TETRA TECH

August 31, 2021

Mr. Todd Davis
EPA Site Assessment Coordinator
U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Subject: **Integrated Site Assessment and Removal Site Evaluation Report regarding Sunshine Laundry Site, Fort Dodge, Iowa**
EPA SEMS Identification No. IAN000706520
U.S. EPA Region 7, START 5, Contract No. 68HE0719D0001
Task Order No. 19F0086.008
Task Monitor: Todd Davis, EPA Site Assessment Manager

Dear Mr. Davis:

Tetra Tech, Inc. submits the enclosed Integrated Site Assessment and Removal Site Evaluation Report regarding the Sunshine Laundry site in Fort Dodge, Iowa. A Hazard Ranking System (HRS) scoring memorandum will be submitted separately. If you have any questions or comments about this submittal, please contact the Project Manager at (816) 412-1771.

Sincerely,

Jenna Mead

Jenna Mead, R.G.
START Project Manager

Ted Faile

Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Doug Ferguson, On-Scene Coordinator

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INTEGRATED SITE ASSESSMENT AND REMOVAL SITE EVALUATION REPORT

SUNSHINE LAUNDRY SITE
FORT DODGE, IOWA

EPA SEMS ID – IAN000706520

Superfund Technical Assessment and Response Team (START) 5 Contract
Contract No. 68HE0719D0001, Task Order 19F0086.008

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
11201 Renner Boulevard
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August 31, 2021

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CONTENTS

CONTENTS (Continued)

APPENDICES

ATTACHMENTS

CONTENTS (Continued)

TABLES

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division tasked the Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START), under contract number 68HE0719D0001, to conduct an Integrated Site Assessment (ISA) (consisting of a preliminary assessment [PA], site inspection [SI]), and a removal site evaluation [RSE]) of the Sunshine Laundry site (the site) in Fort Dodge, Iowa (the City) (see Figure 1, Appendix A). This task was under authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA). Work proceeded under Task Order Number 19F0086.008. The site has been entered into the Superfund Enterprise Management System (SEMS), with site identification number IAN000706520.

The purpose of the ISA was to determine whether any threats to human health or the environment exist as a result of the releases of volatile organic compounds (VOC) such as tetrachloroethene (PCE) associated with a former dry cleaning facility at the site—specifically, releases to soil and/or groundwater that could migrate via vapor intrusion (VI) into nearby structures. In addition, the RSE was conducted to delineate extents of soil and groundwater contamination for potential removal or remedial action prior to a proposed purchase of the property by the City of Fort Dodge. Those data would be evaluated to determine whether EPA removal response and/or further pre-remedial evaluation would be warranted.

Apparent Problem

Rainbow Cleaners operated at the site (2422 5th Avenue South in Fort Dodge, Iowa) from about 1984 to 1992. The building previously had been used as a restaurant. Sunshine Laundry (Sunshine Laundromat and Tanning or Sunshine Laundromat Deli and Tanning) operated from 1992 until June 2021 and reportedly did not perform dry cleaning. A December 1992 inspection of Rainbow Cleaners indicated that significant evidence (spills and odors) suggested storage of PCE wastes and/or spent filters and still bottoms in a shed behind the building, and disposal of these materials in a trash dumpster in the same area (Iowa Department of Natural Resources [IDNR] 2021b). Dry cleaning had ceased by the time of the inspection, and the machine had been moved to another facility in Des Moines. Investigations between 2008 and 2014 identified PCE contamination in soils and groundwater at the property, with groundwater contamination extending east onto the neighboring bank property. In 2014, IDNR suspended further monitoring requirements because site conditions had not changed within the previous 5 years. In 2021, the City of Fort Dodge asked EPA to investigate the former dry cleaning site, which the City was considering purchasing for use as a parking lot.

2.0 SITE DESCRIPTION

This section conveys information regarding the site's location, description, operational history, waste characteristics, geology, and hydrogeology.

2.1 SITE LOCATION AND DESCRIPTION

The City of Fort Dodge (City) is on the Des Moines River in Webster County, Iowa (Appendix A, Figure 1), and according to the 2010 census, had a population of 25,206 (U.S. Census Bureau 2021). The City supplies potable water to the population; however, many residing outside of city limits obtain their water from private wells (Iowa Geologic Survey [IGS] 2021). The City has an economy primarily involving biofuels, livestock feed, gypsum and limestone mining, can production, drywall manufacturing, trucking, manufacture of veterinary pharmaceuticals and vaccines, and retail (Wikipedia 2020). The City appears on 7.5-minute topographic quadrangle maps of Fort Dodge South, Iowa and Fort Dodge North, Iowa (U.S. Geological Survey [USGS] 2018a, b).

The approximately 0.94-acre site is on the eastern side of the City at 2422 5th Avenue South (Appendix A, Figure 2). The single-story building on the site was constructed in 1974, and the site also features a shed north of the building and a paved parking lot. A stormwater drain is in the parking lot about 50 feet north of the and in line with the sidewalk at the west side of the building. Sunshine Laundry was operating during the ISA investigation; however, the laundromat manager indicated that it was slated for closure in mid-June 2021. The manager indicated that the dry cleaning machine had been at the northwest corner of the building in the area hosting a television lounge at the time of the manager's statement. Inside the southwest entrance was a former snack bar used as the attendant's counter/office area; east-west lines of washers occupied the eastern half of the building, with dryers along the eastern and northern walls. Floor drains were present between the rows of machines. The laundromat manager indicated the drain lines flow east and then south. A furnace/utility room was at the northeast part of the building inside the north door to the building.

The site is surrounded by an asphalt parking lot in poor condition, with commercial/industrial buildings beyond. A partially vacant shopping center is across an alley to the north, a former (currently vacant) Wells Fargo Bank adjoins to the east, La' James International College (cosmetology) is across 5th Avenue South to the south, and Nestlé Purina PetCare Company (NPPC) is beyond a power/cable utility easement to the west. Numerous vacant properties are present in the area; however, revitalization and redevelopment has been planned or is underway in the area. The immediate area surrounding the site is commercial, with the closest residential structures about 0.25 mile to the south and west. The Crossroads

Mall (to be demolished and redeveloped) and retail stores are generally northeast (downgradient) of the site, with the closest downgradient residences about 0.5 mile north or 0.8 mile northeast. Global Positioning System (GPS) coordinates at the approximate center of the Sunshine Laundry property are 42.50142 degrees (º) north latitude and 94.16390º west longitude.

2.2 OPERATIONAL HISTORY AND WASTE CHARACTERISTICS

The building at 2422 5th Avenue South was constructed in 1974 as a restaurant, and the land previously had been used for agriculture (Burns & McDonnell Engineering Company, Inc. [Burns & McDonnell] 2008). Rainbow Laundry and Dry Cleaning (Eugene Hiskey, owner) operated as a coin-operated dry cleaning and laundry at the property from approximately 1984 until 1992 (NewspaperArchive 2020). Mr. Hiskey sold the property in 1994 to Sunshine Company LC (Webster County, Iowa 2020), and Sunshine Laundry operated out of the building until June 2021. During this investigation, the laundromat manager stated that he had been informed that the business would be closing on June 18, 2021.

PCE

PCE is a chlorinated solvent with an ether-like odor that has been typically used in dry cleaning operations and as a degreaser for metal parts (Agency for Toxic Substances and Disease Registry [ATSDR] 2019a). Prolonged exposure to PCE may cause vision changes and neurobehavioral effects.

The common dry-cleaning solvent PCE was not used in the United States until 1934; however, petroleum solvents and carbon tetrachloride were in use as dry-cleaning solvents in the early 1900s. By 1948, PCE had replaced carbon tetrachloride as the major chlorinated dry cleaning solvent used in the United States (petroleum solvents still dominated overall). By 1962, dry cleaning operations accounted for 90 percent of the PCE used in the United States (State Coalition for Remediation of Drycleaners [SCRD] 2007). PCE degrades to trichloroethene (TCE). PCE has low to moderate mobility in soil and may leach slowly to groundwater. Its solubility in groundwater is slight (0.15 grams per liter) at 25 degrees Celsius (ºC), and its specific gravity is 1.62 (Centers for Disease Control and Prevention [CDC] 2020). PCE tends to accumulate at greater depths with increasing distance from the source area.

Biodegradation of chlorinated VOCs (CVOC) such as PCE may be enhanced by presence of petroleum hydrocarbons. The microorganisms obtain energy by transferring electrons from fuel hydrocarbons or native carbon (electron donors) to CVOCs (electron acceptors) in an oxidation-reduction reaction (EPA 1998). Moreover, microbes feeding on petroleum hydrocarbons may consume CVOCs in the groundwater contaminant plume.

TCE

TCE is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste (ATSDR 2019b). TCE is reasonably anticipated to be a human carcinogen. Drinking small amounts of TCE for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women (ATSDR 2019b). The *cis*- and *trans*- isomers of 1,2-dichloroethene (DCE) are common degradation products from TCE. These daughter products eventually degrade to vinyl chloride.

TCE was introduced as a dry cleaning solvent in the United States in 1930 (SCRD 2007) and many dry cleaning operations during the early-late 1900s used TCE as a spotting agent or specialty cleaner. In addition to dry cleaning, TCE is used as a degreaser for metal parts and as a precursor chemical in industry (ATSDR 2019b). TCE is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers. TCE has low to moderate mobility in soil and may leach slowly to groundwater. Its solubility in groundwater is low (1 gram per liter at 25 ºC), and its specific gravity is 1.46 (CDC 2020). TCE is denser than water and is typically found at greater depths with increased time and/or distance from a source area if released to the environment.

2.3 GEOLOGY AND HYDROGEOLOGY

Webster County is in the northwest portion of central Iowa within the Central Lowlands Physiographic Province. Wisconsin-aged glaciation occurred in central Iowa during three major advances across an area referred to as the Des Moines Lobe. Glacial till comprised of silt loam and sandy loam overlies Pennsylvanian and Mississippian bedrock. The irregular bedrock surface topography in this region varies considerably and ranges in elevation from 700 to 950 feet above mean sea level (amsl). Regional Pleistocene deposits vary in thickness from about 100 to 300 feet, depending on the bedrock surface elevation (University of Iowa 2020). The Mississippian Saint Louis (sandy to silty dolomite) and Pella (calcareous shale) Formations form the uppermost bedrock in the site area (IDNR 1997). Iowa's Geosam database of water wells indicates that typically about 80-100 feet of glacial till overlies bedrock in this area (IGS 2021).

The exposed geologic units in the Fort Dodge area include early Pennsylvanian shale and sandstone; late Mississippian dolomite, limestone, and sandstone; and Jurassic gypsum and red beds (Iowa Geologic and Water Survey [IGWS] 2010). The City's bedrock geology is unique, including conglomerates, gypsum beds, and red beds of the Upper Jurassic-aged Fort Dodge Formation. The Fort Dodge Formation

contains some of the most quarried bedrock units in Iowa due to economic viability of the high-quality gypsum exposed in the Fort Dodge area (Geological Society of Iowa 2014).

Soils in Fort Dodge are very deep and well drained on foot slopes, alluvial fans, upland drainageways, treads, and risers on stream terraces. These soils formed in loamy colluvium or alluvium overlying coarse textured sediments (U.S. Department of Agriculture [USDA] 2006).

Fort Dodge is part of Iowa's Southern Groundwater Province, which is classified as a poor groundwater area in terms of sufficient quantity and quality (IDNR 2003). Public water supply (PWS) wells serving Fort Dodge are near the Des Moines River in an area extending from about 2.75 miles northwest of the site to 1.1 miles southwest of the site. The Fort Dodge PWS serves a population of 26,186 persons (IDNR 2021a). Five active municipal wells pump from sandstones and dolomites of the Cambrian-Ordovician Aquifer and have total depths of 1,830 to 2,307 feet below ground surface (bgs). Three active wells draw from the Mississippian Aquifer sandstones and dolomites, with total depths between 516 and 980 feet bgs (Fort Dodge Water Department [FDWD] 2017, IDNR 2021b).

Domestic wells in the area are typically installed in the Mississippian Aquifer. The IDNR Private Well Tracking System (PWTS) identified several commercial wells, generally associated with gypsum mines, about 1.5-2 miles southeast of the site. These wells have total depths ranging from 345 to 720 feet, suggesting that they are producing water from the Mississippian Aquifer. One household well was identified in the PWTS, about 1.9 miles northeast of the site, and just outside of Fort Dodge city limits. The IGS GeoSam database indicates that this well has a static water level (SWL) of 44 feet bgs and produces groundwater from sand and gravel at 85-95 feet bgs (IGS 2021). The well log indicates that clay and sandy clay are present from the surface to 70 feet bgs, and sand and gravel below that to 98 feet bgs, where shale and limestone Mississippian bedrock is present. IGS GeoSam well records indicate most wells in this rural area are between 148 and 192 feet deep and produce groundwater from the Mississippian Aquifer. The GeoSam database also includes records pertaining to six wells in the northwest quarter of Section 22, T89N, T28W, about 1 mile northeast of the site. These wells were drilled between 1960 and 1966 to depths between 232 and 380 feet bgs. It is uncertain whether these wells were associated with houses on 5th Avenue North or 10th Avenue North; however, these residences are within current city limits and likely are now supplied with municipal water.

Groundwater flow in the Fort Dodge area is generally southwest toward the Des Moines River and regionally toward the south-southeast. The regional groundwater flow of the Mississippian Aquifer is to the south, with discharge into the Des Moines River. Regional groundwater flow of the Silurian-

Devonian Aquifer is to the southeast, with discharges into several rivers including the Iowa, Winnebago, Shell Rock, Cedar, and Maquoketa Rivers. Regional groundwater flow of the Cambrian-Ordovician Aquifer is to the southeast, with discharge into the Mississippi River Valley (IDNR 2003). Based on the historical plume maps, shallow groundwater flow at the site is to the northeast, and groundwater first occurs at depth of 5.45 feet bgs. The Des Moines River is approximately 1.25 miles southwest of the site. Two tributaries of the Des Moines River are near the site—Soldier Creek is approximately 1.5 miles north of the site, and Gypsum Creek is less than 1 mile southeast of the site (Appendix A, Figure 1).

3.0 PREVIOUS INVESTIGATIONS

START reviewed documents regarding previous investigations at the site available through IDNR's Contaminated Sites webpage (IDNR 2021c). In June 1992, EPA inspected the site under Section 3007 of the Resource Conservation and Recovery Act (RCRA). EPA sent a Letter of Warning to Mr. Hiskey of Rainbow Cleaners in December 1992 stating that the inspection had revealed significant evidence suggesting storage of PCE wastes and/or spent filters and still bottoms in a shed behind the building, and disposal of these materials in a trash dumpster in the same area (IDNR 2021c).

In 2008, NPPC retained Burns & McDonnell to conduct a Phase I Environmental Site Assessment (ESA) of the site. NPPC was considering purchase of the property for additional facility parking. Burns & McDonnell obtained documents regarding the 1992 EPA inspection through the Freedom of Information Act (FOIA). The Phase I ESA report alludes to a RCRA complaint inspection that indicated cessation of dry cleaning operations at the facility about 6 months before that inspection—and when the dry cleaning machinery was moved to another facility owned by Mr. Hiskey in Des Moines. The documents reportedly indicated no presence of wastes at the time; however, staining and PCE odors were detected. Mr. Hiskey admitted previous storage of PCE wastes in the shed in 5-gallon buckets, and previous placements of waste filters back into the box as new filters had been removed. Reportedly, the owner's son had transported the wastes to the Des Moines facility, or (during 1990-91 only) Safety Kleen had collected those wastes (Burns & McDonnell 2008). This shed is still present at the site and is about 25 feet north of the building at the east property line. Trash dumpsters are between the shed and the building.

Ms. Jyoti Raval, co-owner of Sunshine Laundry, stated that no dry cleaning had occurred at the site during Sunshine Laundry ownership (Burns & McDonnell 2008).

A subsequent (2008) Phase II ESA of the site by Burns & McDonnell at the request of NPPC included direct-push borings (DP-1 through DP-10) advanced at 10 locations for collection of soil and groundwater samples; two sub-slab vapor samples (SVP-1 and SVP-2) also were collected inside the Sunshine Laundry building. The soil and groundwater sampling locations were in or near areas suspected to be along likely pathways of contaminant migration. Three or four samples from each boring were collected and field-screened for organic vapors by use of a photoionization detector (PID). One sample from each boring was selected for laboratory analysis for VOCs. Figure 2 in Appendix A shows sampling locations during the 2008 Phase II ESA. Table B-1 in Appendix B lists VOC results from the soil samples, and includes information on depths where elevated PID readings were noted on the soil boring logs.

Analytical results from the Phase II ESA indicated that soils collected within 14-15 feet bgs (just above the water table) at DP-9 contained 22,100 micrograms per kilogram (µg/kg) of PCE, which exceeded the Iowa Statewide Standard (ISS) referenced as applicable at that time (5,700 µg/kg, compared to the current ISS of 1,500,000 µg/kg). DP-9 was about 50 feet north of the building near a storm sewer inlet in the parking lot. The second highest PCE concentration in soil was 1,850 µg/kg detected at 2-3 feet bgs at DP-4, near the northwest corner of the building and along the storm sewer line.

A groundwater sample collected within the interval from 22-26 feet bgs at DP-9 contained 2,130 micrograms per liter (µg/L) of PCE and 4.2 µg/L of TCE. Groundwater at DP-6, near the dumpster where disposal of PCE waste likely had occurred, contained 1,040 µg/L of PCE and 37.9 µg/L of TCE. Groundwater at DP-8, just north of the shed, contained 178 µg/L of PCE, 103 µg/L of TCE, 302 µg/L of *cis*-1,2-DCE, 139 µg/L of *trans*-1,2-DCE, 2.3 µg/L of vinyl chloride, and 1.4 µg/L of chloroethane—indicating that PCE is degrading to its daughter products in this area. Table B-2 in Appendix B lists data from all groundwater samples in chronological order, and Table B-3 lists groundwater data from the six monitoring wells (MW) by grouped by well.

In VI sub-slab sample SVP-2, collected near the northwest corner inside the laundromat, PCE was detected at 630,000 micrograms per cubic meter (µg/m^3). Sample SVP-1, collected at the northeast sub-slab port, contained 170 µg/m^3 of PCE. Table B-4 in Appendix B lists data from sub-slab samples.

IDNR requested additional investigation of the site under CERCLA in 2008. At the request of Sunshine Laundry, Barker Lemar Engineering Consultants (Barker Lemar) conducted a limited Site Assessment in 2010 (Barker Lemar 2010). Six borings were drilled and completed as permanent MWs (MW-1 through MW-6). MW-1 through MW-4, screened from 5 to 20 feet bgs (total depth of each well), were installed and sampled in January 2010. MW-5 and -6 were installed and sampled in April 2010. MW-5 was screened from 5 to 10 feet bgs, while MW-6 was screened from 4 to 14 feet bgs. Groundwater was encountered at depths between 5.4 and 9.25 feet bgs. Soil samples were collected from four of the borings, with highest concentrations detected near the northeast corner of the building where a sample collected at 9 feet bgs at MW-6 contained 43 µg/kg of PCE and 63 µg/kg of TCE. Figure 2 in Appendix A shows sampling locations, and Table B-1 in Appendix B lists results from soil samples. Tables B-2 and B-3 in Appendix B lists results from groundwater samples collected from these wells.

The highest PCE result from groundwater samples collected during January and April 2010 was 1,970 µg/L in a sample collected from MW-3, about 40 feet east of the storm sewer inlet, or about 25 feet

northwest of the shed. Only MW-1, the farthest north well, contained less than 5 µg/L of PCE; however, it contained 7 µg/L of TCE.

In response to IDNR's request, additional temporary wells (TW) (WF-1 through WF-3) were advanced on the east neighboring property (Wells Fargo) in December 2010. WF-1, the farthest downgradient near the northeast corner of the bank property, contained 130 µg/L of PCE; WF-2 contained 400 µg/L of PCE; and WF-3, closest to the former dry cleaner, contained 1,000 µg/L of PCE. The MWs were also sampled in December 2010; however, MW-3 could not be located. MW-2, about 30 feet west of the stormwater inlet, contained the highest PCE concentration at 350 µg/L. Figure 2 in Appendix A shows these sample locations, and Table B-2 in Appendix B lists analytical results from those samples.

In May 2011, four additional TWs (PS-1 through PS-4) were advanced east of Wells Fargo, across South 25th Street, in the Long John Silver's parking lot (now Ninja Sushi Steak House). Only the northern two wells (PS-1 and PS-2) yielded groundwater, and neither contained detectable VOCs. Figure 2 in Appendix A shows these sampling locations, and Table B-2 in Appendix B lists results from those samples.

Additional rounds of groundwater sampling occurred in May and December 2011 as part of an Extended Site Screening (ESS). At the time of the ESS in 2011, the plume did not appear to extend east of South 25th Street; however, contaminated groundwater was known to extend off site onto the Wells Fargo property. In May 2011, MW-3 contained PCE at 4,000 µg/L, and in December 2011, it contained 3,700 µg/L of PCE. PCE was not detected in MW-1; however low levels of its degradation products TCE and 1,2-DCE were detected. MW-2 (west of the stormwater inlet) contained 690 µg/L of PCE in May 2011 and 790 µg/L in December 2011. VOCs were not detected in MW-4 in either May or December 2011. In MW-5 and -6, PCE concentrations between 67 and 190 µg/L were detected during May and December 2011. Table B-2 in Appendix B lists these data.

On August 28, 2014, the Contaminated Sites Section of IDNR collected another round of groundwater samples from the permanent on-site wells. Analytical results from this 2014 sampling event indicated remaining presence of groundwater contamination at the site. MW-1 and -4 did not contain PCE or TCE; however *cis*-1,2-DCE was detected at 11 µg/L in MW-1. MW-3 could not be found. Detected in MW-2 were 2,300 µg/L of PCE, 290 µg/L of TCE, and 760 µg/L of 1,2-DCE. MW-5 contained 170 µg/L of PCE, and MW-6 contained 97 µg/L PCE (similar to 2010-2011 results). Table B-2 in Appendix B lists these data.

In September 2014, IDNR sent a letter to the current property owners summarizing IDNR's position regarding the site, emphasizing that on-site conditions had not changed significantly within the previous 5 years. Additionally, under current site use and conditions, IDNR would suspend any further requirements for continued monitoring (IDNR 2021c).

In 2020, EPA performed a Pre-Comprehensive Environmental Response, Compensation, and Liability Act Screening (PCS) at Sunshine Laundry under the site name 2422 5th Avenue South Former Dry Cleaner site. The PCS determined that additional investigation was warranted (Tetra Tech 2020).

In 2021, the City requested that EPA investigate the site. The City is considering purchasing the site, razing the building, and installing a parking lot.

4.0 SAMPLING ACTIVITIES

Section 4.0 discusses field sampling and associated quality assurance (QA)/quality control (QC) activities at the site during the ISA. General objectives of the project were to delineate approximate extents of site-related contamination in soil and groundwater, and to assess VI threats to nearby workers (no residential properties are within 0.25 mile of the site).

Field work for the ISA/RSE occurred June 7-11, 2021. The START Project Manager (PM) was Jenna Mead, and the EPA Project Managers were Region 7 Iowa Site Assessment Manager Todd Davis and On-Scene Coordinator (OSC) Megan Schuette. START members (SM) Tim Barbeau and Thomas Kaley conducted various VI, soil, and groundwater field samplings.

START PM Mead mobilized to site on June 6, 2019, and met the subcontracted direct-push technology (DPT) operator Plains Environmental Services (PES) on site at 08:00 hours on June 7, 2021, to begin electrical conductivity (EC) and membrane interface probe (MIP) logging. SMs Barbeau and Kaley and EPA OSC Schuette arrived later that day. In addition to EC/MIP logging at 15 locations, field activities included collection of 30 soil samples from 19 soil borings, 14 groundwater samples from TWs, three groundwater samples from existing MWs, two soil-gas samples, one ambient air sample, eight indoor air samples, and five sub-slab vapor samples. A copy of the field logbook is in Appendix C, site photographs are in Appendix D, and access agreements are in Appendix E.

Activities proceeded as specified in a site-specific Quality Assurance Project Plan (QAPP) for the ISA approved by EPA on May 27, 2021, unless otherwise noted in this report (Tetra Tech 2021). All soil and groundwater samples were stored in coolers maintained at or below a temperature of 4 degrees Celsius (°C) pending submittal for laboratory analysis. Sub-slab vapor, indoor air, crawlspace air, ambient air, and soil-gas samples collected in Summa® canisters were submitted at ambient temperature for laboratory analyses. All samples were submitted to the EPA Region 7 laboratory under Analytical Services Request (ASR) Number 8924.

4.1 MEMBRANE INTERFACE PROBE AND ELECTRICAL CONDUCTIVITY LOGGING

PES used a track-mounted DPT rig to advance a combination MIP/EC probe to investigate soils at the former dry cleaner. Figure 3 in Appendix A shows locations of the MIP borings at the site. Most locations were collocated with soil or groundwater sample locations; however, sequential numbers were assigned to each boring type among the collocated borings, which are shown on Figures 4 and 5. The MIP/EC probe was driven into the ground by application of standard DPT techniques. As the probe

advances, a shielded cable transmits data from the probe through the rod string to a field instrument at the surface. The field instrument displays depth of the probe, soil conductivity (or other data), and probe speed simultaneously and in real time. Generally, high soil conductivities (exceeding 50 milliSiemens/meter [mS/m]) indicate clays, moderate conductivities indicate silts, and low conductivities indicate sands. Clean quartz sands and silts may induce EC readings of about 1-2 mS/m; however, the EC readings in saturated sands reflect the EC of the formation water. As such, EC logging provides site-specific lithologic information, including vertical and lateral extents of aquitards, aquifers, and other hydrostratigraphic units; however, mineralogy of the formation or the aquifer can affect reliability of readings.

The MIP is a screening tool with semi-quantitative capabilities, acting as an interface between volatile contaminants at depth in the soil and gas phase detectors at the surface. The semi-permeable MIP membrane, composed of a thin film polymer and impregnated into a stainless-steel screen for support, is in a heated (100-120 °C) block attached to the probe as the probe advances into the soil. Heating the block accelerates diffusion of volatiles from the soil through the membrane while minimizing absorption of contaminants by the membrane. Diffusion through the membrane is also driven by the concentration gradient between the contaminated soil and the clean carrier gas behind the membrane. A constant gas flow (typically nitrogen) sweeps behind the membrane and carries the contaminants to the gas phase detectors at ground surface that are part of the MIP instrument system. The MIP consisted of a halogen (chlorine)-specific detector (XSD), a PID, and a flame ionization detector (FID) attached to a gas chromatograph. MIP logs were recorded at 15 on-site borings (MIP-01 through -15).

The downhole logging tools were advanced to a maximum of about 42 feet bgs, with most advanced to about 32 feet bgs. MIP logging commenced at the southwest corner of the site and generally proceeded along the edges of the known contamination before proceeding to the more contaminated area. Two MIP borings planned for the adjoining Wells Fargo Bank property were eliminated because access permission was not granted prior to field activities. Attachment 1 contains copies of the EC/MIP logs provided by PES.

MIP Logging Results

The EC logs indicate presence of clays and silty clays with occasional sandy layers to the total depth logged. Soils at the southern part of the site have relatively high resistivities, suggestive of higher clay content to about 6 feet, while farther north the higher resistivity clays continue to about 14 feet bgs.

PID readings from the EC/MIP logs commonly show elevated PID readings without a corresponding XSD peak (typically indicative of non-chlorinated VOCs such as fuel contamination) at about 28 feet bgs.

The MIP XSD indicated presence of CVOCs (presumably PCE and breakdown products) at the former dry cleaner property. High XSD readings were detected at various depths from about 2 to 42 feet bgs at MIP-12 near the stormwater drain. At MIP-12, XSD readings were highest over the largest interval, with very high readings from about 13 to 20 feet bgs, decreasing below that to total depth at 42 feet bgs. At MIP-11, between the storm drain and the waste PCE storage shed, a high XSD reading occurred at 9 feet bgs, with indications of lesser contamination above and below that depth. At other locations, elevated XSD readings tended to occur at around 5 feet bgs or about 10-14 feet bgs—around top of groundwater. Figures 6, 7, and 8 are south to north MIP cross-sections at western, central, and eastern portions of the site, respectively, and illustrate the generally low XSD responses at the eastern and northern portions of the site, and the higher responses, indicative of contamination, near the stormwater drain north of the building. Because most of the site is flat—at approximate elevation of 1,111 feet amsl—the cross-sections show depth in feet bgs. MIP logs on these figures have been annotated with results from collocated soil and groundwater sample locations.

4.2 SOIL SAMPLING

Soil samples submitted to the EPA Region 7 laboratory for VOCs analysis were selected in part based on MIP logging results, with samples generally collected at depths where elevated XSD readings were indicated on the MIP logs. At other locations, soil samples were collected to delineate previously identified soil contamination. Soil cores were obtained at each location by use of 5-foot-long Geoprobe® Macro-Core soil samplers, each of which contained a disposable polyvinyl chloride (PVC) sleeve. START screened the cores for presence of VOCs using a handheld PID, and recorded the PID readings on the boring logs. Soils were logged from surface to a maximum of 21 feet bgs. Boring logs were prepared for selected borings due to their proximity to each other (see Appendix F). DPT soil sample locations are shown on Figure 4 in Appendix A, and are listed in Table 1 below.

TABLE 1

JUNE 2021 SOIL SAMPLE SUMMARY
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Boring Number	Location	Depth (ft bgs)	Sample Number	Sample Date	Sample Time
SB-1	Sunshine Laundry – northwest quadrant at lounge area inside building	1-2	8924-101	6/09/2021	07:58
		7-8	8924-102		08:15
SB-2	Sunshine Laundry – northeast quadrant inside building	5-6	8924-103		10:10
		11-12	8924-104		10:50
SB-3	Sunshine Laundry – southeast quadrant inside building	5-6	8924-105		13:05
SB-4	Sunshine Laundry – southwest quadrant inside building	2-3	8924-106		13:45
		10-12	8924-107		14:15
SB-5	City easement – at southwest entrance to Sunshine Laundry property; collocated with MIP-1 and TW-6	4-5	8924-108		15:25
		14-15	8924-109		15:35
SB-6	Sunshine Laundry – west property line and in line with northwest corner of Sunshine Laundry building; collocated with MIP-3 and TW-7	4-5	8924-110		15:50
SB-7	Sunshine Laundry – west property line about 80 feet northwest of building; collocated with MIP-4	4-5	8924-111		16:15
		9-10	8924-112		16:20
SB-8	Sunshine Laundry – near northeast corner of Sunshine Laundry property; collocated with MIP-7	9-10	8924-113		16:55
SB-9	Sunshine Laundry – east property line, about 30 feet north of shed; collocated with MIP-8 and TW-9	3-4	8924-114	6/10/2021	07:25
		9-10	8924-115		07:30
SB-10	Sunshine Laundry – east property line between building and shed; collocated with MIP-10	9-10	8924-116		07:50
SB-11	Sunshine Laundry – about 40 feet north of center of building; collocated with MIP-11	9-10	8924-117		08:10
SB-12	Sunshine Laundry – just northeast of stormwater drain, about 50 feet north of northwest corner of building; collocated with MIP-12 and TW-8	12-13	8924-118		08:45
		4-5	8924-119		08:50
SB-13	Sunshine Laundry – about 80 feet north of center of building; collocated with MIP-9	4-5	8924-120		09:10
		10-11	8924-121		09:05
SB-14	Sunshine Laundry – northwest corner of parking lot about 90 feet north of stormwater drain; collocated with TW-10	12-13	8924-122		09:25
SB-15	Sunshine Laundry – about 10 feet west of the northwest corner of building	3-5	8924-123		09:45
SB-16	Sunshine Laundry – grassy area just east of front walkway to building, about 10 feet north of City sidewalk; collocated with MIP-15 and TW-3	4-5	8924-124		10:20
		7-8	8924-125		10:25

TABLE 1 (Continued)

JUNE 2021 SOIL SAMPLE SUMMARY
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Boring Number	Location	Depth (ft bgs)	Sample Number	Sample Date	Sample Time
SB-17	City easement – near southeast corner of Sunshine Laundry property; collocated with TW-4	4-5	8924-126	6/10/2021	10:35
SB-18	Wells Fargo Bank property – grassy area near west property line, about 15 feet south of bank's drive-through lane canopy; collocated with TW-5	3-4	8924-127		11:00
		14-15	8924-128		11:15
SB-19	Wells Fargo Bank property – about 15 feet east of west property line and in line with north edge of shed at Sunshine Laundry	4-5	8924-129		11:25
		9-10	8924-130		11:30

Notes:

ft bgs Feet below ground surface
SB Soil boring

Each grab sample of subsurface soils for analysis for VOCs consisted of two 5-gram aliquots placed into two 40-milliliter (mL) vials preserved with sodium bisulfate, one 5-gram aliquot placed into a 40-mL vial preserved with methanol, and an unpreserved 2-ounce plastic bottle packed with soil for percent solids (moisture content) determination.

Analytical Data Summary

Table 2 below lists soil sample results, and Figure 9 presents the site-related VOC results (results for the common laboratory contaminants acetone and 2-butanone results are not shown on this figure). PCE was detected in 17 samples from 12 borings. PCE concentrations ranged from 6 µg/kg, just above detection limits, to an estimated 31,000 µg/kg. PCE was detected in seven of the 15 samples collected above 6 feet bgs at concentrations between 6 and 180 µg/kg. PCE was detected in 10 of the 15 deeper samples collected within 7-13 feet bgs. PCE concentrations ranged from 19 to an estimated 31,000 µg/kg, with six samples containing over 4,000 µg/kg. Highest concentrations were along the west side of the building, extending south from the storm sewer inlet north of the building. Figure 10 is an isoconcentration map of the maximum PCE concentrations detected in soils at the site since 2008, and is a general depiction of areas at the site having the highest levels of PCE contamination.

TABLE 2

JUNE 2021 SOIL SAMPLE RESULTS
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Boring Number	Location	Depth (ft bgs)	Sample Number	Acetone	MEK	Benzene	Toluene	PCE	TCE	*cis*-1,2-DCE	*trans*-1,2-DCE
				Concentration (µg/kg)							
Removal Management Level Industrial Soil (TR=10E-04; THQ = 1)				**6.7E+08**	**1.9E+08**	**4.2E+05**	**4.7E+07**	**3.9E+05**	**1.9E+04**	**2.3E+06**	**3E+05**
Iowa Statewide Standard for Soil				**6.8E+07**	**4.6E+07**	**5.6E+04**	**6.1E+06**	**1.5E+06**	**6.7E+04**	**1.5E+05**	**1.5E+06**
SB-1	Sunshine Laundry – northwest quadrant at lounge area inside building; collocated with TW-1	1-2	8924-101	9.2 U	9.2 U	4.6 U	4.6 U	6	4.6 U	4.6 U	4.6 U
		7-8	8924-102	9.5 U	9.5 U	4.7 U	4.7 U	14,000 J	35	18	4.7 U
SB-2	Sunshine Laundry – northeast quadrant inside building; dry at 30 feet bgs	5-6	8924-103	12 U	12 U	5.9 U	5.9 U	16	5.9 U	5.9 U	5.9 U
		11-12	8924-104	9.3 U	9.3 U	4.6 U	4.6 U	4,200	4.6 U	4.6 U	4.6 U
SB-3	Sunshine Laundry – southeast quadrant inside building	5-6	8924-105	12 U	12 U	5.8 U	5.8 U	180	5.8 U	5.8 U	5.8 U
SB-4	Sunshine Laundry – southwest quadrant inside building; collocated with TW-2	2-3	8924-106	120	12 U	5.9 U	5.9 U	140	5.9 U	5.9 U	5.9 U
		10-12	8924-107	10 U	10 U	5 UJ	5 UJ	9,800 J	5 UJ	5 U	5 U
SB-5	City easement – at southwest entrance to Sunshine Laundry property; collocated with MIP-1 and TW-6	4-5	8924-108	10 U	10 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U
		14-15	8924-109	9.7 U	9.7 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U
SB-6	Sunshine Laundry – west property line and in line with northwest corner of Sunshine Laundry building; collocated with MIP-3 and TW-7	4-5	8924-110	50 J	9.6 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U
SB-7	Sunshine Laundry – west property line about 80 feet northwest of building; collocated with MIP-4	4-5	8924-111	10 U	10 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	13
		9-10	8924-112	10 U	10 U	5 U	5 U	19	5 U	5 U	5 U
SB-8	Sunshine Laundry – near northeast corner of Sunshine Laundry property; collocated with MIP-7	9-10	8924-113	23	11 U	5.4 U	5.4 U	5.4 U	6.8	5.4 U	5.4 U
SB-9	Sunshine Laundry – east property line, about 30 feet north of shed; collocated with MIP-8 and TW-9	3-4	8924-114	27	10 U	5.2 U	5.2 U	5.2 U	14	33	5.2 U
		9-10	8924-115	11 U	11 U	5.6 U	5.6 U	4,300	8	7.9	5.6 U
SB-10	Sunshine Laundry – east property line between building and shed; collocated with MIP-10	9-10	8924-116	9.5 U	9.5 U	4.8 U	4.8 U	4,200	4.8 U	4.8 U	4.8 U
SB-11	Sunshine Laundry – about 40 feet north of center of building; collocated with MIP-11	9-10	8924-117	11 U	11 U	5.3 U	5.3 U	200	21	79	16
SB-12	Sunshine Laundry – just northeast of stormwater drain, about 50 feet north of northwest corner of building; collocated with MIP-12 and TW-8	4-5	8924-119	19	9.6 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	14
		12-13	8924-118	11 U	11 U	5.4 U	5.4 U	31,000 J	28	38	5.4 U
SB-13	Sunshine Laundry – about 80 feet north of center of building; collocated with MIP-9	4-5	8924-120	220	50	11	10	5.8 U	5.8 U	21	5.8 U
		10-11	8924-121	12 U	12 U	5.8 U	5.8 U	5.8 U	110	75	13
SB-14	Sunshine Laundry – northwest corner of parking lot about 90 feet north of stormwater drain; collocated with TW-10	12-13	8924-122	13 U	13 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
SB-15	Sunshine Laundry – about 10 feet west of the northwest corner of building	3-5	8924-123	9.8 U	9.8 U	4.9 UJ	4.9 UJ	23	4.9 UJ	4.9 U	4.9 U
SB-16	Sunshine Laundry – grassy area just east of front walkway to building, about 10 feet north of City sidewalk; collocated with MIP-15 and TW-3	4-5	8924-124	9.5 U	9.5 U	4.7 U	4.7 U	11	4.7 U	4.7 U	4.7 U
		7-8	8924-125	12 U	12 U	5.9 U	5.9 U	150	5.9 U	5.9 U	5.9 U
SB-17	City easement – near southeast corner of Sunshine Laundry property; collocated with TW-4	4-5	8924-126	57 J	9.1 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
SB-18	Wells Fargo Bank property – grassy area near west property line, about 15 feet south of bank's drive-through lane canopy; collocated with TW-5	3-4	8924-127	8.8 U	8.8 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
		14-15	8924-128	8.8 U	8.8 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
SB-19	Wells Fargo Bank property – about 15 feet east of west property line and in line with north edge of shed at Sunshine Laundry	4-5	8924-129	77	18	5.3 U	5.3 U	58	41	120	7.4
		9-10	8924-130	12 U	12 U	5.9 U	5.9 U	39	5.9 U	5.9 U	5.9 U

TABLE 2 (Continued)

JUNE 2021 SOIL SAMPLE RESULTS
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Notes:

No exceedance of either a Removal Management Level or Iowa Statewide Standard was detected.

DCE	Dichloroethene
µg/kg	Micrograms per kilogram
ft bgs	Feet below ground surface
J	Estimated value
MEK	Methyl ethyl ketone (2-butanone)
MIP	Membrane interface probe
PCE	Tetrachloroethene
SB	Soil boring
TCE	Trichloroethene
THQ	Target Hazard Quotient
TR	Target Risk
TW	Temporary well
U	Analyte not detected at concentration at or above reporting limit at immediate left.
UJ	Analyte not detected at concentration at or above estimated reporting limit at immediate left.

TCE was detected in samples from seven borings, including one (SB-13) where PCE was not detected. The TCE-degradation products *cis*-1,2-DCE and *trans*-1,2-DCE were commonly detected with occurrence of TCE at the site, and PCE likely was present previously at SB-13 but had degraded to its daughter products. Only at SB-13 were benzene and toluene detected. As previously mentioned, petroleum products enhance PCE degradation (EPA 1998).

No contaminant concentration exceeded either an EPA Removal Management Level (RML) or an ISS for soil. Chain-of-custody records and analytical data for ASR 8924 are in Appendix F.

4.3 GROUNDWATER SAMPLING

To better delineate the known CVOC contamination in groundwater in the site area, START collected groundwater samples from three existing MWs and installed and sampled 14 DPT TWs. START submitted the groundwater samples to EPA Region 7 laboratory in Kansas City, Kansas, for analysis for VOCs. Groundwater sample locations are shown on Figure 5 in Appendix A.

4.3.1 Monitoring Well Sampling

Table 3 below lists the six MWs that were installed at the site in 2010. Five of the wells were located during field activities; however, only three of these were capped and sealed, and were sampled (see Photographs 4 through 9 in Appendix D). Flush-mount vault covers and J-Plug well caps were missing at MW-1 and MW-2, where open PVC pipe was at the approximate grade of the parking lot. No samples were collected because the wells had been compromised and would likely have been impacted by rainwater or other contaminants from the parking lot. The flanges holding the vault cover at MW-3 had broken, and the well could not be secured after sampling. MW-5, assumedly in the street or easement south of the site, was not found and likely had been demolished during road or utility work. MW-1, -2, and -5 locations are shown on Figure 2 in Appendix A; locations of sampled wells MW-3, -4, and -6 are shown on Figure 5.

Depth to groundwater and total depth were gauged in the three sampled MWs from below tops of casing (btoc). Tops of casing for the three secured wells were at about 0.2-0.4 feet bgs. Only at MW-4 was the measured total depth similar to the reported bottom of the screened interval. At MW-6, the water level probe could not be lowered past 8.15 feet btoc—almost 6 feet higher than the reported 14 feet bgs for the bottom of the screened interval. Electrical lines, shown as overhead on previous report maps, are now below ground, and utility markings show these lines immediately adjacent to the well vault, suggesting

that MW-6 may have been damaged or broken during line installation. At MW-3, the shallower bottom (18.7 feet bgs) is likely due to siltation.

TABLE 3

JUNE 2021 MONITORING WELL GROUNDWATER SAMPLE SUMMARY
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Monitoring Well	Original Screened Depth (ft bgs)	Depth to Water (ft btoc)[a]	Total Depth (ft btoc)[a]	Sample Number	Date Sample	Time Sampled
MW-1	9-20	Not sampled; open PVC pipe with no well cap or vault cover				
MW-2	5-20	Not sampled; open PVC pipe with no well cap or vault cover				
MW-3	5-20	4.45	18.7	8924-201	6/7/2021	17:10
MW-4	5-20	5.1	19.9	8924-203	6/7/2021	18:40
MW-5	5-10	No well found on easement or 5th Avenue South; may have been demolished				
MW-6	4-14	6.3	8.15	8924-202	6/7/2021	18:00

Notes

[a] Measured during June 2012 field activities

ft bgs Feet below ground surface
ft btoc Feet below top of casing
MW Monitoring well
PVC Polyvinyl chloride

Samples were collected by use of HydraSleeve™ samplers, a method that does not require well purging prior to sampling. Various studies have indicated that analytical results obtained from zero-purge sampling are comparable to those acquired from low-flow sampling or from purging three well volumes. Zero-purge sampling assumes horizontal flow through the well screen or formation, which sustains constant equilibrium between the water in the well and the surrounding aquifer. Under this condition, presence of stagnant well water is less likely, thus eliminating need for purging prior to sampling.

The HydraSleeve consists of a flexible polyethylene sample bag with a self-sealing, reed-type, flexible polyethylene check valve at the top of the sleeve. A weighted collar holds the top of the bag, and another weight is attached to the bottom of the bag so it can be suspended within the interval to be sampled. The sampler was left in place for about 15 minutes to allow any turbidity to settle and the well to re-equilibrate prior to sample collection. As the sampler is lifted from the well, the self-sealing check valve opens, allowing water to enter the sampler. As the sampler is brought to the surface, the check valve closes, preventing any stagnant water that may be present above the screened or uncased interval from entering the sampler. A rigid plastic straw is inserted into the sampler to transfer the groundwater sample to the appropriate containers. Each groundwater sample for analysis for VOCs was collected in three 40-mL vials, each preserved with hydrochloric acid (HCl). The weighted collar and bottom weight were decontaminated after sampling at each well.

