40.0
Carbon tetrachloride	0.493	0.391	0.100	-20.7	30.0
Benzene	1.581	1.172	0.400	-25.8	30.0
1,2-Dichloroethane	0.360	0.283	0.100	-21.4	30.0
Trichloroethene	0.376	0.297	0.300	-21.0	30.0
Methylcyclohexane	0.488	0.407	0.010	-16.6	40.0

Report 1,4-Dioxane for Low/Medium VOA analysis only

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/22/2015 Time: 1121
 Lab File Id: 17459_003.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DU Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.344	0.282	0.010	-17.9	40.0
Bromodichloromethane	0.358	0.288	0.200	-19.5	30.0
cis-1,3-Dichloropropene	0.429	0.360	0.200	-16.2	30.0
4-Methyl-2-pentanone	0.134	0.114	0.010	-15.3	40.0
Toluene	1.552	1.326	0.400	-14.5	30.0
trans-1,3-Dichloropropene	0.321	0.272	0.100	-15.3	30.0
1,1,2-Trichloroethane	0.187	0.157	0.100	-16.1	30.0
Tetrachloroethene	0.312	0.257	0.100	-17.7	30.0
2-Hexanone	0.094	0.087	0.010	-7.7	40.0
Dibromochloromethane	0.178	0.150	0.100	-15.9	30.0
1,2-Dibromoethane	0.164	0.139	0.010	-15.3	40.0
Chlorobenzene	0.984	0.832	0.500	-15.4	30.0
Ethylbenzene	1.773	1.573	0.100	-11.3	30.0
o-Xylene	0.589	0.526	0.300	-10.7	30.0
m,p-Xylene	0.644	0.583	0.300	-9.4	30.0
Styrene	0.909	0.800	0.300	-12.0	30.0
Bromoform	0.128	0.105	0.050	-17.6	30.0
Isopropylbenzene	1.643	1.464	0.010	-10.9	40.0
1,1,2,2-Tetrachloroethane	0.189	0.169	0.100	-10.4	30.0
1,3-Dichlorobenzene	1.428	1.211	0.400	-15.2	30.0
1,4-Dichlorobenzene	1.620	1.369	0.400	-15.5	30.0
1,2-Dichlorobenzene	1.334	1.129	0.400	-15.3	30.0
1,2-Dibromo-3-Chloropropane	0.045	0.033	0.010	-26.2	40.0
1,2,4-Trichlorobenzene	0.667	0.575	0.200	-13.7	30.0
1,2,3-Trichlorobenzene	0.497	0.435	0.200	-12.5	30.0

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/22/2015 Time: 1121
 Lab File Id: 17459_003.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DU Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Vinyl Chloride-d3	0.345	0.278	0.010	-19.4	30.0
Chloroethane-d5	0.240	0.208	0.010	-13.5	40.0
1,1-Dichloroethene-d2	0.638	0.507	0.010	-20.5	30.0
2-Butanone-d5	0.052	0.042	0.010	-18.8	40.0
Chloroform-d	0.665	0.555	0.010	-16.5	30.0
1,2-Dichloroethane-d4	0.296	0.249	0.010	-15.6	30.0
Benzene-d6	1.432	1.176	0.010	-17.9	30.0
1,2-Dichloropropane-d6	0.402	0.367	0.010	-8.6	40.0
Toluene-d8	1.323	1.149	0.010	-13.2	30.0
trans-1,3-Dichloropropene-d4	0.287	0.241	0.010	-16.0	30.0
2-Hexanone-d5	0.039	0.035	0.010	-8.1	40.0
1,1,2,2-Tetrachloroethane-d2	0.191	0.166	0.010	-13.1	30.0
1,2-Dichlorobenzene-d4	0.854	0.713	0.010	-16.5	30.0

