SITE INSPECTION REPORT
For
ST. LOUIS PARK SOLVENT PLUME
ST. LOUIS PARK, HENNEPIN COUNTY, MINNESOTA

MPCA Site Assessment Site: SA4543
MPCA Superfund Site ID: SR377, SR358
EPA ID: MNN000506121

Prepared by:

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February 17, 2017

Minnesota Pollution
Control Agency

Signature Page
For

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(a.k.a, Highway 7 and Wooddale Avenue Vapor Intrusion)

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February 17, 2017

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SITE INSPECTION REPORT

St. Louis Park Solvent Plume
St. Louis Park, Hennepin County, Minnesota
MPCA Site Assessment Site: SA4543
MPCA State Superfund Site: SR377, SR358
EPA ID: MNN000506121 and MNN000509134

1.0 INTRODUCTION

The Site Assessment Program of the Minnesota Pollution Control Agency (MPCA), under a Cooperative Agreement with the United States Environmental Protection Agency (EPA), has prepared this Site Inspection Report (SI) for the St. Louis Park Solvent Plume in St. Louis Park and Edina, Minnesota (the Site).

The MPCA was given approval by the EPA to conduct the SI at the St. Louis Park Solvent Plume (originating near Highway 7 and Wooddale Avenue in St. Louis Park, Hennepin County, Minnesota, Figure 1) based on the results of a Preliminary Assessment (PA) that was prepared for this site (MPCA, 2016a). The PA identified tetrachloroethene (PCE), trichloroethene (TCE), *cis*-1,2-dichloroethene (*cis*-DCE), and vinyl chloride (VC) (all collectively referred to as chlorinated volatile organic compounds, cVOCs) as possible contaminants of concern in municipal wells operated by the cities of Edina and St. Louis Park.

The St. Louis Park municipal well field (SLPWF) consists of twelve bedrock wells that provide potable water for a population of approximately 48,000 (see table below and Figure 2). Two of the St. Louis Park municipal wells, SLP4 and SLP6, have been impacted by VC at concentrations above the federal and state regulatory standards. TCE concentrations in samples from SLP6 have also exceed the federal and state regulatory standards and *cis*-DCE concentrations in samples from wells SLP4 and SLP6 exceeded state regulatory standards;

St. Louis Park Municipal Wells

Distance from Site	Wells	Population	Aquifer
0 to ¼ mile	SLP4*, SLP6*,	11,174	PDCJ
	SLP12		MTSH
¼ to ½ mile	none	4,865	Not Applicable
½ to 1 mile	SLP5**, SLP10, SLP15*	10,715	PDCJ
	SLP11		MTSH
1 to 2 miles	SLP7, SLP9, SLP14, SLP16*	15,572	PDCJ
	SLP13		MTSH
2 to 3 miles	SLP8,	2,872	PDCJ
3 to 4 miles	None	206	Not Applicable

*Open hole construction in the Jordan portion of the aquifer only.
**SLP5 not in use. Pump has been removed.
Population count from 2010 Census Information
PDCJ=Prairie du Chien-Jordan
MTSH=Mt. Simon Hinckley

The St. Louis Park Solvent Plume Site Preliminary Assessment (MPCA, 2016a) and Site Inspection Work Plan (MPCA, 2016b) note SLP4 and SLP6 as being completed in the PDCJ bedrock aquifer. The PDCJ aquifer consists of two primary units: 1) the Prairie du Chien (PdC) formation, a fractured dolomite aquifer, and 2) the underlying Jordan formation, a sandstone aquifer. However, the Minnesota Department of Health (MDH) recently conducted a well construction review at SLP4 and SLP6 in summer 2016. Their review indicates these wells were reconditioned and cased through the PdC formation and to the Jordan bedrock aquifer in the early 1960's. It is presumed that the wells had their casing extended to alleviate groundwater contamination issues associated with the Reilly Tar and Chemical site (appendix A). The well records have been updated in the Minnesota Well Index database. It should be noted that SLP6 is currently not used as a principal municipal supply well; however, it is connected as a backup supply well for emergency demand.

The Edina municipal well field (EWF) consists of eighteen bedrock wells that provide potable water for a population of approximately 50,000 (see table below). Two of the Edina municipal wells, E2 and E7, are impacted by VC at concentrations above the federal and state regulatory standards. These wells are completed in the PDCJ bedrock aquifer. *cis*-DCE concentrations exceed the state regulatory standard in samples from Edina wells E2 and E7.

Edina Municipal Wells

Distance from Site	Wells	Population	Aquifer
0 to ¼ mile	E2, E7	8,822	PDCJ
¼ to ½ mile	E3, E4, E15	2,773	PDCJ
½ to 1 mile	E6, E17	6,471	PDCJ
	E9		MTSH
1 to 2 miles	E12,	15,489	MTSH
	E13*, E16, E20, E19, E8		PDCJ
2 to 3 miles	E5, E11*,	13,151	PDCJ
	E10, E18		MTSH
3 to 4 miles	None	1,487	Not Applicable

*Open hole only in Jordan portion of the aquifer.
Population count from 2010 Census Information

The cities of Hopkins and Minnetonka also operate wells within 2 to 3 miles of the site (Figure 2). Historic and current compliance monitoring conducted by the MDH has not identified cVOCs at concentrations exceeding state or federal standards at these wells.

The purpose of this investigation was to verify the presence of cVOCs within the affected municipal wells and from existing monitoring wells, evaluate groundwater quality in the site area, and provide updated details regarding the conceptual site model (CSM). Information contained in this report will be used to evaluate this site to support a site decision regarding the need for further Superfund action, including the possibility for the St. Louis Park Solvent Plume site to be considered for inclusion on the National Priorities List (NPL) of hazardous waste sites.

Activities completed during the SI included:

- Collection of raw groundwater samples from municipal wells E2 and E7 (PDCJ), and municipal wells SLP4 and SLP6 (Jordan);
- Collection of background groundwater samples from nearby PDCJ municipal wells SLP5, E15 and PDCJ monitoring well W403;
- Collection of groundwater samples from St. Peter (OSTP) Aquifer monitoring well W133;

- Collection of groundwater samples from Platteville-Glenwood (PVGW) formation monitoring wells W120, W143, W433, W434, W437 and W438;
- Collection of background PVGW groundwater samples from monitoring wells W27, W425 and W426;
- Collection of Quaternary/Drift Aquifer groundwater samples from monitoring wells P307, P309 and P310;
- Collection of background Quaternary/Drift Aquifer groundwater samples from monitoring wells W423 and W425;
- Submission of samples for laboratory analysis through the U.S. EPA Region V Contract Laboratory Program (CLP);
- Preparation of this Site Inspection Report, which summarizes the activities and sampling results.

The SI field work was completed in accordance with the Site Inspection Work Plan (MPCA, 2016b) and the Site Assessment Program QAPP (MPCA, 2014), and the sampling field work was conducted by AECOM of Minneapolis under contract to the MPCA on June 27-28, 2016.

2.0 SITE DESCRIPTION AND HISTORY

The St. Louis Park (SLP) Solvent Plume (Site) is a groundwater contaminant plume consisting of PCE, TCE, cis-DCE and VC in the glacial Drift, Platteville-Glenwood, St. Peter and Prairie du Chien-Jordan aquifers located in the cities of St. Louis Park and Edina, Hennepin County, Minnesota (Figures 1,2). The Site comprises approximately 3.16 square miles, and is located within an area generally bounded by W 33rd Street to the north, S France Avenue to the east, W 58th Street to the south, and Blake Road to the west and includes the St. Louis Park municipal wells SLP4 and SLP6 and Edina municipal wells E2, E7 and E15. The Site is located in multiple sections of Township 117 North, Range 21 West and Township 28 North, Range 24 West of the Minneapolis South, Minnesota 7.5-Minute Quadrangle.

The ground surface area around the site is gently sloping with surface elevations ranging from approximately 885 to 990 feet above sea level (estimated from USGS, 2013). Meadowbrook Lake is present in the western portion of the Site, and Minnehaha Creek is present in the west and southern portions of the Site (Figures 1,3).

Portions of the Site area have been in residential, commercial, and industrial use for nearly a century, and continue to be used in this capacity. Commercial businesses included many machine shop operations (including tool and die manufactures, engine rebuilders, and metal fabricators) throughout the area. Industrial uses included a secondary lead smelter and various types of manufacturing facilities. The Reilly Tar and Chemical wood treating facility (MPCA ID SR60, EPA ID MND980609804) operated near the northwest portion of the Site from 1917 to 1972 (STS, 2005a).

2.1 Source Areas

This section provides an overview of cVOC sources of the SLP Solvent Plume site. As indicated in the Preliminary Assessment (MPCA, 2016a), environmental investigation work was initiated in 2004, when VC was detected in Edina municipal well E7. Several multi-phase investigations conducted between 2004 and 2013 documented the presence of a large cVOC plume spreading from the Quaternary aquifer through the Platteville (OPVL) into the St. Peter (OSTP) and Prairie du Chien-Jordan aquifers. These sampling efforts indicate the main source is located in an area within the city of St. Louis Park in an area near the intersection of West Lake Street and Walker Street (Figure 4). PCE releases in this area have been documented at a former heat transfer equipment manufacturing facility (6714 Walker Street), a former tube fabrication facility (3356 Gorham Avenue), a former light fixture

manufacturing facility (6512 Walker Street), a former printing facility (6518 Walker Street), and a dry cleaning facility (6528 W Lake Street).

Surrounding property use in the suspected source area consists of mixed commercial and residential property.

3.0 SOURCE AREA SAMPLING

Source area samples were not collected as part of this Site Inspection. However, source area samples were previously collected by the MPCA Site Assessment program and are discussed in the Preliminary Assessment (MPCA, 2016a). The Preliminary Assessment identified areas with soil contamination in excess of regulatory criteria (Minnesota soil reference values (SRVs) or soil leaching values (SLVs)). Additionally, the PA identified groundwater contamination at levels in excess of regulatory criteria (MDH Health Risk Limits (HRL), or federal maximum contaminant levels (MCLs)) at the former light fixture manufacturing facility, former Printing facility, and former heat transfer equipment manufacturing properties (Figure 4).

Potential source area soil PCE concentrations noted in the Preliminary Assessment included:

- 35,200 micrograms per kilogram (µg/kg) at three feet below ground surface (bgs) at former light fixture manufacturing facility;
- 107 to 3,900 µg/kg at depths of 4, 40, and 45 feet bgs at former printing facility;
- 57.5 to 9,080 µg/kg at depths ranging between 44 and 70 feet bgs at former heat transfer equipment manufacturing facility,

Potential source area groundwater concentrations noted in the Preliminary Assessment included:

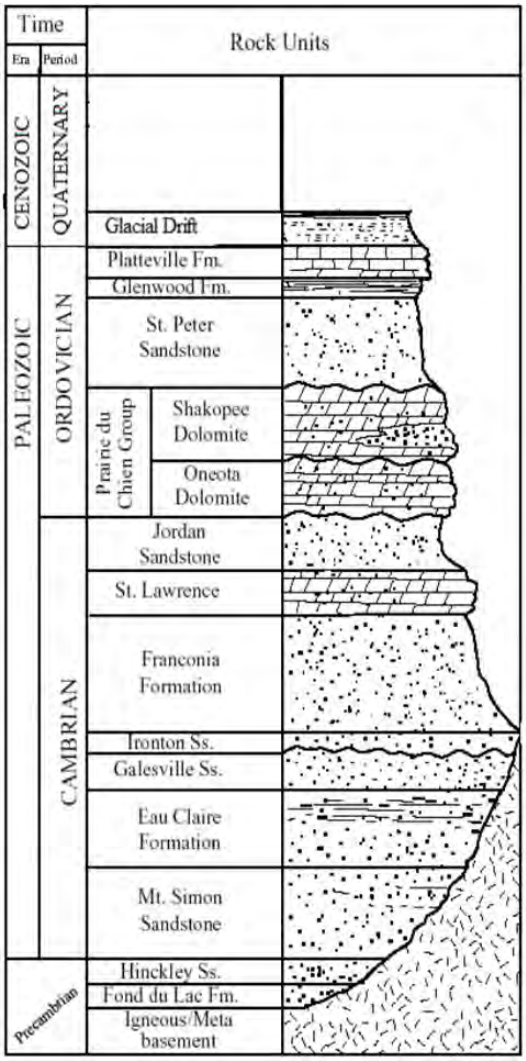
- 3.0 to 1,800 micrograms per liter (µg/L) PCE collected at depths of 44 and 47.7 feet bgs respectively at the former light fixture manufacturing facility;
- 4.8 to 2,400 µg/L PCE and 0.96 to 11.8 µg/L TCE collected at depths of 50-54 feet bgs and 46-50 feet bgs at the former printing facility;
- 9.4 µg/L TCE at a depth of 38-42 feet bgs at the former tube fabrication facility;
- 21,000 µg/L PCE; 150 µg/L TCE; 4,800 µg/L *cis*-DCE; 110 µg/L *trans*-DCE; and 240 µg/L VC at a depth of 52-56 feet bgs at the former heat transfer equipment manufacturing facility.

4.0 GROUNDWATER PATHWAY

4.1 Hydrogeology

The Site is located approximately 7.8 miles northwest of the confluence of the Minnesota and Mississippi Rivers, in the vicinity of a buried bedrock valley that formerly contained the Glacial River Warren. The upper-most bedrock in the area of the site is typically the Platteville formation, at depths of 90 to 150 feet below grade. However, the surficial soils were developed from Des Moines Lobe glacial outwash deposits consisting of sand, loamy sand and gravel; overlain by loess deposits. These unconsolidated glacial deposits underlie the and fill the bedrock valleys carved by pre-glacial rivers (Balaban, 1989).

Regionally, the bedrock units from top to bottom are the Platteville Formation, Glenwood shale, St. Peter sandstone, Prairie du Chien Group, Jordan Sandstone, and the St. Lawrence limestone. The Prairie du Chien Group and Jordan Sandstone together form the primary drinking water aquifer of the Twin Cities Metropolitan area. The Platteville formation is present at depths of 90 to 122 feet below grade. However, a drift filled bedrock valley, located near Wooddale Avenue and MN Highway 7, cuts through the Platteville and the underlying Glenwood to the St. Peter Sandstone. Depth to the St. Peter within the valley ranges between 100 and 200' below ground surface (Figure 5). The PDC is approximately 160 ft. thick in the area of the site. Based on the SLP4 and SLP6 well logs, the PDC formation lies beneath the St. Peter sandstone at a depth of approximately 290'. The stratigraphic relationships are summarized in the following stratigraphic column (Ojakangas 1982).



Stratigraphy taken from well SLP6

- Water Table 45' bgs
- 0-90' Glacial Drift
- 90-122' Platteville Formation
- 122-127' Glenwood Formation
- 135-290' St. Peter Sandstone
- 290-417' Prairie du Chien Group
- 417-480' Jordan Sandstone
- 480'+ St. Lawrence Formation

Aquifers in the glacial drift deposits noted above include the shallow Quaternary aquifer, which is comprised of sands and silts with lenses of clay. The St. Peter sandstone is a source of water for domestic and low-capacity use locally.

Groundwater flow in the unconsolidated glacial deposits is generally presumed to be southeast toward the Minnesota River, approximately 7.5 miles from the site. Groundwater flow in the PDC aquifer in this area is also

to the southeast toward the Mississippi River, which is approximately 7.2 miles east of the site (Kanivetsky, 1989). However, pumping stresses from municipal and commercial groundwater wells significantly alters groundwater flow throughout the area (MGWA Newsletter June 2009).

The Minnesota Geological Survey (MGS) classifies the water table aquifer system in the area of the site as highly susceptible to pollution (Balaban, 1989). MGS also considers the Prairie du Chien-Jordan aquifer as moderately susceptible to pollution in the area of the bedrock valley (Piegat, 1989). A table that outlines the stratigraphic relationships (from Balaban, 1989) is provided below.

Rock Unit	Aquifer System	Hydrologic Condition
Quaternary Drift	QWTA and QBAA	Mostly non-aquifer, limited local supply
Platteville Formation	Platteville-Glenwood (Confining Layer)	Mostly non-aquifer, limited local supply
Glenwood Formation		
St. Peter Sandstone	St. Peter Aquifer	Unconfined/Confined
	Confining Layer	Non-aquifer
Prairie du Chien Group (includes Shakopee formation and Oneota dolomite)	Prairie du Chien-Jordan Aquifer	Confined in most areas
Jordan Sandstone		
St. Lawrence Formation	Confining Layer	Mostly non-aquifer, limited local supply

The municipal wells with known impacts from the solvent plume that exceed regulatory standards consist of the following:

- SLP4 open hole in the Jordan aquifer (St. Louis Park well)
- SLP6 open hole in the Jordan aquifer (St. Louis Park well)
- E2 open hole in the PDCJ aquifer (Edina well)
- E7 open hole in the PDCJ aquifer (Edina well)

Table 1 provides a summary of well construction details for all wells in the monitoring well network, including wells sampled during the SI. Well records for wells sampled as part of this SI provided as Appendix B.

4.2 Targets

As summarized in the table below, there are approximately 1,233 registered domestic supply wells, 171 public supply wells, and 202 commercial supply wells within 4 miles of the Site. These wells draw from the Quaternary, OSP, and PDCJ aquifers, which serve as the principal water supply aquifers to the area. According to U.S. Census data, approximately 328,465 people are within 4 miles of the site.

Populations and Water Supply Wells Located Within 4 Mile Target Distance Limit

Distance from Site	Population Within Distance Zones	Public Water Supply Wells	Commercial/ Industrial/ Irrigation Supply Wells	Domestic Supply Wells
0 to ¼ mile	20,181	7	35	90
¼ to ½ mile	10,290	4	6	45
½ mile to 1 mile	28,561	14	8	119
1 mile to 2 miles	59,177	38	24	172
2 miles to 3 miles	96,312	42	68	346
3 miles to 4 miles	113,944	66	61	461
Total	328,465	171	202	1233

Populations developed from 2010 US Census block group data. Well information derived from Minnesota Department of Health County Well Index data.

Several well field Drinking Water Supply Management Areas (DWSMAs) and Well Head Protection Areas (WHPAs) are located within 4 miles of the St. Louis Park Solvent Plume (Figure 2). (MDH, 2013).

Sensitive receptors located within 0 to ¼ mile of the site (Figure 3) include the following:

NAME	Address
Calvin Christian School	4015 Inglewood Ave S, Edina, MN 55416
Central Community Center/Spanish Immersion School	6300 Walker St, St Louis Park, MN 55426
Golden Years Montessori	4100 W 42nd St, Edina, MN 55416
Kid Zone Child Care	3700 Alabama Ave S, St. Louis Park, MN 55416
Methodist Hospital	6500 Excelsior Blvd, St Louis Park, MN 55426
Perspectives Child Care	3381 Gorham Ave, St. Louis Park, MN 55426
St. Louis Park High School	6425 W 33rd St, St Louis Park, MN 55426
Susan Lindgren Elementary School	4801 W 41st St, St Louis Park, MN 55416

These facilities obtain their drinking water from municipal groundwater supplies.

4.3 Sample Locations

As part of this Site Inspection report, groundwater samples were collected from an existing well network used in connection with the Reilly Tar facility. Sample locations were collected within the plume from municipal supply wells SLP4, SLP6, E2, E7 and monitoring wells W120, W133, W143, W433, W434, W437, W438, P307, P309, and P310 to document current groundwater contamination. Sample locations collected outside the plume from municipal supply wells SLP5, E15 and monitoring wells W403, W27, W423, W424, W425, and W426 to document background groundwater conditions. Sample locations are provided on Figures 6A and 6B.

Groundwater sampling activities for this Site Inspection were conducted in accordance with the MPCA SA Quality Assurance Project Plan (QAPP) and in accordance with the EPA-approved Site Inspection Work Plan (MPCA, 2016b) which documents the frequency of duplicate samples, field blanks, and equipment blanks.

4.4 Analytical Results

A summary of the analytical results pertaining to chlorinated VOCs is provided in this section. Note that several petroleum-related VOCs were detected in groundwater samples. These detections may be associated with the Reilly Tar facility, and are not discussed in this document. Analytical results for sampling conducted as part of this Site Inspection are provided in Tables 2 to 7. Field sampling forms are provided in Appendix C. CLP laboratory reports are provided in Appendix D.

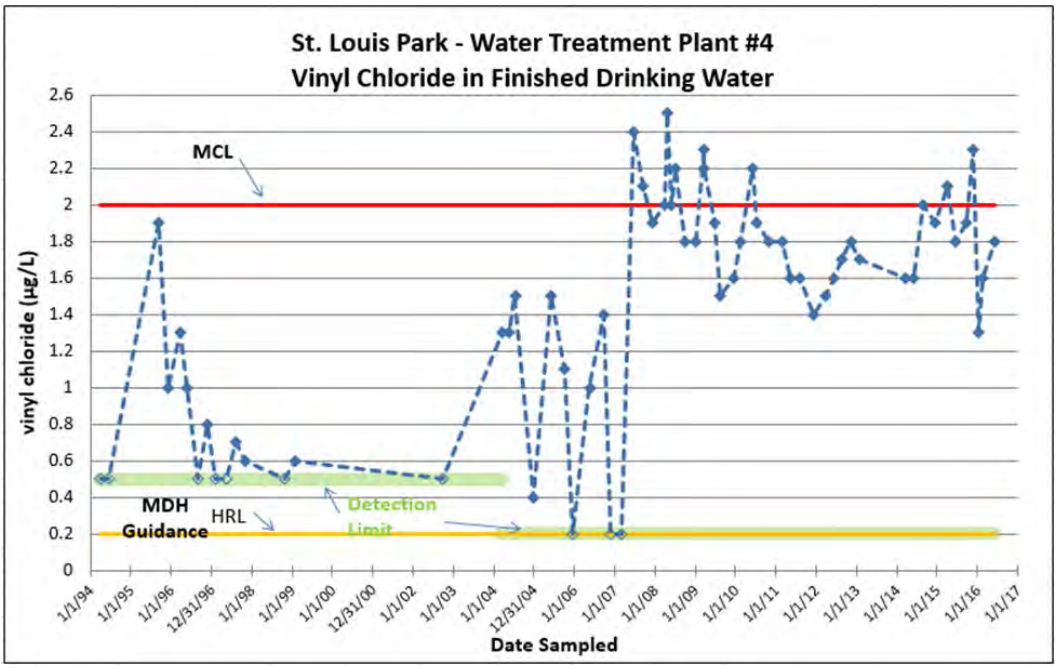
4.4.1. Historical Analytical Results

The city of Edina contacted the MPCA in April 2004, requesting assistance to find the source of VC contamination that had been detected in two municipal wells (Appendix E). These wells, Edina Well 2 and Edina Well 7, draw water from the PDCJ Aquifer were found to have VC concentrations in excess of the MCL.

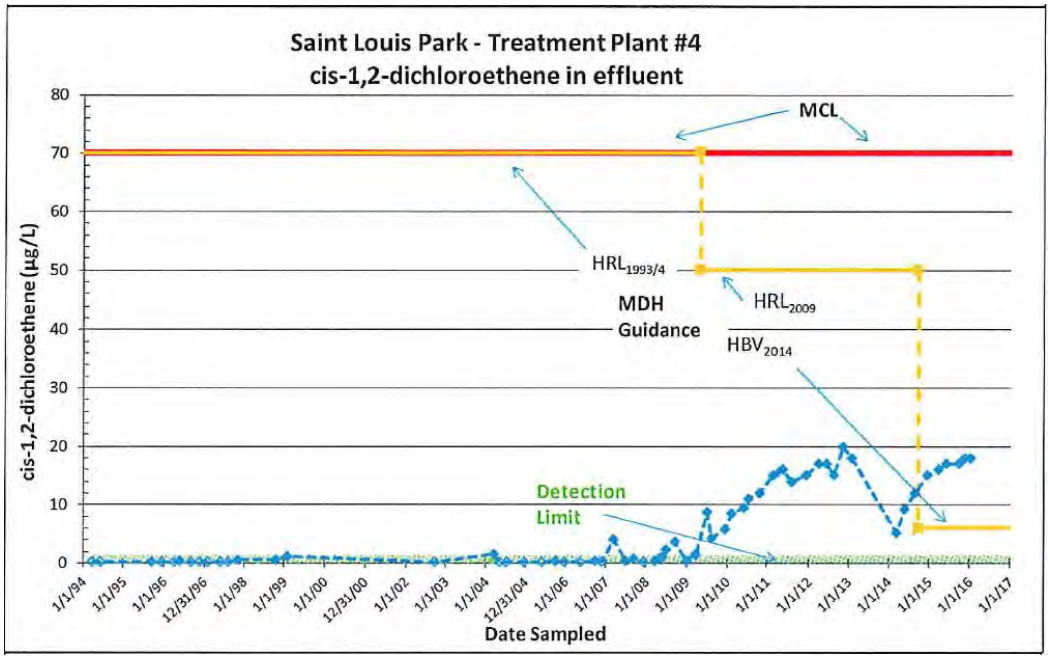
Since 2004, TCE, *cis*- DCE, *trans* - 1,2-DCE and VC have been detected in Edina Wells E2, E7, E13 and E15 on multiple occasions. However, only VC concentrations in samples collected from well E7 consistently exceeded the MCL. Edina Well E7 was shut down until a water-treatment system could be built to remove VOCs from the water before it is distributed to the public. The treatment process selected uses air stripping to remove vinyl chloride and other VOCs. The City and the MPCA constructed a centralized water-treatment facility, located southeast of Vernon Avenue and west of Highway 100 that processes all the water produced from Edina Wells E2, E7 and E15 (Figure 3). The treatment facility came on-line in 2012. After VOC removal, the water is further treated (disinfection, iron, taste, etc.) before it is released into the distribution system, making it available to Edina residents and businesses.

Beginning in 2004 the MPCA began investigating the contamination in order to define the extent and magnitude, as well as to identify the source of the Edina well contamination. During the investigation for the source of the chlorinated solvent release, MPCA sampled Prairie du Chien-Jordan Aquifer wells throughout the cities of Edina, Hopkins, and St. Louis Park. The sample analytical results for these deep wells showed a pattern of increasing chlorinated solvent concentrations [PCE, TCE, cis-1,2-dichloroethylene (cis-DCE) and VC] to the north from Edina into St. Louis Park approximately 2.4 miles away (Figure 3). PCE, TCE, *cis* -DCE, *trans* -DCE, VC and 1,4-dioxane have been detected in samples collected from well SLP6. TCE and VC have consistently been detected at concentrations above the MCL. *cis* -DCE and 1,4-dioxane concentrations exceeded the Minnesota HBV of 6 µg/L and HRL of 1 µg/L, respectively. Well SLP 6 is considered an emergency back up well but has been not in use since 1963 due to contamination.

As represented in the graph below, VC concentrations in finished water from Treatment Plant 4 have been above or near the MCL since 2007. However, the concentrations have not exceeded the MCL for four consecutive quarters so the well is still in compliance with the SDWA. VC concentrations have consistently been at or above the MDH HRL since 1994.



cis -DCE concentrations in well SLP 4 finished water have also exceeded the MDH HBV since January 2014 (see graph below). On March 10, 2016, the MDH issued a Notice of Health Risk Advisory based on exceedance of HRL for vinyl chloride and exceedance of HBV for cis- DCE (Appendix F).



4.4.2. Site Inspection Background Groundwater Quality

Groundwater quality samples were collected from the Quaternary aquifer (monitoring wells W423 and W425), the PVGW aquifer (monitoring wells W27, W424, and W426), and from the Prairie du-Chien and Jordan aquifers (St. Louis Park well SLP5, Edina well E15, and monitoring well W403).

No VOCs were identified above the contract required quantitation limits (CRQL) for the background Quaternary wells, PVGW wells, and PDCJ well W403.

Trans-DCE and *cis*-DCE were detected in PDCJ well SLP5 at concentrations of 4.5 and 4.2 µg/L, respectively. 1,1-DCE and *cis*-DCE were detected in PDCJ well E15 at concentrations of 0.96 and 2.8 µg/L, respectively. These concentrations are below state and federal regulatory criteria.

Background concentrations observed as part of this Site Inspection are consistent with historical monitoring results from these wells

4.4.3. Site Inspection Sample Results for the Quaternary and St. Peter Aquifers (Monitoring Wells)

Wells sampled to evaluate contamination in these aquifers included P307, P309, P310 (Drift aquifer) and W133 (St. Peter aquifer). VOCs were not identified above the CRQLs in any of the Quaternary background wells (W423, W425). Sampling results identified the following:

- Chlorinated VOCs were not identified at concentrations above the CRQL in St. Peter Well W133. In addition, PCE and TCE were not identified at concentrations above the CRQL in wells P307, P309, and P310.
- *cis*-DCE was identified at concentrations ranging from 990 to 5,000 µg/L in wells P307, P309 and P310. The concentrations exceed the CRQLs, the state HBV of 6 µg/L and the federal MCL of 70 µg/L.
- *trans*-DCE was identified at concentrations ranging from 36 to 120 µg/L in wells P307, P309 and P310 and exceed the CRQLs. Wells exceeding regulatory criteria were P307 (120 µg/L) and P309 (43 µg/L). The state HRL is 40 µg/L and the federal MCL is 100 µg/L.
- VC was identified at concentrations ranging from 390 to 460 µg/L in wells P307, P309 and P310 and exceed the CRQL. The concentrations exceed both the state HRL of 0.2 µg/L and the federal MCL of 2 µg/L.

4.4.4. Site Inspection Sample Results for the Platteville-Glenwood Formation Aquifer (Monitoring Wells)

Wells sampled to evaluate contamination in this aquifer included monitoring wells W120, W143, W433, W434, W437, and W438. VOCs were not identified above the CRQLs in any of the PVGW background wells. Sampling results identified the following:

- PCE was not identified at concentrations above the CRQL in these wells.
- TCE was identified in well W143 at a concentration of 8.5 µg/L, which exceeds the CRQL, the state HRL of 0.4 µg/L and the federal MCL of 5 µg/L. The data qualifier for W120 notes that the while TCE was not detected, the reported quantitation limit is approximate and may be inaccurate or imprecise.

- *cis*-DCE was detected in W120 at a concentration of 33 µg/L, which is above CRQL, the state HBV but below the federal MCL. c*is*-DCE was detected in the remaining wells at concentrations exceeding the CRQLs as well as both state and federal standards. Concentrations in these wells ranged from 320 to 6,500 µg/L
- *trans*-DCE was detected in these wells at concentrations ranging from 11 µg/L (W120) to 320 µg/L (W143). All of the samples from these wells exceed the CRQL. Wells exceeding the state standard (but below the federal standard) were W433 and W437. The only well exceeding the federal standard was W143.
- VC was detected above the CRQL in each well except W120. Concentrations ranged from 59 to 760 µg/L. These concentrations exceed both state and federal standards.

4.4.5. Site Inspection Sample Results for the Prairie du Chien and Jordan Aquifers (Municipal Wells)

Wells sampled to evaluate contamination in these aquifers included St. Louis Park municipal wells SLP4 and SLP6, and Edina municipal wells E2 and E7. Background municipal wells included SLP5 and E15. Sampling results for the Site wells identified the following:

- PCE was not identified at concentrations above the CRQL in these wells.
- TCE was identified at concentrations above the CRQL in wells SLP4 (3.0 µg/L) and SLP6 (0.55 µg/L). These concentrations also exceed the state HRL but do not exceed the federal MCL. TCE was not detected above the CRQL in background well SLP5.
- *cis*-DCE was detected in each of the wells exceeded the CRQLs at concentrations ranging from 3.3 (E2, estimated J-flag) to 37 µg/L (SLP4). *Cis*-DCE concentrations were 8.8 times greater in well SLP4 than in background well SLP5 and 9.2 times greater in well E7 than in background well E15. None of the concentrations exceeded federal standards. *Cis*-DCE concentrations in E2 and SLP6 were not greater than three times the background concentrations.
- *trans*-DCE was detected above the CRQL in SLP4 and SLP6 at concentrations of 3.3 and 0.89 µg/L, respectively but were not three times greater than the background concentrations. The concentrations do not exceed state or federal standards.
- VC was detected above the CRQL in SLP4 and SLP6 at concentrations of 4.4 and 1.5 µg/L, respectively. The concentrations in SLP4 exceed both state and federal standards and the concentrations in SLP6 exceed state standards. VC was not detected above the CRQL in the background municipal well SLP5.

4.5 Conclusions

The primary source of drinking water in the site vicinity is groundwater obtained from the PDCJ aquifers. Groundwater sampling results indicate that chlorinated volatiles are present in the PDCJ aquifer and concentrations (both historic and current) exceed regulatory criteria. Effluent from well SLP4 is distributed directly into the water system without blending. Groundwater contamination is present in the Quaternary, OSP, PVGW, and PDCJ aquifers and this encompasses a large geographic area within St. Louis Park and Edina (Figures 6A, 6B). The potential for ingestion of VOCs above regulatory standards via the groundwater drinking water pathway may be significant.

5.0 SURFACE WATER PATHWAY

Meadowbrook Lake is present in the western portion of the Site, and Minnehaha Creek is present in the western and southern portions of the Site. A fish survey, completed in 2009 for the Minnehaha Creek Watershed District and the Minnesota Department of Natural Resources, identified eleven different species of fish in Meadowbrook Lake (Appendix G). Numerous smaller natural surface water bodies are present within 1,000 feet of the Site, most notably to the west and south (Figure 1). Exposure risk to identified surface water via surface water runoff near the suspected source areas appears to be limited as the majority of these are covered with pavement or buildings.

The extent to which shallow ground water influences local surface water quality has not been determined at this time. Regional groundwater flow in this area is to the east-southeast toward the Mississippi River, located approximately 7.2 miles from the Site. The Mississippi River serves as the sole drinking water source for the city of Minneapolis (population 382,578; 2010 census). Although the Minneapolis boundary is just 1.35 miles east of the Site, the nearest major water intakes for municipal water supplies lie several miles upstream from the Minnehaha Creek outfall. Municipal water intakes on the Mississippi river downstream from the Minnehaha Creek outfall are more than 15 river-miles downstream

Minnehaha Creek (which discharges to the Mississippi River) is present within the identified Site area. Groundwater-surface water interaction may provide a route for VOCs to enter the creek. Depending upon contaminant loading to Minnehaha Creek, there may be potential for exposure risk at the Mississippi River. Shallow soil sampling results noted in the Preliminary Assessment did not indicate the presence of contaminants that could be entrained in surface water runoff from the site.

Process water associated with the municipal wells for both St. Louis Park and Edina is managed in accordance with National Pollutant Discharge Elimination System/State Disposal System MS4 General Permits issued for the cities of St. Louis Park and Edina. For St. Louis Park, contaminated groundwater is currently treated by granular activated carbon (GAC) prior to discharge. The Edina water treatment system utilizes air stripping technology prior to discharge.

No surface water pathway samples were collected as part of this Site Inspection; the available information does not appear to suggest that any significant completed surface water exposure pathways exist at this site at this time.

6.0 SOIL EXPOSURE

Soil samples were not collected as part of this site inspection report.
As noted in the Preliminary Assessment, historic soil samples were collected in the source areas (Figure 4). Historic impacts identified included the following:

- 6512 Walker Street (former light fixture manufacturing facility): PCE was detected in a soil sample collected near a back door B-2 (3' below ground surface) at a concentration of 35,200 µg/kg which exceeded the Tier 1 SLV.

- 6518 Walker Street (former printing facility): PCE was detected in soil samples SB-3 (4'), SB-4 (4'), SB-5 (40'), SB-6 (40'), and SB-6 (45') at concentrations ranging from 107 to 3,900 micrograms per kilogram

(µg/kg). The concentrations exceeded the Tier 1 SLV of 41.5 µg/kg but did not exceed the residential or industrial SRV (72,000 µg/kg and 131,000 µg/kg, respectively).

- 6714 Walker Street (former heat transfer equipment manufacturing): PCE was detected in soil samples B-4 (48'), B-5 (45'), B-5 (56'), B-8 (53'), B-8 (70'), B-9 (48'), B-9 (54'), B-9 (70'), B-10 (60'), B-11 (54'), B-12 (44'), and B-12 (68') at concentrations ranging from 57.5 µg/kg to 9,080 µg/kg. The concentrations exceed the Tier 1 SLV, but did not exceed the residential or industrial SRV. cis-DCE was also identified in soil sample B-7

Previous environmental investigations have identified significant concentrations of PCE in shallow soil (3') and deeper soil (40'-70') at the Site. The risk of direct soil exposure is not expected to be significant because most of the suspected source areas are paved or occupied by buildings at this time. In general, the shallower soil impacts appear to be isolated, and it is not expected that potential future development work would entail excavation of deeper contaminated soil. Therefore, it appears that the risk of direct soil exposure by occupants, workers, residents, or the public is low.

However, if redevelopment in the shallower soil (such as for building foundations, etc.) were to occur, the potential exists to encounter contaminated soil, which would lead to an increased risk of direct soil exposure to workers, residents, and/or building occupants.

7.0 AIR PATHWAY

Air samples were not collected as part of this site inspection report.

8.0 VAPOR INTRUSION

Although not a component of the HRS, vapor intrusion assessment activities were historically conducted throughout the solvent plume and are discussed in the Preliminary Assessment (MPCA, 2016a). Most notably, MPCA obtained assistance from the EPA Emergency Response Program between 2008 and 2009 to evaluate risk to residents, businesses, and sensitive populations (including those noted in the sensitive receptors table noted in section 4.2). These activities identified 40 residential and commercial properties with vapor intrusion risks for which the EPA installed vapor mitigation systems. The investigation area is illustrated on Figures 3 and 4.

Recent vapor intrusion sampling conducted by MPCA's contractor (AECOM, 2014-2016) also identified four commercial properties with known or potential vapor intrusion impacts: one commercial property requiring vapor mitigation (the former Super Radiator Coils Tube Fab building) and three commercial properties near source areas which MPCA is currently evaluating (Bohn Welding, 6600 Lake Street; Ryan Company, 3361 Republic Street; and SMD Copy Systems, 6520 Lake Street).

Additionally, vapor intrusion activities conducted at the former Super Radiator Coils property on behalf of one of the potential responsible parties (GHD, 2016) identified vapor concentrations requiring building mitigation. The potential responsible party is currently working on mitigating the building.

Historic vapor intrusion sampling activities conducted near the source areas indicate that chlorinated volatiles are present near the source area in the soil gas at concentrations that exceed risk-based regulatory criteria. Details regarding these investigations and results are documented in the Preliminary Assessment (MPCA,

2016a). Additional characterization of the potential for exposure to soil vapors from this site is necessary to determine if there is risk of soil vapor intrusion exposure. However, inhalation via vapor intrusion is not currently an exposure pathway considered under the EPA's Hazard Ranking System for NPL scoring.

9.0 SUMMARY AND CONCLUSIONS

The St. Louis Park Solvent Plume SI attempted to gather data necessary to evaluate the site as a candidate for the NPL. Groundwater samples were collected from an existing monitoring network associated with the adjacent NPL listed Reilly Tar site and from municipal water supply wells to evaluate background groundwater conditions in St. Louis Park and Edina. Groundwater samples were also collected from this network to document existing conditions of the groundwater plume.

The St. Louis Park Solvent Plume impacts both the St. Louis Park municipal well field (SLPWF) and the Edina Well field (EWF). The SLPWF, consisting of ten bedrock wells, provides potable water for a population of approximately 48,000. The EWF, consisting of eighteen bedrock wells, provides potable water for a population of approximately 50,000.

Site investigation work indicates that potential sources of VOC contamination are present in an area near West Lake Street and Walker Street in St. Louis Park. The data derived from the investigations indicates initial discharges in the suspected source areas migrated downward through porous site soils, eventually coming into contact with the groundwater table in the Quaternary aquifer then to the underlying PVGW aquifer.

Soil, groundwater, and soil vapor concentrations from beneath Site buildings indicate that dense non-aqueous phase liquid (DNAPL) may be present beneath the suspected source areas. The presence of dense non-aqueous phase liquid (DNAPL) is considered likely when a concentration exceeds 1% of a compound's aqueous solubility (EPA, 2004). Additional investigation is necessary to characterize surface soil at the release source areas and establish the contaminant pathway from the source area to the bedrock valley and deeper SP and PDCJ aquifers.

PCE and/or its degradation daughter products have been detected at concentrations exceeding acceptable regulatory limits in several monitoring wells and municipal water supply wells throughout the Site.

9.0 REFERENCES

AECOM, 2013, VOC Sampling of the Edina and St. Louis Park Wells in FY2013, June 30, 2013, prepared by AECOM for MPCA, 380 pages (AECOM, 2013).

AECOM, 2014, Site Investigation Report, St. Louis Park Investigation, St. Louis Park, July 1, 2014, prepared by AECOM for MPCA, 1663 pages

AECOM, 2015, St. Louis Park Investigation, April 1, 2015, prepared by AECOM for MPCA, 1577 pages

AECOM, 2016, St. Louis Park Investigation-FY16, July 1, 2016, prepared by AECOM for MPCA, 1534 pages

Balaban, N.H.. (1989). C-04 Geologic atlas of Hennepin County, Minnesota. Minnesota Geological Survey. Retrieved from the University of Minnesota Digital Conservancy, http://hdl.handle.net/11299/58491.

GHD, 2016, Site Investigation Results, 6714 Walker Street Street, St. Louis Park, prepared by GHD on behalf of Daikin Applied Americas Inc. and Super Radiator Coils LP, 782 pages

Minnesota Pollution Control Agency (MPCA). 2016a. Preliminary Assessment Report, St. Louis Park Solvent Plume, MPCA Site Assessment Site: SA4543, MPCA Superfund Site ID: SR377, SR358, EPA CERCLA ID: MN000506121, December 17, 2015, signed January 13, 2016.

MPCA. 2016b. Site Inspection Work Plan for St. Louis Park Solvent Plume, MPCA Site Assessment Site: SA4542, MPCA Superfund Site ID: SR377 and SR358, EPA ID: MNN000506121, October 26, 2015, signed January 25, 2016.

MPCA, 2014, Site Assessment Program Quality Assurance Project Plan, dated September 2014, prepared for MPCA by AECOM, Minneapolis, Minnesota, 218 pp.