Analytical Results

Table 4 lists VOCs detected in the MW samples, and these results are shown on Figure 11 in Appendix A. PCE was detected at 3,700 µg/L in the groundwater sample from MW-3, and at 23 µg/L in the sample from MW-6—both exceeding the 5 µg/L MCL. The sample collected from MW-3, north of the building, also contained an estimated 250 µg/L of TCE (estimated), 880 µg/L of *cis*-1,2-DCE, and 140 µg/L of *trans*-1,2-DCE, which also exceeded their respective MCLs. PCE, TCE, and *cis*-1,2-DCE concentrations in MW-3 also exceeded the ISS for a nonprotected groundwater source (the federal MCLs are used for the protected groundwater standards).

TABLE 4

JUNE 2021 MONITORING WELL GROUNDWATER SAMPLE RESULTS
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Monitoring Well	Sample Depth[a] (ft bgs)	Sample Number	Acetone	PCE	TCE	*cis*-1,2-DCE	*trans*-1,2-DCE
			Concentration (µg/L)				
Federal Maximum Contaminant Level			NE	5	5	70	100
Iowa Statewide Standards – Nonprotected			32,000	1,700	76	350	700
MW-3	4.45-18.7	8924-201	10 U	**3,700**	**250 J**	**880**	**140**
MW-4	5.1-19.9	8924-203	10 U	5 U	5 U	5 U	5 U
MW-6	6.3-8.15[b]	8924-202	11	**23**	5 U	5.3	5 U

Notes

Bold font indicates a concentration that exceeds the Maximum Contaminant Level
Shading indicates a concentration that exceeds the Iowa Statewide Standard for a nonprotected groundwater source.

[a] Sample depth is interval between the measured depths to groundwater and total depth.
[b] Total depth of the well screen was reported to be at 14 feet bgs, indicating the well screen or riser likely had been damaged.

DCE Dichloroethene
ft bgs Feet below ground surface
J Estimated value
µg/L Micrograms per liter
MW Monitoring well
NE Not established
PCE Tetrachloroethene
TCE Trichloroethene
U Analyte not detected at concentration at or above reporting limit at immediate left.

4.3.2 Temporary Well Sampling

To better delineate the known CVOC contamination in groundwater in the site area, START installed and sampled 14 DPT TWs. Samples were collected at top of groundwater in the silty clay strata.
TW locations are shown on Figure 5 in Appendix A, and Table 5 lists the groundwater samples collected.

Collection of groundwater samples from the TWs proceeded by use of a Geoprobe Screen Point 16 sampling apparatus containing a 4-foot-long, reusable, stainless-steel screen. At sampled intervals, approximately 1 gallon of groundwater was purged from the well by use of disposable polyethylene tubing with an attached foot valve. Then, a sample was collected through the tubing into three 40-mL vials preserved with HCl for analysis for VOCs. Decontamination of the groundwater sampler and rods occurred after sampling at each well location, and new tubing was used for each sample.

TABLE 5

JUNE 2021 DPT GROUNDWATER SAMPLE SUMMARY
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Temporary Well	Location	Sample Depth (ft bgs)	Sample Number	Sample Date	Sample Time
TW-1	Northwest quadrant inside Sunshine Laundry building; collocated with SB-1	~11-32 (open hole)	8924-204	6/10/2021	12:20
TW-2	Southwest quadrant inside Sunshine Laundry building; collocated with SB-4	~11-13.5	8924-205		14:15
TW-3	Sunshine Laundry – grassy area just east of front walkway to building, about 10 feet north of City sidewalk; collocated with MIP-15 and SB-16	9-13	8924-206		13:35
TW-4	City easement – near southeast corner of Sunshine Laundry property; collocated with SB-17	9-13	8924-207		13:55
TW-5	Wells Fargo Bank property – grassy area near west property line, about 15 feet south of bank's drive-through lane canopy; collocated with SB-18	9-13	8924-208		14:10
TW-6	City easement – at southwest entrance to Sunshine Laundry property; collocated with MIP-1 and SB-5	9-13	8924-209		14:45
TW-7	Sunshine Laundry – west property line and in line with northwest corner of Sunshine Laundry building; collocated with MIP-3 and SB-6	11-15	8924-210		15:10
TW-8	Sunshine Laundry – just northeast of stormwater drain, about 50 feet north of northwest corner of building; collocated with MIP-12 and SB-12	8-12	8924-211		15:20
TW-9	Sunshine Laundry – east property line, about 30 feet north of shed; collocated with MIP-8 and SB-9	9-13	8924-212		15:35
TW-10	Sunshine Laundry – Northwest corner of parking lot about 90 feet north of stormwater drain; collocated with SB-14	9-13	8924-213		15:45

TABLE 5 (Continued)

JUNE 2021 GROUNDWATER SAMPLE SUMMARY
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Temporary Well	Location	Sample Depth (ft bgs)	Sample Number	Sample Date	Sample Time
TW-11	City Easement – grassy area just south of former Wells Fargo Bank entrance from S. 25th St.	11-15	8924-215	6/11/2021	07:00
TW-12	City easement – between Wells Fargo Bank automated teller machine entrance and alley	9-13	8924-216		08:00
TW-13	City easement – grassy area just south of north entrance to 407 S. 25th St.	9-13	8924-217		07:25
TW-14	City easement – grassy area about 60 feet east of alley/entrance for 2419 5th Ave. S.	15-16	8924-218		08:50
Quality Assurance Samples					
Rinsate Blank			8924-214	6/10/2021	15:55
Trip Blank (Field Blank)			8924-221FB	6/10/2021	16:10
Trip Blank (Field Blank)			8924-222FB	6/10/2021	16:20
Trip Blank (Field Blank)			8924-223FB	6/08/2021	08:10

Notes:

FB Field blank or trip blank laboratory code
ft bgs Feet below ground surface
MIP Membrane interface probe
SB Soil boring
TW Temporary DPT well

Analytical Data Summary

Table 6 below lists the VOCs detected in the 14 groundwater samples, and Figure 11 indicates these results. Site-related VOCs were detected at seven locations. PCE was detected in six of the groundwater samples at concentrations between 28 and 2,500 µg/L. Because of the high concentrations previously detected at the site, a 5 µg/L detection limit (the MCL) was applied for this analysis; consequently, lower levels of VOCs may be present where indicated as "undetected" in Table 6. The 2 µg/L MCL for vinyl chloride was below the detection limit. Vinyl chloride detections at TW-11 (11 µg/L) and TW-12 (31 µg/L) exceeded the MCL.

TABLE 6

JUNE 2021 DPT GROUNDWATER SAMPLE RESULTS
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Temporary Well	Location	Depth (ft bgs)	Sample Number	Acetone	PCE	TCE	*cis*-1,2-DCE	*trans*-1,2-DCE	Vinyl Chloride
				Concentration (µg/L)					
	Maximum Contaminant Level			**NE**	**5**	**5**	**70**	**100**	**2**
	Iowa Statewide Standards – Nonprotected			**32,000**	**1,700**	**76**	**350**	**700**	**10**
	Commercial VISL – Shallow Groundwater (EPA Region 7)			**1.15E+7**	**31**	**2.71 [1.9]**	**NE**	**55.3**	**28**
TW-1	Northeast quadrant inside Sunshine Laundry building.	9-32	8924-204	10 U	5 U	5 U	5 U	5 U	5 U
TW-2	Southeast quadrant inside Sunshine Laundry building.	~11-13.5	8924-205	10 U	**2,400**	**16**	5	5 U	5 U
TW-3	Sunshine Laundry – grassy area just east of front walkway to building, about 10 feet north of City sidewalk; collocated with MIP-15 and SB-16.	9-13	8924-206	10 U	**580**	**44**	16	8.5	5 U
TW-4	City easement – near southeast corner of Sunshine Laundry property; collocated with SB-17.	9-13	8924-207	10 U	5 U	5 U	5 U	5 U	5 U
TW-5	Wells Fargo Bank property – grassy area near west property line, about 15 feet south of bank's drive-through lane canopy; collocated with SB-18.	9-13	8924-208	10 U	**30**	5 UJ	5 U	5 U	5 U
TW-6	City easement – at southwest entrance to Sunshine Laundry property; collocated with MIP-1 and SB-5.	9-13	8924-209	10 U	5 U	5 UJ	5 U	5 U	5 U
TW-7	Sunshine Laundry – west property line and in line with northwest corner of Sunshine Laundry building; collocated with MIP-3 and SB-6.	11-15	8924-210	10 U	5 U	5 U	5 U	5 U	5 U
TW-8	Sunshine Laundry – just northeast of stormwater drain, about 50 feet north of northwest corner of building; collocated with MIP-12 and SB-12.	8-12	8924-211	10 U	**2,500**	**66**	56	47	5 U
TW-9	Sunshine Laundry – east property line, about 30 feet north of shed; collocated with MIP-8 and SB-9.	9-13	8924-212	10 U	**300**	**60**	**170**	50	5 U
TW-10	Sunshine Laundry – northwest corner of parking lot about 90 feet north of stormwater drain; collocated with SB-14.	9-13	8924-213	15	5 U	5 U	5 U	5 U	5 U
TW-11	City Easement – west side of S. 25th St., just south of east entrance to former Wells Fargo Bank.	11-15	8924-215	10 U	5 U	5 U	**380**	52	**11**
TW-12	City easement – west side of S. 25th St., between Wells Fargo Bank automated teller machine (ATM) driveway and alley.	9-13	8924-216	10 U	**28**	**63**	**260**	77	**31**
TW-13	City easement – east side of S. 25th St., just south of north entrance to 407 S. 25th St.	9-13	8924-217	10 U	5 U	5 U	5 U	5 U	5 U
TW-14	City easement – south side of 5th Ave. S., about 60 feet east of alley/entrance for 2415 and 2419 5th Ave. S.	15-16	8924-218	10 U	5 U	5 U	5 U	5 U	5 U
	Quality Control Samples								
	Rinsate Blank		8924-214	10 U	5 U	5 U	5 U	5 U	5 U
	Trip Blank (Field Blank)		8924-223FB	10 U	5 U	5 U	5 U	5 U	5 U
	Trip Blank (Field Blank)		8921-221FB	10 U	5 U	5 U	5 U	5 U	5 U
	Trip Blank (Field Blank)		8921-222FB	10 U	5 U	5 U	5 U	5 U	5 U

Notes:

Bold font indicates concentration exceeds the Maximum Contaminant Level.

Red font indicates concentration exceeds the VISL for shallow groundwater.

Shading indicates concentration exceeds the Iowa Statewide Standard for a nonprotected groundwater source.

EPA U.S. Environmental Protection Agency
FB Trip blank or field blank
ft bgs Feet below ground surface
µg/L Micrograms per liter
NE Not established
PCE Tetrachloroethene
TCE Trichloroethene
DCE Dichloroethene
TW Temporary direct-push technology well
U Analyte not detected at concentration at or above reporting limit at immediate left.
UJ Analyte not detected at concentration at or above estimated reporting limit at immediate left.
VISL Vapor intrusion screening level

PCE concentrations in samples from TW-2 and TW-8 exceeded the ISS of 1,700 µg/L for a nonprotected groundwater source. No TCE concentration exceeded the 76 µg/L ISS. However, *cis*-1,2-DCE concentration in the sample from TW-11 (380 µg/L) exceeded the ISS of 350 µg/L, and vinyl chloride concentrations in the samples from TW-11 and -12 also exceeded the ISS of 10 µg/L. Concentrations of various analytes in samples from TW-2, -3, -8, -9, and -12 exceeded EPA VISLs for shallow groundwater. The common laboratory contaminant acetone was detected in one sample. No VOC was detected in the trip/field or rinsate blank samples. Groundwater sample results under ASR 8924 are in Appendix G.

PCE degradation products were identified at most locations. Only TW-18, south of the drive through canopy at the adjoining bank property, did not contain daughter products. At TW-11, near the distal end of the groundwater plume just south of the bank's east entrance, only the PCE and TCE degradation products *cis*-1,2-DCE (380 µg/L), *trans*-1,2-DCE (52 µg/L), and vinyl chloride (11 µg/L) were detected. Groundwater samples from six TWs contained VOC concentrations that exceeded either ISSs for a nonprotected groundwater source or EPA vapor intrusion screening levels (VISL) for commercial properties overlying a shallow groundwater plume.

Figures 12 and 13 are PCE and TCE isoconcentration maps for groundwater based on concentrations detected since 2008. Vinyl chloride was detected only in groundwater samples from TW-11 and -12 at the distal end of the groundwater plume, south and north, respectively, of the bank's east entrance.

4.4 VAPOR INTRUSION SAMPLING

START collected two soil-gas vapor samples, five sub-slab vapor samples, eight indoor air samples, and one ambient air sample to assess inhalation threats to occupants of commercial structures overlying soil or groundwater potentially or actually contaminated with site-related VOCs. Figure 14 in Appendix A shows locations of the VI samples. Copies of signed access agreements are in Appendix F.

4.4.1 Soil-Gas Vapor Sampling

START collected two shallow soil-gas (SG) samples at the western edge of the site to assess potential VI at the adjoining NPPC facility. At each sampling location, DPT was used to drive steel rods to the sampling depth, and the rods were lifted to provide a void space of approximately 1 foot. Disposable polyethylene tubing was then secured to the bottom of the rod string, and ambient air in the tubing was purged by use of a vacuum pump. The upper end of the tubing was then connected to an evacuated

Summa® canister, which was opened, allowing the canister to fill with soil-gas vapors. Table 7 summarizes SG sampling information.

TABLE 7

JUNE 2021 SOIL-GAS SAMPLE SUMMARY
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Sample	Location	Sample Depth (ft bgs)	Sample Number	Sample Date/Time
SG-1	Sunshine Laundry – west property line about 80 feet northwest of building; collocated with MIP-4 and SB-7	4-4.5	8924-15	6/10/21 @ 12:00
SG-2	Sunshine Laundry – west property line and in line with northwest corner of Sunshine Laundry building; collocated with MIP-3 SB-6, and TW-7	4-4.5	8924-16	6/10/21 @ 12:25

Notes:

ft bgs Feet below ground surface
MIP Membrane interface probe
SB Soil boring
SG Soil gas
TW Temporary well

These locations were collocated with MIP-3 and MIP-4, in the area where previous investigations had indicated CVOCs in groundwater closest to the NPPC facility. The first SG-1 sampling attempt at a depth of 6 feet bgs, drew water into the cannister. The second attempt resulted in collection of a sample at about 4-4.5 feet bgs. SG-2 was also collected within that depth.

Analytical Results

Site-related CVOCs detected in the two SG samples are listed in Table 8 below and shown on Figure 15 in Appendix A. Results are compared to VISLs and EPA Region 7 screening levels for exterior soil-gas. Because a utility corridor is immediately east of the NPPC facility building, SG samples were collected about 12 to 15 feet from the building rather than within 10 feet, as specified for comparison to these VISLs. In addition, samples were collected at about 4-4.5 feet bgs—rather than the recommended depth of greater than 5 feet bgs—because an initial sample attempt at 6 feet bgs encountered groundwater.

TCE concentration of 59 µg/m^3 at SG-2 (collocated with MIP-3, SB-6, and TW-7) exceeded the VISL of 29.2 µg/m^3 and the Region 7 screening level of 20 µg/m^3 for TCE in exterior soil-gas. Based on these results, VI into the adjoining NPPC facility is a potential health concern.

TABLE 8

JUNE 2021 SOIL-GAS SAMPLE RESULTS
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Sample	Location	PCE	TCE	1,1-DCE	*cis*-1,2-DCE	*trans*-1,2-DCE	Vinyl chloride
		Concentration (µg/m^3)					
Commercial VISL – Sub-slab and Near Source Soil-Gas		**584**	**29.2**	**2,920**	**NE**	**584**	**929**
EPA Region 7 Exterior Soil Gas Screening Level		**580**	**20**	**2,900**	**NE**	**NE**	**930**
SG-1 8924-15	Sunshine Laundry – west property line about 80 feet northwest of building; collocated with MIP-4 and SB-7	8	1.5	0.2 U	7.1	180	0.13 U
SG-2 8924-16	Sunshine Laundry – west property line and in line with northwest corner of Sunshine Laundry building; collocated with MIP-3, SB-6, and TW-7	25	**59**	3.5	260	17	200

Notes:

Commercial VISL for SG is calculated using a Cancer Risk of 1E-05, a Hazard Quotient of 0.1, an attenuation factor of 0.03, and a temperature of 20 degrees Celsius.

Bold font indicates concentration exceeds Commercial VISL for SG and Region 7 SG Screening Level.

DCE Dichloroethene
EPA U.S. Environmental Protection Agency
µg/m^3 Micrograms per cubic meter
MIP Membrane interface probe
NE Not established
PCE Tetrachloroethene
SB Soil boring
SG Soil gas
TCE Trichloroethene
TW Temporary well
U Analyte not detected at concentration at or above reporting limit at immediate left.
VISL Vapor intrusion screening level

4.4.2 Sub-slab Vapor, Indoor Air, and Ambient Air Sampling

Following receipt of access permission from property owners, START conducted sub-slab vapor, indoor air, and ambient air sampling at the site. For indoor air sampling at the commercial properties, evacuated 6-liter Summa canisters were fitted with 8-hour passive flow regulators. All buildings sampled were one-story slab-on-grade construction, and indoor air samples typically were placed in an out-of-the-way area at the business or vacant building. Collection of indoor air and ambient air samples accorded with EPA Region 7 Standard Operating Procedure (SOP) 4231.1704. In each building, indoor air samples were collected at roughly the same time as collection of sub-slab vapor grab samples. Indoor air and ambient air samples were analyzed for VOCs at the EPA Region 7 laboratory according to EPA Region 7 SOP 3230.04.

START received permission to collect sub-slab vapor samples at five of the eight properties where owners had granted indoor air sampling access. A hammer drill equipped with a 5/8-inch-diameter concrete bit was used to penetrate the concrete slab at each location. An approximately 4-inch-long, 5/8-inch-diameter stainless steel tube (vapor pin) with a silicon fitting was inserted through the drill hole into the sub-slab material. Vapor pin sample ports are easily removed after completion of sampling, and only the silicon fitting must be replaced for reuse. A removable plug on top of the vapor pin allows resealing of the port and retention of it in place for later sampling, if desired.

Collection of sub-slab vapor samples accorded with EPA SOP 2318.07. At each location, about 6 inches of disposable, 0.25-inch-diameter perfluoroalkoxy (PFA) tubing connected the top of the port to an evacuated Summa canister for collection of a sub-slab vapor sample. Sub-slab vapor was collected as grab samples with the Summa canister opened and then shut off as pressure dropped to about -2 to -4 inches of mercury (inHg). After sampling, the vapor pin was removed, and quick setting hydraulic cement was applied to patch the hole through the concrete slab.

An ambient air sample was collected behind the buildings north of the site. Table 9 below summarizes sample locations and indicates types of business. The vacant Wells Fargo bank (east) was the building closest to the former dry cleaning facility, about 90 feet away. Distances from the site of remaining buildings ranged from about 200 to 400 feet.

TABLE 9

AMBIENT AIR, INDOOR AIR AND SUB-SLAB VAPOR SAMPLES
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Sample	Address	Business Type	Start Sampling Date/Time	End Sampling Date/Time
Ambient Air Sample				
8924-10	330 S. 25th St.	NA	6/9/21 @ 09:58	6/9/21 @ 17:58
Indoor Air Samples				
8924-1	326 S. 25th St.	Vacant – Bowling Alley	6/8/21 @ 08:28	6/8/21 @ 16:14
8924-3	328 S. 25th St.	Hearing Aid Store	6/8/21 @ 09:10	6/8/21 @ 16:16
8924-5	330 S. 25th St.	Nail Salon	6/8/21 @ 09:38	6/8/21 @ 17:18
8924-6	2419 5th Ave. S.	Cosmetology School	6/8/21 @ 10:20	6/8/21 @ 16:25
8924-7	2415 5th Ave. S.	Clothing Boutique	6/8/21 @ 10:25	6/8/21 @ 16:52
8924-8	332 S. 25th St.	Store/Taqueria	6/8/21 @ 11:48	6/8/21 @ 18:20
8924-11	325 S. 25th St.	Drive-In Restaurant	6/9/21 @ 12:07	6/9/21 @ 20:00
8924-13	406 S. 25th St.	Vacant – Wells Fargo Bank	6/10/21 @ 12:06	6/10/21 @ 20:04
Sub-Slab Vapor Samples				
8924-2	326 S. 25th St.	Vacant – Bowling Alley	6/8/21 @ 08:53	NA – Grab
8924-4	328 S. 25th St.	Hearing Aid Store	6/8/21 @ 09:25	NA – Grab
8924-9	332 S. 25th St.	Store/Taqueria	6/8/21 @ 12:05	NA – Grab
8924-12	325 S. 25th St.	Drive-In Restaurant	6/9/21 & 19:52	NA – Grab
8924-14	406 S. 25th St.	Vacant – Wells Fargo Bank	6/10/21 @ 12:05	NA – Grab

Notes:

NA Not applicable

Analytical Data Summary

Table 10 summarizes PCE, TCE, and 1,1-DCE results from indoor air, sub-slab, and ambient air sampling at the site. These three compounds were reported in several indoor air and sub-slab samples, but at concentrations well below EPA Region 7 RMLs and VISLs for commercial structures. No *cis*- or *trans*-1,2-DCE or vinyl chloride was detected in these samples. Table B-5 in Appendix B lists results for all VOC analytes in these samples, as well as VISL sub-slab or indoor air benchmarks for those analytes. Only 2-propanol (isopropanol—used in rubbing alcohol) was detected at concentrations exceeding the commercial indoor air RML, with concentrations ranging from 1,900 to 4,900 µg/m^3 at the adjoining buildings 328, 330, and 332 S. 25th Street. Addresses 328 (a hearing aid store) and 330 (a nail salon) are in a shared building, and either is likely to use this common product.

TABLE 10

SITE-RELATED VOCS IN VAPOR INTRUSTION SAMPLES
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Sample Number	Address	Business Type	PCE	TCE	1,1-DCE
			Concentration (µg/m^3)		
		EPA Region 7 RML – Commercial Indoor Air	**180**	**6**	**880**
		EPA Region 7 VISL – Commercial Sub-slab	**5,800**	**200**	**29,000**
Ambient Air Sample					
8924-10	330 S. 25th St.	NA	0.34 U	0.14 U	0.2 U
Indoor Air Samples					
8924-1	326 S. 25th St.	Vacant – Bowling Alley	1.3	0.14 U	0.2 U
8924-3	328 S. 25th St.	Hearing Aids	0.34 U	0.14 U	0.2 U
8924-5	330 S. 25th St.	Nail Salon	0.34 U	0.14 U	0.2 U
8924-6	2419 5th Ave. S.	Cosmetology School	0.34 U	0.14 U	0.2 U
8924-7	2415 5th Ave. S.	Clothing Boutique	5.4	0.18	0.2 U
8924-8	332 S. 25th St.	Store/Taqueria	0.34 U	0.14 U	0.2 U
8924-11	325 S. 25th St.	Drive-In Restaurant	0.34 U	0.14 U	0.2 U
8924-13	406 S. 25th St.	Vacant – Wells Fargo Bank	0.64	0.14 U	0.2 U
Sub-Slab Vapor Samples					
8924-2	326 S. 25th St.	Vacant – Bowling Alley	2.2	0.14 U	0.2 U
8924-4	328 S. 25th St.	Hearing Aid Store	1.6	0.14 U	0.46
8924-9	332 S. 25th St.	Store/Taqueria	0.51	0.14 U	0.2 U
8924-12	325 S. 25th St.	Drive-In Restaurant	0.89	0.2	0.2 U
8924-14	406 S. 25th St.	Vacant – Wells Fargo Bank	52	0.14	0.2 U

Notes:

DCE Dichloroethene
EPA U.S. Environmental Protection Agency
µg/m^3 Micrograms per cubic meter
PCE Tetrachloroethene
RML Removal Management Level (Cancer Risk = 10E-04; Hazard Quotient =1)
TCE Trichloroethene
VISL Vapor intrusion screening level

4.5 QUALITY CONTROL SAMPLES

During this project, one rinsate blank, and three trip blanks were collected. The trip blanks prepared by the EPA Region 7 laboratory broke; consequently, replacement trip/field blanks were prepared in the field. The blank samples were submitted for laboratory analyses for VOCs.

Analytical Data Summary

No VOCs were detected in the blank samples. Data are included with groundwater results in Table 6.

5.0 HAZARD RANKING SYSTEM FACTORS

This section discusses the source(s) of contamination and contaminant migration pathways evaluated under the Hazard Ranking System (HRS). The air pathway was not evaluated for the site.

5.1 SOURCES OF CONTAMINATION

Contaminated soil associated with the former dry cleaner at 2422 5th Avenue S. has been identified as the source of PCE contamination in groundwater. PCE has been a common historical dry cleaning solvent, and a dry cleaner (Rainbow Cleaners) is known to have operated at the property from at least 1984 until 1992. PCE has been detected at concentrations exceeding 100 µg/kg in subsurface soil samples collected across a 100- by 200-foot area at the site, and exceeding 10,000 µg/kg in an area of approximately 125- by 25-feet along the eastern edge of the building. The highest concentration of PCE (estimated at 31,000 µg/kg) in soils was detected near the storm sewer inlet about 50 feet north of the northeast corner of the building at 4-5 feet bgs. PCE has also been detected in the shallow groundwater, as well as in soil gas, sub-slab vapor, and indoor air samples collected in the area.

5.2 GROUNDWATER PATHWAY

This section discusses the groundwater pathway.

5.2.1 Hydrogeological Setting

Near the site, glacial till consisting of clays and silts with occasional sandy zones are present down to Mississippian-aged bedrock at approximately 80-100 feet bgs. Groundwater occurs in glacial till between 5 and 15 feet bgs (typically about 11 feet bgs) at the site. Based on the orientation of the PCE plume, groundwater flow direction in the shallow aquifer appears to be northeast. However, surveyed water table elevations would be required to verify flow direction.

5.2.2 Groundwater Targets

Fort Dodge's 2010 population was reported as 25,206 and had decreased to 24, 871 according to the 2020 Census. Census data from 2015-2019 indicate approximately 2.2 persons per household in Webster County, Iowa (U.S. Census Bureau 2021). Breaking down the available 2010 census results indicates that 1,115 people live within 0.5 mile of the site and 7,494 people live between 0.5 and 1 mile of the site. Population is 11,344 between 1 and 2 miles, 5,523 between 2 and 3 miles, and 1,345 between 3 and 4 miles of the site for a total 4-mile radius population of 26,821 (Missouri Census Data Center 2021).

Groundwater samples were collected at top of groundwater at 14 temporary DPT wells during the ISA/RSE. Three secured MWs remaining at the site were also sampled and a concentration of 3,700 µg/L was detected in the sample from MW-3. PCE concentrations as high as 2,500 µg/L were detected in the DPT samples. The PCE-degradation products TCE, 1,2-DCE, and vinyl chloride were also detected in groundwater at the site and at the adjoining property at concentrations exceeding the MCL and ISS for a nonprotected source. Concentrations of various analytes in samples from TW-2, -3, -8, -9, and -12 exceeded EPA's VISLs for shallow groundwater. PCE, TCE, and vinyl chloride concentrations detected at this site also exceeded their EPA Superfund Chemical Data Matrix (SCDM) cancer risk benchmarks; however, shallow groundwater in the glacial till is not used as a drinking water source in the area.

Potential targets for the groundwater migration pathway include public water supply wells and private domestic wells within 4 miles of the site (see Appendix A, Figure 16). According to IDNR, six PWS wells are within 1.0 to 2.0 miles of the site, and two PWS wells are within 2.0 to 3.0 miles of the site (IDNR 2021b). About seven private or water use permit wells listed with the State appear to be within 1 mile of the site. IGS well records indicate that the well shown on Figure 16 about 0.5 mile northeast of the site is a 285-foot well for Fort Dodge Memorial Park—a cemetery actually about 0.75 mile east of the site. The well's geographic coordinates were entered into the IGS database as the center of the section in which the well is located (IGS 2021).

5.2.3 Groundwater Pathway Conclusions

Based on results of previous sampling efforts, a release of PCE to groundwater in clayey glacial till has been established at the site. About 80-100 feet of glacial till overlies the Mississippian Aquifer that supplies drinking water to three of eight municipal wells, and to domestic and commercial wells not served by the City PWS. No drinking water wells are known within the immediate area; consequently, no samples have been collected to evaluate whether any targets have been impacted by the contamination identified in groundwater at the site. PCE has been detected at concentrations up to 3,700 µg/L in on-site

monitoring or DPT temporary wells; however, the shallow groundwater in the glacial till is not used as a drinking water source.

5.3 SURFACE WATER PATHWAY

This section discusses the surface water pathway. Because no release to surface water from the source associated with this site is suspected, no surface water sampling occurred as part of the ISA/RSE investigation.

5.3.1 Hydrological Setting

Surface water runoff at the site and in the vicinity flows into storm sewer drains in the parking lot or along adjoining city streets. The stormwater sewer system directs runoff in the site vicinity to tributaries of the Des Moines River. The stormwater discharge to Gypsum Creek is about 0.9 mile east of the site, and Deer Creek is about 0.6 mile to the southwest.

5.3.2 Surface Water Targets

Surface water targets were not evaluated for this RSE/SI. No surface water intakes for drinking water are on the Des Moines River within 15 miles downstream of the site. The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory identifies about 2.3 acres of freshwater forest/shrub and emergent wetland areas within the rail spur area at NPPC, about 1,000 feet northwest of the site (USFWS 2021). Part of this area seems to have been paved in about 2019 as parking for a nearby building. Other wetlands are present in a previously quarried area about 1.25 miles southeast of the site and along the Des Moines River and its tributaries.

5.3.3 Surface Water Pathway Conclusions

A release of PCE to soils has been confirmed at a former dry cleaner at 12422 5th Avenue S. in an eastern Fort Dodge commercial area. The normal annual rainfall in Webster County is 34.4 inches (USDA 2008). Any surface water at the site would likely flow to storm sewers and then to tributaries of the Des Moines River. Given the hydrologic setting of the site and non-use of surface water for drinking water in this area, the threat via the surface water pathway is minimal.

5.4 SOIL EXPOSURE AND SUBSURFACE INTRUSION PATHWAY

Section 5.4 discusses the soil exposure and subsurface intrusion pathway. VI exposure risks and associated sampling data are also discussed.

5.4.1 Physical Conditions

Most ground surfaces within the vicinity of the site are covered by structures (mostly businesses) and pavement (streets, parking lots, sidewalks, etc.). Surface soils are classified as urban land (USDA 2008). Glacial till consisting of clays, silty clays, and some sands underlie surface soils to about 80-100 feet bgs.

5.4.2 Soil and Subsurface Intrusion Targets

The property is covered by a building and an asphalt parking lot, and is within a commercial/industrial area. The soil exposure component of this pathway does not appear to be of concern.

No residents have been identified within 200 feet of the property. The closest residential areas are a mobile home park about 1,000 feet southeast of the site, single-family homes about 1,300 feet west, and apartments about 0.4 mile to the east. According to 2010 Census data, the residential population within 0.5 mile of the site is 1,115 (Missouri Census Data Center 2021). The laundromat manager worked at the building during field activities; however, he indicated that the facility was scheduled to close on June 18, 2021. The NPPC facility to the west has approximately 225 employees (Nestlé Purina 2021). Nearby commercial buildings visited during sampling were vacant or had few employees. No known terrestrial sensitive environments are at the site. Also, no school or day care facility is within 200 feet of the former dry cleaner property. The area is undergoing redevelopment; consequently, potential exposure via subsurface VI is a risk at current or future buildings.

During the ISA/RSE, PCE was detected in indoor air at three commercial buildings at concentrations ranging from 0.64 to 5.4 µg/m^3—well below the Region 7 RML for commercial indoor air. PCE was detected in all five sub-slab vapor samples collected at the commercial buildings at concentrations between 0.51 and 52 µg/m^3. The highest PCE concentration (52 µg/m^3) was in a sample collected beneath the former bank just east of the site. TCE was detected in one indoor air sample at 0.18 µg/m^3 and in a separate sub-slab vapor sample at 0.2 µg/m^3, well below any benchmark for TCE—including the 0.478 µg/m^3 indoor air cancer risk SCDM benchmark.

Two soil gas samples were collected near the NPPC facility west of the site. A TCE concentration of 59 µg/m^3 at one location exceeded the VISL level of 29.2 and the Region 7 screening level of 20 µg/m^3 for TCE in exterior soil gas. Based on these results, VI is a potential concern at the NPPC facility.

5.4.3 Soil Exposure and Subsurface Intrusion Pathway Conclusions

The surface is covered with buildings and pavement with small, landscaped areas or grassy street easements. Only one surface soil sample was collected (SB-1 from 1-2 feet bgs). MIP/EC logs generally indicated elevated XSD responses (indicative of CVOCs) at about 4-5 feet bgs or between about 9 to 15 feet bgs, near top of groundwater.

Subsurface intrusion of PCE into occupied structures overlying contaminated soil and/or groundwater could present a threat to workers in those structures. Previous sub-slab sampling at the former dry cleaning building detected PCE at 630,000 $\mu g/m^3$, establishing that sub-slab concentrations exceeded the EPA Region 7 RML of 5,800 $\mu g/m^3$. The next closest building to the site is the former Wells Fargo Bank, where PCE was detected in sub-slab vapor at 52 $\mu g/m^3$, below the commercial RML. TCE concentration detected in the soil gas sample collected near the NPPC facility west of the site exceeded the VISL, suggesting the possibility of VI at that facility.

Current plans are for demolition of the existing building onsite and development of the property as a parking lot. Construction workers could be exposed to contaminated soil and vapors during site activities that expose contaminated soil beneath the building.

5.5 AIR MIGRATION PATHWAY

An ambient air sample was collected north of the site during the June sampling event. Neither PCE nor its degradation products were detected in the sample. Other than small, landscaped areas or grassy easements, the area is largely covered by asphalt, concrete, or buildings—rendering documentation of an observed release to air unlikely. The air migration pathway is not considered a viable exposure pathway at the site and was not scored.

6.0 EMERGENCY RESPONSE AND REMOVAL ACTION CONSIDERATIONS

The National Contingency Plan [40 *Code of Federal Regulations* [CFR] 300.415(b) (2)] authorizes EPA to consider emergency response actions at facilities that pose an imminent threat to human health or the environment. Elevated PCE concentrations in sub-slab vapors have been detected beneath the former dry cleaning building; however, plans reportedly are for future demolition of this building. If the building remains on site for future use, a vapor mitigation system may be warranted. PCE was not detected in sub-slab vapors at concentrations of concern at other buildings in the area.

Although minimal soil is exposed at the surface within the immediate site area, excavation or in situ treatment of contaminated soil may be warranted to help address the source of groundwater contamination and alleviate potential VI threats that might arise with future redevelopment. Demolition of the on-site building could expose underlying contaminated soils.

PCE was detected at levels as high as 3,700 µg/L in groundwater samples from existing MWs and temporary DPT wells—significantly above the MCL and ISS for nonprotected groundwater. No drinking water wells are known to exist close to the former dry cleaner property, and the shallow groundwater in the glacial till is not used for drinking water. Injection of treatment fluids may be considered to remediate the groundwater plume under a removal action.

A Superfund Removal Site Evaluation and Removal Preliminary Assessment Form is in Appendix H.

7.0 SUMMARY

EPA Region 7, under authority of CERCLA and SARA, tasked Tetra Tech START to conduct a combined ISA and RSE at the Sunshine Laundry site in Fort Dodge, Iowa. Since 1994, the site has hosted a laundromat. Previously, Rainbow Cleaners operated at the site from 1984-1992, and had a dry cleaning machine as well as laundry services. A 1992 Letter of Warning stated that an inspection had revealed significant evidence (reportedly spills and odors) suggesting storage of PCE wastes and/or spent filters and still bottoms in a shed behind the building, and disposal of these materials in a trash dumpster in the same area (IDNR 2021c). Dry cleaning operations had reportedly ceased by the time of the inspection, and the machine had been moved to a facility in Des Moines.

A 2008 Phase II ESA indicated that soils collected within 14-15 feet bgs (just above the water table) at DP-9 (near a storm drain behind the building) contained PCE at 22,100 µg/kg. A groundwater sample collected within the interval of 22-26 feet bgs at DP-9 contained 2,130 µg/L of PCE and 4.2 µg/L of TCE. The VI sub-slab sample collected near the northwest corner inside the laundromat contained 630,000 µg/m^3 of PCE.

IDNR requested additional investigation, and in 2010, six permanent MWs were installed and sampled. The highest PCE result from groundwater samples collected during January and April 2010 was 1,970 µg/L in a sample from MW-3. Only MW-1, the farthest north well, contained less than 5 µg/L of PCE; however, it contained 7 µg/L of TCE. In December 2010, three TWs were sampled on the east neighboring property (Wells Fargo). The groundwater sample closest to the former dry cleaner contained 1,000 µg/L of PCE, while the sample collected farthest downgradient, near the northeast corner of the bank property, contained 130 µg/L of PCE.

In 2011, four additional TWs were placed across South 25th Street from Wells Fargo. Only the northern two wells produced groundwater, and neither contained detectable VOCs. The MWs were sampled semi-annually in 2010-2011, and MW-2 and -3 continued to contain high PCE and TCE concentrations.

In 2014, IDNR collected samples from the on-site wells, with results indicating continuing presence of groundwater contamination at the site. IDNR concluded that on-site conditions had not changed significantly within the previous 5 years, and suspended requirements for continued monitoring.

In 2020, START conducted a PCS of the site and determined that additional investigation was warranted. In 2021, the City requested that EPA investigate the site, which was under consideration for purchase to provide additional parking for NPPC.

START conducted sampling activities for the ISA/RSE during June 6-11, 2021. Those field activities included MIP/EC logging at 15 borings and collection of 30 soil samples, 14 DPT groundwater samples from TWs, three groundwater samples from MWs, two shallow soil-gas samples, eight indoor air samples, five sub-slab vapor samples, and one ambient air sample.

PCE was detected in 17 samples at concentrations as high as an estimated 31,000 µg/kg in a sample collected at 12-13 feet bgs near a stormwater drain about 50 feet north of the former dry cleaner building. TCE and other PCE degradation compounds were detected in 11 soil samples, generally in the north central portion of the site. The fuel-related VOCs benzene and toluene were also detected in one sample collected in this area. Fuel-related VOCs are known to enhance PCE and TCE degradation (EPA 1998).

PCE, TCE, and related degradation products were detected at concentrations exceeding ISSs for nonprotected groundwater, federal MCLs, and EPA Region 7 shallow groundwater VISLs. The shallow groundwater in the glacial till is not used for drinking. The former dry cleaning facility at the site overlying this contaminated groundwater may be demolished for a parking lot. If the building is retained for future use, occupants could be exposed to VI contamination.

Two SG samples were collected near the NPPC facility west of the site. A TCE concentration of 59 µg/m^3 at one location exceeded the VISL level of 29.2 and the Region 7 screening level of 20 µg/m^3 for TCE in exterior soil gas. Based on these results, VI into the NPPC facility is a potential concern.

Elevated concentrations of PCE in sub-slab vapors have been detected beneath the former dry cleaning building; however, plans reportedly call for future demolition of the building. If the building remains on site for future use, a vapor mitigation system may be warranted. Elevated PCE concentrations in sub-slab vapors were not detected at other buildings in the area.

Based on data obtained during the ISA/RSE and from historical investigations at the site, soil and groundwater contamination associated with a release of PCE at the former dry cleaner could pose risks to human health via subsurface intrusion. Although minimal soil is exposed at the surface within the immediate site area, excavation or in situ treatment of contaminated soil may be warranted to help address the source of groundwater contamination and alleviate potential VI threats that might arise with future redevelopment. Demolition of the on-site building could expose underlying contaminated soils.

Excavation or in situ treatment of contaminated soil may be warranted to help address the source of groundwater contamination and alleviate VI threats. Also, injection of treatment fluids under a removal action may be considered to remediate the groundwater plume.