Report 1,4-Dioxane-d8 for Low/Medium VOA analysis only

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/22/2015 Time: 1956
 Lab File Id: 17459_023.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005UD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.773	0.801	0.010	3.6	50.0
Chloromethane	0.551	0.527	0.010	-4.3	50.0
Vinyl chloride	0.420	0.439	0.010	4.6	50.0
Bromomethane	0.126	0.115	0.010	-8.8	50.0
Chloroethane	0.231	0.230	0.010	-0.6	50.0
Trichlorofluoromethane	0.707	0.701	0.010	-0.9	50.0
1,1-Dichloroethene	0.254	0.254	0.010	0.0	50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.299	0.312	0.010	4.3	50.0
Acetone	0.036	0.036	0.010	1.2	50.0
Carbon disulfide	0.609	0.581	0.010	-4.5	50.0
Methyl acetate	0.078	0.074	0.010	-5.3	50.0
Methylene Chloride	0.283	0.259	0.010	-8.5	50.0
trans-1,2-Dichloroethene	0.321	0.323	0.010	0.7	50.0
Methyl tert-butyl ether	0.465	0.468	0.010	0.7	50.0
1,1-Dichloroethane	0.651	0.676	0.010	3.8	50.0
cis-1,2-Dichloroethene	0.325	0.358	0.010	10.0	50.0
2-Butanone	0.058	0.065	0.010	10.8	50.0
Bromochloromethane	0.117	0.119	0.010	1.8	50.0
Chloroform	0.613	0.660	0.010	7.7	50.0
1,1,1-Trichloroethane	0.567	0.552	0.010	-2.6	50.0
Cyclohexane	0.622	0.622	0.010	0.0	50.0
Carbon tetrachloride	0.493	0.477	0.010	-3.3	50.0
Benzene	1.581	1.550	0.010	-2.0	50.0
1,2-Dichloroethane	0.360	0.359	0.010	-0.4	50.0
Trichloroethene	0.376	0.359	0.010	-4.4	50.0
Methylcyclohexane	0.488	0.486	0.010	-0.5	50.0

Report 1,4-Dioxane for Low/Medium VOA analysis only

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/22/2015 Time: 1956
 Lab File Id: 17459_023.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005UD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.344	0.329	0.010	-4.4	50.0
Bromodichloromethane	0.358	0.346	0.010	-3.5	50.0
cis-1,3-Dichloropropene	0.429	0.464	0.010	8.2	50.0
4-Methyl-2-pentanone	0.134	0.144	0.010	6.9	50.0
Toluene	1.552	1.629	0.010	5.0	50.0
trans-1,3-Dichloropropene	0.321	0.317	0.010	-1.1	50.0
1,1,2-Trichloroethane	0.187	0.197	0.010	5.3	50.0
Tetrachloroethene	0.312	0.329	0.010	5.5	50.0
2-Hexanone	0.094	0.107	0.010	14.1	50.0
Dibromochloromethane	0.178	0.174	0.010	-2.1	50.0
1,2-Dibromoethane	0.164	0.163	0.010	-0.6	50.0
Chlorobenzene	0.984	0.983	0.010	0.0	50.0
Ethylbenzene	1.773	1.798	0.010	1.4	50.0
o-Xylene	0.589	0.616	0.010	4.5	50.0
m,p-Xylene	0.644	0.684	0.010	6.2	50.0
Styrene	0.909	1.088	0.010	19.7	50.0
Bromoform	0.128	0.124	0.010	-2.9	50.0
Isopropylbenzene	1.643	1.780	0.010	8.4	50.0
1,1,2,2-Tetrachloroethane	0.189	0.198	0.010	4.6	50.0
1,3-Dichlorobenzene	1.428	1.426	0.010	-0.1	50.0
1,4-Dichlorobenzene	1.620	1.680	0.010	3.7	50.0
1,2-Dichlorobenzene	1.334	1.429	0.010	7.2	50.0
1,2-Dibromo-3-Chloropropane	0.045	0.043	0.010	-4.4	50.0
1,2,4-Trichlorobenzene	0.667	0.677	0.010	1.5	50.0
1,2,3-Trichlorobenzene	0.497	0.543	0.010	9.4	50.0

