ANNUAL MONITORING REPORT

Christian Ochsendorf Property
75090 Highway 4
Hector, MN
MPCA Site ID: LEAK00017482
WCEC Project No.: 12-9309-30

April 10, 2013

Prepared by:

West Central Environmental Consultants, Inc.
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Minnesota Pollution Control Agency

Monitoring Report

Guidance Document 4-08

This form must be completed annually for Minnesota Pollution Control Agency (MPCA) review following the submittal of Guidance Document 4-06 *Investigation Report Form*. Under certain circumstances MPCA staff may request submittal of this form on an alternate schedule (e.g., quarterly, semi-annually).

All site monitoring results and additional work activities requested by the MPCA must be included and used to support the site management decision. Include any additional information that is important for making the site management decision. Refer to MPCA Guidance Document 1-01 *Petroleum Remediation Program General Policy* for the overall site investigation objectives and to other MPCA guidance documents for details on investigation methods. Do not revise or delete any text from this report form. Attach all applicable figures, tables, and appendices, and indicate those that have been updated during this reporting period. **All data provided must be cumulative.**

MPCA Site ID: Leak000 **17482** Date: **04/10/13**

Responsible Party Information

Name: **Nancy Hennen-Blomme MPCA** Phone #: **507-476-4260**

Mailing Address: **504 Fairgrounds Rd. Suite 200**

City: **Marshall** Zip Code: **56258**

Alternate Contact (if any) for Responsible Party: Phone #:

Leak Site Information

Leak Site Name: **Christian Ochsendorf Property** Phone #:

Leak Site Address: **75090 Highway 4**

City: **Hector** Zip Code: **55342** County: **Renville**

Environmental Professional Information

By signing this document, I/we acknowledge that we are submitting this document on behalf of and as agents of the responsible person or volunteer for this leak site. I/we acknowledge that if information in this document is inaccurate or incomplete, it will delay the completion of remediation and may harm the environment and may result in a reduction in Petrofund reimbursement. In addition, I/we acknowledge on behalf of the responsible person or volunteer for this leak site that if this document is determined to contain a false material statement, representation, or certification, or if it omits material information, the responsible person or volunteer may be found to be in violation of Minn. Stat. § 115.075 (2007) or Minn. R. 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.

MPCA staff are instructed to reject unsigned reports and reports that have been altered.

Name and Title of Report Author(s)	Signature	Date Signed
Seth Miller – Assistant Project Manager	Seth Miller	4-10-13

Name and Title of Report Reviewer(s)	Signature	Date Signed
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Section 1: Work Completed

1.1 Describe all site work completed since the *Investigation Report Form* or the last *Monitoring Report* was submitted. This should include both field and non-field related activities.

In September of 2012, West Central Environmental Consultants (WCEC) submitted a work plan to the MPCA to conduct the following investigative activities: advance borings through the basement floor in order to collect soil and groundwater samples; collect a sub-slab vapor intrusion sample; conduct a vapor survey of the main floor and basement; determine the status of the ventilation system installed during the emergency response phase; and submit the findings with the MPCA Monitoring Report form (Guidance Document 4-08). The work plan recommended advancing enough borings through the basement floor to determine the extent of contamination; the initial boring being in the "worst case" area and additional borings advanced further away to adequately define the extent. A photo-ionization detector (PID) was used to measure vapors from soil samples collected from the borings. These field samples were used to determine the number of borings and final depth of the borings. On 12/20/12, WCEC performed the field work outlined within the work plan.

The vapor survey was conducted first in order to get data representative of the existing ambient conditions within the residence. A PID was used to collect organic vapor measurements. The areas surveyed with the PID include within the entryway, in the bathroom, kitchen, and additional living spaces located on the main floor of the residence. No organic vapors were detected during this survey of the main floor. Vapor readings during the vapor survey of the basement were recorded in the main basement room, the electrical room, the former AST room, and the basement sump. No organic vapors were detected during the survey of the basement area.

Two hand auger borings were advanced (test holes TH2 and TH3) on 12/20/12 in an effort to determine the extent of contamination at this site. Procedures for hand auger borings are included as Appendix B. The hand auger advanced during the emergency phase is considered as test hole TH1. Test hole TH2, was advanced through the basement floor in the area of the former above ground storage tank (AST). A hand auger was used to advance the test hole to approximately 5 feet below the basement floor. WCEC collected soil during the advancement of this boring to perform head space analysis via MiniRae 2000 photo ionization detector (PID). Procedures regarding head space analysis are included as Appendix B. Samples were collected at 1 foot intervals for the head space analysis. No organic vapors were detected during this field screening process. The results of the headspace analysis can be found in Table 2 of this report. A section of 1 inch PVC screen was placed in the test hole in an attempt to collect a groundwater sample from the boring. No groundwater was collected within the test holes, so WCEC followed the sampling protocol outlined within the work plan in the event that groundwater could not be collected. Therefore, soil samples were analyzed for VOCs as well as DRO. Samples were submitted to Pace Analytical Services (Pace) of Minneapolis (# 027-053-137) for analysis. Test hole TH3 was advanced through the basement floor in the area where a crack in the floor was documented during the

emergency response phase of this project. During the activities on 12/20/12, the second test hole was completed in the same fashion as the first test hole (TH2), with samples once again being collected every 1 foot. Groundwater did not collect within this test hole either, so the soil samples collected were analyzed for DRO and VOCs as they were for test hole TH2.

During the emergency response, two 24 hour air samples were obtained from ambient air via laboratory supplied summa canisters and submitted for analysis. During this site visit WCEC advanced a vapor intrusion assessment (VIA) boring to a depth of 4 feet below slab. Flint sand was installed around the aluminum point screen and the top of the sand pack and was sealed from the surface using distilled water and bentonite. An air sample was drawn into an evacuated 6 liter summa canister for approximately 5 minutes. This air sample was analyzed by Pace for volatile organic compounds using the TO-15 method.

WCEC attempted to collect a water sample from the basement sump, which is located near the northwest corner of the basement. There was no water found within the sump, but it appeared that the residence may be experiencing plumbing issues related to the sump. The concrete around the sump had been broken up in what appeared to be an attempt to make adequate space to work on the plumbing associated with the sump. There was no detection of organic vapors when the sump and work area excavation were surveyed with the PID.

WCEC questioned the homeowners regarding the status of the blower fan that was part of the ventilation system installed during the emergency response phase of this investigation. The blower fan was not in the basement area when WCEC staff visited the site on 12/20/12. Prior to this site visit, the most recent site activities occurred in January 2009. The current homeowner has owned the residence for only the past 1 ½ years and does not remember seeing the ventilation fan when they purchased the home. The location of the blower fan is unknown.

1.2 If additional work requested in the most recent MPCA correspondence has not been completed, explain why.
All of the work outlined within the work plan for FY13 has been completed.

Section 2: Monitoring Results

2.1 Ground Water

Discuss the cumulative ground water monitoring results, water level measurements, and plume characteristics with respect to identified receptors.

No groundwater was encountered during the investigation activities in 2008/2009 or 2012.

2.2 Field-Detectable Vapors (photoionization detector, explosimeter, etc.)

Discuss the results of any additional follow-up field vapor monitoring. Include a description of each vapor monitoring location and an explanation of monitoring methods and instruments used. Interpret the cumulative results as related to the identified receptors.

During the emergency response phase, immediately following the release of fuel oil, PID readings ranging between 20-22 parts per million (ppm) were detected on the main floor of the residence. The report from the emergency response states that slightly higher PID detections were encountered in the basement area. However, on subsequent visits, occurring on 12/16/2008, 12/19/2008, and 1/6/2009, the report states that no significant PID readings were detected. PID results (0.7 to 1.2 ppm) from the 1/6/2009 visit can be found on Table 19.

During the field activities on 12/20/2012 a vapor survey of the basement and entire main floor was conducted. The main room of the basement, the electrical room, the former AST room, the crawl space, and the sump located on the north end of the basement were sampled during this vapor survey. No organic vapors were detected in these locations using the PID. The bathroom, back entryway, kitchen, living room, front entry, office, and additional living space located on the main floor of the residence were sampled during this vapor survey. Like the basement survey, no organic vapors were detected using the PID.

No additional vapor surveys are planned at this time.

NOTE: If vapor concentrations exceed 10 percent of the lower explosive limit, exit the building and contact the local fire department immediately. Then contact the Minnesota Duty Officer (24 hours) at 651-649-5451 (metro and outside Minnesota) or 1-800-422-0798 (Greater Minnesota). TTY users call 651-297-5353 (V/TTY) or 1-800-627-3529 (V/TTY).

2.3 Vapor Intrusion (soil gas, sub-slab, indoor, ambient)

Discuss the results of any follow-up vapor intrusion assessment (VIA) activities including a description of each VIA sampling location and an interpretation of the results with respect to receptors.

During the emergency response phase of this project, two ambient VIA samples were collected in 6 liter summa canisters with 24 hour flow controllers. These canisters were placed in the main room of the basement and in the kitchen area on the main floor of the residence. The summa canister located in the basement was placed on the basement floor approximately 25 feet from the source area. The summa canister located in the

kitchen area was placed on the counter. The summa canisters collected from the kitchen and basement returned detections of several compounds, however no detects of contamination were above the established ISVs, except for 1,2,4-Trimethylbenzene, which was found in concentrations of 15.2 and 12.4 ug/m^3 (slightly above the ISV value of 1,2,4-TMB at 7 ug/m^3). The results from the analysis of these summa canisters can be found in Table 20 of this report.

During the most recent investigation activities, an additional VIA sample was collected beneath the basement slab of the former AST storage room (source). This sample was collected using an aluminum screen point attached to tubing. The point was installed at a depth approximately 4 feet below the basement slab. Flint sand was placed around the aluminum screen to provide a good sand pack. Bentonite was used on top of the flint sand to seal the VIA boring from the surface. A VIA sample was collected in a 6 liter summa canister for approximately 5 minutes. 1,2,4-Trimethylbenzene was detected at 22.8 ug/m3, slightly above the established ISVs (7 ug/m3), but well below 10X the ISVs (70 ug/ m3), from the summa canister sample collected at 4 ft below slab. No other detects were found to be above the established ISVs. The results from this additional VIA analysis can be found in Table 20 of this report.

2.4 Free Product

If free product is present, discuss what activities are being completed to measure and recover it. Describe the effectiveness of the recovery efforts and free product trends over the course of the investigation. Complete Table 14 and discuss the data compiled to date.

During the emergency response phase of this project, free LNAPL was recovered using Oil-Dri absorbents. The initial report stated that 5-10 gallons of fuel oil was released. It is unknown how many bags of floor dry was used during the recovery of the released fuel oil. The used Oil-Dri was disposed of at Veolia Rolling Hills Landfill in Buffalo, MN.

No free LNAPL was encountered during the additional investigation activities that took place on 12/20/12. Table 14 was not completed as part of this report. There is no specific data from the emergency response phase and no free LNAPL was encountered during the additional investigation.

2.5 Other (e.g., surface water, contaminated surface soil, etc.)

Discuss the results of any additional monitoring or subsurface investigation conducted during this reporting period. Identify all monitoring locations on an attached site map by labeling each location. A description of sampling methods, including the instruments used, must be included in Section 6.

No other sampling was conducted as part of this investigation.

2.6 Site Conceptual Model

Discuss any changes to the overall site conceptual model that has altered the current site management decision based upon the information presented in this report.

No site conceptual model has been prepared during the emergency response phase of the project. This section will describe site conditions at the time of emergency response, site conditions currently at the site, and the changes between these investigation periods.

The primary source of contamination was an unused fuel oil tank. The fuel oil tank was approximately 220 gallons based upon measurements taken from the emergency response photographs. Approximately 5-10 gallons of fuel oil was spilled during the removal of the unused, but not empty, fuel oil tank. There are no other potential sources of contamination known to exist at this site.