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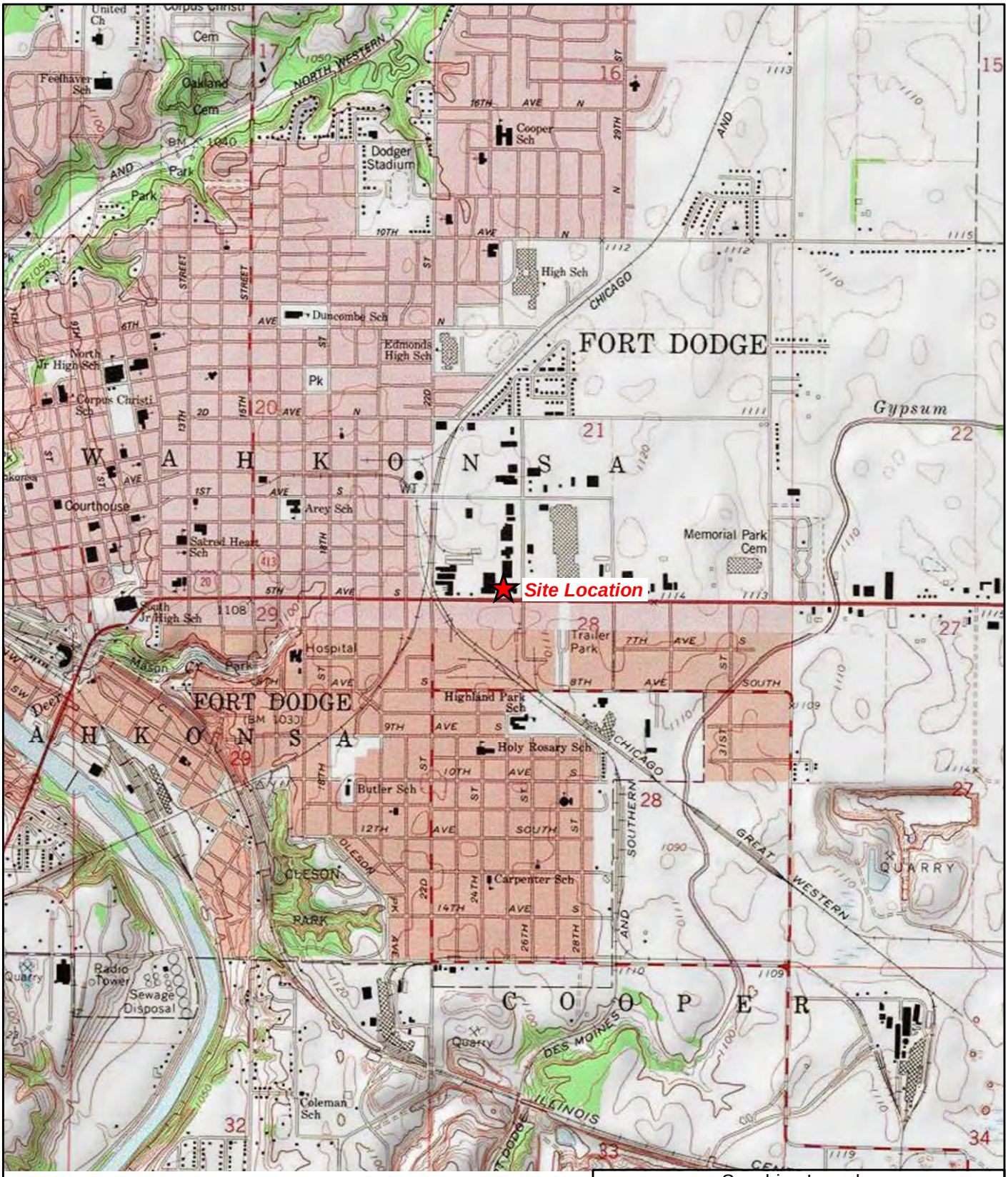
APPENDIX A

FIGURES



Source: Fort Dodge North, Iowa USGS 7.5 Minute Topo Quad, 1979;
Fort Dodge South, Iowa USGS 7.5 Minute Topo Quad, 1965

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 1

Site Location Map

TETRA TECH

Date: 4/8/2021 Drawn By: Nick Wiederholt Project No: X903019F0086.008

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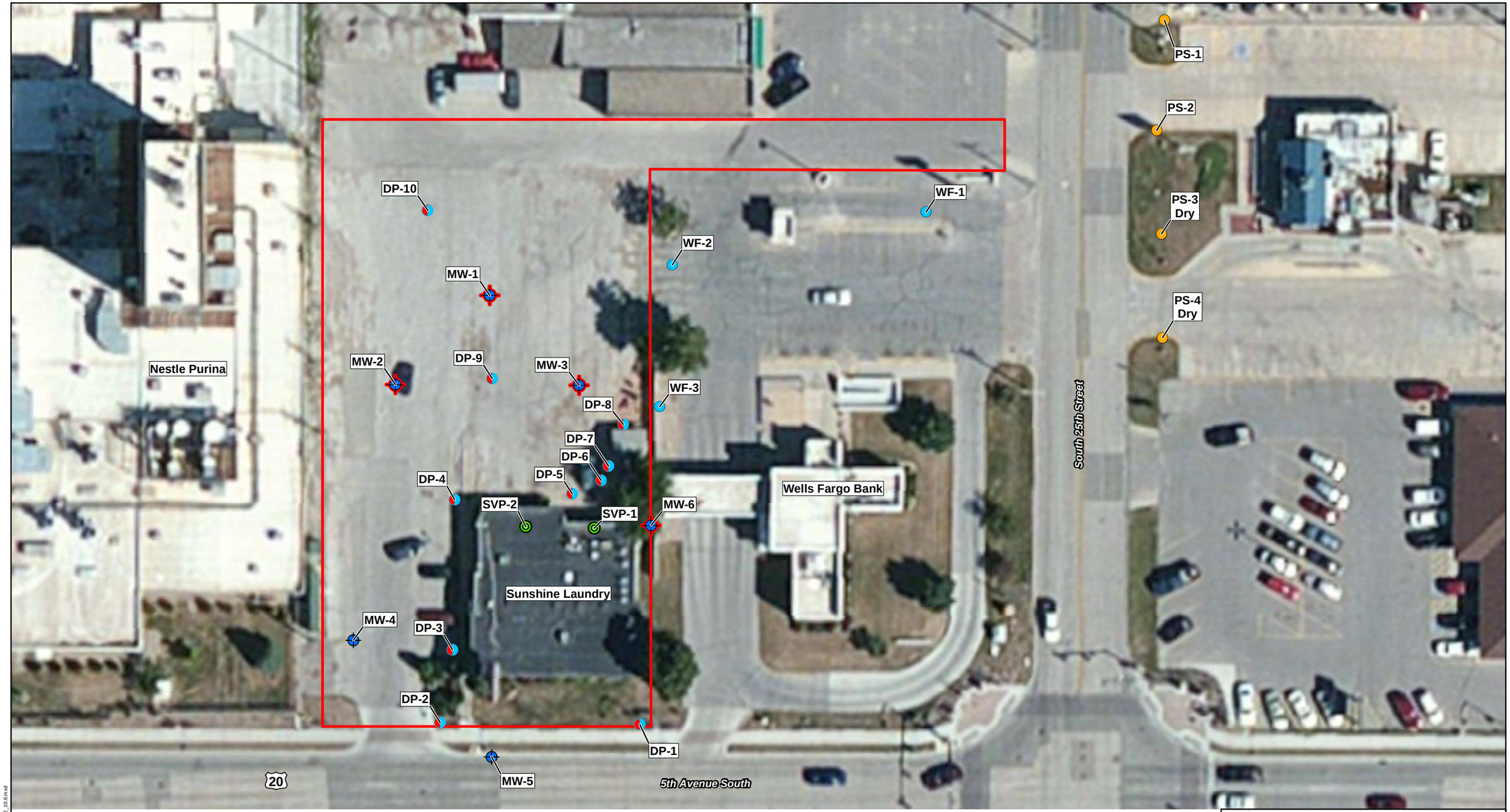

Legend

- 2008 DPT soil and groundwater sample location
- 2008 Sub-slab vapor sample location
- 2010 Monitoring well sample location
- 2010 Monitoring well / soil sample location
- 2010 DPT Groundwater sample location
- 2011 DPT Groundwater sample location
- Former dry cleaner facility

DPT Direct-push technology

N

0 20 40

Feet

Source: Esri, ArcGIS Online, World Imagery (Clarity)

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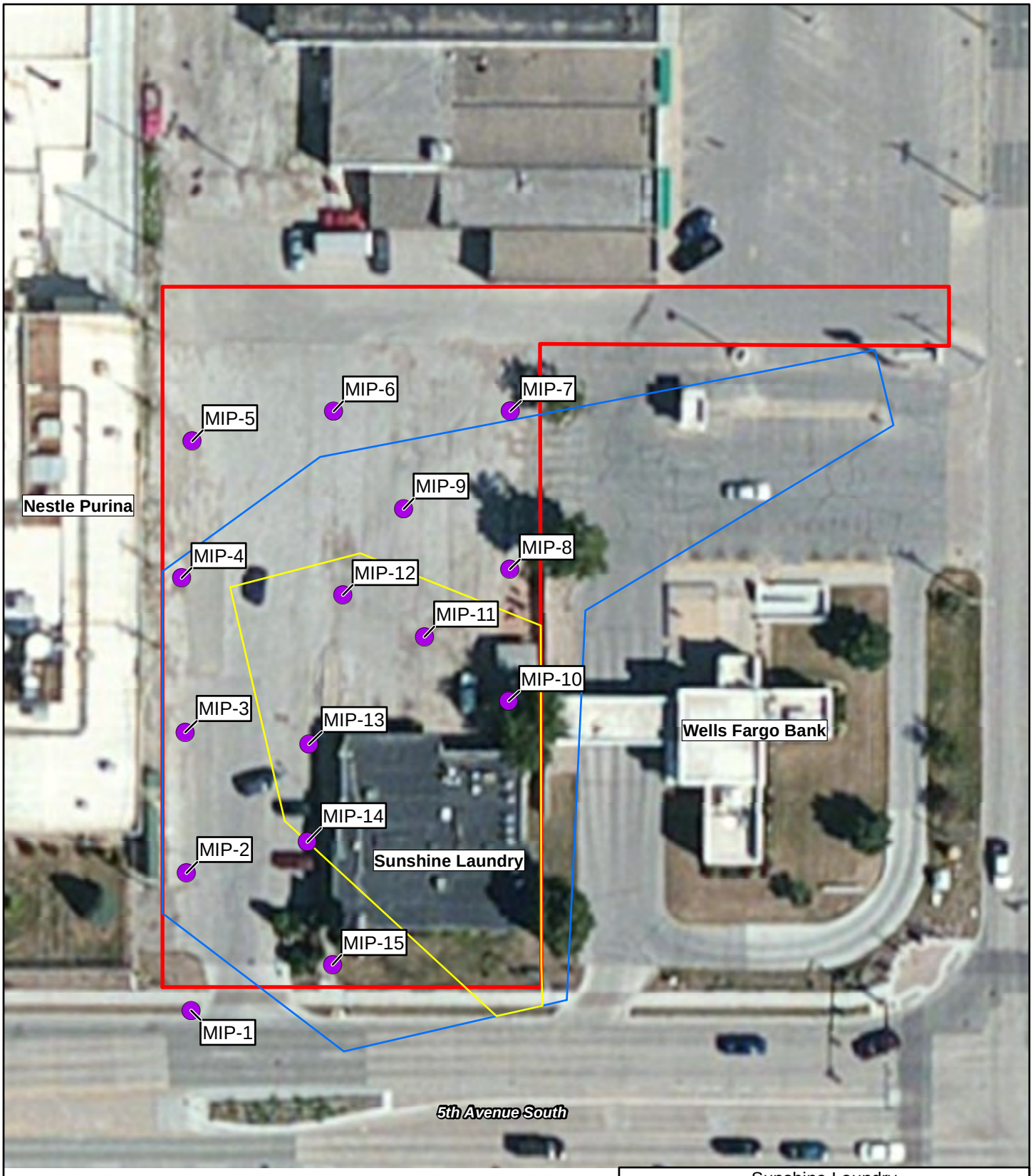
Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 2

Historical Sample Location Map

TETRA TECH

Date: 8/20/2021 Drawn By: Nick Wiederholt Project No: X903019F0086.008



Legend

- MIP Boring Location
- 2014 area of known groundwater contamination
- 2014 area of known soil contamination
- Former dry cleaner facility

N

0 25 50

Feet

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 3

Membrane Interface Probe/Electrical Conductivity (MIP/EC) Location Map

TETRA TECH

Date: 8/16/2021 Drawn By: Clayton Hayes Project No: X903019F0086.008

X:\G\903\0086\008\Projects\mxd\071621\Figure3.mxd

Legend

- Soil sample location
- 2014 area of known groundwater contamination
- 2014 area of known soil contamination
- Former dry cleaner facility

N

0 25 50

Feet

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 4

Soil Sample Locations

TETRA TECH

Date: 8/20/2021 Drawn By: Clayton Hayes Project No: X903019F0086.008

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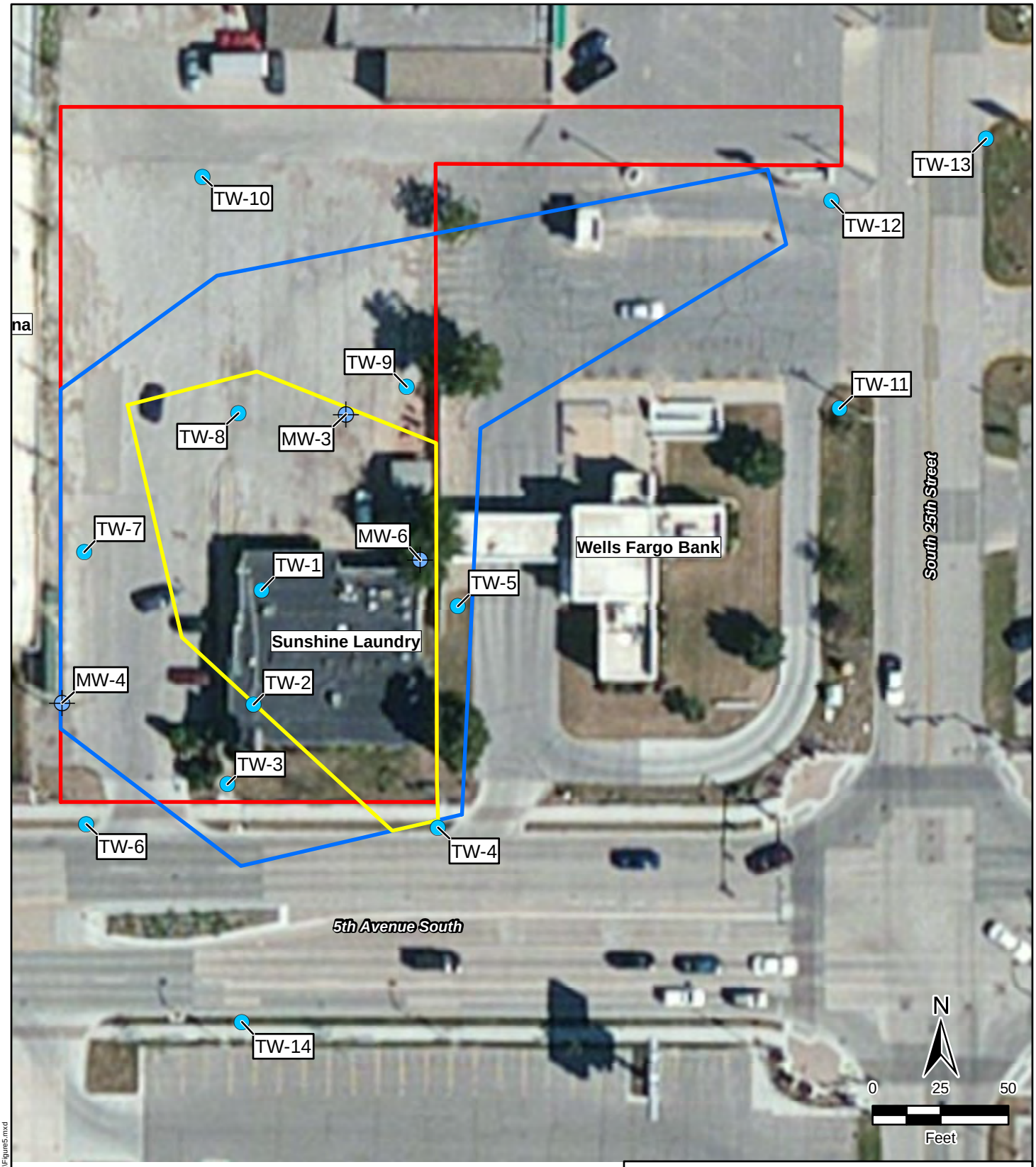

Legend

- Monitoring well location
- Temporary well groundwater boring location
- 2014 area of known groundwater contamination
- 2014 area of known soil contamination
- Former dry cleaner facility

TW Temporary well

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 5

Groundwater Sample Locations

TETRA TECH

Date: 8/20/2021 Drawn By: Clayton Hayes Project No: X903019F0086.008

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South

MIP-1; SB-5; TW-6
MIP-01.MIP (mS/m)

MIP-02.MIP (mS/m)

MIP-3; SB-6; TW-7
MIP-03.MIP (mS/m)

MIP-4; SB-7
MIP-04.MIP (mS/m)

MIP-05.MIP (mS/m)

North

0 100 200 300 390

Depth (ft)

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40

4-5 ft: ND

9-13 ft: ND

14-15 ft: ND

Silty Clay to Clayey Silt with some sandy zones

Sandy zone

Approximate Top of Groundwater

Predominantly Clay

4-5 ft: ND

11-15 ft: ND

4-5 ft: ND

9-10 ft: 19 ppb

Sandy zone

0.0 0.5 1.0 1.2

µV ×10^6

Direct Image By Geoprobe Systems

West Site EC / XSD Max

Company:	Plains Environmental Services	Operator:	Jason A.
Project ID:	Sunshine Cleaners	Client:	Tetra Tech

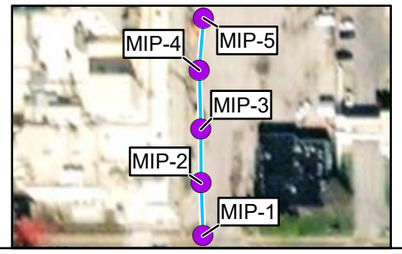
MIP-01.MIP	6/7/2021
MIP-02.MIP	6/7/2021
MIP-03.MIP	6/7/2021
MIP-04.MIP	6/7/2021
MIP-05.MIP	6/7/2021

Legend

- MIP Boring Location
- Cross-section locator
- EC Response (mS/m)
- XSD microvolts (µv)

EC	Electric conductivity
ft	Feet
MIP	Membrane interface probe
mS/m	Millisiemens per meter
µV	microvolts
ND	Non detect
ppb	Parts per billion
SB	Soil boring
TW	Temporary well
XSD	Halogen specific detector

Note:
Results indicated are for tetrachloroethene in soil or groundwater



N

0 72.5 145

Feet

Scale of Locator Map

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 6
Cross-Section at Western Site Area

TETRA TECH

Date: 8/31/2021 Drawn By: Rose Micke Project No: X903019F0086.008

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South

MIP-15; SB-19; TW- 3
MIP-15.MIP (mS/m)

MIP-14.MIP (mS/m)

MIP-13.MIP (mS/m)

MIP-12; SB-12; TW-8
MIP-12.MIP (mS/m)

MIP-9; SB-13
MIP-09.MIP (mS/m)

MIP-06.MIP (mS/m)

North

0 100 200 300 390

Depth (ft)

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 43

4-5 ft: 58 ppb

7-8 ft: 39 ppb

9-13 ft: 580 ppb

Sandy zone

Clay and Silty Clay

Sandy zone

Silty Clay to Clayey Silt
with some sandy zones

Approximate Top of
Groundwater

4-5 ft: ND

Predominantly Clay

8-12 ft: 2,500 ppb

12-13 ft: 31,000 ppb

4-5 ft: ND

10-11 ft: ND

0.0 0.5 1.0 1.2

$\mu V \times 10^6$

Direct Image

Central Site EC / XSD Max

Company: Plains Environmental Services	Operator: Jason A.	MIP-15.MIP 6/8/2021	MIP-12.MIP 6/8/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	MIP-14.MIP 6/8/2021	MIP-09.MIP 6/8/2021
		MIP-13.MIP 6/8/2021	MIP-06.MIP 6/7/2021

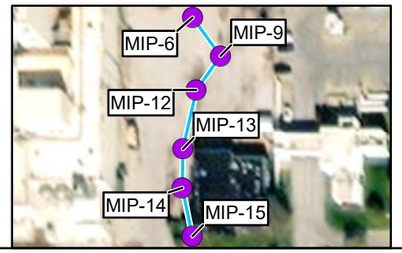
Legend

- MIP Boring Location
- Cross-section locator
- EC Response (mS/m)
- XSD microvolts (µv)

EC	Electric conductivity
ft	Feet
MIP	Membrane interface probe
mS/m	Millisiemens per meter
µV	microvolts
ND	Non detect
ppb	Parts per billion

SB	Soil boring
TW	Temporary well
XSD	Halogen specific detector

Note:
Results indicated are for tetrachloroethene in soil or groundwater



N

0 35 70 140

Feet

Scale of Locator Map

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 7
Cross-Section at Center Site Area

TETRA TECH

Date: 8/31/2021 Drawn By: Rose Micke Project No: X903019F0086.008

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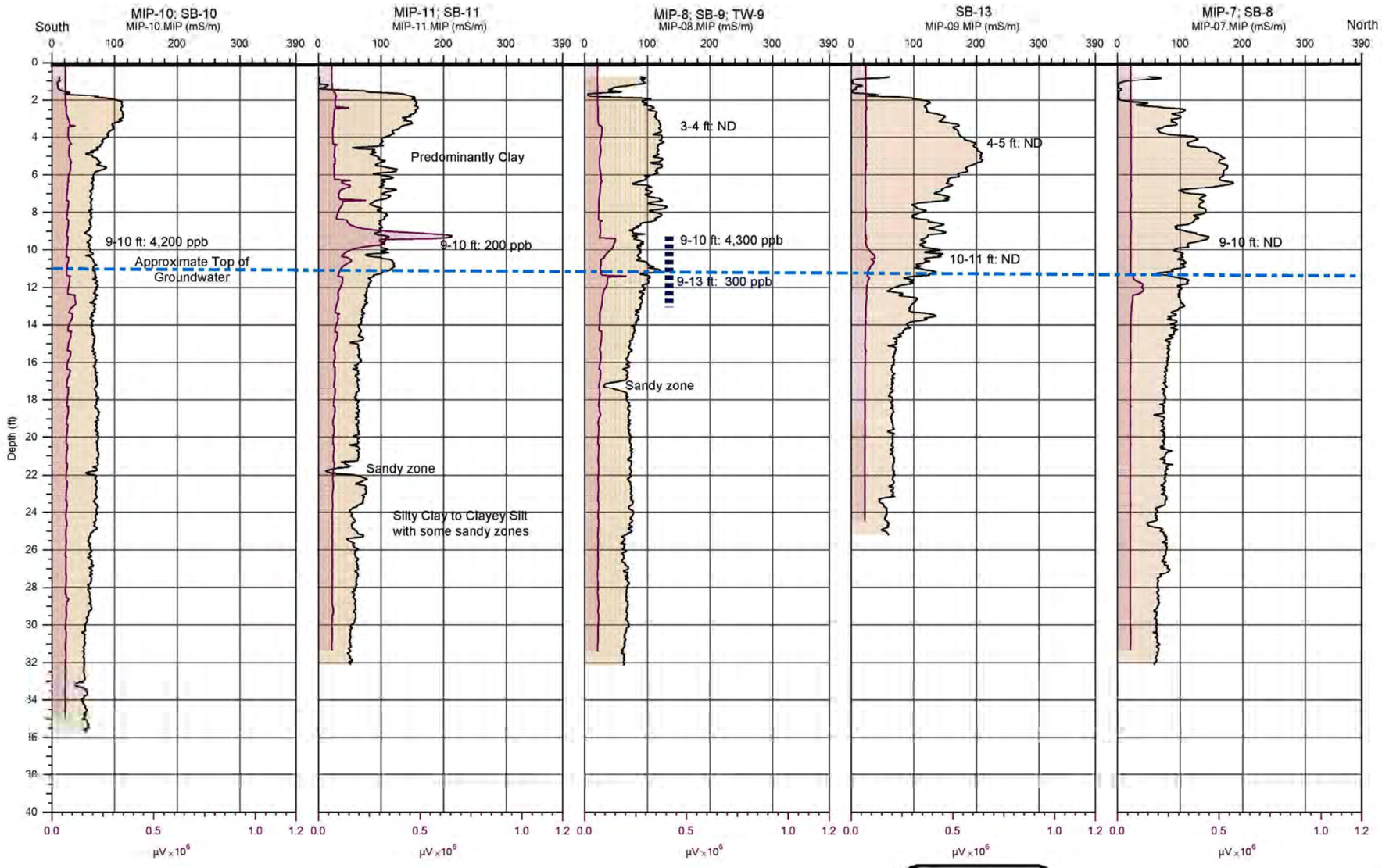


Direct Image By Geoprobe Systems®

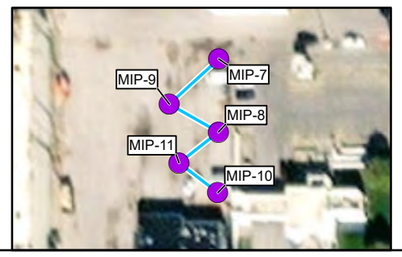
East Site EC / XSD Max

Company: Plains Environmental Services		Operator: Jason A.	MIP-10.MIP 6/8/2021
Project ID: Sunshine Cleaners		Client: Tetra Tech	MIP-11.MIP 6/8/2021
			MIP-08.MIP 6/7/2021
			MIP-09.MIP 6/8/2021
			MIP-07.MIP 6/7/2021

Legend
- MIP Boring Location
- Cross-section locator
- EC Response (mS/m)
- XSD microvolts (µV)

EC	Electric conductivity
ft	Feet
MIP	Membrane interface probe
mS/m	Millisiemens per meter
µV	microvolts
ND	Non detect
ppb	Parts per billion
SB	Soil boring
TW	Temporary well
XSD	Halogen specific detector

Note:
Results indicated are for tetrachloroethene in soil or groundwater



N

0 30 60 120
Feet
Scale of Locator Map

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 8
Cross-Section at Eastern Site Area

TETRA TECH

Date: 8/31/2021 Drawn By: Rose Micke Project No: X903019F0086.008

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SB-12		
Sample	8924-119	8924-118
Sample Depth (ft bgs)	4-5	12-13
Analyte	Result (µg/kg)	
PCE	ND	31,000 J
TCE	ND	28
cis-1,2-DCE	ND	38
trans-1,2-DCE	14	ND

SB-13		
Sample	8924-120	8924-121
Sample Depth (ft bgs)	4-5	10-11
Analyte	Result (µg/kg)	
Benzene	11	ND
Toluene	10	ND
TCE	ND	110
cis-1,2-DCE	21	75
trans-1,2-DCE	ND	13

SB-14	
Sample	8924-122
Sample Depth (ft bgs)	12-13
Analyte	Result (µg/kg)
All analytes	ND

SB-8	
Sample	8924-113
Sample Depth (ft bgs)	9-10
Analyte	Result (µg/kg)
TCE	6.8

SB-11	
Sample	8924-117
Sample Depth (ft bgs)	9-10
Analyte	Result (µg/kg)
PCE	200
TCE	21
cis-1,2-DCE	79
trans-1,2-DCE	16

SB-9		
Sample	8924-114	8924-115
Sample Depth (ft bgs)	3-4	9-10
Analyte	Result (µg/kg)	
PCE	ND	4,300
TCE	14	8
cis-1,2-DCE	33	7.9

SB-7		
Sample	8924-111	8924-112
Sample Depth (ft bgs)	4-5	9-10
Analyte	Result (µg/kg)	
PCE	ND	19
trans-1,2-DCE	13	ND

SB-19		
Sample	8924-129	8924-130
Sample Depth (ft bgs)	4-5	9-10
Analyte	Result (µg/kg)	
PCE	58	39
TCE	41	ND
cis-1,2-DCE	120	ND
trans-1,2-DCE	7.4	ND

SB-15	
Sample	8924-123
Sample Depth (ft bgs)	3-5
Analyte	Result (µg/kg)
PCE	23

SB-10	
Sample	8924-116
Sample Depth (ft bgs)	9-10
Analyte	Result (µg/kg)
PCE	4,200

SB-6	
Sample	8924-110
Sample Depth (ft bgs)	4-5
Analyte	Result (µg/kg)
All analytes	ND

SB-18		
Sample	8924-127	8924-128
Sample Depth (ft bgs)	3-4	14-15
Analyte	Result (µg/kg)	
All analytes	ND	ND

SB-1		
Sample	8924-101	8924-102
Sample Depth (ft bgs)	1-2	7-8
Analyte	Result (µg/kg)	
PCE	6	14,000 J
TCE	ND	35
cis-1,2-DCE	ND	18

SB-3	
Sample	8924-105
Sample Depth (ft bgs)	5-6
Analyte	Result (µg/kg)
PCE	180

SB-2		
Sample	8924-103	8924-104
Sample Depth (ft bgs)	5-6	11-12
Analyte	Result (µg/kg)	
PCE	16	4,200

SB-4		
Sample	8924-106	8924-107
Sample Depth (ft bgs)	2-3	10-12
Analyte	Result (µg/kg)	
PCE	140	9,800 J

SB-5		
Sample	8924-108	8924-109
Sample Depth (ft bgs)	4-5	14-15
Analyte	Result (µg/kg)	
All analytes	ND	ND

SB-16		
Sample	8924-124	8924-125
Sample Depth (ft bgs)	4-5	7-8
Analyte	Result (µg/kg)	
PCE	11	150

SB-17	
Sample	8924-126
Sample Depth (ft bgs)	4-5
Analyte	Result (µg/kg)
All analytes	ND

South 25th Street

South

Legend

- Soil sample location

bgs	Below ground surface
DCE	Dichloroethene
ft	Feet
ND	Non detect
PCE	Tetrachloroethene
SB	Soil boring
TCE	Trichloroethene
µg/kg	Micrograms per kilogram

N

0 25 50

Feet

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 9

Soil Results Map

TETRA TECH

Date: 8/25/2021 Drawn By: Rose Micke Project No: X903019F0086.008

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Legend

PCE isoconcentration plume
- 20 µg/kg
- 100 µg/kg
- 1,000 µg/kg
- 10,000 µg/kg

µg/kg Micrograms per kilogram
PCE Tetrachloroethene

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 10

Soil Isoconcentration Map

TETRA TECH

Date: 8/31/2021 Drawn By: Clayton Hayes Project No: X903019F0086.008

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TW-10	
Sample	8924-213
Sample Depth (ft bgs)	9-13
Analyte	Result (µg/L)
All analytes	ND

TW-8	
Sample	8924-211
Sample Depth (ft bgs)	8-12
Analyte	Result (µg/L)
PCE	2,500
TCE	66
cis-1,2-DCE	56
trans-1,2-DCE	47

MW-3	
Sample	8924-201
Sample Depth (ft bgs)	4.45-18.7
Analyte	Result (µg/L)
PCE	3,700
TCE	250 J
cis-1,2-DCE	880
trans-1,2-DCE	140

TW-13	
Sample	8924-217
Sample Depth (ft bgs)	9-13
Analyte	Result (µg/L)
All analytes	ND

TW-12	
Sample	8924-216
Sample Depth (ft bgs)	9-13
Analyte	Result (µg/L)
PCE	28
TCE	63
cis-1,2-DCE	260
trans-1,2-DCE	77
Vinyl chloride	31

TW-1	
Sample	8924-204
Sample Depth (ft bgs)	9-32
Analyte	Result (µg/L)
All analytes	ND

TW-9	
Sample	8924-212
Sample Depth (ft bgs)	9-13
Analyte	Result (µg/L)
PCE	300
TCE	60
cis-1,2-DCE	170
trans-1,2-DCE	50

TW-11	
Sample	8924-216
Sample Depth (ft bgs)	11-15
Analyte	Result (µg/L)
cis-1,2-DCE	380
trans-1,2-DCE	52
Vinyl chloride	11

South 25th Street

TW-7	
Sample	8924-210
Sample Depth (ft bgs)	11-15
Analyte	Result (µg/L)
All analytes	ND

MW-6	
Sample	8924-202
Sample Depth (ft bgs)	6.3-8.15
Analyte	Result (µg/L)
PCE	23
cis-1,2-DCE	5.3

MW-4	
Sample	8924-202
Sample Depth (ft bgs)	5.1-19.9
Analyte	Result (µg/L)
All analytes	ND

TW-5	
Sample	8924-208
Sample Depth (ft bgs)	9-13
Analyte	Result (µg/L)
PCE	30

TW-2	
Sample	8924-205
Sample Depth (ft bgs)	11-13.5
Analyte	Result (µg/L)
PCE	2,400
TCE	16
cis-1,2-DCE	5

TW-4	
Sample	8924-207
Sample Depth (ft bgs)	9-13
Analyte	Result (µg/L)
All analytes	ND

TW-3	
Sample	8924-206
Sample Depth (ft bgs)	9-13
Analyte	Result (µg/L)
PCE	580
TCE	44
cis-1,2-DCE	16
trans-1,2-DCE	8.5

5th

TW-14	
Sample	8924-218
Sample Depth (ft bgs)	15-16
Analyte	Result (µg/L)
All analytes	ND

TW-6	
Sample	8924-209
Sample Depth (ft bgs)	9-13
Analyte	Result (µg/L)
All analytes	ND

Legend

- Monitoring well location
- Temporary well groundwater boring location

bgs	Below ground surface
DCE	Dichloroethene
ft	Feet
MW	Monitoring well
NA	Not available
ND	Non detect
PCE	Tetrachloroethene
TCE	Trichloroethene
TW	Temporary well
µg/L	Micrograms per liter

Note:
Red values exceed the maximum contaminant level

N

0 25 50

Feet

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 11

Groundwater Results Map

TETRA TECH

Date: 8/25/2021 Drawn By: Rose Micke Project No: X903019F0086.008

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Legend

PCE isoconcentration plume

- 5 µg/L
- 100 µg/L
- 1,000 µg/L

µg/L Micrograms per liter

PCE Tetrachloroethene

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 12

2008-2021 PCE Isoconcentration Map

TETRA TECH

Date: 8/31/2021 Drawn By: Rose Micke Project No: X903019F0086.008

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Legend

TCE isoconcentration plume

- 5 µg/L
- 50 µg/L
- 100 µg/L
- 200 µg/L
- 300 µg/L

µg/L Micrograms per liter

TCE Trichloroethene

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 13

2008-2021 TCE Isoconcentration Map

TETRA TECH

Date: 8/31/2021 Drawn By: Rose Micke Project No: X903019F0086.008

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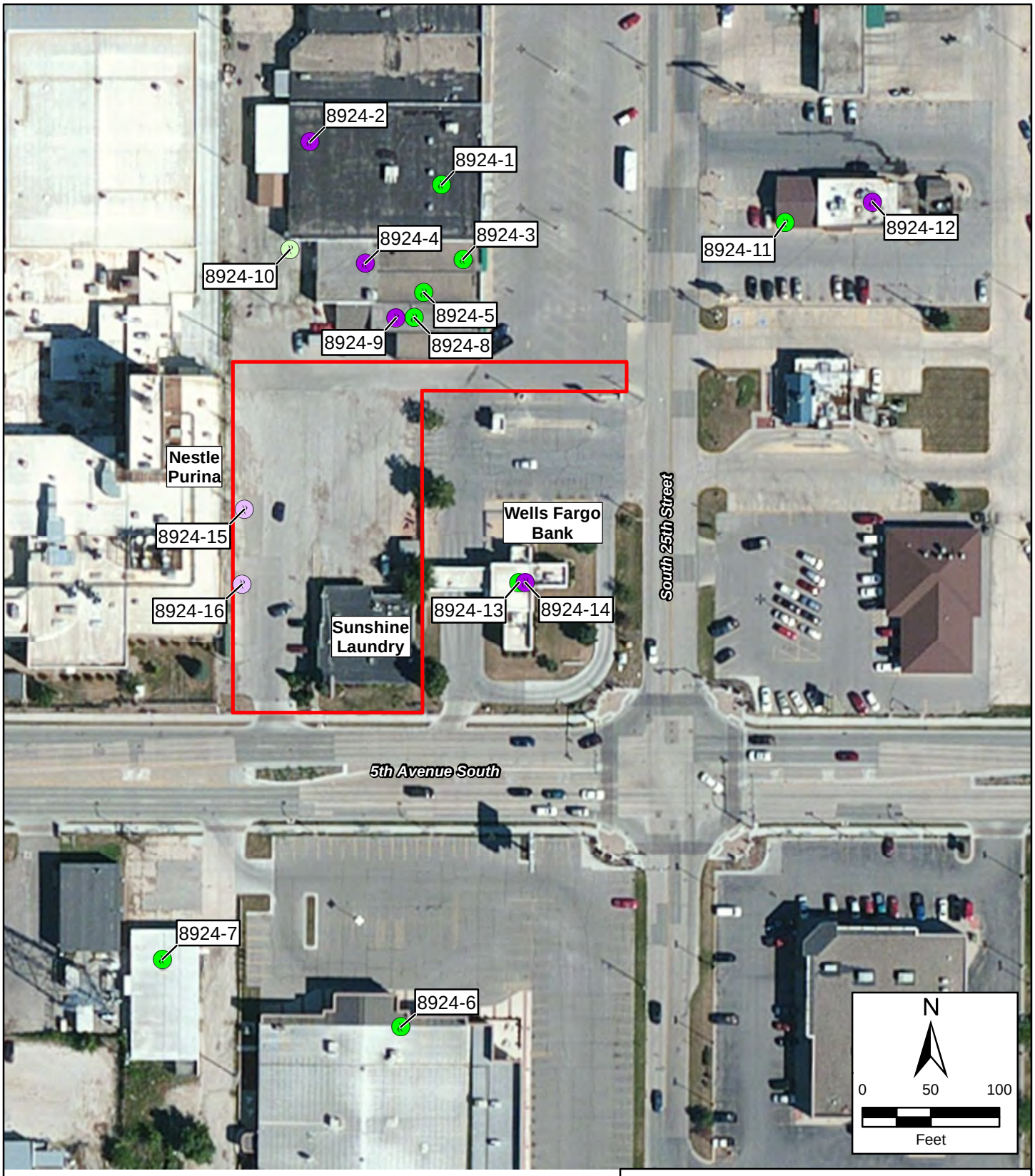

Legend

- Ambient air sample location
- Indoor air sample location
- Soil gas sample location
- Sub-slab sample location
- Former dry cleaner facility

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 14

Vapor Intrusion Sample Locations

TETRA TECH

Date: 8/23/2021 Drawn By: Clayton Hayes Project No: X903019F0086.008

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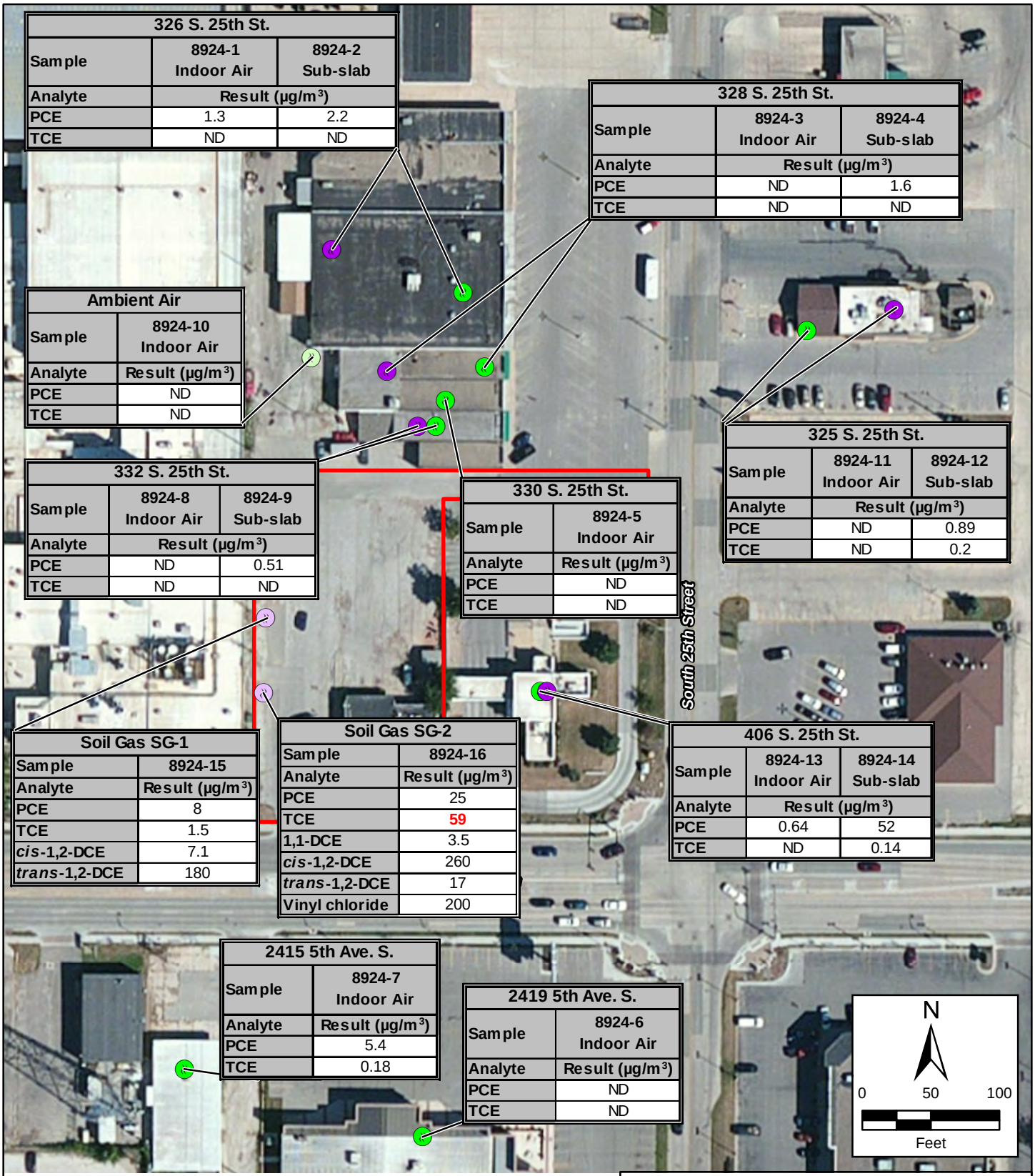

326 S. 25th St.		
Sample	8924-1 Indoor Air	8924-2 Sub-slab
Analyte	Result (µg/m³)	
PCE	1.3	2.2
TCE	ND	ND

328 S. 25th St.		
Sample	8924-3 Indoor Air	8924-4 Sub-slab
Analyte	Result (µg/m³)	
PCE	ND	1.6
TCE	ND	ND

Ambient Air	
Sample	8924-10 Indoor Air
Analyte	Result (µg/m³)
PCE	ND
TCE	ND

325 S. 25th St.		
Sample	8924-11 Indoor Air	8924-12 Sub-slab
Analyte	Result (µg/m³)	
PCE	ND	0.89
TCE	ND	0.2

332 S. 25th St.		
Sample	8924-8 Indoor Air	8924-9 Sub-slab
Analyte	Result (µg/m³)	
PCE	ND	0.51
TCE	ND	ND

330 S. 25th St.	
Sample	8924-5 Indoor Air
Analyte	Result (µg/m³)
PCE	ND
TCE	ND

Soil Gas SG-1	
Sample	8924-15
Analyte	Result (µg/m³)
PCE	8
TCE	1.5
cis-1,2-DCE	7.1
trans-1,2-DCE	180

Soil Gas SG-2	
Sample	8924-16
Analyte	Result (µg/m³)
PCE	25
TCE	59
1,1-DCE	3.5
cis-1,2-DCE	260
trans-1,2-DCE	17
Vinyl chloride	200

406 S. 25th St.		
Sample	8924-13 Indoor Air	8924-14 Sub-slab
Analyte	Result (µg/m³)	
PCE	0.64	52
TCE	ND	0.14

2415 5th Ave. S.	
Sample	8924-7 Indoor Air
Analyte	Result (µg/m³)
PCE	5.4
TCE	0.18

2419 5th Ave. S.	
Sample	8924-6 Indoor Air
Analyte	Result (µg/m³)
PCE	ND
TCE	ND

Legend

- Ambient air sample location
- Indoor air sample location
- Soil gas sample location
- Sub-slab sample location
- Former dry cleaner facility

DCE	Dichloroethene
ND	Non detect
SG	Soil Gas
PCE	Tetrachloroethene
TCE	Trichloroethene
µg/m³	Micrograms per cubic meter

Note:
Red values exceed the vapor intrusion screening level for commercial soil gas

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 15

Vapor Intrusion Result Map

TETRA TECH

Date: 8/31/2021 Drawn By: Clayton Hayes Project No: X903019F0086.008

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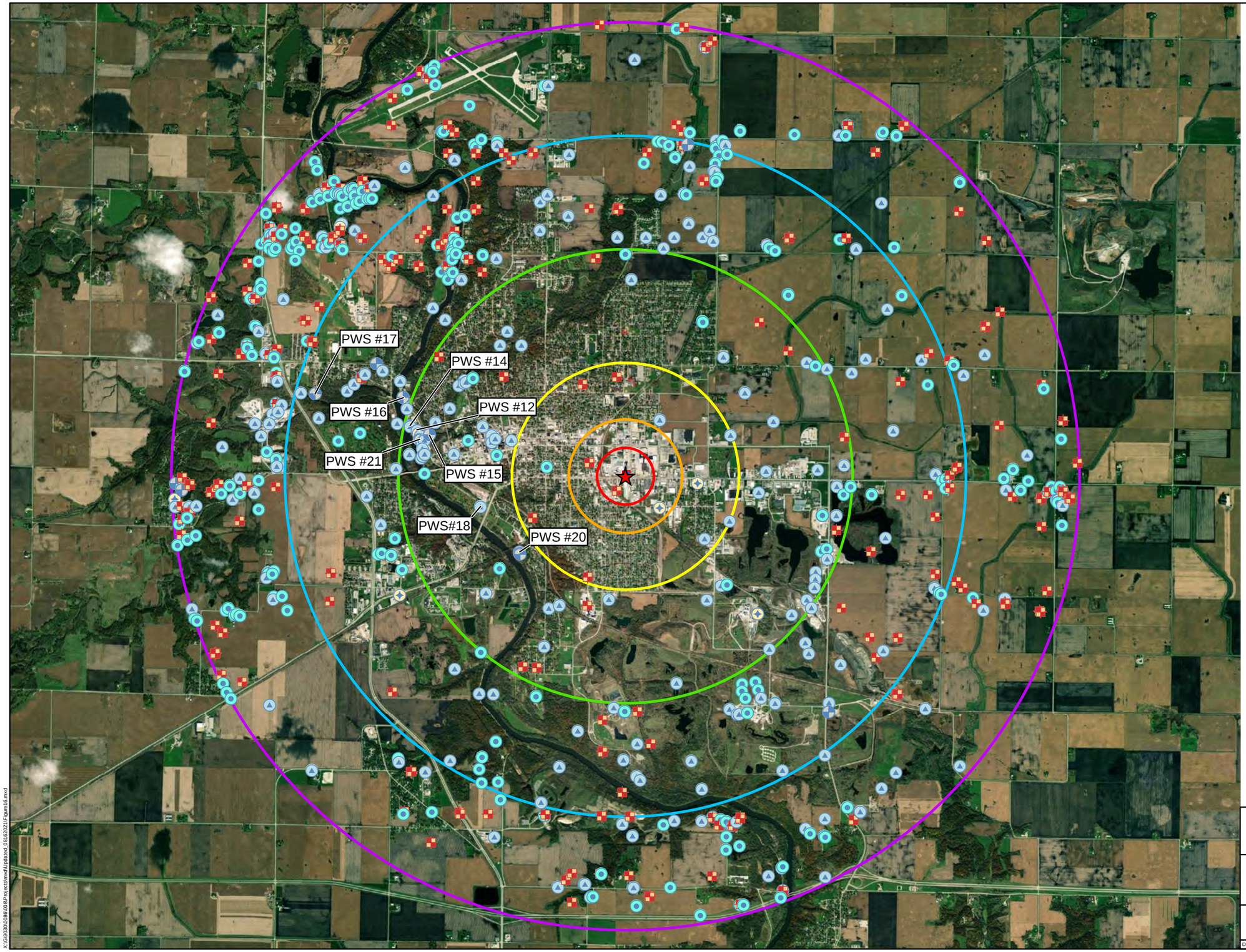

Legend

- IGS Database well
- Private well
- Public water supply well
- Water use permit well
- Registered testing well
- Site location
- 4 mile buffer
- 3 mile buffer
- 2 mile buffer
- Mile buffer
- 1/2 mile buffer
- 1/4 mile buffer

IGS Iowa Geological Survey

PWS Public water supply

N

0 2,200 4,400

Feet

Source: Esri, ArcGIS Online, World Imagery (Clarity);
Iowa Department of Natural Resources Source Water Protection,
All Registered Wells in the State of Iowa, Downloaded July 17th, 2021