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 12/22/2015 Time: 1956
 Lab File Id: 17459_023.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005UD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Vinyl Chloride-d3	0.345	0.370	0.010	7.4	50.0
Chloroethane-d5	0.240	0.269	0.010	12.0	50.0
1,1-Dichloroethene-d2	0.638	0.642	0.010	0.7	50.0
2-Butanone-d5	0.052	0.056	0.010	7.7	50.0
Chloroform-d	0.665	0.684	0.010	2.9	50.0
1,2-Dichloroethane-d4	0.296	0.325	0.010	9.9	50.0
Benzene-d6	1.432	1.454	0.010	1.6	50.0
1,2-Dichloropropane-d6	0.402	0.401	0.010	-0.3	50.0
Toluene-d8	1.323	1.400	0.010	5.8	50.0
trans-1,3-Dichloropropene-d4	0.287	0.291	0.010	1.4	50.0
2-Hexanone-d5	0.039	0.044	0.010	13.7	50.0
1,1,2,2-Tetrachloroethane-d2	0.191	0.207	0.010	8.3	50.0
1,2-Dichlorobenzene-d4	0.854	0.948	0.010	10.9	50.0

Report 1,4-Dioxane-d8 for Low/Medium VOA analysis only

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 01/05/2016 Time: 1321
 Lab File Id: 17602_005.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DY Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.773	0.737	0.010	-4.7	40.0
Chloromethane	0.551	0.481	0.010	-12.6	40.0
Vinyl chloride	0.420	0.415	0.100	-1.1	30.0
Bromomethane	0.126	0.168	0.100	33.1	30.0
Chloroethane	0.231	0.232	0.010	0.6	40.0
Trichlorofluoromethane	0.707	0.723	0.010	2.2	40.0
1,1-Dichloroethene	0.254	0.258	0.100	1.4	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.299	0.313	0.010	4.9	40.0
Acetone	0.036	0.032	0.010	-9.5	40.0
Carbon disulfide	0.609	0.615	0.010	1.1	40.0
Methyl acetate	0.078	0.070	0.010	-10.5	40.0
Methylene Chloride	0.283	0.277	0.010	-2.0	40.0
trans-1,2-Dichloroethene	0.321	0.340	0.010	6.1	40.0
Methyl tert-butyl ether	0.465	0.468	0.010	0.5	40.0
1,1-Dichloroethane	0.651	0.677	0.200	4.0	30.0
cis-1,2-Dichloroethene	0.325	0.344	0.010	5.9	40.0
2-Butanone	0.058	0.058	0.010	0.0	40.0
Bromochloromethane	0.117	0.120	0.050	2.8	30.0
Chloroform	0.613	0.648	0.200	5.6	30.0
1,1,1-Trichloroethane	0.567	0.618	0.100	9.0	30.0
Cyclohexane	0.622	0.687	0.010	10.5	40.0
Carbon tetrachloride	0.493	0.569	0.100	15.3	30.0
Benzene	1.581	1.613	0.400	2.0	30.0
1,2-Dichloroethane	0.360	0.357	0.100	-0.7	30.0
Trichloroethene	0.376	0.391	0.300	4.1	30.0
Methylcyclohexane	0.488	0.547	0.010	12.0	40.0