Minnesota Depart of Health. 2013. Wellhead Protection Area
http://www.health.state.mn.us/divs/eh/water/swp/maps/index.htm

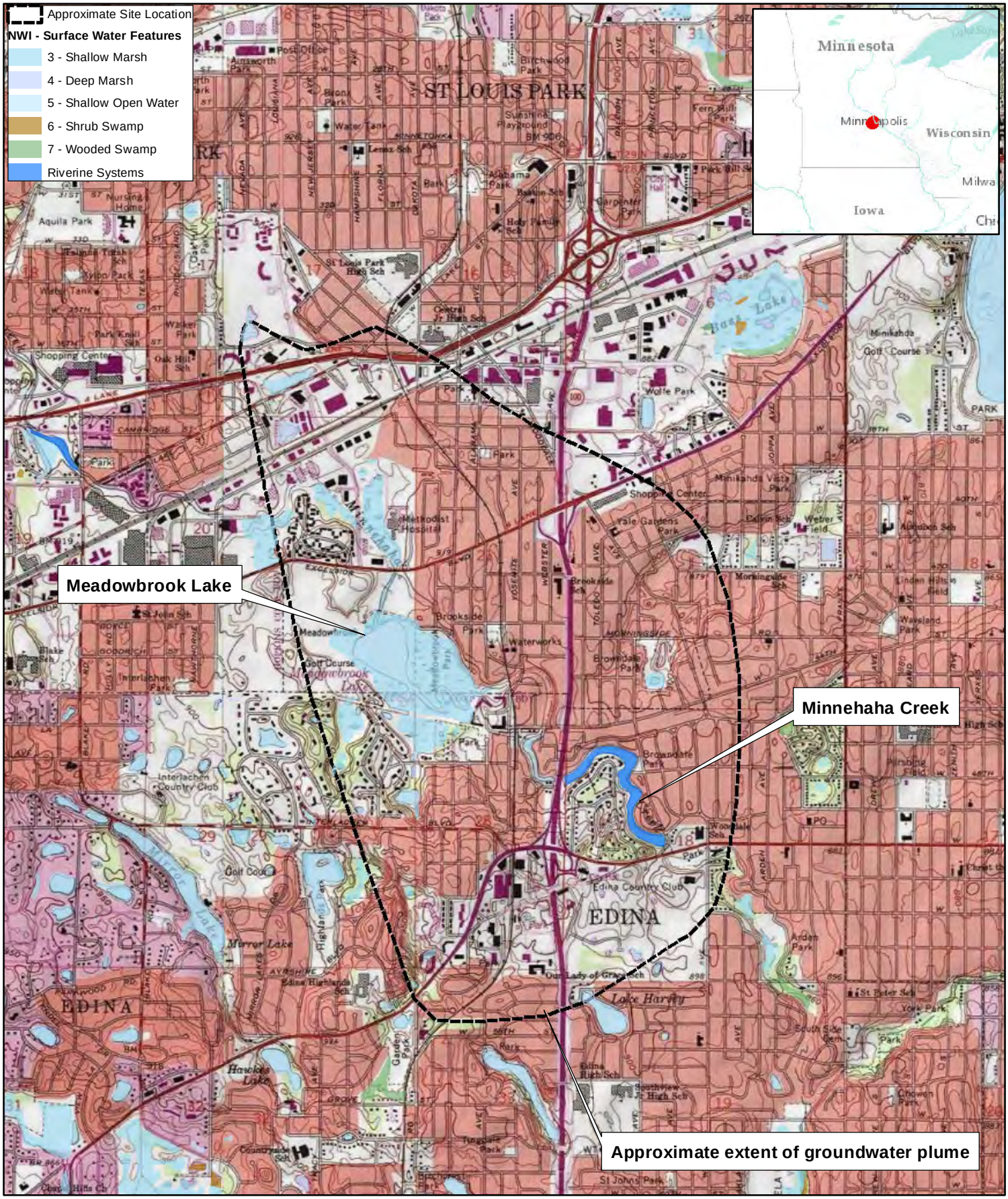
STS Consultants, 2005, Land Use and Source Characterization Survey-Edina Well Evaluation, May 27, 2005, prepared by STS Consultants for MPCA, 416 pages (STS, 2005a)

United States Geological Survey. 2013. Minneapolis South 7.5 Minute Quadrangle. Accessed at:
http://viewer.nationalmap.gov/viewer/

Figures

Minnesota Pollution Control Agency

Figure 1
Site Location
St. Louis Park Solvent Plume
St. Louis Park & Edina, Minnesota
MPCA SA4542, SR377, SR358

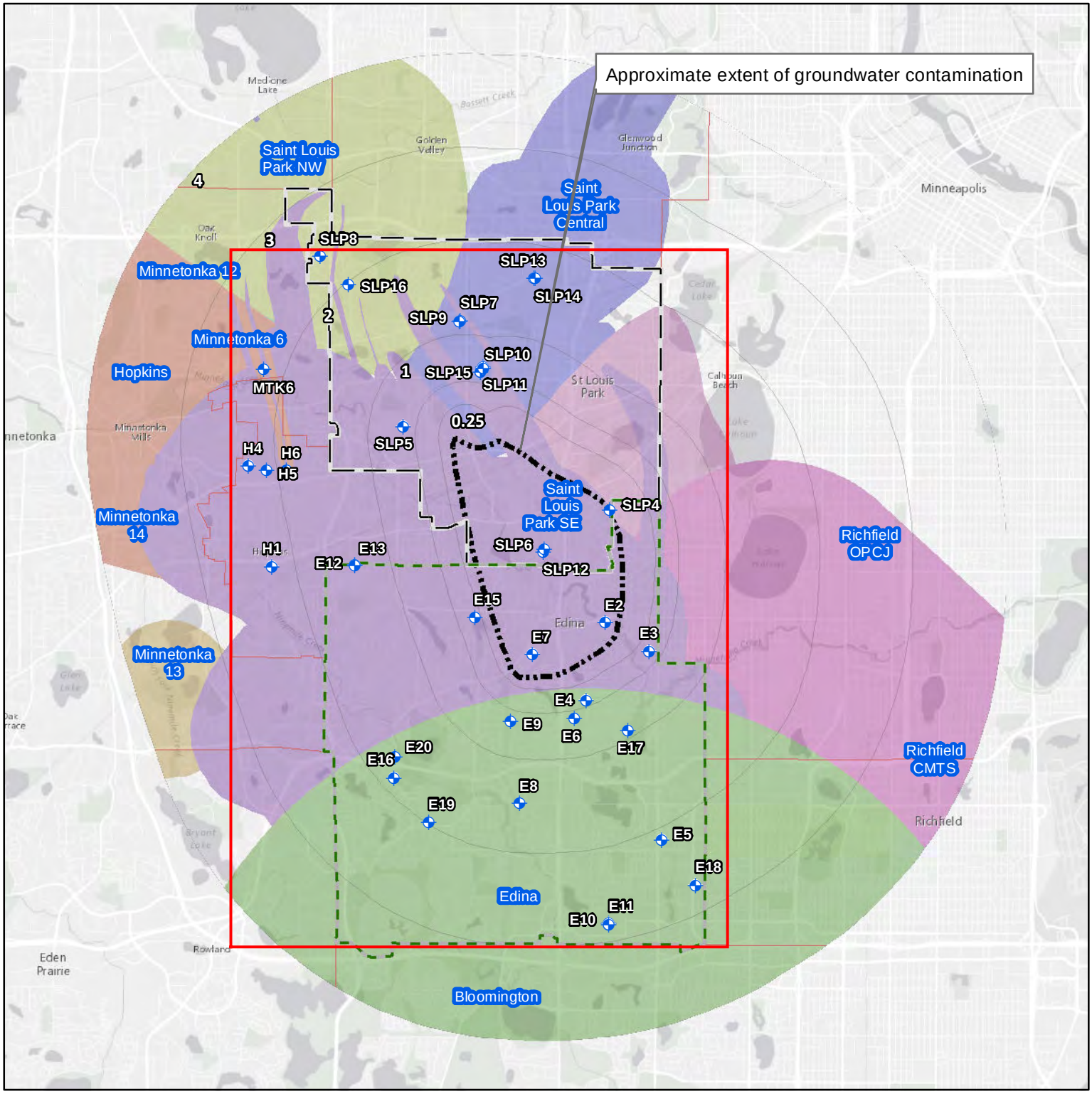


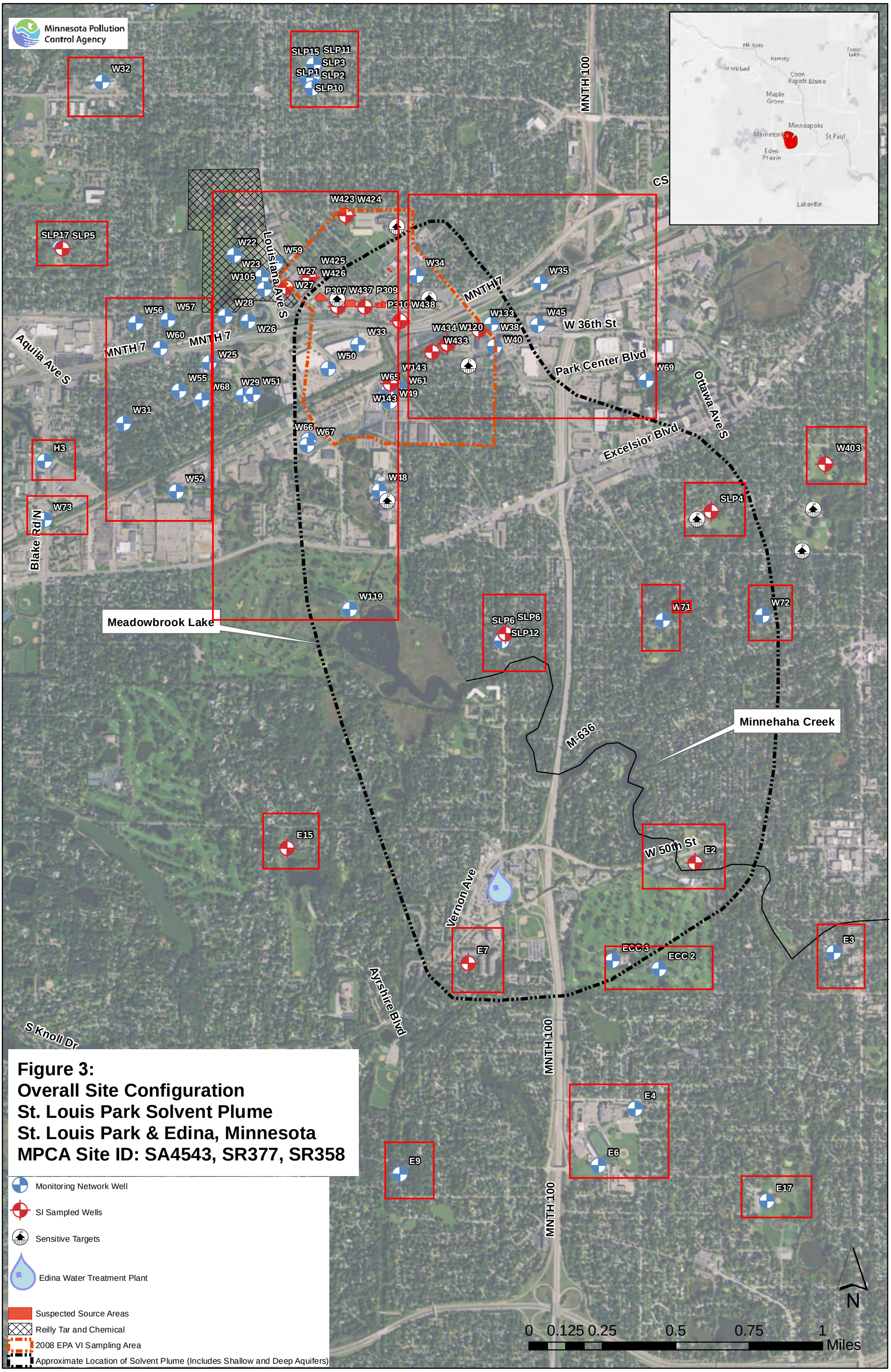
Minnesota Pollution Control Agency

Figure 2:
Municpal Wells and Wellhead Protection Areas
St. Louis Park Solvent Plume
St. Louis Park & Edina, Minnesota
MPCA Site ID: SA4543, SR377, SR358

Municipal Wells
Target Distance Limit
Edina
Saint Louis Park
City Boundary

Wellhead Protection Area
Bloomington
Edina
Hopkins
Minnetonka 12
Minnetonka 13
Minnetonka 14
Minnetonka 6
Richfield CFIG
Richfield CMTS
Richfield OPCJ
Saint Louis Park Central
Saint Louis Park NW
Saint Louis Park SE
Sun Valley Mobile Home Park





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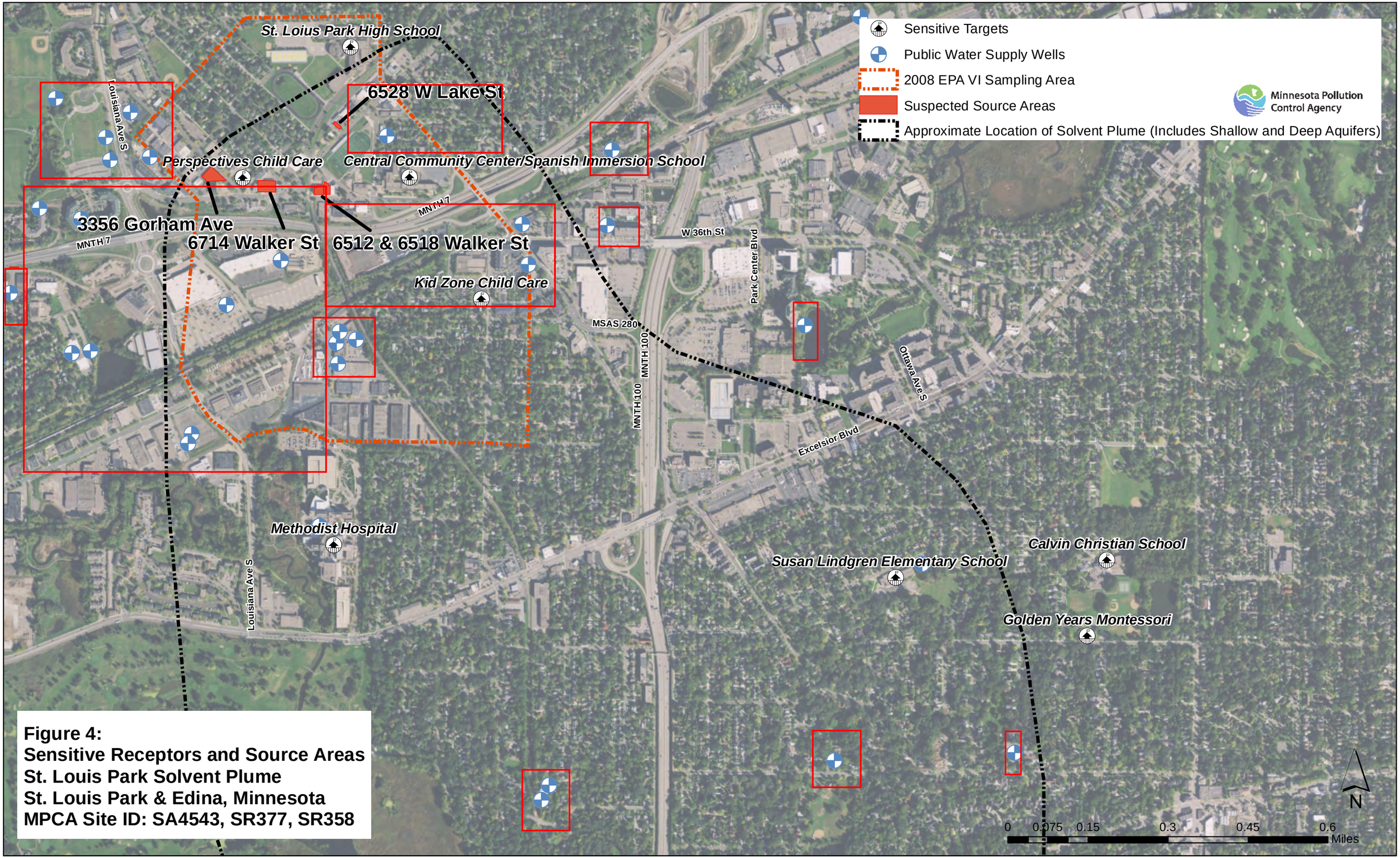
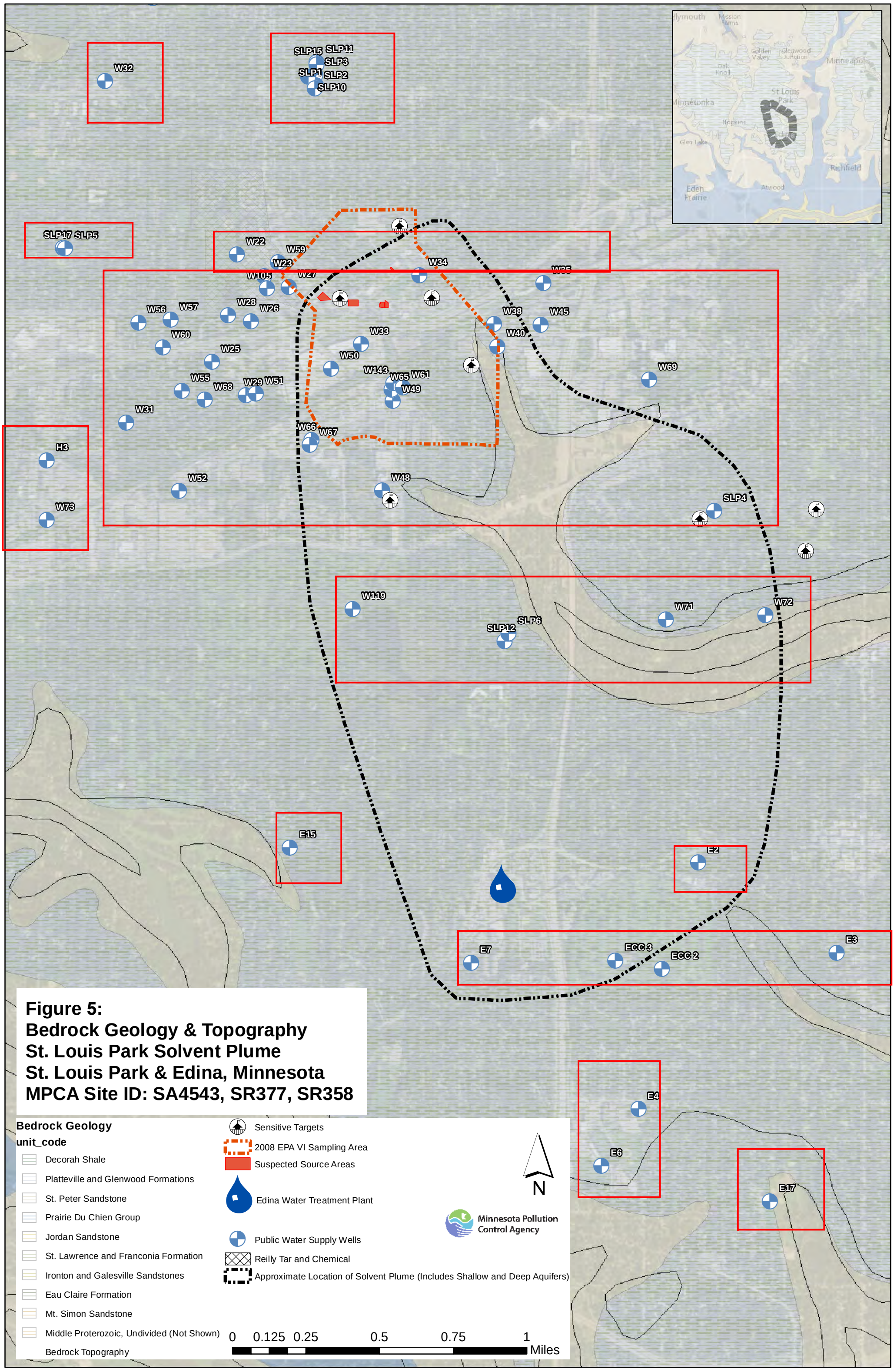


Figure 4:
Sensitive Receptors and Source Areas
St. Louis Park Solvent Plume
St. Louis Park & Edina, Minnesota
MPCA Site ID: SA4543, SR377, SR358

DISCLAIMER: The State of Minnesota makes no representations or warranties to the user as to the accuracy, currency, suitability or reliability of this data for any purpose.



DISCLAIMER: The State of Minnesota makes no representations or warranties to the user as to the accuracy, currency, suitability or reliability of this data for any purpose.

Figure 6A:
Site Inspection Sampling Results
St. Louis Park Solvent Plume
St. Louis Park & Edina, Minnesota
MPCA Site ID: SA4543, SR377, SR358

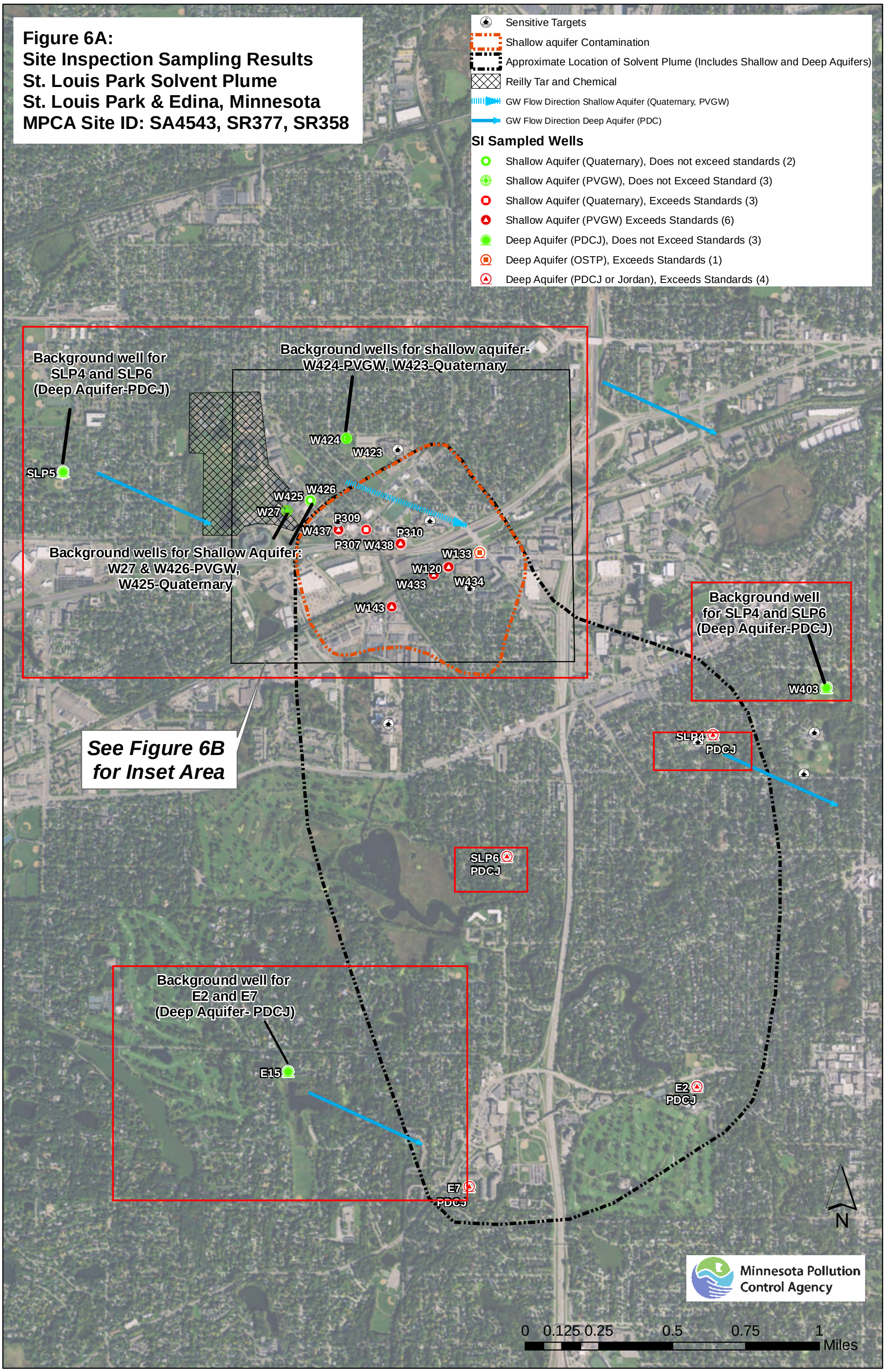


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Figure 6B:
Site Inspection Sampling Results (Inset Area)
St. Louis Park Solvent Plume
St. Louis Park & Edina, Minnesota
MPCA Site ID: SA4543, SR377, SR358

Minnesota Pollution Control Agency

Background wells for shallow aquifer:
W424-PVGW, W423-Quaternary

W424
W423
W425
W426
W27
Quaternary
P307
P309
W437
PVGW
W438
PVGW
P310
Quaternary
W133
OSTP
W120
PVGW
W433
PVGW
W434
PVGW
W143
PVGW

Background wells for Shallow Aquifer:
W27 & W426-PVGW,
W425-Quaternary

Sensitive Targets
Shallow Aquifer Contamination
Reilly Tar and Chemical
Suspected Source Areas
Approximate Location of Solvent Plume (Includes Shallow and Deep Aquifers)
GW Flow Direction Shallow Aquifer (Quaternary, PVGW)
GW Flow Direction Deep Aquifer (PDC)

SI Sampled Wells

Shallow Aquifer (Quaternary), Does not exceed standards (2)
Shallow Aquifer (PVGW), Does not Exceed Standard (3)
Shallow Aquifer (Quaternary), Exceeds Standards (3)
Shallow Aquifer (PVGW) Exceeds Standards (6)
Deep Aquifer (OSTP), Exceeds Standards (1)

N

0 250 500 1,000 1,500 2,000 Feet

DISCLAIMER: The State of Minnesota makes no representations or warranties to the user as to the accuracy, currency, suitability or reliability of this data for any purpose.

Tables

Table 1
Well Construction Details
St. Louis Park Solvent Plume

Color denotes aquifer type

Well Name	Unique #	Well Type	Aquifer Type	Easting (UTM)	Northing (UTM)	Ground/ Reference Elevation (ft)	Well Depth (ft)	Screen/Open Hole Length (ft)	Bottom of Casing	Bottom of Screen (ft)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Protective Casing Elevation (ft)
P109	216194	PZ	Drift	470406	4977204	895.11	44	2	42	44	853.11	851.11	895.11
P307	462926	PZ	Drift	470596	4976193	913.1	73.7	10	63.7	73.7	849.4	839.4	913.1
P308	462927	PZ	Drift	470633.865	4976014.682	923.29	68.7	10	58.7	68.7	864.59	854.59	923.29
P309	462928	PZ	Drift	471160.289	4976250.516	925.16	73	10	63	73	862.16	852.16	925.16
P310	462929	PZ	Drift	471308.147	4976253.025	921.48	69.5	10	59.5	69.5	861.98	851.98	921.48
W10	216038	MW	Drift	471022.09	4977518.492	892.03	29	4	25	29	867.03	863.03	892.03
W116	160030	MW	Drift	468219.448	4979495.085	909.54	67	4	63	67	846.54	842.54	909.54
W117	160031	MW	Drift	470613	4978367	917.75	72	4	68	72	849.75	845.75	917.75
W128	165583	MW	Drift	471206	4976017	922.89	67	4	63	67	859.89	855.89	922.89
W136	165591	MW	Drift	471447	4976079	919.17	53	4	49	53	870.17	866.17	919.17
W16	216044	MW	Drift	472819	4974463	891	64	0					
W420	434045	MW	Drift	474274.505	4974558.308	895.88	67	27	40	67	855.84	828.84	895.84
W423	439813	MW	Drift	474695.847	4976749.676	917.51	45	10	35	45	882.51	872.51	917.51
W425	439814	MW	Drift	471006.778	4977206.979	923.81	45	10	35	45	888.76	878.76	923.76
W427	439811	MW	Drift	473314	4976147	919.4	47	10	35	45	884.4	874.4	919.4
W101	149711	MW	OPVL	473204	4975130	918.03	106	3	103	106	815.03	812.03	918.03
W120	165576	MW	OPVL	472031.284	4976143.628	919.81	105.7	9	100	109	819.9	810.9	919.9
W121	165577	MW	OPVL	472873	4975534	922.85	113.25	6	109	115	813.85	807.85	922.85
W123	165580	MW	OPVL	472485	4976067	909.36	103	10	93	103	816.36	806.36	909.36
W130	165585	MW	OPVL	472489	4976044	894.83	88	8	80	88	814.83	806.83	894.83
W131	165586	MW	OPVL	470967.913	4975412.223	919.27	107	10	97	107	822.27	812.27	919.27

Notes:
TOC=Top of Casing
-=No Data Available
PZ=Piezometer
IR=Irrigation

MW=Monitoring Well
OSTP=St. Peter
OPVL=Platteville
PCJ=Prairie du Chien-Jordan

STLP=St. Louis Park Well
H=Hopkins Well
ED=Edina well

Table 1
Well Construction Details
St. Louis Park Solvent Plume

Color denotes aquifer type

Well Name	Unique #	Well Type	Aquifer Type	Easting	Northing	Ground/ Reference Elevation (ft)	Well Depth (ft)	Screen/Open Hole Length (ft)	Bottom of Casing	Bottom of Screen (ft)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Protective Casing Elevation (ft)
W132	165587	MW	OPVL	472373.522	4976119.542	904.95	93	7	86	93	818.95	811.95	904.95
W143	216051	MW	OPVL	472153.333	4976139.775	905.31	90	20	70	90	835.31	815.31	905.31
W18	216046	MW	OPVL	471890.362	4975109.247	893.33	78	7	71	78	822.27	815.27	893.27
W20	216048	MW	OPVL	471679.97	4976660.382	895.83	80	10	80	90	815.83	805.83	895.83
W27	216052	MW	OPVL	470426.197	4977198.416	910.47	112	31	81	112	829.47	798.47	910.47
W421	434044	MW	OPVL	473828.616	4975388.85	895.86	84	17	67	84	828.82	811.82	895.82
W424	439809	MW	OPVL	474398	4976763	917.57	110	10	100	110	817.57	807.57	917.57
W426	439812	MW	OPVL	471012.638	4976406.944	923.95	116	16.5	99.5	116	824.41	807.91	923.91
W428	439810	MW	OPVL	471478.758	4975870.207	919.4	109	11	98	109	821.4	810.4	919.4
W431	462935	MW	OPVL	472032.9566	4975812.446	922.77	114.1	8	106.15	114.15	816.62	808.62	921.98
W432	462930	MW	OPVL	472036.3671	4975812.132	919.02	109	12.5	96.5	109	822.52	810.02	919.02
W433	462933	MW	OPVL	472034.8168	4975814.927	925.84	112	16	96	112	829.84	813.84	925.84
W434	463012	MW	OPVL	471540	4975853	920.7	112	15	97	112	823.59	808.59	920.59
W437	498917	MW	OPVL	471638	4975946	913.18	104	10.167	94	104.167	819.18	809.013	913.18
W438	498919	MW	OPVL	470954.35	4976063.872	921.12	106.5	10	96.5	106.5	824.62	814.62	921.12
W122	165578	MW	OSTP	470755.628	4976350.34	918.58	239	22	217	239	701.58	679.58	918.58
W129	165584	MW	OSTP	471822	4975893	916.33	122	5	117	122	799.33	794.33	916.33
W133	165588	MW	OSTP	472031.693	4976146.598	921.06	122	6	116	122	805.06	799.06	921.06
W33	206449	MW	OSTP	477021	4980762	906.15	182	-	-	-	-	-	907.55
W33R	753534	MW	OSTP	478467	4980343	894	-	-	-	-	-	-	-

Notes:
TOC=Top of Casing
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Well Construction Details
St. Louis Park Solvent Plume

Color denotes aquifer type

Well Name	Unique #	Well Type	Aquifer Type	Easting	Northing	Ground/ Reference Elevation (ft)	Well Depth (ft)	Screen/Open Hole Length (ft)	Bottom of Casing	Bottom of Screen (ft)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Protective Casing Elevation (ft)
W410	434042	MW	OSTP	470987.393	4976083.949	908.04	125	20	105	125	803.04	783.04	908.04
W411	432035	MW	OSTP	471591	4976423	896.25	111	27	83	110	813.25	786.25	896.25
W412	432034	MW	OSTP	472269	4976380	915.17	139.9	27	112	139	803.17	776.17	915.17
E13	203613	Edina Well	PCJ	Not Public Data	Not Public Data	935	495	66	429	495	506	440	-
E15	207674	Edina Well	PCJ	Not Public Data	Not Public Data	898	475	200	275	475	623	423	-
E2	208399	Edina Well	PCJ	Not Public Data	Not Public Data	879	446	180	266	446	613	433	-
E7	206474	Edina Well	PCJ	Not Public Data	Not Public Data	953	547	197	350	547	603	406	-
EDTW1	748656	MW	PCJ	Not Public Data	Not Public Data	899	450	179	271	450	631.03	452.03	-
H6	112228	H	PCJ	Not Public Data	Not Public Data	961	545	191	354	545	571.45	380.45	925.45
SLP10	206442	SLP Well	PCJ	Not Public Data	Not Public Data	925	500	185	315	500	610	425	-
SLP16	203187	SLP Well	PCJ	Not Public Data	Not Public Data	934.34	500	75	425	500	509.34	434.34	-
SLP5	203196	SLP Well	PCJ	Not Public Data	Not Public Data	927.13	465	160	305	465	622.13	462.13	-
W112	206443	MW	PCJ	469650.795	4976569.893	917.52	540	247	293	540	624.52	377.52	917.52
W118	216088	MW	PCJ	471160.91	4977294.004	905	487	-	-	-	-	-	-
W119	216009	MW	PCJ	471020.352	4975599.63	890	502	245	257	502	633	388	890
W23	216050	MW	PCJ	471003	4975601	897.22	909	536	373	909	524.22	-11.78	897.22
W29	206454	MW	PCJ	469495	4975270	896.2	335	78	257	335	639.2	561.2	896.2
W401	453805	MW	PCJ	470667	4976172	922.99	-	-	-	-	-	-	922.99
W403	439751	MW	PCJ	470543	4976204	868.21	385	150	235	385	633.21	483.21	868.21
Edina CC#3	161443	IR	PCJ	472693	4972663	918	492	-	290	-	-	-	-
Edina CC #2	236157	IR	PCJ	472927	4972621	908	490	-	287	-	-	-	-
SLP4	200542	SLP Well	CJDN	Not Public Data	Not Public Data	904.87	490	70	420	490	484.87	414.87	-
SLP6	206457	SLP Well	CJDN	Not Public Data	Not Public Data	914.87	480	50	430	480	611.87	307.87	-
SLP15	215447	SLP Well	CJDN	Not Public Data	Not Public Data	922.7	503	105	398	503	524.7	419.7	-

Notes:
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STLP=St. Louis Park Well
H=Hopkins Well
ED=Edina well

Table 1
Well Construction Details
St. Louis Park Solvent Plume

Well Name	Casing Diameter (in)	Pack Material	Sandpack Top	Casing Material	Screen Material	Grout	Well Diameter (in)	Contractor	Drill Method	Start Date	Abandon Date	WellNotes
P109	1.25	-	-	-	-	-	1.25	-	-	25-Jan-80	-	Ground/Reference Elevation are TOC
P307	2	Red Filter Sand 45-55	61.7	Schedule 40 Black Steel	Stainless Steel	Cement Bentonite	2	E.H. Renner & Sons	Mud Rotary	29-Nov-90	-	Ground/Reference Elevation are TOC
P308	2	Red Filter Sand 45-55	56.5	Schedule 40 Black Steel	Stainless Steel	Cement Bentonite	2	E.H. Renner & Sons	Mud Rotary	06-Dec-90	-	Ground/Reference Elevation are TOC
P309	2	Red Filter Sand 45-55	61	Schedule 40 Black Steel	Stainless Steel	Cement Bentonite	2	E.H. Renner & Sons	Mud Rotary	27-Nov-90	-	Ground/Reference Elevation are TOC
P310	2	Red Filter Sand 45-55	62	Schedule 40 Black Steel	Stainless Steel	Cement Bentonite or Bentonite Slurry	2	E.H. Renner & Sons	Cable Tool	21-Nov-90	-	Ground/Reference Elevation are TOC
W10	4	-	-	-	-	-	4	E.H. Renner & Sons	-	03-Feb-89	-	-Ground/Reference Elevation are TOC -Screen assumed
W116	4	-	-	-	-	-	4	E.H. Renner & Sons	-	01-Apr-79	19-Nov-10	-Ground/Reference Elevation are TOC -Screen assumed
W117	4	-	-	-	-	-	4	E.H. Renner & Sons	-	01-Apr-79	-	Ground/Reference Elevation are TOC
W128	4	-	-	-	-	-	4	E.H. Renner & Sons	Cable Tool	14-Sep-79	-	Ground/Reference Elevation are TOC
W136	4	-	-	Johnson SS	-		4	E.H. Renner & Sons	-	28-Nov-79	-	Ground/Reference Elevation are TOC
W16		-	-	-	-	-	-	-	-	-	-	-
W420	4	-	-	Black Welded	Johnson Wirewound	Neat Cement and Bentonite	4	Bergerson-Caswell Inc.	Rotary	12-Oct-87	-	-
W423	4	-	-	Black Steel	304 Johnson Stains. Steel	Neat Cement	4	E. H. Renner & Sons	Cable Tool	25-Nov-87	-	Ground/Reference Elevation are TOC
W425	4	-	-	Black Steel	Johnson 304 Stainless	Neat Cement	4	E. H. Renner & Sons	Cable Tool	07-Dec-87	-	-Ground/Reference Elevation are TOC 11/05 -Variable Casing
W427	4	-	-	Black Steel	Johnson 304 Stainless	Neat Cement	4	E. H. Renner & Sons	Cable Tool	20-Nov-87	-	-Ground/Reference Elevation are TOC -Variable Casing diameter
W101	4	-	-	-	-	-	4	E.H. Renner & Sons	-	26-Dec-78	-	Ground/Reference Elevation are TOC
W120	4	-	-	-	-	-	4	E.H. Renner & Sons	-	12-Jul-79	-	Ground/Reference Elevation are TOC 11/05
W121	4	-	-	Johnson SS	-	-	4	E.H. Renner & Sons	Cable Tool	15-Jul-79	-	Ground/Reference Elevation are TOC
W123	4	-	-	-	-	-	4	E.H. Renner & Sons	-	07-Aug-79	01-Oct-10	Ground/Reference Elevation are TOC
W130	4	-	-	-	-	-	4	E.H. Renner & Sons	-	25-Sep-79	-	Ground/Reference Elevation are TOC
W131	4	-	-	-	-	-	4	E.H. Renner & Sons	-	05-Oct-79	-	Ground/Reference Elevation are TOC

Notes:
TOC=Top of Casing
-=No Data Available
PZ=Piezometer
IR=Irrigation

MW=Monitoring Well
OSTP=St. Peter
OPVL=Platteville
PCJ=Prairie du Chien-Jordan

STLP=St. Louis Park Well
H=Hopkins Well
ED=Edina well

Table 1
Well Construction Details
St. Louis Park Solvent Plume

Color denotes aquifer type

Well Name	Casing Diameter (in)	Pack Material	Sandpack Top	Casing Material	Screen Material	Grout	Well Diameter (in)	Contractor	Drill Method	Start Date	Abandon Date	WellNotes
W132	4	-	-	-	-	-	4	E.H. Renner & Sons	-	29-Oct-79	-	Ground/Reference Elevation are TOC
W143	4	-	-	-	-	-	4	-	-	03-Feb-89	-	-Ground/Reference Elevation are TOC -Open hole Assumed
W18	4	-	-	-	-	-	4	E.H. Renner & Sons	-	07-Jul-78	-	GW contamination by coal tar derivatives
W20	4	-	-	-	-	-	4	E.H. Renner & Sons	-	27-Nov-78	-	Ground/Reference Elevation are TOC
W27	4	-	-	-	-	-	4	E.H. Renner & Sons	-	03-Jul-53	-	Ground/Reference Elevation are TOC
W421	6	-	-	Black Welded	no screen	Neat Cement and Bentonite	4	Bergerson-Caswell Inc.	Rotary	12-Oct-87	-	-Ground/Reference Elevation are TOC 11/05 -Open hole 67-87'
W424	4	-	-	Black Steel	no screen	Neat Cement	4	E. H. Renner & Sons	Cable Tool	20-Nov-87	-	-Ground/Reference Elevation are TOC 11/05 -Open hole 99.5-116'
W426	4	-	-	Black Steel	no screen	Neat Cement	4	E. H. Renner & Sons	Cable Tool	07-Dec-87	-	-Ground/Reference Elevation are TOC -Open hole 98-109'
W428	4	-	-	Black Steel	no screen	Neat Cement	4	E. H. Renner & Sons	Cable Tool	17-Nov-87	-	Ground/Reference Elevation are TOC
W431	4	-	-	Schedule 40 Black Steel	Stainless Steel	Cement Bentonite or Bentonite Slurry	4	E.H. Renner & Sons	Cable Tool	12-Nov-90	-	Ground/Reference Elevation are TOC
W432	4	-	-	Schedule 40 Black Steel	Stainless Steel	Cement Bentonite or Bentonite Slurry	4	E.H. Renner & Sons	Cable Tool	01-Nov-90	19-Nov-10	Ground/Reference Elevation are TOC
W433	6	-	-	Schedule 40 Black Steel	Stainless Steel	Cement Bentonite	6	E.H. Renner & Sons	Mud Rotary	05-Nov-90	-	-Ground/Reference Elevation are TOC -Open hole 96-112'
W434	6	Red Flint Sand	92	Schedule 40 Black Steel	Stainless Steel	Cement Bentonite	6	E.H. Renner & Sons	Mud Rotary	23-Apr-91	-	Ground/Reference Elevation are TOC 11/05
W437	4	-	-	-	Black Welded	Portland	4	Mark J. Traut Wells, Inc.	Rotary	30-Dec-91	-	-Ground/Reference Elevation are TOC -Open hole 94-104.2'
W438	4	-	-	-	Black Welded	Portland	4	Mark J. Traut Wells,	Rotary	02-Jan-92	-	Ground/Reference Elevation are TOC
W122	4	-	-	-	-	-	4	E.H. Renner & Sons	-	06-Aug-79	-	Ground/Reference Elevations are TOC
W129	4	-	-	-	-	-	4	E.H. Renner & Sons	-	23-Oct-79	-	Ground/Reference Elevations are TOC
W133	4	-	-	Johnson SS	-	-	4	E.H. Renner & Sons	-	13-Nov-79	-	Ground/Reference Elevations are TOC
W33	4	-	-	-	-	-	4	Max Renner	-	01-Jun-53	01-Oct-04	Ground/Reference Elevations are TOC
W33R	-	-	-	-	-	-	4	-	-	-	-	-

Notes:
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STLP=St. Louis Park Well
H=Hopkins Well
ED=Edina well

Table 1
Well Construction Details
St. Louis Park Solvent Plume

Color denotes aquifer type

Well Name	Casing Diameter (in)	Pack Material	Sandpack Top	Casing Material	Screen Material	Grout	Well Diameter (in)	Contractor	Drill Method	Start Date	Abandon Date	WellNotes
W410	4	-	-	Black Welded	Johnson Wire Wound	Neat Cement/Bentonite	4.008	Bergerson-Caswell Inc.	Rotary Cable tool	12-Oct-87	-	-Ground/Reference Elevation are TOC -Hole diam/casing varies w/ depth
W411	4	-	-	Black Welded	-	Neat Cement	4	Layne-Western Co. INC	Rotary	27-Oct-87	-	-Ground/Reference Elevation are TOC -Various casing/hole diameters
W412	4	-	-	Black Welded	Johnson	Neat Cement	4	Layne-Western Co INC	Rotary	20-Nov-87	-	Ground/Reference Elevation are TOC
E13	16	-	-	-	-	-	16	Keys Well Drilling Co.	-	01-May-64	-	-Assumed well diameter, actual may be smaller -CWI remarks: "CASING 024 TO 0109; 016 TO 0429."
E15	24	-	-	-	-	-	24	Bergerson-Caswell	-	15-Jun-02	-	Assumed well diameter, actual may be smaller
E2	12	-	-	-	-	-	12	Keys Well Drilling	-	01-Apr-07	-	-CWI casing 20"-53; 16"-260', 12"-266'
E7	16	-	-	-	-	-	16	Keys Well Co.	-	03-May-55	-	-Assumed well diameter, actual may be smaller -1/25/11 Out of service until VOC Treatment -148' pipe 24", 350' pipe 16"
EDTW1	6	-	-	steel	-	neat cement	6	Mark J Traut Wells,	-	07-Dec-06	-	Assumed well diameter, actual may be smaller
H6	30	-	-	welded	-	neat cement	24	Bergerson-Caswell Inc.	Cable Tool	30-Sep-77	-	-Assumed well diameter, actual may be smaler -30" to 132'; 24" to 354'
SLP10	16	-	-	-	-	-	23	Keys	Cable Tool	15-Sep-55	-	-
SLP16	24	-	-	-	-	yes	24	Tri-State Drilling Co.	-	31-Jul-73	-	-Open hole assumed -24' liner pipe 425', 30" outer casing 310 ft
SLP5	20	-	-	-	-	Neat cement	20	Layne Minnesota Co.	-	01-Jan-47	-	-Assumed well diameter, actual may be smaller -Open hole assumed -24" pipe to 115' then 20' to 305'
W112	16	-	-	-	-	-	16	McCarthy	-	28-May-32	-	-Assumed well diameter, acutal may be smaller -Open hole assumed, have casing to 293 -Formerly AKA SLP01
W118	-	-	-	-	-	-			-		-	-
W119	16	-	-	-	-	-	16	E. H. Renner	-	01-Jun-35	-	-Assumed well diameter, acutal may be smaller -Open hole assumed, have casing to 257
W23	10	-	-	-	-	-	10	McCarthy	-	-	-	Ground/Reference Elevation are TOC
W29	4	-	-	-	-	-	4	E.H. Renner & Sons	-	12-Apr-63	-	-Ground/Reference Elevation are TOC -Private well
W401	4	-	-	-	-	-	4	-	-	-	-	Ground/Reference Elevation are TOC
W403	4	-	-	steel	-	-	4	-	Rotary	01-Mar-88	-	Ground/Reference Elevation are TOC
Edina CC#3	-	-	-	-	-	-	12	-	-	-	-	-
Edina CC #2	-	-	-	-	-	-	12	-	-	-	-	-
SLP4	12	-	-	-	-	Neat cement	12	Layne-Western Co.	-	01-Jan-46	-	-Assumed well diameter, actual may be smaller -Open hole assumed, GAC
SLP6	16	-	-	-	-	Neat cement	16	Layne-Western Co.	-	01-Jan-48	-	-Open hole assumed -CWI remarks " CASING 024 TO 0108; 020 TO 0303' 16" to 430'
SLP10	24	-	-	-	-	-	24	Bergerson-Caswell	-	22-May-05	-	-

Notes:
TOC=Top of Casing
-=No Data Available
PZ=Piezometer
IR=Irrigation

MW=Monitoring Well
OSTP=St. Peter
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STLP=St. Louis Park Well
H=Hopkins Well
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Table 2: Laboratory Analytical Results for Quaternary Background Wells

Sample Location (Scribe Sample ID) Sample Date		W423 (ZZ-0060) 6/27/2016			W425 (ZZ-0062) 6/27/2016		
CAS NUMBER	ANALYTE	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL
75-71-8	Dichlorodifluoromethane	0.50	U	S3VE	0.50	U	S3VE
74-87-3	Chloromethane	0.50	U	S3VE	0.50	U	S3VE
75-01-4	Vinyl chloride	0.50	U	S3VE	0.50	U	S3VE
74-83-9	Bromomethane	0.50	U	S3VE	0.50	U	S3VE
75-00-3	Chloroethane	0.50	U	S3VE	0.50	U	S3VE
75-69-4	Trichlorofluoromethane	0.50	U	S3VE	0.50	U	S3VE
75-35-4	1,1-Dichloroethene	0.50	U	S3VE	0.50	UJ	S3VE
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	S3VE	0.50	U	S3VE
67-64-1	Acetone	5.0	U	S3VE	5.0	U	S3VE
75-15-0	Carbon disulfide	0.50	U	S3VE	0.50	U	S3VE
79-20-9	Methyl acetate	0.50	U	S3VE	0.50	U	S3VE
75-09-2	Methylene chloride	0.50	U	S3VE	0.50	U	S3VE
156-60-5	trans-1,2-Dichloroethene	0.50	U	S3VE	0.50	UJ	S3VE
1634-04-4	Methyl tert-butyl ether	0.50	U	S3VE	0.50	U	S3VE
75-34-3	1,1-Dichloroethane	0.50	U	S3VE	0.50	U	S3VE
156-59-2	cis-1,2-Dichloroethene	0.50	U	S3VE	0.50	UJ	S3VE
78-93-3	2-Butanone	5.0	U	S3VE	5.0	U	S3VE
74-97-5	Bromochloromethane	0.50	U	S3VE	0.50	U	S3VE
67-66-3	Chloroform	0.50	U	S3VE	0.50	U	S3VE
71-55-6	1,1,1-Trichloroethane	0.50	U	S3VE	0.50	U	S3VE
110-82-7	Cyclohexane	0.50	U	S3VE	0.50	U	S3VE
56-23-5	Carbon tetrachloride	0.50	U	S3VE	0.50	U	S3VE
71-43-2	Benzene	0.50	U	S3VE	0.50	U	S3VE
107-06-2	1,2-Dichloroethane	0.50	U	S3VE	0.50	U	S3VE
79-01-6	Trichloroethene	0.50	U	S3VE	0.50	U	S3VE
108-87-2	Methylcyclohexane	0.50	U	S3VE	0.50	U	S3VE
78-87-5	1,2-Dichloropropane	0.50	U	S3VE	0.50	U	S3VE
75-27-4	Bromodichloromethane	0.50	U	S3VE	0.50	U	S3VE
10061-01-5	cis-1,3-Dichloropropene	0.50	U	S3VE	0.50	U	S3VE
108-10-1	4-Methyl-2-pentanone	5.0	U	S3VE	5.0	U	S3VE
108-88-3	Toluene	0.50	U	S3VE	0.50	U	S3VE
10061-02-6	trans-1,3-Dichloropropene	0.50	U	S3VE	0.50	U	S3VE
79-00-5	1,1,2-Trichloroethane	0.50	U	S3VE	0.50	U	S3VE
127-18-4	Tetrachloroethene	0.50	U	S3VE	0.50	U	S3VE
591-78-6	2-Hexanone	5.0	U	S3VE	5.0	U	S3VE
124-48-1	Dibromochloromethane	0.50	U	S3VE	0.50	U	S3VE
106-93-4	1,2-Dibromoethane	0.50	UJ	S3VE	0.50	UJ	S3VE
108-90-7	Chlorobenzene	0.50	U	S3VE	0.50	U	S3VE
100-41-4	Ethylbenzene	0.50	U	S3VE	0.50	U	S3VE
95-47-6	o-Xylene	0.50	U	S3VE	0.50	U	S3VE
179601-23-1	m,p-Xylene	0.50	U	S3VE	0.50	U	S3VE
100-42-5	Styrene	0.50	U	S3VE	0.50	U	S3VE
75-25-2	Bromoform	0.50	U	S3VE	0.50	U	S3VE
98-82-8	Isopropylbenzene	0.50	U	S3VE	0.50	U	S3VE
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	S3VE	0.50	U	S3VE
541-73-1	1,3-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE
106-46-7	1,4-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE
95-50-1	1,2-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	S3VE	0.50	U	S3VE
120-82-1	1,2,4-Trichlorobenzene	0.50	U	S3VE	0.50	U	S3VE
87-61-6	1,2,3-Trichlorobenzene	0.50	U	S3VE	0.50	U	S3VE

Notes:

Primary Chlorinated VOC of interest

U: The analyte was analyzed for, but was not detected above the reported sample quantitation limit

J: The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ: The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

NJ: The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

Regulatory Criteria (ug/L):

HBV, HRL (State based) Health Based Value, Health Risk Limit

MCL: (Federal based) Maximum Contaminant Level

PCE: 4/5 (HBV/MCL)

TCE: .4/5 (HRL/MCL)

Cis DCE:6/70 (HBV/MCL)

Trans DCE: 40/100 (HRL/MCL)

VC: .2/2 (HRL/MCL)

Table 3: Laboratory Analytical Results for Quaternary Contaminated Wells

Sample Location		P307			P309			P310			W133		
(Scribe Sample ID)		(ZZ-0046)			(ZZ-0047)			(ZZ-0048)			(ZZ-0056)		
Sample Date		6/27/2016			6/27/2016			6/27/2016			6/27/2016		
AS NUMBE	ANALYTE	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL
75-71-8	Dichlorodifluoromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
74-87-3	Chloromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
75-01-4	Vinyl chloride	460		S3VE	390		S3VE	91		S3VE	0.50	U	S3VE
74-83-9	Bromomethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
75-00-3	Chloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
75-69-4	Trichlorofluoromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
75-35-4	1,1-Dichloroethene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
67-64-1	Acetone	10	U	S3VE	10	U	S3VE	20	U	S3VE	5.0	U	S3VE
75-15-0	Carbon disulfide	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
79-20-9	Methyl acetate	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
75-09-2	Methylene chloride	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
156-60-5	trans-1,2-Dichloroethene	120		S3VE	43		S3VE	36		S3VE	0.50	U	S3VE
1634-04-4	Methyl tert-butyl ether	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
75-34-3	1,1-Dichloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
156-59-2	cis-1,2-Dichloroethene	5000		S3VE	990		S3VE	2300		S3VE	0.50	U	S3VE
78-93-3	2-Butanone	10	U	S3VE	10	U	S3VE	20	U	S3VE	5.0	U	S3VE
74-97-5	Bromochloromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
67-66-3	Chloroform	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
71-55-6	1,1,1-Trichloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
110-82-7	Cyclohexane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
56-23-5	Carbon tetrachloride	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
71-43-2	Benzene	22		S3VE	38		S3VE	8.7	J	S3VE	0.50	U	S3VE
107-06-2	1,2-Dichloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
79-01-6	Trichloroethene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
108-87-2	Methylcyclohexane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
78-87-5	1,2-Dichloropropane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
75-27-4	Bromodichloromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
10061-01-5	cis-1,3-Dichloropropene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
108-10-1	4-Methyl-2-pentanone	10	U	S3VE	10	U	S3VE	20	U	S3VE	5.0	U	S3VE
108-88-3	Toluene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	4.2		S3VE
10061-02-6	trans-1,3-Dichloropropene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
79-00-5	1,1,2-Trichloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
127-18-4	Tetrachloroethene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
591-78-6	2-Hexanone	10	U	S3VE	10	U	S3VE	20	U	S3VE	5.0	U	S3VE
124-48-1	Dibromochloromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
106-93-4	1,2-Dibromoethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
108-90-7	Chlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
100-41-4	Ethylbenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
95-47-6	o-Xylene	5.0	U	S3VE	7.5		S3VE	10	U	S3VE	0.50	U	S3VE
179601-23-	m,p-Xylene	5.0	U	S3VE	3.5	J	S3VE	10	U	S3VE	0.50	U	S3VE
100-42-5	Styrene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
75-25-2	Bromoform	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
98-82-8	Isopropylbenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
541-73-1	1,3-Dichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
106-46-7	1,4-Dichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
95-50-1	1,2-Dichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
120-82-1	1,2,4-Trichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE
87-61-6	1,2,3-Trichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	0.50	U	S3VE

Notes:

Primary Chlorinated VOC of interest

U: The analyte was analyzed for, but was not detected above the reported sample quantitation limit

J: The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ: The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

NJ: The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

Regulatory Criteria (ug/L):

HBV, HRL (State based) Health Based Value, Health Risk Limit

MCL: (Federal based) Maximum Contaminant Level

PCE: 4/5 (HBV/MCL)

TCE: .4/5 (HRL/MCL)

Cis DCE:6/70 (HBV/MCL)

Trans DCE: 40/100 (HRL/MCL)

VC: .2/2 (HRL/MCL)

Table 4: Laboratory Analytical Results for PVGW Background Wells

Sample Location		W27			W424			W426		
(Scribe Sample ID)		(ZZ-0058)			(ZZ-0061)			(ZZ-0063)		
Sample Date		6/27/2016			6/27/2016			6/27/2016		
CAS NUMBER	ANALYTE	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL
75-71-8	Dichlorodifluoromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
74-87-3	Chloromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-01-4	Vinyl chloride	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
74-83-9	Bromomethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-00-3	Chloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-69-4	Trichlorofluoromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-35-4	1,1-Dichloroethene	0.50	U	S3VE	0.50	UJ	S3VE	0.50	U	S3VE
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
67-64-1	Acetone	5.0	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-15-0	Carbon disulfide	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
79-20-9	Methyl acetate	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-09-2	Methylene chloride	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
156-60-5	trans-1,2-Dichloroethene	0.50	U	S3VE	0.50	UJ	S3VE	0.50	U	S3VE
1634-04-4	Methyl tert-butyl ether	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-34-3	1,1-Dichloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
156-59-2	cis-1,2-Dichloroethene	0.50	U	S3VE	0.50	UJ	S3VE	0.50	U	S3VE
78-93-3	2-Butanone	5.0	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
74-97-5	Bromochloromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
67-66-3	Chloroform	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
71-55-6	1,1,1-Trichloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
110-82-7	Cyclohexane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
56-23-5	Carbon tetrachloride	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
71-43-2	Benzene	7.1		S3VE	0.50	U	S3VE	0.42	J	S3VE
107-06-2	1,2-Dichloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
79-01-6	Trichloroethene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
108-87-2	Methylcyclohexane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
78-87-5	1,2-Dichloropropane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-27-4	Bromodichloromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
10061-01-5	cis-1,3-Dichloropropene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
108-10-1	4-Methyl-2-pentanone	5.0	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
108-88-3	Toluene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
10061-02-6	trans-1,3-Dichloropropene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
79-00-5	1,1,2-Trichloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
127-18-4	Tetrachloroethene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
591-78-6	2-Hexanone	5.0	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
124-48-1	Dibromochloromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
106-93-4	1,2-Dibromoethane	0.50	U	S3VE	0.50	UJ	S3VE	0.50	UJ	S3VE
108-90-7	Chlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
100-41-4	Ethylbenzene	0.50	U	S3VE	0.50	U	S3VE	3.8		S3VE

95-47-6	o-Xylene	0.50	U	S3VE	0.50	U	S3VE	2.0		S3VE
179601-23-1	m,p-Xylene	0.50	U	S3VE	0.50	U	S3VE	1.1		S3VE
100-42-5	Styrene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-25-2	Bromoform	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
98-82-8	Isopropylbenzene	0.65		S3VE	0.50	U	S3VE	1.4		S3VE
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
541-73-1	1,3-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
106-46-7	1,4-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
95-50-1	1,2-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
120-82-1	1,2,4-Trichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
87-61-6	1,2,3-Trichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE

Notes:

Primary Chlorinated VOC of interest

U: The analyte was analyzed for, but was not detected above the reported sample quantitation limit

J: The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ: The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

NJ: The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.