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Figure 16
4-Mile Radius Map

TETRA TECH

Date: 8/25/2021 Drawn By: Clayton Hayes Project No: X903019F0086.008

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APPENDIX B

DATA TABLES

TABLE B-1: HISTORICAL SOIL RESULTS
SUNSHINE LAUNDRY - FORT DODGE, IOWA

Location	Depth (ft bgs)	Date	PCE	TCE	*cis* -1,2-DCE	*trans* -1,2-DCE	VC	Depths of elevated PID readings
			Concentration (µg/kg)					
RSL - Commercial			**100,000**	**6,000**	**2.30E+06**	**3.00E+05**	**1,700**	
RML - Commercial			**390,000**	**19,000**	**2.30E+06**	**3.00E+05**	**17,000**	
Iowa Statewide Standards Soil			**1,500,000**	**67,000**	**150,000**	**1,500,000**	**2,100**	
2008 Phase II Environmental Site Assessment								
DP-1/SB01	3-4	3/4/2008	18.4	<6.3	<6.3	<6.3	<6.3	None
DP-2/SB02	6-7	3/4/2008	<6.1	<6.1	<6.1	<6.1	<6.1	None
DP-3/SB03	12-13	3/4/2008	<5.8	<5.8	<5.8	<5.8	<5.8	None
DP-4/SB01	2-3	3/4/2008	1,850	<6.7	<6.7	<6.7	<6.7	2-3; 11-13 ft bgs
DP-5/SB01	1-2	3/4/2008	16.7	<5.7	<5.7	<5.7	<5.7	2.5 ft bgs
DP-6/SB02	4-6	3/4/2008	291	<6	<6	<6	<6	None
DP-7/SB03	14-15	3/4/2008	<5.8	<5.8	<5.8	<5.8	<5.8	None
DP-8/SB02	6-7	3/4/2008	262	10.5	14.8	4.6[a]	<6.2	None
DP-9/SB03	14-15	3/4/2008	22,100	52	<5.9	<5.9	<5.9	15-17 ft bgs
DP-10/SB03	14-15	3/4/2008	<6.1	<6.1	<6.1	<6.1	<6.1	None
Dup-1/SB-02	NA	3/4/2008	319	8	10.6	2.9[a]	<5.9	None
2010 Site Assessment & Remedial Action Plan								
MW-1	9	1/18/2010	<2	<2	<2	<2	<2	None
MW-2	11	1/19/2010	28	3	6	<2	<2	3-12 ft bgs
MW-3	3	1/19/2010	<2	<2	10	10	<2	2-16 ft bgs
MW-6	9	4/22/2010	43	63	18	27	<2	1-5; 8-11 ft bgs

Notes:

[a] Calculated as the difference between the total 1,2-DCE and*cis* -1,2-DCE concentrations

ft bgs	Feet below ground surface	RML	Remedial Management Level
DCE	Dichloroethene	SB	Soil boring core designation (SB01 = 0-5 ft bgs)
Dup	Duplicate	PCE	Tetrachloroethene
<	Less than the detection limit at the immediate righ	PID	Photoionization detector
NA	Not available; likely DP-8/SB02 (6-7 ft bgs)	TCE	Trichloroethene
µg/kg	Micrograms per kilogram	VC	Vinyl chloride
RSL	Regional Screening Level		

TABLE B-2: HISTORICAL GROUNDWATER RESULTS
SUNSHINE LAUNDRY - FORT DODGE, IOWA

Sample Name	Depth (ft bgs)[a]	Date	PCE	TCE	*cis*-1,2-DCE	*trans*-1,2-DCE	VC	Other detections (µg/L [ISS])
			Concentration (µg/L)					
VISL - Shallow Groundwater (Worker)			**31**	**1.9**	**NE**	**NE**	**28**	
Federal Drinking Water MCL and ISS - Protected Groundwater Source			**5**	**5**	**70**	**100**	**2**	
ISS - Non-Protected Groundwater Source			**1,700**	**76**	**350**	**700**	**10**	
2008 Phase II Environmental Site Assessment								
DP-1/GW01	16-25	3/4/2008	12	<5	<5	<5	<5	
DP-2/GW01	16-25	3/4/2008	34	<5	<5	<5	<5	
DP-3/GW01	16-28	3/4/2008	66.4	<1	<1	<1	<1	
DP-4/GW01	21-25	3/4/2008	190	<5	24.3	2.1 J	<5	
DP-5/GW01	15-20	3/4/2008	248[b]	<5	<5	<5	<5	
DP-6/GW01	15-20	3/4/2008	1,040	37.9	7	<5	<5	
DP-7/GW01	21.25	3/4/2008	511	<5	<5	<5	<5	
DP-8/GW01	15-20	3/4/2008	178	103	302	139	2.3	Chloroethane (1.4 [14,000])
DP-9/GW01	22-26	3/4/2008	2,130	4.2	5.8	2.6	<1	1,2,4-TMB (1.2 [350])
DP-9/Dup-1		3/4/2008	2,140	4.8	6.9	3	<1	1,2,4-TMB (1.3 [350])
DP-10/GW01	22.5-29	3/4/2008	<1	<1	<1	<1	<1	
2010 Site Assessment								
MW-1	9-20	1/29/2010	2.8	6	20.1	3.7	<1	
MW-2	5-20	1/29/2010	57.8	10.8	46.8	13.7	<1	
MW-3	5-20	1/29/2010	1,970	281	1,110	518	6.2	
MW-4	5-20	1/29/2010	7.3	1.1	2.9	1.4	<1	
MW-5	5-10	4/22/2010	111	4.5	<2	<2	<2	
MW-6	4-14	4/22/2010	75.3	5.1	3.5	2.5	<2	
December 2010 Direct-Push Groundwater Sampling at Wells Fargo Property (406 S. 25th St.)								
WF-1	15-19	12/6/2010	130	270	1,100	170	<5	
WF-2	15-19	12/6/2010	400	210	430	180	<25	
WF-3	15-19	12/6/2010	1,000	310	1,300	650	<25	
May 2011 Direct-Push Groundwater Sampling at Long John Silver's Property (407 S. 25th St.)								
PS-1	15-19	5/18/2011	<5	<5	<5	<5	<5	
PS-2	15-19	5/18/2011	<5	<5	<5	<5	<5	
December 2010 - December 2011 Extended Site Screening Monitoring Well Sampling								
MW-1	9-20	12/6/2010	<5	7	18	<5	<5	
		5/18/2011	<5	<5	8	<5	<5	
		12/19/2011	ND	5	Total: 9		ND	
MW-2	5-20	12/6/2010	350	89	400	85	<25	
		5/18/2011	690	230	500	120	26	
		12/19/2011	790	200	Total: 640		67	
MW-3	5-20	12/6/2010	Not Sampled					
		5/18/2011	4,000	360	1100	590	11	
		12/19/2011	3,700	420	Total: 1,500		11	
MW-4	5-20	12/6/2010	22	<5	<5	<5	<5	
		5/18/2011	<5	<5	<5	<5	<5	
		12/19/2011	ND	ND	Total: ND		ND	
MW-5	5-10	12/6/2010	160	14	<5	<5	<5	
		5/18/2011	160	20	8	<5	<5	
		12/19/2011	190	13	Total: ND		ND	
MW-6	4-14	12/6/2010	100	17	10	33	ND	
		5/18/2011	67	6	8	<5	<5	
		12/19/2011	110	15	Total: 11		ND	

TABLE B-2: HISTORICAL GROUNDWATER RESULTS
SUNSHINE LAUNDRY - FORT DODGE, IOWA

Sample Name	Depth (ft bgs)[a]	Date	PCE	TCE	*cis*-1,2-DCE	*trans*-1,2-DCE	VC	Other detections (µg/L [ISS])
			Concentration (µg/L)					
VISL - Shallow Groundwater (Worker)			**31**	**1.9**	**NE**	**NE**	**28**	
Federal Drinking Water MCL and ISS - Protected Groundwater Source			**5**	**5**	**70**	**100**	**2**	
ISS - Non-Protected Groundwater Source			**1,700**	**76**	**350**	**700**	**10**	
2014 Iowa Department of Natural Resources Sampling								
MW-1	9-20	8/28/2014	<5	<5	Total: 11		<5	
MW-2	5-20	8/28/2014	2,300	290	Total: 760		26	
MW-3	5-20	8/28/2014	Not Sampled					
MW-4	5-20	8/28/2014	<5	<5	Total: <5		<5	
MW-5	5-10	8/28/2014	170	9	Total: 7		<5	
MW-6	4-14	8/28/2014	97	8	Total: 9		<5	

Notes:

Concentration exceeds one benchmark value provided in table
Concentration exceeds two benchmark values provided in table
Concentration exceeds all three benchmark levels provided in table

[a] Sample depth is considered the interval between static water level and total depth, unless otherwise indicated.

[b] Incorrectly listed as 0.0248 mg/L on some historical data tables; however, analytical data indicated value was 248 µg/L (0.248 mg/L).

DCE	Dichloroethene
Dup	Duplicate
ISS	Iowa Statewide Standard
<	Less than the detection limit at the immediate right
µg/L	Micrograms per liter
mg/L	Milligrams per liter
MCL	Maximum Contaminant Level
MW	Monitoring well
ND	Not detected (detection limits unknown)
NE	Not established
PCE	Tetrachloroethene
TCE	Trichloroethene
TMB	Trimethyl benzene
VISL	Vapor Intrusion Screening Level
VC	Vinyl chloride

TABLE B-3: VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER FROM MONITORING WELLS
SUNSHINE LAUNDRY – FORT DODGE, IOWA

Sample Name	Depth (ft bgs)	Date	PCE	TCE	*cis* -1,2-DCE	*trans* -1,2-DCE	VC
			Concentration (µg/L)				
VISL - Shallow Groundwater (Worker)			**31**	**1.9**	**NE**	**NE**	**28**
Federal Drinking Water MCL and ISS - Protected Groundwater Source			**5**	**5**	**70**	**100**	**2**
ISS - Non-Protected Groundwater Source			**1,700**	**76**	**350**	**700**	**10**
MW-1	9-20	1/29/2010	2.8	6	20.1	3.7	<1
		12/6/2010	<5	7	18	<5	<5
		5/18/2011	<5	<5	8	<5	<5
		12/19/2011	ND	5	Total: 9		ND
		8/28/2014	<5	<5	Total: 11		<5
MW-2	5-20	1/29/2010	57.8	10.8	46.8	13.7	<1
		12/6/2010	350	89	400	85	<25
		5/18/2011	690	230	500	120	26
		12/19/2011	790	200	Total: 640		67
		8/28/2014	2,300	290	Total: 760		26
MW-3	5-20	1/29/2010	1,970	281	1,110	518	6.2
		12/6/2010	Not Sampled				
		5/18/2011	4,000	360	1,100	590	11
		12/19/2011	3,700	420	Total: 1,500		11
		8/28/2014	Not Sampled				
MW-4	5-20	1/29/2010	7.3	1.1	2.9	1.4	<1
	5-20	12/6/2010	22	<5	<5	<5	<5
		5/18/2011	<5	<5	<5	<5	<5
		12/19/2011	ND	ND	Total: ND		ND
	5-20	8/28/2014	<5	<5	Total: <5		<5
MW-5	5-10	4/22/2010	111	4.5	<2	<2	<2
		12/6/2010	160	14	<5	<5	<5
		5/18/2011	160	20	8	<5	<5
		12/19/2011	190	13	Total: ND		ND
		8/28/2014	170	9	Total: 7		<5

TABLE B-3: VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER FROM MONITORING WELLS
SUNSHINE LAUNDRY – FORT DODGE, IOWA

Sample Name	Depth (ft bgs)	Date	PCE	TCE	*cis* -1,2-DCE	*trans* -1,2-DCE	VC
			Concentration (µg/L)				
VISL - Shallow Groundwater (Worker)			**31**	**1.9**	**NE**	**NE**	**28**
Federal Drinking Water MCL and ISS - Protected Groundwater Source			**5**	**5**	**70**	**100**	**2**
ISS - Non-Protected Groundwater Source			**1,700**	**76**	**350**	**700**	**10**
MW-6	4-14	4/22/2010	75.3	5.1	3.5	2.5	<2
		12/6/2010	100	17	10	33	ND
		5/18/2011	67	6	8	<5	<5
		12/19/2011	110	15	Total: 11		ND
		8/28/2014	97	8	Total: 9		<5

Notes:

Concentration exceeds one benchmark value provided in table
Concentration exceeds two benchmark values provided in table
Concentration exceeds all three benchmark levels provided in table

DCE	Dichloroethene
ISS	Iowa Statewide Standard
<	Less than the detection limit at the immediate right
µg/L	Micrograms per liter
MCL	Maximum Contaminant Level
MW	Monitoring well
ND	Not detected (detection limits unknown)
NE	Not established
PCE	Tetrachloroethene
TCE	Trichloroethene
VISL	Vapor Intrusion Screening Level
VC	Vinyl chloride

TABLE B-4: HISTORICAL SUB-SLAB SOIL GAS SAMPLE RESULTS
SUNSHINE LAUNDRY - FORT DODGE, IOWA

Sub-slab	Location	Date	PCE	m,p-Xylenes
			Concentration (µg/m^3)	
Vapor Intrusion Screening Level – Commercial Sub-slab Soil Gas			**5,800**	**1,460**
SVP-1	Sunshine ─ Northeast Port	3/4/2008	170	4.9
SVP-2	Sunshine ─ Northwest Port	3/4/2008	**630,000**	<7800

Notes:

Bold font indicates a concentration that exceeds the VISL

<	Less than the detection limit at the immediate right
µg/m^3	Micrograms per cubic meter
NE	Not established
PCE	Tetrachloroethene
SVP	Soil vapor port

TABLE B-5: VAPOR INTRUSION SAMPLE RESULTS
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Analyte	VISL Sub-slab and Near-source Soil Gas[1] [EPA Region 7 Sub-slab RML][2]	RML Commercial Indoor Air CR = 1E-4; HQ = 1 [EPA Region 7 Indoor Air RML]	326 S. 25th St. Indoor Air 8924-1	326 S. 25th St. Sub-slab 8924-2	328 S. 25th St. Indoor Air 8924-3	328 S. 25th St. Sub-slab 8924-4	330 S. 25th St. Indoor Air 8924-5	2419 5th Ave. S. Indoor Air 8924-6	2415 5th Ave. S. Indoor Air 8924-7	332 S. 25th St. Indoor Air 8924-8	332 S. 25th St. Sub-slab 8924-9
	Volatile Organic Compounds (µg/m3) Method TO-15										
1,1-Dichloroethene	29,200 [29,000]	880 [880]	0.20 U	0.20 U	0.20 U	0.46	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,2,4-Trimethylbenzene	8,760	260	7.1 J	4.8	5.2	4.2	4.9	0.99 U	20	1.8	1.6
1,2-Dichloroethane	1,020 [1,000]	31 [31]	0.18	0.11	0.18	0.10 U	0.20	0.55	2.5	0.10 U	0.10 U
1,2-Dichloropropane	584	18	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U	4.2	0.93 U	0.93 U
1,3,5-Trimethylbenzene	8,760	260	2.3 J	1.5	1.4	1.1	2.1	0.99 U	4.7	0.99 U	0.99 U
1,3-Butadiene	292	8.8	0.45 U	0.83	0.45 U	1.7	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
1,4-Dichlorobenzene	3,720	110	2.9 J	1.4	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
2,2,4-Trimethylpentane	NE	NE	1.6	2.2	0.94 U	0.94 U	0.94 U	0.94 U	63	0.94 U	0.94 U
2-Propanol (Isopropanol)	29,200	880	34 J	0.50 UJ	**3800 J**	340 J	**4900 J**	24 J	13 J	**1900 J**	27 J
4-Ethyltoluene (ethyl methyl benzene)	NE	NE	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.9	4.0 U	4.0 U
2-Hexanone	4,380	130	1.7 UJ	1.7 U	38 J	3.0	1.7 UJ	1.7 UJ	3.0 J	3.1 J	1.7 U
Acetone	4.51E+05	1.40E+05	96 J	14	330 J	250 J	3500	190 J	250 J	2000 J	160 J
Benzene	4,380 [4,400]	130 [130]	0.71	2.5	0.49	8.8	0.38	0.27	9.8	0.35	1.8
Carbon disulfide	1.02E+05	3,100	0.63 U	0.63 U	0.63 U	0.63 U	0.63 U	0.63 U	0.65	0.63 U	0.63 U
Carbon tetrachloride	6,810 [6,800]	200 [200]	0.68	0.54	0.60	0.32 U	0.57	0.54	0.54	0.54	0.32 U
Chloroethane (ethyl chloride)	1.46E+06	44,000	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
Chloroform	1,780 [1,800]	53 [53]	0.61	0.45	0.67	0.12 U	0.78	0.12	2.2	1.1	1.2
Chloromethane	13,100	390	1.7 J	1.4	1.1 J	0.42 U	1.4 J	1.4 J	1.1 J	1.6 J	0.42 U
cis -1,2-Dichloroethene	NE	NE	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Cyclohexane	NE	26,000	0.70 U	0.70 U	0.70 U	3.4	0.70 U	0.70 U	4.5	0.70 U	0.70 U
Dichlorodifluoromethane	14,600	440	8.4 J	7.7	2.1	3.1	2.2	2.6	35	2.3	1.5
Ethylbenzene	16,400 [16,000]	490 [490]	0.89	3.3	8.7	16	3.6	0.88 U	15	1.1	1.5
Ethyl acetate	10,200	310	2.0	0.73 U	60	3.9	190	2.5	5.0	56	0.73 U
Heptane	58,400	1,800	0.86 J	1.4	7.3	5.3	0.83 U	0.83 U	8.1	1.9	0.83 U
Hexane	87,600	3,100	0.71 U	1.9	0.78	10	0.75	0.77	20	0.74	0.76
Methyl ethyl ketone (2-butanone)	7.30E+05	22,000	19	1.2 U	620 J	160	130	5.8	14	41	4.0
Methyl isobutyl ketone (4-methyl-2-pentanone)	4.38E+05	13,000	10 J	3.4 J	9.9 J	2.7 J	4.6 J	1.7 U	1.8 J	1.9 J	1.7 UJ
Methylene Chloride (dichloromethane)	87,600	2,600	1.3 J	0.70 U	2.7 J	0.70 U	0.70 U	0.70 U	1.9 J	0.70 U	0.70 U
Propylene (propene)	4.38E+05	13,000	1.6	5.9	0.59	10	0.67	2.9	0.65	0.44	1.1
Styrene	1.46E+05	4,400	4.2 J	3.0	3.0	0.86 U	1.6	0.86 U	3.1	0.86 U	0.86 U
Tetrachloroethene	5,840 [5,800]	180 [180]	1.3	2.2	0.34 U	1.6	0.34 U	0.34 U	5.4	0.34 U	0.51
Tetrahydrofuran	2.92E+05	8,800	8.2 J	5.5	15	2.0	4.0	12	1.2	1.1	0.60 U
Toluene	14,600	22,000	6.2 J	9.1	680 J	55	170 J	1.6 J	270 J	59 J	3.7
trans -1,2-Dichloroethene	5,840	180	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	292 [200]	8.8 [6]	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.18	0.14 U	0.14 U
Trichlorofluoromethane	NE	NE	32 J	26	2.8 J	5.3	2.4 J	1.8 J	180 J	1.7 J	3.5
Vinyl acetate	29,400	880	8.3 J	0.71 UJ	1.6 J	0.71 UJ	3.4 J	1.5 J	20 J	2.7 J	0.71 UJ
Vinyl chloride	9,290 [9,300]	280 [280]	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Xylenes, Total	14,600	440	7.10	8.50	31.90	11.10	14.10	ND	74	4.35	ND
m and/or p-Xylene	14,600	440	4.3	5.7	26	7.5	11	1.8 U	53	3.4	1.8 U
o-Xylene	14,600	440	2.8 J	2.8	5.9	3.6	3.1	0.88 U	21	0.95	0.88 U

TABLE B-5: VAPOR INTRUSION SAMPLE RESULTS
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Analyte	VISL Sub-slab and Near-source Soil Gas[1] [EPA Region 7 Sub-slab RML][2]	RML Commercial Indoor Air CR = 1E-4; HQ = 1 [EPA Region 7 Indoor Air RML]	Ambient Air 8924-10	325 S. 25th St. Indoor Air 8924-11	325 S. 25th St. Sub-slab 8924-12	406 S. 25th St. Indoor Air 8924-13	406 S. 25th St. Sub-slab 8924-14	SG-1 Soil-gas 8924-15	SG-2 Soil-gas 8924-16
			Volatile Organic Compounds (µg/m3) Method TO-15						
1,1-Dichloroethene	29,200 [29,000]	880 [880]	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	3.5
1,2,4-Trimethylbenzene	8,760	260	0.99 U	1.3	0.99 U	0.99 U	1.4	6.7	9.9 U
1,2-Dichloroethane	1,020 [1,000]	31 [31]	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U
1,2-Dichloropropane	584	18	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U	9.3 U
1,3,5-Trimethylbenzene	8,760	260	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	1.5	9.9 U
1,3-Butadiene	292	8.8	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	4.5 U
1,4-Dichlorobenzene	3,720	110	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	12 U
2,2,4-Trimethylpentane	NE	NE	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	9.4 U
2-Propanol (Isopropanol)	29,200	880	8.9 J	34 J	0.97 J	10 J	21 J	0.50 UJ	5.0 UJ
4-Ethyltoluene (ethyl methyl benzene)	NE	NE	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	40 U
2-Hexanone	4,380	130	1.7 UJ	1.7 UJ	1.7 U	1.7 UJ	1.7 U	1.7 U	17 U
Acetone	4.51E+05	1.40E+05	13	31	5.9	27	42	69	65
Benzene	4,380 [4,400]	130 [130]	0.22	0.95	0.53	0.27	0.67	1.6	7.6
Carbon disulfide	1.02E+05	3,100	0.63 U	0.63 U	0.63 U	0.63 U	0.63 U	0.63 U	7.7
Carbon tetrachloride	6,810 [6,800]	200 [200]	0.51	0.52	0.43	0.52	0.48	0.54	3.2 U
Chloroethane (ethyl chloride)	1.46E+06	44,000	0.53 U	0.58	0.53 U	0.53 U	0.53 U	0.53 U	5.3 U
Chloroform	1,780 [1,800]	53 [53]	0.12 U	1.3	0.90	0.12 U	0.12 U	0.12 U	1.2 U
Chloromethane	13,100	390	0.99 J	1.0 J	0.42 U	1.4 J	0.79	0.42 U	4.2 U
cis -1,2-Dichloroethene	NE	NE	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	7.1	260
Cyclohexane	NE	26,000	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	11
Dichlorodifluoromethane	14,600	440	2.1	1.8	2.7	2.7	2.3	1.0 U	10 U
Ethylbenzene	16,400 [16,000]	490 [490]	0.88 U	0.88 U	0.88 U	0.88 U	2.0	1.8	8.8 U
Ethyl acetate	10,200	310	0.73 U	7.6	0.73 U	0.73 U	0.73 U	0.73 U	7.3 U
Heptane	58,400	1,800	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	1.1	8.3 U
Hexane	87,600	3,100	0.71 U	1.8	0.71 U	0.71 U	0.71 U	0.71 U	7.1 U
Methyl ethyl ketone (2-butanone)	7.30E+05	22,000	1.2 U	2.3	1.2 U	2.8	4.5	24	13
Methyl isobutyl ketone (4-methyl-2-pentanone)	4.38E+05	13,000	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 UJ	1.7 UJ	17 UJ
Methylene Chloride (dichloromethane)	87,600	2,600	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	7.0 U
Propylene (propene)	4.38E+05	13,000	0.35 U	0.71	0.35	0.41	1.2	0.35 U	3.5 U
Styrene	1.46E+05	4,400	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	8.6 U
Tetrachloroethene	5,840 [5,800]	180 [180]	0.34 U	0.34 U	0.89	0.64	52	8.0	25
Tetrahydrofuran	2.92E+05	8,800	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	6.0 U
Toluene	14,600	22,000	0.76 U	8.1 J	1.2	0.76 U	2.3	5.9	19
trans -1,2-Dichloroethene	5,840	180	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	180	17
Trichloroethene	292 [200]	8.8 [6]	0.14 U	0.14 U	0.20	0.14 U	0.14	1.5	59
Trichlorofluoromethane	NE	NE	1.4 J	1.3 J	1.5	3.1 J	3.4	1.1 U	11 U
Vinyl acetate	29,400	880	0.89 J	5.8 J	0.94 J	1.9 J	0.88 J	0.71 UJ	7.1 UJ
Vinyl chloride	9,290 [9,300]	280 [280]	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	200
Xylenes, Total	14,600	440	ND	ND	ND	ND	3.30	11.10	ND
m and/or p-Xylene	14,600	440	1.8 U	1.8 U	1.8 U	1.8 U	2.3	7.6	18 U
o-Xylene	14,600	440	0.88 U	0.88 U	0.88 U	0.88 U	1.0	3.5	8.8 U

TABLE B-5: VAPOR INTRUSION SAMPLE RESULTS
SUNSHINE LAUNDRY SITE – FORT DODGE, IOWA

Notes:

[1] CR=1E-04; HQ=1; sub-slab attenuation = 0.03

[2] CR = 1E-04; HQ=1; Attenuation Factor 0.03 (Region 7 RMLs for Exterior soil gas are not included in this table.)

Bold font indicates a concentration that exceeds an indoor air RML or a VISL sub-slab value

EPA = U. S. Environmental Protection Agency
CR = Target Cancer Risk
HQ = Hazard Quotient
J = Estimated value
NE = Not Established
RML = Removal Management Level
U = Analyte was not detected at concentration at or above reporting limit at immediate left
UJ = Analyte was not detected at concentration at or above estimated reporting limit at immediate left
VISL = Vapor intrusion screening level

APPENDIX C

LOGBOOK

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6/7/21 Sunshine Laundry

0715 STM Barbeau at Tetra Tech Kansas City to pack up vehicle and gather Vapor Intrusion equipment.

1235 STMs Barbeau and Kaley arrive at the site. STM ~~Jenna~~ Mead will be around for the MIP survey. STMs Barbeau and Kaley attempt access.

1430 Return to the site with STM Mead.

1500 Leave for access and gathering supplies.

1545 Return and starting to gauge and sample monitoring wells.

1600 Gauge MW-3. Total depth 18.7' Top of Water, 4.15'

1615 Deploy hydrosleeve samplers into the well.

1710 Collect MW-3 sample. 8924-201

1735 Gauge MW-6 Total depth 9.15'

1742 Top of water - 6.3'

~~1515~~ TB Gauge MW-4, Total depth 19.9' Top of water - 5.

1800 Collect MW-6 8924-202

1810 ~~1810~~ TB Deploy sample MW-4.

1840 ~~1840~~ Collect MW-4 8924-203. MW1 + MW2 were unsampleable and MW5

6/7/21 Sunshine Laundry

was not visable.

1850 Done for the day.

TB 6/7/21

6/8/21 Sunshine Laundry

0710 STMs Mead and Barbeau at five sites. Drillers continue working on the MIP.
MW-3 : 42.501713, -94.163974
MW-4 : 42.501416, -94.164258
MW-6 : 42.501564, -94.163776

0810 Create trip blank samples 8924-223-FB

0820 At 326 South 25th to collect indoor and sub-slab.
8924-1 : Indoor air
Start: -29.5 mmHg @ 0828
End: -3 mmHg @ 1614
Canister ID: 4556 Reg ID: 149
8924-2 : Sub-slab at 0853
Start: -30 mmHg
End: -4 mmHg
Canister ID: ~~632~~ TB 15207
8924-3 : Indoor air at 328 S 25th
Start: -26.5 mmHg @ 0910
End: -5.5 mmHg @ 1616
Canister ID: 30375 Reg ID: 147
8924-4 : Sub-slab at 328 S 25th
Start: -28.5 mmHg at 0925
End ~~Cent~~ TB -1 mmHg
Canister ID: 661
8924-5 Indoor Air at 330 S 25th St
Start: -29 mmHg @ 0932

6/8/21 Sunshine Laundry

End: +5 mmHg @ 1718
Canister ID: 717 Reg ID 141

1015 Verbal access ~~from~~ TB to collect indoor air at 2419 5th Ave S and 2515 5th Ave S
8924-6 Indoor Air at 2419 5th Ave South
Start: -28.5 mmHg @ 1020
End: 0 mmHg @ 1625
Canister ID: 3012 Reg ID: 19
8924-7) Indoor Air at 2515 5th Ave South.
Start: -13 mmHg @ 1025
End: -7 mmHg @ 1652 Store closes at 5.
Canister ID: 816 Reg ID: 16

1055 STM Haley will attempt property owner access and STM Barbeau will check on MIP Survey with STM Mead. Access granted verbally.

1145 At 332 S 25th St.
8924-8 Indoor Air
Start: -29.5 @ 1148
End: -7 @ ~~1641~~ TB 1820
Canister ID: 3001 Reg ID: -
8924-9 Sub-slab
Start: -30 mmHg at 1205

Rite in the Rain

6/8/21 Sunshine Laundry

End: -2

Canister ID: bb2

1215 Crew takes lunch.

1245 Drillers are at location 13.

1350 Drillers are at location 14.

1438 Drillers are at location 15.

1608 Leave to pick up indoor air canisters. 30 TB

8~~5~~ Done with work for the day.

TB

TB 6/8/21

6/9/21 Sunshine Laundry

0650 Pick up ice for the samples

0700 At the site. The drillers will ~~so~~ TB start sampling inside the laundry building.

0730 At SB-1/TW-1

0758 Collect SB-1 (~~5~~ 1 TB '-~~5~~ 2 TB '). 8924-101

0815 Collect SB-1 (7'-8') 8924-102

0924 Drillers stop at 20.5' bgs. Will come back later to collect water.

8924-10 Ambient air at 330 S 25th St.

Start: -30 mmHg @ 0758

End: -3.5 mmHg @ 1758

Canister ID: 17007 Reg ID: 156

1010 Collect ~~52~~ TB SB-2 (5'-6') 8924-103

1050 Collect SB-2 (11'-12') 8924-104

Well was dry to 30 feet bgs at SB-2 location. Drillers will move to SB-1 to attempt sampling groundwater.

1205 At 325 S 25th to start indoor air sample. 8924-11

Start: -30 mmHg @ 1207

End: TB ~~-5~~ -4.5 mmHg @ 2000

Canister ID: K2226 Reg ID: 155

1220 Collect TW-1 at 32' ~~from~~ bgs.

6/9/21 Sunshine Cleaners

8924-204. Air bubbles were visible due to reaction with HCl acid.

1305 Collect SB-3-(5'-6') 8924-105
No recovery passed 13.5 feet in SB-3.

1345 Collect SB-4-(2'-3') 8924-106

1415 Collect SB-4(10'-12') 8924-107 MS/MSD

+TB Collect TW-2 8924-205

1515 ~~Crews~~ TB Drillers are at MIP 1/SB-5

~~1535~~ 1525 TB Collect SB-5(4'-5') 8924-108

1535 ~~Collect~~ SB-5(14'-15') 8924-109

1550 Collect SB-6(4'-5') 8924-110

1600 Drillers at SB-7.

1615 Collect SB-7(4'-5') 8924-111
GW at 10 feet.

1620 Collect SB-7(9'-10') 8924-112

1634 Drillers at SB-8/MIP-7

1655 Collect SB-8(9'-10') 8924-113
GW at 11 feet.

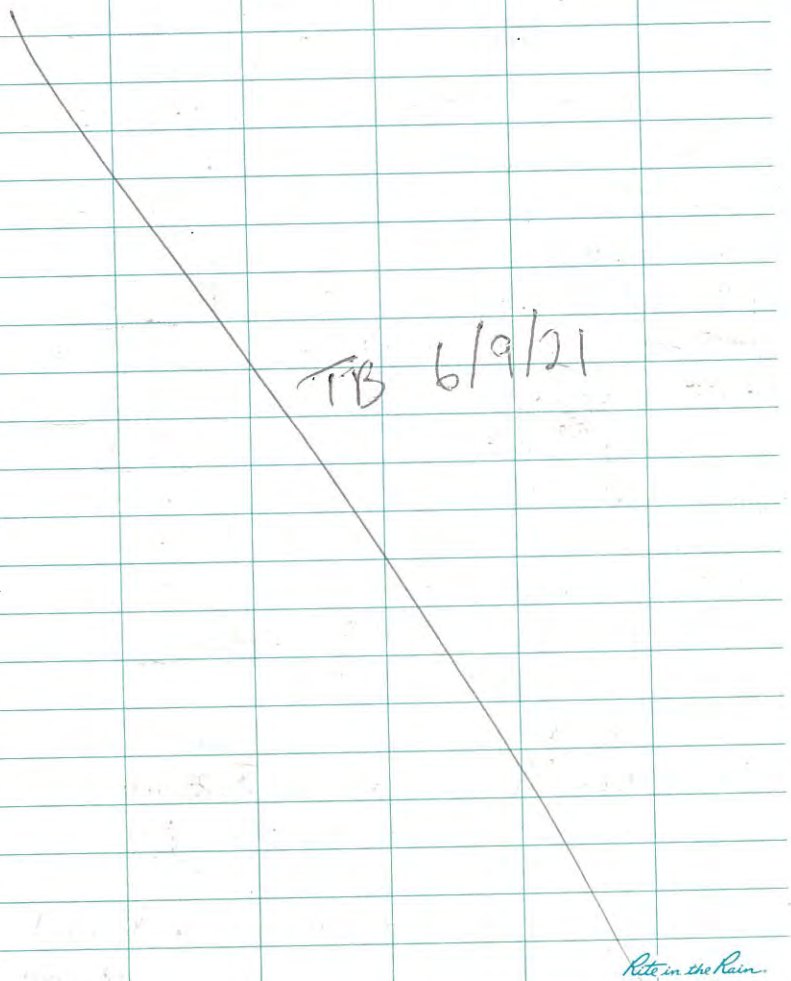
1705 Drillers leave site for the day. Pack away supplies. Wait around for the ambient air at 330 S 5th St.

5
1718 TB Collect ambient air and wait on indoor air at 325 S 25th.

6/9/21 Sunshine Cleaners

1952 Collect sub-slab at 325 S 25th
Start: -30 mmHg @ 1952. 8924-12
End: -3 mmHg
Canister ID: 606

2005 End work for the day.



6/10/21 Sunshine Laundry

0700 All crews on site. Start drilling at MIP-8/SB-9.
0725 Collect SB-9 (3'-4') [8924-114]
0730 Collect SB-10 (9'-10') [8924-115]
0740 At MIP-10/SB-10
0750 Collect SB-10 (9'-10') [8924-116]
0810 Collect SB-11 (9'-10") [8924-117]
0830 Crew moves to MIP-12/SB-12
0840 4-5 ppm at 12'-13' bgs in SB-12. Drillers will go another 5' if possible.
0845 Collect SB-12 (12'-13') [8924-118]
0850 Collect SB-12 (4'-5') [8924-119]
0905 Collect SB-13 (10'-11') [8924-121] TB
0910 Collect SB-13 (4'-5') [8924-120]
0915 Drillers at SB-14 (42.501958, -94.164042)
0925 Collect SB-14 (12'-13') [8924-122]
0938 Drillers MIP-13/SB-15.
0945 Collect SB-15 (3'-5') [8924-123] MS/MSD
1015 Drillers at MIP-15/SB-16
1020 Collect SB-16 (4'-5') [8924-124]
1025 Collect SB-16 (7'-8') [8924-125]
1030 Drillers at SB-17 (42.501291, -94.163742). No recovery past

5' bgs.
1035 Collect SB-17 (4'-5') [8924-126]
1055 At 406 S 25th to collect indoor air. [8924-13]
Start: -27 mmHg @ 1057
1100 Collect SB-18 (3'-4') [8924-127]
1115 Collect SB-18 (14'-15') [8924-128]
1120 Drillers at SB-19 (42.501660, -94.163691). SB-18 coordinates are 42.501523, -94.163720.
1125 Collect SB-19 (4'-5') [8924-129]
1130 Collect SB-19 (9'-10') [8924-130]
1145 At MIP-4/SG-1
Canister ID 818 filled with water at 6' bgs.
~~[8924-13]~~ 6-30-21
End: 0 at 1155 (VOID) sample
Canister ID: 4568 Reg ID: 150
1200 Collect SG-1 [8924-15]
Canister ID: 737
Start: -30 mmHg End: -5 mmHg
1206 Collect indoor air [8924-13]
at 406 S 25th.
Start: -26.5 mmHg @ 1206
End: -4.5 mmHg @ 2004
Canister ID: 3243 Reg

6/10/21 Sunshine Laundry.

~~1205~~ Collect SG-2 at MIP-3 location

1225 Start: -30 mmHg End: -5 mmHg

Canister ID: 727 8924-16 FB 1225 ~~1205 1255~~

Collect sub-slab at 406 S 25th.

1225 8924-14

Start: 30 mmHg @ 1225 End: -2 mmHg

Canister ID. 4562

1320 Drillers at TW-3 at MIP-15.

1335 Collect 2nd FB 8924-206 at 13' bgs.

1345 Move to TW-4/SB-17.

1355 Collect TW-4 at 13 feet bgs

8924 FB-207 Air bubbles from reaction to HCl.

1400 At TW-5/SB-18

1410 Collect TW-5 at 13' bgs 8924-208 MS/MSD.

1430 At TW-6/SB-5

1445 Collect TW-6 at 13' bgs 8924-209

1450 At TW-7/SB-6

1510 Collect TW-~~8~~7 FB at 15' bgs 8924-210

1515 At TW-8/SB-12

1520 Collect TW-8 at 12' bgs 8924-211

1525 At TW-9/SB-9

1535 Collect TW-9 at 13' bgs 8924-213

1540 At TW-10/SB-14

1545 Collect TW-10 at 13' bgs 8924-213

6/10/21 Sunshine. Laundry

1555 Collect rinsate blank of the screen 8924-214.

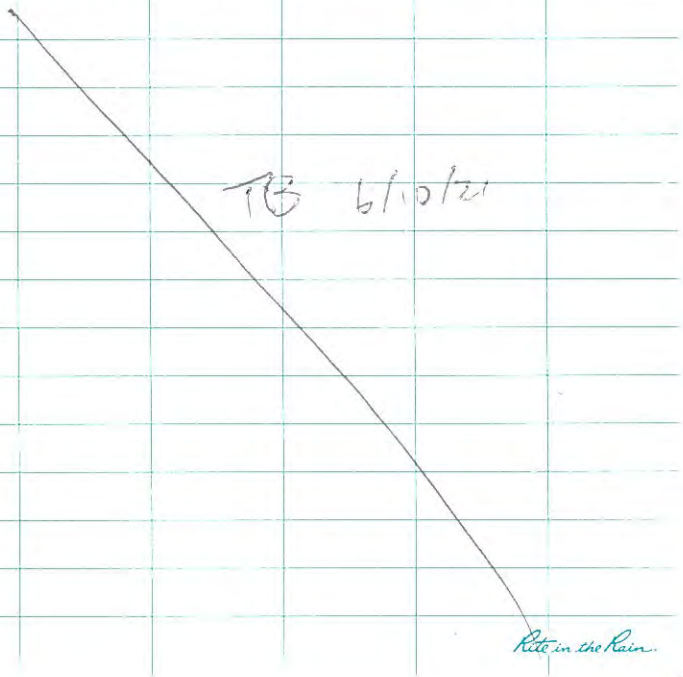
1610 Collect trip blank 8924-221-FB

1620 Collect field blank 8924-222-FB

Drillers are patching up holes and STM Barbeau takes photos of the patches.

1645 Leave the site to wait on indoor air sample.

2004 Collect indoor air from 406 S 25th. End day. Work on lab field sheets and COC.



6/11/21 Sunshine Laundry

0630 At the site with the drillers.

0635 At TW-11 at 42.501718, -94.163214

0700 Collect TW-11 at 15' bgs 8924-215

0706 At TW-12 (42.501895, -94.163224) well was dry at 15'. Drillers will come back later.

0715 At TW-13 (42.502000, -94.163006)

0720 Collect TW-13 at 13' bgs 8924-217 8924-201

0730 Drillers return to TW-12. Still dry at that location. Will attempt at new location (42.501948, -94.163205).

0800 Collect TW-12 at 13' bgs 8924-216

0810 At TW-14 (42.501088, -94.164016). well is dry to 19'. Attempt at new location (42.501089, -94.163931). ~~Orig~~ MB Orignal location collected water so collected sample 8924 from there.

0850 Collect TW-14 at 19' bgs 8924-218

Take photos and finish packing supplies.

0905 Leave the site.

1330 At Tetra Tech Kansas City. Put supplies away and finish office work.

Jenna Mead, PM

Notes added to

log book

6/6/21

1330 Depart ISC for site

1800 Arrive H. Dodge

Sunday to be there

8:00 Monday to meet

Plains Env. Service

(Jason + Henry)

Jenna Mead

6-6-21

6-7-21

0750 JMead on site. start 100 kmz @ Utility Marking. Laundromat manager for 18 yrs (Dana) here, they will close 6/18/21 per owner telling him.

0800 Jason + Henry w/ PES arrive. Go over utilities, want to stay away from electrical along west side of site (easement) power/cable. PES starts setting up for MIP. JRM starts marking playing boring/MIP locations. Identify 3 existing MWs but only one has vault cover/cap, others have been ripped off + open PVC pipe.

0820 Tim Barbeau called, leaving KC office.

0935 PES has equipment switched from HPT to MIP + ready to start @ SW corner by street; calibrate probe

1000 Start MIP 1

6-7-21

1030 Finish MIP 1 @ 31'; v. slight response ~2-6'

1055 Start on MIP 2. some PID hits, but not Chlorinated (no XSD hits); DTW ~6' on Rods in open hole after MIP.

1145 Break for lunch. JRM staying on site until drillers return to keep eye on equipment.

1205-1235 JRM lunch. Tim Barbeau + Thomas Kaley arrive on site

1400 MIP 4 - 2-16ft high XSD; Deepest MIP calibration + PID boring w/ bentonite

1413 Start MIP 5 - nothing

1603 Finish MIP 6 - nothing

1645 MIP-7 Hits ~11-12'; GW ~5-6'

1705 Start MIP 8; hits ~8-12'

1755 Finish for day JRM, EPA (Megan Schuette arrives ~1600) + drillers off site. Tim + Thomas sampling MWs.

Jenn Mead 6/7/21 Rite in the Rain

6-8-21

0700 Meet drillers on site, Tim B. arrives + will work on getting GPS.

0750 Thomas on site. Megan Schuette EPA OSC working @ hotel until later. Plains working on equipment airflow issue + calibration.

0810 @ MIP9 hit old slab(?) ~ 8-12' bgs. Drilled through it since not supposed to be any utilities there.

0832 stopped @ 24.5' nothing past small response @ 10-12'.

0915 MIP10 by shed hits ~2.5' to 14' then decreasing. Slight peak @ 29' so will go to 35' to see if it increases. OSC Schuette on site. Tim + Thomas are setting Summas for V1 sampling + back now

0955 JM + PES look @ interior of building + discuss sample locations @

NW, NE, SE + SW areas. Per Dana w/ laundromat. Dry cleaner had been @ NW corner of lounge area, where floor electrical connection present, have to come south of that to be safe.