Report 1,4-Dioxane for Low/Medium VOA analysis only

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 01/05/2016 Time: 1321
 Lab File Id: 17602_005.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DY Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.344	0.358	0.010	4.1	40.0
Bromodichloromethane	0.358	0.374	0.200	4.5	30.0
cis-1,3-Dichloropropene	0.429	0.489	0.200	14.0	30.0
4-Methyl-2-pentanone	0.134	0.133	0.010	-1.0	40.0
Toluene	1.552	1.694	0.400	9.2	30.0
trans-1,3-Dichloropropene	0.321	0.343	0.100	6.9	30.0
1,1,2-Trichloroethane	0.187	0.195	0.100	4.0	30.0
Tetrachloroethene	0.312	0.334	0.100	7.2	30.0
2-Hexanone	0.094	0.096	0.010	1.9	40.0
Dibromochloromethane	0.178	0.188	0.100	5.3	30.0
1,2-Dibromoethane	0.164	0.163	0.010	-0.3	40.0
Chlorobenzene	0.984	1.026	0.500	4.3	30.0
Ethylbenzene	1.773	1.944	0.100	9.6	30.0
o-Xylene	0.589	0.681	0.300	15.5	30.0
m,p-Xylene	0.644	0.730	0.300	13.4	30.0
Styrene	0.909	1.089	0.300	19.9	30.0
Bromoform	0.128	0.139	0.050	9.1	30.0
Isopropylbenzene	1.643	1.888	0.010	14.9	40.0
1,1,2,2-Tetrachloroethane	0.189	0.188	0.100	-0.6	30.0
1,3-Dichlorobenzene	1.428	1.484	0.400	4.0	30.0
1,4-Dichlorobenzene	1.620	1.597	0.400	-1.4	30.0
1,2-Dichlorobenzene	1.334	1.347	0.400	1.0	30.0
1,2-Dibromo-3-Chloropropane	0.045	0.038	0.010	-14.2	40.0
1,2,4-Trichlorobenzene	0.667	0.684	0.200	2.6	30.0
1,2,3-Trichlorobenzene	0.497	0.508	0.200	2.3	30.0

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 01/05/2016 Time: 1321
 Lab File Id: 17602_005.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005DY Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	<u>RRF</u>	<u>RRF5.0</u>	<u>MIN</u> <u>RRF</u>	<u>%D</u>	<u>MAX %D</u>
Vinyl Chloride-d3	0.345	0.337	0.010	-2.3	30.0
Chloroethane-d5	0.240	0.266	0.010	10.5	40.0
1,1-Dichloroethene-d2	0.638	0.666	0.010	4.4	30.0
2-Butanone-d5	0.052	0.051	0.010	-1.0	40.0
Chloroform-d	0.665	0.702	0.010	5.6	30.0
1,2-Dichloroethane-d4	0.296	0.320	0.010	8.1	30.0
Benzene-d6	1.432	1.500	0.010	4.7	30.0
1,2-Dichloropropane-d6	0.402	0.401	0.010	-0.3	40.0
Toluene-d8	1.323	1.493	0.010	12.8	30.0
trans-1,3-Dichloropropene-d4	0.287	0.306	0.010	6.6	30.0
2-Hexanone-d5	0.039	0.041	0.010	5.2	40.0
1,1,2,2-Tetrachloroethane-d2	0.191	0.197	0.010	3.0	30.0
1,2-Dichlorobenzene-d4	0.854	0.871	0.010	1.9	30.0