Regulatory Criteria (ug/L):

HBV, HRL (State based) Health Based Value, Health Risk Limit

MCL: (Federal based) Maximum Contaminant Level

PCE: 4/5 (HBV/MCL)

TCE: .4/5 (HRL/MCL)

Cis DCE:6/70 (HBV/MCL)

Trans DCE: 40/100 (HRL/MCL)

VC: .2/2 (HRL/MCL)

Table 5: Laboratory Anlytical Results for PVGW Contaminated Wells

Sample Location		W120			W143			W433			W434			W437			W438		
(Scribe Sample ID)		(ZZ-0055)			(ZZ-0057)			(ZZ-0064)			(ZZ-0065)			(ZZ-0066)			(ZZ-0067)		
Sample Date		6/27/2016			6/27/2016			6/27/2016			6/28/2016			6/27/2016			6/27/2016		
CAS NUMBER	ANALYTE	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL
75-71-8	Dichlorodifluoromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
74-87-3	Chloromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
75-01-4	Vinyl chloride	5.0	U	S3VE	760		S3VE	320		S3VE	59		S3VE	450		S3VE	59		S3VE
74-83-9	Bromomethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
75-00-3	Chloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
75-69-4	Trichlorofluoromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
75-35-4	1,1-Dichloroethene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
76-13-1	,1,2-Trichloro-1,2,2-trifluoroethan	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
67-64-1	Acetone	10	U	S3VE	10	U	S3VE	20	U	S3VE	10	U	S3VE	50	U	S3VE	20	U	S3VE
75-15-0	Carbon disulfide	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
79-20-9	Methyl acetate	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
75-09-2	Methylene chloride	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
156-60-5	trans-1,2-Dichloroethene	11		S3VE	320		S3VE	45		S3VE	23	J+	S3VE	48		S3VE	9.6	J	S3VE
1634-04-4	Methyl tert-butyl ether	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
75-34-3	1,1-Dichloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
156-59-2	cis-1,2-Dichloroethene	33		S3VE	6500		S3VE	640		S3VE	320		S3VE	3100		S3VE	370		S3VE
78-93-3	2-Butanone	10	U	S3VE	10	U	S3VE	20	U	S3VE	10	U	S3VE	50	U	S3VE	20	U	S3VE
74-97-5	Bromochloromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
67-66-3	Chloroform	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
71-55-6	1,1,1-Trichloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
110-82-7	Cyclohexane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
56-23-5	Carbon tetrachloride	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
71-43-2	Benzene	7.2	J	S3VE	6.5		S3VE	39		S3VE	5.0	U	S3VE	25	U	S3VE	5.6	J	S3VE
107-06-2	1,2-Dichloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
79-01-6	Trichloroethene	5.0	UJ	S3VE	8.5		S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
108-87-2	Methylcyclohexane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
78-87-5	1,2-Dichloropropane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
75-27-4	Bromodichloromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
10061-01-5	cis-1,3-Dichloropropene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
108-10-1	4-Methyl-2-pentanone	10	U	S3VE	10	U	S3VE	20	U	S3VE	10	U	S3VE	50	U	S3VE	20	U	S3VE
108-88-3	Toluene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
10061-02-6	trans-1,3-Dichloropropene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
79-00-5	1,1,2-Trichloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
127-18-4	Tetrachloroethene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
591-78-6	2-Hexanone	10	U	S3VE	10	U	S3VE	20	U	S3VE	10	U	S3VE	50	U	S3VE	20	U	S3VE
124-48-1	Dibromochloromethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
106-93-4	1,2-Dibromoethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
108-90-7	Chlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
100-41-4	Ethylbenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
95-47-6	o-Xylene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
179601-23-1	m,p-Xylene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
100-42-5	Styrene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
75-25-2	Bromoform	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
98-82-8	Isopropylbenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
541-73-1	1,3-Dichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
106-46-7	1,4-Dichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
95-50-1	1,2-Dichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
120-82-1	1,2,4-Trichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE
87-61-6	1,2,3-Trichlorobenzene	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	5.0	U	S3VE	25	U	S3VE	10	U	S3VE

Notes:

Primary Chlorinated VOC of interest

U: The analyte was analyzed for, but was not detected above the reported sample quantitation limit

J: The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ: The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

NJ: The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

J+: The result is an estimated quantity, but the results may be biased high.

Regulatory Criteria (ug/L):

HBV, HRL (State based) Health Based Value, Health Risk Limit

MCL: (Federal based) Maximum Contaminant Level

PCE: 4/5 (HBV/MCL)

TCE: .4/5 (HRL/MCL)

Cis DCE:6/70 (HBV/MCL)

Trans DCE: 40/100 (HRL/MCL)

VC: .2/2 (HRL/MCL)

Table 6: Laboratory Analytical Results for PDCJ Background Wells

	Sample Location	SLP5			E15			W403		
	(Scribe Sample ID)	(ZZ-0050)			(ZZ-0039)			(ZZ-0059)		
	Sample Date	6/28/2016			6/28/2016			6/28/2016		
CAS NUMBER	ANALYTE	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL
75-71-8	Dichlorodifluoromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
74-87-3	Chloromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-01-4	Vinyl chloride	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
74-83-9	Bromomethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-00-3	Chloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-69-4	Trichlorofluoromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-35-4	1,1-Dichloroethene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
67-64-1	Acetone	5.0	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-15-0	Carbon disulfide	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
79-20-9	Methyl acetate	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-09-2	Methylene chloride	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
156-60-5	trans-1,2-Dichloroethene	4.5		S3VE	0.50	U	S3VE	0.50	U	S3VE
1634-04-4	Methyl tert-butyl ether	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-34-3	1,1-Dichloroethane	0.50	U	S3VE	0.96		S3VE	0.50	U	S3VE
156-59-2	cis-1,2-Dichloroethene	4.2		S3VE	2.8		S3VE	0.50	U	S3VE
78-93-3	2-Butanone	5.0	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
74-97-5	Bromochloromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
67-66-3	Chloroform	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
71-55-6	1,1,1-Trichloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
110-82-7	Cyclohexane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
56-23-5	Carbon tetrachloride	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
71-43-2	Benzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
107-06-2	1,2-Dichloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
79-01-6	Trichloroethene	0.50	U	S3VE	0.40	J	S3VE	0.50	U	S3VE
108-87-2	Methylcyclohexane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
78-87-5	1,2-Dichloropropane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-27-4	Bromodichloromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
10061-01-5	cis-1,3-Dichloropropene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
108-10-1	4-Methyl-2-pentanone	5.0	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
108-88-3	Toluene	0.96		S3VE	0.50	U	S3VE	0.50	U	S3VE
10061-02-6	trans-1,3-Dichloropropene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
79-00-5	1,1,2-Trichloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
127-18-4	Tetrachloroethene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
591-78-6	2-Hexanone	5.0	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
124-48-1	Dibromochloromethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
106-93-4	1,2-Dibromoethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
108-90-7	Chlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE

100-41-4	Ethylbenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
95-47-6	o-Xylene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
179601-23-1	m,p-Xylene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
100-42-5	Styrene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
75-25-2	Bromoform	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
98-82-8	Isopropylbenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
541-73-1	1,3-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
106-46-7	1,4-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
95-50-1	1,2-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
120-82-1	1,2,4-Trichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE
87-61-6	1,2,3-Trichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	0.50	U	S3VE

Notes:

Primary Chlorinated VOC of interest

U: The analyte was analyzed for, but was not detected above the reported sample quantitation limit

J: The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ: The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

NJ: The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.

Regulatory Criteria (ug/L):

HBV, HRL (State based) Health Based Value, Health Risk Limit

MCL: (Federal based) Maximum Contaminant Level

PCE: 4/5 (HBV/MCL)

TCE: .4/5 (HRL/MCL)

Cis DCE:6/70 (HBV/MCL)

Trans DCE: 40/100 (HRL/MCL)

VC: .2/2 (HRL/MCL)

Table 7: Laboratory Analytical Results for PDCJ Contaminated Wells

	Sample Location	SLP4			SLP6			E2			E7		
	(Scribe Sample ID)	(ZZ-0049)			(ZZ-0051)			(ZZ-0040)			(ZZ-0041)		
	Sample Date	6/28/2016			6/28/2016			6/28/2016			6/28/2016		
CAS NUMBER	ANALYTE	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL	FINAL RESULT (ug/L)	QUALIFIER	DATA VALIDATION LABEL
75-71-8	Dichlorodifluoromethane	0.69		S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
74-87-3	Chloromethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-01-4	Vinyl chloride	4.4		S3VE	1.5		S3VE	5.0	U	S3VE	5.0	U	S3VE
74-83-9	Bromomethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-00-3	Chloroethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-69-4	Trichlorofluoromethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-35-4	1,1-Dichloroethene	0.56		S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroet	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
67-64-1	Acetone	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	10	U	S3VE
75-15-0	Carbon disulfide	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
79-20-9	Methyl acetate	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-09-2	Methylene chloride	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
156-60-5	trans-1,2-Dichloroethene	3.3		S3VE	0.89		S3VE	5.0	U	S3VE	5.0	U	S3VE
1634-04-4	Methyl tert-butyl ether	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-34-3	1,1-Dichloroethane	0.72		S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
156-59-2	cis-1,2-Dichloroethene	37		S3VE	10		S3VE	3.3	J	S3VE	26		S3VE
78-93-3	2-Butanone	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	10	U	S3VE
74-97-5	Bromochloromethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
67-66-3	Chloroform	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
71-55-6	1,1,1-Trichloroethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
110-82-7	Cyclohexane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
56-23-5	Carbon tetrachloride	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
71-43-2	Benzene	0.86		S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
107-06-2	1,2-Dichloroethane	0.28	J	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
79-01-6	Trichloroethene	3.0		S3VE	0.55		S3VE	5.0	U	S3VE	5.0	U	S3VE
108-87-2	Methylcyclohexane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
78-87-5	1,2-Dichloropropane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-27-4	Bromodichloromethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
10061-01-5	cis-1,3-Dichloropropene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
108-10-1	4-Methyl-2-pentanone	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	10	U	S3VE
108-88-3	Toluene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
10061-02-6	trans-1,3-Dichloropropene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
79-00-5	1,1,2-Trichloroethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
127-18-4	Tetrachloroethene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
591-78-6	2-Hexanone	5.0	U	S3VE	5.0	U	S3VE	10	U	S3VE	10	U	S3VE
124-48-1	Dibromochloromethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
106-93-4	1,2-Dibromoethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
108-90-7	Chlorobenzene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
100-41-4	Ethylbenzene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
95-47-6	o-Xylene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
179601-23-1	m,p-Xylene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE

100-42-5	Styrene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
75-25-2	Bromoform	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
98-82-8	Isopropylbenzene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
541-73-1	1,3-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
106-46-7	1,4-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
95-50-1	1,2-Dichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
120-82-1	1,2,4-Trichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE
87-61-6	1,2,3-Trichlorobenzene	0.50	U	S3VE	0.50	U	S3VE	5.0	U	S3VE	5.0	U	S3VE

Notes:

Primary Chlorinated VOC of interest

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TCE: .4/5 (HRL/MCL)

Cis DCE:6/70 (HBV/MCL)

Trans DCE: 40/100 (HRL/MCL)

VC: .2/2 (HRL/MCL)

Appendix A

From:	Jay Hall
To:	Scheer, Dave (MPCA); William Gregg (bgregg@summite.com); Mark Hanson; John Laumann
Subject:	FW: SLP WELL NO 4
Date:	Tuesday, August 23, 2016 10:39:29 AM
Attachments:	doc00360920160823111841.pdf

Roger Renner said that there is no paperwork stating this, but his recollection was that SLP 4 was recased to just the Jordan because of the contamination in the Prairie du Chein. You will receive a second email with the rest of the information he has on SLP 4.
Jay

Jay Hall
Utilities Superintendent | City of St. Louis Park
7305 Oxford Street, St. Louis Park, MN 55426
Office: 952-924-2557
Cell: 952-242-7648
www.stlouispark.org
Experience LIFE in the Park.

-----Original Message-----
From: Roger Renner [mailto:rerenner@ehrenner.com]
Sent: Tuesday, August 23, 2016 10:31 AM
To: Jay Hall <jhall@stlouispark.org>
Subject: SLP WELL NO 4

ONE OF TWO e-mails.

Sincerely,

Roger E. Renner, President
Past Chair MDH Advisory Council
NGWA PRESIDENT 2001
MWWA PRESIDENT 1990
E.H. RENNER & SONS, INC.
MINNESOTA LICENSE #1431
763.427.6100 w, 763.427.0533 f, 763.286.9355 c

rerenner@ehrenner.com

Minnesota Unique Well Number

200542

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 08/17/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	28	24	W	7	BDADAC

Elevation 900 ft. Elev. Method 7.5 minute topographic map (+/- 5 feet)

Address
Well 41ST ST ST LOUIS PARK MN 55416
Contact ST LOUIS PARK MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL	0	3		
SAND & GRAVEL	3	76		
PLATTEVILLE LIME	76	90		
PLATTEVILLE LIME	90	106		
ST. PETER SAND	106	117		
ST. PETER SAND	117	123		
ST. PETER SAND	123	235		SOFT
HARD SANDSTONE &	235	277		HARD
LIME	277	290		HARD
LIME	290	355		HARD
LIME MILKY CUTTINGS	355	398	WHITE	
JORDAN SANDSTONE	398	418		
JORDAN SANDSTONE	418	445		
JORDAN SANDSTONE	445	455		
JORDAN SANDSTONE	455	470		
ST. LAWRENCE	470	490		

Remarks
GAMMA LOGGED 7-28-2016. VIDEO AND HYDRO LAB BY MDH 7-28-2016.
SEE EMAIL FROM ROGER RENNER IN MGS FILES.

Well Depth 490 ft. **Depth Completed** 490 ft. **Date Well Completed** 09/00/1946
Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ From To

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter			Weight
24 in. To	90	ft.	lbs./ft.
18 in. To	304	ft.	lbs./ft.
12 in. To	420	ft.	lbs./ft.

Open Hole From 410 ft. To 490 ft.

Screen? ☐ **Type** **Make**

Static Water Level
85 ft. land surface Measure 09/27/1946

Pumping Level (below land surface)
121 ft. 24 hrs. Pumping at 2560 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	550	Sacks	ft. 420	ft.
neat cement	25	Cubic yards	ft.	ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity 1200 g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat Jordan Sandstone Depth to Bedrock 90 ft
Located by Minnesota Department of Health
Locate Method GPS SA On (averaged)
System UTM - Mad83, Zone 15, Meters X 473203 Y 4975132
Unique Number Verification Inpute Date 10/12/1999

Angled Drill Hole

Well Contractor
Layne Well Co. 27010
Licensee Business Lic. or Reg. No. Name of Driller

WELL #4

LAYNE - MINNESOTA CO.

200542

900
26
634

FIELD REPORT OF COMPLETED WELL

Name of Job St. Louis Park, Minnesota Date started 4-17-46

Address No. 4 Date completed

No. of days

LOG OF WELL

From	To	Material	From	To	Material
0	3	Dirt fill FILL FILL	291	355	Hard lime OPDC DLMT
3	76	Sand & gravel PLTS SANDGRVL	355	398	Lime, milky cuttings DLMT
76	106	Platteville Lime OPVL	398	445	Jordan sandstone CJDN SNDS
106	235	Soft St. Peter Sand CSTP SNDS	445	455	Jordan Sandstone & hard shale SNDS, SHLE
235	277	Hard sandstone & shale	455	470	" " " SNDS
277	291	Hard lime OPDC DLMT	470	490	St. Lawrence CSTL SHLE, SNDS

Kind of plug in well none Static water level

Depth of well - ground level to top of plug P.A. 73-1007

MATERIAL LEFT IN WELL

	Opening	Length - feet	Diameter - inches	Material
Screen				M.G.H.
Inner casing		304'	18" O.D.	PWS 1370052502
Outer casing		89' 10"	24" O.D.	

Was outer casing cemented Amount

Size of gravel used in. to in. Amount

TEST OF WELL

Aquifer OPDC - CSTL

Hours Pumped From	Hours Pumped To	Yield gal. per min.	Water Level ft. below surface	Remarks
9-19 4 p.m.	9-19 4 p.m.	2500	82'	drawdown averages 53' Length of airline 180' to top of bowls

Did well clear up yes Time to clear approx. 4 hours

Date Driller

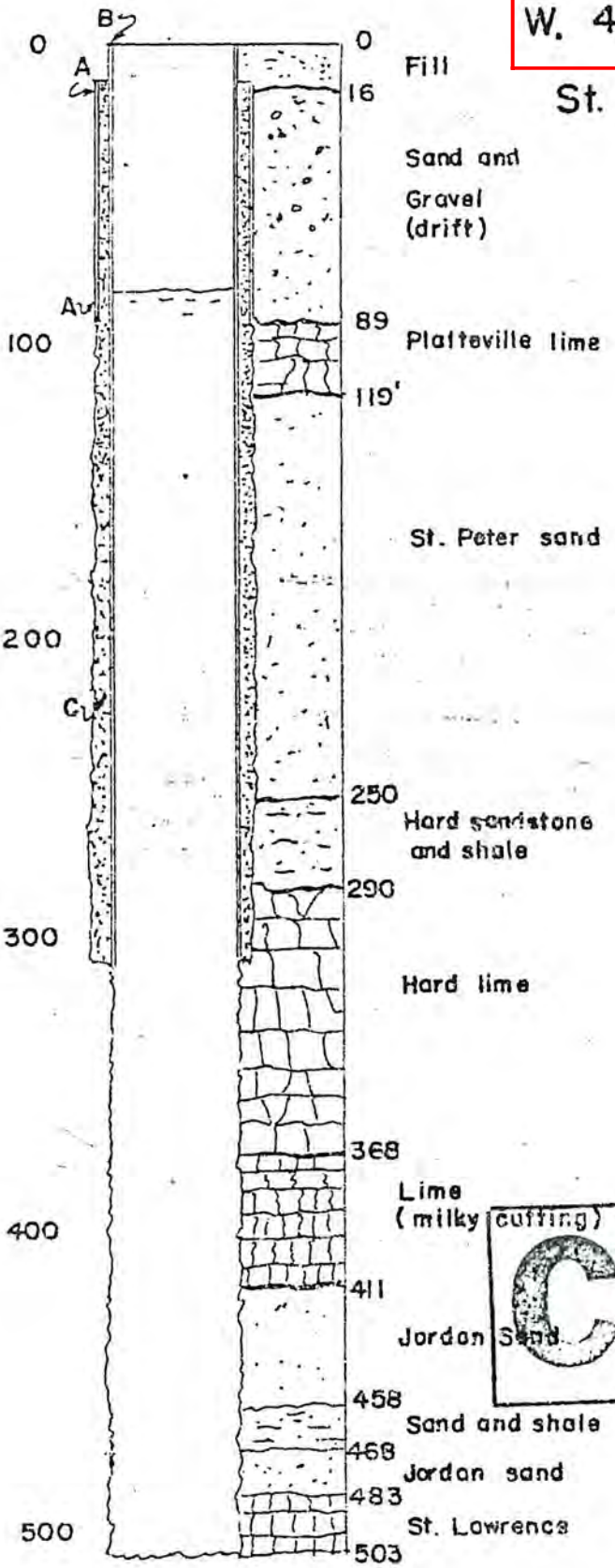
W. 41st ST. and Natchez Ave.

St. Louis Park Minn.

#4 28-27-7b

200542 elev 900

P.A. 73-1007



Material

A - 89'10" of 24" O.D. 3/8" wall pipe

B - 304' of 18" O.D. 1/2" Wall pipe

C - 25 Cu. yards grout (1 to 1 min)

M.D.H.

PWS 1270050502

Test Data

Test run from 4 P.M. Sept 27, 1946 to 4 P.M. Sept. 29 1946

Average yield 2,560 G.P.M.

Static water level, 85'.

Average pumping level 121'.

Average drawdown 36'

Note 13' added to all well and water level measurements to correct for fill.

CODED

Well built by Layne-Western Co. of Minnesota

Minneapolis Minnesota

Oct. 23 1946

(Fill Out Both Sides of Form)

200542

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

WELL LOG STATEMENT

File No. 104A

Well No. 28/24-7 bda

MAIL REPORT PROMPTLY TO DIRECTOR, DIVISION OF WATERS, STATE OFFICE BLDG., ST. PAUL 1, MINN.

Location of Well: Well #4 OK

County: St. Louis Park

City or Town: 41st. & Natchez

Describe Further by Lot, Block, Nearest Highway, Street and Number: Natchez

Locate Well on Plat of Section

Sec. 7

Twp. 28 N

Range 24 W

Drilled for: 13238

Address

Driller: Layne-Western

Address: 28-24-7 bdadac

Elev. 900±5'

Date of Completion: 1946

Site: Upland, Valley, Hillside, Etc.

Type of Well: Drilled (Dug, Driven, Bored, Drilled)

Drill Rig Used: (Solid Tool, Jet, Rotary)

Diameter: Top ____ Bottom ____

Depth of Well: 503

Ground Elevation: 900± (Sea Level Datum or Give Distance Above or Below R. R., Highway, Lake, Etc.)

Height of Casing Above Ground

Quality of Water: (Hard or Soft, Fresh or Salty, Etc.)

Temperature of Water

Was Laboratory Analysis Made?

For What Purpose Will Water Be Used?

Is Well Pumped? Yes Pump Capacity 1200 GPM

Was Well Sealed on Completion?

Does Well Overflow Without Pumping? (Yes or No)

Natural Flow ____ GPM

What Pressure, or Head, at Ground Level?

Principal Aquifer Penetrated

REPORT OF FINAL PUMPING TEST

Date of Test: Sept 27, 1946

~~Duration of Test~~ 24 Hrs. ____ Min.

Rate of Pumping: 815 GPM

Static Water Level: 85 Ft.

Water Level While Pumping: 121 Ft.

Drawdown: 36 Ft.

Time Required for Recovery: P.A. 73-1007

Expected Average Yield ____ Gal. per day

If Other Tests were Made, Give Details on Another Sheet.

Were Measurements Made of Effect on Other Nearby Wells During Test? Give Details.

Well No. 4

M.D.H.

PWS 1270050502

UNIQUE NUMBER VERIFICATION

1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat
5 - ☐ Info. From Owner
6 - ☐ Info. From [illegible]
7 - ☒ Other MDH Terry Boree
E - ☐ EMS Number
S - ☐ Site Plan
T - ☐ Tag on Well
X - ☐ Tax Records

(Fill Out Both Sides of Form)

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Thickness of Formation	Depth in Feet From	Depth in Feet To	Casing Diam.	Water Conditions Found
Fill & Drift Sand	89	0	89	24"	to 89'
Platteville L.S.	30	89	119		18" to 304' cement grouted
St. Peter S.S.		119	250		18" open hole
S.S. & Shale	171	250	290		
Hard L.S.		290	368		
L.S. mixed cuttings	121	368	411		
Jordan S.S.		411	458		
Shale & S.S.	72	458	483		
St. Lawrence	20	483	503		
	503				

Indicate Size, Type, & Location of Any Screens, Gravel Packs, Grouting, or Other Development

I hereby certify that, to the best of my knowledge, the data presented in this statement is a true and correct representation of conditions encountered in the construction of this well.

Dated at _____ this _____ day of _____, 19__.

(Firm Name) _____

By _____

Title _____

St. Louis Park

Don Galloway ph. 920-3000 Ext. 40

Old No. 1		6021 W. 36th	206443
No. 1	Max Renner	Investment Bldg. 2936 Idaho Ave.	206441
No. 2	Max Renner	2936 Idaho Ave. S. of Water Tower	200962
No. 3	Mc Carthy	2924 Idaho Ave. 15' N. of water Tower.	206440
" 4	Layne	41st + Natchez Ave.	2005 42
No. 5	Layne	Wyoming + 34th St. N. of Tank	203196
No. 6	Layne	42nd + Zanthan Ave.	206457
No. 7	Layne	2500 Louisana Ave.	206436
No. 8		16th + Lancaster	229904 203678
No. 9	Layne	2500 Nevada Ave.	206437
No. 10	Keys	29th & New Jersey Ave.	206442
No. 11	Bergerson-Caswell	W. 29th + Idaho Ave.	206439

St. Louis Park (continued)

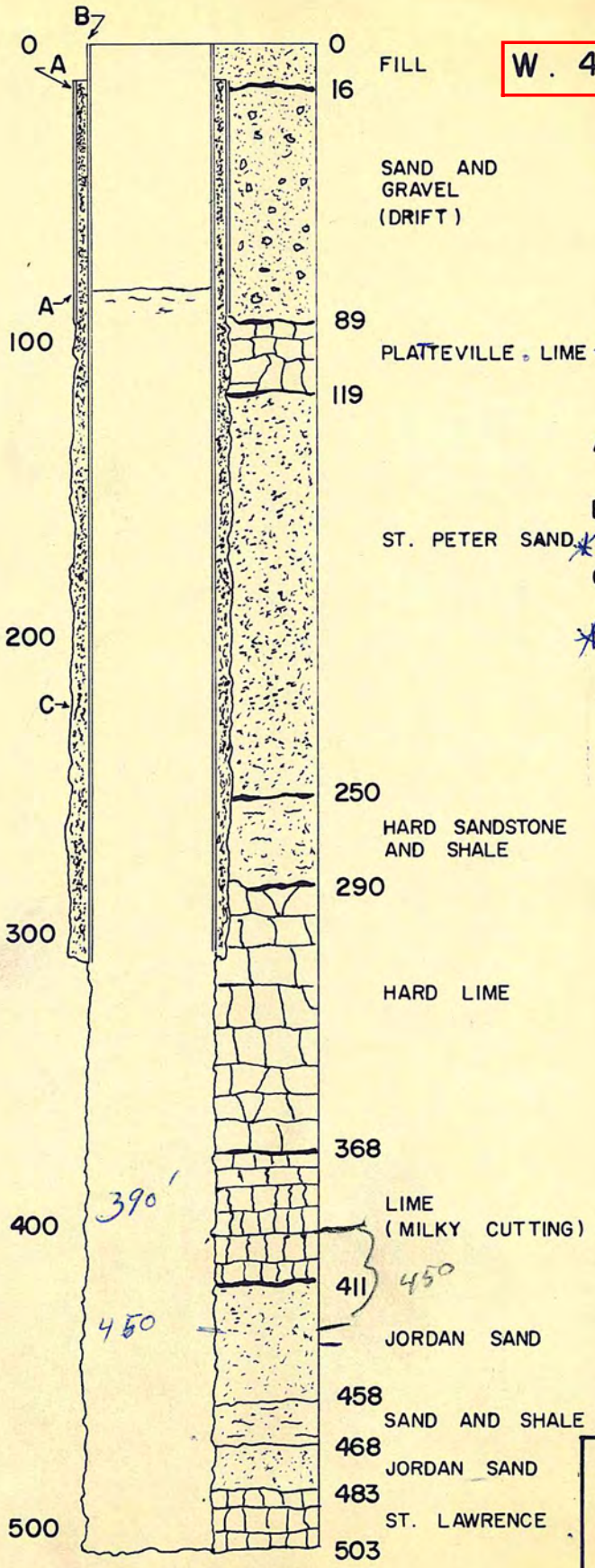
No. 12	Keys	42nd + Zarthan Ave.	206456
No. 13	Layne	Cedar Lake Rd. + Alabama Ave.	206424
No. 14.	Bergerson-Caswell	(As Above)	227965
No. 15	Bergerson-Caswell	W. 29th St. + Idaho Ave.	215447
No. 16	Tri-State	Flag Ave. + Franklin St.	203187

ELEV. 199.75

EXISTING WELL NO. 4

W. 41ST ST. AND NATCHEZ AVE.

ST. LOUIS PARK, MINN.



MATERIAL

A – 89' 10" OF 24" O.D. 3/8" WALL PIPE

B – 304' OF 18" O.D. 1/2" WALL PIPE

* — OF 12" OD 3/8 WALL PIPE

C – 25 CU. YARDS GROUT (1 TO 1 MIN.)

* 1962
ADD 12" Liner casing

WELL BUILT BY
LAYNE - WESTERN COMPANY
OF MINNESOTA

FREDRICKSON.
897-3111
112-897 3111

ORR-SCHELEN-MAYERON AND ASSOCIATES, INC.

CONSULTING ENGINEERS
MINNEAPOLIS, MINNESOTA

MARCH 5, 1962

SPECIFICATIONS

FOR

MODIFICATION OF WELL NO. 4

AND

APPURTENANT WORK

FOR

CITY OF ST. LOUIS PARK, MINNESOTA

ORR-SCHELEN-MAYERON & ASSOCIATES, INC.
CONSULTING ENGINEERS
MINNEAPOLIS, MINNESOTA

Commission No. A560-3
February 26, 1962

D-W V.T. 1962 - 1000 GPM @ 190' +FL

ADVERTISEMENT FOR BIDS

FOR

MODIFICATION OF WELL NO. 4

NOTICE IS HEREBY GIVEN That the City Council of St. Louis Park, Minnesota will receive sealed bids at the office of the City Manager in the City Hall in said City until 11:00 o'clock a.m. March 12, 1962 for: the modification of an existing 18 inch Shakopee-Jordan formation well to a Jordan formation well by the installation and grouting of a new 12 inch liner pipe and the installation of a new well pump.

All bids shall be submitted in duplicate on the proposal forms provided and in accordance with specifications as prepared by the Consulting Engineers, Orr-Schelen-Mayeron & Associates, Inc., 1104 Currie Avenue, Minneapolis, 3, Minnesota which are on file with the City Clerk and Director of Public Works and shall be accompanied by cash deposit, cashier's check, bid bond, or certified check payable to the order of the City Treasurer for not less than 5% of the bid. Copies of proposal forms and specifications are available from the Consulting Engineers upon request. Bids shall be directed to the City Manager, securely sealed and endorsed upon the outside wrapper with a brief statement as to the work for which the bid is made.

Bids will be publicly opened by the City Clerk and the City Manager in the Council Chambers in the City Hall at 11:00 o'clock a.m. March 12, 1962, and shall be tabulated by the Consulting Engineer. The Council will consider the bids at 8:00 o'clock p.m. on March 12, 1962, in the Council Chambers in the City Hall.

The City reserves the right to reject any or all bids.

Dated: February 26, 1962 /s/ Camille D. Andre
City Manager

SPECIFICATION FOR MODIFICATION OF WELL NO. 4

1. SCOPE OF WORK

The work to be done under these specifications will comprise the furnishing of all labor, transportation, materials, tools, machinery, fuel and the necessary equipment, unless hereinafter specifically excepted, necessary for the complete and satisfactory modification of existing well No. 4 and for the furnishing and installation of a new verticle turbine pump including all piping, wiring and appurtenant equipment and work as described in these specifications, shown on the plans and in accordance with the pertinent requirements of the Minnesota Department of Health and the American Water Works Association.

2. LOCATION

All work shall be performed and all equipment, piping and appurtenant items shall be installed at the site of existing well No. 4 near the intersection of West 41st Street and Natchez Avenue, (4701 W. 41st Street) in the City of St. Louis Park, Hennepin County, Minnesota.

3. METHOD OF PROCEDURE

The Contractor shall perform his work in such a manner as to cause the least interference and delay to such other work as may be in progress at the time by other Contractors. The Contractor shall notify the Engineer in writing of his intentions to commence work at least five (5) days prior to his moving onto the site. The City shall provide the Contractor with free ingress and egress to the property and sufficient space as required to set up and operate his equipment.

All precautions shall be taken as necessary to protect the work including the placement of guy lines, proper guards, fencing, barricades, warning lights and similar safeguards.

4. STARTING AND COMPLETION DATES

The Contractor shall commence work on the day following the date of execution of the Contract and all work shall be completed, ready for final inspection and acceptance by the Engineer within thirty-five (35) calendar days (including Sundays and holidays) from said starting date.

5. ALTERATION OF WELL

The existing well is approximately 500 feet deep and is presently cased-off into the top of the Shakopee limerock at a depth of approximately 300 feet (see well log attached). The existing well pump has been pulled by others and the well is therefore open and ready for the new work specified herein.

(a) Electric Logging

The Contractor shall provide all necessary equipment and labor to provide an accurate electric log of the existing well below the cased portion thereof in order to authenticate the original driller's log and to specifically establish the exact elevation of the top of the Jordan sandrock formation. The electric logging shall be done only by experienced labor with the most dependable and accurate equipment available for this work.

The Contractor shall submit with his bid a statement of his previous experience in electric logging and shall state the type, previous length of service and other relevant data concerning the equipment to be used. If the work is to be done by a sub-contractor, state the name of such sub-contractor in addition to the other information previously specified.

The Contractor shall provide the Engineer with a written report immediately after the electric logging is completed. The report shall include the electric log as recorded and shall establish the elevations and thicknesses of the existing formations.

(b) Liner Pipe Installation

After the top elevation of the Jordan formation is established as specified above, the Contractor shall proceed by backfilling the lower portion of the existing well with pit run sand and gravel from the bottom up to within 15 ft. of the top of the Jordan formation and construct a concrete platform approximately 5 ft. in thickness. It should be noted that lower portion of the existing well is already filled with an estimated 40 ft. more or less of loose sandrock deposited there throughout the past several years operation of the well.

After the concrete platform has been placed and allowed to set up, the Contractor shall furnish and install an estimated 420 feet of 12 in. I.D. liner pipe which shall be centered within the existing 18 in. nominal hole, both cased and uncased, and the annular space between the new liner pipe and the existing hole shall be completely pressure grouted with cement grout. After the cement grout has been allowed to set up for not less than 72 hours, the concrete platform shall be drilled out as 12 in. nominal hole and the hole below shall be entirely bailed clean to the original depth of the existing well.

The top of the 12 in. liner pipe shall terminate at the top of the well not less than 1 in. above the existing concrete pump pedestal.

(c) Extra Work Approved by the Engineer

Although these specifications for well alteration are established on the most accurate existing information available for the

existence of rock formations and the thickness and relative depth of same, the quantities of work specified herein and indicated on the Proposal Form are estimated only and are subject to increase or decrease as may be required, such quantities of work, either increased or decreased, to be performed at the contract unit prices bid.

It is the intent of these specifications that the Contractor shall evaluate all reasonable and probable difficulties which may be expected to occur during the alteration of the well and shall incorporate or merge the cost of overcoming said difficulties with the various unit prices bid. However, the exact physical condition of the formations hereinbefore described are not accurately known for this existing well. Therefore, should extreme difficulties develop during alteration of the well which, in the opinion of the Engineer, are beyond the scope of these specifications, the Engineer may authorize extra work to be performed for which the Contractor shall be paid.

6. LINER PIPE

All pipe shall be new, black, wrought steel and shall be of Grade "A" seamless or Electric-Fusion-Weld construction as manufactured by National Tube or Republic Steel or approved equal. No sub-standard or reject pipe will be acceptable. Pipe shall have ends chamfered suitable for welding. Welding shall consist of a minimum of two complete welding beads which must extend a minimum of 1/32 inch beyond the outside wall of the pipe and a minimum of 1/16 inch above and below the outside edge of the bevel. The Engineer must be notified for his inspection of the first weld to be made.

Pipe shall have the following minimum wall thickness and weight:

Pipe	Wall Thickness	Weight
12 in. I.D.	0.375 in.	49 lb./ft.

7. CEMENT GROUTING

The cement grout shall be a neat Portland Cement grout consisting of one (1) bag of cement to approximately five (5) gallons of clean water in such ratio as to make a pumpable slurry. The cement must be placed in one (1) continuous operation and shall be placed from the bottom of the twelve (12) inch liner pipe to the surface to provide a uniform wall of cement without voids. The cement grout shall be forced into the annular space between the liner pipe and the drill hole and the casing pipe from the bottom up until it appears at the surface. This cement grout shall be placed with and by the use of continuous mixer and suitable grout pump or pumps through drop pipe or pipes placed in the annular space.

The pumps shall be provided with pressure gauges to evaluate the level of the grout above the ends of the drop piping. The drop piping shall be raised at intervals satisfactory to the Engineer.

After the cement grout has been placed it shall be allowed to set for a period of not less than seventy-two (72) hours before continuing other work on the well.

8. DEEP WELL PUMP

The pump to be furnished and installed shall be a verticle, electric motor driven, deep well pump and is to be a standard make of conventional design capable of delivering 1000 gallons per minute against a total net head of 190 foot head to which must be added pump and column losses. The pump must be suitable for installation in a 12 inch I.D. well and the pump setting shall be not less than 240 ft. below the top of the well. No pump which is either partly or entirely manufactured in a foreign country shall be considered acceptable under these specifications.

(a) Speed

The pump speed shall not exceed 1,800 r.p.m.

(b) Column and Shaft

The Contractor shall furnish sufficient column and shafting to set the top bowl of the impeller unit below the pump base the distance specified above. The column shall be made up of sections not exceeding ten (10) feet in length. The column sections are to be furnished with screw couplings.

Column pipe and couplings are to be black wrought steel pipe, 8 in. inside diameter, weighing not less than 25 pounds per lineal foot.

The pump column shafting shall be genuine stainless steel, straightened, ground, threaded and coupled with steel couplings in a manner to insure perfect alignment when assembled. Shaft shall be not less than 1½ in. diameter.

The Contractor shall provide a taper screen having a total opening area of not less than four times the end area of the suction pipe, and 10 ft. of 8 in. black wrought steel suction pipe.

(c) Bowl and Impeller Assembly

The unit shall be made up of a sufficient number of stages to economically meet the stated conditions. The pump bowls shall be close-grained, gray iron or semi-steel, heavily reinforced to withstand the shut-off pressure of the pump equipped with bronze impellers. The bidder shall state in his proposal the

type of bowls he proposes to furnish. The shaft through the impeller unit shall be of genuine stainless steel. The complete assembly shall be statically and dynamically balanced.

(d) Bearings
The bearings shall be of durable construction, suitable for deep well pump operation, and shall be water lubricated. Bearings shall be spaced not to exceed 10' apart, and shall be of rubber.

(e) Pump Head
A heavy duty pump head designed to support the weight of pump bowls, column, and shafting shall be provided. Pump head shall have an above ground discharge and provision for mounting a water level gauge. The discharge shall be 10 in. flanged. The pump head and all fittings shall comply in every respect with Minnesota Department of Health regulations. The pump head shall also be tapped for prelubrication.

(f) Motor
The motor shall be of a vertical hollow shaft type direct connected, 60 cycle, 220 volt, 3 phase motor A.C., with a temperature rise not to exceed 40° C., continuous rating, and shall in addition be capable of carrying 25% overload for 2 hours continuous run, with a temperature rise of not to exceed 55° C. Heavy duty thrust bearings shall be used and shall be capable of withstanding downthrust loads. The motor shall conform to the current Nema re-rate requirements.

The H.P. rating of the motor must not be exceeded at the design point indicated on the curve submitted by the Contractor with the bid. The 15% service factor by the motor manufacturer shall not be considered in selecting the motor size bid. The motor size shall be not less than 75 H.P. and designed for part-winding starting.

The electric motor shall have a built-in non-reverse ratchet which shall absolutely prevent the motor from being reversed by the back-flow of water down through the pump column.

(g) Characteristic Curves and Data
Each bidder shall submit with his bid in addition to characteristic curves for each pump, the following information tabulated on a separate sheet, properly entitled which the Owner will take into consideration in making award of this contract.

1. Make of pump.
2. Capacity of pump.
3. Total discharge head including all column friction loss.
4. Material used in impeller shaft.
5. Outside diameter of pump bowl assembly.

10. CLEANUP WORK

The intent of these specifications is to obtain good workmanship throughout, with the completed work complying with the specifications in full working order upon completion. The work shall not be accepted until this result is obtained.

Contractor shall keep the premises clean at all times and shall remove all rubbish as often as directed by the Engineer. He shall protect all finished work from damage or defacement from any subsequent operation by his men or his sub-contractors. Should any such damage or defacement occur he shall promptly have such work satisfactorily replaced, repaired or cleaned.

All debris and rubbish caused by the contractor's operations including materials bailed from the well, shall be removed by the Contractor and the pump house and the site shall be left in a neat, presentable condition as approved by the Engineer.

11. STERILIZATION

After the well has been altered, the new pump installed, and before final acceptance of the work, the entire installation including piping, shall be entirely sterilized in accordance with the procedure recommended by the Minnesota State Department of Health.

12. WATER SAMPLE

Before the work is accepted, samples of water shall be taken by the Contractor or his representative which shall be submitted to a reputable testing laboratory for a bacterial and mineral analysis. A written report of each analysis shall be sent in triplicate to the Engineer. The analysis and the reports shall be provided at the Contractor's expense.