Fuel oil was released from the steel tank on to the cement floor of the basement. The fuel oil flowed across the basement floor until being contained with floor dry. Once floor dry was applied to the spill area, the fuel was contained. Vapor contamination was present at this site, due to the presence of fuel oil. Upon clearing the basement floor of the fuel oil/floor dry mixture, it was noted that a crack in the basement floor existed in the area of the release. Some fuel oil was able to penetrate beneath the basement slab through the crack. The soil boring during the emergency response phase returned no significant PID readings during headspace analysis (no specific results were recorded), but analytical results returned detections of DRO in concentrations of approximately 1500 ppm in test hole TH1. This indicated soil contamination existed directly below the basement slab. Groundwater was not encountered during the advancement of the soil boring, so at the time of the emergency response, groundwater did not appear to be impacted by this release.

The spilled fuel oil was immediately cleaned up, removing the potential dermal or ingestion related health risks. Summa canisters were used to collect ambient air samples which were analyzed for TO-15 compounds. The analysis indicated that there were no ISV exceedences except for concentrations of 1, 2, 4-Trimethylbenzene (15.2 ug/m3 and 12.4 ug/m3) that were slightly above the established intrusion screening values (ISV for TMB is 7 ug/m3).

During the December 2012 investigation, no fuel oil was found above or below the cement slab in the source area of the residence. No organic vapors were detected during headspace analysis with a PID in the test holes. Since no organic vapors were detected by the PID in the "worst case" areas (near the fuel oil tank and at the crack in the floor), no further test holes were deemed necessary. Soil samples that were submitted for laboratory analysis had detections within the DRO range (61.2 ppm in test hole TH2 and 145 ppm in test hole TH3). No other VOCs were detected in either sample. An "organic" odor was described in the field, but not a petroleum odor. No groundwater was encountered during either phase of this investigation.

Petroleum vapors were discovered during the emergency response phase of this project and PID readings ranged from 20-22 ppm on the main floor of the residence. Detections of several compounds were discovered during the analysis of the two summa canisters that were used to collect ambient air samples over a 24 hour period. Several steps were taken to alleviate these conditions. During the emergency phase, the floor/wall was washed with a degreaser and sealed with a product similar to Kilz. An ozone/air purifying system was used to help eliminate any lingering odors/vapors. No petroleum vapors were noticed during the additional investigation phase of this project that was completed on 12/20/12. PID readings that were taken during the vapor survey all returned with a 0.0 ppm result. Laboratory analysis of an air sample collected 4 ft below the basement slab returned no detects of contamination above the established ISVs, except for 1,2,4-Trimethylbenzene, which was found at a concentration of 22.8 ug/m^3 (ISV value of 1,2,4-TMB at 7 ug/m^3). This is well below 10X ISV value and represents a relatively low risk.

The DRO concentrations of a soil sample collected just beneath the basement floor in test hole TH1 in December 2008 was 1,580 ppm, and no detect at 4 ft below the slab. Four years later, no fuel oil odors were noticed and there were no detection of organic vapors with the PID, but there was detection of DRO in test holes TH2 and TH3 at 5 ft below the basement floor. The native soils consist of clay rich till which inhibits the migration of any remaining contamination. No groundwater was encountered to a depth of 4 ft below the basement floor in 2008, or 5 ft below the basement floor in 2012. There is a sump pit in the basement, but no water has been observed during the emergency phase in 2008/2009, nor during the investigative phase in 2012. Static water elevation in the site well is 54 ft below surface, and the depth to the base of the casing in 239 ft below surface grade (bsg).

At the time of the additional investigation phase of this project, this house was serving as the primary residence for the current property owner. The house was purchased from the former owner approximately 1.5 years prior to this additional investigation.

Section 3: Site Management Decision

The site management decision should be based on the Program's objectives described in Guidance Document 1-01 *Petroleum Remediation Program General Policy.*

3.1 Recommendation for site:

- ☒ site closure
- ☐ additional ground water monitoring
- ☐ additional field-detectable vapor monitoring
- ☐ additional soil or ground water investigation
- ☐ additional soil gas/vapor intrusion investigation
- ☐ corrective action

3.2 If closure is recommended, summarize significant investigative events and describe how the site-specific exposure pathways identified in the site conceptual model (SCM) have been adequately addressed.
WCEC recommends closure of this leak site.

The initial spill response activities removed the spilled fuel oil on the floors/walls of the basement. That, along with the blower and ozone/air purifying system, mitigated the vapors from the fuel oil on the walls/floor. DRO was detected within the top 1 foot of soil in the emergency response hand auger boring, which indicated some fuel penetrated through the floor, likely through the cracks.

During the additional investigation phase of this project, no LNAPL or fuel oil vapors were encountered, and no groundwater was encountered. There is a small amount of residual soil contamination beneath the basement floor. However, this remaining contamination is considered to be minor and not mobile. WCEC believes that the previously mentioned activities have remediated this release to the maximum extent practicable. Therefore, WCEC suggests that no further investigation or cleanup activities are necessary, and requests that this site be considered for closure.

3.3 If additional monitoring or subsurface investigation is recommended, provide details of all proposed activities (e.g., monitoring locations, sampling frequency, target analytes, additional monitoring wells, soil borings). Continue ground water monitoring and sampling in accordance with the previously-approved schedule until the MPCA responds to this report.

No vapors were detected by the PID and no fuel odors were noticed, but DRO was detected in the soil samples collected from test holes TH2 and TH3. The DRO concentrations (61.2 ppm and 145 ppm, respectively) are significantly lower than the DRO concentration (1,580 ppm) detected in test hole TH1 advanced in 2008. This suggests that the clay rich soils are minimizing the migration of any remaining contamination, and natural attenuation is occurring. The total amount spilled was fairly small in volume, and the amount that penetrated through the concrete floor was even smaller. Any remaining contamination should not create any further vapor issues nor create a risk to the site well.

3.4 If additional vapor intrusion investigation is recommended, provide details of proposed activities such as completing an indoor building survey, sub-slab vapor sampling, indoor air sampling, or locations for additional soil gas sampling.
Not applicable. Site closure is recommended.

3.5 If corrective action is recommended, provide a conceptual approach by completing Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet* and include in Section 6. See Guidance Document 4-10 *Elements of the Corrective Action Design* for more information on the corrective action design process and other requirements. (Note: If a *Conceptual Corrective Action Design Worksheet* is submitted, MPCA staff will review this report at a higher-than-normal priority to determine if corrective action is required.)
Not applicable. Site closure is recommended.

Section 4: Figures

Attach the following figures in the order listed below. All figures must include a north arrow, scale, and legend. Approximate scales are not acceptable.

☒ Site Location Map using a U.S. Geological Survey 7.5 minute quadrangle map.

☒ One or more Site Maps showing:

- Structures
- Locations and depths of on-site buried utilities
- All past and present petroleum storage tanks, piping, dispensers, and transfer areas
- Extent of soil excavation
- Boring and well locations (including any drinking water wells on site)
- Horizontal extent of soil contamination
- Extent of contaminated surface soil
- Horizontal extent of ground water contamination
- Horizontal extent of NAPL
- Location of end points for all geologic cross sections
- Potential pathways that lead to surface water features within ¼ mile of the site

Distinguish sequential elements of investigations by dates, symbols, etc. in the key.

☐ Updated ground water gradient contour maps using water level elevations from each monitoring event since the last report. Show all wells at the site, and differentiate wells constructed in different aquifers. Label ground water contours and elevations at each data point used for contouring.

☐ Hydrograph for all monitoring and recovery wells.

☐ Graph(s) showing contaminant concentrations over time for all monitoring and recovery wells.

☒ Potential Receptor Map (scale 1 inch = 50 to 100 feet), centered on the release area, showing property boundaries and roads, and potential receptors such as buildings, water wells, underground utilities (distinguish between water, storm sewer, and sanitary sewer), surface waters, ditches, and any other pertinent items within 500 feet of the release source.

☒ Vapor Survey Map showing utilities and buildings with basements and monitoring locations within 500 feet (if a survey was required). If the survey area has been expanded beyond 500 feet, adjust the map to encompass the entire surveyed area.

☒ Vapor Intrusion Assessment Map showing all vapor intrusion samples and receptors at and within the 100-foot preliminary assessment area. If the assessment area has been expanded beyond 100 feet, adjust the map to encompass the entire assessment area.

Section 5: Tables

Attach all tables from the *Investigation Report Form* and indicate those that have been updated during this reporting period by marking the check box below. **Tables must include all cumulative data.**

Updated	Table Number and Name
☒	Table 1. Tank Information
☒	Table 2. Results of Soil Headspace Screening
☒	Table 3. Analytical Results of Soil Samples
☐	Table 4. Other Contaminants Detected in Soils (Petroleum or Non-petroleum Derived)
☐	Table 5. Contaminated Surface Soil Results
☐	Table 6. Water Level Measurements and Depths of Water Samples Collected from Borings
☐	Table 7. Analytical Results of Water Samples Collected from Borings
☐	Table 8. Other Contaminants Detected in Water Samples Collected from Borings (Petroleum or Non-petroleum Derived)
☐	Table 9. Monitoring Well Completion Information
☐	Table 10. Water Level Measurements in Wells
☐	Table 11. Analytical Results of Water Samples Collected from Wells
☐	Table 12. Other Contaminants Detected in Water Samples Collected from Wells (Petroleum or Non-petroleum Derived)
☐	Table 13. Natural Attenuation Parameters
☐	Table 14. Free Product Recovery
☒	Table 15. Properties Located within 500 feet of the Release Source
☒	Table 16. Water Supply Wells Located within 500 feet of the Release Source and Municipal or Industrial Wells within ½ mile
☐	Table 17. Surface Water Receptor Information
☒	Table 18. Utility Receptor Information
☒	Table 19. Vapor Survey Results
☒	Table 20. Results of Soil Gas Sampling for Vapor Intrusion Screening

Table 1
Tank Information

Tank #	Tank Material[1]	UST or AST	Capacity (gallons)	Contents (product type)	Year Installed	Tank Status[2]	Tank Condition
1	Steel	AST	100	Fuel Oil	Unknown	Removed	NA

Notes:

Table 2
Results of Soil Headspace Screening

Depth (ft)	Soil Boring ID		
	TH1*	TH2	TH3
0		0.00	0.00
1		0.00	0.00
2		0.00	0.00
3		0.00	0.00
4		0.00	0.00
5		0.00	0.00
6			
7			
8			
EOB	4.0	5.0	5.0

Notes: Results are in mg/kg (ppm)
* TH1 was completed as part of the emergency response phase. Spill response report stated that no significant PID detections were encountered. No specific values can be found. The spill report states that the boring was completed to 4 feet bsg.
TH2-TH3 were developed on 12/20/12 and completed to 5 feet below the basement floor.

Table 3
Analytical Results of Soil Samples

Boring ID	Sampled Depth (ft)	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	GRO	DRO	Lab Type[2]
HA-1 (TH1)	0-1	12/12/08	ND	ND	ND	ND	ND	NS	1580	Fixed
HA-1 (TH1)	4	12/12/08	ND	ND	ND	ND	ND	NS	ND	Fixed
TH2	5	12/20/12	ND	ND	ND	ND	ND	NS	61.2	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	NS	145	Fixed

Notes: "NS" indicates not sampled.
"ND" indicates no detection above the laboratory reporting limit.
Results reported in ppm (mg/kg).