Report 1,4-Dioxane-d8 for Low/Medium VOA analysis only

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 01/05/2016 Time: 1556
 Lab File Id: 17602_011.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005YD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.773	0.772	0.010	-0.1	50.0
Chloromethane	0.551	0.468	0.010	-15.0	50.0
Vinyl chloride	0.420	0.421	0.010	0.3	50.0
Bromomethane	0.126	0.123	0.010	-2.4	50.0
Chloroethane	0.231	0.232	0.010	0.6	50.0
Trichlorofluoromethane	0.707	0.756	0.010	6.9	50.0
1,1-Dichloroethene	0.254	0.217	0.010	-14.7	50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.299	0.272	0.010	-9.0	50.0
Acetone	0.036	0.027	0.010	-23.5	50.0
Carbon disulfide	0.609	0.515	0.010	-15.5	50.0
Methyl acetate	0.078	0.056	0.010	-27.9	50.0
Methylene Chloride	0.283	0.217	0.010	-23.5	50.0
trans-1,2-Dichloroethene	0.321	0.350	0.010	9.1	50.0
Methyl tert-butyl ether	0.465	0.475	0.010	2.2	50.0
1,1-Dichloroethane	0.651	0.711	0.010	9.3	50.0
cis-1,2-Dichloroethene	0.325	0.356	0.010	9.6	50.0
2-Butanone	0.058	0.062	0.010	6.9	50.0
Bromochloromethane	0.117	0.122	0.010	4.9	50.0
Chloroform	0.613	0.670	0.010	9.2	50.0
1,1,1-Trichloroethane	0.567	0.632	0.010	11.5	50.0
Cyclohexane	0.622	0.697	0.010	12.1	50.0
Carbon tetrachloride	0.493	0.558	0.010	13.0	50.0
Benzene	1.581	1.675	0.010	6.0	50.0
1,2-Dichloroethane	0.360	0.398	0.010	10.7	50.0
Trichloroethene	0.376	0.384	0.010	2.1	50.0
Methylcyclohexane	0.488	0.545	0.010	11.7	50.0

Report 1,4-Dioxane for Low/Medium VOA analysis only

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 01/05/2016 Time: 1556
 Lab File Id: 17602_011.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005YD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.344	0.377	0.010	9.5	50.0
Bromodichloromethane	0.358	0.380	0.010	6.1	50.0
cis-1,3-Dichloropropene	0.429	0.478	0.010	11.3	50.0
4-Methyl-2-pentanone	0.134	0.144	0.010	7.0	50.0
Toluene	1.552	1.775	0.010	14.4	50.0
trans-1,3-Dichloropropene	0.321	0.364	0.010	13.6	50.0
1,1,2-Trichloroethane	0.187	0.197	0.010	5.2	50.0
Tetrachloroethene	0.312	0.335	0.010	7.3	50.0
2-Hexanone	0.094	0.104	0.010	10.0	50.0
Dibromochloromethane	0.178	0.195	0.010	9.5	50.0
1,2-Dibromoethane	0.164	0.172	0.010	5.1	50.0
Chlorobenzene	0.984	1.042	0.010	5.9	50.0
Ethylbenzene	1.773	1.993	0.010	12.4	50.0
o-Xylene	0.589	0.684	0.010	16.1	50.0
m,p-Xylene	0.644	0.750	0.010	16.5	50.0
Styrene	0.909	1.108	0.010	21.9	50.0
Bromoform	0.128	0.137	0.010	7.1	50.0
Isopropylbenzene	1.643	1.904	0.010	15.9	50.0
1,1,2,2-Tetrachloroethane	0.189	0.199	0.010	5.5	50.0
1,3-Dichlorobenzene	1.428	1.490	0.010	4.4	50.0
1,4-Dichlorobenzene	1.620	1.643	0.010	1.4	50.0
1,2-Dichlorobenzene	1.334	1.384	0.010	3.7	50.0
1,2-Dibromo-3-Chloropropane	0.045	0.043	0.010	-3.3	50.0
1,2,4-Trichlorobenzene	0.667	0.684	0.010	2.6	50.0
1,2,3-Trichlorobenzene	0.497	0.513	0.010	3.3	50.0

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: _____ SDG No.: 31247
 Instrument ID: CHD.i Calibration Date: 01/05/2016 Time: 1556
 Lab File Id: 17602_011.D Init. Calib. Date(s): 12/18/2015 12/18/2015
 EPA Sample No. (VSTD####): VSTD005YD Init. Calib. Time(s): 1706 1846
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Vinyl Chloride-d3	0.345	0.344	0.010	-0.2	50.0
Chloroethane-d5	0.240	0.262	0.010	9.1	50.0
1,1-Dichloroethene-d2	0.638	0.602	0.010	-5.7	50.0
2-Butanone-d5	0.052	0.052	0.010	0.5	50.0
Chloroform-d	0.665	0.732	0.010	10.0	50.0
1,2-Dichloroethane-d4	0.296	0.321	0.010	8.6	50.0
Benzene-d6	1.432	1.562	0.010	9.1	50.0
1,2-Dichloropropane-d6	0.402	0.412	0.010	2.4	50.0
Toluene-d8	1.323	1.530	0.010	15.6	50.0
trans-1,3-Dichloropropene-d4	0.287	0.311	0.010	8.5	50.0
2-Hexanone-d5	0.039	0.042	0.010	10.0	50.0
1,1,2,2-Tetrachloroethane-d2	0.191	0.213	0.010	11.0	50.0
1,2-Dichlorobenzene-d4	0.854	0.884	0.010	3.5	50.0