13. PAYMENT

Payment will be made on the basis of the unit prices bid on the Proposal Form, except where designated as lump sum bids. The quantities shown are an estimate and any variance between the quantities shown are and actually drilled/or used will be figures on the basis of the prices bid.

14. GUARANTEE

The Contractor shall construct all work and install all equipment in compliance with standard construction codes and shall guarantee to maintain the stability of all work, materials and equipment, and to keep the same in perfect repair for the period of one (1) year after the issuance of the final payment on contract.

Defects of any kind due to negligence or faulty workmanship or materials or damage of other materials resulting therefrom appearing during the above-mentioned period shall immediately be made good by the Contractor at his own expense and to the satisfaction of the Owner and Engineers.

PROPOSAL FORM

FOR

MODIFICATION OF WELL NO. 4

(To be submitted in duplicate)

To the
City Council of the
City of St. Louis Park
St. Louis Park, Minnesota

~~12345678~~

Gentlemen:

1. The following proposal is made for the modification of an existing 18 inch Shakopee-Jordan formation well to a Jordan formation well by the installation and grouting of a new 12 inch liner pipe and for furnishing and installing a new well pump.

2. The Undersigned certifies that the Contract Documents listed in the Instructions to Bidders have been carefully examined, and that the site of the work has been personally inspected. The Undersigned declares that the amount and nature of the work to be done is understood, and that at no time will misunderstanding of the Contract Documents be pleaded. On the basis of the Contract Documents the Undersigned proposes to furnish all necessary apparatus and other means of construction, to do all the work and furnish all the materials in the manner specified, to finish the entire project within the time hereinafter specified and to accept as full compensation therefore the sum of the various products obtained by multiplying each unit price herein bid for the work or materials, by the quantities thereof actually incorporated on the completed project, as determined by the Engineer. The Undersigned understands that the quantities mentioned herein are approximate only, and are subject to increase or decrease, and hereby proposes to perform all quantities of work as either increased or decreased, in accordance with the provisions of the specifications, at the unit prices bid in the following Proposal Schedules, unless such schedules designate lump sum bids.

3. Proposal Schedules

Item 1. For moving onto site, setting up and moving off site — Lump Sum = $ ~~10,500.00~~

Item 2. For electric logging of the existing well — Lump Sum = $ _____

Item 3. Backfill 18" nominal hole, installing concrete platform, drilling through platform and bailing out hole — Lump Sum = $_____

Item 4. Estimated 420 l.f. of 12" I.D. liner pipe @ $_____/l.f. = $_____

Item 5. Estimated 550 sacks of Portland cement as grout and figured in place @ $ 3.90 /sack = $_____

Item 6. For furnishing and installing a new verticle turbine well pump as specified — Lump Sum = $_____

TOTAL COST (ITEMS NO. 1 THROUGH 6) = $_____

For Extra Work Ordered by the Engineer

Item 7. Each 10 ft. section of pump column and shafting complete — $_____/10' section

Item 8. Well and pump rig and two man crew — $_____/hr.

Item 9. Truck and driver — $_____/hr.

Item 10. Shop time and extra man on job — $_____/hr.

Item 11. Materials used on job and left in place — Invoice cost plus $_____/%

4. The Undersigned further proposes to execute the Contract Agreement and to furnish satisfactory bond within seven (7) days after notice of the award of contract has been received. The Undersigned further proposes to begin work on the day following the date of execution of contract and shall complete all the work within thirty-five (35) calendar days from said starting date.

The Undersigned also agrees to maintain at all times a Contract Bond, approved by the City, in an amount equal to the total bid.

5. Accompanying this proposal is the Bid Security required to be furnished by the Contract Documents, the same being subject to forfeiture in event of default by the Undersigned.

6. In submitting this proposal, it is understood that the right is reserved by the City to reject any or all proposals.

7. This proposal may not be withdrawn after the opening of the proposals and shall be subject to acceptance by the City for a period of thirty (30) calendar days from the opening thereof.

8. If a corporation, what is the state of incorporation?

_____

9. If a partnership, state full names of all co-partners.

_____

_____

Official Address: Firm Name_____

_____ _____

_____ By_____

Title_____

By_____

Date:_____ Title_____

KE 3-5315

E. H. RENNER & SONS, INC.

WELLS • PUMPS • SUPPLIES

E. H. RENNER, SECY-TREAS. • T. T. RENNER, PRES. • E. R. RENNER, VICE-PRES.

5465-A COUNTY ROAD 18 NORTH
MINNEAPOLIS 27, MINNESOTA

City of St. Louis Park

1st Test Pump Results - Well #4

April 9, 1962 — Static W.L. 85

470 G.P.M.	130' Pumping Level
700 G.P.M.	140' Pumping Level
800 G.P.M.	150 +

Sand Content estimated to be 2-cu. feet per minute at 800 GPM. Sand did not materially change at 700 GPM or at 470 GPM.

2nd Test Pump Results

May 3, 1962 — Static W.L. 85

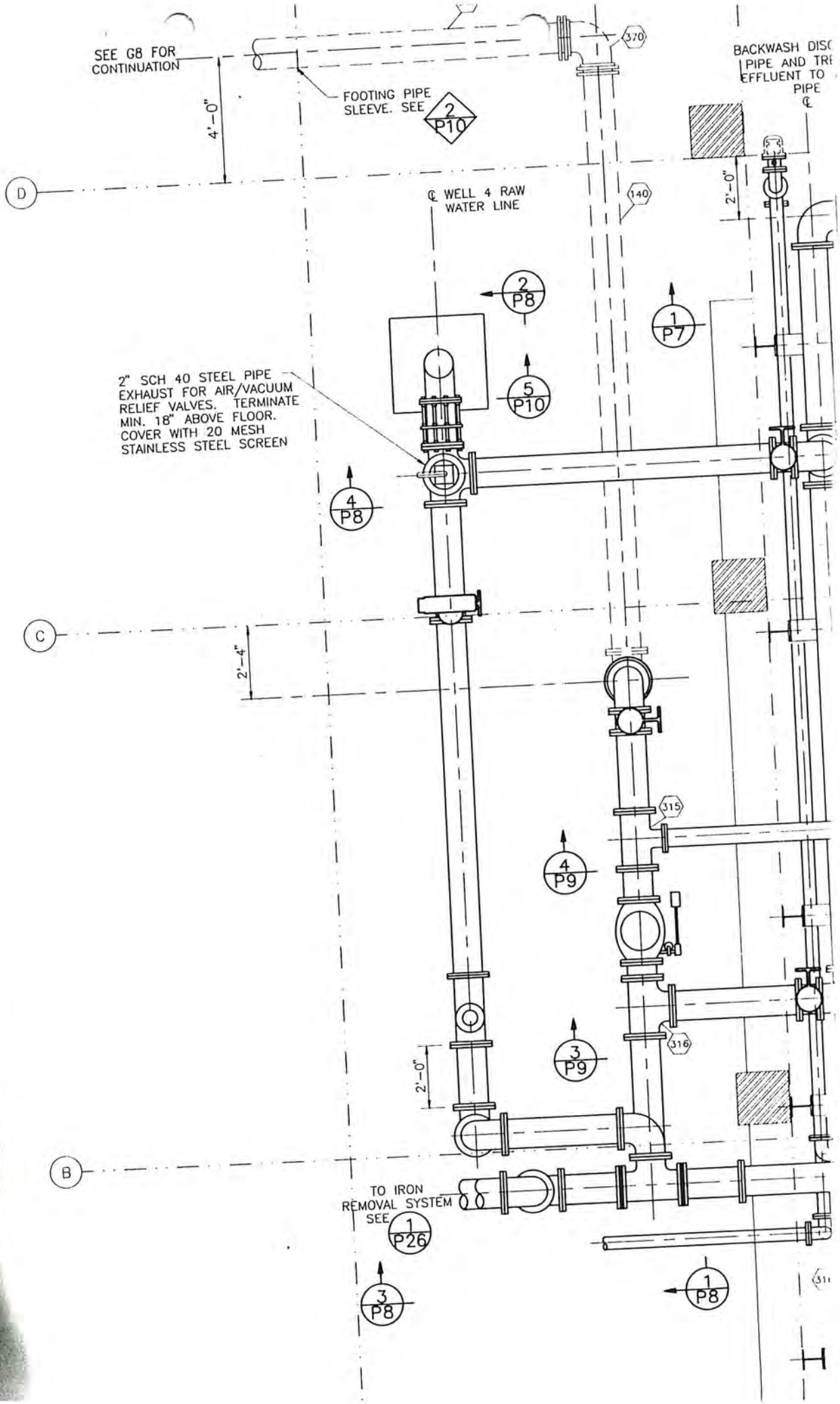
1:30 P.M.	600 G.P.M.	Draw Down	20 ft.
2:30 P.M.	700 G.P.M.	Draw Down	20 ft.
3:30 P.M.	900 G.P.M.	Draw Down	20 ft.
4:30 P.M.	700 G.P.M.	Pump Allowed to run all night.	

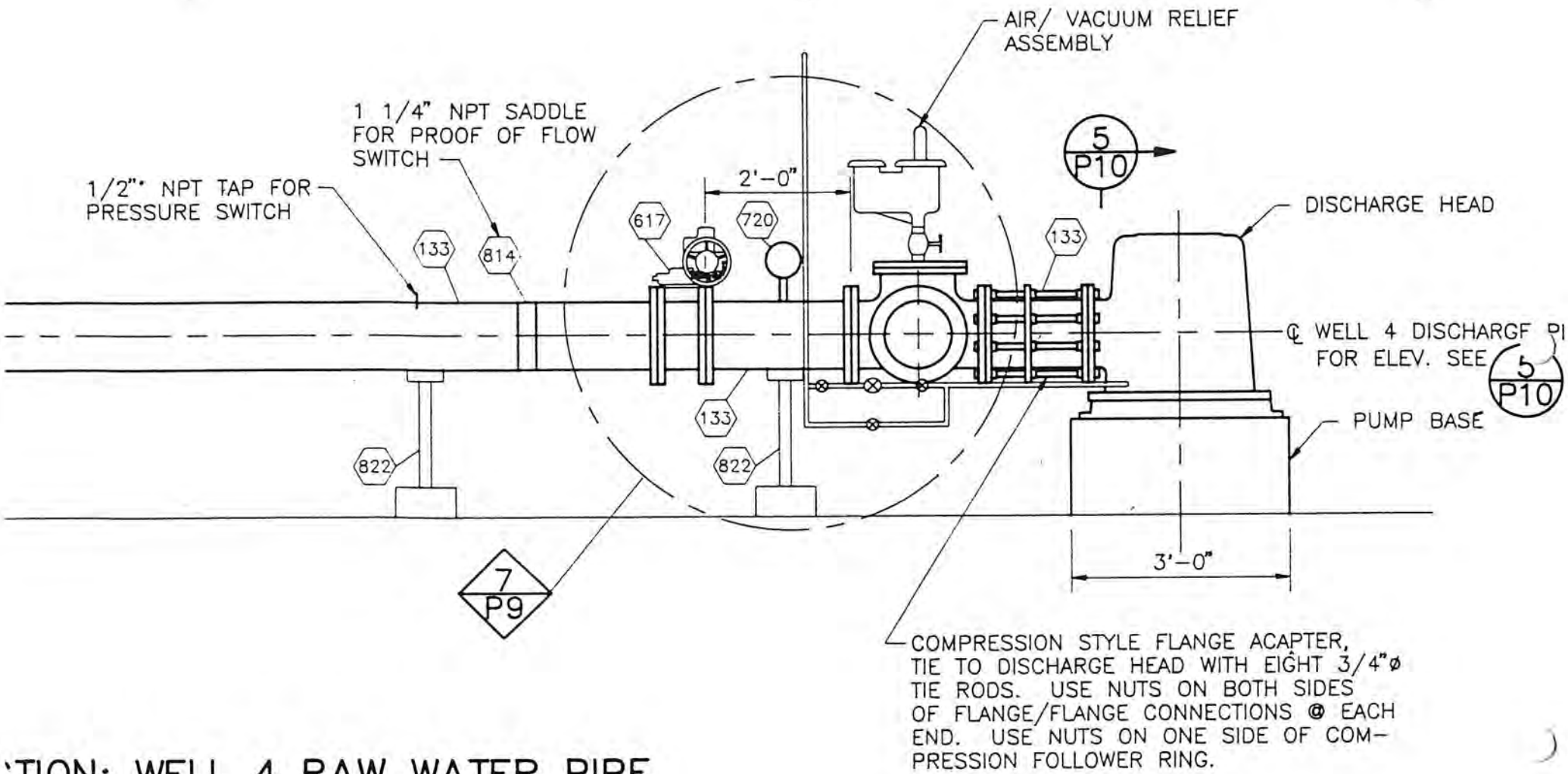
May 4, 1962

7:00 A.M.	700 G.P.M.	No Visible Sand. Draw Down 20 ft.
7:10 A.M.	1000 G.P.M.	Till 9:00 A.M. 22 feet of draw down. No Visible Sand.

An estimated 200 yards of Sandstone was removed during the interval of these two tests. 20 to 30 lb. charges were set off at 10 ft. increments from 435' to 490'. Several areas were shot twice in order to align the hole.

420' of 12" x .375 wall liner set with 1325 sacks grout terminated 1" above pedestal.

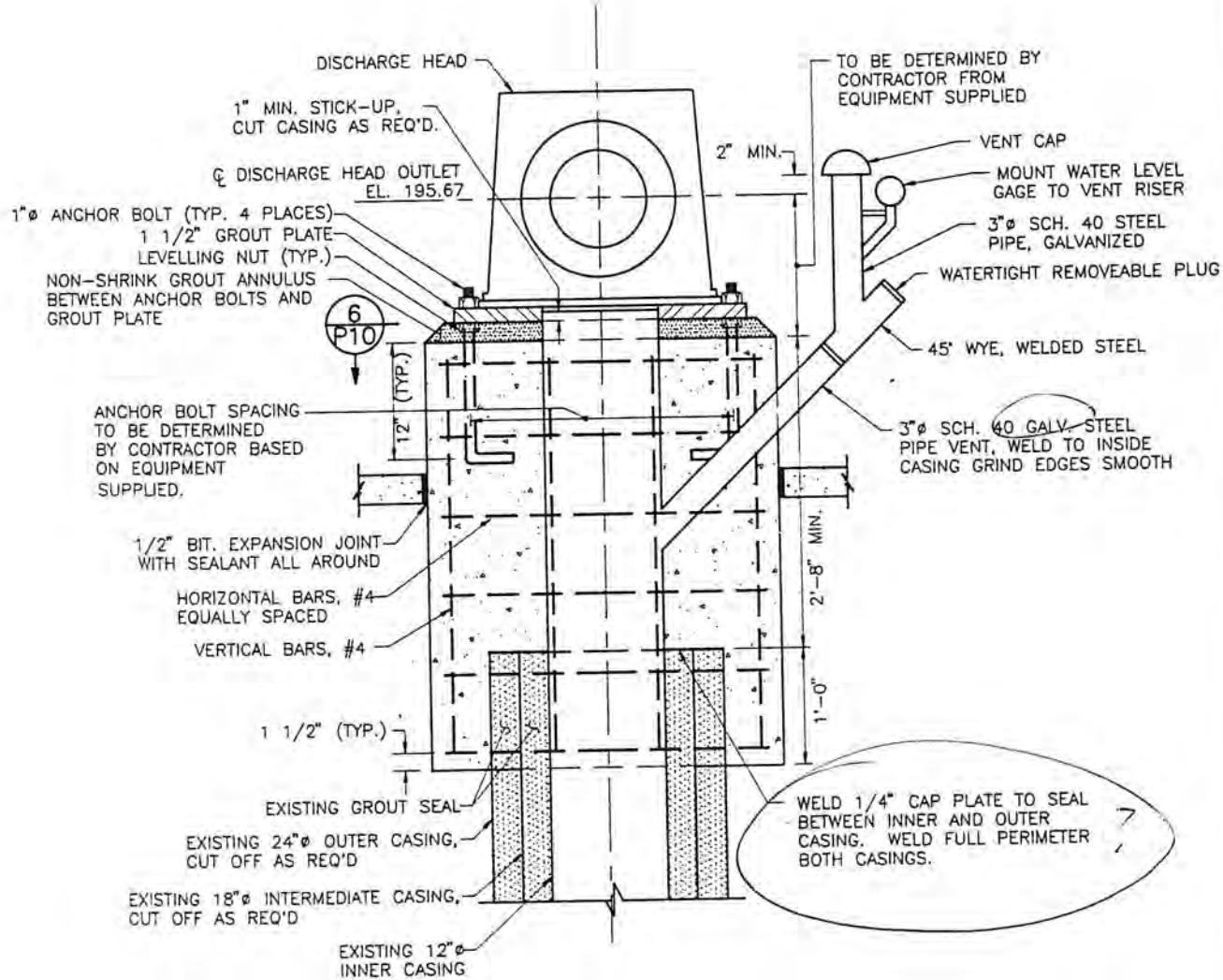

SEE G8 FOR CONTINUATION
FOOTING PIPE SLEEVE. SEE 2/P10
4'-0"
370
BACKWASH DISC
PIPE AND TRE
EFFLUENT TO
PIPE
℄
D
℄ WELL 4 RAW WATER LINE
140
2'-0"
2/P8
1/P7
5/P10
2" SCH 40 STEEL PIPE EXHAUST FOR AIR/VACUUM RELIEF VALVES. TERMINATE MIN. 18" ABOVE FLOOR. COVER WITH 20 MESH STAINLESS STEEL SCREEN
4/P8
C
2'-4"
315
4/P9
316
3/P9
2'-0"
B
TO IRON REMOVAL SYSTEM SEE 1/P26
3/P8
1/P8



:TION: WELL 4 RAW WATER PIPE

0 1 2 3 4 5

SCALE IN FEET



5 P10 SECTION: PUMP BASE AND DISCHARGE HEAD

0 6" 1' 2'
SCALE

MINNESOTA
DOWNHOLE
SERVICES, INC.

Water Well Video & Geophysical Surveys
Electric, Gamma Ray & Caliper Logging
SERVING THE UPPER MIDWEST

P. O. BOX 63 • ANOKA, MINNESOTA 55303 • TELEPHONE (612) 427-9509

January 17, 1986

City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Attention: Mr. Robert Burke

RE: Water Well Video Survey of St. Louis Park Municipal wells No. 15 and No. 4

Dear Mr. Burke:

The following are the highlights of the video surveys conducted on the above wells.

Well No. 15

December 31, 1985

5.1 Ft.- Start.	Steel Casing is 24 inches in diameter. Depth are referenced from top of casing to center of lighthead in feet.
10.7 Ft.-	Rub mark
22.7 Ft.-	casing joint
38.4 Ft.-	joint
58.6 Ft.-	joint
73.7 Ft.-	joint
89.0 Ft.-	static water level
92.0 Ft.-	joint
103.0 Ft.-	joint
133.5 Ft.-	joint
144.0 Ft.-	some pitting present
156.4 Ft.-	joint
172.0 Ft.-	horizontal lines on casing
175.0 Ft.-	joint? difficult ot see
183.0 Ft.-	casing is stained black; probably from presenses of iron/manganese.
191.3 Ft.-	joint
198.0 Ft.-	casing becoming extremely dark
202.0-206.0 Ft.-	casing not as dark
206.0 Ft.-	casing extremely dark
229.7 Ft.-	joint. casing not as dark
240.0 Ft.-	rubmark
251.0 Ft.-	joint? casing pitted and corroded

272.7 Ft.-	joint
293.0 Ft.-	joint
300.0 Ft.-	casing not as badly stained as above.
312.0 Ft.-	joint? hard to see
331.5 Ft.-	joint
348.0 Ft.-	joint? casing still pitted and corroded
365.0 Ft.-	joint?
389.0 Ft.-	end of 24 inch casing
389.0-395.0 Ft.-	cement grout
395.0 Ft.-	cavern to 397 ft. Jordan Formation
397.5-399.0 Ft.-	ledge
399.0-405.0 Ft.-	irregular borehole
405.0-428.0 Ft.-	large cavern
428.0-444.0 Ft.-	can see one side of borehole
444.0-453.0 Ft.-	large cavern
453.0-470.0 Ft.-	can see sidewalls of borehole
470.0 Ft.-	bottom of well. Originally drilled to 503.0 Ft.

The casing shows some degree of corrosion and pitting, but no perforations or drafts were observed. In general, the cased portion of this well shows no unusual wear or degradation.

The open borehole, constructed in the Jordan Formation, appears to have been blased at one time. Approximately 33 feet of sand has settled into the bottom of this since its original construction.

Well No. 4

January 2, 1986

4.6 Ft.-	Start. 12 inch casing
8.0-40.0 Ft.-	scaling present
40.0-88.0 Ft.-	lens is fogged up;review this interval during ascent from well at the end of this VHS recorded tape.
88.0 Ft.-	static water level
93.5 Ft.-	casing joint
105.5 Ft.-	small spot of incrustation
113.5 Ft.-	joint
114.5 Ft.-	horizontal lines on casing
135.4 Ft.-	joint. some pitting present
156.7 Ft.-	joint. pitting increasing with depth
177.7 Ft.-	joint. some clay size material in suspension.
195.3 Ft.-	joint. casing heavily corroded on one side.
217.9 Ft.-	joint. view this interval to end of casing on second taping of well which followed back flushing activities.
239.0 Ft.-	joint. pitting and corrosion present
243.0 Ft.-	scale present
248.0 Ft.-	severe scale present
260.0 Ft.-	cannot see joint. pitting and corrosion continue to the end of casing. Incrustration sometimes present.

410.0 Ft.-	end of casing
410.0-420.0-	open borehole
420.0 Ft.-	ledge
423.0 Ft.-	cavern. sidewalls connot be seen
463.0-467.0 Ft.-	ledge
467.0-474.5 Ft.-	large cavern
474.5 Ft.-	bottom of well.

The cased interval from 260 feet to the end of the casing is quite corroded and may contain some small perforations. However, no major perforations or drafts were observed.

The open borehole portion of the well is completed in the Jordan. Approximately 30 feet of sand has settled into the bottom of this since its original construction in 1946.

Enclosed with this report is the recorded VHS tape of these two wells. The counter on your VCR corresponds to the following recordings:

0 - 2326	Well No. 15
2326 - 4052	Well No. 4
4052 - end	Well No. 4 second run, 216 - 410 Ft.

I thank you for contacting Minnesota Downhole Services, Inc. for this work and if you have any questions please call.

Sincerely,

James J. Dalsin, Geologist
Minnesota Downhole Services, Inc.

Enclosure

JJD:jbn

Minnesota Unique Well No.

200542

County Hennepin
Quad Minneapolis South
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update
Received Date 08/17/2016

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
ST. LOUIS PARK 4	28	24	W	7	BDADAC	community supply	A	490 ft.	490 ft.	09/00/1946	27010

Elevation 900 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Prairie Du Chien- **Depth to Bedrock** 90 ft **Open Hole** 410 - 490 ft **Static Water Level** 112 ft

Field Located By Minnesota Department of
Unique No. Verified
Geological Interpretation Andrew Retzler
Agency (Interpretation)

Locate Method GPS SA On (averaged)
Input Source Minnesota Department of Health
Input Date 10/12/1999

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 473203
UTM Northing (Y) 497513
Interpretaion Method Inferred from geophysical log

Geological Material	Color	Hardness	Depth (ft.) From	Depth (ft.) To	Thickness	Elevation (ft.) From	Elevation (ft.) To	Stratigraphy	Primary Lithology	Secondary	Minor Lithology
FILL			0	3	3	900	897	man-made fill	fill		
SAND & GRAVEL			3	76	73	897	824	sand +larger	sand	gravel	
PLATTEVILLE LIME			76	90	14	824	810	Quaternary deposit	drift		
PLATTEVILLE LIME			90	106	16	810	794	Platteville Formation	limestone		
ST. PETER SAND			106	117	11	794	783	Platteville Formation	limestone		
ST. PETER SAND			117	123	6	783	777	Glenwood Formation	shale		
ST. PETER SAND		SOFT	123	235	112	777	665	St.Peter Sandstone	sandstone		
HARD SANDSTONE & SHALE		HARD	235	277	42	665	623	St.Peter Sandstone	sandstone	shale	
LIME		HARD	277	290	13	623	610	St.Peter Sandstone	sandstone	shale	
LIME		HARD	290	355	65	610	545	Prairie Du Chien	dolomite		
LIME MILKY CUTTINGS	WHITE		355	398	43	545	502	Prairie Du Chien	dolomite		
JORDAN SANDSTONE			398	418	20	502	482	Prairie Du Chien	dolomite		
JORDAN SANDSTONE			418	445	27	482	455	Jordan Sandstone	sandstone		
JORDAN SANDSTONE &			445	455	10	455	445	Jordan Sandstone	sandstone	shale	
JORDAN SANDSTONE &			455	470	15	445	430	Jordan Sandstone	sandstone	shale	
ST. LAWRENCE			470	490	20	430	410	Jordan Sandstone	sandstone	shale	

Minnesota Unique Well Number

206457

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 08/23/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	117	21	W	21	CDBDBD

Elevation 915 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact ST LOUIS PARK MN 55426
Well ST LOUIS PARK MN 55426

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	90		
LIMEROCK	90	122		
SHALE	122	127	BLUE	
ST. PETER SAND	127	290		SOFT
SHAKOPEE LIME	290	417		
JORDAN SANDSTONE	417	480		
ST. LAWRENCE	480	482		

Remarks

WELL RECONSTRUCTED BY KEYS 1953. INOF FROM THE CITY.

Well Depth 482 ft. **Depth Completed** 482 ft. **Date Well Completed** 02/19/1948

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
24 in. To 107. ft.	lbs./ft.	16 in. To 480 ft.
20 in. To 303 ft.	lbs./ft.	
16 in. To 430 ft.	lbs./ft.	

Open Hole From 303 ft. To 482 ft.

Screen? ☐ **Type** **Make**

Static Water Level
60 ft. land surface Measure 01/19/1948

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	480	Sacks	ft.	430 ft.
neat cement	24	Cubic yards	ft.	303 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity 1200 g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat St.Lawrence Formation Depth to Bedrock 90 ft
Located by Minnesota Department of Health
Locate Method GPS SA On (averaged)
System UTM - Mad83, Zone 15, Meters X 472079 Y 4974462
Unique Number Verification Inpute Date 10/12/1999

Angled Drill Hole

Well Contractor
Layne Well Co. 27010 SHUEY, P.
Licensee Business Lic. or Reg. No. Name of Driller

M. 470

(Rev. 2-59)

Well Located in Lt. of St. Louis PARK map. See Metro Area map

Well.

Mpls So

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

WELL LOG STATEMENT

File No. 104-A

Well No. 117/21-21cdb

FILL REPORT PROMPTLY TO DIRECTOR, DIVISION OF WATERS, STATE OFFICE BLDG., ST. PAUL 1, MINN.

Location of Well 206457 Well #6

County: 4 and 5 Zarthan — City or Town: St. Louis Park

Describe Further by Lot, Block, Nearest Highway, Street and Number

Locate Well on Plat of Section

Sec. 21

Twp. 117N

Range 21W

Drilled for: 117-21-21cdbdbd

Address: elev. 915 ± 5

Driller: Layne - Minn -

Address: P.A. 73-1007

Date of Completion: 1948

Site: Upland, Valley, Hillside, Etc.

Type of Well: Drilled — Dug, Driven, Bored, Drilled

Drill Rig Used: Solid Tool, Jet, Rotary

Diameter: Top 24" Bottom 16"

Depth of Well: 480

Ground Elevation: 910 — Sea Level Datum or Give Distance Above or Below R. R., Highway, Lake, Etc.

Height of Casing Above Ground

Quality of Water: (Hard or Soft, Fresh or Salty, Etc.)

Temperature of Water

Was Laboratory Analysis Made?

For What Purpose Will Water Be Used?

Is Well Pumped? Yes Pump Capacity 1200 GPM

Was Well Sealed on Completion?

Does Well Overflow Without Pumping? Yes or No

Natural Flow GPM

What Pressure, or Head, at Ground Level?

Principal Aquifer Penetrated

REPORT OF FINAL PUMPING TEST

Date of Test

Duration of Test Hrs. Min.

Rate of Pumping GPM ~~543~~ 833

Static Water Level 77 Ft.

Water Level While Pumping 132 Ft.

Drawdown Ft.

Time Required for Recovery

Expected Average Yield Gal. per day

If Other Tests were Made, Give Details on Another Sheet.

Were Measurements Made of Effect on Other Nearby Wells During Test? Give Details.

M.D.H

PWS 1270050504

CODED

UNIQUE NUMBER VERIFICATION

1- ☐ Address Verification
2- ☐ Name on Mailbox
3- ☐ Lot-Block
4- ☐ Plat Book
5- ☐ Info. From Owner
6- ☐ Info. From Neighbor
7- ☒ Other M.D.H Terry Boree
E- ☐ EMS Number
S- ☐ Site Plan
T- ☐ Tag on Well
X- ☐ Tax Records

(Fill Out Both Sides of Form)

910

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Thickness of Formation	Depth in Feet From	Depth in Feet To	Casing Diam.	Water Conditions Found
Gravel drift	90	0	90	24" to 107'	3 cement grouting
Platteville L.S. & Shale	37	90	127	20" to 303	3 820
St. Peter S.S.	163	127	290	16" open hole.	783
Shakopee L.S.	127	290	417		620
Jordan S.S.	63	417	480		493
	480				

910
417
503

Indicate Size, Type, & Location of Any Screens, Gravel Packs, Grouting, or Other Development

I hereby certify that, to the best of my knowledge, the data presented in this statement is a true and correct representation of conditions encountered in the construction of this well.

Dated at _____ this _____ day of _____, 19__.

(Firm Name) _____

By _____

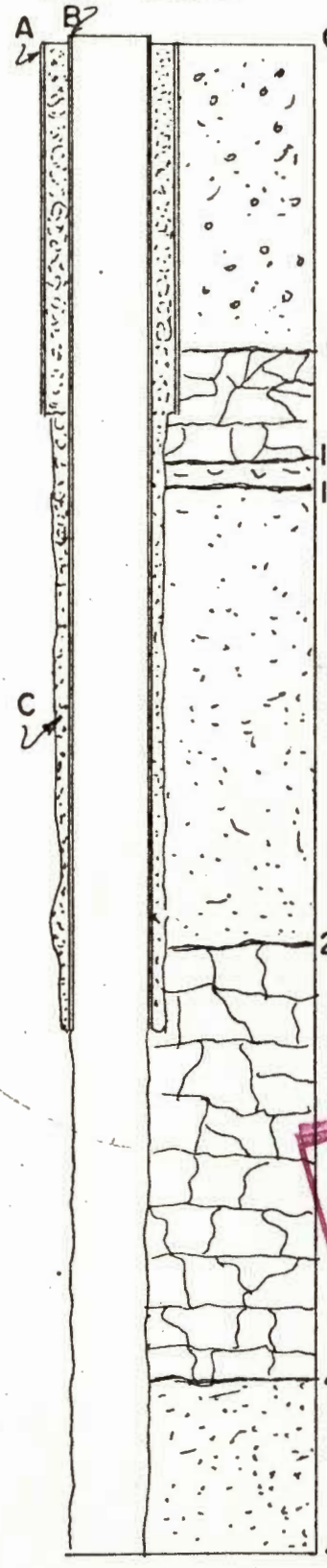
Title _____

Elev. 203.41

Well No. 6

42nd ST. and Zarthan Ave

St. Louis Park Minn.



Gravel PLTS GRVL

Platteville lime OPVL LMSN

Shale OGWD SHLE

St Peter Sand OSTP SNDS

Shakopee Lime OPDC DLMT

Jordan Sand CJDN SNDS

Aquifer OPDC-CJDN

CODED

Material:

A - 107' of 24" O.D 3/8" wall pipe

B - 303' of 20" O.D. 3/8" wall pipe

C - 24 Cu.yards cement

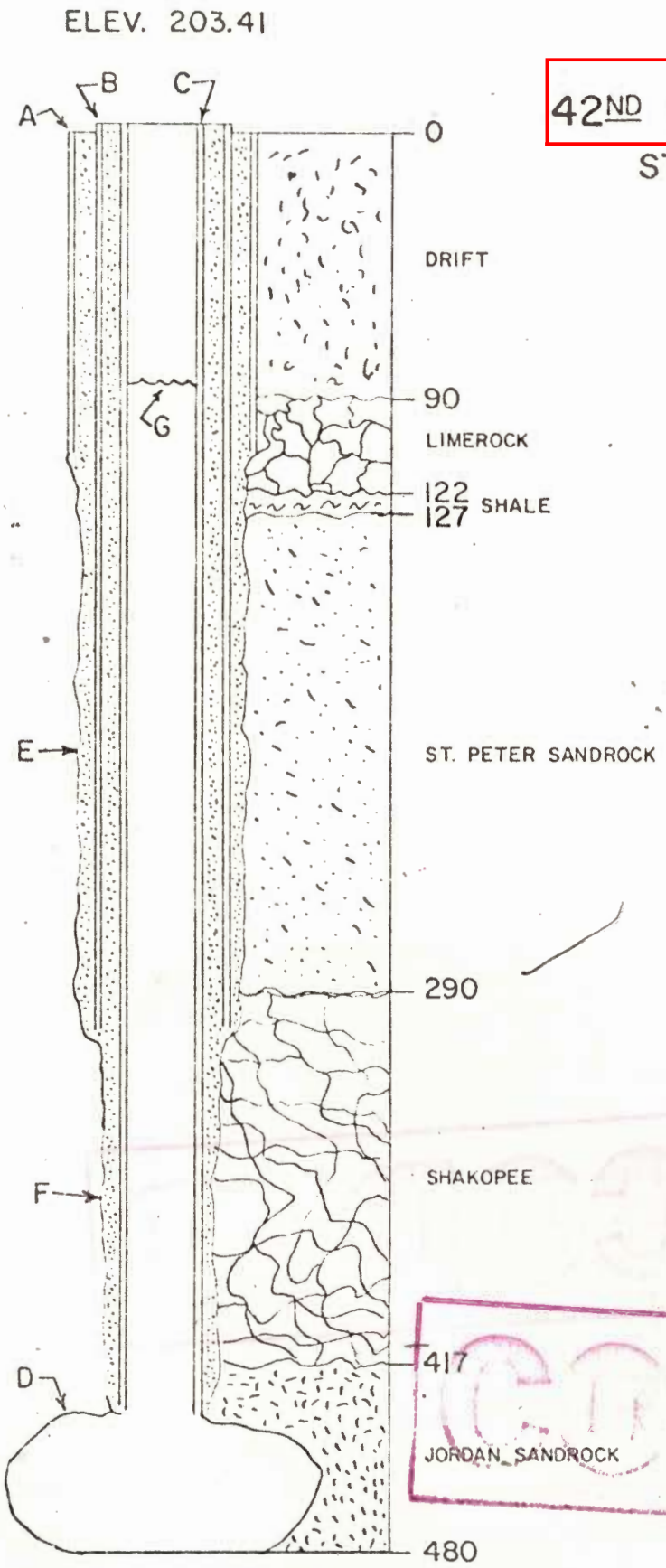
Well built by Layne-Minnesota Co. Minneapolis, Minn

March 30 1948

WELL NO. 6

42ND ST. AND ZARTHAN AVE.

ST. LOUIS PARK, MINNESOTA



MATERIAL

A - 107' OF 24" BLACK 3/8" STEEL PIPE

B - 303' OF 20" " " " "

C - 430' OF 16" " " " "

D - 50' OPEN HOLE BLASTED BAILED WITH 123.7 YDS. OF JORDAN SANDROCK REMOVED

E - 24 CUBIC YARDS OF CEMENT

F - 480 BAGS OF CEMENT GROUT

G - STATIC WATER LEVEL 88.5'

WELL BUILT BY:
LAYNE-MINNESOTA CO.
MINNEAPOLIS, MINNESOTA
MARCH 30, 1948

RECONDITIONED APRIL 10, 1963
BY KEYS WELL DRILLING CO.
ST. PAUL, MINNESOTA

COPY

ORR-SCHELEN-MAYERON
AND ASSOCIATES, INC.
CONSULTING ENGINEERS
MINNEAPOLIS, MINNESOTA
MAY 1, 1963

206457

WELL # 6

LAYNE - MINNESOTA CO.

(13370)

E

FIELD REPORT OF COMPLETED WELL

Name of Job: St. Louis Park, Minnesota — Date started: 9-30-47

Address: No. 6 — Date completed: 1-19-48

No. of days: 73

915 / 90 / 825

915 / 122 / 793

LOG OF WELL

915 / 127 / 788

From	To	Material	From	To	Material
0	90	sand & gravel QFUU SAND, GRVL	480	482	St. Lawrence CSTL DLMT
90	122	Platteville lime OPVL LMSN			
122	127	Blue shale OGWD SHLE			
127	290	St. Peter sand - soft OSTP SNDS			Aquifer OPDC-CJDN
290	417	Shakopee Lime OPDC DLMT			
417	480	Jordan sandstone CJDN SNDS			

Kind of plug in well: none — Static water level: 60'

Depth of well - ground level to top of plug: 482'

480 / 290 / 790

MATERIAL LEFT IN WELL

	Opening	Length - feet	Diameter - inches	Material
Screen				
Inner casing		303'	20" O. D.	welded
Outer casing		107' 6"	24" O. D.	welded

Was outer casing cemented: yes — Amount: 24 yards

Size of gravel used: _____ in. to _____ in. Amount _____

TEST OF WELL

Hours Pumped From	Hours Pumped To	Yield gal. per min.	Water Level ft. below surface	Remarks
Test of well appears on another report				

Did well clear up _____ Time to clear _____

Date: 1-19-48 — Driller: Paul W. Shuey

WRD Exp. (GW)
April 1966

Well No. 117.21.21cdb 1

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

PUNCHED AND VERIFIED
ROLLA COMPUTATION BRANCH

MASTER CARD

Record by: Source of data: Date: 1948 Map: MPLS SOUTH 316

State: 27 County (or town): 27

Latitude: 44 55 26 N Longitude: 093 21 14 Sequential number: 1

Lat-long accuracy: 2 T 117 S, R 21 E Sec 21, NW, SE, SW

Local well number: 117N21W21CDB 1 Other number: Well #6

Local use: LAYNE-MINNESOTA Owner or name: St. Louis Pk Well

Owner or name: ST. LOUIS PKWELL Address: 42 & Zarthon

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — M

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — W

DATA AVAILABLE: Well data: Freq. W/L meas.: Ø Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: Pumpage inventory: yes no, period:

Aperture cards: yes

Log data: D

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: ft 480 Meas. accuracy 6

Depth cased: (first perf.) ft 430 Casing type: ; Diam. in 24

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other — X

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot, (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other

Date Drilled: 948 Pump intake setting: ft

Driller: Layne-Minnesota (name), (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other — Deep Shallow

Power (type): diesel, elec, nat gas, gasoline, hand; LP gas, wind; H.P. Trans. or meter no.

Descrip. MP ft above below LSD, Alt. MP

Alt. LSD: 910 Accuracy: (source)

Water Level 77 ft above below MP; Ft above below LSD 77 Accuracy: G

Date meas: 348 Yield: gpm Method determined

Drawdown: ft 55 Accuracy: 6 Pumping period hrs

QUALITY OF WATER DATA: Iron ppm Sulfate ppm Chloride ppm Hard. ppm

Sp. Conduct K x 10^6 Temp. °F Date sampled

Taste, color, etc.

CODED

Well No. 117.21.21cdb

Punched

MINNEAPOLIS, MINNESOTA
MAY 1 1963

St. Louis Park

Don Galloway ph. 920-3000 Ext. 40

Old No. 1		6021 W. 36th	206443
		Intreatment Bldg.	
No. 1	Max Renner	2936 Idaho Ave	206441
No. 2	Max Renner	2936 Idaho Ave.	200962
		S. of Water Tower	
No. 3	Mc Carthy	2924 Idaho Ave.	206440
		15' N. of water Tower.	
" 4	Layne	41st + Natchez Ave.	2005 42
No. 5	Layne	Wyoming + 34th St.	203196
		N. of Tank	
No. 6	Layne	42nd + Zarthan Ave.	206457
No. 7	Layne	2500 Louisana Ave.	206436
No. 8		16th + Lancaster	227964 203678
No. 9	Layne	2500 Nevada Ave.	206437
No. 10	Keys	29th & New Jersey Ave.	206442
No. 11	Bergerson-Caswell	W. 29th + Idaho Ave.	206439

St. Louis Park (continued)

No. 12	Keys	42nd + Zarthan Ave.	206456
No. 13	Layne	Cedar Lake Rd. + Alabama Ave.	206424
No. 14	Bergerson-Caswell	(As Above)	227965
No. 15	Bergerson-Caswell	W. 29th St. + Idaho Ave.	215447
No. 16	Tri-State	Flag Ave. + Franklin St.	203187

Minnesota Unique Well No.

206457

County Hennepin
Quad Minneapolis South
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update
Received Date 08/23/2016

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
ST. LOUIS PARK 6	117	21	W	21	CDBDBD	community supply	A	482 ft.	482 ft.	02/19/1948	27010

Elevation 915 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Prairie Du Chien- **Depth to Bedrock** 90 ft **Open Hole** 303 - 482 ft **Static Water Level** 60 ft

Field Located By Minnesota Department of
Unique No. Verified
Geological Interpretation Bruce Olsen
Agency (Interpretation)

Locate Method GPS SA On (averaged)
Input Source Minnesota Department of Health
Input Date 10/12/1999

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 472079
UTM Northing (Y) 497446
Interpretaion Method Geologic study 1:24k to 1:100k

Geological Material	Color	Hardness	Depth (ft.) From	Depth (ft.) To	Thickness	Elevation (ft.) From	Elevation (ft.) To	Stratigraphy	Primary Lithology	Secondary	Minor Lithology
SAND & GRAVEL			0	90	90	915	825	sand +larger-brown	sand	gravel	
LIMEROCK			90	122	32	825	793	Platteville Formation	limestone		
SHALE	BLUE		122	127	5	793	788	Glenwood Formation	shale		
ST. PETER SAND		SOFT	127	290	163	788	625	St.Peter Sandstone	sandstone		
SHAKOPEE LIME			290	417	127	625	498	Prairie Du Chien	dolomite		
JORDAN SANDSTONE			417	480	63	498	435	Jordan Sandstone	sandstone		
ST. LAWRENCE			480	482	2	435	433	St.Lawrence	siltstone	dolomite	

Appendix B

Minnesota Unique Well Number

206457

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 08/23/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	117	21	W	21	CDBDBD

Elevation 915 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact ST LOUIS PARK MN 55426
Well ST LOUIS PARK MN 55426

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	90		
LIMEROCK	90	122		
SHALE	122	127	BLUE	
ST. PETER SAND	127	290		SOFT
SHAKOPEE LIME	290	417		
JORDAN SANDSTONE	417	480		
ST. LAWRENCE	480	482		

Remarks

WELL RECONSTRUCTED BY KEYS 1953. INOF FROM THE CITY.

Well Depth 482 ft. **Depth Completed** 482 ft. **Date Well Completed** 02/19/1948

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
24 in. To 107. ft.	lbs./ft.	16 in. To 480 ft.
20 in. To 303 ft.	lbs./ft.	
16 in. To 430 ft.	lbs./ft.	

Open Hole From 303 ft. To 482 ft.

Screen? ☐ **Type** **Make**

Static Water Level
60 ft. land surface Measure 01/19/1948

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	480	Sacks	ft.	430 ft.
neat cement	24	Cubic yards	ft.	303 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity 1200 g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat St.Lawrence Formation Depth to Bedrock 90 ft
Located by Minnesota Department of Health
Locate Method GPS SA On (averaged)
System UTM - Mad83, Zone 15, Meters X 472079 Y 4974462
Unique Number Verification Inpute Date 10/12/1999

Angled Drill Hole

Well Contractor
Layne Well Co. 27010 SHUEY, P.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

200542

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 08/17/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	28	24	W	7	BDADAC

Elevation 900 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 41ST ST ST LOUIS PARK MN 55416

Contact ST LOUIS PARK MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL	0	3		
SAND & GRAVEL	3	76		
PLATTEVILLE LIME	76	90		
PLATTEVILLE LIME	90	106		
ST. PETER SAND	106	117		
ST. PETER SAND	117	123		
ST. PETER SAND	123	235		SOFT
HARD SANDSTONE &	235	277		HARD
LIME	277	290		HARD
LIME	290	355		HARD
LIME MILKY CUTTINGS	355	398	WHITE	
JORDAN SANDSTONE	398	418		
JORDAN SANDSTONE	418	445		
JORDAN SANDSTONE	445	455		
JORDAN SANDSTONE	455	470		
ST. LAWRENCE	470	490		

Remarks

GAMMA LOGGED 7-28-2016. VIDEO AND HYDRO LAB BY MDH 7-28-2016.
SEE EMAIL FROM ROGER RENNER IN MGS FILES.

Well Depth 490 ft. **Depth Completed** 490 ft. **Date Well Completed** 09/00/1946

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter		Weight		
24 in. To	90 ft.		lbs./ft.	
18 in. To	304 ft.		lbs./ft.	
12 in. To	420 ft.		lbs./ft.	

Open Hole From 410 ft. To 490 ft.

Screen? ☐ **Type** **Make**

Static Water Level
85 ft. land surface Measure 09/27/1946

Pumping Level (below land surface)
121 ft. 24 hrs. Pumping at 2560 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	550	Sacks	ft.	420 ft.
neat cement	25	Cubic yards	ft.	ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity 1200 g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat Jordan Sandstone Depth to Bedrock 90 ft
Located by Minnesota Department of Health
Locate Method GPS SA On (averaged)
System UTM - Mad83, Zone 15, Meters X 473203 Y 4975132
Unique Number Verification Inpute Date 10/12/1999

Angled Drill Hole

Well Contractor
Layne Well Co. 27010
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Well Index Report **200542**

Printed on 10/20/2016
HE-01205-15

Minnesota Unique Well Number

208399

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 12/31/2015
Received Date 04/09/2007

Well Name	Township	Range	Dir	Section	Subsection
EDINA 2	28	24	W	18	CAABDD

Elevation 878 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 4521 50TH ST EDINA MN 55436
Contact 5146 EDEN AV EDINA MN 55436

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	62		
PLATTEVILLE	62	63		
PLATTEVILLE	63	86		
PLATTEVILLE	86	91		
PLATTEVILLE	91	97		
ST. PETER	97	259		
ST. PETER	259	262		
PRAIRIE DU CHIEN	262	381		
PRAIRIE DU CHEIN	381	385		
JORDAN SANDSTONE	385	448		

Well Depth 448 ft. **Depth Completed** 448 ft. **Date Well Completed** 04/00/2007

Drill Method Cable Tool **Drill Fluid** Water

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter			Weight		Hole Diameter		
20 in. To	53 ft.		78.6 lbs./ft.		20 in. To	256 ft.	
16 in. To	260 ft.		62.4 lbs./ft.		16 in. To	448 ft.	
12 in. To	266 ft.		49.5 lbs./ft.				

Open Hole From 266 ft. To 446 ft.

Screen? ☐ **Type** **Make**

Static Water Level
80 ft. land surface Measure 04/17/2002

Pumping Level (below land surface)
113 ft. 2 hrs. Pumping at 900 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☒ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	13	Cubic yards	ft. 266	ft.