Table 4
Other Contaminants Detected in Soils (Petroleum or Non-petroleum Derived)

Boring ID	Sampled Depth (ft)	Date Sampled	Acetone	Allyl chloride	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Boring ID	Sampled Depth (ft)	Date Sampled	MEK	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Boring ID	Sampled Depth (ft)	Date Sampled	Chloroform	Chloromethane	2-Chlorotoluene	4-chlorotoluene	1,2-dibromo-3-chloropropane	Dibromochloromethane	EDB	Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Boring ID	Sampled Depth (ft)	Date Sampled	Dibromomethane	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Dichlorodifluoromethane	1,1-dichloroethane	1,2-dichloroethane	Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Boring ID	Sampled Depth (ft)	Date Sampled	1,1-dichloroethene	cis-1,2-dichloroethene	trans-1,2-dichloroethene	dichlorofluoromethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Boring ID	Sampled Depth (ft)	Date Sampled	1,1-dichloropropane	cis-1,3-dichloropropene	trans-1,3-dichloropropene	diethyl ether	hexachloro-1,3-butadiene	isopropylbenzene	p-isopropyltoluene	Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Boring ID	Sampled Depth (ft)	Date Sampled	methylene chloride	4-methyl-2-pentanone	naphthalene	n-propylbenzene	styrene	1,1,1,2-tetrachloroethane	1,1,2,2-tetrachloroethane	Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Boring ID	Sampled Depth (ft)	Date Sampled	tetrachloroethene	tetrahydrofuran	1,2,3-TCB	1,2,4-TCB	1,1,1-TCE	1,1,2-TCE	trichloroethene	Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Boring ID	Sampled Depth (ft)	Date Sampled	trichlorofluoromethane	1,2,3-TCP	1,1,2-trichlorotrifluoroethane	1,2,4-TMB	1,3,5-TMB	vinyl chloride		Lab Type
TH2	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
TH3	5	12/20/12	ND	ND	ND	ND	ND	ND	ND	Fixed
HRL										

Notes: "ND" indicates no detection above the laboratory reporting limit.

Table 5
Contaminated Surface Soil Results

Not Applicable

Table 6
Water Level Measurements and Depths of Water Samples Collected from Borings

Not Applicable

Table 7
Analytical Results of Water Samples Collected from Borings

Not Applicable

Table 8
Other Contaminants Detected in Water Samples
Collected from Borings (Petroleum or Non-petroleum Derived)

Not Applicable

Table 9
Monitoring Well Completion Information

Not Applicable

Table 10
Water Level Measurements in Wells

Not Applicable

Table 11
Analytical Results of Water Samples Collected from Wells

Not Applicable

Table 12
Other Contaminants Detected in Water Samples Collected from Wells (Petroleum or Non-petroleum Derived)

Not Applicable

Table 13
Natural Attenuation Parameters

Not Applicable

Table 14
Free Product Recovery

Not Applicable

Table 15
Properties Located within 500 feet of the Release Source

Prop ID[1]	Property Address	Distance From Site (ft)	Water Supply Well			Public Water Supply		Basement (Y/N)	Sump (Y/N)	Possible Petroleum Sources (Y/N)	Comments (including property use)
			Well Present (Y/N)	How Determined [2]	Well Use[3]	Utilized (Y/N)	Confirmed by City (Y/N)				
1	75090 Hwy 4	0	Yes	Visual	Residential	N	N	Y	Y	Removed	

[1] Property IDs should correspond to labeled properties in the Potential Receptor Map.
[2] For example, visual observation, personal contact, telephone, returned postcard, assumed (i.e., no postcard returned).
[3] For example, domestic, industrial, municipal, livestock, lawn/gardening, irrigation.
Add additional rows as needed.
Notes:

Table 16
Water Supply Wells Located within 500 feet of the Release Source and Municipal or Industrial Wells within ½ mile

Property ID[1]	MDH Unique Well Number	Ground Elevation	Total Depth (ft)	Base of Casing (ft)	Static Elevation	Aquifer	Use	Owner	Distance and Direction from Source (ft)
1	148770	1085	269	239	54	QBAA	Res.	Peris	0

[1] Property IDs should correspond to properties listed in Table 15 and labeled properties in the Potential Receptor Map if known or applicable.

Notes:

Table 17
Surface Water Receptor Information

Not Applicable

Table 18
Utility Receptor Information

Utility ID[1]	Description	Construction Material	Depth to Top of Structure	Diameter	Flow Direction (for liquids)	Year Installed	Backfill Material	Distance to Water Table
1	LP Yard Line	Copper	Unknown	¼ Inch	East	Unknown	Native	Unknown (12-18 inches bsg)
2	Electrical	Copper	Over head		NA	Unknown	NA	NA

[1] ID should correspond to an identified utility line on the Potential Receptor Map.
Notes: All utility information is base upon visual observations while on site.

Utility ID[1]	Name, title, and telephone number for public entity contacted to obtain information or other source of information

[1] IDs should correspond to the same IDs in the above table.
Notes:

Table 19
Vapor Survey Results

Location ID[1]	Description[2]	Monitoring Date	PID Reading (ppm)	Percent of the LEL[3]
1	Entry	01/06/09	0.8	0.0%
		12/20/12	0.0	0.0%
2	Bathroom	01/06/09	0.9	0.0%
		12/20/12	0.0	0.0%
3	Kitchen	01/06/09	0.8	0.0%
		12/20/12	0.0	0/0%
4	Living Room	01/06/09	0.7	0.0%
		12/20/12	0.0	0/0%
5	Front Entry	01/06/09	0.8	0.0%
		12/20/12	0.0	0/0%
6	Office	01/06/09	0.8	0.0%
		12/20/12	0.0	0/0%
7	Living Room #2	01/06/09	0.8	0.0%
		12/20/12	0.0	0/0%
8	Basement Main	01/06/09	0.9	0.0%
		12/20/12	0.0	0/0%
9	Basement Sump	01/06/09	0.8	0.0%
		12/20/12	0.0	0/0%
10	Electrical Room	01/06/09	1.2	0.0%
		12/20/12	0.0	0/0%
11	Former Tank Room	01/06/09	0.8	0.0%
		12/20/12	0/0	0/0%

[1] Location IDs must match labeled locations on the Vapor Survey Map.

[2] Provide a brief description of the monitoring point (e.g., sump, basement corner, sanitary sewer manhole, storm sewer basin, etc.).

[3] LEL = Lower Explosive Limit.

Notes:
PID surveys were completed during the emergency response phase, but no records can be found.

Table 20
Results of Soil Gas Sampling for Vapor Intrusion Screening[1]

Sample ID[2]	VS-1			VS-2			VIA-1			Intrusion Screening Value[3]	Basis
Date	1/6/2009			1/6/2009			12/20/2012				
Depth (feet)	Ambient			Ambient			4 Feet				
PID (ppm)							0.0				
COMPOUNDS	Result	Report Limit	Lab Note	Result	Report Limit	Lab Note	Result	Report Limit	Lab Note		
Acetone	44.4	0.64		43.0	0.64		18.7	6.4	CH, L1, SS	31,000	NC
Benzene	N/D	0.87		N/D	0.87		N/D	4.4		4.5	C
Bromodichloromethane	N/D	1.9		N/D	1.9		N/D	18.2		NA	
Bromoform	N/D	2.8		N/D	2.8		N/D	28.1		9	C
Bromomethane (Methyl bromide)	N/D	1.1		N/D	1.1		N/D	10.6		5	NC
1,3-Butadiene	N/D	0.6		N/D	0.6		N/D	6		0.3	C
2-Butanone (Methyl ethyl ketone, MEK)	3.6	0.8		1.3	0.8		N/D	8		5,000	NC
Carbon disulfide	N/D	0.84		N/D	0.84		N/D	8.4		700	NC
Carbon tetrachloride	N/D	1.7		N/D	1.7		N/D	8.6		0.7	C
Chlorobenzene	N/D	1.3		N/D	1.3		N/D	12.6		50	NC
Chloroethane (Ethyl chloride)	N/D	0.72		N/D	0.72		N/D	7.2		10,000	NC
Chloroform	N/D	1.3		N/D	1.3		N/D	13.3		100	NC
Chloromethane (Methyl chloride)	0.9	0.56		0.9	0.56		N/D	5.6		90	NC
Cyclohexane	N/D	0.91		N/D	0.91		N/D	9.4		6,000	NC
Dibromochloromethane	N/D	2.3		N/D	2.3		N/D	23.2		NA	
1,2-Dibromoethane (Ethylene dibromide)	N/D	2.1		N/D	2.1		N/D	20.9		0.02	C
1,2-Dichlorobenzene	N/D	1.6		N/D	1.6		N/D	16.3		200	NC
1,3-Dichlorobenzene	N/D	1.6		N/D	1.6		N/D	16.3		NA	
1,4-Dichlorobenzene	N/D	1.6		N/D	1.6		N/D	16.3		60	NC
Dichlorodifluoromethane (Freon 12)	2.4	1.3		N/D	1.3		N/D	13.5		200	NC

Guidance Document c-prp4-08: September 2008
Petroleum Remediation Program
Minnesota Pollution Control Agency

Table 20 Continued											
1,1-Dichloroethane	N/D	1.1		N/D	1.1		N/D	11		**500**	NC
1,2-Dichloroethane	N/D	1.1		N/D	1.1		N/D	5.5		**0.4**	C
1,1-Dichloroethene (DCE)	N/D	1.1		N/D	1.1		N/D	10.9		**200**	NC
cis-1,2-Dichloroethene	N/D	1.1		N/D	1.1		N/D	10.9		NA	
trans-1,2-Dichloroethene	N/D	1.1		N/D	1.1		N/D	10.9		**60**	NC
1,2-Dichloropropane	N/D	1.3		N/D	1.3		N/D	12.6		**4**	NC
cis-1,3-Dichloropropene*	N/D	1.2		N/D	1.2		N/D	12.3		**20**	NC
trans-1,3-Dichloropropene*	N/D	1.2		N/D	1.2		N/D	12.3		**20**	NC
Dichlorotetrafluoroethane	N/D	1.9		N/D	1.9		N/D	19		NA	
Ethanol	1340.0	2.5	E,L1	994.0	2.5	E, L1	60.4	5.1		**15,000**	NC
Ethyl acetate	N/D	0.98		N/D	0.98		N/D	9.8		**3,000**	NC
Ethylbenzene	2.5	1.2		2.0	1.2		N/D	11.8		**1,000**	NC
4-Ethyltoluene	3.7	3.4		N/D	3.4		N/D	13.4		NA	
n-Heptane	N/D	1.1		N/D	1.1		N/D	11.1		NA	
Hexachloro-1,3-butadiene	N/D	2.9		N/D	2.9		N/D	29.5		**0.5**	C
n-Hexane	7.7	0.96		8.9	0.96		N/D	9.6		**2,000**	NC
2-Hexanone	N/D	1.1		N/D	1.1		N/D	11.1		NA	
Methylene Chloride (Dichloromethane)	2.8	0.95		4.0	0.95		N/D	9.5		**20**	C
4-Methyl-2-pentanone (MIBK)	N/D	1.1		7.5	1.1		N/D	11.1		**3,000**	NC
Methyl-tert-butyl ether (MTBE)	N/D	0.98		N/D	0.98		N/D	9.8		**3,000**	NC
Naphthalene	N/D	3.6		4.0	3.6	L1	N/D	14.3		**9**	NC
2-Propanol (Isopropyl alcohol)	558.0	3.4	E,IC	556.0	3.4	E, IC	N/D	6.7		**7,000**	NC
Propylene (Methylethylene)	N/D	0.47		N/D	0.47		N/D	4.7		**3,000**	NC
Styrene	N/D	1.2		N/D	1.2		N/D	11.7		**1,000**	NC
1,1,2,2-Tetrachloroethane	N/D	1.9		N/D	1.9		N/D	9.4		**0.2**	C
Tetrachloroethylene (PCE)	N/D	1.9		N/D	1.9		N/D	9.2		**20**	C
Tetrahydrofuran	N/D	0.8		N/D	0.8		N/D	8		NA	
Toluene (Methylbenzene)	4.6	1		6.5	1		17.3	10.3		**5,000**	NC

Table 20 Continued											
1,2,4-Trichlorobenzene	N/D	1.3		N/D	1.3		N/D	20.2		**4**	NC
1,1,1-Trichloroethane (Methyl chloroform)	N/D	1.5		N/D	1.5		N/D	14.9		**5,000**	NC
1,1,2-Trichloroethane	N/D	1.5		N/D	1.5		N/D	7.4		**0.6**	C
Trichloroethylene (TCE)	N/D	1.5		N/D	1.5		N/D	7.4		**3**	C
Trichlorofluoromethane (Freon 11)	N/D	1.5		N/D	1.5		N/D	15.3		**700**	NC
1,1,2-Trichlorotrifluoroethane (CFC-113)	N/D	2.1		N/D	2.1		N/D	21.4		**30,000**	NC
1,2,4-Trimethylbenzene	15.2	3.4		12.4	3.4		22.8	13.4		**7**	NC
1,3,5-Trimethylbenzene	4.5	3.4		3.6	3.4		N/D	13.4		**6**	NC
Vinyl acetate	N/D	0.95		N/D	0.95		N/D	9.6		**200**	NC
Vinyl chloride	N/D	0.7		N/D	0.7		N/D	3.5		**1**	C
m&p-Xylene**	9.3	2.4		7.4	2.4		N/D	23.6		**100**	NC
o-Xylene**	4.6	1.2		3.8	1.2		N/D	11.8		**100**	NC

[1] Report results in $\mu g/m^3$.