1015 MIP11 have peak ~ 10' Biggest peak yet; contam ~ 6-11' w/ peak ~ 9'. cleaning up (decreasing) so stop @ 30'

1120 MIP12 ~ 4' NNE of Stormdrain in parking lot. Big hits ~ 12-24' then decreasing.

1145 Finished @ 41' ft @ MIP12 No deeper hits. J. Mead departing site for Sioux City, IA Sampling

James Mead
6-8-21

APPENDIX D

PHOTOGRAPHIC LOG

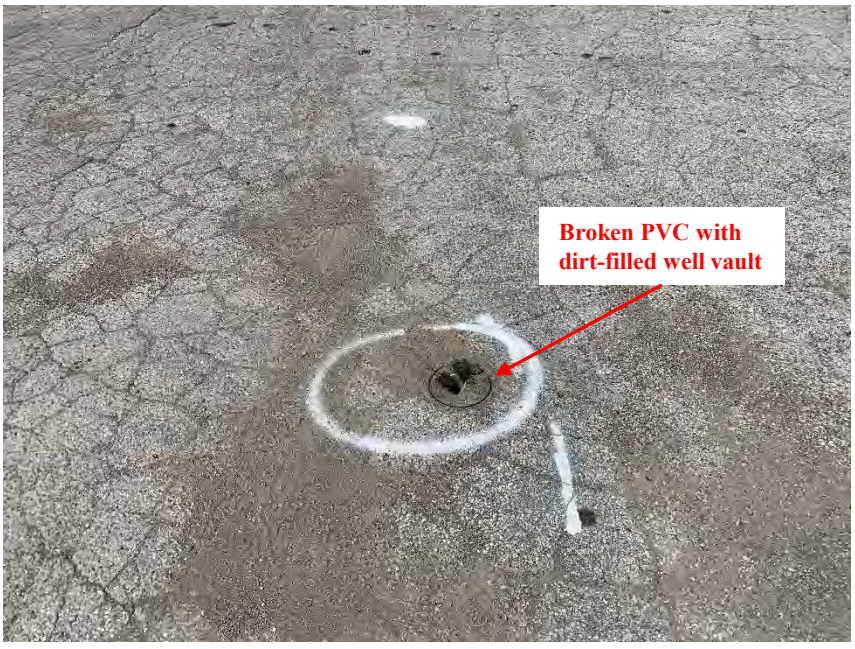
Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows Membrane Interface Probe (MIP)-1 location; collocated with Soil Boring (SB)-5 and Temporary Well (TW)-6.	1
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: North	DESCRIPTION	This photograph shows power and communications utility easement at west side of Sunshine Laundry.	2
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: South	DESCRIPTION	This photograph shows the storm sewer drain in parking lot north of Sunshine Laundry.	3
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	



TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: -	DESCRIPTION	This photograph shows open polyvinyl chloride (PVC) riser with no well cap or vault cover at MW-1; not sampled.	4
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: -	DESCRIPTION	This photograph shows open PVC with no well cap or vault cover at MW-2; not sampled.	5
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: South	DESCRIPTION	This photograph shows MW-3 with vault cover in place, north of Sunshine Laundry building.	6
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: North	DESCRIPTION	This photograph shows MW-4 with 4-inch vault cover in place.	7
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows MW-6 location just northeast of Sunshine Laundry building. Note underground electrical flag and markings.	8
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: Southeast	DESCRIPTION	This photograph shows water level measurement at MW-6. Note: the subsurface electrical post-dates installation of MW-6.	9
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

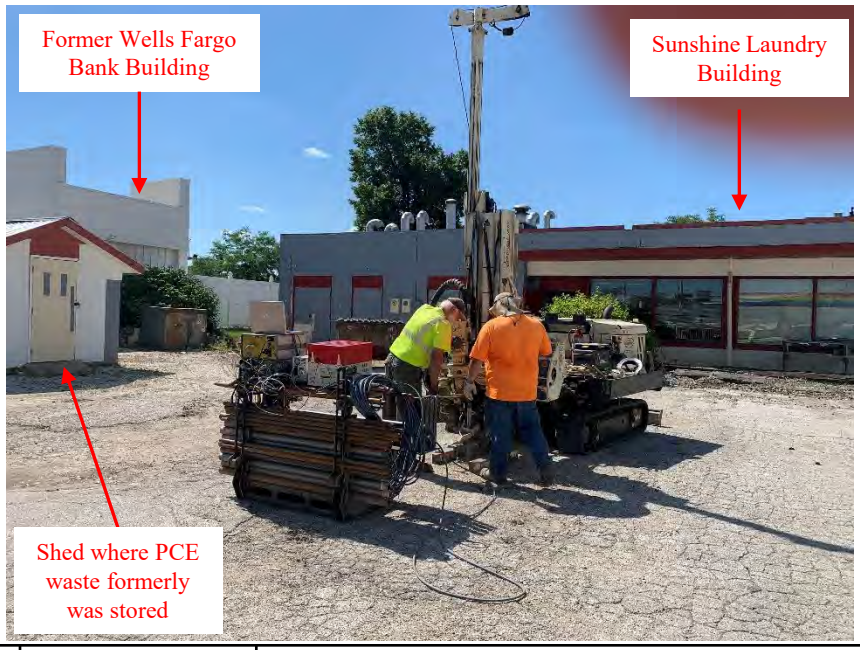
TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: Southwest	DESCRIPTION	This photograph shows groundwater sample collected at MW-3 by use of a HydraSleeve™ sampling device.	10
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: Northwest	DESCRIPTION	This photograph shows MIP-6 location.	11
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows MIP-8 location. Collocated with SB-9 and TW-9.	12
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/7/2021
	PHOTOGRAPHER	Jenna Mead	

Sunshine Laundry Site
Fort Dodge, Iowa



TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: Southeast	DESCRIPTION	This photograph shows MIP-11 location; collocated with SB-11.	13
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/8/2021
	PHOTOGRAPHER	Jenna Mead	

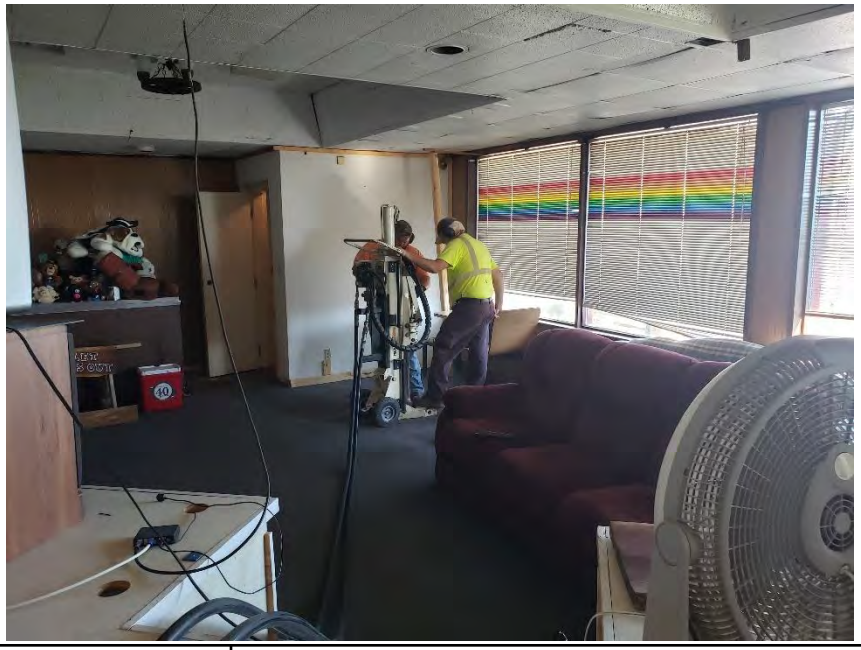
TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows MIP-13 near northwest corner of the Sunshine Laundry building; collocated with SB-15.	14
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/8/2021
	PHOTOGRAPHER	Jenna Mead	

Sunshine Laundry Site
Fort Dodge, Iowa

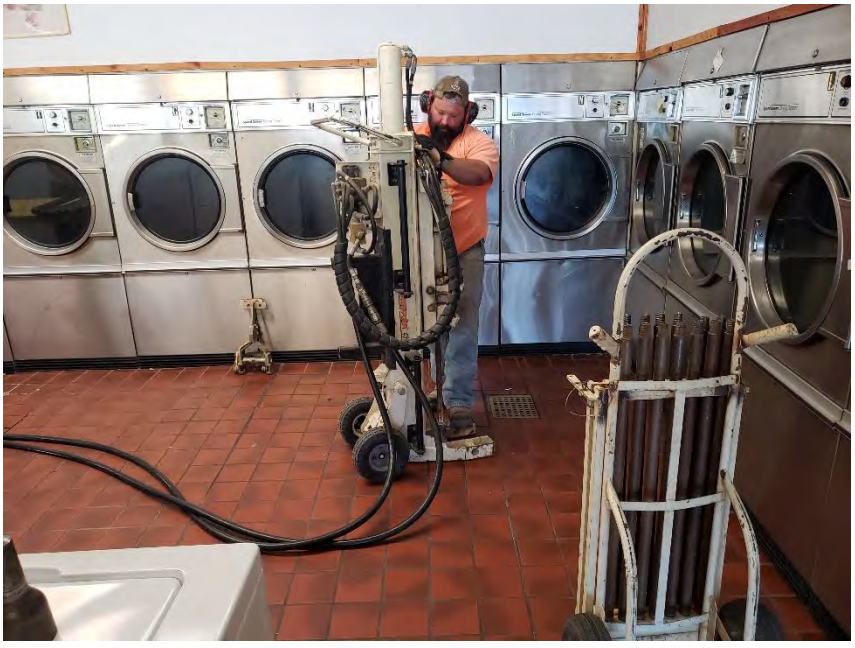
TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows indoor air sample collection at 2419 5th Avenue South.	15
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/8/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: -	DESCRIPTION	This photograph shows indoor air sample location at vacant bowling alley at 326 S. 25th Street.	16
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/8/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa



TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: Northwest	DESCRIPTION	This photograph shows SB-1/TW-1 at northwest quadrant inside Sunshine Laundry near former dry cleaning machine's location.	17
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	



TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: North	DESCRIPTION	This photograph shows SB-2 location in northeast quadrant of the Sunshine Laundry building.	18
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: Northeast	DESCRIPTION	This photograph shows SB-3 location in southeastern quadrant within the Sunshine Laundry building.	19
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows SB-4/TW-2 location inside west entrance at southwest quadrant of the Sunshine Laundry building.	20
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: NA	DESCRIPTION	This photograph shows ambient air sample collection behind building at 330 S. 25th Street, north of Sunshine Laundry.	21
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: NA	DESCRIPTION	This photograph shows indoor air sample collection at 325 S. 25th Street.	22
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: South	DESCRIPTION	This photograph shows SB-5 near southwest corner of Sunshine Laundry property; collocated with MIP-1 and TW-6.	23
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: West	DESCRIPTION	This photograph shows SB-6 location; collocated with MIP-3, TW-7, and Soil Gas (SG)-2.	24
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: Northwest	DESCRIPTION	This photograph shows SB-7 location; collocated with MIP-4 and SG-1.	25
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: Northeast	DESCRIPTION	This photograph shows SB-8 location near northeast corner of Sunshine Laundry property; collocated with MIP-7.	26
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/9/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows SB-10 location between Sunshine Laundry building and shed; collocated with MIP-10.	27
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

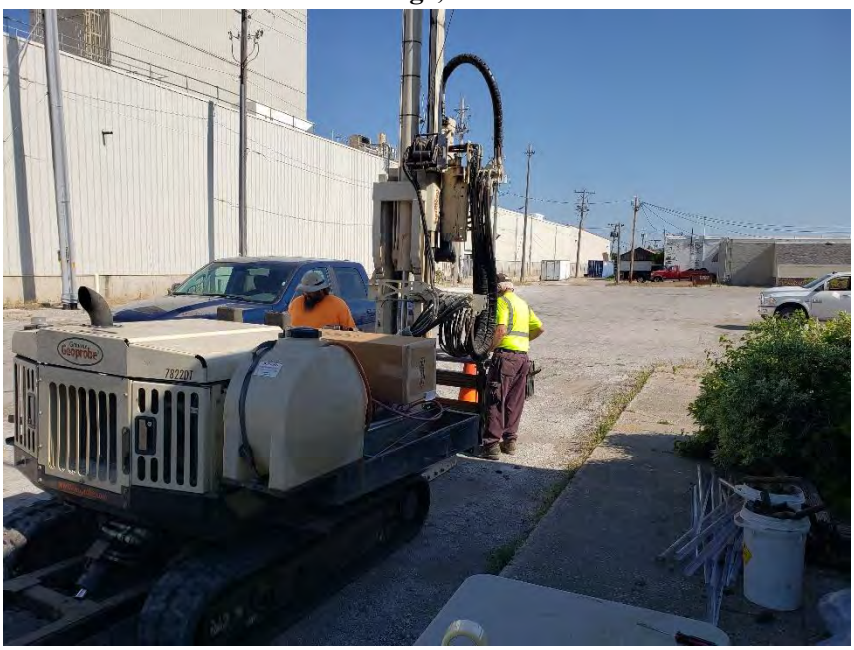
TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: Northeast	DESCRIPTION	This photograph shows SB-11 location west of shed; collocated with MIP-11.	28
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: North	DESCRIPTION	This photograph shows SB-12 location just northeast of stormwater drain; collocated with MIP-12 and TW-8.	29
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: North	DESCRIPTION	This photograph shows SB-14 location by alley at north collocated with TW-10.	30
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa



TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: North	DESCRIPTION	This photograph shows SB-15 just northwest of Sunshine Laundry building; collocated with MIP-13.	31
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows SB-16 south of Sunshine Laundry; collocated with MIP-15 and TW-3.	32
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: Southeast	DESCRIPTION	This photograph shows SB-17 at City easement near southeast corner of Sunshine Laundry property; collocated with TW-4.	33
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

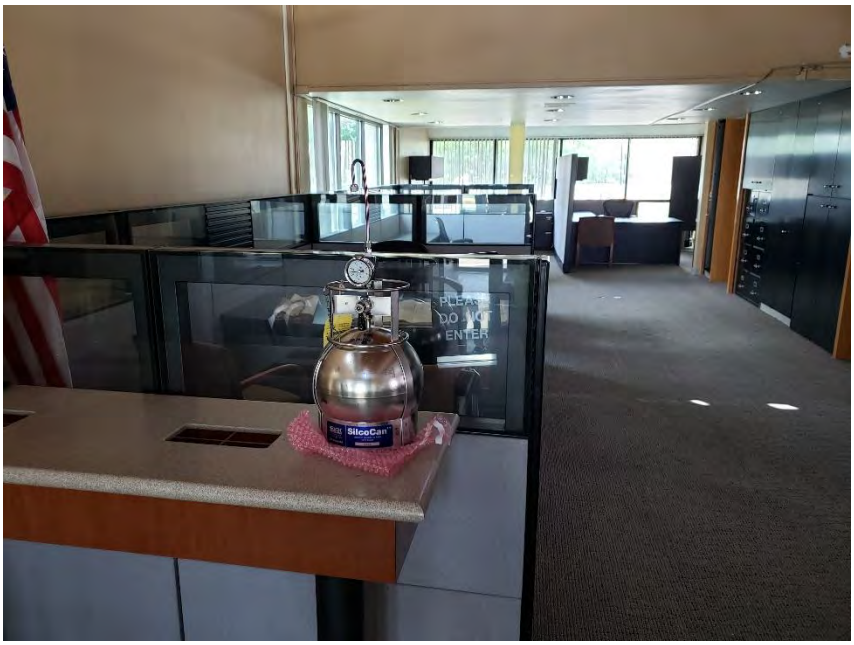
TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: Northeast	DESCRIPTION	This photograph shows SB-18 southwest of former Wells Fargo Bank drive-through; collocated with TW-5.	34
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: West	DESCRIPTION	This photograph shows SB-19 location north of drive-through teller lanes for former Wells Fargo Bank.	35
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: Southwest	DESCRIPTION	This photograph shows sample collection at SG-1 (MIP-4 location); re-sampled due to water drawn into canister.	36
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa



TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: NA	DESCRIPTION	This photograph shows indoor air sample collection inside former Wells Fargo Bank; sub-slab sample collected in a nearby closet.	37
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/10/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: East	DESCRIPTION	This photograph shows TW-13 location across S. 25th Street, northeast of site.	38
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/11/2021
	PHOTOGRAPHER	Tim Barbeau	

Sunshine Laundry Site
Fort Dodge, Iowa

TETRA TECH PROJECT NO. X9030..19F.0086.008 DIRECTION: Northeast	DESCRIPTION	This photograph shows TW-12 location at S. 25th Street easement at alley and bank's automated teller machine (ATM) drive-through.	39
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/11/2021
	PHOTOGRAPHER	Tim Barbeau	

TETRA TECH PROJECT NO. X9030.19F.0086.008 DIRECTION: West	DESCRIPTION	This photograph shows TW-14 location across 5th Avenue South from Sunshine Laundry property.	40
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/11/2021
	PHOTOGRAPHER	Tim Barbeau	

APPENDIX E

ACCESS AGREEMENTS

CONSENT AGREEMENT

The United States Environmental Protection Agency (EPA) will conduct environmental sampling on and near the following site:

Evaluated Site/Facility: Sunshine Laundry

CERCLIS ID. No. IAN000706520 **Task Order:** 0086.008

EPA Site Assessment Manager: Todd Davis (913-551-7749);

EPA On-Scene Coordinator: Megan Schutte (913-551-7630)

EPA's Superfund Technical Assessment and Response Team (START) contractor Tetra Tech, Inc. will conduct sampling on the property identified below. The undersigned owner/operator/agent consents to allow START access to such property in order to perform sampling activities. The undersigned owner/operator/agent further consents to EPA releasing to the public all analytical results from any samples that EPA collects at the property identified below.

The undersigned owner/operator/agent understands that EPA requires its contractors to maintain comprehensive vehicle liability insurance, and comprehensive general liability insurance covering bodily injury, death, and loss or damage to property or third persons arising from activities of its contractors.

Property Address/Description: 2422 5th Ave South

Access Requested During: Scheduled for the week of June 7, 2021 (Note that this date is subject to change.)

Property Owner / Operator / Agent 6-1-2021 Date

If you would like us to call before sampling, please provide a telephone number at which you can be reached: 515-570-0672

Return To:

Tetra Tech, Inc.
Attn: Jenna Mead
415 Oak Street
Kansas City, Missouri 64106
Phone: 816-412-1771
jenna.mead@tetratech.com

CONSENT AGREEMENT

The United States Environmental Protection Agency (EPA) will conduct environmental sampling on and near the following site:

Evaluated Site/Facility: Sunshine Laundry

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The undersigned owner/operator/agent understands that EPA requires its contractors to maintain comprehensive vehicle liability insurance, and comprehensive general liability insurance covering bodily injury, death, and loss or damage to property or third persons arising from activities of its contractors.

Property Address/Description: 320 & 326 S. 25th Street

Access Requested During: Week of June 7, 2021

Todd [signature] 6/7/21

Property Owner / Operator / Agent Date

If you would like us to call before sampling, please provide a telephone number at which you can be reached: 515-571-2110

Return To: Tetra Tech, Inc.
Attn: Jenna Mead
415 Oak Street
Kansas City, Missouri 64106
Phone: 816-412-1771
jenna.mead@tetratech.com

10:00

CONSENT AGREEMENT

The United States Environmental Protection Agency (EPA) will conduct environmental sampling on and near the following site:

Evaluated Site/Facility: Sunshine Laundry

CERCLIS ID. No. IAN000706520 **Task Order:** 0086.008

EPA Site Assessment Manager: Todd Davis (913-551-7749)

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The undersigned owner/operator/agent understands that EPA requires its contractors to maintain comprehensive vehicle liability insurance, and comprehensive general liability insurance covering bodily injury, death, and loss or damage to property or third persons arising from activities of its contractors.

Property Address/Description: ~~Contact~~ - La Loma 332 S 25TH ST Fort Dodge IA. 50501

Access Requested During: Week of June 7, 2021

Gonzalo Mirabal 6/7/21

Property Owner / Operator / Agent Date

If you would like us to call before sampling, please provide a telephone number at which you can be reached: 515-332-7144

Return To:

Tetra Tech, Inc.
Attn: Jenna Mead
415 Oak Street
Kansas City, Missouri 64106
Phone: 816-412-1771
jenna.mead@tetratech.com

10:30

CONSENT AGREEMENT

The United States Environmental Protection Agency (EPA) will conduct environmental sampling on and near the following site:

Evaluated Site/Facility: Sunshine Laundry

CERCLIS ID. No. IAN000706520 **Task Order:** 0086.008

EPA Site Assessment Manager: Todd Davis (913-551-7749)

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The undersigned owner/operator/agent understands that EPA requires its contractors to maintain comprehensive vehicle liability insurance, and comprehensive general liability insurance covering bodily injury, death, and loss or damage to property or third persons arising from activities of its contractors.

Property Address/Description: 407 S 25th St Fort Dodge IA 50501

Access Requested During: Week of June 7, 2021

Geping Yu 06/07/21

Property Owner / Operator / Agent Date

If you would like us to call before sampling, please provide a telephone number at which you can be reached: 626 493 6592

Return To:

Tetra Tech, Inc.
Attn: Jenna Mead
415 Oak Street
Kansas City, Missouri 64106
Phone: 816-412-1771
jenna.mead@tetratech.com

CONSENT AGREEMENT

The United States Environmental Protection Agency (EPA) will conduct environmental sampling on and near the following site:

Evaluated Site/Facility: Sunshine Laundry

CERCLIS ID. No. IAN000706520 **Task Order:** 0086.008

EPA Site Assessment Manager: Todd Davis (913-551-7749);

EPA On-Scene Coordinator: Megan Schutte (913-551-7630)

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The undersigned owner/operator/agent understands that EPA requires its contractors to maintain comprehensive vehicle liability insurance, and comprehensive general liability insurance covering bodily injury, death, and loss or damage to property or third persons arising from activities of its contractors.

Property Address/Description: 2422 5th Ave South

Access Requested During: Scheduled for the week of June 7, 2021 (Note that this date is subject to change.)

Agent 6-1-2021

Property Owner / Operator / Agent Date

If you would like us to call before sampling, please provide a telephone number at which you can be reached: 515-570-0672

Return To: Tetra Tech, Inc.
Attn: Jenna Mead
415 Oak Street
Kansas City, Missouri 64106
Phone: 816-412-1771
jenna.mead@tetratech.com

CONSENT TO ACCESS FOR
ENVIRONMENTAL INVESTIGATION/RESPONSE

Property Owner: Wells Fargo Bank, N.A.

Property Description: 406 North 25th Street (BE # 100733)

Fort Dodge, Iowa 50501

Intent. This Access Agreement ("Agreement") is between the United States Environmental Protection Agency and its authorized employees, contractors, and agents ("EPA") and Wells Fargo Bank, N.A. ("Wells Fargo"). The intent of this Agreement is to permit access to EPA for the collection of environmental samples to determine the source of tetrachloroethylene, or PCE, contamination detected in groundwater in the general locations identified in the sampling map, attached hereto as Exhibit 1 ("Property"). Specifically, EPA will construct and develop soil borings to obtain soil and groundwater samples for laboratory analysis, and EPA will close such borings by mixing the soil under the hole with bentonite clay or such other appropriate material up to a surface level with the existing ground (the "Work").

Right of Entry. Wells Fargo hereby consents to the United States Environmental Protection Agency and its authorized employees, contractors, and agents entering, investigating, and/or sampling the Property to determine the presence of any release or threat of release of hazardous substances, pollutants, or contaminants at, on, and/or from, the property, in accordance with Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9604. Any access needed to the Property to complete any remediation work shall be conducted pursuant to a separate access agreement.

Scope of Access. The investigation may include, but is not necessarily limited to, locating equipment and machinery on the property in preparation for, and in the course of, the investigation and collecting samples from the Property, but excluding access for any remediation work on the Property.

Utilities. EPA is responsible for contacting any applicable hotlines or utility locator services to confirm the location of underground utilities prior to the commencement of the Work.

Costs. The Work shall be conducted at the sole expense of EPA. EPA reserves the right to recover response costs from potentially responsible parties pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607.

Restoration of Property. Wells Fargo recognizes that the performance of such actions may require some disturbance of the Property. EPA will attempt to minimize such disturbance, and areas of disturbance will be restored as nearly as possible to prior condition by EPA, subject to the availability of appropriated funds. EPA will remove any and all equipment and/or materials, included, but not limited to, any investigation derived wastes related to the Work in a reasonable amount of time after completion of the Work.

Liability. EPA requires its contractors to maintain comprehensive vehicle liability insurance, and comprehensive general liability insurance for bodily injury, death, and loss or damage to property or third persons arising from their activities. EPA's liability for damages to the property or injuries to persons that result from or are caused by its activities on the property shall be to the extent permitted by the Federal Tort Claims Act (28 U.S.C. §§ 1346(b), 2671 - 2680) and the Federal Employee's Compensation Act (5 U.S.C. §§ 8101 - 8151).

Term. The access rights granted pursuant to this Agreement will terminate upon the earliest of the following: (a) completion of the Work; or (b) Wells Fargo giving notice to EPA of its intent to terminate consent. EPA will give notice to Wells Fargo upon completion of the Work.

This written permission is given by me voluntarily and without threats or promises of any kind. By my signature I acknowledge that I am authorized to grant the access provided for herein.

WELLS FARGO BANK, N.A.

Date

John Cantrell, Vice President

Signature

Printed Name

Title

Digitally signed by John Cantrell, Vice President
Date: 2021.06.10 10:33:16 -04'00'

Date

Signature

Printed Name

Title

U.S. ENVIRONMENTAL PROTECTION AGENCY

MEGAN SCHUETTE

Digitally signed by MEGAN SCHUETTE
Date: 2021.06.10 10:41:31 -05'00'

Date

Signature

Printed Name

Title

Legend

Proposed sample locations

- DPT groundwater boring
- DPT interior soil and groundwater boring
- DPT interior soil boring
- DPT soil and groundwater boring
- DPT soil boring
- Indoor air and sub-slab vapor
- Membrane interface probe boring
- Soil gas
- Area of known groundwater contamination
- Area of known soil contamination
- Former dry cleaner facility

Source: Esri, ArcGIS Online, World Imagery (Clarity)

Sunshine Laundry
2422 5th Avenue South
Fort Dodge, Iowa

Exhibit 1

Proposed Sample Location Map

TETRA TECH

Date: 4/26/2021 Drawn By: Nick Wiederholt Project No: X903019F0086.008

X:\G\903019\0086\008\Projects\mxd\Figure3.mxd

APPENDIX F

BORING LOGS

Boring Log Form

Site Name: Sunshine Laundry **Boring Number:** SB-1

Date Drilled (Start/Finish): 6/8/2021

Drilling Method: Direct-push technology; Geoprobe 420M

Drilling Company: Plains Environmental Services, Salina, KS

Elevation: **Total Depth:** 20.5 feet (ft) below ground surface (bgs)

Coordinates:

Depth to Water: **Geologist:** Thomas Kaley

Project Number: **Weather: N/A (Interior boring)**

Sample Interval	Interval	Soil Recv.	PID Reading (ppm)	Depth (Feet)	Laboratory PCE Result (µg/kg)	Lithology	Graphic Log	Description and Remarks
☒		60%	0 3.4 7.7	3	6			0-0.5 ft: Building Slab and Fill: Dark brown to brown, sandy. Soil, nonplastic.
		40%	0 0.5	6				Soil, brown, very sandy to 5 ft. CLAY: high plasticity; poor recovery.
☒		70%	0.9 0.2 0.5	9	14,000 J			CLAY: Dark brown to 8 ft, then light brown; high plasticity, semi-soft.
		100%	0.6 0.3 0	12				CLAY: light brown, slightly silty, high plasticity, slightly hard.
		100%	1.9 0 0	15				CLAY, silty, brown; slightly wet. Hard, high plastic brown clay expanded in sleeve so shorter intervals collected. CLAY: Dark brown, semi-hard; slightly wet.
		100%	0 0 0	18				Clay continuing to expand in sleeve. 15-16 ft: same as above.
		100%	0 0 0	21				CLAY: dark brown, slightly silty, semi-hard. Refusal at 20.5 ft bgs.
				24				
				27				

Boring Log Form

Site Name: Sunshine Laundry **Boring Number:** SB-2

Date Drilled (Start/Finish): 6/8/2021

Drilling Method: Direct-push technology; Geoprobe 420M

Drilling Company: Plains Environmental Services, Salina, KS

Elevation: **Total Depth:** 15 feet (ft) below ground surface (bgs)

Coordinates:

Depth to Water: **Geologist:** Thomas Kaley

Project Number: **Weather:** N/A (Interior boring)

Sample Interval	Interval	Soil Recv.	PID Reading (ppm)	Depth (Feet)	Laboratory PCE Result (µg/kg)	Lithology	Graphic Log	Description and Remarks
		100%	0					SLAB and ASPHALT. Small amount of dark brown clay near 3 ft bgs.
			0					
			0	3				
		80%	0					CLAY: Dark brown, semi-hard, high plasticity. 5 ft bgs: Becoming light brown to gray, soft, medium plastic; moist.
☒			0					
			0	6	16			
		85%	0					CLAY: Silty, light brown, very soft. 8 ft bgs: Becomes semi-hard, medium plastic, with reddish streaks.
			0					
			0	9				
		80%	0					CLAY: Light brown, slightly silty. Clay expanding into sleeve. 10.5 ft: CLAY as above is semi-hard; slightly wet at 11 ft.
☒			0					
			0.9	12	4,200			
		90%	0					CLAY: light brown, slightly silty, high plasticity, semi-hard.
			0					
			0	15				
				18				
				21				
				24				
				27				

Boring Log Form

Site Name: Sunshine Laundry **Boring Number:** SB-3

Date Drilled (Start/Finish): 6/8/2021

Drilling Method: Direct-push technology; Geoprobe 420M

Drilling Company: Plains Environmental Services, Salina, KS

Elevation: **Total Depth:** 13.5 feet (ft) below ground surface (bgs)

Coordinates:

Depth to Water: **Geologist:** Thomas Kaley

Project Number: **Weather:** N/A (Interior boring)

Sample Interval	Interval	Soil Recv.	PID Reading (ppm)	Depth (Feet)	Laboratory PCE Result (µg/kg)	Lithology	Graphic Log	Description and Remarks
		65%	0 1.4 0.8	3				0-0.5 ft bgs: SLAB and FILL. CLAY: Light brown semi-soft with grey streaks. Little to no plasticity.
		65%	1.9					FILL and ASPHALT: Little to no soil.
☒			0.3	6	180			
		80%	0 0 0	9				CLAY: light brown with grey streaks, soft; moist. Becoming slightly sandy near 9 ft bgs with small clasts.
		100%	0 0 0	12				CLAY: light brown, slightly sandy, soft, with small clasts throughout, becomes harder near 11 ft bgs; moist.
		100%	0 0	15				CLAY: Brown to dark brown, semi-hard, poor plasticity. No recovery after 13.5 ft bgs.
				18				
				21				
				24				
				27				

Boring Log Form

Site Name: Sunshine Laundry **Boring Number:** SB-4

Date Drilled (Start/Finish): 6/8/2021

Drilling Method: Direct-push technology; Geoprobe 420M

Drilling Company: Plains Environmental Services, Salina, KS

Elevation: **Total Depth:** 12 feet (ft) below ground surface (bgs)

Coordinates:

Depth to Water: **Geologist:** Thomas Kaley

Project Number: **Weather:** N/A (Interior boring)

Sample Interval	Interval	Soil Recv.	PID Reading (ppm)	Depth (Feet)	Laboratory PCE Result (µg/kg)	Lithology	Graphic Log	Description and Remarks
☒		90%	0.5 0.4 0	3	140			0-0.5 ft bgs: SLAB and FILL. CLAY: Very dark brown at 2 ft bgs, semi-soft, medium plasticity.
		80%	0 0 0	6				
		90%	0.5 0.6 1	9				CLAY: light brown, slightly silty, soft, high plasticity. Becomes harder at 8 ft bgs.
☒		100%	1.1 1.1 1.3	12	9,800 J			CLAY: light brown, slightly silty, semi-soft, high plasticity. 11 ft bgs: Becomes sandy and harder with small clasts near 12 ft bgs.
				15				
				18				
				21				
				24				
				27				

Boring Log Form

Site Name: Sunshine Laundry **Boring Number:** SB-9

Date Drilled (Start/Finish): 6/8/2021

Drilling Method: Direct-push technology (track probe)

Drilling Company: Plains Environmental Services, Salina, KS

Elevation: **Total Depth:** 15 feet (ft) below ground surface (bgs)

Coordinates:

Depth to Water: **Geologist:** Thomas Kaley

Project Number: 103X903019F0086.008 **Weather:**

Sample Interval	Interval	Soil Recv.	PID Reading (ppm or ppb)	Depth (Feet)	Color (Munsell or Rock)	Lithology	Graphic Log	Description and Remarks
☒		50%	0 0 0 0 0	5	ND			0-0.5 ft bgs: CONCRETE. CLAY: Silty, very dark brown, poor plasticity, semi-soft.
☒		85%	0 0 0 0 0 0	10	4,300			CLAY: dark brown, soft and sandy. At 6 ft bgs becomes light brown with less sand content. Pockets of sand and moisture at 7-9 ft bgs, then becomes harder with medium plasticity.
		90%	0 0 0 0 0	15				CLAY: Very sandy, brown; saturated between 10-11 ft bgs (top of groundwater). 13 ft bgs: CLAY, silty, grey, semi-soft.
				20				
				25				
				30				

Boring Log Form

Site Name: Sunshine Laundry **Boring Number:** SB-10

Date Drilled (Start/Finish): 6/8/2021

Drilling Method: Direct-push technology (track probe)

Drilling Company: Plains Environmental Services, Salina, KS

Elevation: **Total Depth:** 15 feet (ft) below ground surface (bgs)

Coordinates:

Depth to Water: **Geologist:** Thomas Kaley

Project Number: 103X903019F0086.008 **Weather:**

Sample Interval	Interval	Soil Recv.	PID Reading (ppm or ppb)	Depth (Feet)	Color (Munsell or Rock)	Lithology	Graphic Log	Description and Remarks
		40%	0 0 0 0 0	5				0-0.5 ft bgs: CONCRETE. CLAY: Very sandy, brown, no plasticity. 4 ft bgs: Clay is dark brown semi-soft, high plasticity. (Very little recovery 0-5 ft bgs.)
☒		100%	0 0 0 0 0	10	4,200			CLAY: Light brown, slightly silty, semi-soft. Slightly grey at 6-7 ft bgs; high plasticity. 10 ft bgs: Slightly sandy.
		100%	0 0 0 0 0	15				CLAY: Silty, dark brown, slightly hard, medium plasticity; becomes grey at 13 ft bgs.
				20				
				25				
				30				

APPENDIX G

ANALYTICAL DATA AND CHAIN-OF-CUSTODY FORM FOR ANALYTICAL SERVICES REQUEST 8924

United States Environmental Protection Agency
Region 7
300 Minnesota Avenue
Kansas City, KS 66101

Date: 07/21/2021

Subject: Transmittal of Sample Analysis Results for ASR #: 8924

Project ID: TDB7K8

Project Description: Sunshine Laundry, Fort Dodge

From: Margaret E.W. St. Germain, Chief
Laboratory Technology & Analysis Branch
Laboratory Services and Applied Sciences Division

To: Todd Davis
SEMD/AERR

Enclosed are the analytical data for the above-referenced Analytical Services Request (ASR) and Project. These results are based on samples as received at the Science and Technology Center. The Regional Laboratory has reviewed and verified the results in accordance with procedures described in our Quality Manual (QM). In addition to all of the analytical results, this transmittal contains pertinent information that may have influenced the reported results and documents any deviations from the established requirements of the QM.

Please ensure that you file this electronic (.pdf only) transmittal in your records management system. The Regional Laboratory will now retain all of the original hardcopy documentation (e.g. COC[s] and the R7LIMS field sheet[s], etc.) according to our LSASD records management system.

Please contact us within 14 days of receipt of this package if you determine there is a need for any changes. Please complete the Online ASR Sample/Data Disposition and Customer Survey for this ASR as soon as possible. The process of disposing of the samples for this ASR will be initiated 30 days from the date of this transmittal unless an alternate release date is specified on the Online ASR Sample/Data Disposition and Customer Survey. It is critical that we receive your response in accordance to RCRA and the laboratory accreditation.

If you have any questions or concerns relating to this data package, contact our customer service line at 913-551-5295.

Project Manager: Todd Davis **Org:** SEMD/AERR **Phone:** 913-551-7749

Project ID: TDB7K8

Project Desc: Sunshine Laundry, Fort Dodge

Location: Fort Dodge **State:** Iowa **Program:** Superfund

Site Name: SUNSHINE LAUNDRY, FORT DODGE - Site Evaluation/Disposition **Site ID:** B7K8 **Site OU:** 00

GPRA PRC: 000DC6

Purpose: Site Characterization

Integrated site assessment sampling.

Submitted ASR from the EPA PM (TD)/Sampler dated 5/10/2021 noted that this ASR is not part of a litigation hold at this time.

GPRA/site code (+OU) check OK per ok per JE on 5/11/2021.

Explanation of Codes, Units and Qualifiers used on this report

Sample QC Codes: QC Codes identify the type of sample for quality control purpose.

__ = Field Sample
FB = Field Blank

Units: Specific units in which results are reported.

ug/kg = Micrograms per Kilogram
ug/m3 = Micrograms per Cubic Meter
ug/L = Micrograms per Liter
I.D. = Identification, Species or Other ID
inHg = Inch of Mercury

Data Qualifiers: Specific codes used in conjunction with data values to provide additional information on the quality of reported results, or used to explain the absence of a specific value.

(Blank)= Values have been reviewed and found acceptable for use.
UJ = The analyte was not detected at or above the reporting limit. The reporting limit is an estimate.
J = The identification of the analyte is acceptable; the reported value is an estimate.
U = The analyte was not detected at or above the reporting limit.

ASR Number: 8924 **Sample Information Summary** **07/21/2021**

Project ID: TDB7K8 **Project Desc:** Sunshine Laundry, Fort Dodge

Sample No	QC Code	Matrix	Location Description	External Sample No	Start Date	Start Time	End Date	End Time	Receipt Date
1 - __		Air	326 S 25th St-Indoor Air		06/08/2021	08:28	06/08/2021	16:14	06/11/2021
2 - __		Air	326 S 25th St - Sub-slab Air		06/08/2021	08:53			06/11/2021
3 - __		Air	328 S 25th St - Indoor Air		06/08/2021	09:10	06/08/2021	16:16	06/11/2021
4 - __		Air	328 S 25th St - Sub-slab Air		06/08/2021	09:25			06/11/2021
5 - __		Air	330 S 25th St - Indoor Air		06/08/2021	09:38	06/08/2021	17:18	06/11/2021
6 - __		Air	2419 5th Ave - Indoor Air		06/08/2021	10:20	06/08/2021	16:25	06/11/2021
7 - __		Air	2515 5th Ave - Indoor Air		06/08/2021	10:25	06/08/2021	16:52	06/11/2021
8 - __		Air	332 S 25th St - Indoor Air		06/08/2021	11:48	06/08/2021	18:20	06/11/2021
9 - __		Air	332 S 25th St - Sub-slab Air		06/08/2021	12:05			06/11/2021
10 - __		Air	330 S 25th St - Ambient Air		06/09/2021	09:58	06/09/2021	17:58	06/11/2021
11 - __		Air	325 S 25th St - Indoor Air		06/09/2021	12:07	06/09/2021	20:00	06/11/2021
12 - __		Air	325 S 25th St - Sub-slab Air		06/09/2021	19:52			06/11/2021
13 - __		Air	406 S 25th Ave - Indoor Air		06/10/2021	12:06	06/10/2021	20:04	06/14/2021
14 - __		Air	406 S 25th Ave - Sub-slab Air		06/10/2021	12:25			06/14/2021
15 - __		Air	SG-1		06/10/2021	12:00			06/14/2021
16 - __		Air	SG-2		06/10/2021	12:25			06/14/2021
101 - __		Solid	SB-1(1-2)		06/09/2021	07:58			06/11/2021
102 - __		Solid	SB-1(7-8)		06/09/2021	08:15			06/11/2021
103 - __		Solid	SB-2(5-6)		06/09/2021	10:10			06/11/2021
104 - __		Solid	SB-2(11-12)		06/09/2021	10:50			06/11/2021
105 - __		Solid	SB-3(5-6)		06/09/2021	13:05			06/11/2021
106 - __		Solid	SB-4(2-3)		06/09/2021	13:45			06/11/2021
107 - __		Solid	SB-4(10-12)		06/09/2021	14:15			06/11/2021
108 - __		Solid	SB-5(4-5)		06/09/2021	15:25			06/11/2021
109 - __		Solid	SB-5(14-15)		06/09/2021	15:35			06/11/2021
110 - __		Solid	SB-6(4-5)		06/09/2021	15:50			06/11/2021
111 - __		Solid	SB-7(4-5)		06/09/2021	16:15			06/11/2021
112 - __		Solid	SB-7(9-10)		06/09/2021	16:20			06/11/2021
113 - __		Solid	SB-8(9-10)		06/09/2021	16:55			06/11/2021
114 - __		Solid	SB-9(3-4)		06/10/2021	07:25			06/11/2021
115 - __		Solid	SB-9(9-10)		06/10/2021	07:30			06/11/2021
116 - __		Solid	SB-10(9-10)		06/10/2021	07:50			06/11/2021
117 - __		Solid	SB-11(9-10)		06/10/2021	08:10			06/11/2021
118 - __		Solid	SB-12(12-13)		06/10/2021	08:45			06/11/2021
119 - __		Solid	SB-12(4-5)		06/10/2021	08:50			06/11/2021
120 - __		Solid	SB-13(4-5)		06/10/2021	09:10			06/11/2021
121 - __		Solid	SB-13(10-11)		06/10/2021	09:05			06/11/2021
122 - __		Solid	SB-14(12-13)		06/10/2021	09:25			06/11/2021
123 - __		Solid	SB-15(3-5)		06/10/2021	09:45			06/11/2021
124 - __		Solid	SB-16(4-5)		06/10/2021	10:20			06/11/2021
125 - __		Solid	SB-16(7-8)		06/10/2021	10:25			06/11/2021
126 - __		Solid	SB-17(4-5)		06/10/2021	10:35			06/11/2021
127 - __		Solid	SB-18(3-4)		06/10/2021	11:00			06/11/2021
128 - __		Solid	SB-18(14-15)		06/10/2021	11:15			06/11/2021

ASR Number: 8924 **Sample Information Summary** **07/21/2021**

Project ID: TDB7K8 **Project Desc:** Sunshine Laundry, Fort Dodge

Sample No	QC Code	Matrix	Location Description	External Sample No	Start Date	Start Time	End Date	End Time	Receipt Date
129	- __	Solid	SB-19(4-5)		06/10/2021	11:25			06/11/2021
130	- __	Solid	SB-19(9-10)		06/10/2021	11:30			06/11/2021
201	- __	Water	MW-3		06/07/2021	17:10			06/11/2021
202	- __	Water	MW-6		06/07/2021	18:00			06/11/2021
203	- __	Water	MW-4		06/07/2021	18:40			06/11/2021
204	- __	Water	TW-1		06/09/2021	12:20			06/11/2021
205	- __	Water	TW-2		06/09/2021	14:15			06/11/2021
206	- __	Water	TW-3(9-13)		06/10/2021	13:35			06/14/2021
207	- __	Water	TW-4(9-13)		06/10/2021	13:55			06/14/2021
208	- __	Water	TW-5(9-13)		06/10/2021	14:10			06/14/2021
209	- __	Water	TW-6(9-13)		06/10/2021	14:45			06/14/2021
210	- __	Water	TW-7(11-15)		06/10/2021	15:10			06/14/2021
211	- __	Water	TW-8(8-12)		06/10/2021	15:20			06/14/2021
212	- __	Water	TW-9(9-13)		06/10/2021	15:35			06/14/2021
213	- __	Water	TW-10(9-13)		06/10/2021	15:45			06/14/2021
214	- __	Water	Rinsate blank		06/10/2021	15:55			06/14/2021
215	- __	Water	TW-11(11-15)		06/11/2021	07:00			06/14/2021
216	- __	Water	TW-12(9-13)		06/11/2021	08:00			06/14/2021
217	- __	Water	TW-13(9-13)		06/11/2021	07:25			06/14/2021
218	- __	Water	TW-14(15-16)		06/11/2021	08:50			06/14/2021
221	- FB	Water	VOA Trip Blank sample		06/10/2021	16:10			06/14/2021
222	- FB	Water	VOA Field Blank sample		06/10/2021	16:20			06/14/2021
223	- FB	Water	VOA Trip Blank sample		06/08/2021	08:10			06/11/2021

Analysis **Comments About Results For This Analysis**

1 Air VOA Field Parameters

Lab: (Field Measurement)

Method: Measurement of field parameter

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__

Comments:
(N/A)

1 VOCs in Air Samples in Canisters at Ambient Levels by GC/MS

Lab: Region 7 EPA Laboratory - Kansas City, Ks.

Method: EPA Region 7 RLAB Method 3230.4I

Samples: 1-__ 2-__ 3-__ 4-__ 5-__ 6-__ 7-__
8-__ 9-__ 10-__ 11-__ 12-__ 13-__ 14-__
15-__ 16-__

Comments:
Vinyl Acetate (30.61% RSD, limit is 30%) was J-coded in samples 1, 3, 5, 6, 7, 8, 10, 11, and 13. Although the analyte in question has been positively identified in the samples, the quantitation is an estimate (J-coded) due to the initial instrument calibration curve not meeting linearity specifications.

2-Hexanone (66.96%, limit is 70%) was UJ-coded in samples 1, 5, 6, 10, 11, and 13. This analyte was not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to the second source calibration check not meeting accuracy specifications. The actual reporting limit for this analyte may be higher than the reported value.

2-Propanol (66.55%, limit is 70%) was J-coded in samples 1, 3, 4, 5, 6, 7, 8, 10, 11, and 13. 2-Hexanone (66.96%, limit is 70%) was J-coded in samples 3, 7, and 8. Although the analytes in question has been positively identified in the samples, the quantitations are estimated (J-coded) due to the second source calibration check not meeting accuracy specifications. The actual concentration for these analytes may be higher than the reported values.

2-Propanol (58.79%, limit is 70%) was UJ-coded in samples 2, 15, and 16. Vinyl Acetate (48.87%) was UJ-coded in samples 2, 4, 9, 15, and 16. 4-Methyl-2-Pentanone (63.58%) was UJ-coded in samples 9, 12, 14, 15, and 16. trans-1,3-Dichloropropene (54.93%) was UJ-coded in samples 2, 4, 9, 12, 14, 15, and 16. These analytes were not found in the samples at or above their reporting limits, however, the reporting limits are estimated (UJ-coded) due to the second source calibration check not meeting accuracy specifications. The actual reporting limits for these analytes may be higher than the reported values.