Nearest Known Source of Contamination
150 feet South Direction Body of water Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed 01/02/2007
Manufacturer's name GOULDS
Model Number 11005100 HP 100 Volt 208
Length of drop pipe 140 ft Capacity 900 g.p. Typ Submersible

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☒ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat Jordan Sandstone Depth to Bedrock 63 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 473111 Y 4973204
Unique Number Verification Information from Inpute Date 08/10/1995

Angled Drill Hole

Well Contractor
Keys Well Drilling Co. 1347 GALVIN, M.
Licensee Business Lic. or Reg. No. Name of Driller

Remarks
LOCATED 20FT. S. OF NO. 1 GAMMA LOGGED 2-15-1984.
REDEVELOPMENT PROJECT #02-2PW
WELL RECONSTRUCTED 4-2007 BY KEYS WELL CO.
VARIANCE TN#3623.
EDINA #2 MU#208399 AMENDED RECORD
THE WELL WAS ORIGINALLY DRILLED IN 1935 AND RECONSTRUCTED IN 2007.

GAMMA & MULTI TOOL LOGGED 4-2-2015.
VIDEO 4-2-2015 BY MDH. HYDRO LAB BY MDH.

Minnesota Unique Well Number

206474

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 09/22/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
EDINA 7	117	21	W	28	CCDDBA

Elevation 951 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W EDINA MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	18		
SAND & GRAVEL	18	35		
CLAY	35	78		
SAND	78	132		
LIMEROCK	132	159		
SOAPSTONE	159	162		
SANDROCK	162	290		
SANDROCK & SHALE	290	324		
SHAKOPEE	324	453		
JORDAN	453	459		
JORDAN	459	545		
SHALE	545	547		

Remarks

GAMMA LOGGED 11-8-04 BY JIM TRAEN

Well Depth 547 ft. **Depth Completed** 547 ft. **Date Well Completed** 03/00/1955

Drill Method **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter		Weight
16 in. To 350 ft.		lbs./ft.
24 in. To 148 ft.		lbs./ft.

Open Hole From 350 ft. To 547 ft.

Screen? ☐ **Type** **Make**

Static Water Level
112 ft. land surface Measure 03/00/1955

Pumping Level (below land surface)
137 ft. hrs. Pumping at 1040 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	463 Sacks	ft.	ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat St.Lawrence Formation Depth to Bedrock 132 ft
Located by Minnesota Department of Health
Locate Method GPS Differentially Corrected
System UTM - Mad83, Zone 15, Meters X 471863 Y 4972656
Unique Number Verification Information from Inpute Date 03/22/1993

Angled Drill Hole

Well Contractor
Keys Well Co. 62012
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

203196

County Hennepin
Quad Hopkins
Quad ID 104B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 08/23/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	117	21	W	18	DABBAD

Elevation 930 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact ST LOUIS PARK MN 55426
Well ST LOUIS PARK MN 55426

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	5		
CLAY & BOULDERS	5	15		
SAND & GRAVEL	15	103		
COARSE GRAVEL	103	109		
PLATTEVILLE LIME	109	117		
PLATTEVILLE LIME	117	120		
ROCK & SHALE	120	124		
ROCK & SHALE	124	132		
SANDROCK	132	230		
SHALE & ROCK	230	285		
LIMEROCK	285	287		
LIMEROCK	287	407		
SANDSTONE	407	416		
SANDSTONE	416	460		
ST. LAWRENCE	460	465		

Remarks

GAMMA, CALIPER, & MULTI TOOL LOGGED 6-27-2014. LOGGED FOR MPCA & MDH.
HYDRO LAB BY MDH.

Well Depth 465 ft. **Depth Completed** 465 ft. **Date Well Completed** 08/21/1947

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter		Weight			Hole Diameter			
20	in. To	305	ft.	lbs./ft.	20	in. To	465	ft.
24	in. To	115	ft.	lbs./ft.				

Open Hole From 305 ft. To 465 ft.

Screen? ☐ **Type** **Make**

Static Water Level
91 ft. land surface Measure 08/21/1947

Pumping Level (below land surface)
116 ft. hrs. Pumping at 1380 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	15	Cubic yards	ft. 305	ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat St.Lawrence Formation Depth to Bedrock 109 ft
Located by Minnesota Department of Health
Locate Method GPS SA On (averaged)
System UTM - Mad83, Zone 15, Meters X 469653 Y 4976568
Unique Number Verification Inpute Date 10/12/1999

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Layne Well Co.	27010	SHUEY, P.

Minnesota Unique Well Number

207674

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 03/31/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
EDINA 15	117	21	W	29	DBBADC

Elevation 897 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact 4801 50TH ST W EDINA MN 55424
Well 5005 MIRROR LAKE DR EDINA MN 55436

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & CLAY	0	91		
PLATTEVILLE ROCK	91	111		
ST. PETER SAND	111	205		
SHALE & SAND MIX	205	210		HARD
SHALE & SAND MIX	210	260		
SHALE	260	265	BLUE	HARD
ROCK	265	400		
JORDAN SANDSTONE	400	405		
JORDAN	405	475		

Remarks

M.G.S. NO. 434.

THE WELL WAS ORIGINALLY DRILLED IN 1967 AND RECONSTRUCTED IN 2002.

ORIGINALLY DRILLED BY LAYNE MINNESOTA CO. DRILLER GORDON HOLLEN.

Well Depth 475 ft. **Depth Completed** 475 ft. **Date Well Completed** 06/15/2002

Drill Method Cable Tool **Drill Fluid** Water

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
30 in. To 92 ft.		lbs./ft.
20 in. To 275 ft.		lbs./ft.
24 in. To 225 ft.		lbs./ft.

Open Hole From 275 ft. To 475 ft.

Screen? ☐ **Type** **Make**

Static Water Level
69 ft. land surface Measure 11/00/1967

Pumping Level (below land surface)
110 ft. hrs. Pumping at 1200 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	27	Cubic yards	ft.	ft.

Nearest Known Source of Contamination
200 feet South Direction Body of water Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name LAYNR
Model Number 13 ECH HP 150 Volt 480
Length of drop pipe 160 ft Capacity 1150 g.p. Typ Turbine

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat Jordan Sandstone Depth to Bedrock 91 ft
Located by Minnesota Department of Health
Locate Method GPS Differentially Corrected
System UTM - Mad83, Zone 15, Meters X 470883 Y 4973294
Unique Number Verification Information from Inpute Date 07/21/1995

Angled Drill Hole

Well Contractor

Bergerson-Caswell	27058	MANTHIR, D.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

439751

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 11/24/1992
Update Date 12/30/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	28	24	W	7	AACADD

Elevation 867 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well: INGLEWOOD & 39TH ST ST LOUIS PARK MN 55416
Contact: 5005 MINNETONKA BL ST LOUIS PARK MN 55416

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SANDY SOIL	0	15	YELLOW	SOFT
PEAT	15	50	BLACK	SOFT
GRAVEL	50	66	BRN/BLK	MED-HRD
PLATTEVILLE	66	68	GRAY	HARD
GLENWOOD	68	92	GREEN	MEDIUM
ST. PETER	92	230	WHITE	MEDIUM
PRAIRIE DU CHIEN	230	382	RED	HARD
JORDAN	382	385	WHITE	SOFT

Remarks

INGLEWOOD & 39TH ST. - IN PARK. 87-22 (W403).
MINNICOTTA GOLF CLUB

Well Depth 385 ft. **Depth Completed** 385 ft. **Date Well Completed** 03/01/1988

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use irrigation **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint** Threaded
Drive Shoe? Yes ☐ No ☒ **Above/Below** 2 ft.

Casing Diameter			Weight		Hole Diameter		
5 in.	To	235 ft.	14.6	lbs./ft.	15 in.	To	70 ft.
10 in.	To	68 ft.	40.4	lbs./ft.	10 in.	To	235 ft.
					5 in.	To	385 ft.

Open Hole From 235 ft. To 385 ft.

Screen? ☐ **Type** **Make**

Static Water Level
30 ft. land surface Measure 02/26/1988

Pumping Level (below land surface)
0 ft. hrs. Pumping at 50 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
bentonite	3.5	Cubic yards	0 ft.	235 ft.
neat cement	2	Cubic yards	0 ft.	68 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Prairie Du Chien-
Last Strat Jordan Sandstone Depth to Bedrock 66 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - Mad83, Zone 15, Meters X 473824 Y 4975388
Unique Number Verification Information from Inpute Date 06/16/2005

Angled Drill Hole

Well Contractor
Bergerson-Caswell 27058
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

165576

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
U.S.G.S. WELL	117	21	W	16	CCACCB

Elevation 920 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W ST LOUIS PARK MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	60	BLK/BRN	
CLAY & SAND &	60	95	YELLOW	
CLAY	95	96	WHITE	
LIMEROCK	96	107	GRAY	
GLENWOOD	107	109	GREEN	

Remarks

Well Depth 109 ft. **Depth Completed** 109 ft. **Date Well Completed** 07/12/1979

Drill Method Cable Tool **Drill Fluid**

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Welded
Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below** 1 ft.

Casing Diameter **Weight**
4 in. To 100 ft. 10.7 lbs./ft.

Open Hole From 100 ft. To 109 ft.

Screen? ☐ **Type** **Make**

Static Water Level
44 ft. land surface Measure 07/11/1979

Pumping Level (below land surface)
44 ft. 3 hrs. Pumping at 20 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☒ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Platteville
Last Strat Glenwood Formation Depth to Bedrock 96 ft
Located by Minnesota Geological Survey
Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)
System UTM - Mad83, Zone 15, Meters X 471747 Y 4976012
Unique Number Verification Inpute Date 01/01/1990

Angled Drill Hole

Well Contractor
Renner E.H. & Sons 02015 LEDBETTER, B.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Well Index Report **165576**

Printed on 10/20/2016
HE-01205-15

Minnesota Unique Well Number

216051

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 09/17/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	117	21	W	17	DDDDCA

Elevation 907 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 6425 OXFORD ST ST LOUIS PARK MN 55426

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	70		
PLATTEVILLE	70	90		

Remarks

U.S.G.S. W-143

Well Depth 90 ft. **Depth Completed** 90 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**

Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter **Weight**

4 in. To 70 ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer Platteville

Last Strat Platteville Formation Depth to Bedrock 70 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - Mad83, Zone 15, Meters X 471464 Y 4975822

Unique Number Verification Information from Inpute Date 01/01/1990

Angled Drill Hole

Well Contractor

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

462933

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 04/19/1995
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	117	21	W	16	CCACCB

Elevation 918 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well: JORVIG PARK MN
Contact: 5005 MINNETONKA BL ST LOUIS PARK MN 55416

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOPSOIL	0	2	BLACK	
GRAVEL & ROCKS	2	20	BROWN	
GRAVEL FINER	20	30	BROWN	
GRAVEL & ROCKS	30	50	BLK/RED	
CLAY & GRAVEL MIX	50	75	BLK/RED	
CLAY & GRAVEL MIX	75	85	BLK/RED	
CLAY & GRAVEL MIX	85	96	BLK/RED	
PLATTEVILLE	96	112	GREEN	

Remarks
MAP CODE D-260
STONEY

Well Depth 112 ft. **Depth Completed** 112 ft. **Date Well Completed** 11/06/1990

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use monitor well **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint** Welded
Drive Shoe? Yes ☒ No ☐ **Above/Below** 2.5 ft.

Casing Diameter		Weight		Hole Diameter	
6 in. To	99 ft.	18.9 lbs./ft.		12 in. To	97.5 ft.
				6 in. To	112 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
6 in.	8	12 ft.	100 ft.	112 ft.

Static Water Level
46.2 ft. land surface Measure 11/06/1990

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	6	Sacks	ft. 97.5	ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Platteville
Last Strat Platteville Formation Depth to Bedrock 96 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 471763 Y 4976036
Unique Number Verification Site Plan Inpute Date 09/16/2015

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Renner E.H. Well	71015	DAVIDSON,D.

Minnesota Unique Well Number

463012

County Hennepin
Quad
Quad ID

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 05/12/1995
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
JORVIG PARK	117	21	W	16	CC

Elevation **Elev. Method**

Address

Well JORVIG PARK MN
Contact 5005 MINNETONKA BL

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOP SOIL	0	5	BLACK	
CLAY	5	15	BROWN	
GRAVEL	15	38	BROWN	
SILT	38	40	GRAY	
CLAY ROCKS	40	45	GRAY	
CLAY	45	48	BROWN	
MED. SAND	48	65	GRAY	
SILT	65	80	GRAY	
CLAY, FINE SAND	80	95	GRAY	
RUBBLE	95	108	GRY/TAN	
SHALE, LIMESTONE	108	112	GRAY	
SHALE	112	112	LT. GRN	

Remarks

Well Depth 114 ft. **Depth Completed** 114 ft. **Date Well Completed** 04/29/1991

Drill Method **Drill Fluid** Bentonite

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Welded
Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below** 2.5 ft.

Casing Diameter		Weight		Hole Diameter	
6 in. To	99.4 ft.	10.7 lbs./ft.		12 in. To	112 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
in.	15	15.3 ft.	97 ft.	112 ft.

Static Water Level

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	24	ft. 109	ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - Mad83, Zone 15, Meters X Y
Unique Number Verification Inpute Date

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Renner E.H. Well	71015	PRAUGHT,V.

Minnesota Unique Well Number

498917

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/28/2012
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
W437	117	21	W	17	DACCBC

Elevation 912 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 5005 MINNETONKA BL ST LOUIS PARK MN 55416

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	61	BROWN	
SAND & GRAVEL	61	92	GRAY	
PLATVILLE	92	94	GRAY	
PLATVILLE	94	104	GRAY	
GLENWOOD	104	104	BLU/GRN	

Remarks

Well Depth 104 ft. **Depth Completed** 104 ft. **Date Well Completed** 12/30/1991

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use monitor well **Status** Unknow

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Welded
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below** 2 ft.

Casing Diameter **Weight**
4 in. To 94 ft. lbs./ft.

Open Hole From 94 ft. To 104 ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)
100 ft. 1 hrs. Pumping at g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		ft. 94	ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Platteville
Last Strat Glenwood Formation Depth to Bedrock 92 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 471162 Y 4976254
Unique Number Verification Site Plan Inpute Date 09/16/2015

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Traut M.J. Well Co.	71536	BRUCE&ROBBIE

Minnesota Unique Well Number

498919

County Hennepin
Quad
Quad ID

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date
Update Date 03/30/2012
Received Date

Well Name	Township	Range	Dir	Section	Subsection
CITY OF ST.	117	21	W	17	DAC

Elevation **Elev. Method**

Address

Contact 5005 MINNETONKA BL ST LOUIS PARK MN 55416

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	2	BROWN	
SAND & GRAVEL	2	62	BROWN	
SAND & GRAVEL	62	84	GRAY	
SAND, GRAVEL & CLAY	84	95	GRAY	
PLATTVILLE	95	96	GRAY	
PLATVILLE	96	107	GRAY	

Remarks

Well Depth 106.5 ft. **Depth Completed** 106.5 ft. **Date Well Completed** 01/02/1992

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Welded
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below** 2 ft.

Casing Diameter **Weight**
4 in. To 96 ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
4 in.	10	10 ft.	69.5 ft.	106.5 ft.

Static Water Level
40 ft. land surface Measure 01/02/1992

Pumping Level (below land surface)
90 ft. 1 hrs. Pumping at g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		ft. 96.5	ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - Mad83, Zone 15, Meters X Y
Unique Number Verification Inpute Date

Angled Drill Hole

Well Contractor

Traut M.J. Well Co.	71536	BRUCE&ROBBIE
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

216052

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 03/31/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BILL TERRY	117	21	W	17	DBCACB

Elevation 903 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W ST LOUIS PARK MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GRAVEL	0	38		
SAND	38	63	GRAY	
SAND & CLAY &	63	68		
GRAVEL	68	80		
PLATTEVILLE	80	100	GRAY	
ST. PETER	100	112	BLUE	

Remarks

REILLY TAR W027

Well Depth 112 ft. **Depth Completed** 112 ft. **Date Well Completed** 07/03/1953

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Threaded

Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter **Weight**

4 in. To 81 ft. lbs./ft.

Open Hole From 81 ft. To 112 ft.

Screen? ☐ **Type** **Make**

Static Water Level

30 ft. land surface Measure 07/03/1953

Pumping Level (below land surface)

32 ft. hrs. Pumping at 0 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☒ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer Platteville-St.

Last Strat St.Peter Sandstone Depth to Bedrock 80 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - Mad83, Zone 15, Meters X 470865 Y 4976343

Unique Number Verification Inpute Date 01/01/1990

Angled Drill Hole

Well Contractor

Renner E.H. & Sons 27015

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

439809

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/04/1993
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	117	21	W	17	ADCBDB

Elevation 933 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W ST LOUIS PARK MN 55416

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOPSOIL	0	2	BLACK	
SAND AND GRAVEL	2	33	BROWN	
SAND AND GRAVEL	33	40	BROWN	
BOULDERS AND	40	50		
GRAVEL	50	98	BROWN	
GRAVEL AND CLAY	98	99	BRN/GRY	
PLATTEVILLE	99	110	GRAY	
GLENWOOD	110	110	BLU/GRN	

Remarks

M.G.S. NO.2669. 3300 BLOCK AND HAMPSHIRE.

Well Depth 110 ft. **Depth Completed** 110 ft. **Date Well Completed** 11/20/1987

Drill Method Cable Tool **Drill Fluid**

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint** Welded

Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below** 2 ft.

Casing Diameter		Weight
4 in. To 100 ft.		lbs./ft.
8 in. To 4 ft.		lbs./ft.

Open Hole From 100 ft. To 110 ft.

Screen? ☐ **Type** **Make**

Static Water Level

36 ft. land surface Measure 11/20/1987

Pumping Level (below land surface)

100 ft. hrs. Pumping at 1 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	2	Sacks	0 ft.	ft.

Nearest Known Source of Contamination

50 feet North Direction Septic tank/drain field Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☒ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer Platteville

Last Strat Glenwood Formation Depth to Bedrock 99 ft

Located by Minnesota Geological Survey

Locate Method Digitization (Screen) - Map (1:24,000)

System UTM - Mad83, Zone 15, Meters X 471229 Y 4976743

Unique Number Verification Other, note in Inpute Date 06/02/2000

Angled Drill Hole

Well Contractor

Renner E.H. Well 71015 SWARTZ, S.

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

439812

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/04/1993
Update Date 09/17/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	117	21	W	17	DBACCA

Elevation 923 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W ST LOUIS PARK MN 55416

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND GRAVEL ROCKS	0	33	BROWN	
SAND GRAVEL	33	35	GRAY	
SAND GRAVEL FINE	35	50	GRAY	
HARDPAN	50	93	GRAY	
PLATTEVILLE BROKEN	93	99	GRAY	
PLATTEVILLE TIGHT	99	116	GRAY	HARD
GLENWOOD	116	116	BLU/GRN	

Remarks

M.G.S. NO.2670. 100 BLOCK OF GORHAM AVE.

Well Depth 116 ft. **Depth Completed** 116 ft. **Date Well Completed** 12/07/1987

Drill Method Cable Tool **Drill Fluid**

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint** Welded

Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below** 2 ft.

Casing Diameter		Weight	
4 in. To	99 ft.	lbs./ft.	
8 in. To	4 ft.	lbs./ft.	

Open Hole From 99 ft. To 116 ft.

Screen? ☐ **Type** **Make**

Static Water Level

35 ft. land surface Measure 12/07/1987

Pumping Level (below land surface)

100 ft. hrs. Pumping at 10 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	2	Sacks	0 ft.	ft.

Nearest Known Source of Contamination

55 feet South Direction Septic tank/drain field Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☒ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer Platteville

Last Strat Glenwood Formation Depth to Bedrock 93 ft

Located by Minnesota Geological Survey

Locate Method Digitization (Screen) - Map (1:24,000)

System UTM - Mad83, Zone 15, Meters X 470992 Y 4976439

Unique Number Verification Other, note in Inpute Date 06/02/2000

Angled Drill Hole

Well Contractor

Renner E.H. Well	71015	SIGAFOOS, R.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

462926

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 04/19/1995
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
CITY OF ST.	117	21	W	17	DACCBC

Elevation 911 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 5005 MINNETONKA BL ST LOUIS PARK MN 55416

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GRAVEL & ROCKS	0	21	BROWN	
SAND & GRAVEL	21	36	BROWN	
GRAVEL & CLAY	36	60	GRAY	
SAND & GRAVEL	60	81	GRAY	

Remarks

MAP CODE D-255
ROCKS (TOOK WATER)

Well Depth 81 ft. **Depth Completed** 72 ft. **Date Well Completed** 11/29/1990

Drill Method **Drill Fluid** Water

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Threaded
Drive Shoe? **Yes** ☐ **No** ☒ **Above/Below** 2 ft.

Casing Diameter		Weight	
2 in. To 64 ft.		3.75	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	62 ft.	72 ft.

Static Water Level

14 ft. land surface Measure 12/07/1990

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	21 Sacks	ft. 60	ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Aquifer Quat. buried
Last Strat sand +larger-gray Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 471160 Y 4976251
Unique Number Verification Information from Inpute Date 06/24/2014

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Renner E.H. Well	71015	SCHAFFER,R.

Minnesota Unique Well Number

462928

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 04/19/1995
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
CITY OF ST.	117	21	W	17	DACDAC

Elevation 923 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 5005 MINNETONKA BL ST LOUIS PARK MN 55416
Well MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GRAVEL	0	21	BROWN	
SAND - GRAVEL	21	34	BROWN	
SAND - GRAVEL	34	61	GRAY	
SAND-GRAVEL	61	81	GRAY	

Remarks

MAP CODE D-257, WEST LAKE STREET AT WALKER STREET

Well Depth 81 ft. **Depth Completed** 75 ft. **Date Well Completed** 11/27/1990

Drill Method Non-specified Rotary **Drill Fluid** Water

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Threaded
Drive Shoe? **Yes** ☐ **No** ☒ **Above/Below** 2 ft.

Casing Diameter		Weight		Hole Diameter	
2 in. To	67 ft.	3.65 lbs./ft.		6.7 in. To	81 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	65 ft.	75 ft.

Static Water Level
41 ft. land surface Measure 11/27/1990

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	28 Sacks	ft.	62 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand +larger-gray Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 471308 Y 4976253
Unique Number Verification Information from Inpute Date 06/24/2014

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Renner E.H. Well	71015	SCHAFFER,R.

Minnesota Unique Well Number

462929

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 11/01/1992
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ST. LOUIS PARK	117	21	W	17	DDAAAB

Elevation 919 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 5005 MINNETONKA BL ST LOUIS PARK MN 55426
Well ST LOUIS PARK MN 55426

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
COARSE GRAVEL	0	28	BROWN	
COARSE SAND &	28	51	BROWN	
CLAY-SAND	51	60	GRAY	
COARSE-SAND-	60	70	GRAY	

Remarks

M.G.S. NO. 3137.
N. FRONTAGE ROAD OF HWY. 7, W. OF WALKER ST.

Well Depth 70 ft. **Depth Completed** 70 ft. **Date Well Completed** 11/21/1990

Drill Method Cable Tool **Drill Fluid** Water

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Threaded
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below** 2.5 ft.

Casing Diameter		Weight		Hole Diameter	
2 in. To	60 ft.	3.65 lbs./ft.		7 in. To	70 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** HOWARD SMITH

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	60 ft.	70 ft.

Static Water Level
47 ft. land surface Measure 11/21/1990

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	18	Sacks	0 ft.	60 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand +larger-gray Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 471499 Y 4976174
Unique Number Verification Information from Inpute Date 06/24/2014

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Renner E.H. Well	71015	KLAVA, E.

Minnesota Unique Well Number

165588

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
U. S. G. S. NO.	117	21	W	16	CCAADA

Elevation 917 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well ST LOUIS PARK MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND	0	4	BROWN	
SAND & GRAVEL	4	15	BROWN	
COARSE SAND &	15	25	BROWN	
SAND & GRAVEL	25	55	BROWN	
FINE SAND	55	75	BLACK	
SAND & GRAVEL	75	109	TAN	
ST. PETER	109	122		

Remarks

GAMMA LOGGED 6-11-2008. LOGGED FOR MPCA.

ZERO FOR GAMMA LOG WAS 32 INCHES BELOW THE LIP OF THE TOP OF CASING.

Well Depth 122 ft. **Depth Completed** 122 ft. **Date Well Completed** 11/13/1979

Drill Method Cable Tool **Drill Fluid**

Use test well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Welded

Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below** 1 ft.

Casing Diameter **Weight**

4 in. To 116 ft. 10.7 lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
2 in.	12	6 ft.	116 ft.	122 ft.

Static Water Level

50 ft. land surface Measure 11/13/1979

Pumping Level (below land surface)

ft. 2 hrs. Pumping at 5 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
bentonite		ft.	ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock St.Peter Sandstone Aquifer St.Peter

Last Strat St.Peter Sandstone Depth to Bedrock 109 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - Mad83, Zone 15, Meters X 471940 Y 4976114

Unique Number Verification Information from Inpute Date 01/01/1990

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Renner E.H. & Sons	02015	SIGAFOOS, R.

Minnesota Unique Well Number

439813

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
WELL A-S	117	21	W	17	ADCBBD

Elevation 916 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 5005 MINNETONKA BL ST LOUIS PARK MN 55416
Well MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOP SOIL	0	2	BLACK	
BOULDERS & GRAVEL	2	30	BROWN	
GRAVEL	30	45	BROWN	

Remarks

WELL LOCATION - SOUTH SIDE OF 33RD ST. JUST WEST OF HAMPSHIRE

Well Depth 45 ft. **Depth Completed** 45 ft. **Date Well Completed** 11/25/1987

Drill Method Cable Tool **Drill Fluid** Water

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint** Welded
Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below** 2 ft.

Casing Diameter		Weight	
4 in. To 35 ft.		10.7	lbs./ft.
8 in. To 4 ft.		28.5	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** telescoping **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
4 in.	10	ft.	35 ft.	45 ft.

Static Water Level
35 ft. land surface Measure 11/25/1987

Pumping Level (below land surface)
42 ft. 3 hrs. Pumping at 2 g.p.m.

Wellhead Completion
Pitless adapter manufacturer LOCKABLE Model CAP
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		-2 ft.	2 ft.

Nearest Known Source of Contamination
50 feet North Direction Sewer Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat gravel (+larger)-brown Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 471200 Y 4976754
Unique Number Verification Information from Inpute Date 06/24/2014

Angled Drill Hole

Well Contractor
Renner E.H. Well 71015 SWARTZ,S.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

439814

County Hennepin
Quad Minneapolis
Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date
Update Date 09/16/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
CITY OF ST.	117	21	W	17	DBACDC

Elevation 922 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Contact 5005 MINNETONKA BL ST LOUIS PARK MN 55416
Well MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOP SOIL	0	2	BLACK	
BOULDERS/GRAVEL	2	35	BROWN	
GRAVEL	35	45	BROWN	

Remarks

NORTH SIDE OF GORHAM BETWEEN 1ST & 2ND ST.

Well Depth 45 ft. **Depth Completed** 45 ft. **Date Well Completed** 12/07/1987

Drill Method Cable Tool **Drill Fluid** Water

Use monitor well **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below** 2 ft.

Casing Diameter		Weight	
4 in. To 35 ft.		10.7	lbs./ft.
8 in. To 4 ft.		28.5	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
4 in.	10	10 ft.	35 ft.	45 ft.

Static Water Level
38 ft. land surface Measure 12/07/1987

Pumping Level (below land surface)
35 ft. 3 hrs. Pumping at 3 g.p.m.

Wellhead Completion
Pitless adapter manufacturer LOCKABLE Model CAP
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From		To	
neat cement	2	Sacks	-2	ft.	2	ft.

Nearest Known Source of Contamination
55 feet South Direction Sewer Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat gravel (+larger)-brown Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 471004 Y 4976414
Unique Number Verification Information from Inpute Date 06/24/2014

Angled Drill Hole

Well Contractor
Renner E.H. Well 71015 SWARTZ,S.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Well Index Report | **439814** | Printed on 10/20/2016
HE-01205-15

Appendix C

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen, Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number P307 Date sampled 6/27/16 Time 1340
Describe sampling point
Unique Well Number 462926

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 75.60 feet below monitoring point (mp)
Depth to water (below mp) = 30.42 feet Date Time
Well diameter = 2 in inches Water level above screen? No Yes feet
Volume of water in well = 7.36 gallons

PURGING INFORMATION:

Purging method: Bailer Submersible pump Tap Other Bladder Pump
Tubing type: Teflon Dual tube Black poly Other
Pump intake or bailer set at feet below monitoring point (mp).
Discharge rate (if applicable) gpm x 0.1336806 = cfm
At least well volumes evacuated before sampling, totaling gallons.

SAMPLING INFORMATION

Sampling method: Bailer Tap Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other
Bailer was: Disposable Laboratory cleaned Field cleaned Other
Sample collected from feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = gpm
Sample appearance Clear Odor Slight sulfur-like odor
Note any sampling observations if necessary Water was black to 1.0' then become clear.
Metals field filtered? Yes No **Na**
Chemical Analysis **Volatile Organic Compounds (VOCs)**
Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [us/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1325	**7.37**	**-113.9**	**0.772**	**14.50**	**30.49/4.23**	**0.5**
1330	**7.38**	**-110.6**	**0.769**	**14.30**	**30.44/1.45**	**1.5**
1335	**7.39**	**-110.2**	**0.769**	**14.24**	**30.46/3.43**	**2.25**
1340	**7.38**	**-110.4**	**0.775**	**14.44**	**30.46/4.23**	**3.0**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen, Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number P309 Date sampled 6/27/16 Time 1445
Describe sampling point
Unique Well Number 462928

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 77.60 feet below monitoring point (mp)
Depth to water (below mp) = 43.0 feet Date 6/27/16 Time 1418
Well diameter = 2'' (0.163) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 5.64 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary DUP-3 15:15 and E-Blank 2 15:10

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1430	**7.09**	**-117.7**	**1.054**	**12.40**	**43.00/703.7**	**0.5**
1435	**7.08**	**-111.2**	**1.057**	**12.21**	**43.06/716.64**	**1.0**
1440	**7.05**	**-114.3**	**1.053**	**12.08**	**43.06/723.03**	**1.50**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number P310 Date sampled 6/27/16 Time 15:40
Describe sampling point
Unique Well Number 462929

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 72.90 feet below monitoring point (mp)
Depth to water (below mp) = 40.32 feet Date 6/27/16 Time 14:18
Well diameter = 2'' (0.163) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 5.31 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Dark brown to clear, microbes present Odor None
Note any sampling observations if necessary DUP-4 16:35

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1525	**7.31**	**-106.7**	**0.939**	**15.63**	**40.31/2.20**	**0.5**
1530	**7.33**	**-104.5**	**0.937**	**15.57**	**40.32/2.90**	**1.0**
1535	**7.34**	**-103.9**	**0.924**	**14.84**	**40.27/2.12**	**1.50**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Rachel Banasiak, and Tate Yulga
Weather: Overcast, 66
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W423 Date sampled 6/27/16 Time 1040
Describe sampling point
Unique Well Number 439813

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 47.16 feet below monitoring point (mp)
Depth to water (below mp) = 34.68 feet Date 6/27/16 Time 1418
Well diameter = 3'' (0.367) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 4.58 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Rust/sediment laden Odor None
Note any sampling observations if necessary

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1012	**7.51**	**57.3**	**0.936**	**13.18**	**34.69/8.56**	**0.5**
1024	**7.47**	**60.0**	**0.940**	**13.25**	**34.69/8.35**	**1.5**
1029	**7.44**	**63.9**	**0.936**	**13.11**	**34.62/9.02**	**3.0**
1034	**7.39**	**66.1**	**0.936**	**12.97**	**34.69/8.88**	**4.0**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W425 Date sampled 6/27/16 Time 1150
Describe sampling point
Unique Well Number 439814

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 48.80 feet below monitoring point (mp)
Depth to water (below mp) = 40.29 feet Date 6/27/16 Time 1115
Well diameter = 3'' (0.367) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 3.12 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary DO increased to 140 and DO% was 999.9. E-Blank 1 1215

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1133	**7.28**	**46.4**	**1.041**	**12.09**	**43.0/8.09**	**0.5**
1138	**7.21**	**41.4**	**1.042**	**11.94**	**43.31/8.06**	**1.0**
1143	**6.97**	**46.1**	**1.033**	**12.13**	**40.31/140.24**	**1.50**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Rachel Banasiak, Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W120 Date sampled 6/27/16 Time 1745
Describe sampling point
Unique Well Number 165576

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 113.50 feet below monitoring point (mp)
Depth to water (below mp) = 40.25 feet Date 6/27/16 Time 1745
Well diameter = 2'' (0.163) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 11.93 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary MS/MSD (9 vials)

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1732	**7.37**	**-132.0**	**0.797**	**13.70**	**40.28/2.70**	**0.5**
1737	**7.34**	**-125.8**	**0.821**	**13.33**	**40.22/2.20**	**1.0**
1742	**7.33**	**-123.5**	**0.831**	**13.28**	**40.24/1.80**	**1.50**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W433 Date sampled 6/27/16 Time 1725
Describe sampling point
Unique Well Number 462933

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 120.2 feet below monitoring point (mp)
Depth to water (below mp) = 45.94 feet Date 6/27/16 Time 1642
Well diameter = 4'' (0.653) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 48.49 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary E-Blank 4 1745

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1710	**7.15**	**-99.7**	**0.878**	**12.83**	**45.98**	**0.5**
1715	**7.16**	**-100.1**	**0.880**	**12.89**	**45.99**	**1.0**
1720	**7.17**	**-99.0**	**0.880**	**12.82**	**45.99**	**1.50**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen and Rachel Banasiak
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W434 Date sampled 6/28/16 Time 0905
Describe sampling point
Unique Well Number 463012

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 114 feet below monitoring point (mp)
Depth to water (below mp) = feet Date 6/28/16 Time 0905
Well diameter = 6 inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor Slight odor
Note any sampling observations if necessary Could not measure water level due to large municipal pump on well; well was purged for 30 minutes before sampling.

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
0905	**7.20**	**-99.6**	**0.948**	**12.48**	**/7.15**	

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Rachel Banasiak, Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W437 Date sampled 6/27/16 Time 1425
Describe sampling point
Unique Well Number 498917

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 110.28 feet below monitoring point (mp)
Depth to water (below mp) = 29.79 feet Date 6/27/16 Time 1425
Well diameter = 4'' (0.653) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 52.56 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Black, primarily clear after 1 gallon purge Odor None
Note any sampling observations if necessary DUP-1 1505

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1415	**7.75**	**-154.5**	**0.786**	**13.19**	**30.26/0.90**	**0.5**
1420	**7.78**	**-157.9**	**0.791**	**13.14**	**30.39-0.82**	**1.0**
1425	**7.78**	**-163.8**	**0.793**	**13.20**	**30.45/0.78**	**2.0**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Rachel Banasiak, Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W438 Date sampled 6/27/16 Time 1625
Describe sampling point
Unique Well Number 498919

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 98.30 feet below monitoring point (mp)
Depth to water (below mp) = 39.94 feet Date 6/27/16 Time 16.25
Well diameter = 2'' (0.163) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 9.51 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Yellow Odor None
Note any sampling observations if necessary Yellow during purge, yellow during sampling, and microbes present

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1606	**7.85**	**-207.1**	**0.653**	**15.37**	**40.28/0.71**	**0.25**
1611	**7.86**	**-203.9**	**0.644**	**14.74**	**40.34/0.93**	**1.0**
1616	**7.86**	**-200.5**	**0.640**	**14.44**	**40.34/0.63**	**1.5**
1621	**7.75**	**-171.3**	**0.647**	**14.33**	**40.32/0.47**	**3.0**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W-27 Date sampled 6/27/16 Time 13:40
Describe sampling point
Unique Well Number 216052

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 95.50 feet below monitoring point (mp)
Depth to water (below mp) = 27.06 feet Date 6/27/16 Time 12:55
Well diameter = 3"(0.367) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 25.11 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1321	**7.36**	**-170.9**	**0.904**	**15.55**	**27.13/549.8**	**0.25**
1326	**7.38**	**-187.0**	**0.914**	**15.57**	**27.07/547.0**	**0.5**
1331	**7.40**	**-202.2**	**0.920**	**15.26**	**27.07/561.1**	**1.0**
1336	**7.41**	**-210.2**	**0.927**	**15.82**	**27.07/538.3**	**1.25**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W424 Date sampled 6/27/16 Time 1005
Describe sampling point
Unique Well Number 439809

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 114.25 feet below monitoring point (mp)
Depth to water (below mp) = 34.12 feet Date 6/27/16 Time 0915
Well diameter = 3"(0.367) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 29.40 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary DUP-2 2000

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
0935	**6.13**	**-48.7**	**0.478**	**10.86**	**34.31/2.98**	**0.50**
0940	**6.50**	**-70.5**	**0.507**	**10.67**	**34.32/2.87**	**0.75**
0945	**6.90**	**-80.1**	**0.527**	**10.95**	**34.31/2.91**	**1.25**
0950	**6.97**	**-78.1**	**0.530**	**10.92**	**34.31/2.91**	**1.75**
0955	**7.04**	**-72.5**	**0.540**	**11.04**	**34.31/2.83**	**2.50**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen and Rachel Banasiak
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W426 Date sampled 6/27/16 Time 1205
Describe sampling point
Unique Well Number 439812

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 120.45 feet below monitoring point (mp)
Depth to water (below mp) = 40.10 feet Date Time
Well diameter = 4 in inches Water level above screen? No Yes feet
Volume of water in well = 52.46 gallons

PURGING INFORMATION:

Purging method: Bailer Submersible pump Tap Other Bladder Pump
Tubing type: Teflon Dual tube Black poly Other
Pump intake or bailer set at feet below monitoring point (mp).
Discharge rate (if applicable) gpm x 0.1336806 = cfm
At least well volumes evacuated before sampling, totaling gallons.

SAMPLING INFORMATION

Sampling method: Bailer Tap Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other
Bailer was: Disposable Laboratory cleaned Field cleaned Other
Sample collected from feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = gpm
Sample appearance Clear Odor
Note any sampling observations if necessary Microbes and Sulfur like odor present.

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [us/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1435	**7.15**	**-44.2**	**854**	**6.54**	**41.12/1.42**	**0.5**
1440	**7.25**	**-74.8**	**644**	**7.76**	**41.14/1.60**	**0.75**
1445	**7.33**	**-106.6**	**683**	**8.27**	**41.14/1.11**	**1.00**
1450	**7.35**	**-114.6**	**670**	**8.32**	**41.14/1.03**	**1.25**
1455	**7.32**	**-121.0**	**694**	**8.45**	**41.14/**	**1.50**
1500	**7.35**	**-128.5**	**697**	**8.60**	**41.14/0.93**	**1.75**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Rachel Banasiak, Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W133 Date sampled 6/27/16 Time 1900
Describe sampling point
Unique Well Number 165588

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 114.97 feet below monitoring point (mp)
Depth to water (below mp) = 59.20 feet Date 6/27/16 Time 1900
Well diameter = 2"(0.163) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 9.09 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary DUP-2, Time: 2000

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1850	**9.25**	**-64.6**	**0.821**	**13.42**	**60.45/0.76**	**0.50**
1855	**9.27**	**-74.1**	**0.823**	**13.41**	**61.06/1.01**	**1.0**
1900	**9.28**	**-79.4**	**0.823**	**13.43**	**61.67/1.35**	**1.5**
1905	**9.28**	**-82.2**	**0.821**	**13.37**	**62.30/1.70**	**2.5**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen, Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W143 Date sampled 6/27/16 Time 1615
Describe sampling point
Unique Well Number 216051

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 99.56 feet below monitoring point (mp)
Depth to water (below mp) = 25.49 feet Date Time
Well diameter = 3in inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 27.18 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary E-Blank 3 1630

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [ms/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1558	**6.99**	**-74.5**	**1.463**	**13.38**	**25.51/650.17**	**0.5**
1603	**6.99**	**-68.7**	**1.483**	**13.28**	**25.49/654.46**	**1.0**
1608	**6.99**	**-66.0**	**1.472**	**13.00**	**25.51/671.59**	**1.5**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen, Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number SLP 4 Date sampled 6/28/16 Time 0850
Describe sampling point
Unique Well Number 200542

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = _____ Datum = _____ Water elevation = _____
Well depth (prior to sampling) = _____ feet below monitoring point (mp)
Depth to water (below mp) = _____ feet Date _____ Time _____
Well diameter = _____ inches Water level above screen? _____ No _____ Yes _____ feet
Volume of water in well = _____ gallons

PURGING INFORMATION:

Purging method: Bailer _____ Submersible pump _____ Tap _____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly _____ Other _____
Pump intake or bailer set at _____ feet below monitoring point (mp).
Discharge rate (if applicable) _____ gpm x 0.1336806 = _____ cfm
At least _____ well volumes evacuated before sampling, totaling _____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer _____ Tap _____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other _____
Bailer was: Disposable _____ Laboratory cleaned _____ Field cleaned _____ Other _____
Sample collected from _____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = _____ gpm
Sample appearance _____ Odor _____
Note any sampling observations if necessary Sample was taken from raw water spigot with no treatment. Well was purged at least 30 minutes prior to sampling. MS/MSD

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [us/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
0850	**7.41**	**-90.9**	**0.714**	**10.41**	**4.21 DO**	**NA**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen, Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number SLP 5 Date sampled 6/28/16 Time 0940
Describe sampling point
Unique Well Number 203196

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = _____ Datum = _____ Water elevation = _____
Well depth (prior to sampling) = _____ feet below monitoring point (mp)
Depth to water (below mp) = _____ feet Date _____ Time _____
Well diameter = _____ inches Water level above screen? _____ No _____ Yes _____ feet
Volume of water in well = _____ gallons

PURGING INFORMATION:

Purging method: Bailer _____ Submersible pump _____ Tap _____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly _____ Other _____
Pump intake or bailer set at _____ feet below monitoring point (mp).
Discharge rate (if applicable) _____ gpm x 0.1336806 = _____ cfm
At least _____ well volumes evacuated before sampling, totaling _____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer _____ Tap _____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other _____
Bailer was: Disposable _____ Laboratory cleaned _____ Field cleaned _____ Other _____
Sample collected from _____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = _____ gpm
Sample appearance _____ Odor _____
Note any sampling observations if necessary Sample was taken from raw water spigot with no treatment. Well was purged at least 30 minutes prior to sampling.

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [us/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
0940	**7.38**	**-91.5**	**0.667**	**10.87**	**3.01 DO**	**NA**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen, Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number SLP 6 Date sampled 6/28/16 Time 0825
Describe sampling point
Unique Well Number 206457

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = _____ Datum = _____ Water elevation = _____
Well depth (prior to sampling) = _____ feet below monitoring point (mp)
Depth to water (below mp) = _____ feet Date _____ Time _____
Well diameter = _____ inches Water level above screen? _____ No _____ Yes _____ feet
Volume of water in well = _____ gallons

PURGING INFORMATION:

Purging method: Bailer _____ Submersible pump _____ Tap _____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly _____ Other _____
Pump intake or bailer set at _____ feet below monitoring point (mp).
Discharge rate (if applicable) _____ gpm x 0.1336806 = _____ cfm
At least _____ well volumes evacuated before sampling, totaling _____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer _____ Tap _____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other _____
Bailer was: Disposable _____ Laboratory cleaned _____ Field cleaned _____ Other _____
Sample collected from _____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = _____ gpm
Sample appearance _____ Odor _____
Note any sampling observations if necessary Sample was taken from raw water spigot with no treatment. Well was purged for at least 30 minutes prior to samping. MS/MSD

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [ms/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
0825	**7.36**	**-90.2**	**0.546**	**12.41**	**4.65 DO**	**NA**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen and Rachel Banasiak
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number E2 Date sampled 6/28/16 Time 1315
Describe sampling point
Unique Well Number 208399

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = _____ Datum = _____ Water elevation = _____
Well depth (prior to sampling) = _____ feet below monitoring point (mp)
Depth to water (below mp) = _____ feet Date _____ Time _____
Well diameter = _____ inches Water level above screen? _____ No _____ Yes _____ feet
Volume of water in well = _____ gallons

PURGING INFORMATION:

Purging method: Bailer _____ Submersible pump _____ Tap _____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly _____ Other _____
Pump intake or bailer set at _____ feet below monitoring point (mp).
Discharge rate (if applicable) _____ gpm x 0.1336806 = _____ cfm
At least _____ well volumes evacuated before sampling, totaling _____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer _____ Tap _____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other _____
Bailer was: Disposable _____ Laboratory cleaned _____ Field cleaned _____ Other _____
Sample collected from _____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = _____ gpm
Sample appearance _____ Odor _____
Note any sampling observations if necessary Sample was taken from raw water spigot with no treatment. Had low odor and was clean. Well was purged for at least 30 minutes before sampling.
Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [us/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1315	**7.33**	**-85.5**	**0.567**	**-3.72**	**9.71 DO**	**NA**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen, Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number E7 Date sampled 6/28/16 Time 1330
Describe sampling point
Unique Well Number 206474

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = _____ Datum = _____ Water elevation = _____
Well depth (prior to sampling) = _____ feet below monitoring point (mp)
Depth to water (below mp) = _____ feet Date _____ Time _____
Well diameter = _____ inches Water level above screen? _____ No _____ Yes _____ feet
Volume of water in well = _____ gallons

PURGING INFORMATION:

Purging method: Bailer _____ Submersible pump _____ Tap _____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly _____ Other _____
Pump intake or bailer set at _____ feet below monitoring point (mp).
Discharge rate (if applicable) _____ gpm x 0.1336806 = _____ cfm
At least _____ well volumes evacuated before sampling, totaling _____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer _____ Tap _____ Other Bladder Pump/Grab
Tubing type (if applicable): Teflon Dual tube Other _____
Bailer was: Disposable _____ Laboratory cleaned _____ Field cleaned _____ Other _____
Sample collected from _____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = _____ gpm
Sample appearance _____ Odor Slight Odor
Note any sampling observations if necessary Sample was taken from raw water spigot with no treatment. Well was purged for at least 30 minutes prior to sampling.

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [us/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1330	**7.48**	**-100.8**	**0.627**	**5.16**	**7.78 DO**	**NA**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen, Rachel Banasiak, and Tate Yulga
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number E15 Date sampled 6/28/16 Time 1340
Describe sampling point
Unique Well Number 207674

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = _____ Datum = _____ Water elevation = _____
Well depth (prior to sampling) = _____ feet below monitoring point (mp)
Depth to water (below mp) = _____ feet Date _____ Time _____
Well diameter = _____ inches Water level above screen? _____ No _____ Yes _____ feet
Volume of water in well = _____ gallons

PURGING INFORMATION:

Purging method: Bailer _____ Submersible pump _____ Tap _____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly _____ Other _____
Pump intake or bailer set at _____ feet below monitoring point (mp).
Discharge rate (if applicable) _____ gpm x 0.1336806 = _____ cfm
At least _____ well volumes evacuated before sampling, totaling _____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer _____ Tap _____ Other Municipal well Spigot (Grab)
Tubing type (if applicable): Teflon Dual tube Other _____
Bailer was: Disposable _____ Laboratory cleaned _____ Field cleaned _____ Other _____
Sample collected from _____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = _____ gpm
Sample appearance _____ Odor _____
Note any sampling observations if necessary Sample was taken from raw water spigot with no treatment. Well was purged for 30 minutes prior to sampling.