[2] Sample IDs should correspond to labeled locations on the Vapor Intrusion Assessment Map.

[3] The Intrusion Screening Values can be found in Guidance Document 4-01a *Vapor Intrusion Assessments Performed during Site Investigations.*

Notes:

Basis: C = based on carcinogenicity; NC = based on noncancer health effects

D6 = The relative percent difference between sample and sample duplicate exceeded lab control limits

E = Analyte concentration exceeded the calibration range. Result is estimated.

IC = The initial calibration for this compound was outside of method control limits. The result is estimated

L3 = Analyte recovery in the laboratory control sample exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias

L1 = Analyte recovery in the laboratory control sample was above QC limits. Results may be biased high.

CH = Continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

SS = Analyte did not meet secondary source verification criteria for initial calibration. Reported result should be considered an estimated value.

N/D = No detection

Section 6: Appendices

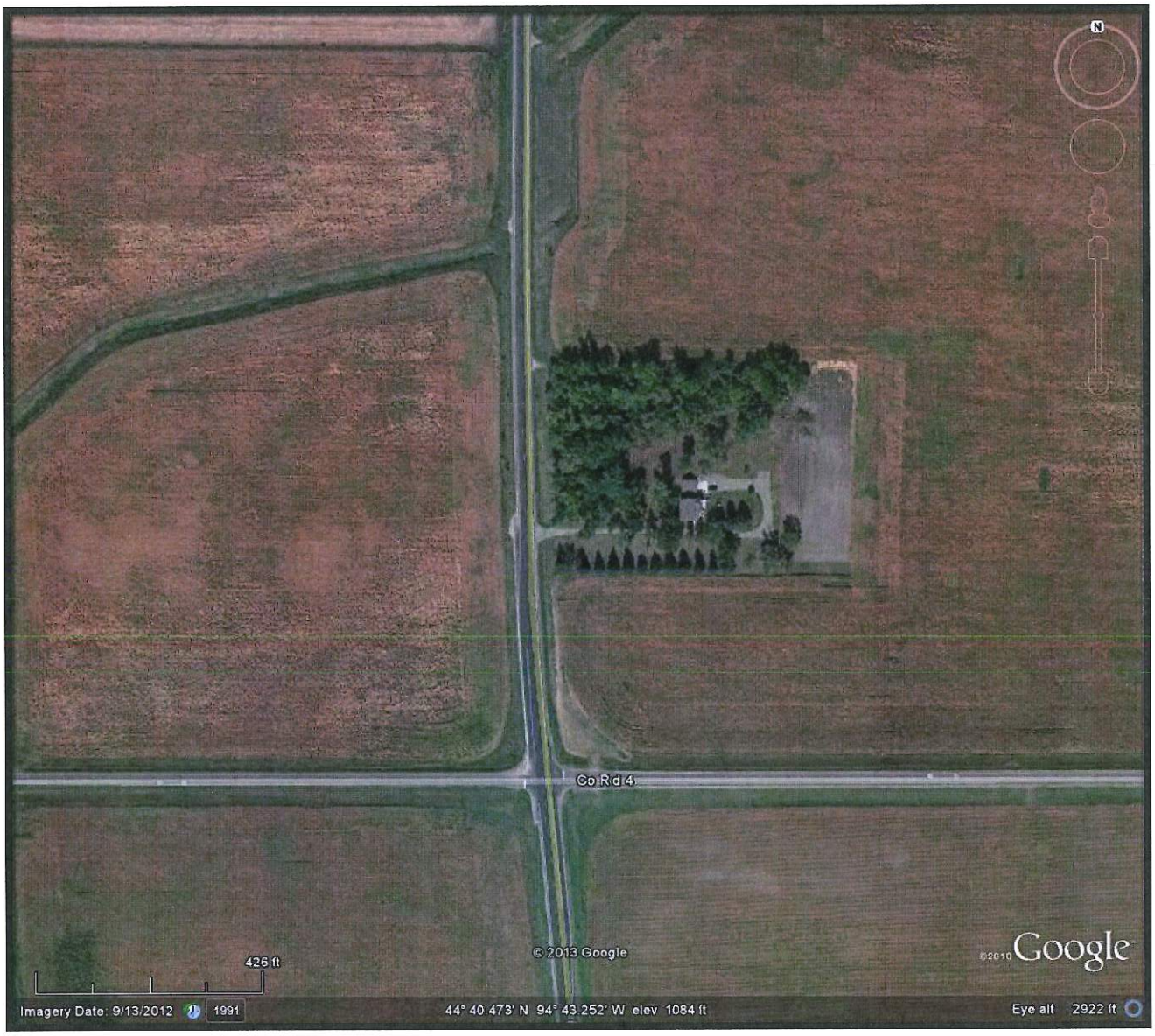
Attach all required or applicable appendices in the following order. Indicate those appendices that are included in this report by marking the check box. The appendix section of the report contains sufficient information to document all activities completed since the last report. All reproduced data must be legible. Reports missing required documentation are subject to rejection.

☒	*Appendix A*	Copies of most recent laboratory analytical reports for Soil, Soil Gas/Sub-slab Vapor/Indoor Air/Ambient Air, and Ground Water samples, including a copy of the Chain of Custody. Include laboratory QA/QC data, Chromatograms, and MDH laboratory certification number.
☒	*Appendix B*	Methodologies and Procedures, Including Field Screening of Soil, Other Field Analyses, Soil Boring, Soil Sampling, Soil Gas/Sub-Slab/Indoor air/Ambient Air Sampling, Well Installation, and Water Sampling.
☒	*Appendix C*	Geologic Logs of Additional Soil Borings and Wells Installed. Include Well Construction Diagrams and Copies of the Minnesota Department of Health Well Record for new wells.
☒	*Appendix D*	Field or sampling data sheets (sampling forms, field crew notes, etc.).
☒	*Appendix E*	Guidance Document 1-03a *Spatial Data Reporting Form* (if not previously submitted or new site features need to be reported).
☒	*Appendix F*	Guidance Document 2-05 *Release Information Worksheet* (if not previously submitted).
☐	*Appendix G*	Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet.*

Web pages and phone numbers	
MPCA staff	http://www.pca.state.mn.us/pca/staff/index.cfm
MPCA toll free	**1-800-657-3864**
Petroleum Remediation Program web page	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Info. Request	http://www.pca.state.mn.us/about/inforequest.html
MPCA VIC program	http://www.pca.state.mn.us/cleanup/vic.html
MPCA Petroleum Brownfields Program	http://www.pca.state.mn.us/programs/vpic_p.html
MPCA SRS guidance documents	http://www.pca.state.mn.us/cleanup/riskbasedoc.html http://www.pca.state.mn.us/cleanup/riskbasedoc.html#surfacewaterpathway
MDH HRLs	http://www.health.state.mn.us/divs/eh/groundwater/hrltable.html
MDH DW hotline	**1-800-818-9318**
Petrofund Web Page	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
Petrofund Phone	**651-215-1775 or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**

FIGURE 1

Site Location Map



N

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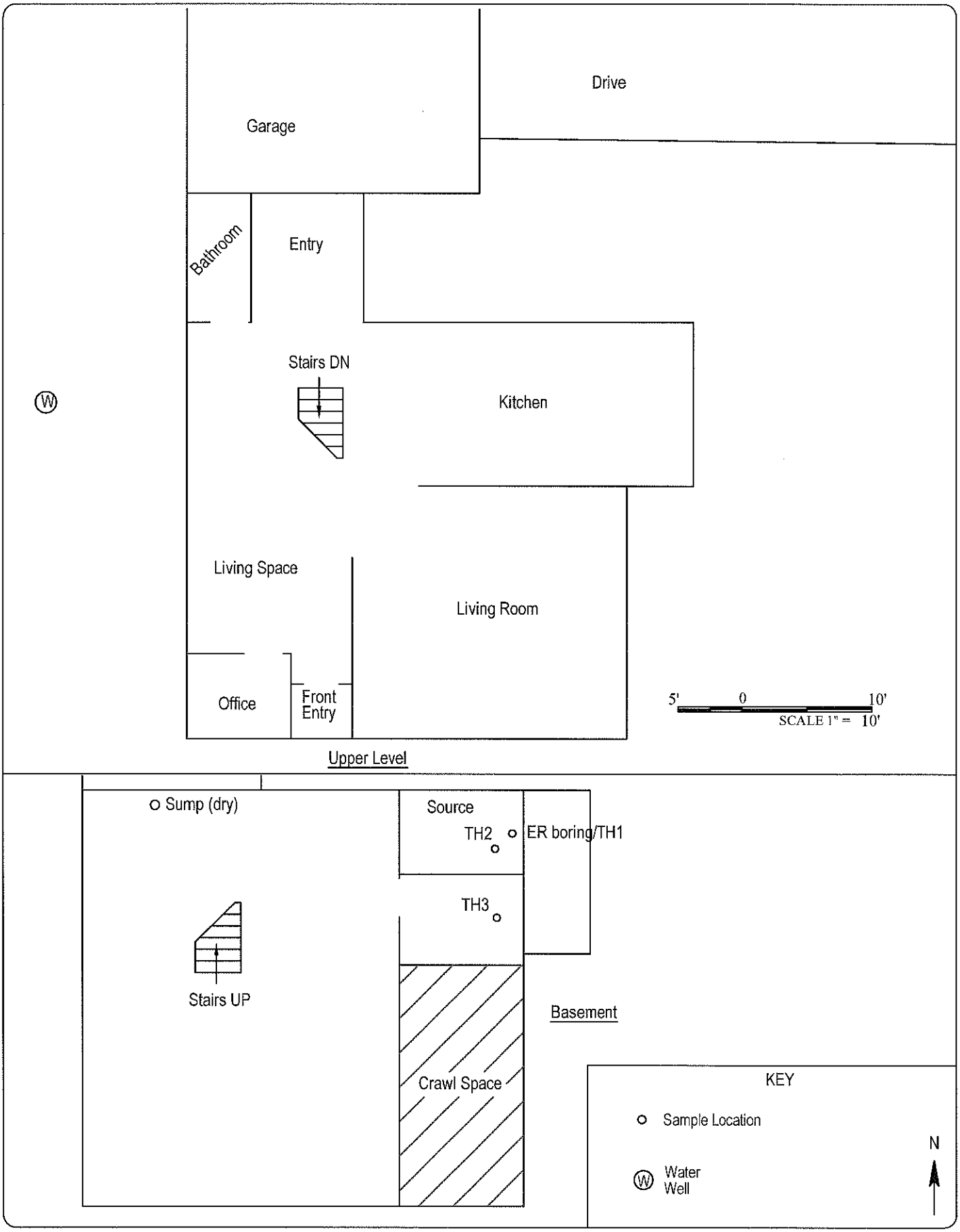
PROJECT No. 12-9309-30
Site Name: Ochsendorf Investigation, Hector
FIGURE 1: Site Map