Report 1,4-Dioxane-d8 for Low/Medium VOA analysis only

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKDT

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: MB 200-98757/6

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17439_006.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 12/21/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	1.1	J
75-15-0	Carbon disulfide	0.11	J
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.077	J
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKDT

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: MB 200-98757/6

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17439_006.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 12/21/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.016	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.0096	J
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.012	J
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.0072	J
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.017	J
106-46-7	1,4-Dichlorobenzene	0.022	J
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.055	J
87-61-6	1,2,3-Trichlorobenzene	0.073	J

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBKDT

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: MB 200-98757/6
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 17439_006.D
Level: (TRACE or LOW/MED) TRACE Date Received:
% Moisture: not dec. Date Analyzed: 12/21/2015
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	7.23	3.6	J X
02	541-05-9	Cyclotrisiloxane, hexamethyl-	8.15	0.53	J N
03	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBKDU

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: MB 200-98810/5

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_005.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	1.3	J
75-15-0	Carbon disulfide	0.067	J
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.16	J
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.089	J
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBKDU

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: MB 200-98810/5

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17459_005.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 12/22/2015

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
79-01-6	Trichloroethene	0.033	J
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.013	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.012	J
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.031	J
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.041	J
87-61-6	1,2,3-Trichlorobenzene	0.064	J

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKDU

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: MB 200-98810/5
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 17459_005.D
Level: (TRACE or LOW/MED) TRACE Date Received:
% Moisture: not dec. Date Analyzed: 12/22/2015
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	7.23	3.3	J X
02	541-05-9	Cyclotrisiloxane, hexamethyl-	8.16	0.61	J N
03	556-67-2	Cyclotetrasiloxane, octamethyl-	10.98	0.56	J N
04	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKDY

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: MB 200-99149/6

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17602_006.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 01/05/2016

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.090	J
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.043	J
156-60-5	trans-1,2-Dichloroethene	0.034	J
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.045	J
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKDY

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: MB 200-99149/6

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17602_006.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 01/05/2016

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
79-01-6	Trichloroethene	0.029	J
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	0.56	J
108-88-3	Toluene	0.063	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.089	J
591-78-6	2-Hexanone	1.2	J
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.10	J
100-41-4	Ethylbenzene	0.092	J
95-47-6	o-Xylene	0.095	J
179601-23-1	m,p-Xylene	0.099	J
100-42-5	Styrene	0.086	J
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.081	J
79-34-5	1,1,2,2-Tetrachloroethane	0.14	J
541-73-1	1,3-Dichlorobenzene	0.17	J
106-46-7	1,4-Dichlorobenzene	0.18	J
95-50-1	1,2-Dichlorobenzene	0.20	J
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.27	J
87-61-6	1,2,3-Trichlorobenzene	0.33	J

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBKDY

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
 Matrix: (SOIL/SED/WATER) Water Lab Sample ID: MB 200-99149/6
 Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 17602_006.D
 Level: (TRACE or LOW/MED) TRACE Date Received:
 % Moisture: not dec. Date Analyzed: 01/05/2016
 GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
 CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	7.23	3.4	J X
02	541-05-9	Cyclotrisiloxane, hexamethyl-	8.15	1.9	J N
03		Unknown	10.98	1.9	J
04		Unknown	13.13	0.56	J
05	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VHBLK01