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [us/cm]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1340	**7.45**	**-100.4**	**0.583**	**6.69**	**3.61 DO**	**NA**

SAMPLING INFORMATION FORM

AECOM
800 LaSalle Avenue, Suite 500
Minneapolis MN 55402

Sampler's Name: Melissa Meeuwsen and Rachel Banasiak
Weather: Partly Cloudy, wind, 70's
Unusual Conditions
Project St. Louis Park EPA CLP Re-Sampling
Location St. Louis Park, MN
Project number 60508199
Sample ID number W403 Date sampled 6/28/16 Time 1040
Describe sampling point
Unique Well Number 439751

MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = Datum = Water elevation =
Well depth (prior to sampling) = 385 feet below monitoring point (mp)
Depth to water (below mp) = 68.96 feet Date 6/27/16 Time 0915
Well diameter = 4" (0.653) inches Water level above screen? ____ No ____ Yes ____ feet
Volume of water in well = 206.37 gallons

PURGING INFORMATION:

Purging method: Bailer ____ Submersible pump ____ Tap ____ Other Bladder Pump
Tubing type: Teflon Dual tube Black poly ____ Other ____
Pump intake or bailer set at ____ feet below monitoring point (mp).
Discharge rate (if applicable) ____ gpm x 0.1336806 = ____ cfm
At least ____ well volumes evacuated before sampling, totaling ____ gallons.

SAMPLING INFORMATION

Sampling method: Bailer ____ Tap ____ Other Bladder Pump
Tubing type (if applicable): Teflon Dual tube Other ____
Bailer was: Disposable ____ Laboratory cleaned ____ Field cleaned ____ Other ____
Sample collected from ____ feet below monitoring point. (mp)
Sample collection discharge rate (if applicable): = ____ gpm
Sample appearance Clear Odor None
Note any sampling observations if necessary Hydra-Sleeve was used for groundwater sampling. Field parameters may not be accurate due to minimal water left for YSI readings.

Metals field filtered? Yes No **Na**

Chemical Analysis **Volatile Organic Compounds (VOCs)**

Equipment Calibration **pH = 7,4,10,7 Conductivity = 1413 µs/cm @**

FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [µs/cu]	Temperature [°C]	Water Level/ **DO** (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
1045	**7.66**	**-111.9**	**0.341**	**15.39**	**NA /5.80**	**0.50**

Appendix D

ESAT Controlled Number: ESAT 5.1.5.741

DATE: August 4, 2016

Minnesota Pollution Control Agency
ATTN: **Mr. Mark Ostby**
520 Lafayette Road North
Saint Paul, MN 55155-4194

Site Name: **St. Louis Park Solvent Plume (MN) – level 3 data validation**

Case	Lab	Samples	SDG	Matrix
46284	KAP	13	E5QW7	Water

Analysis: Low/Med Volatiles

Upon receipt of data, please check each package for completeness and note any missing deliverables below.

PLEASE! Send this form back to Sylvia Griffin, Data Management Coordinator after filling in the blanks below.

Data Received by: Mark Ostby Date: 8/9/2016

PROBLEMS:
Please indicate if data is complete, and note if there are any deliverables missing from the cases noted above.

_____

_____

Received by Data Management Coordinator, CRL for file.

Signature:_____ Date:_____

FROM: **U.S. EPA - Region 5**
Sylvia Griffin
Chicago Regional Laboratory
536 S. Clark, 10th Floor
Chicago, IL 60605

Sent By: Megan Faba
Data Coordinator
ESAT Region 5 - **TechLaw**

ESAT Controlled Number: ESAT 5.1.5.744

DATE: August 11, 2016

Minnesota Pollution Control Agency
ATTN: **Mr. Mark Ostby**
520 Lafayette Road North
Saint Paul, MN 55155-4194

Site Name: **St. Louis Park Solvent Plume (MN) – level 3 data validation**

Case	Lab	Samples	SDG	Matrix
46247	Chemtech	5	E5FP4	water

Analysis: Trace Volatiles

Upon receipt of data, please check each package for completeness and note any missing deliverables below.

PLEASE! Send this form back to Sylvia Griffin, Data Management Coordinator after filling in the blanks below.

Data Received by: Mark Ostby Date: 8/17/16

PROBLEMS:
Please indicate if data is complete, and note if there are any deliverables missing from the cases noted above.

Received by Data Management Coordinator, CRL for file.

Signature:_____ Date:_____

FROM: **U.S. EPA - Region 5**
Sylvia Griffin
Chicago Regional Laboratory
536 S. Clark, 10th Floor
Chicago, IL 60605

Sent By: Megan Faba
Data Coordinator
ESAT Region 5 - **TechLaw**

ESAT Controlled Number: ESAT 5.1.5.748

DATE: August 16, 2016

Minnesota Pollution Control Agency
ATTN: **Mr. Mark Ostby**
520 Lafayette Road North
Saint Paul, MN 55155-4194

Site Name: **St. Louis Park Solvent Plume (MN) – level 3 data validation**

Case	Lab	Samples	SDG	Matrix
46284	KAP	18	E5QW5	Water

Analysis: Trace Volatiles

Upon receipt of data, please check each package for completeness and note any missing deliverables below.

PLEASE! Send this form back to Sylvia Griffin, Data Management Coordinator after filling in the blanks below.

Data Received by: Mark Ostby Date: 8/25/2016

PROBLEMS:
Please indicate if data is complete, and note if there are any deliverables missing from the cases noted above.

_____

_____

Received by Data Management Coordinator, CRL for file.

Signature:_____ Date:_____

FROM: **U.S. EPA - Region 5**
Sylvia Griffin
Chicago Regional Laboratory
536 S. Clark, 10th Floor
Chicago, IL 60605

Sent By: Megan Faba
Data Coordinator
ESAT Region 5 - **TechLaw**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: July 20, 2016

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: MPCA
Email Address: mark.ostby@state.mn.us

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

SITE Name: St. Louis Park Solvent Plume (MN)

Case No: 46284 MA No: NA SDG No: E5QW5

Number and Type of Samples: 18 Waters (18 Trace Volatiles)

Sample Numbers: E5QW5, E5QW6, E5QW9, E5QX2 – E5QX5, E5QX9, E5QY0, E5QY2, E5QY3, E5QY6, E5QY8, E5QY9, E5QZ0 – E5QZ3

Laboratory: KAP Technologies (KAP) Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Case No: 46284 SDG No: E5QW5
Site Name: St. Louis Park Solvent Plume (MN) Laboratory: KAP

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Eighteen (18) preserved water samples labeled E5QW5, E5QW6, E5QW9, E5QX2 through E5QX5, E5QX9, E5QY0, E5QY2, E5QY3, E5QY6, E5QY8, E5QY9, and E5QZ0 through E5QZ3; were shipped to KAP Technologies (KAP) located in The Woodlands, TX. All samples were collected June 27 and 28, 2016 and received June 29, 2016 intact and within the required temperature requirement of ≤ 6°C.

All samples were analyzed for the trace volatile list of target compounds. All samples were analyzed according to CLP SOW SOM02.3 (09/2015) and reviewed according to the August 2014 NFG for SOM02.2 (EPA-540-R-014-002), the document 'Summary of Changes: SOM02.2 to SOM02.3', and the Region 5 Organic CLP Validation SOP.

Sample E5QX9 (ZZ-0039) was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses. The laboratory chose to perform MS/MSD analysis on sample E5QW9 (ZZ-0049) because sample E5QX9 had analytes that exceed the calibration range.

Samples E5QY2 (ZZ-0052) and E5QY3 (ZZ-0053) were identified as trip blanks. Samples E5QX2 (ZZ-0042), E5QX3 (ZZ-0043), E5QX4 (ZZ-0044), and E5QX5 (ZZ-0045) were identified as equipment blanks. Samples E5QW5 (ZZ-0035) and E5QW6 (ZZ-0036) were each identified as a field duplicate based on station location but the Reviewer is unable to determine the corresponding samples.

Case No: 46284 SDG No: E5QW5
Site Name: St. Louis Park Solvent Plume (MN) Laboratory: KAP

1. PRESERVATION AND HOLDING TIMES

No problems were found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems were found.

3. INITIAL CALIBRATION

The following trace volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detects are qualified as estimated J. Nondetects are not qualified. Samples E5QW5DL and E5QX9DL are not reported in the EXES Sample Summary and Universal Deliverables.

E5QW5, E5QW5DL, E5QW6, E5QW9, E5QX2, E5QX3, E5QX4, E5QX5, E5QX9, E5QX9DL, E5QY0, E5QY2, E5QY3, E5QY6, E5QY8, E5QY9, E5QZ0, E5QZ1, E5QZ2, E5QZ3, VBLK88, VBLK90
1,2,4-Trichlorobenzene

E5QW9MS, E5QW9MSD, VBLK06, VHBLK01
Carbon tetrachloride

The following trace volatile samples are associated with an initial calibration with DMC percent relative standard deviation (%RSD) outside criteria. Detects are not qualified. Nondetects are not qualified.

E5QW5, E5QW5DL, E5QW6, E5QW9, E5QX2, E5QX3, E5QX4, E5QX5, E5QX9, E5QX9DL, E5QY0, E5QY2, E5QY3, E5QY6, E5QY8, E5QY9, E5QZ0, E5QZ1, E5QZ2, E5QZ3, VBLK88, VBLK90
1,2-Dichlorobenzene-d_4

4. CONTINUING CALIBRATION

The following trace volatile samples are associated with a closing CCV with % Difference exceeding criteria. There were no detects. Nondetects are qualified as estimated UJ. Samples E5QW5DL and E5QX9DL are not reported in the EXES Sample Summary and Universal Deliverables.

E5QW5DL, E5QX9DL, E5QZ0, E5QZ1, E5QZ2, E5QZ3, VBLK90
1,2-Dibromomethane

5. BLANKS

The following trace volatile samples have the same tentatively identified compounds (TIC) detected as in the associated method blank and exceed concentration criteria (0.5 µg/L). TIC results reported in the associated method blank exceed concentration criteria (0.5 µg/L). Detects are not qualified. Nondetects are not qualified. Sample E5QW5DL is not reported in the EXES Sample Summary and Universal Deliverables.

Unknown @ 2.06 – 2.08
E5QW5DL, E5QW9, E5QX2, E5QX5, E5QY2, E5QY9, E5QZ2, VHBLK01

The following trace volatile samples have the same tentatively identified compounds (TIC) detected as in the associated storage blank and exceed concentration criteria (0.5 µg/L). TIC results reported in the associated storage blank exceed concentration criteria (0.5 µg/L). Detects are not qualified. Nondetects are not qualified. Sample E5QW5DL is not reported in the EXES Sample Summary and Universal Deliverables.

Unknown @ 2.06 – 2.08
E5QW5DL, E5QW9, E5QX2, E5QX5, E5QY2, E5QY9, E5QZ2

The following trace volatile samples have the same tentatively identified compounds (TIC) detected as in the associated trip blank [E5QY2] and exceed concentration criteria (0.5 µg/L). TIC results reported in the associated trip blank [E5QY2] exceed concentration criteria (0.5 µg/L). Detects are not qualified. Nondetects are not qualified. See Section 16 for trip blank associations.

Unknown @ 2.06 – 2.08
E5QW9, E5QY9

The following trace volatile samples have the same tentatively identified compounds (TIC) detected as in the associated equipment blank [E5QX2 – E5QX5] and exceed concentration criteria (0.5 µg/L). TIC results reported in the associated equipment blank [E5QX2 – E5QX5] exceed concentration criteria (0.5 µg/L). Detects are not qualified. Nondetects are not qualified. See Section 16 for equipment blank associations.

CAS No. 275-51-4 Azulene
E5QW5, E5QW5DL

Unknown @ 2.06 – 2.08
E5QW5DL, E5QW9, E5QY9, E5QZ2

Unknown @ 16.01
E5QY0

6. DEUTERATED MONITORING COMPOUNDS / SURROGATES

The following trace volatile samples have DMC/surrogate recoveries less than the primary minimum criteria but greater than or equal to the expanded minimum criteria (10%). There were no detects. Nondetects are qualified as estimated UJ.

E5QW6, E5QZ1, E5QZ2
1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene

7. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample E5QX9 (ZZ-0039) was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses. The laboratory chose to perform MS/MSD analysis on sample E5QW9 (ZZ-0049) because sample E5QX9 had analytes that exceed the calibration range.

No problems were found.

8. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not applicable to the trace volatile analysis.

9. CLEAN UP PROCEDURES

Not applicable to the trace volatile analysis.

10. LABORATORY CONTROL SAMPLE

Not applicable to the trace volatile analysis.

11. INTERNAL STANDARD

No problems were found.

12. TARGET ANALYTE IDENTIFICATION

No problems were found.

13. REPORTED CONTRACT QUANTITATION LIMIT

The following trace volatile samples have analyte results greater than or equal to detection limit (MDL) and below quantitation limit (CRQL). Detects are qualified as estimated J.

E5QW5
Toluene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

E5QW9
Trichloroethene

E5QX9
1,2-Dichloroethane

E5QZ3
Benzene

VBLK88
Bromomethane

14. TENTATIVELY IDENTIFIED COMPOUNDS

Sample TIC results are identified in the separate NFG file 'Tentatively Identified Compounds'. The manually reviewed file is '46284.E5QW5.TIC.rtf'.

15. SYSTEM PERFORMANCE

No problems were found.

16. FIELD QC SAMPLES

No samples were identified as PE samples.

Samples E5QY2 (ZZ-0052) and E5QY3 (ZZ-0053) were identified as trip blanks. Field samples were compared against trip blanks based on cooler receipt. Trip blank associations are listed below and results summarized in the following table:

Trip Blank E5QY2
E5QW9, E5QW9MS, E5QW9MSD, E5QX9, E5QX9DL, E5QY0, E5QY9

Trip Blank E5QY3
E5QW5, E5QW5DL, E5QW6, E5QX2, E5QX3, E5QX4, E5QX5, E5QY6, E5QY8, E5QZ0, E5QZ1, E5QZ2, E5QZ3

Case No: 46284 SDG No: E5QW5
Site Name: St. Louis Park Solvent Plume (MN) Laboratory: KAP

Sample ID	**E5QY2**	**E5QY3**
Blank Type	Trip	Trip
DF	1	1
Units	µg/L	µg/L
%Solids	--	--
Station Location	T-BLANK 1	T-BLANK 2
Collection Date/Time	6/28/2016 07:00	6/27/2016 07:05
Trace Volatile Analytes	**E5QY2**	**E5QY3**
#TVOA TICs	1	0

Samples E5QX2 (ZZ-0042), E5QX3 (ZZ-0043), E5QX4 (ZZ-0044), and E5QX5 (ZZ-0045) were identified as equipment blanks. Field samples were compared to the nearest equipment blank both prior to and post sampling time. Equipment blank associations are listed below and results summarized in the following table:

Equipment Blank E5QX2
E5QW5, E5QW5DL, E5QY8, E5QZ0, E5QZ1, E5QZ2, E5QZ3

Equipment Blank E5QX3
E5QW5, E5QW5DL, E5QY8

Equipment Blank E5QX4
E5QY6

Equipment Blank E5QX5
E5QW6, E5QW9, E5QW9MS, E5QW9MSD, E5QX9, E5QX9DL, E5QY0, E5QY6, E5QY9

Sample ID	**E5QX2**	**E5QX3**	**E5QX4**	**E5QX5**
Blank Type	Equipment	Equipment	Equipment	Equipment
DF	1	1	1	1
Units	µg/L	µg/L	µg/L	µg/L
%Solids	--	--	--	--
Station Location	E-BLANK 1	E-BLANK 2	E-BLANK 3	E-BLANK 4
Collection Date/Time	6/27/2016 12:15	6/27/2016 15:10	6/27/2016 16:30	6/27/2016 17:45
Trace Volatile Analytes	**E5QX2**	**E5QX3**	**E5QX4**	**E5QX5**
Acetone	11	7.6	7.9	9.6
#TVOA TICs	2	4	1	2

Case No: 46284 SDG No: E5QW5
Site Name: St. Louis Park Solvent Plume (MN) Laboratory: KAP

Samples E5QW5 (ZZ-0035) and E5QW6 (ZZ-0036) were each identified as a field duplicate based on station location but the Reviewer is unable to determine the corresponding samples. Detects are summarized in the following tables:

Sample ID	**E5QW5**	**E5QW5DL**
DF	1	80
Units	µg/L	µg/L
%Solids	--	--
Station Location	DUP1	DUP1
Collection Date/Time	6/27/2016 15:05	6/27/2016 15:05
Trace Volatile Analytes	**E5QW5**	**E5QW5DL**
Vinyl chloride	120	140
1,1-Dichloroethene	2.9	Nondetect
trans-1,2-Dichloroethene	16	50
cis-1,2-Dichloroethene	400	690
Benzene	0.69	Nondetect
Trichloroethene	1.1	Nondetect
Toluene	0.37	Nondetect
Tetrachloroethene	0.51	Nondetect
Ethylbenzene	1.3	Nondetect
o-Xylene	0.79	Nondetect
m,p-Xylene	1.0	Nondetect
Isopropylbenzene	1.6	Nondetect
1,2,4-Trichlorobenzene	0.47	Nondetect
1,2,3-Trichlorobenzene	0.44	Nondetect
#TVOA TICs	8	4

Sample ID	**E5QW6**
DF	1
Units	µg/L
%Solids	--
Station Location	DUP2
Collection Date/Time	6/27/2016 20:00
Trace Volatile Analytes	**E5QW6**
Toluene	2.3
#TVOA TICs	1

There are currently no NFG guidelines for qualifying field duplicates or replicates other than to calculate RPDs.

17. OVERALL ASSESSMENT

Manual integrations were reviewed and found to be acceptable. No 'before' chromatograms were provided for any of the manual integrations. Detects are not qualified. Nondetects are not qualified.

EXES reports only one sample result per sample.

1) In instances where the sample was diluted, EXES reports only the detect from the dilution with its associated dilution factor.

TRACE VOLATILES

The following trace volatile samples have detects which exceed the instrument's calibration range. The samples were diluted and re-analyzed. Detects are not qualified. Nondetects are not qualified. EXES includes only the final reported results with the associated dilution factor in the Sample Summary Report and Universal Deliverable. Refer to the laboratory Form I for undiluted results.

E5QW5
Vinyl chloride, cis-1,2-Dichloroethene

E5QX9
cis-1,2-Dichloroethene

The following trace volatile samples have a Tentatively Identified Compound (TIC) identified by the laboratory as a known isomer of an added surrogate compound and considered a laboratory artifact. This TIC is removed from the 46284.E5QW5.TIC document and qualified 'No' in the Reportable column of the EXES Sample Summary Report and concentration values removed. Samples E5QW5DL and E5QX9DL are not reported in the EXES Sample Summary and Universal Deliverables. Copies of the chromatograms are included with the validation report.

CAS No. 463-71-8 cis-1,3-Dichloropropene-d_4
E5QW5, E5QW5DL, E5QW6, E5QW9, E5QX2, E5QX3, E5QX4, E5QX5, E5QX9, E5QX9DL, E5QY0, E5QY2, E5QY3, E5QY6, E5QY8, E5QY9, E5QZ0, E5QZ1, E5QZ2, E5QZ3, VBLK06, VBLK88, VBLK90, VHBLK01

The following trace volatile samples have a compound listed in the raw data that is a target analyte in the semivolatile analysis. The compound was not included on the laboratory Form 1B-OR, NFG file 'Tentatively Identified Compounds', EXES Sample Summary, or EXES Universal deliverable. Copies of the chromatograms are included with the validation report.

CAS No. 91-20-3 Naphthalene
E5QW6, E5QX4

CAS No. 91-57-6 2-Methylnaphthalene
E5QZ3

The following trace volatile samples have a compound listed in the raw data that is a target analyte in the semivolatile analysis. Copies of the chromatograms are included with the validation report.

CAS No. 92-52-4 Biphenyl [1,1'-Biphenyl]
E5QZ0, E5QZ3

Case No: 46284 SDG No: E5QW5
Site Name: St. Louis Park Solvent Plume (MN) Laboratory: KAP

Validation Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

Reviewed by: Christina Rice / TechLaw-ESAT
Date: August 12, 2016

Edit History Report

Case No: 46284 Contract: EPW14031 SDG No: E5QW5 Lab Code: KAP

Method: Trace Volatiles

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
E5QW5	Water	1,2-Dibromoethane	Validation Flag	UJ	U	Christina Rice	8/12/16 9:36 AM	
E5QW5	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:46 PM	
E5QW5	Water	cis-1,3-dichloropropene-d4	Validated Result	6.2		Christina Rice	8/8/16 6:46 PM	
E5QW5	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJB		Christina Rice	8/8/16 6:46 PM	
E5QW6	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:48 PM	
E5QW6	Water	cis-1,3-dichloropropene-d4	Validated Result	5.7		Christina Rice	8/8/16 6:48 PM	
E5QW6	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:48 PM	
E5QW9	Water	Unknown-01	Validation Flag	JB	J	Christina Rice	8/8/16 6:50 PM	
E5QW9	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:50 PM	
E5QW9	Water	cis-1,3-dichloropropene-d4	Validated Result	6.1		Christina Rice	8/8/16 6:50 PM	
E5QW9	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:50 PM	
E5QX2	Water	Unknown-01	Validation Flag	JB	J	Christina Rice	8/8/16 6:51 PM	
E5QX2	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:51 PM	
E5QX2	Water	cis-1,3-dichloropropene-d4	Validated Result	6.1		Christina Rice	8/8/16 6:51 PM	
E5QX2	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:51 PM	
E5QX3	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:52 PM	
E5QX3	Water	cis-1,3-dichloropropene-d4	Validated Result	5.9		Christina Rice	8/8/16 6:52 PM	
E5QX3	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJB		Christina Rice	8/8/16 6:52 PM	
E5QX4	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:53 PM	
E5QX4	Water	cis-1,3-dichloropropene-d4	Validated Result	5.8		Christina Rice	8/8/16 6:53 PM	
E5QX4	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJB		Christina Rice	8/8/16 6:53 PM	
E5QX5	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:54 PM	
E5QX5	Water	cis-1,3-dichloropropene-d4	Validated Result	6.0		Christina Rice	8/8/16 6:54 PM	
E5QX5	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:54 PM	
E5QX9	Water	1,2-Dibromoethane	Validation Flag	UJ	U	Christina Rice	8/12/16 9:37 AM	
E5QX9	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:55 PM	
E5QX9	Water	cis-1,3-dichloropropene-d4	Validated Result	5.9		Christina Rice	8/8/16 6:55 PM	
E5QX9	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:55 PM	
E5QY0	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:56 PM	
E5QY0	Water	cis-1,3-dichloropropene-d4	Validated Result	5.9		Christina Rice	8/8/16 6:56 PM	
E5QY0	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:56 PM	
E5QY2	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:57 PM	
E5QY2	Water	cis-1,3-dichloropropene-d4	Validated Result	6.0		Christina Rice	8/8/16 6:57 PM	
E5QY2	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:57 PM	
E5QY3	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:58 PM	
E5QY3	Water	cis-1,3-dichloropropene-d4	Validated Result	6.2		Christina Rice	8/8/16 6:58 PM	

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
E5QY3	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJB		Christina Rice	8/8/16 6:58 PM	
E5QY6	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:58 PM	
E5QY6	Water	cis-1,3-dichloropropene-d4	Validated Result	5.8		Christina Rice	8/8/16 6:58 PM	
E5QY6	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:58 PM	
E5QY8	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 6:59 PM	
E5QY8	Water	cis-1,3-dichloropropene-d4	Validated Result	5.8		Christina Rice	8/8/16 6:59 PM	
E5QY8	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 6:59 PM	
E5QY9	Water	Unknown-01	Validation Flag	JB	J	Christina Rice	8/8/16 7:00 PM	
E5QY9	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:00 PM	
E5QY9	Water	cis-1,3-dichloropropene-d4	Validated Result	5.8		Christina Rice	8/8/16 7:00 PM	
E5QY9	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 7:00 PM	
E5QZ0	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:01 PM	
E5QZ0	Water	cis-1,3-dichloropropene-d4	Validated Result	5.5		Christina Rice	8/8/16 7:01 PM	
E5QZ0	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJB		Christina Rice	8/8/16 7:01 PM	
E5QZ1	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:01 PM	
E5QZ1	Water	cis-1,3-dichloropropene-d4	Validated Result	5.9		Christina Rice	8/8/16 7:01 PM	
E5QZ1	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJB		Christina Rice	8/8/16 7:01 PM	
E5QZ2	Water	Unknown-01	Validation Flag	JB	J	Christina Rice	8/8/16 7:02 PM	
E5QZ2	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:02 PM	
E5QZ2	Water	cis-1,3-dichloropropene-d4	Validated Result	6.0		Christina Rice	8/8/16 7:02 PM	
E5QZ2	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 7:02 PM	
E5QZ3	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:02 PM	
E5QZ3	Water	cis-1,3-dichloropropene-d4	Validated Result	6.0		Christina Rice	8/8/16 7:02 PM	
E5QZ3	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJB		Christina Rice	8/8/16 7:02 PM	
VBLK06	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:03 PM	
VBLK06	Water	cis-1,3-dichloropropene-d4	Validated Result	5.9		Christina Rice	8/8/16 7:03 PM	
VBLK06	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 7:03 PM	
VBLK88	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:04 PM	
VBLK88	Water	cis-1,3-dichloropropene-d4	Validated Result	6.5		Christina Rice	8/8/16 7:04 PM	
VBLK88	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 7:04 PM	
VBLK90	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:05 PM	
VBLK90	Water	cis-1,3-dichloropropene-d4	Validated Result	6.1		Christina Rice	8/8/16 7:05 PM	
VBLK90	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 7:05 PM	
VHBLK01	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Christina Rice	8/8/16 7:05 PM	
VHBLK01	Water	cis-1,3-dichloropropene-d4	Validated Result	5.0		Christina Rice	8/8/16 7:05 PM	
VHBLK01	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Christina Rice	8/8/16 7:05 PM	

Sample Summary Report

Case No:	46284	Contract:	EPW14031	SDG No:	E5QW5	Lab Code:	KAP

Sample Number:	E5QW5	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	DUP 1	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	15:05:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	140		ug/L	140	D	80.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	2.9		ug/L	2.9		1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	16		ug/L	16		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	690		ug/L	690	D	80.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.69		ug/L	0.69		1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	1.1		ug/L	1.1		1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.37	J	ug/L	0.37	J	1.0	Yes	S3VE
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.51		ug/L	0.51		1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	1.3		ug/L	1.3		1.0	Yes	S3VE
o-Xylene	Target	0.79		ug/L	0.79		1.0	Yes	S3VE
m,p-Xylene	Target	1.0		ug/L	1.0		1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	1.6		ug/L	1.6		1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.47	J	ug/L	0.47	J	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.44	J	ug/L	0.44	J	1.0	Yes	S3VE
Benzene, 1-ethenyl-3-ethyl-	TIC	9.0	NJ	ug/L	9.0	NJ	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	6.2	NJB	1.0	No	NV
Benzene, 1,2,3-trimethyl-	TIC	8.1	NJ	ug/L	8.1	NJ	1.0	Yes	NV
Indane	TIC	46	NJ	ug/L	46	NJ	1.0	Yes	NV
Benzofuran, 7-methyl-	TIC	7.5	NJ	ug/L	7.5	NJ	1.0	Yes	NV
Benzene, 1-ethenyl-4-ethyl-	TIC	11	NJ	ug/L	11	NJ	1.0	Yes	NV
Benzene, 2-butenyl-	TIC	19	NJ	ug/L	19	NJ	1.0	Yes	NV
Azulene	TIC	200	NJ	ug/L	200	NJ	1.0	Yes	NV
2-Methylindene	TIC	7.4	NJ	ug/L	7.4	NJ	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QW6	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	DUP 2	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	20:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	2.3		ug/L	2.3		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	0.71	J	ug/L	0.71	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	5.7	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QW9	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	E15	pH:	2.0	Sample Date:	06/28/2016	Sample Time:	13:40:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.96		ug/L	0.96		1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	2.8		ug/L	2.8		1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.40	J	ug/L	0.40	J	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-02	TIC	0.52	J	ug/L	0.52	J	1.0	Yes	NV
Unknown-01	TIC	0.81	J	ug/L	0.81	JB	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	6.1	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: E5QW9MS	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH: 2.0	Sample Date: 06/28/2016	Sample Time: 13:40:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Spike	3.3		ug/L	3.3		1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.92		ug/L	0.92		1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	3.0		ug/L	3.0		1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Spike	4.5		ug/L	4.5		1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Spike	4.6		ug/L	4.6		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Spike	4.8		ug/L	4.8		1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: E5QW9MSD	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH: 2.0	Sample Date: 06/28/2016	Sample Time: 13:40:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Spike	3.7		ug/L	3.7		1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	1.1		ug/L	1.1		1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	3.4		ug/L	3.4		1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Spike	4.5		ug/L	4.5		1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Spike	4.6		ug/L	4.6		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QX2	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	E-BLANK 1	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	12:15:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	11		ug/L	11		1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	6.1	NJ	1.0	No	NV
Unknown-01	TIC	1.3	J	ug/L	1.3	JB	1.0	Yes	NV
Unknown-02	TIC	0.80	J	ug/L	0.80	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QX3	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	E-BLANK 2	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	15:10:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	7.6		ug/L	7.6		1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Naphthalene, 1-methyl-	TIC	1.4	NJ	ug/L	1.4	NJ	1.0	Yes	NV
Unknown-02	TIC	1.3	J	ug/L	1.3	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	5.9	NJB	1.0	No	NV
Azulene	TIC	2.1	NJ	ug/L	2.1	NJ	1.0	Yes	NV
Unknown-01	TIC	2.1	J	ug/L	2.1	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QX4	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	E-BLANK 3	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	16:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	7.9		ug/L	7.9		1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	5.8	NJB	1.0	No	NV
Unknown-01	TIC	1.9	J	ug/L	1.9	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QX5	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	E-BLANK 4	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	17:45:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	9.6		ug/L	9.6		1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	0.97	J	ug/L	0.97	J	1.0	Yes	NV
Unknown-02	TIC	1.5	J	ug/L	1.5	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	6.0	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QX9	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	SLP4	pH:	2.0	Sample Date:	06/28/2016	Sample Time:	08:50:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.69		ug/L	0.69		1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	4.4		ug/L	4.4		1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.56		ug/L	0.56		1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	3.3		ug/L	3.3		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.72		ug/L	0.72		1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	37		ug/L	37	D	4.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.86		ug/L	0.86		1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.28	J	ug/L	0.28	J	1.0	Yes	S3VE
Trichloroethene	Target	3.0		ug/L	3.0		1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Fluorodichloromethane	TIC	2.2	NJ	ug/L	2.2	NJ	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	5.9	NJ	1.0	No	NV
Unknown-01	TIC	1.1	J	ug/L	1.1	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QY0	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	SLP5	pH:	2.0	Sample Date:	06/28/2016	Sample Time:	09:40:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	4.5		ug/L	4.5		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	4.2		ug/L	4.2		1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.96		ug/L	0.96		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	5.9	NJ	1.0	No	NV
Unknown-01	TIC	0.94	J	ug/L	0.94	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QY2	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	T-BLANK 1	pH:	2.0	Sample Date:	06/28/2016	Sample Time:	07:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	0.74	J	ug/L	0.74	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	6.0	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: E5QY3	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location: T-BLANK 2	pH: 2.0	Sample Date: 06/27/2016	Sample Time: 07:05:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	6.2	NJB	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QY6	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	W133	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	19:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	4.2		ug/L	4.2		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	0.80	J	ug/L	0.80	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	5.8	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QY8	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	W27	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	13:40:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	7.1		ug/L	7.1		1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.65		ug/L	0.65		1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Indane	TIC	19	NJ	ug/L	19	NJ	1.0	Yes	NV
Benzofuran, 7-methyl-	TIC	2.5	NJ	ug/L	2.5	NJ	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	5.8	NJ	1.0	No	NV
Unknown-01	TIC	1.9	J	ug/L	1.9	J	1.0	Yes	NV
Unknown-02	TIC	1.4	J	ug/L	1.4	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: E5QY9	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location: W403	pH: 2.0	Sample Date: 06/28/2016	Sample Time: 10:40:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	5.8	NJ	1.0	No	NV
Unknown-01	TIC	0.89	J	ug/L	0.89	JB	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: E5QZ0	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location: W423	pH: 2.0	Sample Date: 06/27/2016	Sample Time: 10:40:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	1.0	J	ug/L	1.0	J	1.0	Yes	NV
Naphthalene, 1-methyl-	TIC	2.3	NJ	ug/L	2.3	NJ	1.0	Yes	NV
Benzene, 2-ethenyl-1,4-dimethyl-	TIC	1.5	NJ	ug/L	1.5	NJ	1.0	Yes	NV
Biphenyl	TIC	1.4	NJ	ug/L	1.4	NJ	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	5.5	NJB	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QZ1	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	W424	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	10:05:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	5.9	NJB	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: E5QZ2	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location: W425	pH: 2.0	Sample Date: 06/27/2016	Sample Time: 11:50:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	6.0	NJ	1.0	No	NV
Unknown-01	TIC	1.3	J	ug/L	1.3	JB	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number:	E5QZ3	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	W426	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	12:05:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.42	J	ug/L	0.42	J	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	3.8		ug/L	3.8		1.0	Yes	S3VE
o-Xylene	Target	2.0		ug/L	2.0		1.0	Yes	S3VE
m,p-Xylene	Target	1.1		ug/L	1.1		1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	1.4		ug/L	1.4		1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene, (1-methyl-1-propenyl)-, (E)-	TIC	7.6	NJ	ug/L	7.6	NJ	1.0	Yes	NV
Indane	TIC	24	NJ	ug/L	24	NJ	1.0	Yes	NV
Benzene, 1-ethyl-2-methyl-	TIC	3.9	NJ	ug/L	3.9	NJ	1.0	Yes	NV
Unknown-01	TIC	5.6	J	ug/L	5.6	J	1.0	Yes	NV
Indene	TIC	6.7	NJ	ug/L	6.7	NJ	1.0	Yes	NV
Benzene, (1-methyl-2-cyclopropen-1-yl)-	TIC	4.8	NJ	ug/L	4.8	NJ	1.0	Yes	NV
Benzene, 1-ethyl-3-methyl-	TIC	3.5	NJ	ug/L	3.5	NJ	1.0	Yes	NV
Benzene, 1-ethyl-2,4-dimethyl-	TIC	3.8	NJ	ug/L	3.8	NJ	1.0	Yes	NV
1H-Indene, 1-methyl-	TIC	5.7	NJ	ug/L	5.7	NJ	1.0	Yes	NV
Benzene, 1,2,3,4-tetramethyl-	TIC	5.2	NJ	ug/L	5.2	NJ	1.0	Yes	NV
Biphenyl	TIC	2.6	NJ	ug/L	2.6	NJ	1.0	Yes	NV
Benzene, 1,2,3-trimethyl-	TIC	3.4	NJ	ug/L	3.4	NJ	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	6.0	NJB	1.0	No	NV
Benzene, 1,3,5-trimethyl-	TIC	2.8	NJ	ug/L	2.8	NJ	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: VBLK06	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	1.1	J	ug/L	1.1	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	5.9	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: VBLK88	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.30	J	ug/L	0.30	J	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	6.5	NJ	1.0	No	NV
Unknown-01	TIC	1.1	J	ug/L	1.1	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: VBLK90	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	6.1	NJ	1.0	No	NV
Unknown-01	TIC	0.95	J	ug/L	0.95	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW5	Lab Code: KAP

Sample Number: VHBLK01	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	1.6	J	ug/L	1.6	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	5.0	NJ	1.0	No	NV

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QW5** **Location = DUP 1** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
000526-73-8	Benzene, 1,2,3-trimethyl-	13.67	8.1	ug/L	NJ
000496-11-7	Indane	14.18	46	ug/L	NJ
007525-62-4	Benzene, 1-ethenyl-3-ethyl-	14.68	9.0	ug/L	NJ
017059-52-8	Benzofuran, 7-methyl-	14.98	7.5	ug/L	NJ
003454-07-7	Benzene, 1-ethenyl-4-ethyl-	15.15	11	ug/L	NJ
001560-06-1	Benzene, 2-butenyl-	15.30	19	ug/L	NJ
002177-47-1	2-Methylindene	15.42	7.4	ug/L	NJ
000275-51-4	Azulene	16.01	200	ug/L	NJ

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QW6** **Location = DUP 2** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.39	0.71	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QW9** **Location = E15** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.06	0.81	ug/L	JB
Unknown-02	Unknown-02	2.39	0.52	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QX2** **Location = E-BLANK 1** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-02	Unknown-02	14.88	0.80	ug/L	J
Unknown-01	Unknown-01	2.06	1.3	ug/L	JB

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QX3** **Location = E-BLANK 2** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	14.89	2.1	ug/L	J
Unknown-02	Unknown-02	15.89	1.3	ug/L	J
000275-51-4	Azulene	16.01	2.1	ug/L	NJ
000090-12-0	Naphthalene, 1-methyl-	17.40	1.4	ug/L	NJ

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QX4** **Location = E-BLANK 3** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	14.88	1.9	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QX5** **Location = E-BLANK 4** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-02	Unknown-02	16.01	1.5	ug/L	J
Unknown-01	Unknown-01	2.05	0.97	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QX9** **Location = SLP4** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	14.88	1.1	ug/L	J
000075-43-4	Fluorodichloromethane	2.21	2.2	ug/L	NJ

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QY0** **Location = SLP5** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	16.01	0.94	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QY2** **Location = T-BLANK 1** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.07	0.74	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QY3** **Location = T-BLANK 2** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QY6** **Location = W133** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.44	0.80	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QY8** **Location = W27** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
000496-11-7	Indane	14.19	19	ug/L	NJ
Unknown-01	Unknown-01	14.68	1.9	ug/L	J
017059-52-8	Benzofuran, 7-methyl-	14.98	2.5	ug/L	NJ
Unknown-02	Unknown-02	15.55	1.4	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QY9** **Location = W403** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.06	0.89	ug/L	JB

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QZ0** **Location = W423** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	14.18	1.0	ug/L	J
002039-89-6	Benzene, 2-ethenyl-1,4-dimethyl-	15.15	1.5	ug/L	NJ
000090-12-0	Naphthalene, 1-methyl-	17.40	2.3	ug/L	NJ
000092-52-4	Biphenyl	18.05	1.4	ug/L	NJ

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QZ1** **Location = W424** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QZ2** **Location = W425** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.07	1.3	ug/L	JB

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	SDG: E5QW5	Contract: EPW14031	Submission Group Id: 30161376
Lab Name: KAP Technologies Inc	Case: 46284	Client: EPA Region 5	SOW: SOM02.3

Trace Volatiles **Sample = E5QZ3** **Location = W426** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
000611-14-3	Benzene, 1-ethyl-2-methyl-	13.21	3.9	ug/L	NJ
000108-67-8	Benzene, 1,3,5-trimethyl-	13.30	2.8	ug/L	NJ
000620-14-4	Benzene, 1-ethyl-3-methyl-	13.50	3.5	ug/L	NJ
000526-73-8	Benzene, 1,2,3-trimethyl-	13.67	3.4	ug/L	NJ
000496-11-7	Indane	14.18	24	ug/L	NJ
000874-41-9	Benzene, 1-ethyl-2,4-dimethyl-	14.26	3.8	ug/L	NJ
000095-13-6	Indene	14.47	6.7	ug/L	NJ
Unknown-01	Unknown-01	14.98	5.6	ug/L	J
000768-00-3	Benzene, (1-methyl-1-propenyl)-, (E)-	15.15	7.6	ug/L	NJ
000488-23-3	Benzene, 1,2,3,4-tetramethyl-	15.32	5.2	ug/L	NJ
065051-83-4	Benzene, (1-methyl-2-cyclopropen-1-yl)-	15.42	4.8	ug/L	NJ
000767-59-9	1H-Indene, 1-methyl-	15.55	5.7	ug/L	NJ
000092-52-4	Biphenyl	18.05	2.6	ug/L	NJ

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = VBLK06** **Location = null** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.06	1.1	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = VBLK88** **Location = null** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.06	1.1	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = VBLK90** **Location = null** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.07	0.95	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 16:01:01

Lab Code: KAP	**SDG: E5QW5**	**Contract: EPW14031**	**Submission Group Id: 30161376**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = VHBLK01** **Location = null** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.08	1.6	ug/L	J

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: July 20, 2016

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: MPCA
Email Address: mark.ostby@state.mn.us

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

SITE Name: St. Louis Park Solvent Plume (MN)

Case No: 46284 MA No: NA SDG No: E5QW7

Number and Type of Samples: 13 Waters (13 Low/Med Volatiles)

Sample Numbers: E5QW7, E5QW8, E5QX0, E5QX1, E5QX6 – E5QX8, E5QY5, E5QY7, E5QZ4 – E5QZ7

Laboratory: KAP Technologies (KAP) Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Case No: 46284 SDG No: E5QW7
Site Name: St. Louis Park Solvent Plume (MN) Laboratory: KAP

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Thirteen (13) preserved water samples labeled E5QW7, E5QW8, E5QX0, E5QX1, E5QX6 through E5QX8, E5QY5, E5QY7, and E5QZ4 through E5QZ7; were shipped to KAP Technologies (KAP) located in The Woodlands, TX. All samples were collected June 27 and 28, 2016 and received June 29, 2016 intact and within the required temperature requirement of ≤ 6°C.

All samples were analyzed for the low/med volatile list of target compounds. All samples were analyzed according to CLP SOW SOM02.3 (09/2015) and reviewed according to the August 2014 NFG for SOM02.2 (EPA-540-R-014-002), the document 'Summary of Changes: SOM02.2 to SOM02.3', and the Region 5 Organic CLP Validation SOP.

Sample E5QY5 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses.

No samples were identified as trip blanks or field blanks. Samples E5QW7 (ZZ-0037) and E5QW8 (ZZ-0038) were each identified as a field duplicate based on station location but the Reviewer is unable to determine the corresponding samples.

Case No: 46284 SDG No: E5QW7
Site Name: St. Louis Park Solvent Plume (MN) Laboratory: KAP

1. PRESERVATION AND HOLDING TIMES

No problems were found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems were found.

3. INITIAL CALIBRATION

The following volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. There were no detects. Nondetects are not qualified. Samples E5QW7DL, E5QW8DL, E5QX6DL, E5QX7DL, E5QX8DL, E5QY7DL, E5QZ4DL, E5QZ5DL, E5QZ6DL, and E5QZ7DL are not reported in the EXES Sample Summary and Universal Deliverables.

E5QW7, E5QW7DL, E5QW8, E5QW8DL, E5QX0, E5QX1, E5QX6, E5QX6DL, E5QX7, E5QX7DL, E5QX8, E5QX8DL, E5QY5, E5QY5MS, E5QY5MSD, E5QY7, E5QY7DL, E5QZ4, E5QZ4DL, E5QZ5, E5QZ5DL, E5QZ6, E5QZ6DL, E5QZ7, E5QZ7DL, VBLK7G, VBLK7J, VBLK7L, VBLK7N, VHBLK01
1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

4. CONTINUING CALIBRATION

The following volatile samples are associated with an opening CCV with DMC RRF exceeding criteria. Detects are not qualified. Nondetects are not qualified. Sample E5QW8DL is not reported in the EXES Sample Summary and Universal Deliverables.

E5QW7, E5QW8, E5QW8DL, E5QX0, E5QX1, E5QX6, E5QX7, E5QY5, E5QY7, VBLK7G
Benzene-d_6

5. BLANKS

The following volatile samples have the same tentatively identified compounds (TIC) detected as in the associated storage blank and exceed concentration criteria (5.0 µg/L). TIC results reported in the associated storage blank exceed concentration criteria (5.0 µg/L). Detects are not qualified. Nondetects are not qualified. Samples E5QW8DL, E5QX8DL, and E5QZ4DL are not reported in the EXES Sample Summary and Universal Deliverables.

Unknown @ 4.84 – 4.90
E5QW8DL, E5QX0, E5QX6, E5QX8DL, E5QZ4DL, E5QZ7

Unknown @ 17.79
E5QW8

6. DEUTERATED MONITORING COMPOUNDS / SURROGATES

The following volatile samples have DMC/surrogate percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Nondetects are not qualified. Samples E5QX6DL and E5QY7DL are not reported in the EXES Sample Summary and Universal Deliverables.

E5QX6DL
Dichlorodifluoromethane, Chloromethane, Bromomethane, Chloroethane, Acetone, Carbon disulfide, 2-Butanone

E5QY7, E5QZ5
1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene

E5QY7DL
Acetone, 2-Butanone

7. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample E5QY5 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses.

The relative percent difference (RPD) between the following volatile matrix spike and matrix spike duplicate recoveries is outside criteria. Detects in the unspiked parent sample are qualified as estimated J. Nondetects are not qualified.

E5QY5MS, E5QY5MSD
1,1-Dichloroethene, Benzene, Trichloroethene, Toluene, Chlorobenzene

The following volatile matrix spike/matrix spike duplicate samples have percent recoveries greater than or equal to the expanded minimum criteria but less than the primary minimum criteria. There were no detects in the unspiked parent sample. Nondetects are qualified as estimated UJ.

E5QY5MS
Trichloroethene

8. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not applicable to the low/med volatile analysis.

9. CLEAN UP PROCEDURES

Not applicable to the low/med volatile analysis.

10. LABORATORY CONTROL SAMPLE

Not applicable to the low/med volatile analysis.

11. INTERNAL STANDARD

No problems were found.

12. TARGET ANALYTE IDENTIFICATION

No problems were found.

13. REPORTED CONTRACT QUANTITATION LIMIT

The following volatile samples have analyte results greater than or equal to detection limit (MDL) and below quantitation limit (CRQL). Detects are qualified as estimated J. Samples E5QW7DL, E5QX6DL, E5QX7DL, E5QX8DL, E5QZ4DL, and E5QZ5DL are not reported in the EXES Sample Summary and Universal Deliverables.

E5QW7, E5QX7
m,p-Xylene

E5QW7DL, E5QX7DL, E5QZ4DL, E5QZ7
trans-1,2-Dichloroethene, Benzene

E5QX0
cis-1,2-Dichloroethene

E5QX6DL, E5QZ5DL
trans-1,2-Dichloroethene

E5QX8
Benzene

E5QX8DL
Vinyl chloride

14. TENTATIVELY IDENTIFIED COMPOUNDS

Sample TIC results are identified in the separate NFG file ‘Tentatively Identified Compounds’. The manually reviewed file is ‘46284.E5QW7.TIC.rtf’.

15. SYSTEM PERFORMANCE

No problems were found.

16. FIELD QC SAMPLES

No samples were identified as trip blanks, field blanks, or PE samples.

Samples E5QW7 (ZZ-0037) and E5QW8 (ZZ-0038) were each identified as a field duplicate based on station location but the Reviewer is unable to determine the corresponding samples. Detects are summarized in the following tables:

Sample ID	**E5QW7**	**E5QW7DL**
DF	1	10
Units	µg/L	µg/L
%Solids	--	--
Station Location	DUP3	DUP3
Collection Date/Time	6/27/2016 15:15	6/27/2016 15:15
Volatile Analytes	**E5QW7**	**E5QW7DL**
Vinyl chloride	490	440
trans-1,2-Dichloroethene	44	39
cis-1,2-Dichloroethene	1000	1100
Benzene	37	34
o-Xylene	7.6	Nondetect
m,p-Xylene	3.6	Nondetect
#VOA TICs	4	1

Sample ID	**E5QW8**	**E5QW8DL**
DF	1	20
Units	µg/L	µg/L
%Solids	--	--
Station Location	DUP4	DUP4
Collection Date/Time	6/27/2016 16:35	6/27/2016 16:35
Volatile Analytes	**E5QW8**	**E5QW8DL**
Vinyl chloride	70	Nondetect
trans-1,2-Dichloroethene	28	Nondetect
cis-1,2-Dichloroethene	1800	1900
#VOA TICs	2	2

There are currently no NFG guidelines for qualifying field duplicates or replicates other than to calculate RPDs.