2-Propanol (58.79%, limit is 70%) was J-coded in samples 9,12, and 14. Vinyl Acetate (48.87%) was J-coded in samples 12 and 14. 4-Methyl-2-Pentanone (63.58%) was J-coded

Analysis **Comments About Results For This Analysis**

in samples 2 and 4. Although the analytes in question has been positively identified in the samples, the quantitations are estimated (J-coded) due to the second source calibration check not meeting accuracy specifications. The actual concentration for these analytes may be higher than the reported values.

Chloromethane (-38.6%,D limit is -30%D) was J-coded in samples 1, 3, 4, 5, 6, 7, 8, 10, 11, and 13. Trichlorofluoromethane (-37.4%D) was J-coded in samples 1, 3, 5, 6, 7, 8, 10, 11, and 13. 4-Methyl-2-Pentanone (-35.8%D) was J-coded in samples 1, 3, 5, 7, and 8. Although the analytes in question has been positively identified in the samples, the quantitations are estimated (J-coded) due to the continuing calibration check not meeting accuracy specifications. The actual concentration for these analytes may be higher than the reported values.

Acetone (127%, limit is 117%) was J-coded in samples 1, 3, 4, 6, 7, 8, and 9. Methylene Chloride (111%, limit is 110%) was J-coded in samples 1, 3, and 7. Toluene (118%, limit is 117%) was J-coded in samples 1, 3, 5, 6, 7, 8, and 11. Although the analytes in question has been positively identified in the samples, the quantitations are estimated (J-coded) due to high recovery of this analyte in the laboratory control sample. The actual concentration for these analytes may be lower than the reported values.

1,4-Dichlorobenzene (42%, limit is 13%), Dichlorodifluoromethane (20%, limit is 18%), Heptane (24%, limit is 15%), Methylene Chloride (32%, limit is 7.7%), Styrene (18%, limit is 14%), Tetrahydrofuran (38%, limit is 28%), Toluene (14%, limit is 12%), Trichlorofluoromethane (25%, limit is 16%), 1,2,4-Trimethylbenzene (39%, limit is 14%), 1,3,5-Trimethylbenzene (30%, limit is 14%), and o-Xylene (20%, limit is 13%) was J-coded in sample 1. Although the analytes in question have been positively identified in the sample, the quantitations are estimated (J-coded) due to poor precision obtained for these analytes in the laboratory duplicate sample.

2-Propanol was J-coded in samples 3, 5, and 8. 2-Butanone was J-coded in sample 3. Although the analytes in question has been positively identified in the sample, the quantitations are estimated (J-coded) due to the reported values exceeding the calibrated ranges of the instrument. Additional dilutions were analyzed for these analytes; however, there was poor agreement between the values from the on-scale dilutions. The 10x dilution was reported for these analytes as they were analyzed from the original sample canisters.

A dilution was necessary because of poor surrogate recovery caused by high background intereference in sample 16 for this analysis. This increased the reporting limits by a factor of 10x for this sample.

1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Basis: Dry

Samples: 101-__ 102-__ 103-__ 104-__ 105-__ 106-__ 107-__
108-__ 109-__ 110-__ 111-__ 112-__ 113-__ 114-__
115-__ 116-__ 117-__ 118-__ 119-__ 120-__ 121-__

Analysis **Comments About Results For This Analysis**

Samples: 122-__ 123-__ 124-__ 125-__ 126-__ 127-__ 128-__
129-__ 130-__

Comments:
Tetrachloroethene was J-coded in sample -102. Although the analyte in question has been positively identified in the sample, the quantitation is an estimate (J-coded) due to the reported value exceeding the calibrated range of the instrument.

Sample -107 (medium level analysis) was analyzed 1 day past the 14 day holding time. Tetrachloroethene was reported with a J-code indicating that it is an estimated value. The actual concentration of this analyte may have been higher than the reported result.

Bromochloromethane, Carbon Disulfide, Chloroethane, Chloromethane and Dichlorodifluoromethane were UJ-coded in sample -130. Carbon Tetrachloride, 1,2-Dibromoethane, 1,2-Dichloroethane, Methyl Acetate, Methylene Chloride, Methyl tert-butyl Ether, Trichlorofluoromethane and 1,1,2-Trichlorotrifluoroethane were UJ-coded in sample -122. These analytes were not found in the samples at or above the reporting limits; however, the reporting limits are an estimate (UJ-coded) due to low recovery of a surrogate analyte. The actual reporting limits for these analytes may be higher than the reported values.

Acetone was J-coded in samples -110 and -126. Tetrachloroethene was J-coded in sample -118. Although the analytes in question have been positively identified in the samples, the quantitation is an estimate (J-coded) due to high recoveries of surrogate analytes in these samples. The actual concentration for these analytes may be lower than the reported value.

Bromoform, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dibromo-3-chloropropane, Isopropylbenzene, 1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene were UJ-coded in sample -118. These analytes were not found in the samples at or above the reporting limits; however, the reporting limits are an estimate (UJ-coded) due to low internal standard response. The actual reporting limits for these analytes may be higher than the reported values.

Benzene, Chlorobenzene, 1,1-Dichloroethene, Toluene and Trichloroethene were UJ-coded in samples -107 and -123. These analytes were not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recoveries of these analytes in the laboratory matrix spikes. The actual reporting limit for these analytes may be higher than the reported values.

1 VOCs in Water by GC/MS

Lab: Contract Lab Program (Out-Source)

Method: CLP Statement of Work

Samples: 201-__ 202-__ 203-__ 204-__ 205-__ 206-__ 207-__
208-__ 209-__ 210-__ 211-__ 212-__ 213-__ 214-__
215-__ 216-__ 217-__ 218-__ 221-FB 222-FB 223-FB

Comments:

Analysis	Comments About Results For This Analysis

Bromoform was UJ-coded in samples -201 through -218, -221FB, -222FB and -223FB. This analyte was not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to the initial instrument calibration curve not meeting linearity specifications. The actual reporting limit may be higher than the reported value.

1,2-Dichloroethane was UJ-coded in samples -201 through -218, -221FB, -222FB and -223FB. This analyte was not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to the continuing calibration check not meeting accuracy specifications. The actual reporting limit for this analyte may be higher than the reported value.

Benzene, Chlorobenzene, 1,1-Dichloroethene, Toluene and Trichloroethene were UJ-coded in sample -208. These analytes were not found in the sample at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recoveries of these analytes in the laboratory matrix spikes. The actual reporting limit for these analytes may be higher than the reported values.

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
1 Air VOA Field Parameters					
Canister ID	I.D.	4556	L5207	30375	661
Regulator ID	I.D.	149	N/A	147	N/A
Starting Pressure	inHg	-29.5	-30	-26.5	-28.5
Ending Pressure	inHg	-3	-4	-5.5	-1
1 VOCs in Air Samples in Canisters at Ambient Levels by GC/MS					
Acetone	ug/m3	96 J	14	330 J	250 J
Allyl Chloride	ug/m3	0.32 U	0.32 U	0.32 U	0.32 U
Benzene	ug/m3	0.71	2.5	0.49	8.8
Benzyl Chloride	ug/m3	4.2 U	4.2 U	4.2 U	4.2 U
Bromodichloromethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
Bromoform	ug/m3	2.1 U	2.1 U	2.1 U	2.1 U
Bromomethane	ug/m3	0.78 U	0.78 U	0.78 U	0.78 U
1,3-Butadiene	ug/m3	0.45 U	0.83	0.45 U	1.7
2-Butanone	ug/m3	19	1.2 U	620 J	160
Carbon Disulfide	ug/m3	0.63 U	0.63 U	0.63 U	0.63 U
Carbon Tetrachloride	ug/m3	0.68	0.54	0.60	0.32 U
Chlorobenzene	ug/m3	0.93 U	0.93 U	0.93 U	0.93 U
Chloroethane	ug/m3	0.53 U	0.53 U	0.53 U	0.53 U
Chloroform	ug/m3	0.61	0.45	0.67	0.12 U
Chloromethane	ug/m3	1.7 J	1.4	1.1 J	0.42 U
Cyclohexane	ug/m3	0.70 U	0.70 U	0.70 U	3.4
Dibromochloromethane	ug/m3	1.7 U	1.7 U	1.7 U	1.7 U
1,2-Dibromoethane	ug/m3	1.6 U	1.6 U	1.6 U	1.6 U
1,2-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	1.2 U
1,3-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	ug/m3	2.9 J	1.4	1.2 U	1.2 U
Dichlorodifluoromethane	ug/m3	8.4 J	7.7	2.1	3.1
1,1-Dichloroethane	ug/m3	0.82 U	0.82 U	0.82 U	0.82 U
1,2-Dichloroethane	ug/m3	0.18	0.11	0.18	0.10 U
1,1-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.46
cis-1,2-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,2-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.20 U
1,2-Dichloropropane	ug/m3	0.93 U	0.93 U	0.93 U	0.93 U
cis-1,3-Dichloropropene	ug/m3	0.46 U	0.46 U	0.46 U	0.46 U
trans-1,3-Dichloropropene	ug/m3	0.46 U	0.46 UJ	0.46 U	0.46 UJ
1,2-Dichlorotetrafluoroethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
1,4-Dioxane	ug/m3	0.73 U	0.73 U	0.73 U	0.73 U
Ethyl Acetate	ug/m3	2.0	0.73 U	60	3.9
Ethyl Benzene	ug/m3	0.89	3.3	8.7	16
4-Ethyltoluene	ug/m3	4.0 U	4.0 U	4.0 U	4.0 U
Heptane	ug/m3	0.86 J	1.4	7.3	5.3
Hexachlorobutadiene	ug/m3	2.2 U	2.2 U	2.2 U	2.2 U
Hexane	ug/m3	0.71 U	1.9	0.78	10
2-Hexanone	ug/m3	1.7 UJ	1.7 U	38 J	3.0
Methyl tert-butyl ether	ug/m3	0.73 U	0.73 U	0.73 U	0.73 U

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
Methylene Chloride	ug/m3	1.3 J	0.70 U	2.7 J	0.70 U
4-Methyl-2-Pentanone	ug/m3	10 J	3.4 J	9.9 J	2.7 J
2-Propanol	ug/m3	34 J	0.50 UJ	3800 J	340 J
Propene	ug/m3	1.6	5.9	0.59	10
Styrene	ug/m3	4.2 J	3.0	3.0	0.86 U
1,1,2,2-Tetrachloroethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
Tetrachloroethene	ug/m3	1.3	2.2	0.34 U	1.6
Tetrahydrofuran	ug/m3	8.2 J	5.5	15	2.0
Toluene	ug/m3	6.2 J	9.1	680 J	55
1,2,4-Trichlorobenzene	ug/m3	1.5 U	1.5 U	1.5 U	1.5 U
1,1,1-Trichloroethane	ug/m3	1.1 U	1.1 U	1.1 U	1.1 U
1,1,2-Trichloroethane	ug/m3	1.1 U	1.1 U	1.1 U	1.1 U
Trichloroethene	ug/m3	0.14 U	0.14 U	0.14 U	0.14 U
Trichlorofluoromethane	ug/m3	32 J	26	2.8 J	5.3
1,1,2-Trichlorotrifluoroethane	ug/m3	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trimethylbenzene	ug/m3	7.1 J	4.8	5.2	4.2
1,3,5-Trimethylbenzene	ug/m3	2.3 J	1.5	1.4	1.1
2,2,4-Trimethylpentane	ug/m3	1.6	2.2	0.94 U	0.94 U
Vinyl Acetate	ug/m3	8.3 J	0.71 UJ	1.6 J	0.71 UJ
Vinyl Bromide	ug/m3	0.88 U	0.88 U	0.88 U	0.88 U
Vinyl Chloride	ug/m3	0.13 U	0.13 U	0.13 U	0.13 U
m and/or p-Xylene	ug/m3	4.3	5.7	26	7.5
o-Xylene	ug/m3	2.8 J	2.8	5.9	3.6

Analysis/ Analyte	Units	5-__	6-__	7-__	8-__
1 Air VOA Field Parameters					
Canister ID	I.D.	717	3012	816	3001
Regulator ID	I.D.	141	19	16	7
Starting Pressure	inHg	-29	-28.5	-13	-29.5
Ending Pressure	inHg	-5	0	-7	-7
1 VOCs in Air Samples in Canisters at Ambient Levels by GC/MS					
Acetone	ug/m3	3500	190 J	250 J	2000 J
Allyl Chloride	ug/m3	0.36	0.32 U	0.32 U	0.32 U
Benzene	ug/m3	0.38	0.27	9.8	0.35
Benzyl Chloride	ug/m3	4.2 U	4.2 U	4.2 U	4.2 U
Bromodichloromethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
Bromoform	ug/m3	2.1 U	2.1 U	2.1 U	2.1 U
Bromomethane	ug/m3	0.78 U	0.78 U	0.78 U	0.78 U
1,3-Butadiene	ug/m3	0.45 U	0.45 U	0.45 U	0.45 U
2-Butanone	ug/m3	130	5.8	14	41
Carbon Disulfide	ug/m3	0.63 U	0.63 U	0.65	0.63 U
Carbon Tetrachloride	ug/m3	0.57	0.54	0.54	0.54
Chlorobenzene	ug/m3	0.93 U	0.93 U	0.93 U	0.93 U
Chloroethane	ug/m3	0.53 U	0.53 U	0.53 U	0.53 U
Chloroform	ug/m3	0.78	0.12	2.2	1.1
Chloromethane	ug/m3	1.4 J	1.4 J	1.1 J	1.6 J
Cyclohexane	ug/m3	0.70 U	0.70 U	4.5	0.70 U
Dibromochloromethane	ug/m3	1.7 U	1.7 U	1.7 U	1.7 U
1,2-Dibromoethane	ug/m3	1.6 U	1.6 U	1.6 U	1.6 U
1,2-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	1.2 U
1,3-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	1.2 U
Dichlorodifluoromethane	ug/m3	2.2	2.6	35	2.3
1,1-Dichloroethane	ug/m3	0.82 U	0.82 U	0.82 U	0.82 U
1,2-Dichloroethane	ug/m3	0.20	0.55	2.5	0.10 U
1,1-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,2-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.20 U
1,2-Dichloropropane	ug/m3	0.93 U	0.93 U	4.2	0.93 U
cis-1,3-Dichloropropene	ug/m3	0.46 U	0.46 U	0.46 U	0.46 U
trans-1,3-Dichloropropene	ug/m3	0.46 U	0.46 U	0.46 U	0.46 U
1,2-Dichlorotetrafluoroethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
1,4-Dioxane	ug/m3	0.73 U	0.73 U	0.73 U	0.73 U
Ethyl Acetate	ug/m3	190	2.5	5.0	56
Ethyl Benzene	ug/m3	3.6	0.88 U	15	1.1
4-Ethyltoluene	ug/m3	4.0 U	4.0 U	5.9	4.0 U
Heptane	ug/m3	0.83 U	0.83 U	8.1	1.9
Hexachlorobutadiene	ug/m3	2.2 U	2.2 U	2.2 U	2.2 U
Hexane	ug/m3	0.75	0.77	20	0.74
2-Hexanone	ug/m3	1.7 UJ	1.7 UJ	3.0 J	3.1 J
Methyl tert-butyl ether	ug/m3	0.73 U	0.73 U	0.73 U	0.73 U

Analysis/ Analyte	Units	5-__	6-__	7-__	8-__
Methylene Chloride	ug/m3	0.70 U	0.70 U	1.9 J	0.70 U
4-Methyl-2-Pentanone	ug/m3	4.6 J	1.7 U	1.8 J	1.9 J
2-Propanol	ug/m3	4900 J	24 J	13 J	1900 J
Propene	ug/m3	0.67	2.9	0.65	0.44
Styrene	ug/m3	1.6	0.86 U	3.1	0.86 U
1,1,2,2-Tetrachloroethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
Tetrachloroethene	ug/m3	0.34 U	0.34 U	5.4	0.34 U
Tetrahydrofuran	ug/m3	4.0	12	1.2	1.1
Toluene	ug/m3	170 J	1.6 J	270 J	59 J
1,2,4-Trichlorobenzene	ug/m3	1.5 U	1.5 U	1.5 U	1.5 U
1,1,1-Trichloroethane	ug/m3	1.1 U	1.1 U	1.1 U	1.1 U
1,1,2-Trichloroethane	ug/m3	1.1 U	1.1 U	1.1 U	1.1 U
Trichloroethene	ug/m3	0.14 U	0.14 U	0.18	0.14 U
Trichlorofluoromethane	ug/m3	2.4 J	1.8 J	180 J	1.7 J
1,1,2-Trichlorotrifluoroethane	ug/m3	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trimethylbenzene	ug/m3	4.9	0.99 U	20	1.8
1,3,5-Trimethylbenzene	ug/m3	2.1	0.99 U	4.7	0.99 U
2,2,4-Trimethylpentane	ug/m3	0.94 U	0.94 U	63	0.94 U
Vinyl Acetate	ug/m3	3.4 J	1.5 J	20 J	2.7 J
Vinyl Bromide	ug/m3	0.88 U	0.88 U	0.88 U	0.88 U
Vinyl Chloride	ug/m3	0.13 U	0.13 U	0.13 U	0.13 U
m and/or p-Xylene	ug/m3	11	1.8 U	53	3.4
o-Xylene	ug/m3	3.1	0.88 U	21	0.95

Analysis/ Analyte	Units	9-__	10-__	11-__	12-__
1 Air VOA Field Parameters					
Canister ID	I.D.	662	17007	R2226	606
Regulator ID	I.D.	N/A	156	155	N/A
Starting Pressure	inHg	-30	-30	-30	-30
Ending Pressure	inHg	-2	-3.5	-4.5	-3
1 VOCs in Air Samples in Canisters at Ambient Levels by GC/MS					
Acetone	ug/m3	160 J	13	31	5.9
Allyl Chloride	ug/m3	0.32 U	0.32 U	0.32 U	0.32 U
Benzene	ug/m3	1.8	0.22	0.95	0.53
Benzyl Chloride	ug/m3	4.2 U	4.2 U	4.2 U	4.2 U
Bromodichloromethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
Bromoform	ug/m3	2.1 U	2.1 U	2.1 U	2.1 U
Bromomethane	ug/m3	0.78 U	0.78 U	0.78 U	0.78 U
1,3-Butadiene	ug/m3	0.45 U	0.45 U	0.45 U	0.45 U
2-Butanone	ug/m3	4.0	1.2 U	2.3	1.2 U
Carbon Disulfide	ug/m3	0.63 U	0.63 U	0.63 U	0.63 U
Carbon Tetrachloride	ug/m3	0.32 U	0.51	0.52	0.43
Chlorobenzene	ug/m3	0.93 U	0.93 U	0.93 U	0.93 U
Chloroethane	ug/m3	0.53 U	0.53 U	0.58	0.53 U
Chloroform	ug/m3	1.2	0.12 U	1.3	0.90
Chloromethane	ug/m3	0.42 U	0.99 J	1.0 J	0.42 U
Cyclohexane	ug/m3	0.70 U	0.70 U	0.70 U	0.70 U
Dibromochloromethane	ug/m3	1.7 U	1.7 U	1.7 U	1.7 U
1,2-Dibromoethane	ug/m3	1.6 U	1.6 U	1.6 U	1.6 U
1,2-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	1.2 U
1,3-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	1.2 U
Dichlorodifluoromethane	ug/m3	1.5	2.1	1.8	2.7
1,1-Dichloroethane	ug/m3	0.82 U	0.82 U	0.82 U	0.82 U
1,2-Dichloroethane	ug/m3	0.10 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,2-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	0.20 U
1,2-Dichloropropane	ug/m3	0.93 U	0.93 U	0.93 U	0.93 U
cis-1,3-Dichloropropene	ug/m3	0.46 U	0.46 U	0.46 U	0.46 U
trans-1,3-Dichloropropene	ug/m3	0.46 UJ	0.46 U	0.46 U	0.46 U
1,2-Dichlorotetrafluoroethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
1,4-Dioxane	ug/m3	0.73 U	0.73 U	0.73 U	0.73 U
Ethyl Acetate	ug/m3	0.73 U	0.73 U	7.6	0.73 U
Ethyl Benzene	ug/m3	1.5	0.88 U	0.88 U	0.88 U
4-Ethyltoluene	ug/m3	4.0 U	4.0 U	4.0 U	4.0 U
Heptane	ug/m3	0.83 U	0.83 U	0.83 U	0.83 U
Hexachlorobutadiene	ug/m3	2.2 U	2.2 U	2.2 U	2.2 U
Hexane	ug/m3	0.76	0.71 U	1.8	0.71 U
2-Hexanone	ug/m3	1.7 U	1.7 UJ	1.7 UJ	1.7 U
Methyl tert-butyl ether	ug/m3	0.73 U	0.73 U	0.73 U	0.73 U

Analysis/ Analyte	Units	9-__	10-__	11-__	12-__
Methylene Chloride	ug/m3	0.70 U	0.70 U	0.70 U	0.70 U
4-Methyl-2-Pentanone	ug/m3	1.7 UJ	1.7 U	1.7 U	1.7 UJ
2-Propanol	ug/m3	27 J	8.9 J	34 J	0.97 J
Propene	ug/m3	1.1	0.35 U	0.71	0.35
Styrene	ug/m3	0.86 U	0.86 U	0.86 U	0.86 U
1,1,2,2-Tetrachloroethane	ug/m3	1.4 U	1.4 U	1.4 U	1.4 U
Tetrachloroethene	ug/m3	0.51	0.34 U	0.34 U	0.89
Tetrahydrofuran	ug/m3	0.60 U	0.60 U	0.60 U	0.60 U
Toluene	ug/m3	3.7	0.76 U	8.1 J	1.2
1,2,4-Trichlorobenzene	ug/m3	1.5 U	1.5 U	1.5 U	1.5 U
1,1,1-Trichloroethane	ug/m3	1.1 U	1.1 U	1.1 U	1.1 U
1,1,2-Trichloroethane	ug/m3	1.1 U	1.1 U	1.1 U	1.1 U
Trichloroethene	ug/m3	0.14 U	0.14 U	0.14 U	0.20
Trichlorofluoromethane	ug/m3	3.5	1.4 J	1.3 J	1.5
1,1,2-Trichlorotrifluoroethane	ug/m3	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trimethylbenzene	ug/m3	1.6	0.99 U	1.3	0.99 U
1,3,5-Trimethylbenzene	ug/m3	0.99 U	0.99 U	0.99 U	0.99 U
2,2,4-Trimethylpentane	ug/m3	0.94 U	0.94 U	0.94 U	0.94 U
Vinyl Acetate	ug/m3	0.71 UJ	0.89 J	5.8 J	0.94 J
Vinyl Bromide	ug/m3	0.88 U	0.88 U	0.88 U	0.88 U
Vinyl Chloride	ug/m3	0.13 U	0.13 U	0.13 U	0.13 U
m and/or p-Xylene	ug/m3	1.8 U	1.8 U	1.8 U	1.8 U
o-Xylene	ug/m3	0.88 U	0.88 U	0.88 U	0.88 U

Analysis/ Analyte	Units	13-__	14-__	15-__	16-__
1 Air VOA Field Parameters					
Canister ID	I.D.	3243	4562	737	727
Regulator ID	I.D.	167	N/A	N/A	N/A
Starting Pressure	inHg	-26.5	-30	-30	-30
Ending Pressure	inHg	-4.5	-2	-5	-5
1 VOCs in Air Samples in Canisters at Ambient Levels by GC/MS					
Acetone	ug/m3	27	42	69	65
Allyl Chloride	ug/m3	0.32 U	0.32 U	0.32 U	3.2 U
Benzene	ug/m3	0.27	0.67	1.6	7.6
Benzyl Chloride	ug/m3	4.2 U	4.2 U	4.2 U	42 U
Bromodichloromethane	ug/m3	1.4 U	1.4 U	1.4 U	14 U
Bromoform	ug/m3	2.1 U	2.1 U	2.1 U	21 U
Bromomethane	ug/m3	0.78 U	0.78 U	0.78 U	7.8 U
1,3-Butadiene	ug/m3	0.45 U	0.45 U	0.45 U	4.5 U
2-Butanone	ug/m3	2.8	4.5	24	13
Carbon Disulfide	ug/m3	0.63 U	0.63 U	0.63 U	7.7
Carbon Tetrachloride	ug/m3	0.52	0.48	0.54	3.2 U
Chlorobenzene	ug/m3	0.93 U	0.93 U	0.93 U	9.3 U
Chloroethane	ug/m3	0.53 U	0.53 U	0.53 U	5.3 U
Chloroform	ug/m3	0.12 U	0.12 U	0.12 U	1.2 U
Chloromethane	ug/m3	1.4 J	0.79	0.42 U	4.2 U
Cyclohexane	ug/m3	0.70 U	0.70 U	0.70 U	11
Dibromochloromethane	ug/m3	1.7 U	1.7 U	1.7 U	17 U
1,2-Dibromoethane	ug/m3	1.6 U	1.6 U	1.6 U	16 U
1,2-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	12 U
1,3-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	12 U
1,4-Dichlorobenzene	ug/m3	1.2 U	1.2 U	1.2 U	12 U
Dichlorodifluoromethane	ug/m3	2.7	2.3	1.0 U	10 U
1,1-Dichloroethane	ug/m3	0.82 U	0.82 U	0.82 U	8.2 U
1,2-Dichloroethane	ug/m3	0.10 U	0.10 U	0.10 U	1.0 U
1,1-Dichloroethene	ug/m3	0.20 U	0.20 U	0.20 U	3.5
cis-1,2-Dichloroethene	ug/m3	0.20 U	0.20 U	7.1	260
trans-1,2-Dichloroethene	ug/m3	0.20 U	0.20 U	180	17
1,2-Dichloropropane	ug/m3	0.93 U	0.93 U	0.93 U	9.3 U
cis-1,3-Dichloropropene	ug/m3	0.46 U	0.46 U	0.46 U	4.6 U
trans-1,3-Dichloropropene	ug/m3	0.46 U	0.46 UJ	0.46 UJ	4.6 UJ
1,2-Dichlorotetrafluoroethane	ug/m3	1.4 U	1.4 U	1.4 U	14 U
1,4-Dioxane	ug/m3	0.73 U	0.73 U	0.73 U	7.3 U
Ethyl Acetate	ug/m3	0.73 U	0.73 U	0.73 U	7.3 U
Ethyl Benzene	ug/m3	0.88 U	2.0	1.8	8.8 U
4-Ethyltoluene	ug/m3	4.0 U	4.0 U	4.0 U	40 U
Heptane	ug/m3	0.83 U	0.83 U	1.1	8.3 U
Hexachlorobutadiene	ug/m3	2.2 U	2.2 U	2.2 U	22 U
Hexane	ug/m3	0.71 U	0.71 U	0.71 U	7.1 U
2-Hexanone	ug/m3	1.7 UJ	1.7 U	1.7 U	17 U
Methyl tert-butyl ether	ug/m3	0.73 U	0.73 U	0.73 U	7.3 U

Analysis/ Analyte	Units	13-__	14-__	15-__	16-__
Methylene Chloride	ug/m3	0.70 U	0.70 U	0.70 U	7.0 U
4-Methyl-2-Pentanone	ug/m3	1.7 U	1.7 UJ	1.7 UJ	17 UJ
2-Propanol	ug/m3	10 J	21 J	0.50 UJ	5.0 UJ
Propene	ug/m3	0.41	1.2	0.35 U	3.5 U
Styrene	ug/m3	0.86 U	0.86 U	0.86 U	8.6 U
1,1,2,2-Tetrachloroethane	ug/m3	1.4 U	1.4 U	1.4 U	14 U
Tetrachloroethene	ug/m3	0.64	52	8.0	25
Tetrahydrofuran	ug/m3	0.60 U	0.60 U	0.60 U	6.0 U
Toluene	ug/m3	0.76 U	2.3	5.9	19
1,2,4-Trichlorobenzene	ug/m3	1.5 U	1.5 U	1.5 U	15 U
1,1,1-Trichloroethane	ug/m3	1.1 U	1.1 U	1.1 U	11 U
1,1,2-Trichloroethane	ug/m3	1.1 U	1.1 U	1.1 U	11 U
Trichloroethene	ug/m3	0.14 U	0.14	1.5	59
Trichlorofluoromethane	ug/m3	3.1 J	3.4	1.1 U	11 U
1,1,2-Trichlorotrifluoroethane	ug/m3	1.5 U	1.5 U	1.5 U	15 U
1,2,4-Trimethylbenzene	ug/m3	0.99 U	1.4	6.7	9.9 U
1,3,5-Trimethylbenzene	ug/m3	0.99 U	0.99 U	1.5	9.9 U
2,2,4-Trimethylpentane	ug/m3	0.94 U	0.94 U	0.94 U	9.4 U
Vinyl Acetate	ug/m3	1.9 J	0.88 J	0.71 UJ	7.1 UJ
Vinyl Bromide	ug/m3	0.88 U	0.88 U	0.88 U	8.8 U
Vinyl Chloride	ug/m3	0.13 U	0.13 U	0.13 U	200
m and/or p-Xylene	ug/m3	1.8 U	2.3	7.6	18 U
o-Xylene	ug/m3	0.88 U	1.0	3.5	8.8 U

Analysis/ Analyte	Units	101-__	102-__	103-__	104-__
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	9.2 U	9.5 U	12 U	9.3 U
Benzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Bromochloromethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Bromodichloromethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Bromoform	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Bromomethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
2-Butanone	ug/kg	9.2 U	9.5 U	12 U	9.3 U
Carbon Disulfide	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Carbon Tetrachloride	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Chlorobenzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Chloroethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Chloroform	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Chloromethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Cyclohexane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,2-Dibromo-3-Chloropropane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Dibromochloromethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,2-Dibromoethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,2-Dichlorobenzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,3-Dichlorobenzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,4-Dichlorobenzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Dichlorodifluoromethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,1-Dichloroethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,2-Dichloroethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,1-Dichloroethene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
cis-1,2-Dichloroethene	ug/kg	4.6 U	18	5.9 U	4.6 U
trans-1,2-Dichloroethene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,2-Dichloropropane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
cis-1,3-Dichloropropene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
trans-1,3-Dichloropropene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Ethyl Benzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
2-Hexanone	ug/kg	9.2 U	9.5 U	12 U	9.3 U
Isopropylbenzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Methyl Acetate	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Methyl tert-butyl ether	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Methylcyclohexane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Methylene Chloride	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
4-Methyl-2-Pentanone	ug/kg	9.2 U	9.5 U	12 U	9.3 U
Styrene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,1,2,2-Tetrachloroethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Tetrachloroethene	ug/kg	6.0	14000 J	16	4200
Toluene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,2,3-Trichlorobenzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,2,4-Trichlorobenzene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,1,1-Trichloroethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,1,2-Trichloroethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U

Analysis/ Analyte	Units	101-__	102-__	103-__	104-__
Trichloroethene	ug/kg	4.6 U	35	5.9 U	4.6 U
Trichlorofluoromethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
1,1,2-Trichlorotrifluoroethane	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
Vinyl Chloride	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
m and/or p-Xylene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U
o-Xylene	ug/kg	4.6 U	4.7 U	5.9 U	4.6 U

Analysis/ Analyte	Units	105-__	106-__	107-__	108-__
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	12 U	120	10 U	10 U
Benzene	ug/kg	5.8 U	5.9 U	5.0 UJ	5.1 U
Bromochloromethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Bromodichloromethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Bromoform	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Bromomethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
2-Butanone	ug/kg	12 U	12 U	10 U	10 U
Carbon Disulfide	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Carbon Tetrachloride	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Chlorobenzene	ug/kg	5.8 U	5.9 U	5.0 UJ	5.1 U
Chloroethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Chloroform	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Chloromethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Cyclohexane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,2-Dibromo-3-Chloropropane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Dibromochloromethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,2-Dibromoethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,2-Dichlorobenzene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,3-Dichlorobenzene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,4-Dichlorobenzene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Dichlorodifluoromethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,1-Dichloroethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,2-Dichloroethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,1-Dichloroethene	ug/kg	5.8 U	5.9 U	5.0 UJ	5.1 U
cis-1,2-Dichloroethene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
trans-1,2-Dichloroethene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,2-Dichloropropane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
cis-1,3-Dichloropropene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
trans-1,3-Dichloropropene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Ethyl Benzene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
2-Hexanone	ug/kg	12 U	12 U	10 U	10 U
Isopropylbenzene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Methyl Acetate	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Methyl tert-butyl ether	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Methylcyclohexane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Methylene Chloride	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
4-Methyl-2-Pentanone	ug/kg	12 U	12 U	10 U	10 U
Styrene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,1,2,2-Tetrachloroethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Tetrachloroethene	ug/kg	180	140	9800 J	5.1 U
Toluene	ug/kg	5.8 U	5.9 U	5.0 UJ	5.1 U
1,2,3-Trichlorobenzene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,2,4-Trichlorobenzene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,1,1-Trichloroethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,1,2-Trichloroethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U

Analysis/ Analyte	Units	105-__	106-__	107-__	108-__
Trichloroethene	ug/kg	5.8 U	5.9 U	5.0 UJ	5.1 U
Trichlorofluoromethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
1,1,2-Trichlorotrifluoroethane	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
Vinyl Chloride	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
m and/or p-Xylene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U
o-Xylene	ug/kg	5.8 U	5.9 U	5.0 U	5.1 U

Analysis/ Analyte	Units	109-__	110-__	111-__	112-__
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	9.7 U	50 J	10 U	10 U
Benzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Bromochloromethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Bromodichloromethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Bromoform	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Bromomethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
2-Butanone	ug/kg	9.7 U	9.6 U	10 U	10 U
Carbon Disulfide	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Carbon Tetrachloride	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Chlorobenzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Chloroethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Chloroform	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Chloromethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Cyclohexane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Dibromochloromethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,2-Dibromoethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,2-Dichlorobenzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,3-Dichlorobenzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,4-Dichlorobenzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Dichlorodifluoromethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,1-Dichloroethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,2-Dichloroethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,1-Dichloroethene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
cis-1,2-Dichloroethene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
trans-1,2-Dichloroethene	ug/kg	4.9 U	4.8 U	13	5.0 U
1,2-Dichloropropane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
cis-1,3-Dichloropropene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
trans-1,3-Dichloropropene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Ethyl Benzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
2-Hexanone	ug/kg	9.7 U	9.6 U	10 U	10 U
Isopropylbenzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Methyl Acetate	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Methyl tert-butyl ether	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Methylcyclohexane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Methylene Chloride	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
4-Methyl-2-Pentanone	ug/kg	9.7 U	9.6 U	10 U	10 U
Styrene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Tetrachloroethene	ug/kg	4.9 U	4.8 U	5.2 U	19
Toluene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,2,3-Trichlorobenzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,2,4-Trichlorobenzene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,1,1-Trichloroethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,1,2-Trichloroethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U

Analysis/ Analyte	Units	109-__	110-__	111-__	112-__
Trichloroethene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Trichlorofluoromethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
Vinyl Chloride	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
m and/or p-Xylene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U
o-Xylene	ug/kg	4.9 U	4.8 U	5.2 U	5.0 U

Analysis/ Analyte	Units	113-__	114-__	115-__	116-__
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	23	27	11 U	9.5 U
Benzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Bromochloromethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Bromodichloromethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Bromoform	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Bromomethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
2-Butanone	ug/kg	11 U	10 U	11 U	9.5 U
Carbon Disulfide	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Carbon Tetrachloride	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Chlorobenzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Chloroethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Chloroform	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Chloromethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Cyclohexane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,2-Dibromo-3-Chloropropane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Dibromochloromethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,2-Dibromoethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,2-Dichlorobenzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,3-Dichlorobenzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,4-Dichlorobenzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Dichlorodifluoromethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,1-Dichloroethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,2-Dichloroethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,1-Dichloroethene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
cis-1,2-Dichloroethene	ug/kg	5.4 U	33	7.9	4.8 U
trans-1,2-Dichloroethene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,2-Dichloropropane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
cis-1,3-Dichloropropene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
trans-1,3-Dichloropropene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Ethyl Benzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
2-Hexanone	ug/kg	11 U	10 U	11 U	9.5 U
Isopropylbenzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Methyl Acetate	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Methyl tert-butyl ether	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Methylcyclohexane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Methylene Chloride	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
4-Methyl-2-Pentanone	ug/kg	11 U	10 U	11 U	9.5 U
Styrene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,1,2,2-Tetrachloroethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Tetrachloroethene	ug/kg	5.4 U	5.2 U	4300	4200
Toluene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,2,3-Trichlorobenzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,2,4-Trichlorobenzene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,1,1-Trichloroethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,1,2-Trichloroethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U

Analysis/ Analyte	Units	113-__	114-__	115-__	116-__
Trichloroethene	ug/kg	6.8	14	8.0	4.8 U
Trichlorofluoromethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
1,1,2-Trichlorotrifluoroethane	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
Vinyl Chloride	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
m and/or p-Xylene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U
o-Xylene	ug/kg	5.4 U	5.2 U	5.6 U	4.8 U

Analysis/ Analyte	Units	117-__	118-__	119-__	120-__
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	11 U	11 U	19	220
Benzene	ug/kg	5.3 U	5.4 U	4.8 U	11
Bromochloromethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Bromodichloromethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Bromoform	ug/kg	5.3 U	5.4 UJ	4.8 U	5.8 U
Bromomethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
2-Butanone	ug/kg	11 U	11 U	9.6 U	50
Carbon Disulfide	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Carbon Tetrachloride	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Chlorobenzene	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Chloroethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Chloroform	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Chloromethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Cyclohexane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,2-Dibromo-3-Chloropropane	ug/kg	5.3 U	5.4 UJ	4.8 U	5.8 U
Dibromochloromethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,2-Dibromoethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,2-Dichlorobenzene	ug/kg	5.3 U	5.4 UJ	4.8 U	5.8 U
1,3-Dichlorobenzene	ug/kg	5.3 U	5.4 UJ	4.8 U	5.8 U
1,4-Dichlorobenzene	ug/kg	5.3 U	5.4 UJ	4.8 U	5.8 U
Dichlorodifluoromethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,1-Dichloroethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,2-Dichloroethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,1-Dichloroethene	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
cis-1,2-Dichloroethene	ug/kg	79	38	4.8 U	21
trans-1,2-Dichloroethene	ug/kg	16	5.4 U	14	5.8 U
1,2-Dichloropropane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
cis-1,3-Dichloropropene	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
trans-1,3-Dichloropropene	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Ethyl Benzene	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
2-Hexanone	ug/kg	11 U	11 U	9.6 U	12 U
Isopropylbenzene	ug/kg	5.3 U	5.4 UJ	4.8 U	5.8 U
Methyl Acetate	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Methyl tert-butyl ether	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Methylcyclohexane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Methylene Chloride	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
4-Methyl-2-Pentanone	ug/kg	11 U	11 U	9.6 U	12 U
Styrene	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,1,2,2-Tetrachloroethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Tetrachloroethene	ug/kg	200	31000 J	4.8 U	5.8 U
Toluene	ug/kg	5.3 U	5.4 U	4.8 U	10
1,2,3-Trichlorobenzene	ug/kg	5.3 U	5.4 UJ	4.8 U	5.8 U
1,2,4-Trichlorobenzene	ug/kg	5.3 U	5.4 UJ	4.8 U	5.8 U
1,1,1-Trichloroethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,1,2-Trichloroethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U

Analysis/ Analyte	Units	117-__	118-__	119-__	120-__
Trichloroethene	ug/kg	21	28	4.8 U	5.8 U
Trichlorofluoromethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
1,1,2-Trichlorotrifluoroethane	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
Vinyl Chloride	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
m and/or p-Xylene	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U
o-Xylene	ug/kg	5.3 U	5.4 U	4.8 U	5.8 U

Analysis/ Analyte	Units	121-__	122-__	123-__	124-__
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	12 U	13 U	9.8 U	9.5 U
Benzene	ug/kg	5.8 U	6.6 U	4.9 UJ	4.7 U
Bromochloromethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Bromodichloromethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Bromoform	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Bromomethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
2-Butanone	ug/kg	12 U	13 U	9.8 U	9.5 U
Carbon Disulfide	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Carbon Tetrachloride	ug/kg	5.8 U	6.6 UJ	4.9 U	4.7 U
Chlorobenzene	ug/kg	5.8 U	6.6 U	4.9 UJ	4.7 U
Chloroethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Chloroform	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Chloromethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Cyclohexane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,2-Dibromo-3-Chloropropane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Dibromochloromethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,2-Dibromoethane	ug/kg	5.8 U	6.6 UJ	4.9 U	4.7 U
1,2-Dichlorobenzene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,3-Dichlorobenzene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,4-Dichlorobenzene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Dichlorodifluoromethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,1-Dichloroethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,2-Dichloroethane	ug/kg	5.8 U	6.6 UJ	4.9 U	4.7 U
1,1-Dichloroethene	ug/kg	5.8 U	6.6 U	4.9 UJ	4.7 U
cis-1,2-Dichloroethene	ug/kg	75	6.6 U	4.9 U	4.7 U
trans-1,2-Dichloroethene	ug/kg	13	6.6 U	4.9 U	4.7 U
1,2-Dichloropropane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
cis-1,3-Dichloropropene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
trans-1,3-Dichloropropene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Ethyl Benzene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
2-Hexanone	ug/kg	12 U	13 U	9.8 U	9.5 U
Isopropylbenzene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Methyl Acetate	ug/kg	5.8 U	6.6 UJ	4.9 U	4.7 U
Methyl tert-butyl ether	ug/kg	5.8 U	6.6 UJ	4.9 U	4.7 U
Methylcyclohexane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Methylene Chloride	ug/kg	5.8 U	6.6 UJ	4.9 U	4.7 U
4-Methyl-2-Pentanone	ug/kg	12 U	13 U	9.8 U	9.5 U
Styrene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,1,2,2-Tetrachloroethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
Tetrachloroethene	ug/kg	5.8 U	6.6 U	23	11
Toluene	ug/kg	5.8 U	6.6 U	4.9 UJ	4.7 U
1,2,3-Trichlorobenzene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,2,4-Trichlorobenzene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,1,1-Trichloroethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
1,1,2-Trichloroethane	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U

Analysis/ Analyte	Units	121-__	122-__	123-__	124-__
Trichloroethene	ug/kg	110	6.6 U	4.9 UJ	4.7 U
Trichlorofluoromethane	ug/kg	5.8 U	6.6 UJ	4.9 U	4.7 U
1,1,2-Trichlorotrifluoroethane	ug/kg	5.8 U	6.6 UJ	4.9 U	4.7 U
Vinyl Chloride	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
m and/or p-Xylene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U
o-Xylene	ug/kg	5.8 U	6.6 U	4.9 U	4.7 U

Analysis/ Analyte	Units	125-__	126-__	127-__	128-__
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	12 U	57 J	8.8 U	8.8 U
Benzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Bromochloromethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Bromodichloromethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Bromoform	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Bromomethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
2-Butanone	ug/kg	12 U	9.1 U	8.8 U	8.8 U
Carbon Disulfide	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Carbon Tetrachloride	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Chlorobenzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Chloroethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Chloroform	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Chloromethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Cyclohexane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,2-Dibromo-3-Chloropropane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Dibromochloromethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,2-Dibromoethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,2-Dichlorobenzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,3-Dichlorobenzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,4-Dichlorobenzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Dichlorodifluoromethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,1-Dichloroethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,2-Dichloroethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,1-Dichloroethene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
cis-1,2-Dichloroethene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
trans-1,2-Dichloroethene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,2-Dichloropropane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
cis-1,3-Dichloropropene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
trans-1,3-Dichloropropene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Ethyl Benzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
2-Hexanone	ug/kg	12 U	9.1 U	8.8 U	8.8 U
Isopropylbenzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Methyl Acetate	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Methyl tert-butyl ether	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Methylcyclohexane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Methylene Chloride	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
4-Methyl-2-Pentanone	ug/kg	12 U	9.1 U	8.8 U	8.8 U
Styrene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,1,2,2-Tetrachloroethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Tetrachloroethene	ug/kg	150	4.5 U	4.4 U	4.4 U
Toluene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,2,3-Trichlorobenzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,2,4-Trichlorobenzene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,1,1-Trichloroethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,1,2-Trichloroethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U

Analysis/ Analyte	Units	125-__	126-__	127-__	128-__
Trichloroethene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Trichlorofluoromethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
1,1,2-Trichlorotrifluoroethane	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
Vinyl Chloride	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
m and/or p-Xylene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U
o-Xylene	ug/kg	5.9 U	4.5 U	4.4 U	4.4 U