FIGURE 2

Detailed Site Map



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PROJECT No. : 12-9309-30 Ochsendorf Investigation, Hector

FIGURE 2: Detailed Site Map

FIGURE 3

Groundwater Contour Maps

Not Applicable

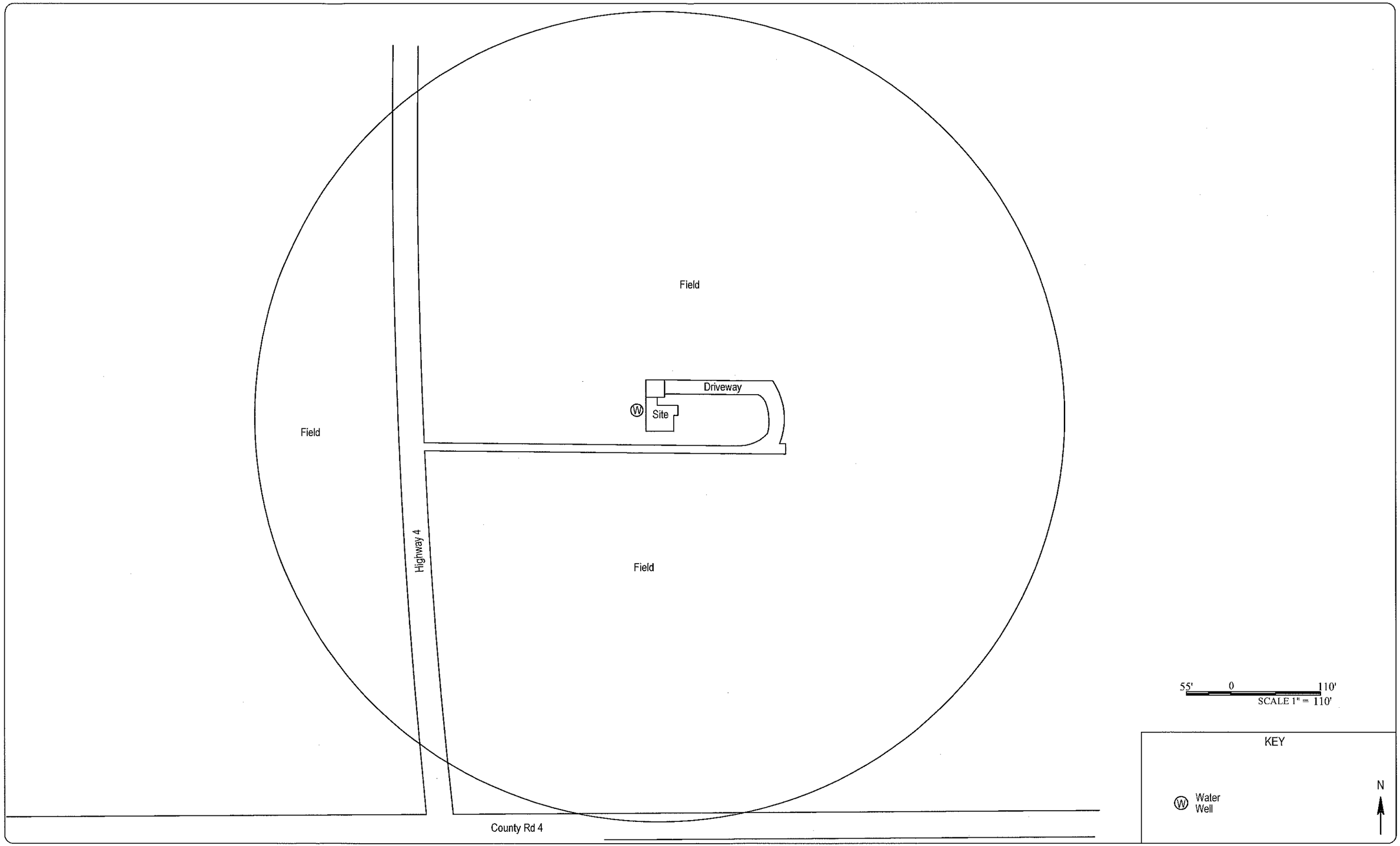
FIGURE 4

Hydrograph(s)

Not applicable

FIGURE 5

Potential Receptor and Well Receptor Map



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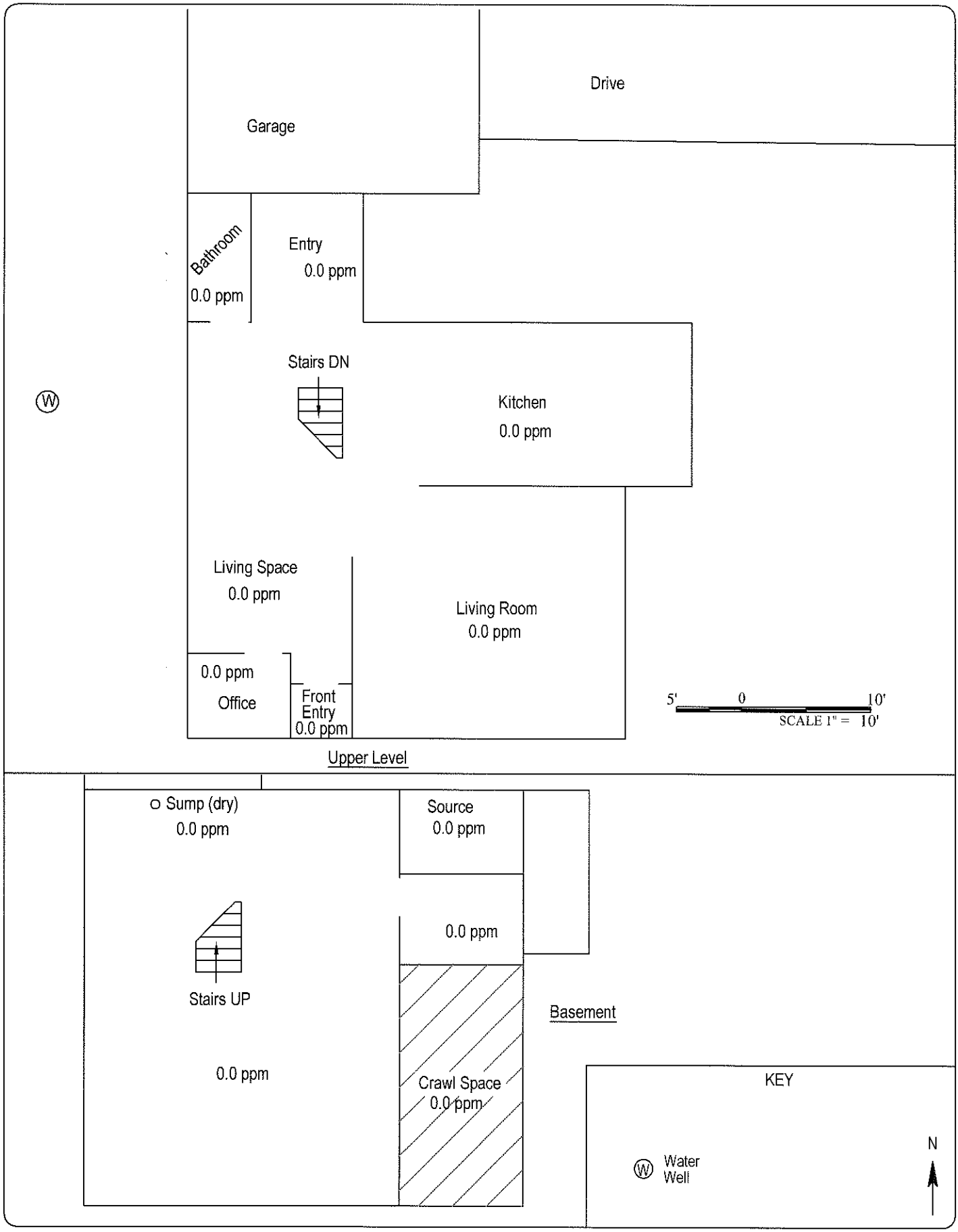
PROJECT No. : 12-9309-30 Ochsendorf Investigation, Hector

FIGURE 5: Potential Receptor Map

12/21/2012 1:02 PM

FIGURE 6

Vapor Survey Map



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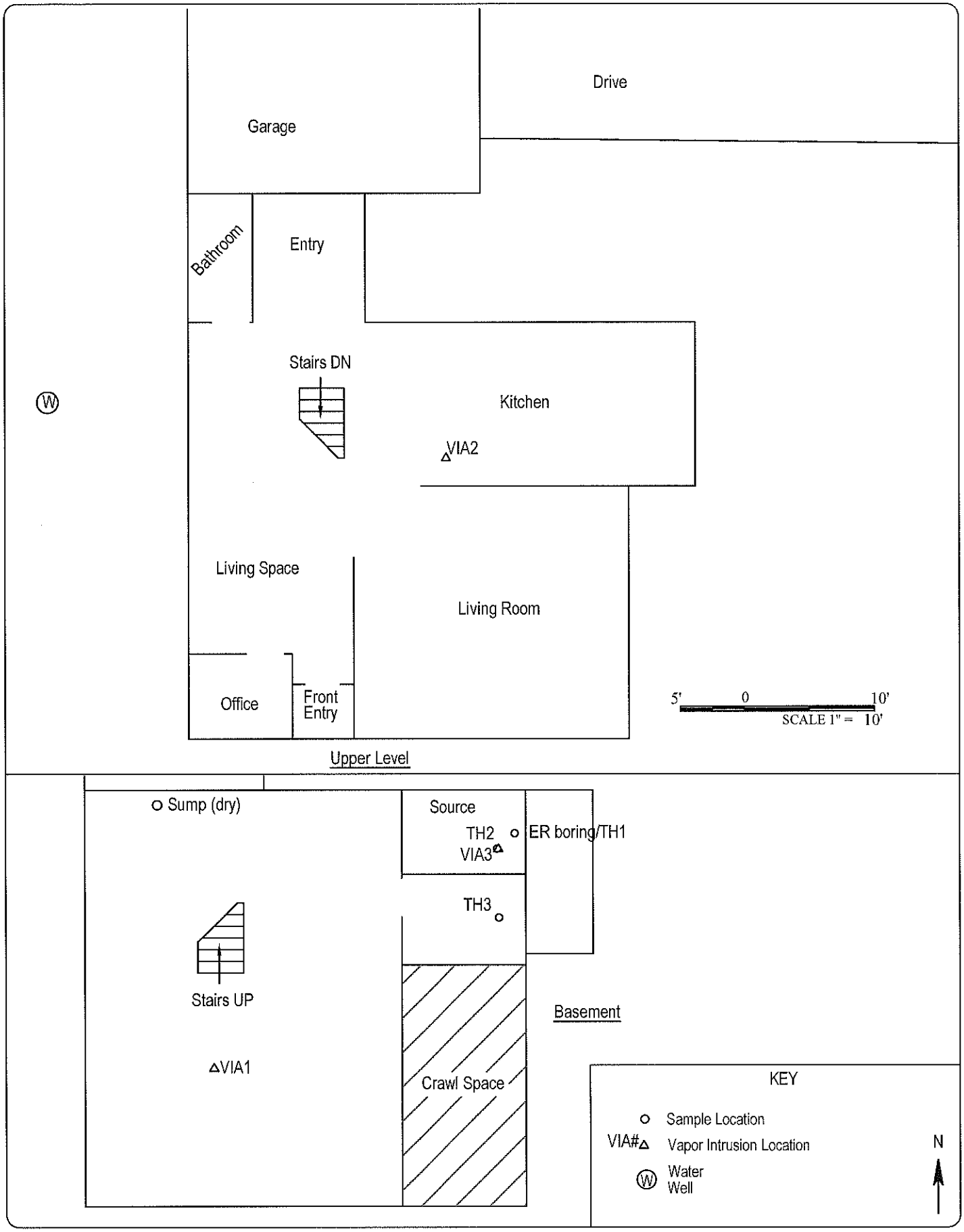
PROJECT No. : 12-9309-30 Ochsendorf Investigation, Hector