17. OVERALL ASSESSMENT

Manual integrations were reviewed and found to be acceptable. No 'before' chromatograms were provided for any of the manual integrations. Detects are not qualified. Nondetects are not qualified.

EXES reports only one sample result per sample.

1) In instances where the sample was diluted, EXES reports only the detect from the dilution with its associated dilution factor.

LOW/MED VOLATILES

The following volatile samples have detects which exceed the instrument's calibration range. The samples were diluted and re-analyzed. Detects are not qualified. Nondetects are not qualified. Ultimately, detected cis-1,2-Dichloroethene in samples E5QZ5 and E5QY7 and detected trans-1,2-Dichloroethene in sample E5QY7 are qualified estimated J+ for surrogate/DMC criteria. EXES includes only the final reported results with the associated dilution factor in the Sample Summary Report and Universal Deliverable. Refer to the laboratory Form I for undiluted results.

E5QW7, E5QX6, E5QX7
Vinyl chloride, cis-1,2-Dichloroethene

E5QW8, E5QX8, E5QZ4, E5QZ5, E5QZ6, E5QZ7
cis-1,2-Dichloroethene

E5QY7
Vinyl chloride, trans-1,2-Dichloroethene , cis-1,2-Dichloroethene

The following volatile samples have a Tentatively Identified Compound (TIC) identified by the laboratory as a known isomer of an added surrogate compound and considered a laboratory artifact. This TIC is removed from the 46284.E5QW7.TIC document and qualified 'No' in the Reportable column of the EXES Sample Summary Report and concentration values removed. Samples E5QW7DL, E5QW8DL, E5QX6DL, E5QX7DL, E5QX8DL, E5QY7DL, E5QZ4DL, E5QZ5DL, E5QZ6DL, and E5QZ7DL are not reported in the EXES Sample Summary and Universal Deliverables. Copies of the chromatograms are included with the validation report.

CAS No. 463-71-8 cis-1,3-Dichloropropene-d_4
E5QW7, E5QW7DL, E5QW8, E5QW8DL, E5QX0, E5QX1, E5QX6, E5QX6DL, E5QX7, E5QX7DL, E5QX8, E5QX8DL, E5QY5, E5QY7, E5QY7DL, E5QZ4, E5QZ4DL, E5QZ5, E5QZ5DL, E5QZ6, E5QZ6DL, E5QZ7, E5QZ7DL, VBLK7G, VBLK7J, VBLK7L, VBLK7N, VHBLK01

The following volatile samples have Tentatively Identified Compounds (TICs) that are common laboratory contaminants (septum or column bleed). These TICs are removed from the

46284.E5QW7.TIC document and qualified 'No' in the Reportable column of the EXES Sample Summary Report and concentration values removed. Copies of the chromatograms are included with the validation report.

CAS No. 541-05-9 Cyclotrisiloxane, hexamethyl-
E5QW8, E5QX0, E5QX1, E5QY5, E5QY7

CAS No. 556-67-2 Cyclotetrasiloxane, octamethyl-
E5QW8, E5QX0, E5QX1, E5QX6, E5QY5, E5QY7, E5QZ5

The following volatile samples have a compound listed in the raw data that is a target analyte in the semivolatile analysis. The compound was not included on the laboratory Form 1B-OR, NFG file 'Tentatively Identified Compounds', EXES Sample Summary, or EXES Universal deliverable. Sample E5QZ6DL is not reported in the EXES Sample Summary and Universal Deliverables. Copies of the chromatograms are included with the validation report.

CAS No. 91-20-3 Naphthalene
E5QZ6, E5QZ6DL

The Sample Summary Report and Universal Deliverable included a "B" laboratory qualification flags as a validation flag. The "B" flags were removed by the Reviewer. See Section 5 for blank qualifications.

Unknown @ 4.89
E5QX0, E5QX6

Case No: 46284 SDG No: E5QW7
Site Name: St. Louis Park Solvent Plume (MN) Laboratory: KAP

Validation Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

Reviewed by: Christina Rice / TechLaw-ESAT
Date: August 1, 2016

Sample Summary Report

Case No:	46284	Contract:	EPW14031	SDG No:	E5QW7	Lab Code:	KAP

Sample Number:	E5QW7	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	DUP 3	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	15:15:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	440		ug/L	440	D	10.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	44		ug/L	44		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	1100		ug/L	1100	D	10.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	37		ug/L	37		1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	7.6		ug/L	7.6		1.0	Yes	S3VE
m,p-Xylene	Target	3.6	J	ug/L	3.6	J	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	41	NJB	1.0	No	NV
Benzofuran, 2-methyl-	TIC	12	NJ	ug/L	12	NJ	1.0	Yes	NV
Benzene, 1-ethenyl-3-ethyl-	TIC	17	NJ	ug/L	17	NJ	1.0	Yes	NV
Benzene, 1-ethyl-4-methyl-	TIC	11	NJ	ug/L	11	NJ	1.0	Yes	NV
Indane	TIC	130	NJ	ug/L	130	NJ	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number:	E5QW8	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	DUP 4	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	16:35:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	70		ug/L	70		1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	28		ug/L	28		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	1900		ug/L	1900	D	20.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Unknown-02	TIC	19	J	ug/L	19	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	48	NJB	1.0	No	NV
Cyclotrisiloxane, hexamethyl-	TIC			ug/L	10	NJ	1.0	No	NV
Unknown-01	TIC	12	J	ug/L	12	J	1.0	Yes	NV
Cyclotetrasiloxane, octamethyl-	TIC			ug/L	11	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: E5QX0	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location: E2	pH: 2.0	Sample Date: 06/28/2016	Sample Time: 13:15:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	3.3	J	ug/L	3.3	J	1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclotetrasiloxane, octamethyl-	TIC			ug/L	8.1	NJ	1.0	No	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	44	NJ	1.0	No	NV
Unknown-01	TIC	7.5	J	ug/L	7.5	JB	1.0	Yes	NV
Cyclotrisiloxane, hexamethyl-	TIC			ug/L	6.0	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number:	E5QX1	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	E7	pH:	2.0	Sample Date:	06/28/2016	Sample Time:	13:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	26		ug/L	26		1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclotrisiloxane, hexamethyl-	TIC			ug/L	6.7	NJ	1.0	No	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	35	NJB	1.0	No	NV
Cyclotetrasiloxane, octamethyl-	TIC			ug/L	8.8	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: E5QX6	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location: P307	pH: 2.0	Sample Date: 06/27/2016	Sample Time: 13:40:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	460		ug/L	460	D	40.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	120		ug/L	120		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	5000		ug/L	5000	D	40.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	22		ug/L	22		1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Unknown-01	TIC	7.2	J	ug/L	7.2	JB	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	38	NJ	1.0	No	NV
Unknown-02	TIC	8.2	J	ug/L	8.2	J	1.0	Yes	NV
Cyclotetrasiloxane, octamethyl-	TIC			ug/L	6.2	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number:	E5QX7	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	P309	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	14:45:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	390		ug/L	390	D	10.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	43		ug/L	43		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	990		ug/L	990	D	10.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	38		ug/L	38		1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	7.5		ug/L	7.5		1.0	Yes	S3VE
m,p-Xylene	Target	3.5	J	ug/L	3.5	J	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene, 1-ethyl-2-methyl-	TIC	11	NJ	ug/L	11	NJ	1.0	Yes	NV
Indane	TIC	130	NJ	ug/L	130	NJ	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	40	NJB	1.0	No	NV
Benzofuran, 2-methyl-	TIC	12	NJ	ug/L	12	NJ	1.0	Yes	NV
Benzene, 1-ethenyl-3-ethyl-	TIC	16	NJ	ug/L	16	NJ	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number:	E5QX8	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	P310	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	15:40:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Vinyl chloride	Target	91		ug/L	91		2.0	Yes	S3VE
Bromomethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Trichlorofluoromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1-Dichloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Acetone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Carbon disulfide	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methyl acetate	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methylene chloride	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	36		ug/L	36		2.0	Yes	S3VE
Methyl tert-butyl ether	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1-Dichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	2300		ug/L	2300	D	25.0	Yes	S3VE
2-Butanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Bromochloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloroform	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,1-Trichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Cyclohexane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Carbon tetrachloride	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Benzene	Target	8.7	J	ug/L	8.7	J	2.0	Yes	S3VE
1,2-Dichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Trichloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methylcyclohexane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dichloropropane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Bromodichloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
4-Methyl-2-pentanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Toluene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2-Trichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Tetrachloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
2-Hexanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Dibromochloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dibromoethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Ethylbenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
o-Xylene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
m,p-Xylene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Styrene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Bromoform	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Isopropylbenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,3-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,4-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Unknown-01	TIC	10	J	ug/L	10	J	2.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	83	NJB	2.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: E5QY5	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location: W120	pH: 2.0	Sample Date: 06/27/2016	Sample Time: 17:45:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	11		ug/L	11		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	33		ug/L	33		1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	7.2	J	ug/L	7.2		1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	UJ	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclotetrasiloxane, octamethyl-	TIC			ug/L	11	NJ	1.0	No	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	46	NJB	1.0	No	NV
Cyclotrisiloxane, hexamethyl-	TIC			ug/L	6.7	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: E5QY5MS	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location:	pH: 2.0	Sample Date: 06/27/2016	Sample Time: 17:45:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Spike	32		ug/L	32		1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	13		ug/L	13		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	38		ug/L	38		1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Spike	45		ug/L	45		1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Spike	33		ug/L	33		1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Spike	39		ug/L	39		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Spike	39		ug/L	39		1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: E5QY5MSD	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location:	pH: 2.0	Sample Date: 06/27/2016	Sample Time: 17:45:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Spike	39		ug/L	39		1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	17		ug/L	17		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	48		ug/L	48		1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Spike	54		ug/L	54		1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Spike	39		ug/L	39		1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Spike	46		ug/L	46		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Spike	46		ug/L	46		1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: E5QY7	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location: W143	pH: 2.0	Sample Date: 06/27/2016	Sample Time: 16:15:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	760		ug/L	760	D	40.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	320		ug/L	320	D	40.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	6500		ug/L	6500	D	40.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	6.5		ug/L	6.5		1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	8.5		ug/L	8.5		1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclotetrasiloxane, octamethyl-	TIC			ug/L	12	NJ	1.0	No	NV
Cyclotrisiloxane, hexamethyl-	TIC			ug/L	5.8	NJ	1.0	No	NV
Unknown-01	TIC	5.3	J	ug/L	5.3	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	36	NJB	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number:	E5QZ4	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	W433	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	17:25:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Vinyl chloride	Target	320		ug/L	320		2.0	Yes	S3VE
Bromomethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Trichlorofluoromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1-Dichloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Acetone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Carbon disulfide	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methyl acetate	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methylene chloride	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	45		ug/L	45		2.0	Yes	S3VE
Methyl tert-butyl ether	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1-Dichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	640		ug/L	640	D	10.0	Yes	S3VE
2-Butanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Bromochloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloroform	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,1-Trichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Cyclohexane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Carbon tetrachloride	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Benzene	Target	39		ug/L	39		2.0	Yes	S3VE
1,2-Dichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Trichloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methylcyclohexane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dichloropropane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Bromodichloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
4-Methyl-2-pentanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Toluene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2-Trichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Tetrachloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
2-Hexanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Dibromochloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dibromoethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Ethylbenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
o-Xylene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
m,p-Xylene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Styrene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Bromoform	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Isopropylbenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,3-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,4-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	89	NJB	2.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number:	E5QZ5	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	W434	pH:	2.0	Sample Date:	06/28/2016	Sample Time:	09:05:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	59		ug/L	59		1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	23	J+	ug/L	23		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	320		ug/L	320	D	5.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclotetrasiloxane, octamethyl-	TIC			ug/L	8.0	NJ	1.0	No	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	40	NJB	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number:	E5QZ6	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	W437	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	14:25:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Chloromethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Vinyl chloride	Target	450		ug/L	450		5.0	Yes	S3VE
Bromomethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Chloroethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Trichlorofluoromethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,1-Dichloroethene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Acetone	Target	50	U	ug/L	50	U	5.0	Yes	S3VE
Carbon disulfide	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Methyl acetate	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Methylene chloride	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	48		ug/L	48		5.0	Yes	S3VE
Methyl tert-butyl ether	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,1-Dichloroethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	3100		ug/L	3100	D	80.0	Yes	S3VE
2-Butanone	Target	50	U	ug/L	50	U	5.0	Yes	S3VE
Bromochloromethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Chloroform	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,1,1-Trichloroethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Cyclohexane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Carbon tetrachloride	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Benzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,2-Dichloroethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Trichloroethene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Methylcyclohexane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,2-Dichloropropane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Bromodichloromethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
4-Methyl-2-pentanone	Target	50	U	ug/L	50	U	5.0	Yes	S3VE
Toluene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,1,2-Trichloroethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Tetrachloroethene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
2-Hexanone	Target	50	U	ug/L	50	U	5.0	Yes	S3VE
Dibromochloromethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,2-Dibromoethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Chlorobenzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Ethylbenzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
o-Xylene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
m,p-Xylene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Styrene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Bromoform	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Isopropylbenzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,3-Dichlorobenzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,4-Dichlorobenzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,2-Dichlorobenzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	25	U	ug/L	25	U	5.0	Yes	S3VE
Indane	TIC	180	NJ	ug/L	180	NJ	5.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	220	NJB	5.0	No	NV
Naphthalene, 1-methyl-	TIC	98	NJ	ug/L	98	NJ	5.0	Yes	NV
Benzene, 1-ethenyl-4-ethyl-	TIC	58	NJ	ug/L	58	NJ	5.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number:	E5QZ7	Method:	Volatile Organics	Matrix:	Water	MA Number:	
Sample Location:	W438	pH:	2.0	Sample Date:	06/27/2016	Sample Time:	16:25:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Vinyl chloride	Target	59		ug/L	59		2.0	Yes	S3VE
Bromomethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Trichlorofluoromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1-Dichloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Acetone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Carbon disulfide	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methyl acetate	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methylene chloride	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	9.6	J	ug/L	9.6	J	2.0	Yes	S3VE
Methyl tert-butyl ether	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1-Dichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	370		ug/L	370	D	5.0	Yes	S3VE
2-Butanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Bromochloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chloroform	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,1-Trichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Cyclohexane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Carbon tetrachloride	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Benzene	Target	5.6	J	ug/L	5.6	J	2.0	Yes	S3VE
1,2-Dichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Trichloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Methylcyclohexane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dichloropropane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Bromodichloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
4-Methyl-2-pentanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Toluene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2-Trichloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Tetrachloroethene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
2-Hexanone	Target	20	U	ug/L	20	U	2.0	Yes	S3VE
Dibromochloromethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dibromoethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Chlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Ethylbenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
o-Xylene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
m,p-Xylene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Styrene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Bromoform	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Isopropylbenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,3-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,4-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	10	U	ug/L	10	U	2.0	Yes	S3VE
Unknown-01	TIC	10	J	ug/L	10	J	2.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	87	NJ	2.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: VBLK7G	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	45	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: VBLK7J	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	43	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: VBLK7L	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	46	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: VBLK7N	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC			ug/L	34	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QW7	Lab Code: KAP

Sample Number: VHBLK01	Method: Volatile Organics	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Vinyl chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromomethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Acetone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Carbon disulfide	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl acetate	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylene chloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Butanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Bromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chloroform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Cyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Benzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Trichloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Methylcyclohexane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromodichloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Toluene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Tetrachloroethene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
2-Hexanone	Target	10	U	ug/L	10	U	1.0	Yes	S3VE
Dibromochloromethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Chlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Ethylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
o-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
m,p-Xylene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Styrene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromoform	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Isopropylbenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Unknown-03	TIC	5.3	J	ug/L	5.3	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC			ug/L	49	NJ	1.0	No	NV
Unknown-02	TIC	5.5	J	ug/L	5.5	J	1.0	Yes	NV
Unknown-01	TIC	7.0	J	ug/L	7.0	J	1.0	Yes	NV

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QW7** **Location = DUP 3** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
000622-96-8	Benzene, 1-ethyl-4-methyl-	13.85	11	ug/L	NJ
000496-11-7	Indane	14.39	130	ug/L	NJ
007525-62-4	Benzene, 1-ethenyl-3-ethyl-	14.78	17	ug/L	NJ
004265-25-2	Benzofuran, 2-methyl-	15.04	12	ug/L	NJ

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QW8** **Location = DUP 4** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	15.29	12	ug/L	J
Unknown-02	Unknown-02	17.80	19	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QX0** **Location = E2** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	4.89	7.5	ug/L	JB

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QX1** **Location = E7** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QX6** **Location = P307** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-02	Unknown-02	14.39	8.2	ug/L	J
Unknown-01	Unknown-01	4.89	7.2	ug/L	JB

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	SDG: E5QW7	Contract: EPW14031	Submission Group Id: 30161375
Lab Name: KAP Technologies Inc	Case: 46284	Client: EPA Region 5	SOW: SOM02.3

Volatile Organics **Sample = E5QX7** **Location = P309** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
000611-14-3	Benzene, 1-ethyl-2-methyl-	13.85	11	ug/L	NJ
000496-11-7	Indane	14.39	130	ug/L	NJ
007525-62-4	Benzene, 1-ethenyl-3-ethyl-	14.78	16	ug/L	NJ
004265-25-2	Benzofuran, 2-methyl-	15.04	12	ug/L	NJ

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QX8** **Location = P310** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	13.39	10	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QY5** **Location = W120** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QY7** **Location = W143** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	14.72	5.3	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QZ4** **Location = W433** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QZ5** **Location = W434** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QZ6** **Location = W437** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
000496-11-7	Indane	14.39	180	ug/L	NJ
003454-07-7	Benzene, 1-ethenyl-4-ethyl-	15.32	58	ug/L	NJ
000090-12-0	Naphthalene, 1-methyl-	17.28	98	ug/L	NJ

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = E5QZ7** **Location = W438** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	4.89	10	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = VBLK7G** **Location = null** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = VBLK7J** **Location = null** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = VBLK7L** **Location = null** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = VBLK7N** **Location = null** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier

Data Validation Report

Tentatively Identified Compounds

Wed, 20 Jul 2016 15:22:57

Lab Code: KAP	**SDG: E5QW7**	**Contract: EPW14031**	**Submission Group Id: 30161375**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Volatile Organics **Sample = VHBLK01** **Location = null** **Matrix = Water** **Level = Low**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-02	Unknown-02	16.02	5.5	ug/L	J
Unknown-03	Unknown-03	17.79	5.3	ug/L	J
Unknown-01	Unknown-01	4.84	7.0	ug/L	J

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: July 19, 2016

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: MPCA
Email Address: mark.ostby@state.mn.us

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

SITE Name: St. Louis Park Solvent Plume (MN)

Case No: 46284 MA No: _____ SDG No: E5QY1

Number and Type of Samples: 1 water (Trace Volatiles)

Sample Numbers: E5QY1

Laboratory: KAP Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Case No: 46284 SDG No: E5QY1
Site Name: St Louis Park Solvent Plume (MN) Laboratory: KAP

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

One (1) preserved water sample labeled E5QY1, was shipped to KAP Technologies Inc. (KAP) located in The Woodlands, TX. The sample was collected on June 28, 2016 and received on June 29, 2016 intact and properly cooled.

The sample was analyzed for the trace volatile compounds according to CLP SOW SOM02.3, [Sept 2015] and reviewed according to the August 2014 NFG for SOM02.2 (EPA-540-R-014-002), the Summary of Changes: SOM02.2 to SOM02.3 and the ESAT SOP for Organic CLP Data Validation.

Sample E5QY1 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses.

The sample was not designated as either a trip blank, field blank or field duplicate.

1. PRESERVATION AND HOLDING TIMES

No problems found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK and GAS CHROMATOGRAPH/ELECTRON CAPTURE DETECTOR INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

The following trace volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. The analytes were not detected in the samples. Nondetects are not qualified.

E5QY1, VBLK88
1,2,4-Trichlorobenzene

E5QY1MS, E5QY1MSD, VBLK06, VHBLK01
Carbon tetrachloride

The following trace volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) in which a DMC did not meet criteria. Detects and nondetects are not qualified.

E5QY1, VBLK88
1,2-Dichlorobenzene-d_4

4. CONTINUING CALIBRATION

No problems found.

5. BLANKS

No problems found.

6. DEUTERATED MONITORING COMPOUNDS / SURROGATES

No problems found.

7. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No problems found.

8. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not applicable to this analysis.

9. GEL PERMEATION CHROMATOGRAPHY PERFORMANCE CHECK

Not applicable to this analysis.

10. LABORATORY CONTROL SAMPLE

Not applicable to this analysis.

11. INTERNAL STANDARD

No problems found.

12. TARGET ANALYTE IDENTIFICATION

No problems found.

13. REPORTED CONTRACT QUANTITATION LIMIT

The following trace volatile samples have analyte results greater than or equal to detection limit (MDL) and below quantitation limit (CRQL). Detects are qualified J.

VBLK88
Bromomethane

14. TENTATIVELY IDENTIFIED COMPOUNDS

All TICs are identified in the separate NFG file: Data Validation Report Tentatively Identified Compounds. The manually reviewed report is titled '46284.E5QY1.TIC.rtf'.

15. SYSTEM PERFORMANCE

No problems found.

16. FIELD QC SAMPLES

The sample was not designated as either a trip blank, field blank or field duplicate.

17. OVERALL ASSESSMENT

Manual integrations were reviewed and found to be acceptable. No 'before' chromatogram snapshots were provided.

Reviewed by: Allison C Harvey / Techlaw-ESAT
Date: August 9, 2016

Case No: 46284 SDG No: E5QY1
Site Name: St Louis Park Solvent Plume (MN) Laboratory: KAP

The following trace volatile samples have a Tentatively Identified Compound (TIC) identified by the laboratory as a known isomer of an added surrogate compound and considered a laboratory artifact. This TIC is removed from the 46284.E5QY1.TIC document and qualified 'No' in the Reportable column of the EXES Sample Summary Report and concentration values removed.

CAS No. 463-71-8 cis-1,3-Dichloropropene-d_4
E5QY1, VBLK06, VBLK88, VHBLK01

After review it appeared to the Reviewer that the unknown TIC in the sample and blanks was mistakenly identified as the same analyte. Copies of the chromatograms are included with the hardcopy validation package.

E5QY1: Unknown @ 2.21
VBLK06, VBLK88, VHBLK01: Unknown @ 2.06

Case No: 46284 SDG No: E5QY1
Site Name: St Louis Park Solvent Plume (MN) Laboratory: KAP

Validation Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

Reviewed by: Allison C Harvey / Techlaw-ESAT
Date: August 9, 2016

Sample Summary Report

Case No:	46284	Contract:	EPW14031	SDG No:	E5QY1	Lab Code:	KAP

Sample Number:	E5QY1	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	SLP6	pH:	2.0	Sample Date:	06/28/2016	Sample Time:	08:25:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	1.5		ug/L	1.5		1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.89		ug/L	0.89		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	10		ug/L	10		1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.55		ug/L	0.55		1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	0.79	J	ug/L	0.79	J	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC				6.0	NJ	1.0	No	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QY1	Lab Code: KAP

Sample Number: E5QY1MS	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH: 2.0	Sample Date: 06/28/2016	Sample Time: 08:25:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	1.4		ug/L	1.4		1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Spike	3.8		ug/L	3.8		1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.80		ug/L	0.80		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	11		ug/L	11		1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Spike	4.8		ug/L	4.8		1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Spike	5.4		ug/L	5.4		1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Spike	4.7		ug/L	4.7		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Case No: 46284	Contract: EPW14031	SDG No: E5QY1	Lab Code: KAP

Sample Number: E5QY1MSD	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH: 2.0	Sample Date: 06/28/2016	Sample Time: 08:25:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	1.5		ug/L	1.5		1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Spike	3.7		ug/L	3.7		1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.89		ug/L	0.89		1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	11		ug/L	11		1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Spike	4.7		ug/L	4.7		1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Spike	5.9		ug/L	5.9		1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Spike	4.8		ug/L	4.8		1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Case No: 46284	Contract: EPW14031	SDG No: E5QY1	Lab Code: KAP

Sample Number: VBLK06	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC				5.9	NJ	1.0	No	NV
Unknown-01	TIC	1.1	J	ug/L	1.1	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QY1	Lab Code: KAP

Sample Number: VBLK88	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.30	J	ug/L	0.30	J	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-dichloropropene-d4	TIC				6.5	NJ	1.0	No	NV
Unknown-01	TIC	1.1	J	ug/L	1.1	J	1.0	Yes	NV

Case No: 46284	Contract: EPW14031	SDG No: E5QY1	Lab Code: KAP
Sample Number: VHBLK01	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methyl tert-butyl ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VE
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,4-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VE
Unknown-01	TIC	1.2	J	ug/L	1.2	JB	1.0	Yes	NV
cis-1,3-dichloropropene-d4	TIC				5.3	NJ	1.0	No	NV

Edit History Report

Case No: 46284 Contract: EPW14031 SDG No: E5QY1 Lab Code: KAP

Method: Trace Volatiles

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
E5QY1	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Allison Harvey	8/2/16 1:13 PM	
E5QY1	Water	cis-1,3-dichloropropene-d4	Units	ug/L		Allison Harvey	8/2/16 1:13 PM	
E5QY1	Water	cis-1,3-dichloropropene-d4	Validated Result	6.0		Allison Harvey	8/2/16 1:13 PM	
E5QY1	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Allison Harvey	8/2/16 1:13 PM	
VBLK06	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Allison Harvey	8/2/16 1:14 PM	
VBLK06	Water	cis-1,3-dichloropropene-d4	Units	ug/L		Allison Harvey	8/2/16 1:14 PM	
VBLK06	Water	cis-1,3-dichloropropene-d4	Validated Result	5.9		Allison Harvey	8/2/16 1:14 PM	
VBLK06	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Allison Harvey	8/2/16 1:14 PM	
VBLK88	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Allison Harvey	8/2/16 1:14 PM	
VBLK88	Water	cis-1,3-dichloropropene-d4	Units	ug/L		Allison Harvey	8/2/16 1:14 PM	
VBLK88	Water	cis-1,3-dichloropropene-d4	Validated Result	6.5		Allison Harvey	8/2/16 1:14 PM	
VBLK88	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Allison Harvey	8/2/16 1:14 PM	
VHBLK01	Water	Unknown-01	Validation Flag	JB	J	Allison Harvey	8/2/16 1:15 PM	
VHBLK01	Water	cis-1,3-dichloropropene-d4	Reportable	Y	N	Allison Harvey	8/2/16 1:15 PM	
VHBLK01	Water	cis-1,3-dichloropropene-d4	Units	ug/L		Allison Harvey	8/2/16 1:15 PM	
VHBLK01	Water	cis-1,3-dichloropropene-d4	Validated Result	5.3		Allison Harvey	8/2/16 1:15 PM	
VHBLK01	Water	cis-1,3-dichloropropene-d4	Validation Flag	NJ		Allison Harvey	8/2/16 1:15 PM	

Data Validation Report

Tentatively Identified Compounds

Tue, 19 Jul 2016 16:06:56

Lab Code: KAP	**SDG: E5QY1**	**Contract: EPW14031**	**Submission Group Id: 30161187**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = E5QY1** **Location = SLP6** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.21	0.79	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Tue, 19 Jul 2016 16:06:56

Lab Code: KAP	**SDG: E5QY1**	**Contract: EPW14031**	**Submission Group Id: 30161187**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = VBLK06** **Location = null** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.06	1.1	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Tue, 19 Jul 2016 16:06:56

Lab Code: KAP	**SDG: E5QY1**	**Contract: EPW14031**	**Submission Group Id: 30161187**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = VBLK88** **Location = null** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.06	1.1	ug/L	J

Data Validation Report

Tentatively Identified Compounds

Tue, 19 Jul 2016 16:06:56

Lab Code: KAP	**SDG: E5QY1**	**Contract: EPW14031**	**Submission Group Id: 30161187**
Lab Name: KAP Technologies Inc	**Case: 46284**	**Client: EPA Region 5**	**SOW: SOM02.3**

Trace Volatiles **Sample = VHBLK01** **Location = null** **Matrix = Water** **Level = Trace**

CAS Number	Analyte	Retention Time (min)	Result	Units	Lab Qualifier
Unknown-01	Unknown-01	2.06	1.2	ug/L	J

Appendix E

Minnesota Pollution Control Agency

Office of the Commissioner

May 6, 2004

Mr. Wayne D. Houle, P.E.
Director of Public Works/City Engineer
City Hall
4801 West 50th Street
Edina, MN 55424-1394

RE: Edina Municipal Well 7 Water Quality

Dear Mr. Houle:

The Minnesota Pollution Control Agency (MPCA) has received your April 5, 2004, letter requesting MPCA assistance in dealing with the volatile organic compounds being detected in the City of Edina's (City) municipal drinking water wells. The City's discontinued use of Well 7 indicates a concern with ground water quality, not just for Edina, but also for the area.

The MPCA is committed to working with the City of Edina and the Minnesota Department of Health (MDH) to address the ground water contamination. Currently, the MPCA is working with an environmental consultant to conduct a more detailed ground water modeling study around the Reilly Tar Site in St. Louis Park. These modeling results should provide us with a better understanding of the regional ground water flow, contaminant transport and clues as to the potential contaminant source(s).

At this time, the MPCA recommends a meeting with City staff, your consultants and MDH staff to identify a future course of action with regard to this issue. The MPCA would like to obtain more information about the nature and extent of the contamination, what options the City has investigated for possible remedies, and discuss the MPCA's possible role in future site evaluations. You also indicated a private well survey was being conducted. The MPCA would be interested in the results of that survey and exploring ways to assist in determining potential impacts to these wells.

The MPCA looks forward to working with the City and MDH to identify alternatives for providing continued safe drinking water to the City residents.

520 Lafayette Rd. N.; St. Paul, MN 55155-4194; (651) 296-6300 (Voice); (651) 292-5332 (TTY)
St. Paul • Brainerd • Detroit Lakes • Duluth • Mankato • Marshall • Rochester • Willmar; www.pca.state.mn.us
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MPCA staff will be contacting you to set up a meeting to discuss this issue. If you have any questions, please call Nile Fellows of our staff at (651) 296-7299.

Sincerely,

Sheryl A. Corrigan
Commissioner

SAC:csa

cc: Dennis Maetzold, Mayor, City of Edina
Pat Bloomgren, Environmental Health Division Director, MDH
Steve Robertson, Hydrogeologist, MDH SourceWater Protection Unit
Terry Bovee, Planner, MDH SourceWater Protection Unit
Roger Glanzer, Utility Superintendent, City of Edina
Scott Anderson, Superintendent, City of St. Louis Park
Craig Kurtz, Sr. Hydrogeologist, SEH, Inc.

RECEIVED
APR 05 2004
MPCA COMMISSIONER'S OFFICE

City of Edina

April 5, 2004

Ms. Sheryl Corrigan
Commissioner
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155-4194

RE: City of Edina, Minnesota
Municipal Well 7 Water Quality Study
SEH No. A-EDINA0402.00 14.00

Dear Ms. Corrigan:

The City of Edina (City) is requesting assistance from the Minnesota Pollution Control Agency (MPCA) in investigating and addressing the presence of contaminants identified in the City's municipal wells and public water supply system. It has been brought to the City's attention that during routine public water supply testing, conducted by the Minnesota Department of Health (MDH), chlorinated volatile organic compounds have been detected in three Edina municipal wells open to the Prairie du Chien-Jordan bedrock aquifer. City staff, and the City's consultant (SEH Inc.), met with MDH staff on February 18, 2004 to discuss these issues.

The City is specifically seeking assistance from the MPCA to a) identify the source of the contaminants, b) determine the extent and magnitude of the contamination, and c) identify potential financing available to the City for constructing treatment plant(s) to remove the contamination from its public water supply system; and (d) identify the persons responsible for the contamination and compel them to take appropriate and necessary remedial action.

The particular contaminants of concern appear to include dichlorodifluoromethane, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, dichlorofluoromethane, tetrachloroethene, 1,1,1-trichloroethane, trichloroethene, and vinyl chloride. Four of these compounds (cis-1,2-dichloroethene, trans-1,2-dichloroethene, trichloroethene, and vinyl chloride) have been consistently detected in Edina Wells 2, 7, and 15 since year 2000. It has also been observed that 1,1-dichloroethane and 1,1-dichloroethene have been detected in both Edina Wells 7 and 15. The concentrations of vinyl chloride detected in Edina Well 7 have recently been above the federal Maximum Contaminant Level (MCL), and concentrations of cis-1,2-dichloroethene and vinyl chloride in this well appear to be increasing. None of the other volatile organic compounds detected in the Edina municipal wells have been detected in concentrations above the MCLs. The costs to construct treatment facilities to address and rectify this contamination will be significant.

The City has discontinued use of Well 7 and is evaluating the feasibility of various alternatives. Based on the presence of chlorinated compounds detected in Wells 2, 7, and 15, the City is concerned that additional Edina municipal wells are threatened and/or have already been impacted.

City Hall
4801 WEST 50TH STREET
EDINA, MINNESOTA 55424-1394

(952) 927-8861
FAX (952) 826-0390
TDD (952) 826-0379

The City is also concerned about the possibility that private drinking water wells may also be adversely affected by these contaminants. The City of Edina and the MDH are currently conducting a well inventory of the area to identify privately owned wells that could be possibly impacted by this contamination.

It is the City's understanding that cis-1,2-dichloroethene, trans-1,2-dichloroethene, trichloroethene, and vinyl chloride were detected in the City of St. Louis Park Well 6 in 1998, and in addition, cis-1,2-dichloroethene, trichloroethene, and vinyl chloride were detected in St. Louis Park Well 4 in 1999. These two municipal wells are located 1 to 1¼-miles north of Edina Wells 2, 7, and 15. It should be noted that the 1998 and 1999 samples collected from these wells appear to have been the most recent in which the samples were analyzed for volatile organic compounds.

The contamination of the Prairie du Chien-Jordan aquifer is a regional problem, not just a local concern. The City believes that the MPCA should be involved in this investigation together with local units of government to protect the environment and enforce environmental regulations.

The MPCA's prompt attention to this matter would be greatly appreciated. If you have any questions, or need additional information, please contact me at 952.826.0371.

Sincerely,

Wayne D. Houle

Wayne D. Houle, PE
Director of Public Works/City Engineer

C: Pat Bloomgren, Environmental Health Division Director - Minnesota Department of Health
Steve Robertson, Hydrogeologist - Minnesota Department of Health Source Water Protection Unit
Terry Bovee, Planner - Minnesota Department of Health Source Water Protection Unit
Roger Glanzer, Utility Superintendent - City of Edina
Scott Anderson, Superintendent of Utilities - City of St. Louis Park
Craig Kurtz, Sr. Hydrogeologist - SEH Inc.

Appendix F

MDH
Minnesota
Department
of Health

PROTECTING, MAINTAINING & IMPROVING THE HEALTH OF ALL MINNESOTANS

March 10, 2016

Tom Harmening, City Manager
St. Louis Park City Hall
5005 Minnetonka Blvd
Saint Louis Park, MN 55416

Re: Notice of Health Risk Advisory based on exceedance of Health Risk Limit for vinyl chloride and exceedance of the Health-Based Value for cis-1,2-dichloroethene

Dear Mr. Harmening:

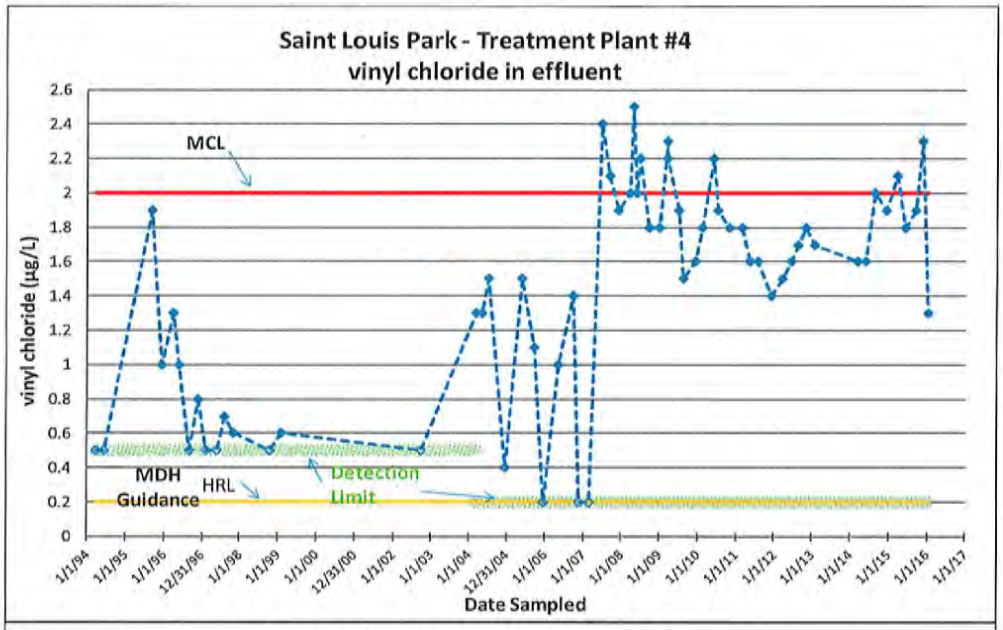
This letter is to notify you that the Minnesota Department of Health (MDH) is issuing a Notice of Health Risk Advisory for Treatment Plant #4 effluent.

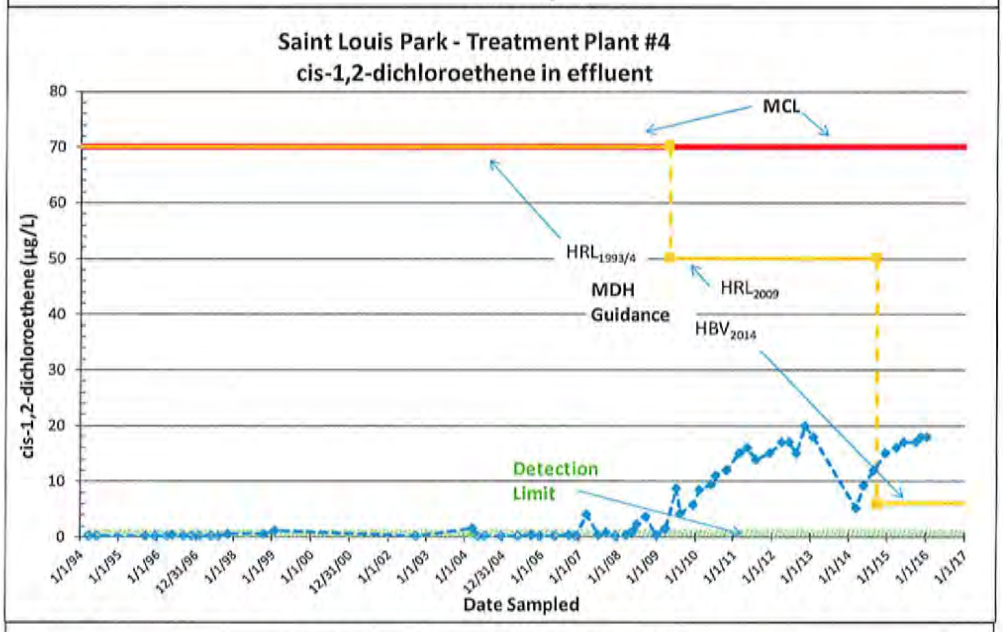
MDH staff reviewed the results of chemical analyses conducted on water samples collected on January 14, 2016 from the Treatment Plant #4 (TP#4) effluent which indicates that vinyl chloride (measured at 1.3 micrograms per liter [ug/L]) exceeds MDH's 2009 Health Risk Limit (HRL) of 0.2 ug/L. In addition, a second chemical, cis-1,2-dichloroethene measured at 18 ug/L exceeds MDH's 2014 Health-Based Value (HBV) of 6 ug/L.

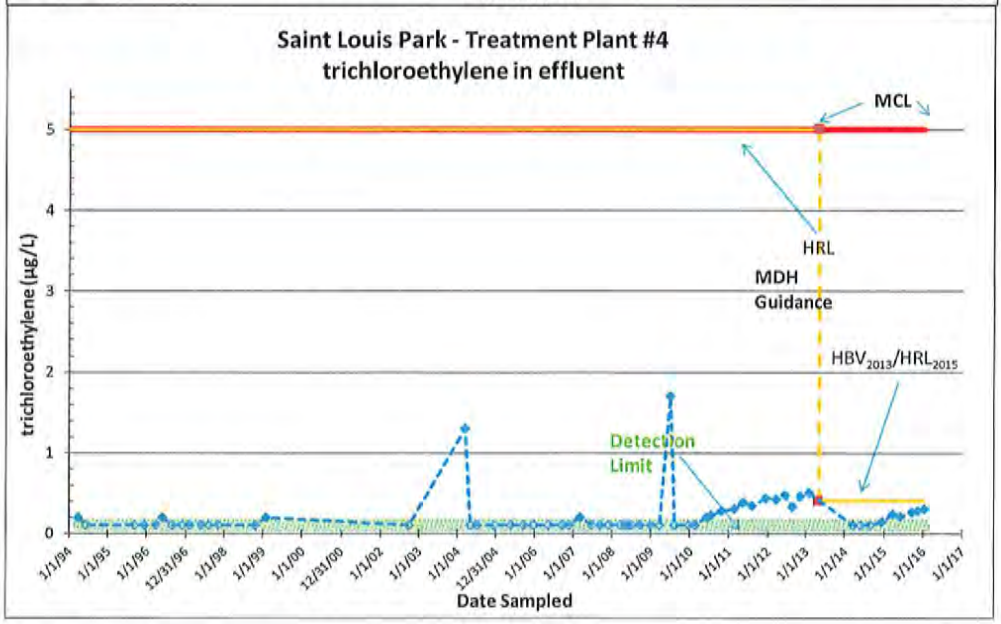
These are both industrial chemicals, byproducts of industrial chemicals, or are formed when the chemical compound trichloroethylene (aka TCE), breaks down in the environment. Trichloroethylene has also been measured in groundwater entering Treatment Plant #4 and in effluent from the plant, but at concentrations that have remained below the MDH HRL of 0.4 µg/L since the value was established as an HBV in 2013.

Below you will see historical trends in the amounts of the three chemical contaminants.

- The figure also shows how the concentrations measured over time compare to EPA's regulatory standards for drinking water and MDH's health–based guidance values.
- The MCL refers to the United States Environmental Protection Agency's Maximum Contaminant Level, which is a regulatory level.
- The HRLs for vinyl chloride and TCE are rules promulgated under Minn. Rules Part 4717 and the HBV for cis-1,2-dichloroethene is an interim guideline developed by MDH to ensure the health of people who use the water as a drinking water source is protected. **Note:** The MDH guidance values have decreased for cis-1,2-dichloroethene and trichloroethylene as more information about the toxicity of these compounds has become available.
- Also, the lowest concentration that can be measured by the laboratory – the Detection Limit – changed for vinyl chloride and this affects what can be known about vinyl chloride concentrations prior to 2004.


Saint Louis Park - Treatment Plant #4
vinyl chloride in effluent
vinyl chloride (µg/L)
MCL
MDH
Guidance
HRL
Detection
Limit
Date Sampled


Saint Louis Park - Treatment Plant #4
cis-1,2-dichloroethene in effluent
cis-1,2-dichloroethene (µg/L)
MCL
HRL1993/4
MDH
Guidance
HRL2009
HBV2014
Detection
Limit
Date Sampled


Saint Louis Park - Treatment Plant #4
trichloroethylene in effluent
trichloroethylene (µg/L)
MCL
HRL
MDH
Guidance
HBV2013/HRL2015
Detection
Limit
Date Sampled

In addition, please also note that data from samples collected between May 2013 and May 2015 (included in the figures below) are currently under a reliability review due to possible inconsistencies in MDH Public Health Laboratory quality control and assurance procedures. However, reported data during this period appear consistent with historical trends.

MDH strongly recommends the city of Saint Louis Park meet the HRL for vinyl chloride and the HBV for cis-1,2-dichloroethene in their distribution system through either management of the community water supply or through additional treatment measures. MDH anticipates that compliance with these criteria will assure that trichloroethylene levels remain below the HRL as well.

More information regarding the potential health effects of the contaminants of interest is available at http://www.health.state.mn.us/divs/eh/risk/guidance/gw/table.html. MDH Drinking Water Protection Program staff have been in communication with Jay Hall, Utilities Superintendent for Saint Louis Park, and will continue to work with him on this matter. For additional questions or assistance, please contact Isaac Bradlich, District Engineer at 651-201-3971 or isaac.bradlich@state.mn.us. For questions regarding health risk, please contact Carl Herbrandson, PhD, at 651-201-4906 or carl.herbrandson@state.mn.us.

Sincerely,

Tom Hogan, Director
Environmental Health Division
P. O. Box 64975
St. Paul, Minnesota 55164-0975

cc: Kathy Sather, Director, Remediation Division, Minnesota Pollution Control Agency

Appendix G

Tub of Fish from Lake Hiawatha. (Fish Survey Conducted in October 2009 by Blue Water Science)

Fish Surveys for Three Pools in Minnehaha Creek and for Lake Hiawatha, Tributary to Minnehaha Creek, 2009

Survey Dates: October 20 - 23, 2009

MnDNR Permit Number: 15954

Submitted to:
Minnehaha Creek Watershed District
and
Minnesota Department of Natural Resources

Prepared by:
Steve McComas
Blue Water Science
St. Paul, MN

April 2010

Fish Surveys for Three Pools in Minnehaha Creek and for Lake Hiawatha, Tributary to Minnehaha Creek, 2009

Steve McComas, Blue Water Science, St. Paul, MN

Abstract

A fish survey was conducted on October 20-23, 2009 at four sites within the 22 mile Minnehaha Creek corridor. The number of fish species observed ranged from 8 to 12. The pool just beneath the dam at the Grays Bay outlet had the most largemouth bass and sunfish species of the four sites. The dominant fish at all four sites were black bullheads with very high catch rates at three of the sites. Carp, dogfish, and white suckers were common at those three sites as well.

Overall fish biomass was dominated by low-oxygen tolerant species such as bullheads, carp, and dogfish. It appears much of the main Minnehaha Creek corridor is susceptible to winterkill and that is a major factor in structuring the fish community. After a winterkill, new fish likely make their way into the Minnehaha Creek system from Lake Minnetonka or Lake Harriet. Some fish, like minnow species. may find microhabitat refuges to overwinter. The existing fish community probably has an adverse impact on water quality in the creek and in the shallow connected lakes such as Meadowbrook and Hiawatha.

Table 1. Fish per net results for three Minnehaha Creek sites and Lake Hiawatha. Sites are located in miles starting at the mouth of the creek at Mississippi River and going upstream to the source at the Grays Bay dam.