Analysis/ Analyte	Units	129-__	130-__	201-__	202-__
1 VOC's in Soil at Low Levels by GC/MS Closed-System Purge-and-Trap					
Acetone	ug/kg	77	12 U		
Benzene	ug/kg	5.3 U	5.9 U		
Bromochloromethane	ug/kg	5.3 U	5.9 UJ		
Bromodichloromethane	ug/kg	5.3 U	5.9 U		
Bromoform	ug/kg	5.3 U	5.9 U		
Bromomethane	ug/kg	5.3 U	5.9 U		
2-Butanone	ug/kg	18	12 U		
Carbon Disulfide	ug/kg	5.3 U	5.9 UJ		
Carbon Tetrachloride	ug/kg	5.3 U	5.9 U		
Chlorobenzene	ug/kg	5.3 U	5.9 U		
Chloroethane	ug/kg	5.3 U	5.9 UJ		
Chloroform	ug/kg	5.3 U	5.9 U		
Chloromethane	ug/kg	5.3 U	5.9 UJ		
Cyclohexane	ug/kg	5.3 U	5.9 U		
1,2-Dibromo-3-Chloropropane	ug/kg	5.3 U	5.9 U		
Dibromochloromethane	ug/kg	5.3 U	5.9 U		
1,2-Dibromoethane	ug/kg	5.3 U	5.9 U		
1,2-Dichlorobenzene	ug/kg	5.3 U	5.9 U		
1,3-Dichlorobenzene	ug/kg	5.3 U	5.9 U		
1,4-Dichlorobenzene	ug/kg	5.3 U	5.9 U		
Dichlorodifluoromethane	ug/kg	5.3 U	5.9 UJ		
1,1-Dichloroethane	ug/kg	5.3 U	5.9 U		
1,2-Dichloroethane	ug/kg	5.3 U	5.9 U		
1,1-Dichloroethene	ug/kg	5.3 U	5.9 U		
cis-1,2-Dichloroethene	ug/kg	120	5.9 U		
trans-1,2-Dichloroethene	ug/kg	7.4	5.9 U		
1,2-Dichloropropane	ug/kg	5.3 U	5.9 U		
cis-1,3-Dichloropropene	ug/kg	5.3 U	5.9 U		
trans-1,3-Dichloropropene	ug/kg	5.3 U	5.9 U		
Ethyl Benzene	ug/kg	5.3 U	5.9 U		
2-Hexanone	ug/kg	11 U	12 U		
Isopropylbenzene	ug/kg	5.3 U	5.9 U		
Methyl Acetate	ug/kg	5.3 U	5.9 U		
Methyl tert-butyl ether	ug/kg	5.3 U	5.9 U		
Methylcyclohexane	ug/kg	5.3 U	5.9 U		
Methylene Chloride	ug/kg	5.3 U	5.9 U		
4-Methyl-2-Pentanone	ug/kg	11 U	12 U		
Styrene	ug/kg	5.3 U	5.9 U		
1,1,2,2-Tetrachloroethane	ug/kg	5.3 U	5.9 U		
Tetrachloroethene	ug/kg	58	39		
Toluene	ug/kg	5.3 U	5.9 U		
1,2,3-Trichlorobenzene	ug/kg	5.3 U	5.9 U		
1,2,4-Trichlorobenzene	ug/kg	5.3 U	5.9 U		
1,1,1-Trichloroethane	ug/kg	5.3 U	5.9 U		
1,1,2-Trichloroethane	ug/kg	5.3 U	5.9 U		

Analysis/ Analyte	Units	129-__	130-__	201-__	202-__
Trichloroethene	ug/kg	41	5.9 U		
Trichlorofluoromethane	ug/kg	5.3 U	5.9 U		
1,1,2-Trichlorotrifluoroethane	ug/kg	5.3 U	5.9 U		
Vinyl Chloride	ug/kg	5.3 U	5.9 U		
m and/or p-Xylene	ug/kg	5.3 U	5.9 U		
o-Xylene	ug/kg	5.3 U	5.9 U		
1 VOCs in Water by GC/MS					
Acetone	ug/L			10 U	11
Benzene	ug/L			5.0 U	5.0 U
Bromochloromethane	ug/L			5.0 U	5.0 U
Bromodichloromethane	ug/L			5.0 U	5.0 U
Bromoform	ug/L			5.0 UJ	5.0 UJ
Bromomethane	ug/L			5.0 U	5.0 U
2-Butanone	ug/L			10 U	10 U
Carbon Disulfide	ug/L			5.0 U	5.0 U
Carbon Tetrachloride	ug/L			5.0 U	5.0 U
Chlorobenzene	ug/L			5.0 U	5.0 U
Chloroethane	ug/L			5.0 U	5.0 U
Chloroform	ug/L			5.0 U	5.0 U
Chloromethane	ug/L			5.0 U	5.0 U
Cyclohexane	ug/L			5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L			5.0 U	5.0 U
Dibromochloromethane	ug/L			5.0 U	5.0 U
1,2-Dibromoethane	ug/L			5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L			5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L			5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L			5.0 U	5.0 U
Dichlorodifluoromethane	ug/L			5.0 U	5.0 U
1,1-Dichloroethane	ug/L			5.0 U	5.0 U
1,2-Dichloroethane	ug/L			5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L			5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L			880	5.3
trans-1,2-Dichloroethene	ug/L			140	5.0 U
1,2-Dichloropropane	ug/L			5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L			5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L			5.0 U	5.0 U
Ethyl Benzene	ug/L			5.0 U	5.0 U
2-Hexanone	ug/L			10 U	10 U
Isopropylbenzene	ug/L			5.0 U	5.0 U
Methyl Acetate	ug/L			5.0 U	5.0 U
Methyl tert-butyl ether	ug/L			5.0 U	5.0 U
Methylcyclohexane	ug/L			5.0 U	5.0 U
Methylene Chloride	ug/L			5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L			10 U	10 U
Styrene	ug/L			5.0 U	5.0 U

Analysis/ Analyte	Units	129-__	130-__	201-__	202-__
1,1,2,2-Tetrachloroethane	ug/L			5.0 U	5.0 U
Tetrachloroethene	ug/L			3700	23
Toluene	ug/L			5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L			5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L			5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L			5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L			5.0 U	5.0 U
Trichloroethene	ug/L			250 J	5.0 U
Trichlorofluoromethane	ug/L			5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L			5.0 U	5.0 U
Vinyl Chloride	ug/L			5.0 U	5.0 U
m and/or p-Xylene	ug/L			5.0 U	5.0 U
o-Xylene	ug/L			5.0 U	5.0 U

Analysis/ Analyte	Units	203-__	204-__	205-__	206-__
1 VOCs in Water by GC/MS					
Acetone	ug/L	10 U	10 U	10 U	10 U
Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	10 U	10 U	10 U	10 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0	16
trans-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	8.5
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	10 U	10 U	10 U	10 U
Styrene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5.0 U	5.0 U	2400	580
Toluene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	203-__	204-__	205-__	206-__
Trichloroethene	ug/L	5.0 U	5.0 U	16	44
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
m and/or p-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	207-__	208-__	209-__	210-__
1 VOCs in Water by GC/MS					
Acetone	ug/L	10 U	10 U	10 U	10 U
Benzene	ug/L	5.0 U	5.0 UJ	5.0 U	5.0 U
Bromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	10 U	10 U	10 U	10 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	ug/L	5.0 U	5.0 UJ	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U	5.0 UJ	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	10 U	10 U	10 U	10 U
Styrene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5.0 U	30	5.0 U	5.0 U
Toluene	ug/L	5.0 U	5.0 UJ	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	207-__	208-__	209-__	210-__
Trichloroethene	ug/L	5.0 U	5.0 UJ	5.0 U	5.0 U
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
m and/or p-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	211-__	212-__	213-__	214-__
1 VOCs in Water by GC/MS					
Acetone	ug/L	10 U	10 U	15	10 U
Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	10 U	10 U	10 U	10 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	56	170	5.0 U	5.0 U
trans-1,2-Dichloroethene	ug/L	47	50	5.0 U	5.0 U
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	10 U	10 U	10 U	10 U
Styrene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	2500	300	5.0 U	5.0 U
Toluene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	211-__	212-__	213-__	214-__
Trichloroethene	ug/L	66	60	5.0 U	5.0 U
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
m and/or p-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	215-__	216-__	217-__	218-__
1 VOCs in Water by GC/MS					
Acetone	ug/L	10 U	10 U	10 U	10 U
Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	10 U	10 U	10 U	10 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	380	260	5.0 U	5.0 U
trans-1,2-Dichloroethene	ug/L	52	77	5.0 U	5.0 U
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	10 U	10 U	10 U	10 U
Styrene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5.0 U	28	5.0 U	5.0 U
Toluene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	215-__	216-__	217-__	218-__
Trichloroethene	ug/L	5.0 U	63	5.0 U	5.0 U
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	11	31	5.0 U	5.0 U
m and/or p-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	221-FB	222-FB	223-FB
1 VOCs in Water by GC/MS				
Acetone	ug/L	10 U	10 U	10 U
Benzene	ug/L	5.0 U	5.0 U	5.0 U
Bromochloromethane	ug/L	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 U	5.0 U	5.0 U
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 U
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	10 U	10 U	10 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 U	5.0 U	5.0 U
Chlorobenzene	ug/L	5.0 U	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/L	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 U
1,1-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	10 U	10 U	10 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	5.0 U	5.0 U	5.0 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	10 U	10 U	10 U
Styrene	ug/L	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5.0 U	5.0 U	5.0 U
Toluene	ug/L	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	221-FB	222-FB	223-FB
Trichloroethene	ug/L	5.0 U	5.0 U	5.0 U
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	5.0 U	5.0 U	5.0 U
m and/or p-Xylene	ug/L	5.0 U	5.0 U	5.0 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

EPA PROJECT MANAGER (Print)	SITE OR SAMPLING EVENT	DATE OF SAMPLE COLLECTION(S)	SHEET
Todd Davis	Sunshine Laundry	6 (MONTH) 7-10 (DAY) 2021 (YEAR)	1 of 2

CONTENTS OF SHIPMENT

ASR AND SAMPLE NUMBER	TYPE OF CONTAINERS: 1 L Plastic Bottle	6 L Summa Canister	3 Vials + 1 Tube Bottle	Bottle	VOA Set (3 Vials Ea)	SAMPLED MEDIA: Water	Soil	Haz Waste	Air	Other	RECEIVING LABORATORY REMARKS OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
8924-1		1							✓		
8924-2		1							✓		
8924-3		1							✓		
8924-4		1							✓		
8924-5		1							✓		
8924-6		1							✓		
8924-7		1							✓		
8924-8		1							✓		
8924-9		1							✓		
8924-10		1							✓		
8924-11		1							✓		
8924-12		1							✓		
8924-101			1				✓				
8924-102			1				✓				
8924-103			1				✓				
8924-104			1				✓				
8924-105			1				✓				
8924-106			1				✓				
8924-107			3				✓				MS/MSD
8924-108			1				✓				
8924-109			1				✓				
8924-110			1				✓				
8924-111			1				✓				
8924-112			1				✓				

DESCRIPTION OF SHIPMENT

52 CONTAINER(S) CONSISTING OF 5 CRATE(S)

3 ICE CHEST(S): OTHER _____

MODE OF SHIPMENT

☐ COMMERCIAL CARRIER _____

☑ SAMPLER CONVEYED _____ (SHIPPING AIRBILL NUMBER)

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (PM/SAMPLER)	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
Tim Barbeau (Digitally signed by: Tim Barbeau DN: CN = Tim Barbeau email = tim.barbeau@tetratech.com C = US OU = Tetra Tech Date: 2021.06.10 20:19:30 -05'00') SEALED ○ UNSEALED ◉	NICOLE ROBLEZ (Digitally signed by NICOLE ROBLEZ Date: 2021.06.11 11:16:42 -05'00') SEALED ○ UNSEALED ◉	STC Analyses
RELINQUISHED BY (PM/SAMPLER) SEALED ○ UNSEALED ○	RECEIVED BY SEALED ○ UNSEALED ○	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY (PM/SAMPLER) SEALED ○ UNSEALED ○	RECEIVED BY SEALED ○ UNSEALED ○	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY (PM/SAMPLER) SEALED ○ UNSEALED ○	RECEIVED BY SEALED ○ UNSEALED ○	REASON FOR CHANGE OF CUSTODY

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

EPA PROJECT MANAGER (Print)	SITE OR SAMPLING EVENT	DATE OF SAMPLE COLLECTION(S)	SHEET
Todd Davis	Sunshine Laundry	6 (MONTH) 7-10 (DAY) 2021 (YEAR)	2 of 2

CONTENTS OF SHIPMENT

ASR AND SAMPLE NUMBER	TYPE OF CONTAINERS: 1 L PLASTIC BOTTLE	6 L Summa CANISTER	3 Vials + 1 Tube BOTTLE	BOTTLE	VOA SET (3 VIALS EA)	SAMPLED MEDIA: WATER	SED LID	HAZ WASTE	AIR	OTHER	RECEIVING LABORATORY REMARKS OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBER(S) OF CONTAINERS PER SAMPLE NUMBER										
8924-113			1				✓				Some water LDL VOA samples were rec'd
8924-114			1				✓				at the STC w/air bubble(s)/sediment
8924-115			1				✓				in them. Noted & lab informed to proceed
8924-116			1				✓				accordingly & note as needed. 6/11/2021
8924-117			1				✓				Since Sealed or Unsealed not marked
8924-118			1				✓				below on both eCOCs dated 6/10/2021,
8924-119			1				✓				NR marked Unsealed at the STC sample
8924-120			1				✓				receipt on 6/11/2021. nr6/11/2021
8924-121			1				✓				
8924-122			1				✓				
8924-123			3				✓				MS/MSD
8924-124			1				✓				PM/TT sampler received email dated
8924-125			1				✓				6/11/2021 noting that no water QC=MS/MSD
8924-126			1				✓				was collected/provided by the TT sampler
8924-127			1				✓				as noted/needed/required on the ASR & sample
8924-128			1				✓				info. provided by the LTAB. No QC=MS/MSD
8924-129			1				✓				will be done/provided on below samples
8924-130			1				✓				201-205 & 223FB. nr6/11/2021
8924-201					1^	✓					^= 1 of 3 vials rec'd broken at the STC per
8924-202					1	✓					TT sampler on 6/10/2021. nr6/11/2021
8924-203					1	✓					
8924-204					1	✓					Coolers rec'd at the STC with a temp.
8924-205					1	✓					range of 13.3-15.4degC. nr6/11/2021
8924-223-FB					1	✓					Trip Blank/ ASR Not Complete

DESCRIPTION OF SHIPMENT

52 CONTAINER(S) CONSISTING OF 5 CRATE(S)

3 ICE CHEST(S): OTHER _____

MODE OF SHIPMENT

☐ COMMERCIAL CARRIER _____

☑ SAMPLER CONVEYED _____ (SHIPPING AIRBILL NUMBER)

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (PM/SAMPLER)	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
Tim Barbeau (Digitally signed by: Tim Barbeau DN: CN = Tim Barbeau email = tim.barbeau@tetratech.com C = US OU = Tetra Tech Date: 2021.06.10 20:21:13 -05'00') ● SEALED ○ UNSEALED	NICOLE ROBLEZ (Digitally signed by NICOLE ROBLEZ Date: 2021.06.11 11:19:21 -05'00') ● SEALED ○ UNSEALED	STC Analyses
RELINQUISHED BY (PM/SAMPLER) ○ SEALED ○ UNSEALED	RECEIVED BY ○ SEALED ○ UNSEALED	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY (PM/SAMPLER) ○ SEALED ○ UNSEALED	RECEIVED BY ○ SEALED ○ UNSEALED	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY (PM/SAMPLER) ○ SEALED ○ UNSEALED	RECEIVED BY ○ SEALED ○ UNSEALED	REASON FOR CHANGE OF CUSTODY

7-EPA-6282 (REV 4/17)

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

EPA PROJECT MANAGER (Print)	SITE OR SAMPLING EVENT	DATE OF SAMPLE COLLECTION(S)	SHEET
Todd Davis	Sunshine Laundry	6 (MONTH) 10-11 (DAY) 2021 (YEAR)	1 of 1

CONTENTS OF SHIPMENT

ASR AND SAMPLE NUMBER	TYPE OF CONTAINERS: 1 L PLASTIC BOTTLE	6 L Summa CANISTER	BOTTLE	BOTTLE	VOA SET (3 VIALS EA)	SAMPLED MEDIA: WATER	SO LID	HAZ WASTE	AIR	OTHER	RECEIVING LABORATORY REMARKS OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBER(S) OF CONTAINERS PER SAMPLE NUMBER										
8924-13		1							✓		
8924-14		1							✓		Some water VOA vials below were
8924-15		1							✓		received with black material in the vials.
8924-16		1							✓		Lab was informed to note and proceed
8924-206					1	✓					accordingly. nr6/14/2021
8924-207					1	✓					
8924-208					3	✓					MS/MSD
8924-209					1	✓					
8924-210					1	✓					
8924-211					1	✓					
8924-212					1	✓					
8924-213					1	✓					
8924-214					1	✓					Rinsate Blank
8924-215					1	✓					
8924-216					1	✓					
8924-217					1	✓					
8924-218					1	✓					
8924-221-FB					1	✓					Trip Blank
8924-222-FB					1	✓					Field Blank
											ASR Complete
											No temp. needed on air canister crate
											& cooler received at 3-5degC. nr6/14/2021

DESCRIPTION OF SHIPMENT

21 CONTAINER(S) CONSISTING OF 2 CRATE(S)

1 ICE CHEST(S): OTHER _____

nr6/14/2021

MODE OF SHIPMENT

☐ COMMERCIAL CARRIER _____

☑ SAMPLER CONVEYED _____ (SHIPPING AIRBILL NUMBER)

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (PM/SAMPLER)	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
Tim Barbeau Digitally signed by: Tim Barbeau DN: CN = Tim Barbeau email = tim.barbeau@tetratech.com C = US OU = Tetra Tech Date: 2021.06.14 08:00:59 -05'00'	NICOLE ROBLEZ Digitally signed by NICOLE ROBLEZ Date: 2021.06.14 10:26:31 -05'00'	STC Analyses
○ SEALED ○ UNSEALED	○ SEALED ○ UNSEALED	
RELINQUISHED BY (PM/SAMPLER)	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
○ SEALED ○ UNSEALED	○ SEALED ○ UNSEALED	
RELINQUISHED BY (PM/SAMPLER)	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
○ SEALED ○ UNSEALED	○ SEALED ○ UNSEALED	
RELINQUISHED BY (PM/SAMPLER)	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
○ SEALED ○ UNSEALED	○ SEALED ○ UNSEALED	

APPENDIX H

SUPERFUND REMOVAL SITE EVALUATION AND REMOVAL PRELIMINARY ASSESSMENT FORM

SUPERFUND REMOVAL SITE EVALUATION
and
REMOVAL PRELIMINARY ASSESSMENT

I. SITE NAME AND LOCATION:

NAME: Sunshine Laundry		
ADDRESS OR OTHER LOCATION IDENTIFIER: Rainbow Cleaners; 2422 5th Ave. S. Former Dry Cleaner		
CITY: Fort Dodge	**STATE:** IA	**ZIP:** 50501

DIRECTIONS TO SITE: From intersection of U.S. Highways 20 and 169 south of Fort Dodge, take Hwy 169 north to Business Hwy 20 (Kenyon Rd), turn northeast into Fort Dodge. Kenyon Road bends east and becomes 5th Ave. S. Proceed east about 1 mile to site at 24225th Ave. S. (north side).
MAP ATTACHED: See Figure 1 of ISA/RSE report.

II. PROGRAM CONTACTS:

REQUESTED BY: Todd Davis	**DATE OF REQUEST:** 04/05/2021	
AGENCY/OFFICE: U.S. EPA Region 7 Superfund Division		
MAILING ADDRESS: 11201 Renner Boulevard		
CITY: Lenexa	**STATE:** Kansas	**ZIP:** 66219
TELEPHONE: (913) 551-7749	**FAX:** (913) 551-7948	
EVALUATOR: Jenna Mead		
AGENCY/OFFICE: Tetra Tech, Inc		
MAILING ADDRESS: 415 Oak Street		
CITY: Kansas City	**STATE:** MO	**ZIP:** 64106
TELEPHONE: 816-412-1771	**FAX:** 816-410-1748	

III. REMOVAL SITE EVALUATION CRITERIA [40 CFR 300.410(e)]:

IS THERE A RELEASE AS DEFINED BY THE NCP: **YES** ☒ **or NO** ☐

EXPLAIN: A release of tetrachloroethene (PCE) to soil and groundwater has occurred.

*(A **RELEASE** is defined as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment of barrels, containers, and other closed receptacles containing any hazardous substances or pollutant or contaminant), but excludes: workplace exposures; engine exhaust emissions; nuclear releases otherwise regulated; and the normal application of fertilizer. For purposes of the NCP, release also means threat of release.)*

IS THE SOURCE A FACILITY OR VESSEL AS DEFINED BY THE NCP: **YES** ☒ **or NO** ☐

EXPLAIN: The area where the PCE was released is considered a facility as defined by the NCP.

*(A **FACILITY** is defined as any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or POTW), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft or any site or area, where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel. A **VESSEL** is defined as any description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel.)*

SUPERFUND REMOVAL SITE EVALUATION
and
REMOVAL PRELIMINARY ASSESSMENT

DOES THE RELEASE INVOLVE A HAZARDOUS SUBSTANCE, OR POLLUTANT OR CONTAMINANT AS DEFINED BY THE NCP: **YES ☒ or NO ☐**

EXPLAIN: PCE is considered a hazardous substance as defined by the NCP.

*(A **HAZARDOUS SUBSTANCE** means any substance, element, compound, mixture, solution, hazardous waste, toxic pollutant, hazardous air pollutant, or imminently hazardous chemical substance or mixture designated pursuant to the CWA, CERCLA, SDWA, CAA or TSCA. The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas. The definition of **POLLUTANT or CONTAMINANT** includes, but is not limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions or physical deformations, in such organisms or their offspring. The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas).*

IS THE RELEASE SUBJECT TO THE LIMITATIONS ON RESPONSE: **YES ☐ or NO ☒**

EXPLAIN: The release does not meet the criteria for limitations on response.

*(The **LIMITATIONS ON RESPONSE** provisions of the NCP (40 CFR 300.400(B) states that removals shall not be undertaken in response to a release: of a naturally occurring substance in its unaltered or natural form; from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures; or into public or private drinking water supplies due to deterioration of the system through ordinary use.)*

DOES THE QUANTITY OR CONCENTRATION WARRANT RESPONSE: **YES ☒ or NO ☐**

EXPLAIN: High PCE concentrations in soil and groundwater and in sub-slab vapors at on-site building suggests that follow-up Superfund response is warranted. TCE concentration in soil gas near the adjoining property also exceeded the vapor intrusion screening level (VISL).

HAS A PRP BEEN IDENTIFIED: **YES ☒ or NO ☐**

EXPLAIN: Rainbow Cleaners formerly operated the facility from about 1984 to 1992, when the business was sold and became Sunshine Laundry. No dry cleaning reportedly occurred during Sunshine Laundry's years of operation.

IV. CONDITIONS TO WARRANT REMOVAL [40 CFR 300.415(b)(2)]:

ACTUAL OR POTENTIAL EXPOSURE TO HAZARDOUS SUBSTANCES, POLLUTANTS, OR CONTAMINANTS: **YES ☒ or NO ☐**

EXPLAIN:

PCE has been detected in indoor air and sub-slab vapors at or near the site; however, levels were below EPA removal management levels (RML). TCE in one soil-gas sample exceeded the RML; however, the distance of the sample location from the nearby building was greater than the recommended distance (within 10 feet) in the EPA guidance.

ACTUAL OR POTENTIAL CONTAMINATION OF DRINKING WATER SUPPLIES: **YES ☐ or NO ☒**

EXPLAIN:

Concentrations of PCE up to 3,700 micrograms per liter (µg/L) have been detected in groundwater samples collected at the site. No private water wells were identified in the site area, which is supplied by municipal water sourced from wells near the Des Moines River about 1-2 miles west or southwest of the site.

HAZARDOUS SUBSTANCES, POLLUTANTS, OR CONTAMINANTS IN DRUMS, BARRELS, OR BULK STORAGE CONTAINERS: **YES ☐ or NO ☒**

EXPLAIN: No hazardous substances stored in bulk storage containers are at the site.

SUPERFUND REMOVAL SITE EVALUATION
and
REMOVAL PRELIMINARY ASSESSMENT

HIGH LEVELS OF HAZARDOUS SUBSTANCES, POLLUTANTS, OR CONTAMINANTS IN NEAR-SURFACE SOILS: **YES ☐ or NO ☒**

EXPLAIN: The surface is largely covered by a deteriorated asphalt surface. Membrane interface probe (MIP) logging indicated lower levels of chlorinated compounds in near surface soils, with increasing concentrations at greater depth. The shallowest soil confirmation sample, collected within 1-2 feet below ground surface (bgs), contained PCE at 6 micrograms per kilogram (mg/kg). Highest soil contamination levels occurred between about 7 feet bgs and top of groundwater at about 15 feet bgs.

CONDITIONS SUSCEPTIBLE TO IMPACT FROM ADVERSE WEATHER CONDITIONS: **YES ☐ or NO ☒**

EXPLAIN: No conditions susceptible to adverse weather conditions are present. The site is covered with asphalt (poor condition), a building, and small landscaped areas.

THREAT OF FIRE OR EXPLOSION: **YES ☐ or NO ☒**

EXPLAIN: No threat of fire or explosion exists at the site.

POTENTIAL FOR OTHER FEDERAL OR STATE RESPONSE MECHANISMS: **YES ☐ or NO ☒**

EXPLAIN: The Iowa Department of Natural Resources was involved with previous investigations regarding the site. The City of Fort Dodge requested EPA conduct this assessment.

OTHER SITUATIONS OR FACTORS WHICH POSE A THREAT: **YES ☒ or NO ☐**

EXPLAIN: Demolition of the building and current parking lot for reconstruction as a City parking lot could expose construction workers to contaminated soil, shallow groundwater, and vapors.

V. POTENTIAL REMOVAL ACTIONS [40 CFR 300.415(d)]:

(NOTE: The following identifies potential removal actions which may be determined to be appropriate pending further review and study. The proposed actions should be considered preliminary proposals and are subject to change.)

SITE SECURITY: **YES ☐ or NO ☒**

EXPLAIN: Provision of site security is not required at the site.

DRAINAGE CONTROL: **YES ☐ or NO ☒**

EXPLAIN: Drainage control is not required at the site.

STABILIZATION OR REMOVAL OF SURFACE IMPOUNDMENTS: **YES ☐ or NO ☒**

EXPLAIN: No surface impoundments exist at the site.

CAPPING OF CONTAMINATED SOIL: **YES ☐ or NO ☒**

EXPLAIN: Capping of contaminated soil as part of the proposed conversion of the site into a parking lot would prevent contact with surface soils; however, contamination could continue to migrate into groundwater.

USE OF CHEMICALS TO CONTROL/RETARD SPREAD OF CONTAMINATION: **YES ☒ or NO ☐**

EXPLAIN: Injection of remediation fluids to chemically treat contaminated subsurface media may be an option at the site.

CONTAMINATED SOIL EXCAVATION: **YES ☒ or NO ☐**

EXPLAIN: Excavation of contaminated soils at the site may prevent further groundwater contamination and vapor intrusion into overlying buildings.

SUPERFUND REMOVAL SITE EVALUATION
and
REMOVAL PRELIMINARY ASSESSMENT

REMOVAL OF DRUMS, TANKS, OR BULK STORAGE CONTAINERS: **YES ☐ or NO ☒**

EXPLAIN: No drums, tanks, or bulk storage containers are present at the site.

CONTAINMENT, TREATMENT, OR DISPOSAL OF HAZARDOUS SUBSTANCES, POLLUTANTS, OR CONTAMINANTS: **YES ☒ or NO ☐**

EXPLAIN: Excavation and disposal of contaminated soil and/or chemical or thermal treatment of contaminated soil and/or groundwater are also possibilities. Chemical treatment of contaminated groundwater is also possible.

PROVIDE ALTERNATIVE WATER SUPPLIES: **YES ☐ or NO ☒**

EXPLAIN: Although elevated concentrations of PCE have been detected in groundwater samples, no contaminated drinking water supplies have been identified at this time. The City of Fort Dodge, Iowa supplies drinking water in the area.

SUPERFUND REMOVAL SITE EVALUATION
and
REMOVAL PRELIMINARY ASSESSMENT

VI. REMOVAL SITE EVALUATION DETERMINATION AND REMOVAL PRELIMINARY ASSESSMENT FINDINGS AND RECOMMENDATIONS:

☐ **REMOVAL NOT WARRANTED—REMOVAL SITE EVALUATION TERMINATED**

(Cite one or more of the criteria from SECTION III. REMOVAL SITE EVALUATION CRITERIA, as the basis for the above determination.)

☐	NOT A RELEASE		☐	NOT A FACILITY OR VESSEL
☐	NOT A HAZARDOUS SUBSTANCE OR POLLUTANT OR CONTAMINANT		☐	SUBJECT TO RESPONSE LIMITATIONS
☐	INSUFFICIENT QUANTITY OR CONCENTRATION		☐	WILLING/CAPABLE PRP IDENTIFIED

COMMENT:

☒ **REMOVAL RECOMMENDED [☐EMERGENCY ☒TIME-CRITICAL ☐NON-TIME-CRITICAL]**

(Cite one or more of the conditions or factors from Section IV. CONDITIONS TO WARRANT A REMOVAL ACTION, as a basis for recommend that a removal action be conducted.)

☒	EXPOSURE TO HAZARDOUS SUBSTANCES OR POLLUTANTS OR CONTAMINANTS				☐	ADVERSE WEATHER IMPACTS
☐	CONTAMINATED DRINKING WATER	☐	FIRE/EXPLOSION THREAT		☒	CONTAMINATED SOIL
☐	DRUMS, BARRELS OR CONTAINERS	☐	NO OTHER RESPONSE MECHANISM		☒	OTHER FACTORS

(Identify one or more of the removal actions listed in Section V. REMOVAL ACTIONS WHICH MAY BE APPROPRIATE, as examples of the types of response actions which are recommended.)

☐	SITE SECURITY	☐	DRAINAGE CONTROL	☐	IMPOUNDMENT STABILIZATION
☐	REMOVAL OF DRUMS, BARRELS, ETC.	☐	SOIL CAPPING	☒	SOIL EXCAVATION
☒	CONTAIN/TREAT/DISPOSE OF WASTES	☒	CHEMICAL CONTROLS	☐	ALT. DRINKING WATER SUPPLIES

COMMENT: High PCE concentrations (31,000 mg/kg in soils and 3,700 µg/L in groundwater) have been detected at the site, indicating presence of a significant amount of PCE in site media. These high concentrations at the source area will continue to leach to groundwater and migrate, potentially resulting in a vapor intrusion hazard.

☒ **ADDITIONAL REMOVAL SITE EVALUATION RECOMMENDED**

(Cite one or more of the conditions or factors from Section IV. CONDITIONS TO WARRANT A REMOVAL ACTION, as a basis for recommending that additional site evaluation be performed.)

☒	EXPOSURE TO HAZARDOUS SUBSTANCES OR POLLUTANTS OR CONTAMINANTS				☐	ADVERSE WEATHER IMPACTS
☐	CONTAMINATED DRINKING WATER	☐	FIRE/EXPLOSION THREAT		☒	CONTAMINATED SOIL
☐	DRUMS, BARRELS OR CONTAINERS	☐	NO OTHER RESPONSE MECHANISM		☒	OTHER FACTORS

(Identify one or more of the removal actions listed in Section V. REMOVAL ACTIONS WHICH MAY BE APPROPRIATE, as examples of the types of response actions which may be appropriate pending the results of further site evaluation.)

☐	SITE SECURITY	☐	DRAINAGE CONTROL	☐	IMPOUNDMENT STABILIZATION
☐	REMOVAL OF DRUMS, BARRELS, ETC.	☐	SOIL CAPPING	☒	SOIL EXCAVATION
☒	CONTAIN/TREAT/DISPOSE OF WASTE	☒	CHEMICAL CONTROLS	☐	ALTERNATIVE DRINKING WATER SUPPLIES

COMMENT: Off-site migration of PCE-contaminated groundwater to the adjoining property has been documented.

SUPERFUND REMOVAL SITE EVALUATION
and
REMOVAL PRELIMINARY ASSESSMENT

VII. ADDITIONAL INFORMATION OR COMMENTS:

Soil, soil gas, and shallow groundwater at the site have been impacted by PCE and associated degradation products. The property has been proposed as the site of a City parking lot. The on-site building likely would be demolished, exposing contaminated soils beneath the structure. Intrusive construction activities at the existing parking lot could also expose contaminated soils.

EPA USE ONLY

VIII. CERTIFICATION:

SIGNATURE: **DATE:**
POSITION/TITLE:
OFFICE/AGENCY:

SUPERFUND REMOVAL SITE EVALUATION
and
REMOVAL PRELIMINARY ASSESSMENT

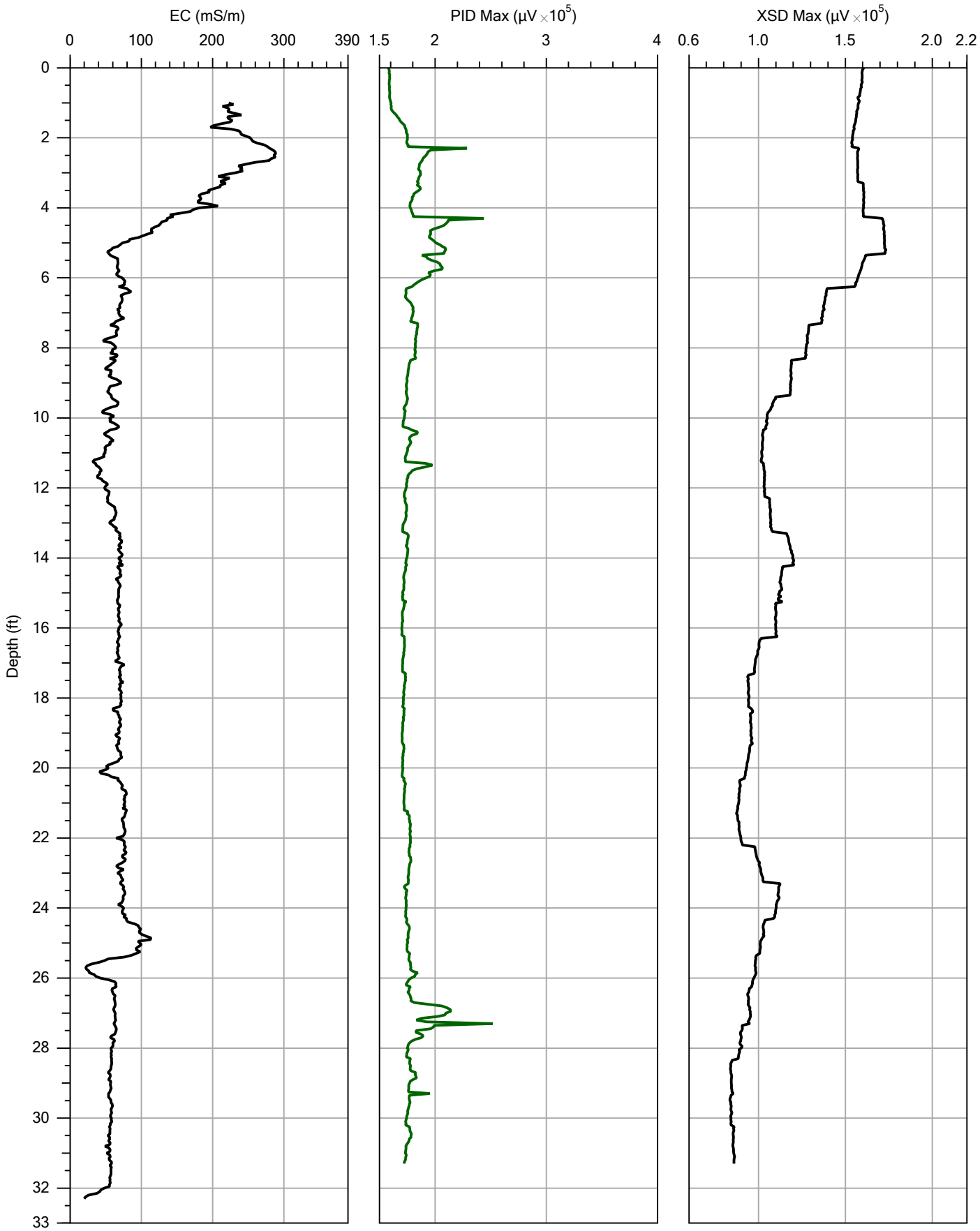
(Supplemental Waste Inventory Sheet)

IX. HAZARDOUS SUBSTANCES, POLLUTANTS OR CONTAMINANT INFORMATION:

MATERIAL DESCRIPTION	CONTAINER INFORMATION					
TRADE NAME/ACTIVE INGREDIENTS	NUMBER of CONTAINERS	SIZE	TYPE	SOLID or LIQUID	% FULL	CONDITION

ATTACHMENT 1

PLAINS ENVIRONMENTAL SERVICES MEMBRANE INTERFACE PROBE AND ELECTRICAL CONDUCTIVITY LOGS



Direct Image® By Geoprobe Systems®

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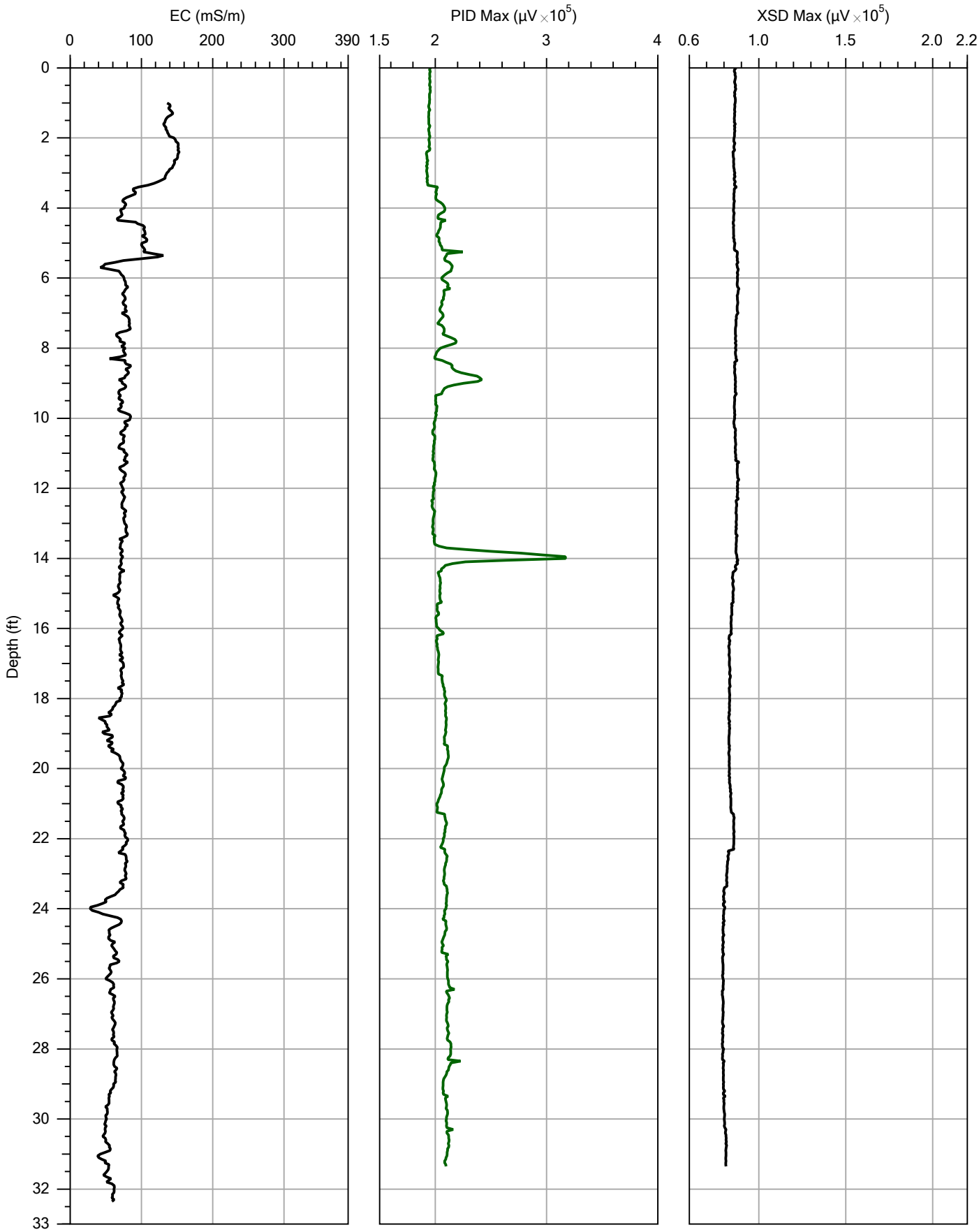
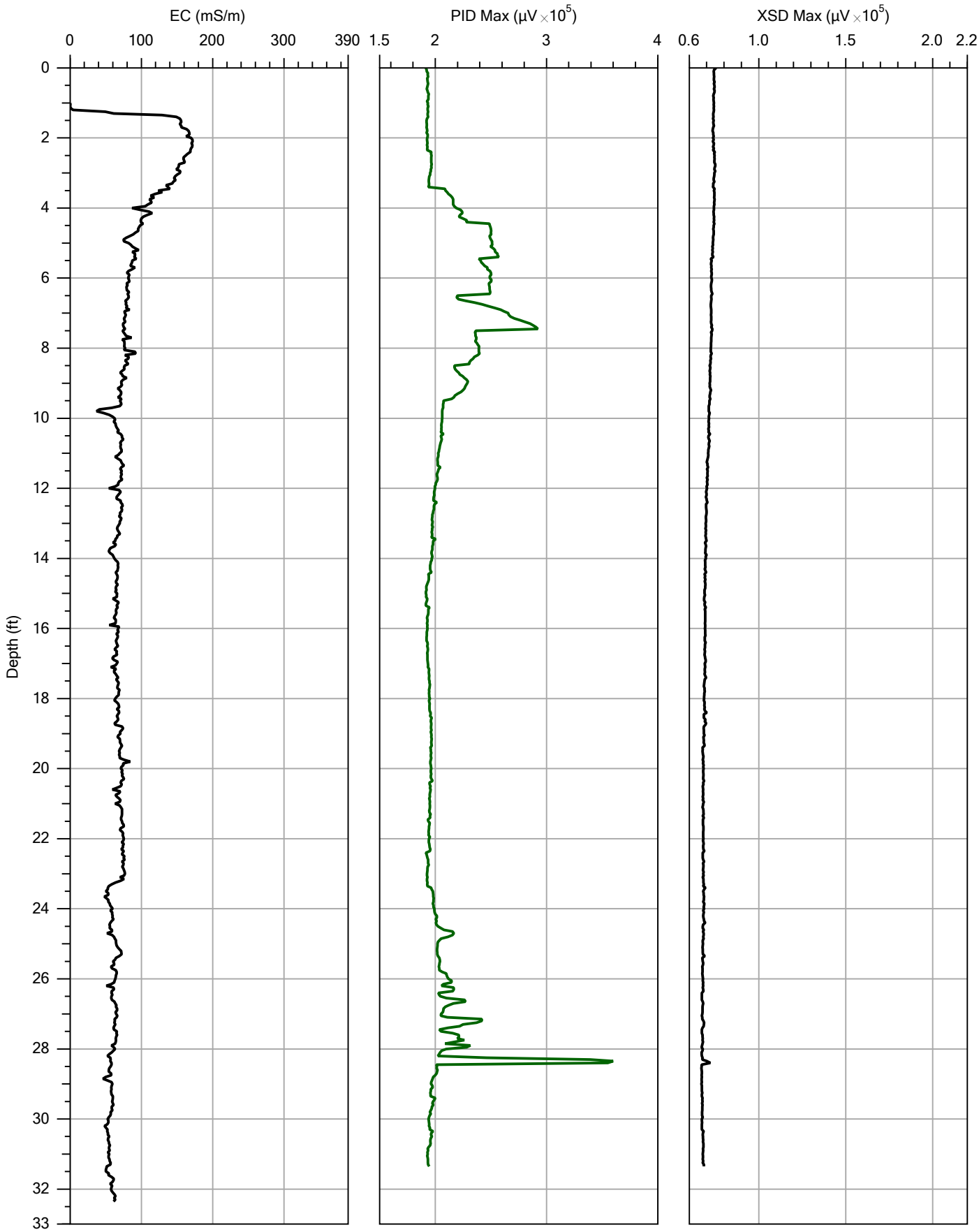
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/7/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