FIGURE 6: Vapor Survey Map

FIGURE 7

Vapor Intrusion Assessment Map



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PROJECT No. : 12-9309-30 Ochsendorf Investigation, Hector

FIGURE 7: Vapor Intrusion Assessment Map

APPENDIX A

Laboratory Analytical Reports

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

January 03, 2013

Mr. Matt Johnson
West Central Env. Consultants
P.O. Box 594
Morris, MN 56267

RE: Project: 9309 Ostendorf
Pace Project No.: 10216355

Dear Mr. Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on December 27, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Diane J. Anderson

Diane J. Anderson

diane.anderson@pacelabs.com
Project Manager

Enclosures

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 9309 Ostendorf
Pace Project No.: 10216355

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 9309 Ostendorf
Pace Project No.: 10216355

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10216355001	**TH2 9309 Soil -01**	Solid	12/20/12 11:00	12/27/12 11:20
10216355002	**TH3 9309 Soil -02**	Solid	12/20/12 11:30	12/27/12 11:20

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 9309 Ostendorf
Pace Project No.: 10216355

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10216355001	**TH2 9309 Soil -01**	WI MOD DRO	JLR	2
		ASTM D2974	JDL	1
		EPA 8260	CNC	71
10216355002	**TH3 9309 Soil -02**	WI MOD DRO	JLR	2
		ASTM D2974	JDL	1
		EPA 8260	CNC	71

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 9309 Ostendorf
Pace Project No.: 10216355

Sample: TH2 9309 Soil -01 **Lab ID: 10216355001** Collected: 12/20/12 11:00 Received: 12/27/12 11:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	**61.2**	mg/kg	12.1	1	12/28/12 12:56	12/30/12 22:37		D5
Surrogates								
n-Triacontane (S)	69	%	50-150	1	12/28/12 12:56	12/30/12 22:37		
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.1**	%	0.10	1		12/28/12 00:00		
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1500	1	12/28/12 08:42	12/28/12 14:19	67-64-1	
Allyl chloride	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	107-05-1	
Benzene	ND	ug/kg	23.9	1	12/28/12 08:42	12/28/12 14:19	71-43-2	
Bromobenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	108-86-1	
Bromochloromethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	74-97-5	
Bromodichloromethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	75-27-4	
Bromoform	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	75-25-2	
Bromomethane	ND	ug/kg	599	1	12/28/12 08:42	12/28/12 14:19	74-83-9	
2-Butanone (MEK)	ND	ug/kg	599	1	12/28/12 08:42	12/28/12 14:19	78-93-3	
n-Butylbenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	104-51-8	
sec-Butylbenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	135-98-8	
tert-Butylbenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	98-06-6	
Carbon tetrachloride	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	56-23-5	
Chlorobenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	108-90-7	
Chloroethane	ND	ug/kg	599	1	12/28/12 08:42	12/28/12 14:19	75-00-3	
Chloroform	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	67-66-3	
Chloromethane	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	74-87-3	
2-Chlorotoluene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	95-49-8	
4-Chlorotoluene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	96-12-8	
Dibromochloromethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	106-93-4	
Dibromomethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	75-71-8	
1,1-Dichloroethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	75-34-3	L2
1,2-Dichloroethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	107-06-2	
1,1-Dichloroethene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	156-60-5	
Dichlorofluoromethane	ND	ug/kg	599	1	12/28/12 08:42	12/28/12 14:19	75-43-4	
1,2-Dichloropropane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	78-87-5	
1,3-Dichloropropane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	142-28-9	
2,2-Dichloropropane	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	594-20-7	
1,1-Dichloropropene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	10061-01-5	

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ANALYTICAL RESULTS

Project: 9309 Ostendorf
Pace Project No.: 10216355

Sample: TH2 9309 Soil -01 **Lab ID: 10216355001** Collected: 12/20/12 11:00 Received: 12/27/12 11:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	60-29-7	
Ethylbenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	299	1	12/28/12 08:42	12/28/12 14:19	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	98-82-8	
p-Isopropyltoluene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	99-87-6	
Methylene Chloride	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	599	1	12/28/12 08:42	12/28/12 14:19	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	1634-04-4	
Naphthalene	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	91-20-3	
n-Propylbenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	103-65-1	
Styrene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	79-34-5	
Tetrachloroethene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	127-18-4	
Tetrahydrofuran	ND	ug/kg	2390	1	12/28/12 08:42	12/28/12 14:19	109-99-9	
Toluene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	79-00-5	
Trichloroethene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	79-01-6	
Trichlorofluoromethane	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	239	1	12/28/12 08:42	12/28/12 14:19	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	59.9	1	12/28/12 08:42	12/28/12 14:19	108-67-8	
Vinyl chloride	ND	ug/kg	23.9	1	12/28/12 08:42	12/28/12 14:19	75-01-4	
Xylene (Total)	ND	ug/kg	180	1	12/28/12 08:42	12/28/12 14:19	1330-20-7	
Surrogates								
Dibromofluoromethane (S)	99	%	55-127	1	12/28/12 08:42	12/28/12 14:19	1868-53-7	
1,2-Dichloroethane-d4 (S)	95	%	49-125	1	12/28/12 08:42	12/28/12 14:19	17060-07-0	
Toluene-d8 (S)	92	%	56-131	1	12/28/12 08:42	12/28/12 14:19	2037-26-5	
4-Bromofluorobenzene (S)	100	%	53-128	1	12/28/12 08:42	12/28/12 14:19	460-00-4	

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ANALYTICAL RESULTS

Project: 9309 Ostendorf
Pace Project No.: 10216355

Sample: TH3 9309 Soil -02 **Lab ID: 10216355002** Collected: 12/20/12 11:30 Received: 12/27/12 11:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Diesel Range Organics	**145**	mg/kg	12.1	1	12/28/12 12:56	12/30/12 23:06		D5
Surrogates								
n-Triacontane (S)	72	%	50-150	1	12/28/12 12:56	12/30/12 23:06		
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.5**	%	0.10	1		12/28/12 00:00		
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1570	1	12/28/12 08:42	12/28/12 14:35	67-64-1	
Allyl chloride	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	107-05-1	
Benzene	ND	ug/kg	25.0	1	12/28/12 08:42	12/28/12 14:35	71-43-2	
Bromobenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	108-86-1	
Bromochloromethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	74-97-5	
Bromodichloromethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	75-27-4	
Bromoform	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	75-25-2	
Bromomethane	ND	ug/kg	626	1	12/28/12 08:42	12/28/12 14:35	74-83-9	
2-Butanone (MEK)	ND	ug/kg	626	1	12/28/12 08:42	12/28/12 14:35	78-93-3	
n-Butylbenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	104-51-8	
sec-Butylbenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	135-98-8	
tert-Butylbenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	98-06-6	
Carbon tetrachloride	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	56-23-5	
Chlorobenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	108-90-7	
Chloroethane	ND	ug/kg	626	1	12/28/12 08:42	12/28/12 14:35	75-00-3	
Chloroform	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	67-66-3	
Chloromethane	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	74-87-3	
2-Chlorotoluene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	95-49-8	
4-Chlorotoluene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	96-12-8	
Dibromochloromethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	106-93-4	
Dibromomethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	75-71-8	
1,1-Dichloroethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	75-34-3	L2
1,2-Dichloroethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	107-06-2	
1,1-Dichloroethene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	156-60-5	
Dichlorofluoromethane	ND	ug/kg	626	1	12/28/12 08:42	12/28/12 14:35	75-43-4	
1,2-Dichloropropane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	78-87-5	
1,3-Dichloropropane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	142-28-9	
2,2-Dichloropropane	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	594-20-7	
1,1-Dichloropropene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	10061-01-5	

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ANALYTICAL RESULTS

Project: 9309 Ostendorf
Pace Project No.: 10216355

Sample: TH3 9309 Soil -02 **Lab ID: 10216355002** Collected: 12/20/12 11:30 Received: 12/27/12 11:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	60-29-7	
Ethylbenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	313	1	12/28/12 08:42	12/28/12 14:35	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	98-82-8	
p-Isopropyltoluene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	99-87-6	
Methylene Chloride	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	626	1	12/28/12 08:42	12/28/12 14:35	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	1634-04-4	
Naphthalene	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	91-20-3	
n-Propylbenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	103-65-1	
Styrene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	79-34-5	
Tetrachloroethene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	127-18-4	
Tetrahydrofuran	ND	ug/kg	2500	1	12/28/12 08:42	12/28/12 14:35	109-99-9	
Toluene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	79-00-5	
Trichloroethene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	79-01-6	
Trichlorofluoromethane	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	250	1	12/28/12 08:42	12/28/12 14:35	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	62.6	1	12/28/12 08:42	12/28/12 14:35	108-67-8	
Vinyl chloride	ND	ug/kg	25.0	1	12/28/12 08:42	12/28/12 14:35	75-01-4	
Xylene (Total)	ND	ug/kg	188	1	12/28/12 08:42	12/28/12 14:35	1330-20-7	
Surrogates								
Dibromofluoromethane (S)	98	%	55-127	1	12/28/12 08:42	12/28/12 14:35	1868-53-7	
1,2-Dichloroethane-d4 (S)	92	%	49-125	1	12/28/12 08:42	12/28/12 14:35	17060-07-0	
Toluene-d8 (S)	93	%	56-131	1	12/28/12 08:42	12/28/12 14:35	2037-26-5	
4-Bromofluorobenzene (S)	99	%	53-128	1	12/28/12 08:42	12/28/12 14:35	460-00-4	

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

QC Batch: MPRP/37066
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10216355001, 10216355002

SAMPLE DUPLICATE: 1357726

Parameter	Units	10216351005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	23.9	24.0	.5	30	

SAMPLE DUPLICATE: 1357798

Parameter	Units	10216401006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10	10	.01	30	

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

QC Batch: MSV/22558 Analysis Method: EPA 8260
QC Batch Method: EPA 5035/5030B Analysis Description: 8260 MSV 5030 Med Level
Associated Lab Samples: 10216355001, 10216355002