	Grays Bay Pool (mi 22.0)	Meadowbrook Lake (mi 12.8)	Utley Pool (mi 10.7)	Lake Hiawatha (mi 1.5)	MnDNR Normal Range
Number of net days	6 (mini fyke)	4 (standard)	4 (standard)	8 (standard)	--
Black bullheads	43	486	468	372	1.3 - 26
Black crappies	0	1.0	4.3	0.1	1.8 - 18
Carp	0.2	15	2.5	5.0	0.3 - 2.6
Dogfish	0	1.3	0.3	0.9	0.3 - 1.0
Green sunfish	2.3	0.3	0	0.4	0.3 - 2.0
Hybrid sunfish	1.2	0.3	0.5	0	NA
Largemouth bass	2.0	0.3	0.3	1.4	
Minnows	0.7	0	0.3	5.8	NA
Northern pike	0	0	0.3	0	NA
Pumpkinseed sunfish	4.0	5.3	4.0	0	0.8 - 5.3
White suckers	0	6.0	6.8	0.9	0.3 - 1.6
Yellow bullheads	0.3	5.3	11	5.3	0.8 - 5.0
Yellow perch	0	0.3	1.5	0.1	0.3 - 1.5
Number of species	8	11	12	10	

Introduction

Minnehaha Creek is about a 22-mile long corridor that runs from the outlet of Lake Minnetonka (the source) to a discharge in the Mississippi River below Minnehaha Falls. Since the 1840s, Minnehaha Creek has been used as a travel corridor as well as a source of power for a variety mills (at least 7). It is a very scenic urban stream. Several lakes feed into Minnehaha Creek and a number of dams create pools behind the dams.

The fish communities in the creek, the pools, and the lakes tributary to the creek are diverse based on MnDNR fish surveys, with the last full survey conducted in 2003. Because fish can have an impact on water quality, a fish survey was conducted at four sites on the Minnehaha Creek corridor to characterize existing fish conditions (Figure 1). The four sites were:

1. Gray's Bay Pool
2. Meadowbrook Lake
3. Utley Pool
4. Lake Hiawatha

A visual inspection was conducted on July 31 and August 3, 2009 and indicated bullheads and carp were present and were a possible influence on water quality. From that evaluation it was recommended that a fish survey should be conducted to assess the fish community at four sites (Figure 1). In this report, we present the results of a fish survey using a combination of mini-trapnets and standard trapnets that was conducted on October 20-23, 2009.

Figure 1. Four sites (yellow dots) of fish surveys on the Minnehaha Creek corridor from October 20-23, 2009.

Methods

Fish were surveyed using trapnets at four locations on the Minnehaha Creek Corridor. Standard trapnets (with 4x6 foot frames) and mini trapnets (with 2x3 feet frames) were used to survey fish. In Grays Bay Pool, three mini trapnets were deployed. In Meadowbrook Lake, two standard and two mini-fyke nets were used. In Utley Pool, two standard trapnets and two mini trapnets were used. In Lake Hiawatha, four standard trapnets and two mini trapnets were used. The standard trapnets were a MnDNR-style with a 4 x 6 foot square frame with two funnel mouth openings and 50-feet lead. Net mesh size varied from 3/8 inch to ½ inch (bar length). The mini-fyke nets were a 2 x 3 foot square frame with a single funnel mouth opening with a 25-feet lead. The mesh size was 3/16 inch. The nets were set on the morning October 19, 2009 in Grays Bay Pool, Meadowbrook Lake, and Utley Pool. The nets were fished for the following two days (October 20 and 21). Next, the nets were set on the morning October 21, 2009 in Lake Hiawatha.. The nets were fished for the following two days (October 22 and 23). Trapnet locations are shown in Figures 1 and 2 and pictures of a typical trapnet are shown in Figure 3.

Grays Bay Pool

Meadowbrook Lake

Utley Pool

Lake Hiawatha

Figure 2. Maps of locations of trapnet sets.

Setting Trapnets

Two sizes of trapnets were set. The smaller size (2' x 3' frame) was used in shallow water and because of small mesh size would capture and hold minnow-sized fish. The larger trapnet with a 4' x 6' frame is a standard-sized net used by the MnDNR. Only fish caught in the standard sized net at three locations were used in statistics to determine fish caught per net. In the Grays Bay pool, because of the shallow water, only mini trapnets were used and all results from the mini trapnets were used.

Table 1. Size (in acres) of the sample sites and the type of nets used for the fish survey.

	Area (acres)	Mini Fyke Net (2x3)	Standard Fyke Net (4x6)
Grays Bay Pool	1.5	3	0
Meadowbrook Lake	19	2	2
Utley Pool	11	2	2
Lake Hiawatha	53	2	4

Figure 3. A standard 4' x 6' frame trapnet is a live fish trap. Fish run into the 50-foot lead net and follow it back through a series of hoops with funnel mouths. Fish end up in the back hoop. Fish are removed from the back hoop and transferred to tubs. Then they are counted, measured, and released (Photo by Mark Lahtinen, City of Maple Grove).

Results - Grays Bay Pool

Black bullheads were the dominant fish species by number and by biomass in Grays Bay Pool. Predator gamefish were present in Grays Bay Pool with largemouth bass sampled. Nine fish species were sampled in October 2009 (Table 2).

Table 2. Grays Bay Pool mini-trap net results for the fish survey conducted in October 2009.

Date: October 20, 2009

Net	Style	Black Bullhead	Bluegill	Carp	Green Sunfish	Hybrid Sunfish	Large-mouth Bass	Minnows - Darter	Pumpkin-seed	Yellow Bullhead	Crayfish
		#	#	#	#	#	#	#	#	#	#
1	mini	25	53	1	1	6	6		13		
2	mini	188	14		3	1	4		9		
3*	mini	4	8		4		1	1			1
Total		**217**	**75**	**1**	**8**	**7**	**11**	**1**	**22**		**1**

* Net 3: frog:1; waterbug: 1

Date: October 21, 2009

Net	Style	Black Bullhead	Bluegill	Carp	Green Sunfish	Hybrid Sunfish	Large-mouth Bass	Minnows - Darter	Pumpkin-seed	Yellow Bullhead	Crayfish
		#	#	#	#	#	#	#	#	#	#
1	mini	3						1			1
2	mini	10	8		6		1	2	1	1	1
3	mini	29	7						1	1	3
Total		**42**	**15**	**0**	**6**	**0**	**1**	**3**	**2**	**2**	**5**
6 lifts fish/mini net		**43**	**15**	**0.2**	**2.3**	**1.2**	**2.0**	**0.7**	**4.0**	**0.3**	**1.0**

Results - Meadowbrook Lake

A total of twelve fish species were sampled in Meadowbrook Lake in October, 2009 (Table 3). Black bullheads were the dominant fish species in 2009. Predator fish were represented by largemouth bass and dogfish.

The number of black bullhead caught per net was high (Table 3).

Table 3. Meadowbrook Lake trapnet results for the fish survey conducted in October 2009.

Date: October 20, 2009

Net	Style	Black Bullhead		Black Crappie	Blue-gill	Carp	Green Sun-fish	Dog-fish	Hybrid Sun-fish	Large-mouth Bass	Pump-kin-seed	White Sucker	Yellow Bull-head	Yellow Perch	Turtles	
		#	lbs	#	#	#	#	#	#	#	#	#	#	#	Snap	Paint
1	treated	1,424	356	1		20					2	4	3	1		
2	mini untreated	163	6 (does not included 3 fish)								1					
3*	mini treated	2			1					1			2			2
4	untreated	239	58	2		18		5	1	1	13	15			2	13
all 4 nets		**1,829**		**3**	**1**	**38**	**0**	**5**	**1**	**2**	**16**	**19**	**18**	**1**	**2**	**15**
2 - Fyke nets		**1,654**		**3**	**0**	**38**	**0**	**5**	**1**	**1**	**15**	**19**	**16**	**1**	**2**	**13**

* beetles and boatman were observed

Date: October 21, 2009

Net	Style	Black Bullhead		Black Crappie	Blue-gill	Carp	Green Sun-fish	Dog-fish	Hybrid Sun-fish	Large-mouth Bass	Pump-kin-seed	White Sucker	Yellow Bull-head	Yellow Perch	Turtles	
		#	lbs	#	#	#	#	#	#	#	#	#	#	#	Snap	Paint
1	treated	124	31 (ct in wt)	1		10	1					1	3			
2	mini	35			2											
3	mini	0		1					2		6		1			
4	untreated	164	41 (ct in wt)			10					6	4	1		1	4
all 4 nets		**323**		**2**	**2**	**20**	**1**	**0**	**2**	**0**	**12**	**5**	**6**	**0**	**1**	**4**
2 - Fyke nets		**288**	**1**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**6**	**5**	**5**	**0**	**1**	**4**
4 lifts fish/net		**486**		**1.0**	**0**	**15**	**0.3**	**1.3**	**0.3**	**0.3**	**5.3**	**6.0**	**5.3**	**5.3**	**0.8**	**4.3**

Results - Utley Pool

Black bullheads dominated the catch in Utley Pool (Table 4). Predator fish were represented by largemouth bass and dogfish. Fourteen fish species were sampled in Utley Pool in 2009. Of the two pools and two lakes sampled in October 2009, Utley Pool had the greatest diversity.

Table 4. Utley Pool Lake trapnet results for the fish survey conducted in October 2009.

Date: October 20, 2009

Net	Style	Black Bullhead		Black Crap-pie	Blue-gill	Carp	Green Sun-fish	Dog-fish	Hybrid Sun-fish	Large-mouth Bass	Min-nows Gold. shiner	North. pike	Pump-kin-seed	White Sucker	Yellow Bull-head	Yellow Perch	Turtles	
		#	lbs	#	#	#	#	#	#	#	#	#	#	#	#	#	Snap	Paint
1	mini	321	62 (does not include wt of 11 counted)				1						1	2	12			
2	treated	660	132	2	3	7		1					5	14	14		2	25
3	untreated	270	18 little ones		1						1	1	1	4	6	1		5
4	mini untreated	18			1	1	1			1			3		1			
all 4 nets		**1,269**		**2**	**5**	**8**	**2**	**1**	**0**	**1**	**1**	**1**	**10**	**20**	**33**	**1**	**2**	**30**
2 - Fyke nets		**930**		**2**	**4**	**7**	**0**	**1**	**0**	**0**	**1**	**1**	**6**	**18**	**20**	**1**	**2**	**30**

Date: October 21, 2009

Net	Style	Black Bullhead		Black Crap-pie	Blue-gill	Carp	Green Sun-fish	Dog-fish	Hybrid Sun-fish	Large-mouth Bass	Min-nows	North. pike	Pump-kin-seed	White Sucker	Yellow Bull-head	Yellow Perch	Turtles	
		#	lbs	#	#	#	#	#	#	#	#	#	#	#	#	#	Snap	Paint
1	mini	197			10	1				1			2		1		1	
2	treated	520		11	5	1			2				17	2	3	5		3
3	untreated	420		4		2				1			1	7	5			
4	mini	110		2					5	1			2		4			
all 4 nets		**1,247**	**17**	**17**	**15**	**4**	**0**	**0**	**7**	**3**	**0**	**0**	**22**	**9**	**31**	**5**	**1**	**3**
2 - Fyke nets		**940**		**15**	**5**	**3**	**0**	**0**	**2**	**1**	**0**	**0**	**18**	**9**	**25**	**5**		**3**
4 lifts (average) (fish/net)		**468**		**4.3**	**2.3**	**2.5**	**0**	**0.3**	**0.5**	**0.3**	**0.3**	**0.3**	**4.0**	**6.8**	**11**	**1.5**	**0.5**	**8.3**

Results - Lake Hiawatha

A total of eleven species were sampled in Lake Hiawatha in 2009 (Table 5). Black bullheads were the dominant fish species. Predator fish were represented by largemouth bass and dogfish.

Table 5. Lake Hiawatha trapnet results for the fish survey conducted in October 2009.

Date: October 22, 2009

Net	Style	Black Bullheads		Yellow Bull-heads	Black Crap-pie	Blue-gills	Carp	Green Sun-fish	Dog-fish	Large-mouth Bass	Min-nows	White Sucker	Yellow Perch	Turtles	
		#	lbs	#	#	#	#	#	#	#	#	#	#	Snap	Paint
1	treated	18		3			2			2	10 fathead				
2	untreated	656	163	3	1		6		1			4			2
3	treated	1,548	387				25	2		1		2			
4	untreated	50 big 360 sm	11 big 16 sm	1			1		2						
5	mini untreated	0		1				1		7	17 fathead	1			
6	mini treated	15						1		3	4 fathead				
all 6 nets		**2,647**		**35**	**1**	**0**	**34**	**4**	**3**	**13**	**31**	**7**	**0**	**0**	**2**
4 - Fyke nets		**2,632**		**34**	**1**	**0**	**34**	**2**	**3**	**3**	**10**	**6**	**0**	**0**	**2**

Date: October 23, 2009

Net	Style	Black Bullheads		Yellow Bull-heads	Black Crap-pie	Blue-gills	Carp	Green Sun-fish	Dog-fish	Large-mouth Bass	Min-nows	White Sucker	Yellow Perch	Turtles	
		#	lbs	#	#	#	#	#	#	#	#	#	#	Snap	Paint
1	treated	17					1			3	25 fathead 2 golden shiner				
2	untreated	21					5	1		1		1	1		
3	treated	294	73.5						1	4					
4	untreated	52	13			1			3						
5	mini untreated	2					1	1		5	18 fathead				
6	mini treated	0				14 fathead		1		3					
all 6 nets		**386**		**8**	**0**	**15**	**7**	**3**	**4**	**16**	**43**	**1**	**1**	**0**	**0**
4 - Fyke nets		**346**		**8**	**0**	**1**	**6**	**1**	**4**	**8**	**25**	**1**	**1**	**0**	**0**
8 lifts (fish/net)		**372**		**5.3**	**0.1**	**0.1**	**5.0**	**0.4**	**0.9**	**1.4**	**5.8**	**0.9**	**0.1**	**0**	**0.3**

Summary of Fish Survey Results

Black bullhead were abundant in all four sample areas in 2009 with black bullhead populations above the normal range (Table 6).

A fish survey was conducted on October 20-23, 2009 at four sites within the 22 mile Minnehaha Creek corridor. The number of fish species observed ranged from 8 to 12. The pool just beneath the dam at the Grays Bay outlet had the most largemouth bass and sunfish species of the four sites. The dominant fish at all four sites were black bullhead with very high catch rates at three of the sites. Carp, dogfish, and white suckers were common at those three sites as well.

Fish biomass was dominated by low-oxygen tolerant species such as bullheads, carp, and dogfish. It appears much of the main Minnehaha Creek corridor is susceptible to winterkill and that is a major factor in structuring the fish community. Fish species are likely introduced from Lake Minnetonka or Lake Harriet. Some fish, like minnow species, may find microhabitat refuges to overwinter. The fish community probably has an adverse impact on water quality in the creek and in the shallow connected lakes such as Meadowbrook and Hiawatha.

Table 6. Fish per net results for three Minnehaha Creek sites and Lake Hiawatha. Sites are located in miles starting at the mouth of the creek at Mississippi River and going upstream to the source at the Grays Bay dam.

	Grays Bay Pool (mi 22.0)	Meadowbrook Lake (mi 12.8)	Utley Pool (mi 10.7)	Lake Hiawatha (mi 1.5)	MnDNR Normal Range
Number of net days	6 (mini fyke)	4 (standard)	4 (standard)	8 (standard)	--
Black bullheads	43	486	468	372	1.3 - 26
Black crappies	0	1.0	4.3	0.1	1.8 - 18
Carp	0.2	15	2.5	5.0	0.3 - 2.6
Dogfish	0	1.3	0.3	0.9	0.3 - 1.0
Green sunfish	2.3	0.3	0	0.4	0.3 - 2.0
Hybrid sunfish	1.2	0.3	0.5	0	NA
Largemouth bass	2.0	0.3	0.3	1.4	
Minnows	0.7	0	0.3	5.8	NA
Northern pike	0	0	0.3	0	NA
Pumpkinseed sunfish	4.0	5.3	4.0	0	0.8 - 5.3
White suckers	0	6.0	6.8	0.9	0.3 - 1.6
Yellow bullheads	0.3	5.3	11	5.3	0.8 - 5.0
Yellow perch	0	0.3	1.5	0.1	0.3 - 1.5
Number of species	8	11	12	10	

Fish Lengths - Grays Bay Pool

Grays Bay Pool has several year classes of sunfish, bluegills and pumpkinseeds. The largemouth bass that were sampled were small and ranged from 3 to 6 inches in length.

Table 7. Length frequency of fish species (as total length) for the Grays Bay Pool fish survey.

Size Range (in)	Black Bullhead	Bluegill	Carp	Green Sunfish	Hybrid Sunfish	Large-mouth Bass	Minnows - Darter	Pumpkin-seed	Yellow Bullhead
1		3							
1.5		8		5			1		
2				1					
2.5									
3.0	7	3				3			
3.5	1								
4.0	2	12		4		5		1	
4.5	1	7		2				1	
5.0	5	13		2	4	2		3	
5.5		5			1	1		4	1
6.0	5	10			1	1		11	
6.5		2	1					2	1
7.0		9			1			2	
7.5									
8.0		2							
8.5									
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Fish Lengths - Meadowbrook Lake

Meadowbrook Lake has several year classes of bullheads and carp. One small largemouth bass was observed in Meadowbrook Lake.

Table 8. Length frequency of fish species (as total length) for the Meadowbrook Lake fish survey.

Size Range (in)	Black Bull-head	Black Crappie	Blue-gill	Carp	Green Sun-fish	Dog-fish	Hybrid Sun-fish	Large-mouth Bass	Pump-kin-seed	White Sucker	Yellow Bull-head	Yellow Perch
<3.0			1									
3.0	1		3									
3.5	1								1			
4.0		1	4				1				2	
4.5	2	2										
5.0	4	1	1					2			2	
5.5		1					1					
6.0	3			2			1		4			
6.5	6			2					5			1
7.0	9			7	1				8		2	
7.5	2			1					2			
8.0	6			10					1			
8.5	1			6								
9.0	8			10						1		
9.5	10			1							2	
10.0	12			11						4		
10.5				1								
11.0				3						1	2	
11.5										1		
12				1		1				1		
13				1		2						
14										3		
15										2		
16										5		
17				1		1				5		
18												
19												
20												
21												
22												
23												
24												
25												
26						1						
27												
28												

Fish Lengths - Utley Pool

Utley Pool has several year classes of bluegill sunfish and pumpkinseed sunfish, but the population seems to be dominated by black bullheads.

Table 9. Length frequency of fish species (as total length) for the Utley Pool fish survey.

Size Range (in)	Black Bull-head	Black Crap-pie	Blue-gill	Carp	Green Sun-fish	Dog-fish	Hybrid Sun-fish	Large-mouth Bass	Min-nows Gold. shiner	North. pike	Pump-kin-seed	White Sucker	Yellow Bull-head	Yellow Perch
2.0			1		1									
2.5											4			
3.0	21	1	11				2				3			
3.5							1							
4.0		9												1
4.5		8						2			1			
5.0		1					1		1		2			
5.5	2		1				1				1		1	1
6.0	6		2	2	1		2				1		2	3
6.5	4		2	1							3		1	1
7.0	6		1					1			5		4	2
7.5	4										9		2	
8.0	6		2	2				1			1			
8.5	1										4	1	3	
9.0	4			1							2		7	4
9.5														
10.0	2												3	6
10.5													1	
11.0													3	2
11.5														
12				1										
13				1								4		
14				2								11		
15												2		
16												4		
17				1								7		
18														
19										1				
20				1										
21														
22														
23														
24														
25						1								

Fish Lengths - Lake Hiawatha

Lake Hiawatha had multiple year classes of carp, bullheads, and dogfish. Predator fish were represented by largemouth bass and dogfish. Some of the dogfish were large, perhaps a state record fish may come from Lake Hiawatha in the near future.

Table 10. Length frequency of fish species (as total length) for the Lake Hiawatha fish survey.

Size Range (in)	Black Bull-heads	Yellow Bull-heads	Black Crappie	Blue-gills	Carp	Green Sunfish	Dogfish	Large-mouth Bass	White Sucker	Yellow Perch
2.0					1					
2.5										
3.0	1							1		
3.5	8									
4.0	1									
4.5								5		
5.0					1			1		
5.5				1	1					
6.0					4					1
6.5	5				1	1				
7.0	14	2			4			2		
7.5	29		1		4			1		
8.0	10				13			1		
8.5					7					
9.0		1			4					
9.5		1								
10.0		1								
10.5		1								
11.0		1							2	
11.5										
12										
13									2	
14									2	
15							2			
16							1			
17										
18									1	
19										
20										
21										
22										
23							1			
24										
25							1			
26							1			
27							1			
28							1			
29										
30										
31										
32										
33										
34										

Grays Bay Pool, October 2009

Figure 3. Upper left: Dam at Grays Bay, Lake Minnetonka. There was no outflow in October 2009. Upper right: Mini fyke net set in Minnehaha Creek, referred to as Grays Bay Pool, in this survey. Lower left: Representative catch from the mini fyke nets consisted of sunfish, bullheads, and small gamefish. Lower right: Largemouth bass were present, but were small in size.

Meadowbrook Lake, October 2009

Figure 4. Upper left: Black bullheads dominated the fish community.
Upper right: Carp were numerous, but small, mostly young-of-the-year.
Lower left: Dogfish (bowfin) were common.
Lower right: Several year classes of bullheads and dogfish were present, but carp were primarily 1-year old.

Utley Pool, October 2009

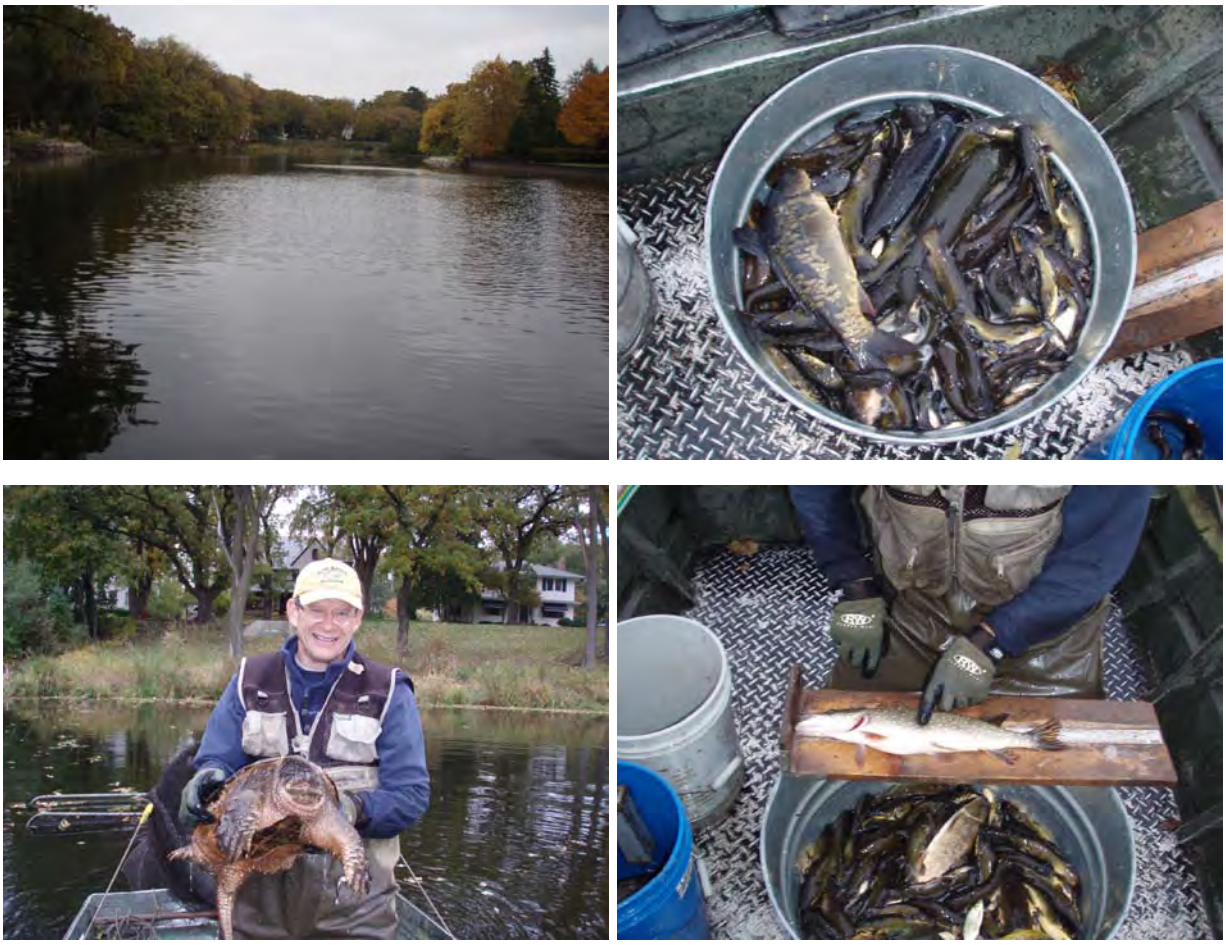


Figure 5. Upper left: A dam at the old Edina mill site, created a pool behind it, and a wide spot on the creek referred to as Utley Pool in this report.
Upper right: Black bullheads dominated the catch and carp were present as well.'
Lower left: Snapping turtles were present in this urban stretch of Minnehaha Creek.
Lower right: One northern pike was sampled. It's a couple of years old.

Lake Hiawatha, October 2009

Figure 6. Upper left: Black bullheads dominated the fish community.
Upper right: Young-of-the-year carp were common.
Lower left: Large dogfish were present. Apparently, they do not easily winterkill.
Lower right: Minnows were sampled in Lake Hiawatha. Largemouth bass were present, but were small (young-of-the-year). No adult bass were observed.

Discussion

Minnehaha Creek (originally called Brown's Creek in 1853, Figure 7) has a length of about 22 miles from the outlet of Lake Minnetonka at the Gray's Bay dam to the confluence of the Mississippi River, below Minnehaha Falls. The creek has a fair diversity of fish species but the biomass is dominated by low-oxygen tolerant species including black bullheads, carp, white suckers, and dogfish.

In 2003, the MnDNR conducted a stream fish survey using backpack shocking methods and sampled nine stations with each station encompassing a 1,000 foot survey length. The 9,000 feet of surveying was equivalent to 1.7 miles of stream or about 9% of the Minnehaha Creek length. More minnow species were monitored in this survey as were young-of-the-year (yoy) largemouth bass compared to our survey using trapnets (Table 8).

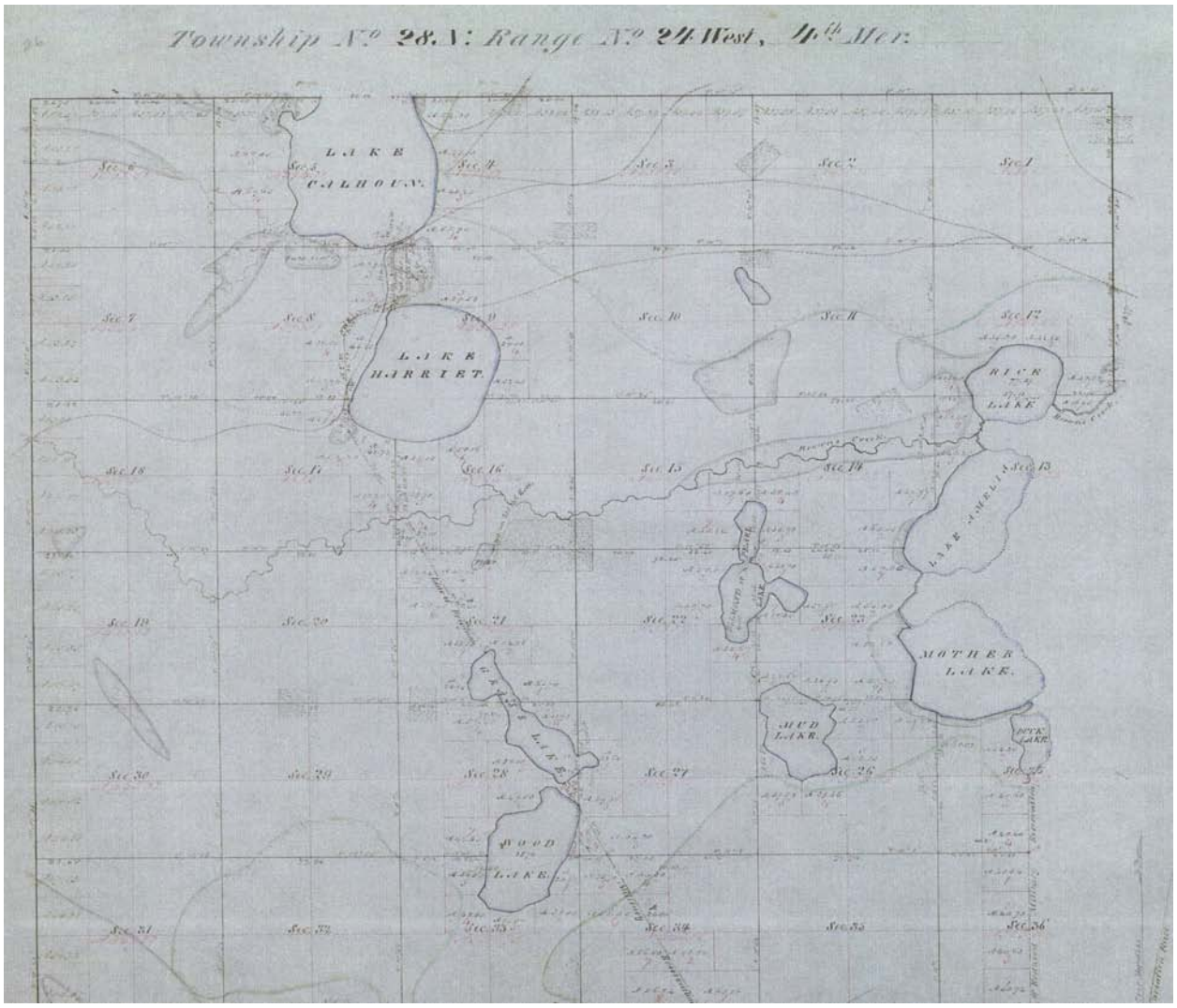


Figure 7. 1853 historical map of a portion of the Minnehaha Creek Corridor. In 1853, Lake Hiawatha was called Rice Lake and Lake Nokomis was called Lake Amelia (source: Minnesota Historical Society).

Table 8. MnDNR fish survey results from August 15-25, 2003 using electro-fishing and 1,000 foot stream length. Map of station locations is shown below. Red shading shows the two highest number of fish sampled at a site.

Station	1	2	3	4	5	6	7	8	9	# of occurrences of species in stations 2 - 9
Miles from mouth	0.3	1.8	4.7	9.5	11.2	13.8	19	20.3	21.3	
Bass, largemouth - adult				4	4			1	8	8
Bass, largemouth - yoy	12	7	1	18	12	1	3	7	33	
Bass, smallmouth	11									0
Bullhead, black		97	5	22	21	7	1	7	6	8
Bullhead, brown						1	1		1	3
Bullhead, yellow		1		5	40	9	9	18		6
Carp	15	40	1	8	13	2	8	35	5	8
Gizzard shad	52									0
Northern pike					1					1
Redhorse, golden	1									0
Redhorse, shorthead	5									0
Sunfish, bluegill	38	1		4	4	1	3	18	6	7
Sunfish, green		11	14		25	28	5		2	6
Sunfish, hybrid		2	1	2	1	3		1	1	7
Sunfish, pumpkinseed		1		2	14	3	1	1	2	7
Walleye								1		1
White sucker	3	26	3	7	69	9	12	24	1	8
Yellow perch					2	2	1			3
Minnow-related										
Black darter	3									0
Jonny darter	1	5		4	4	2	1		6	6
Iowa darter				1	2				8	3
Bluntnose minnow	3	4			2	1		7	27	5
Brassy minnow	5				1					1
Central mudminnow					1		8		11	3
Fathead minnow				3	2					2
Creek chub	7	19	4	8	27					4
Golden shiner		5							5	2
Emerald shiner	51									0
Spotfin shiner	72	8			4			1		3
Logperch	3		3	2		3			1	4
Number of Species	**16**	**14**	**8**	**13**	**19**	**14**	**12**	**11**	**15**	

Comparison of Green Sunfish to Green Sunfish Hybrid (various sources)

Green sunfish (Virginia Fish and Game Service)

Green sunfish hybrid (Friends of Sligo Creek)

Green sunfish (Univ. Arkansas at Pine Bluff)

APPENDIX

A. Report: Assessing Potential Impacts of Fish on Water Quality

APPENDIX A

Assessing Potential Impacts of Fish on Water Quality in Three Pools in Minnehaha Creek and in Lake Hiawatha, a Lake Tributary to Minnehaha Creek

Field work conducted on July 31, 2009 and August 3, 2009 with assistance from Dr. Udai Singh and Kelly Slattery, Minnehaha Creek Watershed District

Prepared by: Steve McComas, Blue Water Science

Report Submitted: September 4, 2009

Abstract

Minnehaha Creek and lakes and ponds tributary to Minnehaha Creek display a variety of water quality conditions. The objective of this fish assessment was to determine if there was clear evidence of impacts from carp, bullheads, or other bottom-feeding fish to adversely impact water quality. Three pools within the Minnehaha Creek corridor and Lake Hiawatha were evaluated. The pool below Gray's Bay dam had fish present, but water clarity was excellent. The Meadowbrook Lake site had fair to poor water quality and the Utley Park pool and Lake Hiawatha had poor water quality. Black bullheads were observed at all four sites, but may have a significant impact in Utley Park and Lake Hiawatha. In Lake Hiawatha signs of carp were present, but no carp were observed.

It is recommended that fish surveys in all four sites be conducted to assess the fish community and correlate fish populations to water quality. Because winterkill may play a significant role in structuring the fish community, it is also recommended that dissolved oxygen conditions should be monitored over the winter months.

Introduction

Minnehaha Creek and lakes and ponds tributary to Minnehaha Creek display a variety of water quality conditions. The impact of nutrient inputs from watershed drainage is generally considered the primary influence on water quality, but there can be internal factors contributing to water quality as well. One of the internal factors can be high phosphorus loads from excessive numbers of carp, bullheads, or other bottom-feeding fish.

In June and July of 2009, rainfall was below average and outflow from lake Minnetonka at the Gray's Bay dam was negligible. With the creek flow dramatically reduced, Minnehaha Creek consisted of a series of pools. This offered an opportunity to assess several isolated pools with open water to look for internal factors influencing water quality since watershed runoff would be minimal. Four sites with standing water were evaluated on July 31 and August 3 of 2009 (Figure 1) and evidence for fish impacts were assessed. The objective of this assessment was to determine if there was enough evidence for fish impacts on water quality to warrant a more comprehensive evaluation.

Figure 1. Four sites that were evaluated as part of a fish assessment (shown in red squares). Site 1 was the Grays Bay Dam pond, Site 2 - Meadowbrook Lake, Site 3 - Utley Park Pool, and Site 4 - Lake Hiawatha.

Methods

To assess potential fish impacts in the three pools and Lake Hiawatha, several assessment methods were used. Aquatic plants were monitored with a meander survey through the open water using a rakehead sampler and visual observations. It was assumed if excessive numbers of bottom-feeding fish were present, submerged aquatic plant growth would be scarce or absent. We also were looking for bowl-sized depressions in the nearshore sediments. Depressions are made as a result of carp feeding activities.

In addition, we were also scouting for direct observation of any fish that could be spotted.

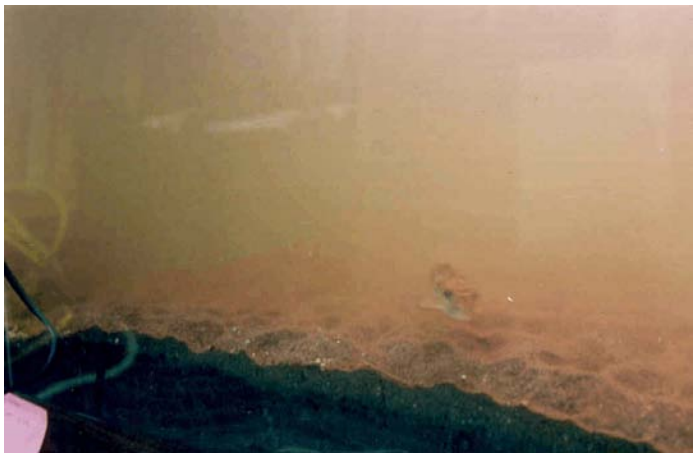
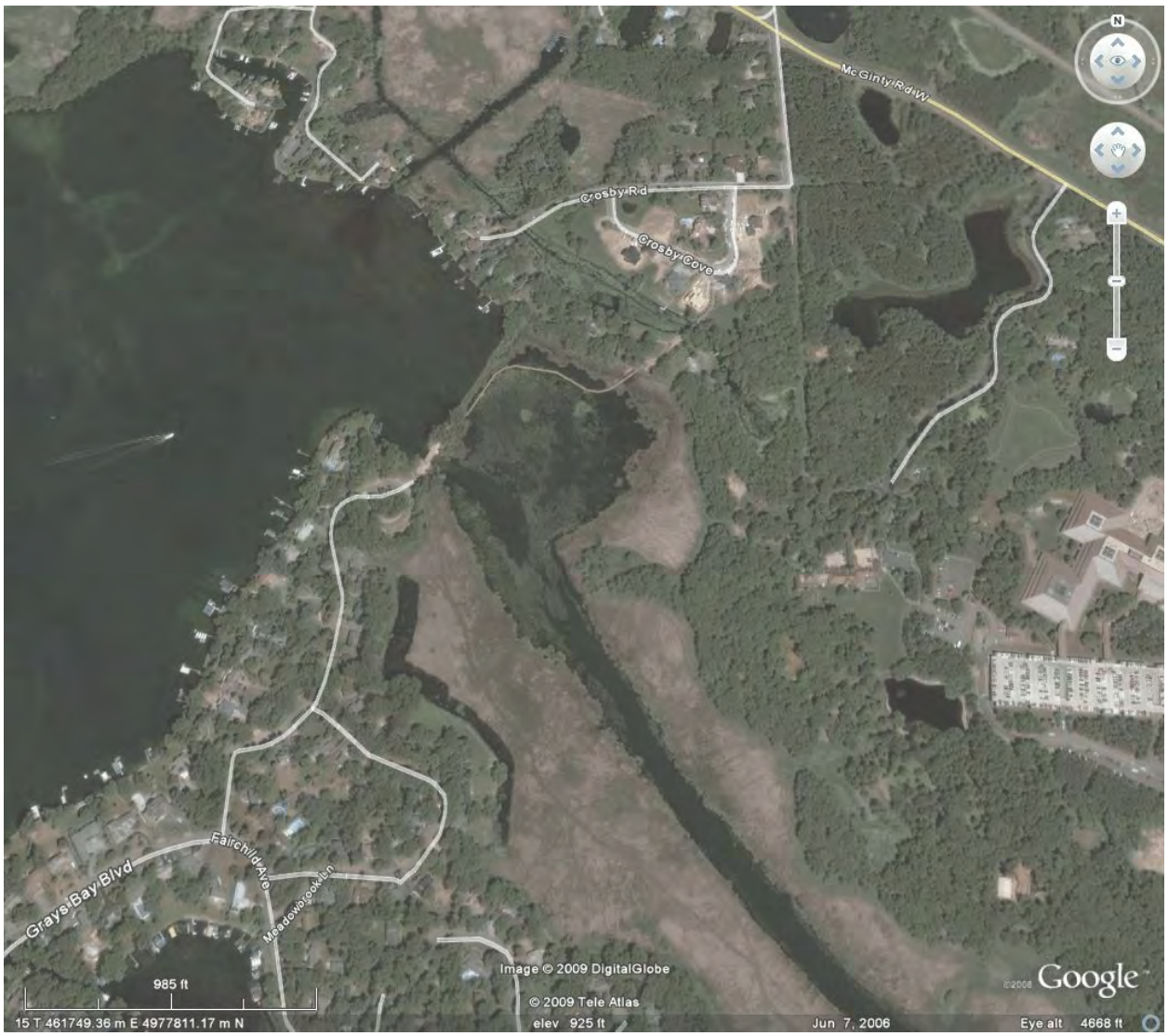


Figure 2. [left] Aquatic plants were sampled with a rakehead sampler. This is coontail found in Lake Hiawatha.
[right] As a result of carp feeding activities, they produce bowl-shaped depressions in lake sediments. Here are depressions made by a young carp in a laboratory aquarium. These types of depressions were looked for during the fish assessment.

Results

Site 1. Gray's Bay Dam Pool (August 3, 2009)

Open water area:	1.5 acres
Average depth:	1 - 3 feet
Secchi disc:	3 feet - visible on bottom
Fish Observed:	Schools of young-of-the-year bullheads and largemouth bass with one adult largemouth bass were observed. Schools of minnows were present also.



Site 1 - Grays Bay Pool below the dam.

Site 1. Gray's Bay Dam Pool

Observations

Open water below the dam is 1 to 3 feet deep. Water is extremely clear. There is 100% coverage of aquatic plants with a good diversity of species including the following: chara (dominant species), water stargrass, water celery, narrowleaf pondweed, and coontail. Water lilies are dominant to the sides of the open water. The dominant emergent plant was phragmites.

Several fish species were observed including bullheads, bass, and minnows.

Sediments were sandy near the dam, and became more peaty moving downstream.

Discussion

Because of the clear water and abundant coverage of aquatic plants, fish do not appear to have any adverse impact on water quality. The open water area is about 1.5 acres, but the wetland areas is much more extensive.

Recommendations

It would be informative to set several trapnets for two days to assess the fish population in this open water pool. It is suspected there is a low fish density. These results could be compared to results from other sites on Minnehaha Creek where water clarity is poorer.

Open water in the pool was bordered by white lilies.

Approximately 500 feet from the dam, emergent wetland vegetation made travel by canoe impossible.

Site 2. Meadowbrook Lake (August 3, 2009)

Open water area:	19 acres
Average depth:	3 - 4 feet (maximum depth: 8 feet)
Secchi disc:	5 feet (August 3, 200)
Total phosphorus:	106 ppb (August 3, 2009)
Fish Observed:	Young-of-the-year bullheads

Site 2 - Meadowbrook Lake

Site 2. Meadowbrook Lake

Observations

Good submerged plant coverage of 80-90% out to 3 feet of water depth. Coontail was sparse at 5 feet. Floating filamentous algae was common in the nearshore area. Several schools of young-of-the-year bullheads were observed.

Discussion

The water clarity in Meadowbrook Lake is 5 feet and plant growth is present although not excessive. Fish impacts would appear to be moderate to light.

It is predicted that the fish community in Meadowbrook Lake is having a moderate adverse impact on water quality. Also there is a likelihood of winterkill conditions that could structure the fish community toward bottom-feeding species, especially bullheads.

Recommendations

Set two to four trapnets for two days to assess the fish community. Conduct wintertime testing for dissolved oxygen.

Water levels were down about 1 to 2 feet in Meadowbrook Lake on August 3, 2009.

Filamentous algae was common in the nearshore area of Meadowbrook Lake.

Site 3. Utley Park Pool (August 3, 2009)

Open water area:	11 acres
Average depth:	3 - 4 feet (maximum depth was 7 feet by mill pond dam)
Secchi disc:	1.0 foot (by mill pond dam)
Total phosphorus:	62 ppb
Fish Observed:	Several schools of young-of-the-year black bullheads

Site 3 - Utley Park Pool. Estimated length from 50th Street to Highway 100 is 3,900 feet.

Site 3. Utley Park Pool

Observations

Plants are scarce in this section of Minnehaha Creek. Coontail and water stargrass, where it is found, grow out to about 3 feet of water depth. About 500 feet from the dam, south of Bridge Street plants are scarce. Young-of-the-year black bullhead schools are observed. About 150 feet south of Highway 100 water lilies have about 80% coverage.

Discussion

The low clarity in this section may limit plant growth. However, plants are sparse even in water where they grow (less than three feet deep). Overall shallow water depths combined with the observation of bullheads indicates there could be partial winterkill conditions which would select for a hardy fish community where bullheads would be important. Bullheads could be limiting plant growth and contributing to poor water quality.

Recommendations

Because of the potential for fish impacts in the open water pool in this stretch of the creek, up to four trapnets should be set for two days to assess the fish population. In winter, dissolved oxygen readings should be taken.

The Utley Park Pool is formed by a mill pond dam, just north of 50th Street and Browndale Avenue. It was 3 to 4 feet deep.

Schools of young-of-the-year black bullheads were observed in the Utley Park Pool.

Site 4. Lake Hiawatha (July 31, 2009)

Size:	53 acres
Average depth:	Approximately 15 feet (maximum depth: 33 ft)
Secchi disc:	1.7 feet
Fish Observed:	Schools of young-of-the-year black bullheads.

Site 4 - Hiawatha Lake

Site 4. Hiawatha Lake

Observations

Aquatic plants grew out to about 5.5 feet of water depth.

Dominant plants were coontail and elodea with water stargrass and Eurasian watermilfoil also observed. Cattails were intact, no undercutting was observed. Undercutting can occur as a result of carp feeding activities.

Schools of young-of-the-year black bullheads were observed. Although no carp were observed, there were numerous depressions in the sandy nearshore area on the southwest side of the lake which are often indicative of carp feeding.

Discussion

Staff from MCWD observed a fish kill consisting of carp and some bullheads in the spring of 2009 after ice out indicating a possible partial winterkill. The abundant growth of elodea (that was observed on July 31, 2009) is often correlated with fish kills. Water clarity is poor in Lake Hiawatha and there is a potential for fish impacts on water quality.

Recommendations

Because there is a possible winterkill situation, it would be helpful to have an updated fish community evaluation. Up to six trapnets should be set for two days (8 lifts) to characterize the existing fish population in Lake Hiawatha. Winter dissolved oxygen readings should also be taken.

Elodea was abundant in shallow water.

Several schools of young-of-the-year black bullheads were observed in Lake Hiawatha.

Conclusions

Low flow in Minnehaha Creek resulted in a number of isolated pools in mid summer of 2009. A summary of conditions and observations for three pools and for Lake Hiawatha are shown in Table 1.

Table 1. Summary of conditions and observations for four sites along the Minnehaha Creek corridor.

	1. Gray's Bay Dam Pool	2. Meadowbrook Lake	3. Utley Park Pool	4. Lake Hiawatha
Open water (acres)	1.5	19	11	53
Average depth (feet)	3	4	3 - 4	15
Secchi disc (feet)	3.0 - bottom	5.0	1.0	1.7
Aquatic plants	abundant	0 - 3: common 3 - 5: sparse 5 - 8: no plants	sparse	patchy, elodea, sparse to common
Fish observed	black bullheads largemouth bass minnows	black bullheads	black bullheads	black bullheads, depressions possibly made by carp feeding activities
Total phosphorus (August 3, 2009)	--	106 ppb	62 ppb	--

In this assessment, the Gray's Bay Pool had good water quality, Meadowbrook Lake had fair water quality, and Utley Park Pool and Lake Hiawatha had poor water quality. It is possible the water quality of Utley Park and Lake Hiawatha are influenced by fish impacts. Gray's Bay Pool water quality does not appear to be influenced by fish and Meadowbrook Lake may have some influence from fish.

It is recommended that fish surveys in all four open water areas be conducted to assess the fish population and correlate fish populations to water quality. Because winterkill may have a significant role in structuring the fish community of these open water pools, it is also recommended that dissolved oxygen and temperature conditions should be monitored 3 to 4 times over winter to assess winterkill potential due to low oxygen.