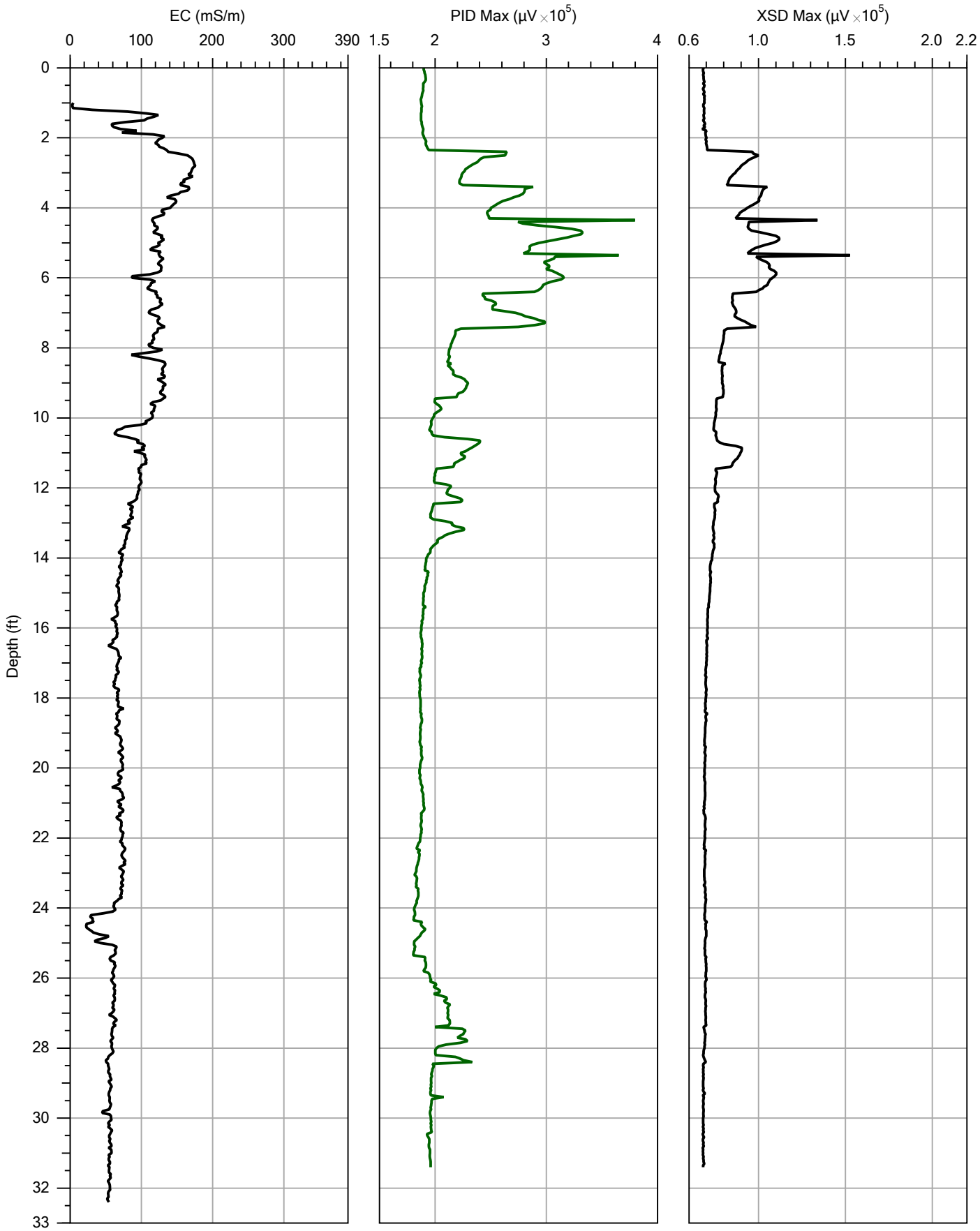
Direct Image® By Geoprobe Systems®

		File: MIP-02.MIP
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/7/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



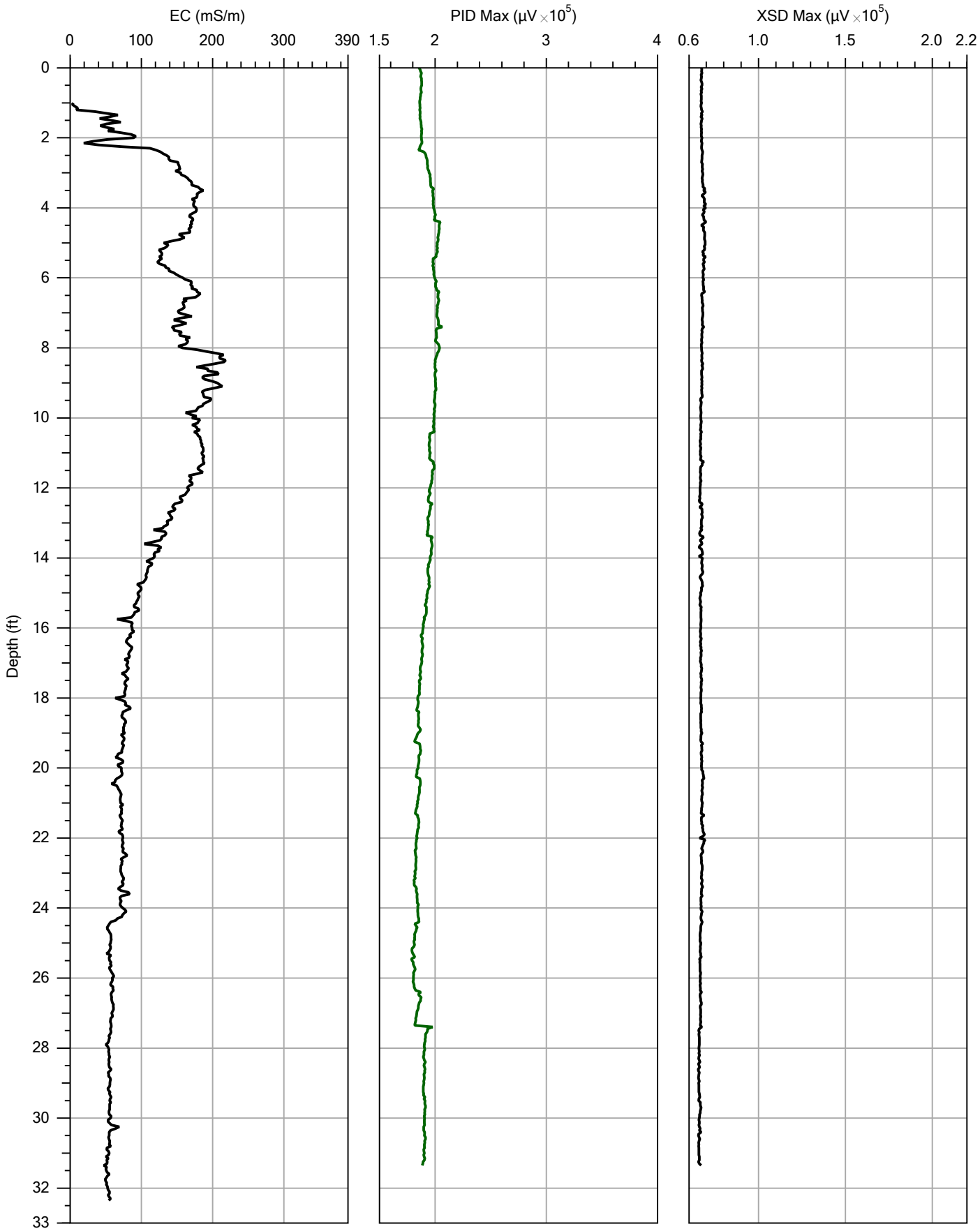
Direct Image® By Geoprobe Systems®

		File: MIP-03.MIP
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/7/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



Direct Image® By Geoprobe Systems®

		File: MIP-04.MIP
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/7/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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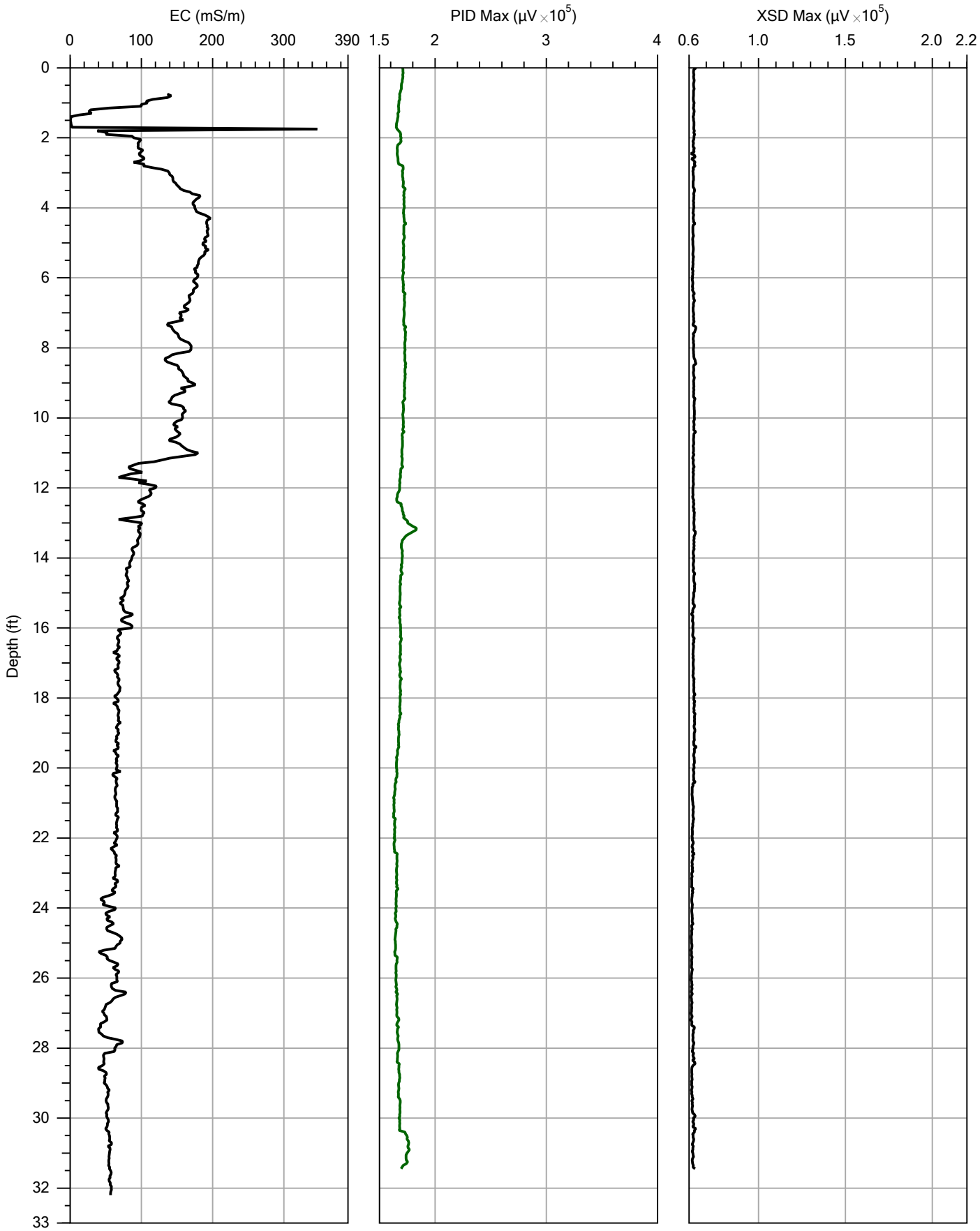
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/7/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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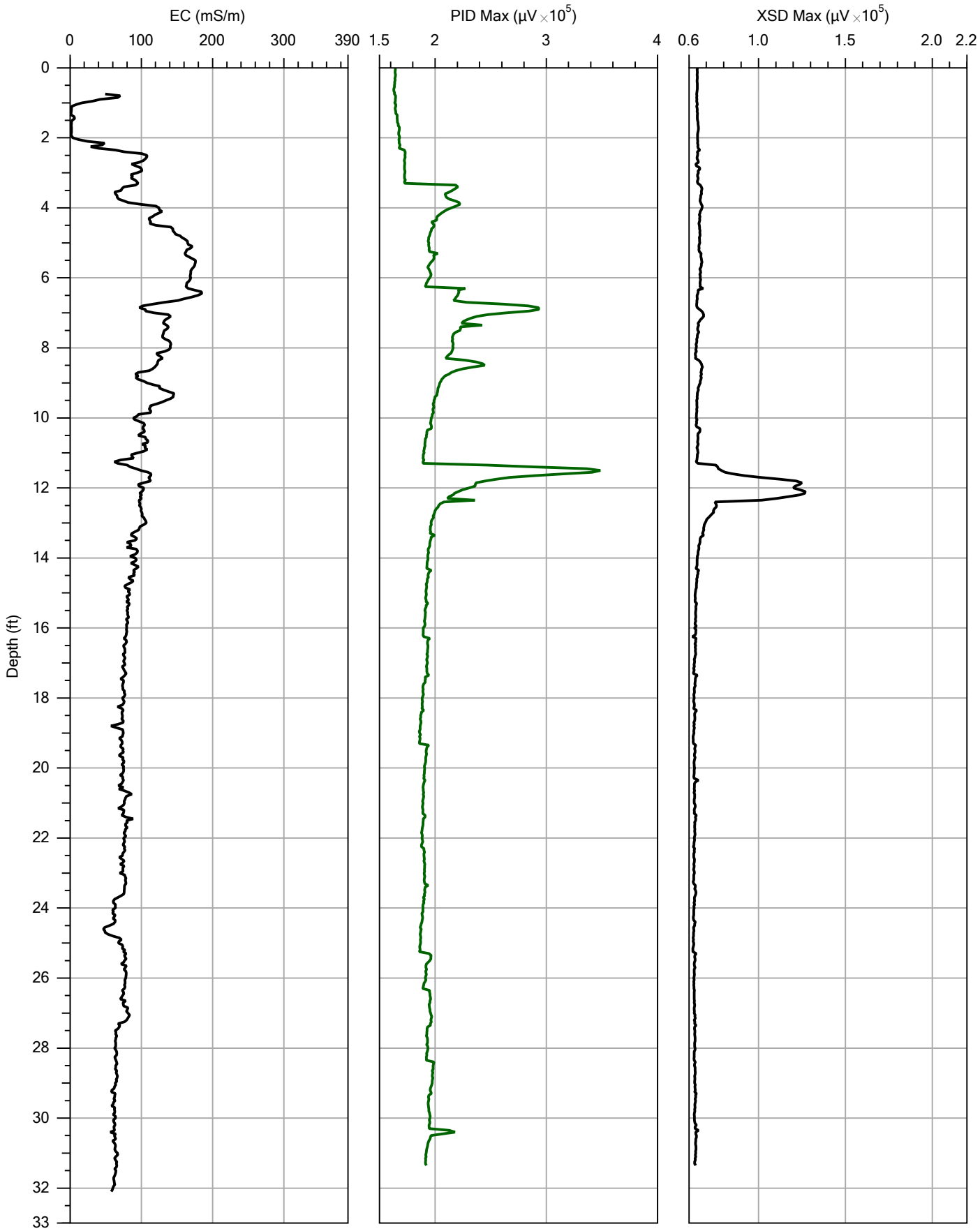
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/7/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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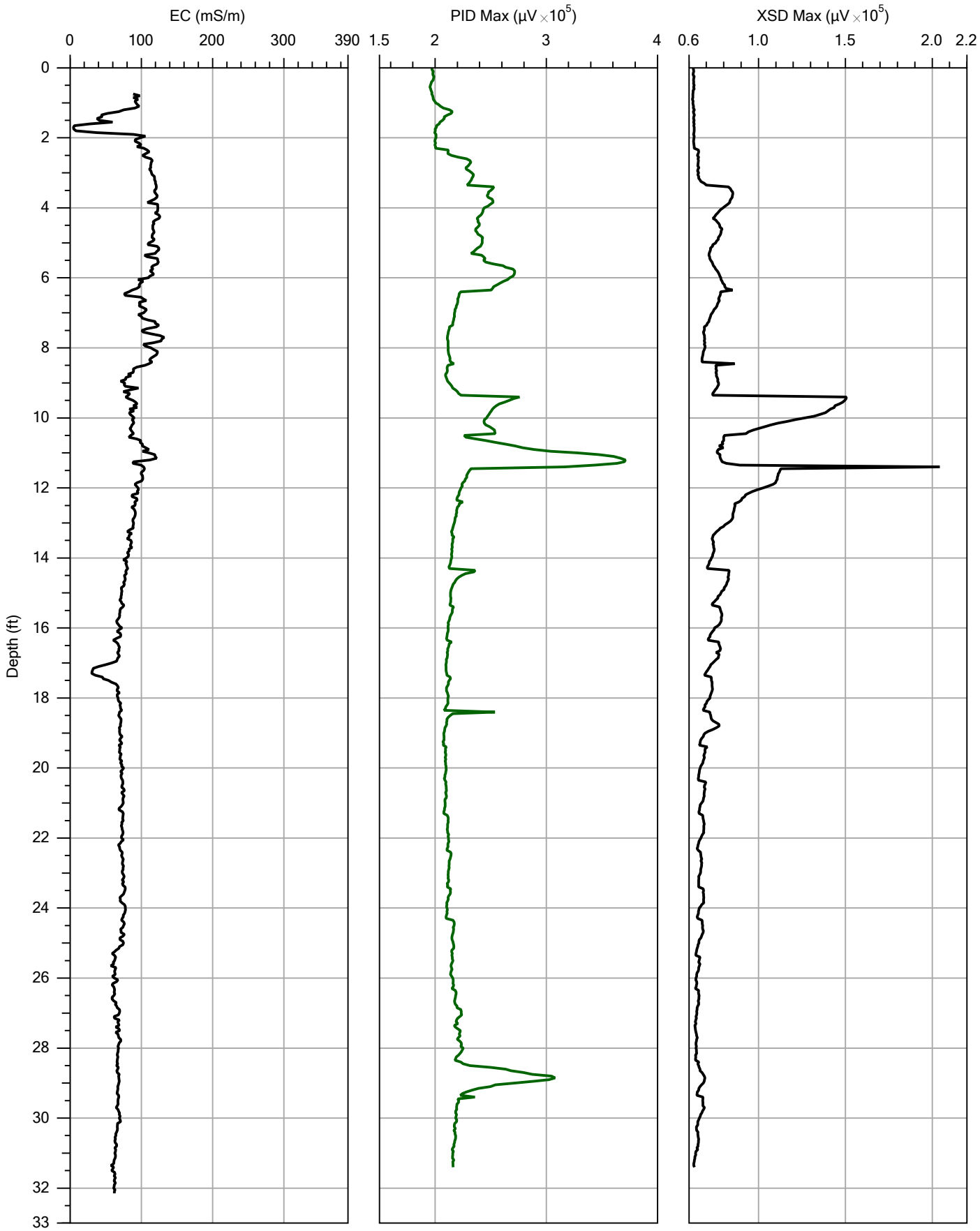
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/7/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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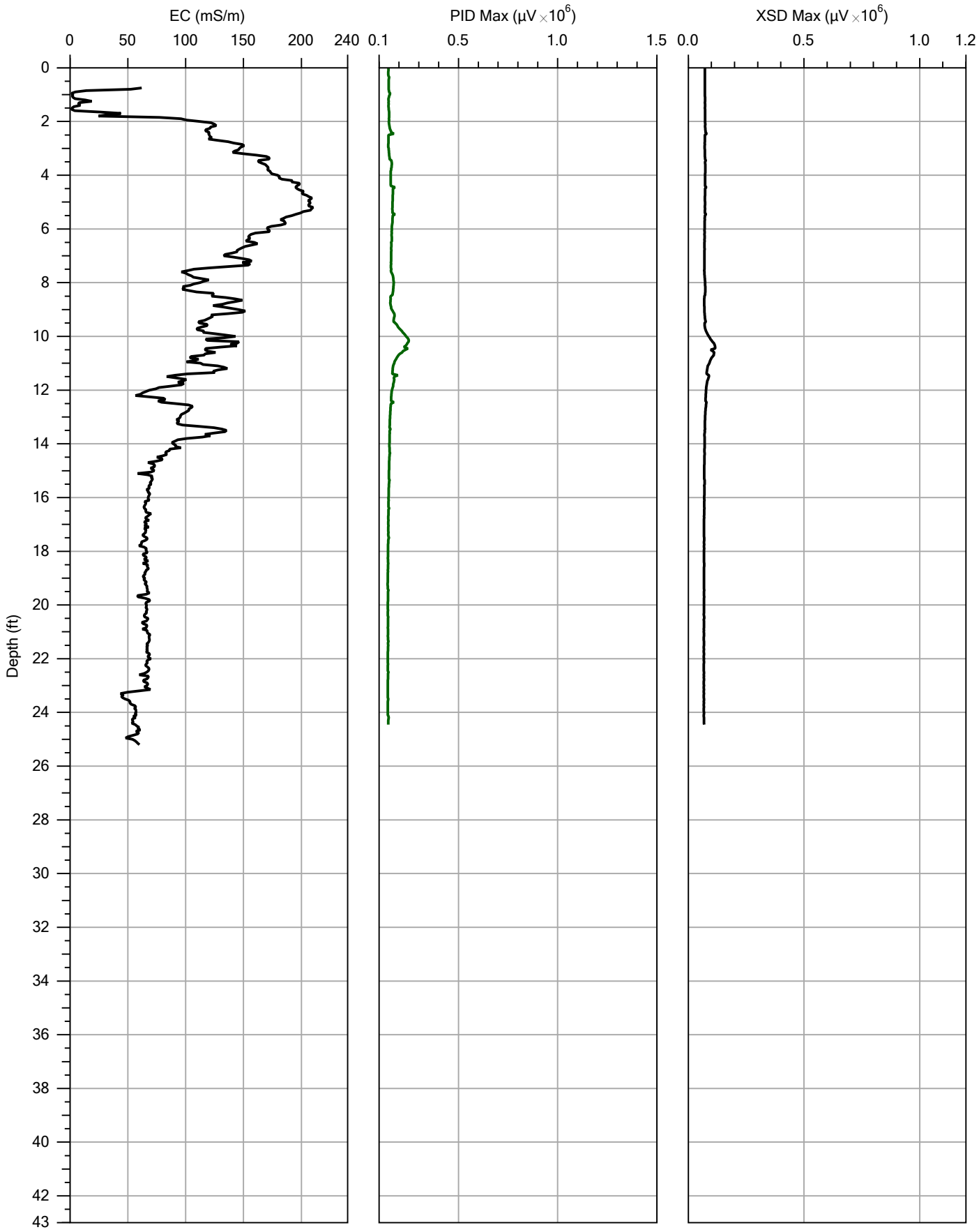
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/7/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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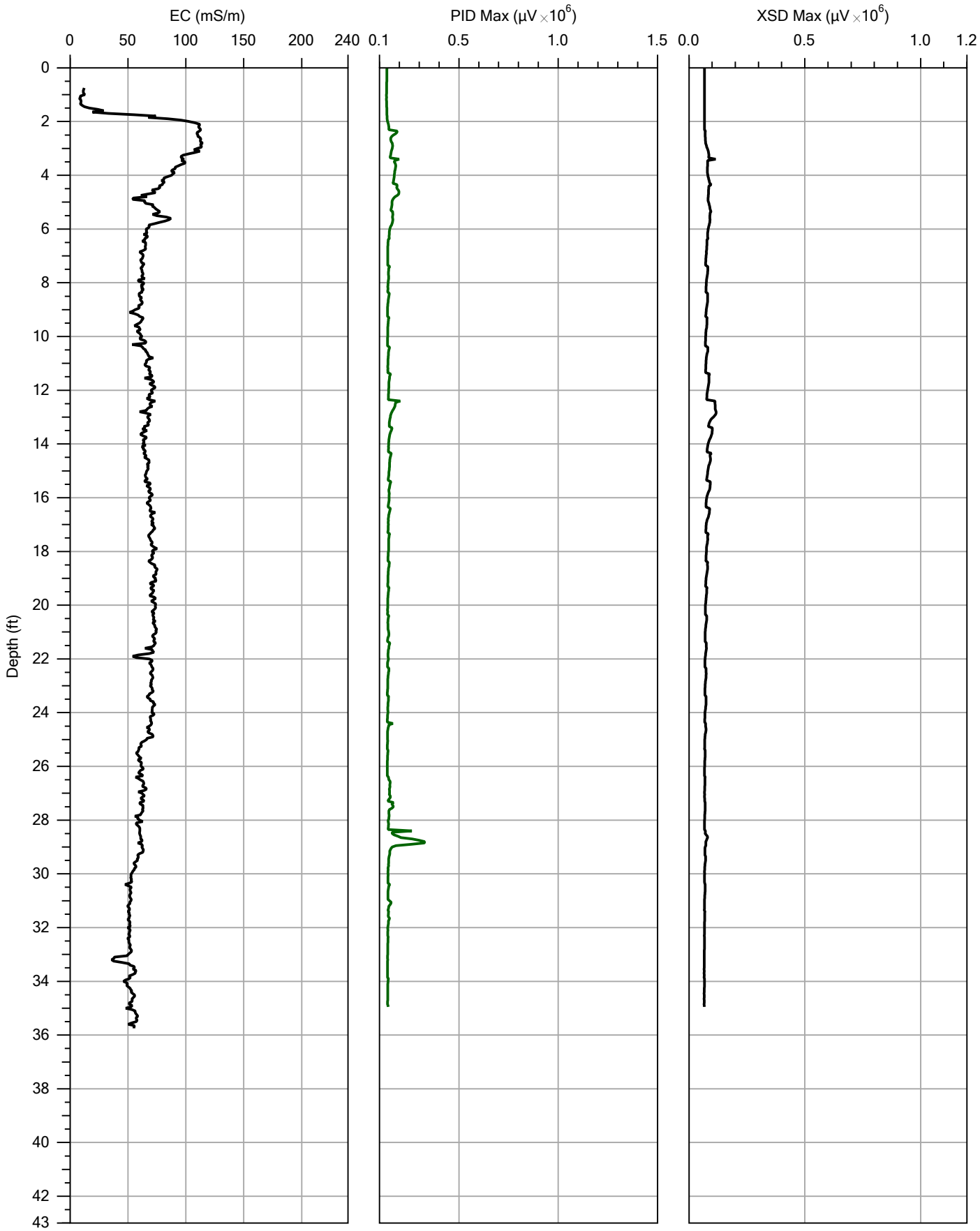
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/8/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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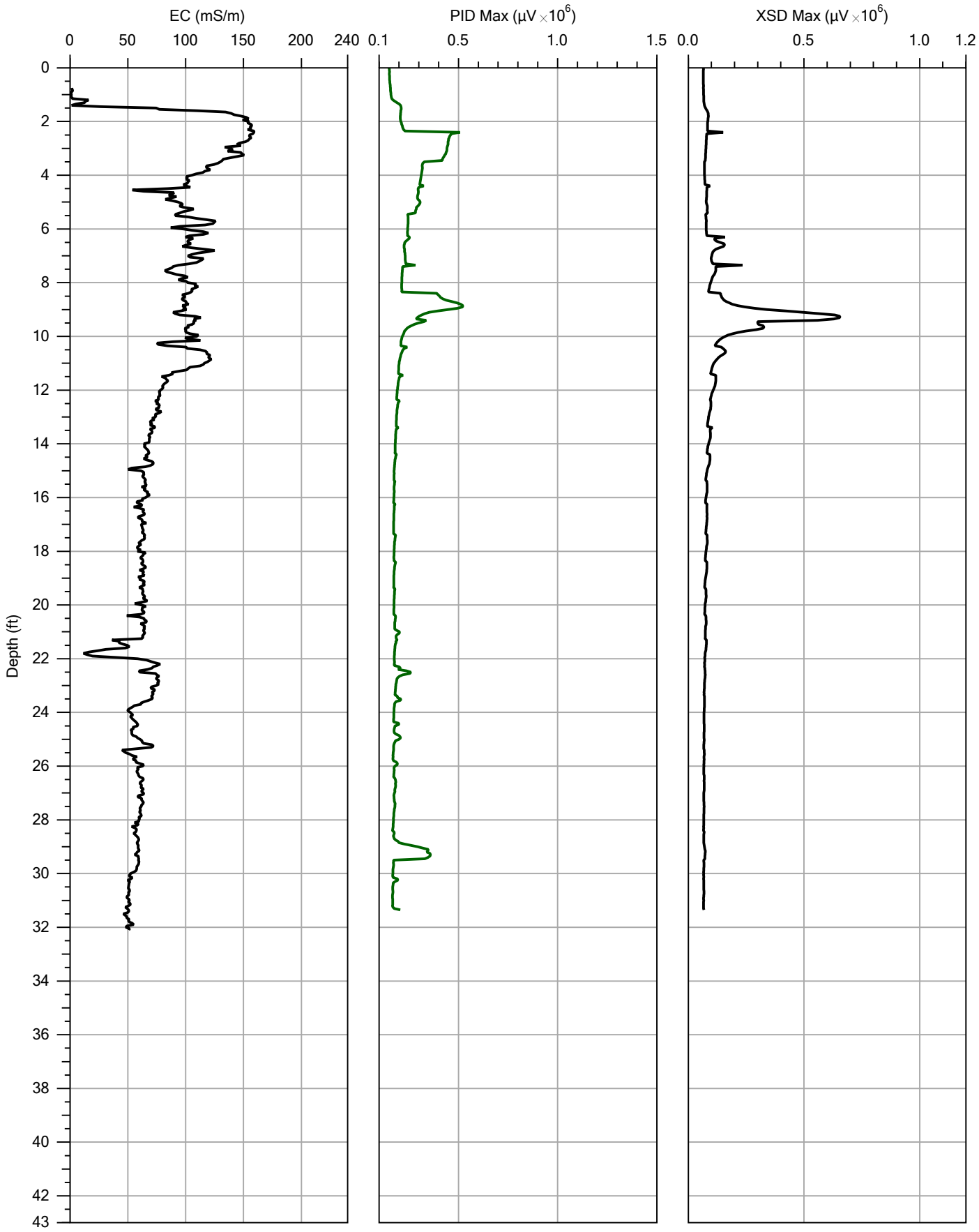
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/8/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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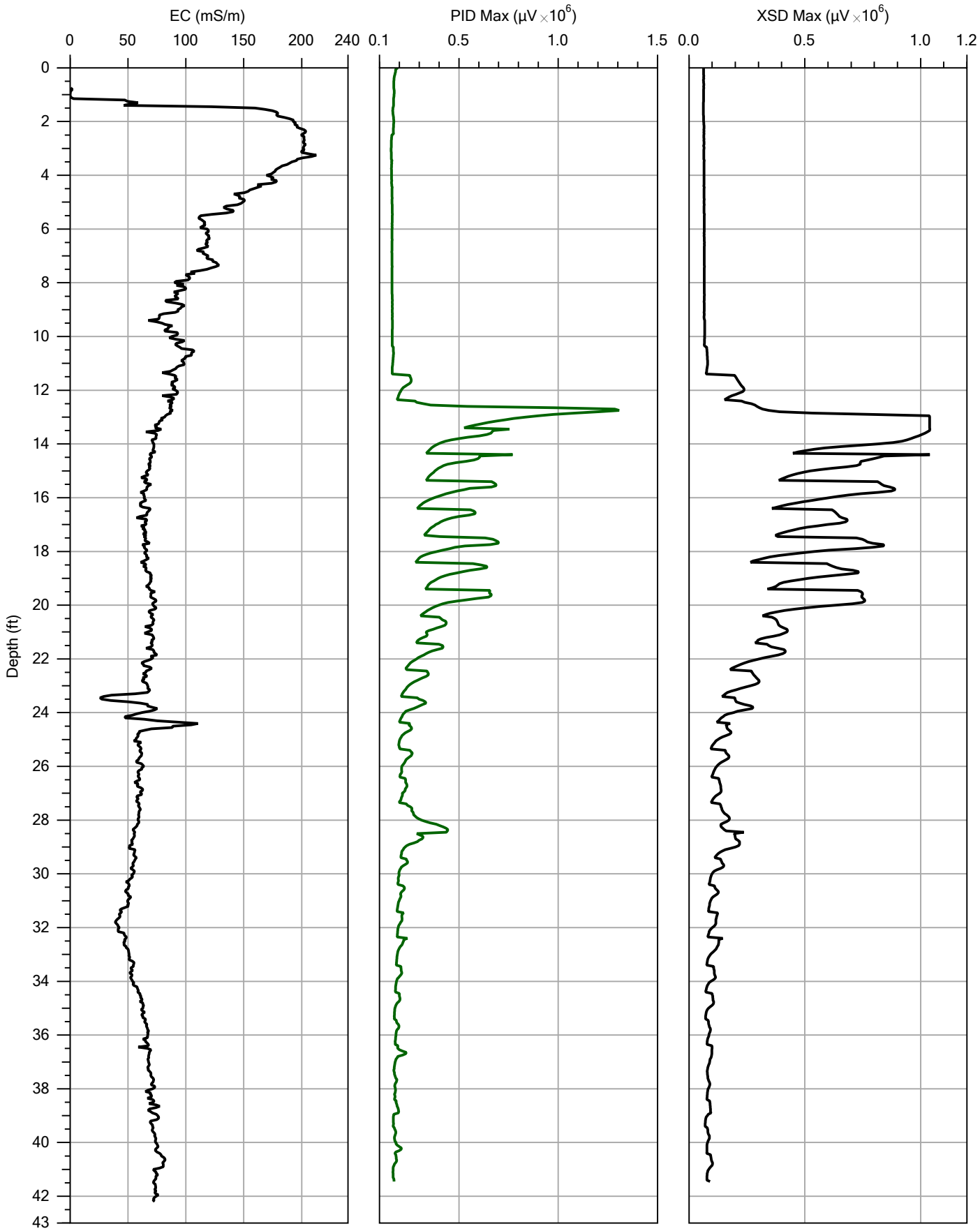
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/8/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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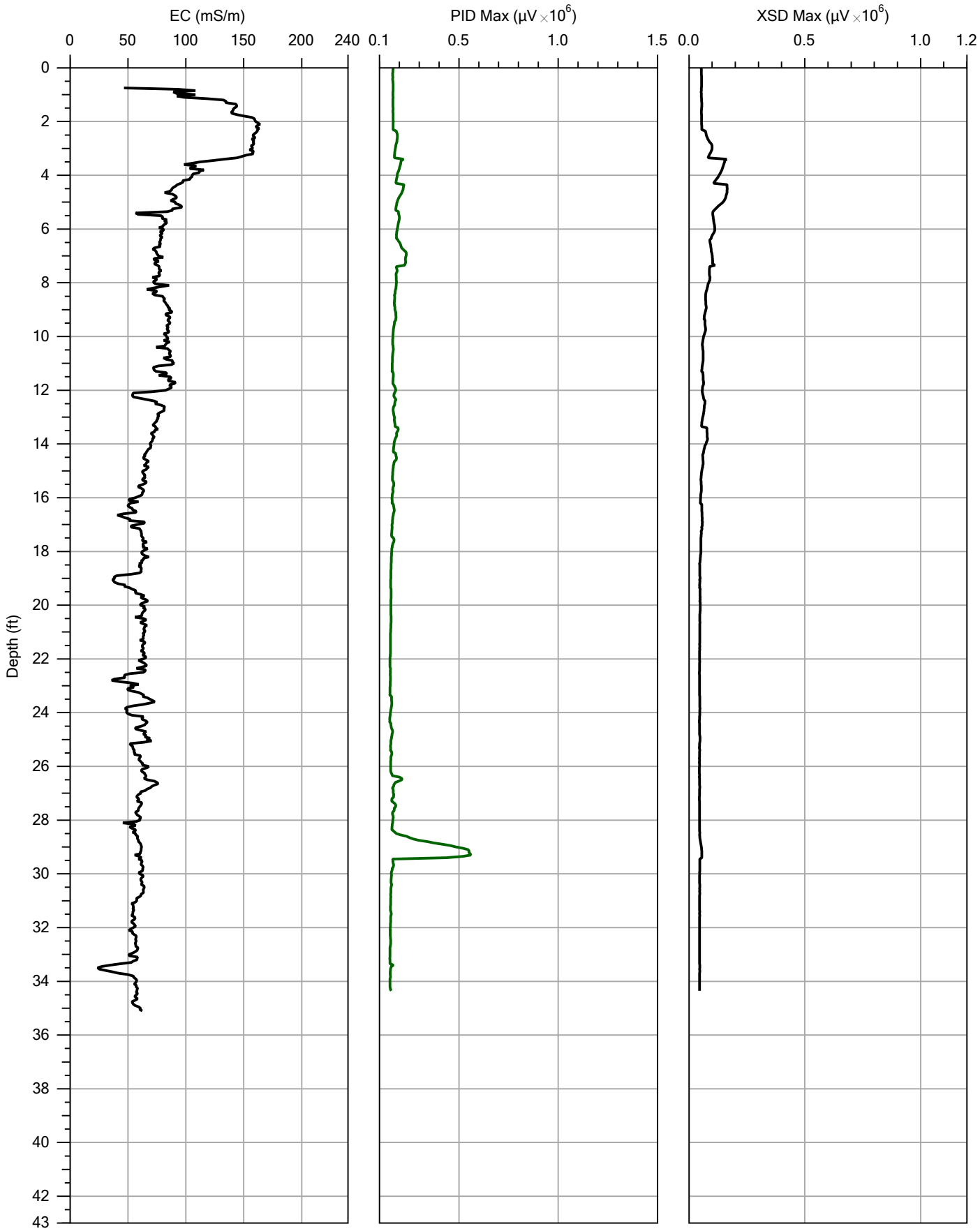
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/8/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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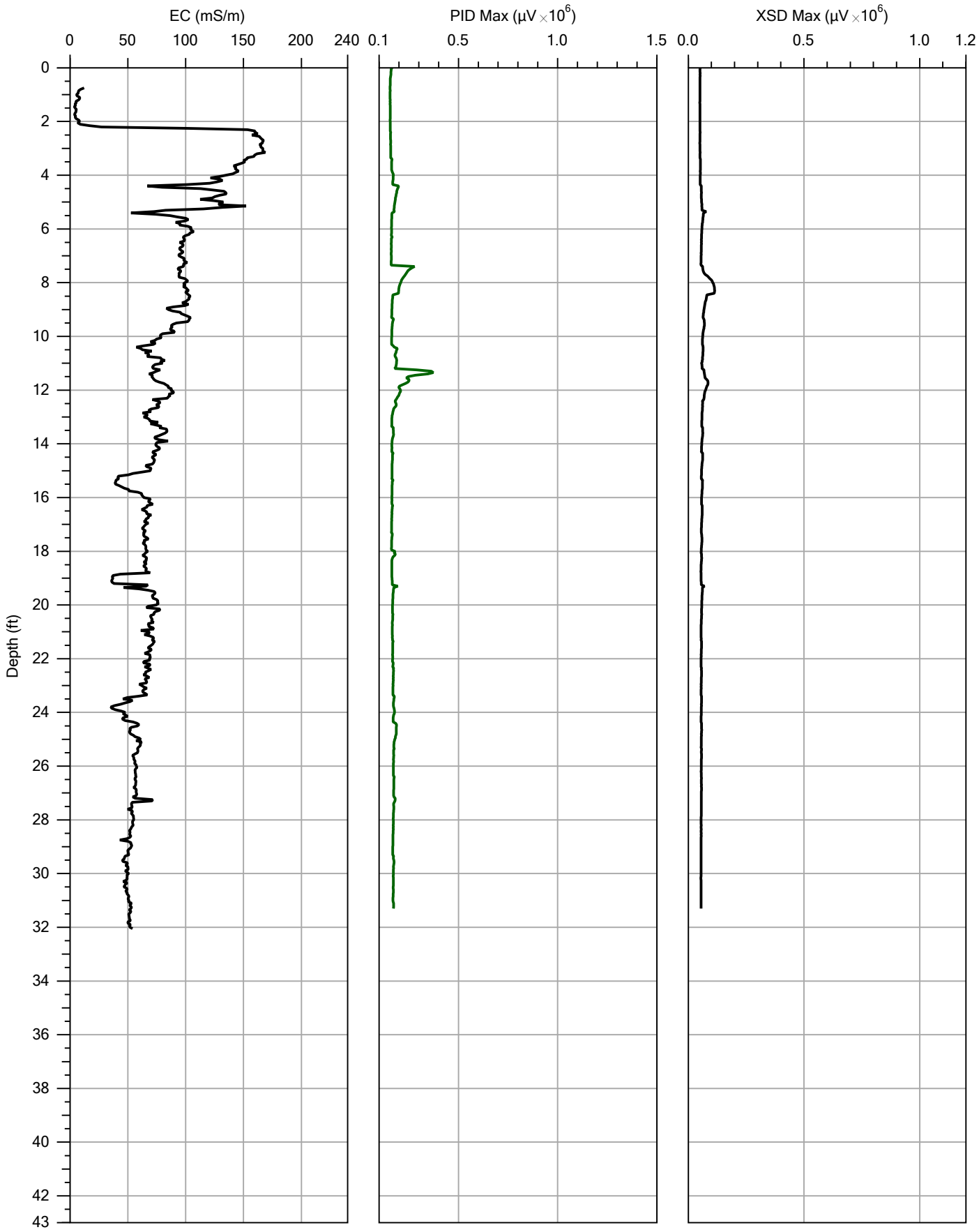
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/8/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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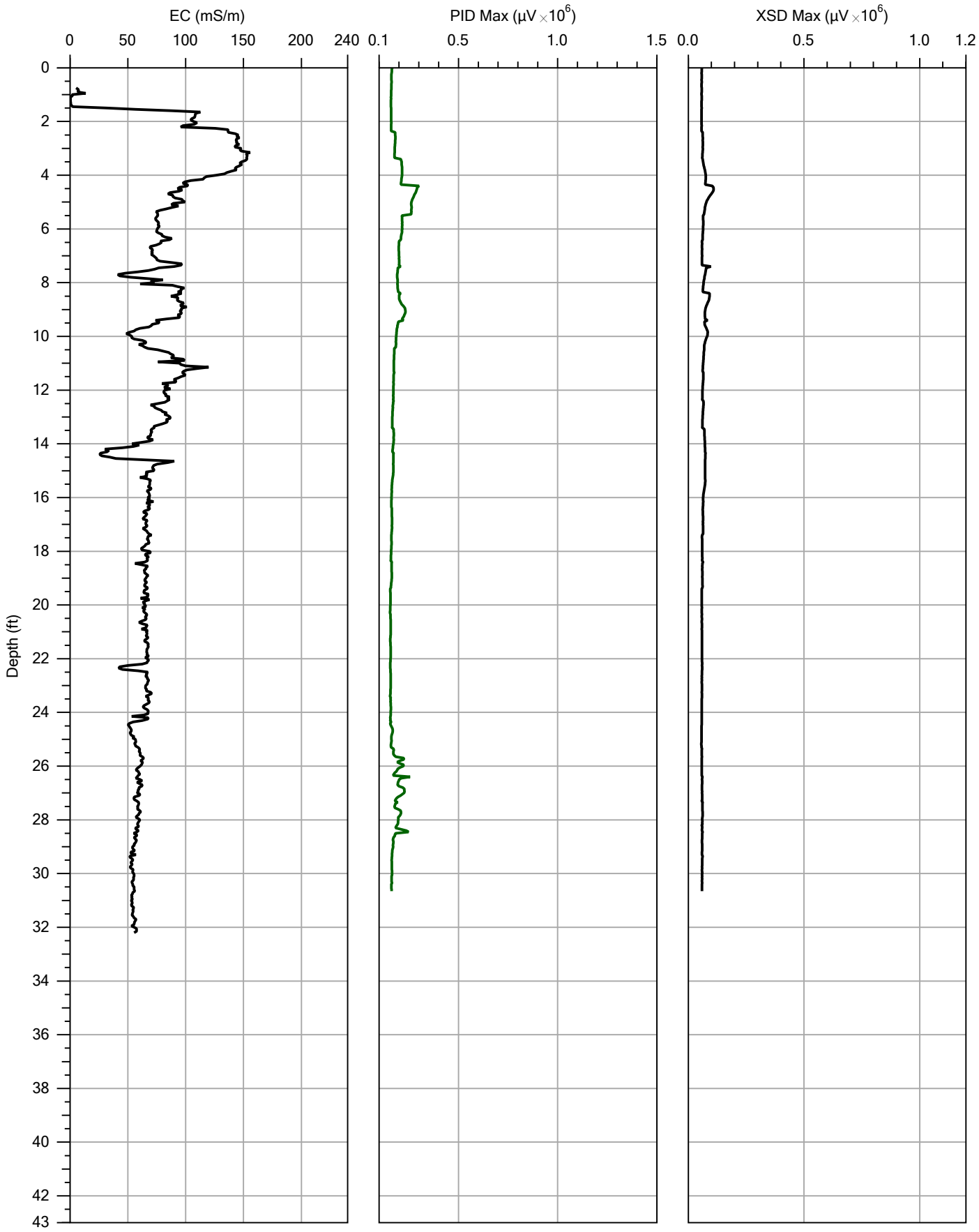
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/8/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa



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		File: MIP-15.MIP
Company: Plains Environmental Services	Operator: Jason A.	Date: 6/8/2021
Project ID: Sunshine Cleaners	Client: Tetra Tech	Location: Fort Dodge, Iowa