METHOD BLANK: 1357772 Matrix: Solid
Associated Lab Samples: 10216355001, 10216355002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	12/28/12 12:55	
1,1,1-Trichloroethane	ug/kg	ND	50.0	12/28/12 12:55	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	12/28/12 12:55	
1,1,2-Trichloroethane	ug/kg	ND	50.0	12/28/12 12:55	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	50.0	12/28/12 12:55	
1,1-Dichloroethane	ug/kg	ND	50.0	12/28/12 12:55	
1,1-Dichloroethene	ug/kg	ND	50.0	12/28/12 12:55	
1,1-Dichloropropene	ug/kg	ND	50.0	12/28/12 12:55	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	12/28/12 12:55	
1,2,3-Trichloropropane	ug/kg	ND	200	12/28/12 12:55	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	12/28/12 12:55	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	12/28/12 12:55	
1,2-Dibromo-3-chloropropane	ug/kg	ND	200	12/28/12 12:55	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	12/28/12 12:55	
1,2-Dichlorobenzene	ug/kg	ND	50.0	12/28/12 12:55	
1,2-Dichloroethane	ug/kg	ND	50.0	12/28/12 12:55	
1,2-Dichloropropane	ug/kg	ND	50.0	12/28/12 12:55	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	12/28/12 12:55	
1,3-Dichlorobenzene	ug/kg	ND	50.0	12/28/12 12:55	
1,3-Dichloropropane	ug/kg	ND	50.0	12/28/12 12:55	
1,4-Dichlorobenzene	ug/kg	ND	50.0	12/28/12 12:55	
2,2-Dichloropropane	ug/kg	ND	200	12/28/12 12:55	
2-Butanone (MEK)	ug/kg	ND	500	12/28/12 12:55	
2-Chlorotoluene	ug/kg	ND	50.0	12/28/12 12:55	
4-Chlorotoluene	ug/kg	ND	50.0	12/28/12 12:55	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	500	12/28/12 12:55	
Acetone	ug/kg	ND	1250	12/28/12 12:55	
Allyl chloride	ug/kg	ND	200	12/28/12 12:55	
Benzene	ug/kg	ND	20.0	12/28/12 12:55	
Bromobenzene	ug/kg	ND	50.0	12/28/12 12:55	
Bromochloromethane	ug/kg	ND	50.0	12/28/12 12:55	
Bromodichloromethane	ug/kg	ND	50.0	12/28/12 12:55	
Bromoform	ug/kg	ND	200	12/28/12 12:55	
Bromomethane	ug/kg	ND	500	12/28/12 12:55	
Carbon tetrachloride	ug/kg	ND	50.0	12/28/12 12:55	
Chlorobenzene	ug/kg	ND	50.0	12/28/12 12:55	
Chloroethane	ug/kg	ND	500	12/28/12 12:55	
Chloroform	ug/kg	ND	50.0	12/28/12 12:55	
Chloromethane	ug/kg	ND	200	12/28/12 12:55	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	12/28/12 12:55	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	12/28/12 12:55	
Dibromochloromethane	ug/kg	ND	50.0	12/28/12 12:55	
Dibromomethane	ug/kg	ND	50.0	12/28/12 12:55	

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

METHOD BLANK: 1357772 Matrix: Solid

Associated Lab Samples: 10216355001, 10216355002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dichlorodifluoromethane	ug/kg	ND	50.0	12/28/12 12:55	
Dichlorofluoromethane	ug/kg	ND	500	12/28/12 12:55	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	12/28/12 12:55	
Ethylbenzene	ug/kg	ND	50.0	12/28/12 12:55	
Hexachloro-1,3-butadiene	ug/kg	ND	250	12/28/12 12:55	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	12/28/12 12:55	
Methyl-tert-butyl ether	ug/kg	ND	50.0	12/28/12 12:55	
Methylene Chloride	ug/kg	ND	200	12/28/12 12:55	
n-Butylbenzene	ug/kg	ND	50.0	12/28/12 12:55	
n-Propylbenzene	ug/kg	ND	50.0	12/28/12 12:55	
Naphthalene	ug/kg	ND	200	12/28/12 12:55	
p-Isopropyltoluene	ug/kg	ND	50.0	12/28/12 12:55	
sec-Butylbenzene	ug/kg	ND	50.0	12/28/12 12:55	
Styrene	ug/kg	ND	50.0	12/28/12 12:55	
tert-Butylbenzene	ug/kg	ND	50.0	12/28/12 12:55	
Tetrachloroethene	ug/kg	ND	50.0	12/28/12 12:55	
Tetrahydrofuran	ug/kg	ND	2000	12/28/12 12:55	
Toluene	ug/kg	ND	50.0	12/28/12 12:55	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	12/28/12 12:55	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	12/28/12 12:55	
Trichloroethene	ug/kg	ND	50.0	12/28/12 12:55	
Trichlorofluoromethane	ug/kg	ND	200	12/28/12 12:55	
Vinyl chloride	ug/kg	ND	20.0	12/28/12 12:55	
Xylene (Total)	ug/kg	ND	150	12/28/12 12:55	
1,2-Dichloroethane-d4 (S)	%	92	49-125	12/28/12 12:55	
4-Bromofluorobenzene (S)	%	101	53-128	12/28/12 12:55	
Dibromofluoromethane (S)	%	98	55-127	12/28/12 12:55	
Toluene-d8 (S)	%	93	56-131	12/28/12 12:55	

LABORATORY CONTROL SAMPLE: 1357773

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	764	76	72-125	
1,1,1-Trichloroethane	ug/kg	1000	706	71	68-134	
1,1,2,2-Tetrachloroethane	ug/kg	1000	785	79	74-125	
1,1,2-Trichloroethane	ug/kg	1000	768	77	75-125	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	855	85	44-150	
1,1-Dichloroethane	ug/kg	1000	641	64	74-125	L0
1,1-Dichloroethene	ug/kg	1000	794	79	64-133	
1,1-Dichloropropene	ug/kg	1000	726	73	70-134	
1,2,3-Trichlorobenzene	ug/kg	1000	852	85	70-125	
1,2,3-Trichloropropane	ug/kg	1000	856	86	71-125	
1,2,4-Trichlorobenzene	ug/kg	1000	828	83	69-125	
1,2,4-Trimethylbenzene	ug/kg	1000	754	75	75-129	
1,2-Dibromo-3-chloropropane	ug/kg	1000	798	80	62-127	

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

LABORATORY CONTROL SAMPLE: 1357773

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromoethane (EDB)	ug/kg	1000	824	82	73-125	
1,2-Dichlorobenzene	ug/kg	1000	812	81	75-125	
1,2-Dichloroethane	ug/kg	1000	777	78	70-131	
1,2-Dichloropropane	ug/kg	1000	748	75	75-125	
1,3,5-Trimethylbenzene	ug/kg	1000	743	74	74-130	
1,3-Dichlorobenzene	ug/kg	1000	804	80	75-125	
1,3-Dichloropropane	ug/kg	1000	773	77	75-125	
1,4-Dichlorobenzene	ug/kg	1000	799	80	75-125	
2,2-Dichloropropane	ug/kg	1000	697	70	46-144	
2-Butanone (MEK)	ug/kg	1000	781	78	41-150	
2-Chlorotoluene	ug/kg	1000	761	76	75-127	
4-Chlorotoluene	ug/kg	1000	766	77	75-127	
4-Methyl-2-pentanone (MIBK)	ug/kg	1000	794	79	67-127	
Acetone	ug/kg	2500	2140	86	30-150	
Allyl chloride	ug/kg	1000	720	72	68-139	
Benzene	ug/kg	1000	738	74	74-126	
Bromobenzene	ug/kg	1000	808	81	75-125	
Bromochloromethane	ug/kg	1000	838	84	75-128	
Bromodichloromethane	ug/kg	1000	779	78	69-130	
Bromoform	ug/kg	1000	808	81	64-124	
Bromomethane	ug/kg	1000	873	87	54-139	
Carbon tetrachloride	ug/kg	1000	804	80	64-139	
Chlorobenzene	ug/kg	1000	780	78	75-125	
Chloroethane	ug/kg	1000	749	75	45-146	
Chloroform	ug/kg	1000	758	76	73-129	
Chloromethane	ug/kg	1000	728	73	55-125	
cis-1,2-Dichloroethene	ug/kg	1000	811	81	75-126	
cis-1,3-Dichloropropene	ug/kg	1000	775	78	70-130	
Dibromochloromethane	ug/kg	1000	789	79	69-125	
Dibromomethane	ug/kg	1000	840	84	73-125	
Dichlorodifluoromethane	ug/kg	1000	766	77	30-137	
Dichlorofluoromethane	ug/kg	1000	695	69	30-150	
Diethyl ether (Ethyl ether)	ug/kg	1000	807	81	68-131	
Ethylbenzene	ug/kg	1000	735	74	74-127	
Hexachloro-1,3-butadiene	ug/kg	500	426	85	59-130	
Isopropylbenzene (Cumene)	ug/kg	1000	766	77	72-131	
Methyl-tert-butyl ether	ug/kg	1000	807	81	65-132	
Methylene Chloride	ug/kg	1000	833	83	30-150	
n-Butylbenzene	ug/kg	1000	732	73	66-134	
n-Propylbenzene	ug/kg	1000	757	76	74-131	
Naphthalene	ug/kg	1000	863	86	66-130	
p-Isopropyltoluene	ug/kg	1000	750	75	65-134	
sec-Butylbenzene	ug/kg	1000	785	79	69-133	
Styrene	ug/kg	1000	785	78	75-125	
tert-Butylbenzene	ug/kg	1000	770	77	72-129	
Tetrachloroethene	ug/kg	1000	739	74	68-131	
Tetrahydrofuran	ug/kg	10000	8390	84	67-131	
Toluene	ug/kg	1000	754	75	75-125	

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

LABORATORY CONTROL SAMPLE: 1357773

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
trans-1,2-Dichloroethene	ug/kg	1000	755	75	74-129	
trans-1,3-Dichloropropene	ug/kg	1000	766	77	72-128	
Trichloroethene	ug/kg	1000	783	78	72-125	
Trichlorofluoromethane	ug/kg	1000	866	87	41-150	
Vinyl chloride	ug/kg	1000	756	76	54-128	
Xylene (Total)	ug/kg	3000	2290	76	75-126	
1,2-Dichloroethane-d4 (S)	%			93	49-125	
4-Bromofluorobenzene (S)	%			99	53-128	
Dibromofluoromethane (S)	%			99	55-127	
Toluene-d8 (S)	%			94	56-131	

MATRIX SPIKE SAMPLE: 1357774

Parameter	Units	10216401002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	1120	982	87	66-135	
1,1,1-Trichloroethane	ug/kg	ND	1120	922	82	65-150	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1120	1050	93	61-140	
1,1,2-Trichloroethane	ug/kg	ND	1120	2510	222	69-132	M1
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1120	1150	102	60-150	
1,1-Dichloroethane	ug/kg	ND	1120	843	75	64-143	
1,1-Dichloroethene	ug/kg	ND	1120	1010	89	59-150	
1,1-Dichloropropene	ug/kg	ND	1120	955	85	63-150	
1,2,3-Trichlorobenzene	ug/kg	ND	1120	1010	89	67-137	
1,2,3-Trichloropropane	ug/kg	ND	1120	979	87	64-135	
1,2,4-Trichlorobenzene	ug/kg	ND	1120	1040	92	68-134	
1,2,4-Trimethylbenzene	ug/kg	718	1120	1540	73	60-150	
1,2-Dibromo-3-chloropropane	ug/kg	ND	1120	900	80	62-133	
1,2-Dibromoethane (EDB)	ug/kg	ND	1120	996	88	65-136	
1,2-Dichlorobenzene	ug/kg	ND	1120	1020	91	66-138	
1,2-Dichloroethane	ug/kg	ND	1120	952	84	59-141	
1,2-Dichloropropane	ug/kg	ND	1120	952	84	64-141	
1,3,5-Trimethylbenzene	ug/kg	292	1120	1210	82	65-147	
1,3-Dichlorobenzene	ug/kg	ND	1120	1030	91	67-138	
1,3-Dichloropropane	ug/kg	ND	1120	958	85	64-138	
1,4-Dichlorobenzene	ug/kg	ND	1120	1010	90	66-136	
2,2-Dichloropropane	ug/kg	ND	1120	874	77	39-150	
2-Butanone (MEK)	ug/kg	ND	1120	1770	156	39-150	M1
2-Chlorotoluene	ug/kg	ND	1120	1000	89	70-141	
4-Chlorotoluene	ug/kg	ND	1120	984	87	70-139	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	1120	1950	173	63-139	M1
Acetone	ug/kg	ND	2830	2630	93	30-150	
Allyl chloride	ug/kg	ND	1120	913	81	60-150	
Benzene	ug/kg	40.0	1120	979	83	62-144	
Bromobenzene	ug/kg	ND	1120	1040	92	67-140	
Bromochloromethane	ug/kg	ND	1120	1040	92	69-139	
Bromodichloromethane	ug/kg	ND	1120	929	82	64-138	
Bromoform	ug/kg	ND	1120	952	84	60-134	