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-6

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17602_008.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 01/05/2016

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.036	J B
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VHBLK01

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-31247-6

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: 17602_008.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 01/05/2016

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.015	J B
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.021	J B
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VHBLK01

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: WASHIN Mod. Ref No.: SDG No.: 31247
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-31247-6
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 17602_008.D
Level: (TRACE or LOW/MED) TRACE Date Received:
% Moisture: not dec. Date Analyzed: 01/05/2016
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	7.23	3.0	J B X
02	541-05-9	Cyclotrisiloxane, hexamethyl-	8.15	3.1	J N B
03	556-67-2	Cyclotetrasiloxane, octamethyl-	10.98	2.3	J N B
04		Unknown	13.14	0.72	J B
05	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1SDG No.: 31247Instrument ID: CHD.i Analysis Batch Number: 98658Lab Sample ID: ICIS 200-98658/7 Client Sample ID: _____Date Analyzed: 12/18/15 17:56 Lab File ID: 17400_007.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dichlorodifluoromethane	1.45	Incomplete Integration	wilburj	12/31/15 17:08
1,2-Dichloropropane-d6	6.35	Split Peak	wilburj	12/31/15 17:08

Lab Sample ID: IC 200-98658/8 Client Sample ID: _____Date Analyzed: 12/18/15 18:21 Lab File ID: 17400_008.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dichlorodifluoromethane	1.45	Incomplete Integration	wilburj	12/31/15 17:09
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	12/31/15 17:09

Lab Sample ID: IC 200-98658/9 Client Sample ID: _____Date Analyzed: 12/18/15 18:46 Lab File ID: 17400_009.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dichlorodifluoromethane	1.45	Incomplete Integration	wilburj	12/31/15 17:09
Bromomethane	1.95	Split Peak	wilburj	12/31/15 17:11
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	12/31/15 17:11

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1SDG No.: 31247Instrument ID: CHD.i Analysis Batch Number: 98757Lab Sample ID: CCVIS 200-98757/4 Client Sample ID: _____Date Analyzed: 12/21/15 14:27 Lab File ID: 17439_004.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	12/31/15 17:42

Lab Sample ID: CCVC 200-98757/19 Client Sample ID: _____Date Analyzed: 12/21/15 21:03 Lab File ID: 17439_019.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	12/31/15 17:58

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1SDG No.: 31247Instrument ID: CHD.i Analysis Batch Number: 98810Lab Sample ID: MB 200-98810/5 Client Sample ID: _____Date Analyzed: 12/22/15 12:11 Lab File ID: 17459_005.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,4-Trichlorobenzene	14.19	Assign Peak	wilburj	01/04/16 14:13

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Burlington Job No.: 200-31247-1SDG No.: 31247Instrument ID: CHD.i Analysis Batch Number: 99149Lab Sample ID: CCVIS 200-99149/5 Client Sample ID: _____Date Analyzed: 01/05/16 13:21 Lab File ID: 17602_005.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	01/05/16 16:42

Lab Sample ID: CCVC 200-99149/11 Client Sample ID: _____Date Analyzed: 01/05/16 15:56 Lab File ID: 17602_011.D GC Column: DB-624 ID: 0.2 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloropropane-d6	6.34	Split Peak	wilburj	01/05/16 16:53

AGEM Team at Argonne

AGEM Staff Member	AGEM Role
Lorraine M. LaFreniere, Ph.D. Principal Geological Engineer	Program Manager
Jorge S. Alvarado, Ph.D. Chemist	Laboratory Manager and Analyst
Esther E. Bowen, M.S. Data Management Specialist	Quality Assurance/Quality Control and Records Manager
Laurel A. Culbert, B.A. Graphic Artist/Designer	Report Graphics and Maps (including GIS)
James Hansen, B.A. Program Coordinator/Manager	Site Reconnaissance and Community Relations
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