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

MATRIX SPIKE SAMPLE: 1357774

Parameter	Units	10216401002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/kg	ND	1120	981	85	52-150	
Carbon tetrachloride	ug/kg	ND	1120	1040	92	67-150	
Chlorobenzene	ug/kg	ND	1120	1020	90	65-139	
Chloroethane	ug/kg	ND	1120	876	78	35-150	
Chloroform	ug/kg	ND	1120	976	86	61-143	
Chloromethane	ug/kg	ND	1120	815	71	44-136	
cis-1,2-Dichloroethene	ug/kg	ND	1120	1030	91	68-140	
cis-1,3-Dichloropropene	ug/kg	ND	1120	967	86	60-143	
Dibromochloromethane	ug/kg	ND	1120	983	87	64-134	
Dibromomethane	ug/kg	ND	1120	1010	89	65-135	
Dichlorodifluoromethane	ug/kg	ND	1120	860	76	30-150	
Dichlorofluoromethane	ug/kg	ND	1120	859	76	30-150	
Diethyl ether (Ethyl ether)	ug/kg	ND	1120	979	87	58-146	
Ethylbenzene	ug/kg	161	1120	1090	83	65-146	
Hexachloro-1,3-butadiene	ug/kg	ND	564	573	102	60-150	
Isopropylbenzene (Cumene)	ug/kg	109	1120	1090	87	73-143	
Methyl-tert-butyl ether	ug/kg	ND	1120	992	88	57-145	
Methylene Chloride	ug/kg	ND	1120	1000	86	30-150	
n-Butylbenzene	ug/kg	87.8	1120	1060	86	65-150	
n-Propylbenzene	ug/kg	170	1120	1130	85	69-147	
Naphthalene	ug/kg	ND	1120	1070	86	60-142	
p-Isopropyltoluene	ug/kg	103	1120	1120	90	65-149	
sec-Butylbenzene	ug/kg	56.5	1120	1070	89	72-144	
Styrene	ug/kg	ND	1120	1010	89	69-138	
tert-Butylbenzene	ug/kg	ND	1120	1030	90	68-144	
Tetrachloroethene	ug/kg	ND	1120	985	87	66-147	
Tetrahydrofuran	ug/kg	ND	11200	9570	85	59-142	
Toluene	ug/kg	ND	1120	997	86	59-145	
trans-1,2-Dichloroethene	ug/kg	ND	1120	953	84	63-148	
trans-1,3-Dichloropropene	ug/kg	ND	1120	939	83	59-144	
Trichloroethene	ug/kg	ND	1120	996	88	69-141	
Trichlorofluoromethane	ug/kg	ND	1120	1020	91	44-150	
Vinyl chloride	ug/kg	ND	1120	851	75	51-144	
Xylene (Total)	ug/kg	251	3380	3180	86	65-146	
1,2-Dichloroethane-d4 (S)	%				94	49-125	
4-Bromofluorobenzene (S)	%				101	53-128	
Dibromofluoromethane (S)	%				97	55-127	
Toluene-d8 (S)	%				94	56-131	

SAMPLE DUPLICATE: 1357775

Parameter	Units	10216401003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

SAMPLE DUPLICATE: 1357775

Parameter	Units	10216401003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	2240	2170	3	30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	749	727	3	30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	5.8J		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	531	494	7	30	
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	287	282	2	30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	239	239	.1	30	
n-Propylbenzene	ug/kg	483	466	4	30	

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

SAMPLE DUPLICATE: 1357775

Parameter	Units	10216401003 Result	Dup Result	RPD	Max RPD	Qualifiers
Naphthalene	ug/kg	ND	182J		30	
p-Isopropyltoluene	ug/kg	266	258	3	30	
sec-Butylbenzene	ug/kg	145	145	.06	30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	14.4J		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	18.7J		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	605	562	7	30	
1,2-Dichloroethane-d4 (S)	%	89	91	4		
4-Bromofluorobenzene (S)	%	105	104	.7		
Dibromofluoromethane (S)	%	95	96	3		
Toluene-d8 (S)	%	96	95	.3		

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QUALITY CONTROL DATA

Project: 9309 Ostendorf
Pace Project No.: 10216355

QC Batch: OEXT/20605 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10216355001, 10216355002

METHOD BLANK: 1358068 Matrix: Solid
Associated Lab Samples: 10216355001, 10216355002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	mg/kg	ND	10.0	12/30/12 22:08	
n-Triacontane (S)	%	76	50-150	12/30/12 22:08	

LABORATORY CONTROL SAMPLE & LCSD: 1358069 1358070

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	mg/kg	80	64.2	67.9	80	85	70-120	6	20	
n-Triacontane (S)	%				82	82	50-150			

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 9309 Ostendorf
Pace Project No.: 10216355

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D5	The sample was re-weighed into a new container because the sample weight in the original container exceeded the method specifications.
L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 9309 Ostendorf
Pace Project No.: 10216355

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10216355001	**TH2 9309 Soil -01**	WI MOD DRO	OEXT/20605	WI MOD DRO	GCSV/10660
10216355002	**TH3 9309 Soil -02**	WI MOD DRO	OEXT/20605	WI MOD DRO	GCSV/10660
10216355001	**TH2 9309 Soil -01**	ASTM D2974	MPRP/37066		
10216355002	**TH3 9309 Soil -02**	ASTM D2974	MPRP/37066		
10216355001	**TH2 9309 Soil -01**	EPA 5035/5030B	MSV/22558	EPA 8260	MSV/22559
10216355002	**TH3 9309 Soil -02**	EPA 5035/5030B	MSV/22558	EPA 8260	MSV/22559

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WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs5.i\123012dro.b\364F0067.D
Lab Smp Id: 10216355001
Inj Date : 30-DEC-2012 22:37
Operator : JLR Inst ID: 10gcs5.i
Smp Info : 10216355001
Misc Info : 10660
Comment : C10-C28 DRO
Method : \\192.168.10.12\chem\10gcs5.i\123012dro.b\WDRO5-121612.m
Meth Date : 02-Jan-2013 13:22 jlries Quant Type: ESTD
Cal Date : 16-DEC-2012 15:02 Cal File: 351F0015.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10MNJRWKS

Concentration Formula: Amt * DF * Uf * Vt/(Ws * Vi*(100-M)/100) * CpndVariable

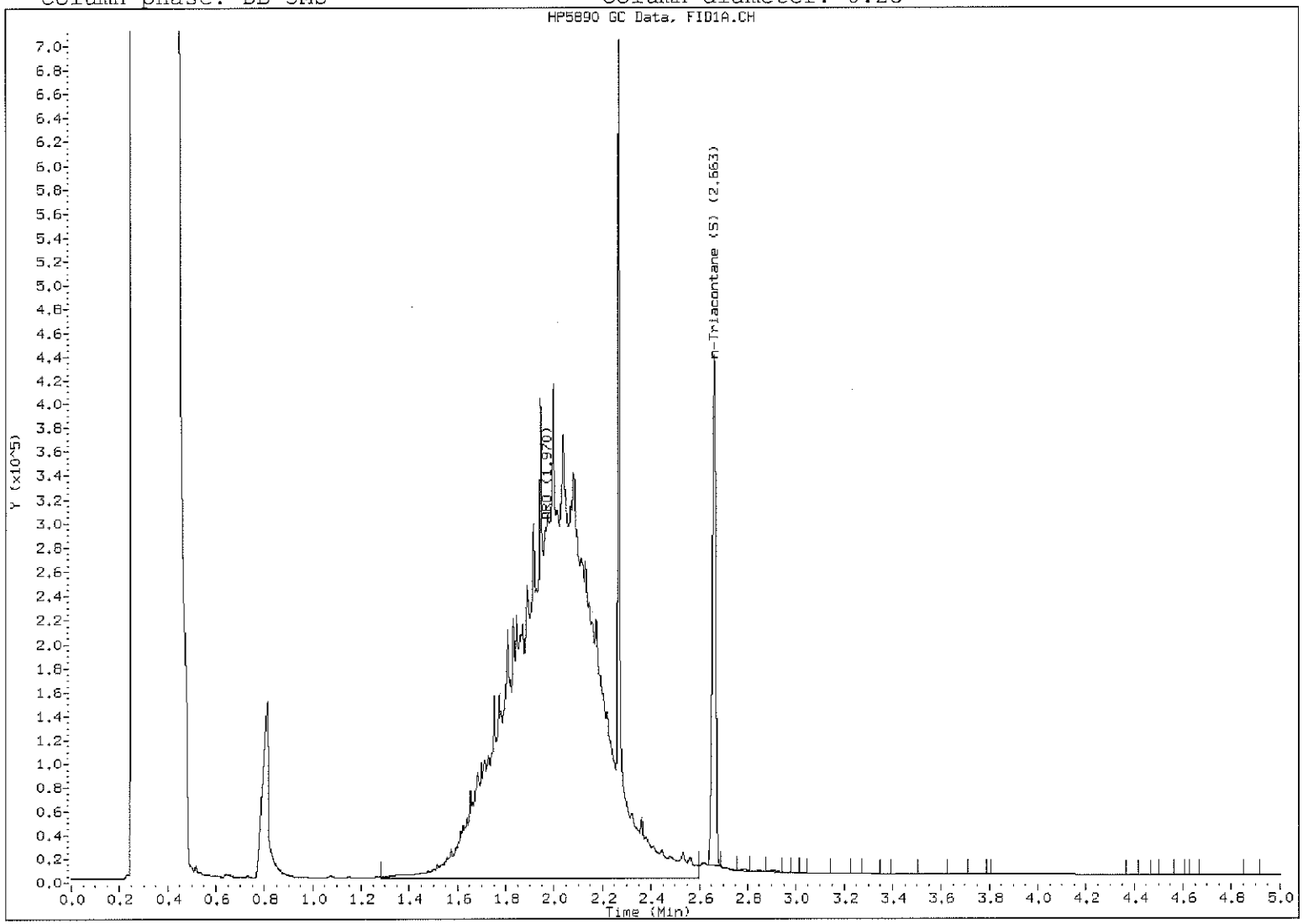
Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Correction factor
Vt	1.000	Volume of final extract (mL)
Ws	25.000	Weight of sample extracted (g)
Vi	1.000	Volume injected (uL)
M	0.00000	% Moisture
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS	
						ON-COLUMN	FINAL
Compounds		RT	EXP RT	DLT RT	RESPONSE	(ug/mL)	(mg/kg)
S	2 DRO	1.350-2.590			173905205	1268.99	50.8
$	5 n-Triacontane (S)	2.662	2.644	0.018	8587398	85.6858	3.43(aRM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs5.i\123012dro.b/364F0067.D
Report Date: 01/02/2013
Sample ID: 10216355001
Client ID:
Instrument: 10gcs5.i
Sample Information: 10216355001
Purge Volume:
Operator: JLR
Column phase: DB-5MS
Column diameter: 0.25



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WI Dept of Nat. Resources- WIDRO

Data file : \\192.168.10.12\chem\10gcs5.i\123012dro.b\364F0071.D
Lab Smp Id: 10216355002
Inj Date : 30-DEC-2012 23:06
Operator : JLR Inst ID: 10gcs5.i
Smp Info : 10216355002
Misc Info : 10660
Comment : C10-C28 DRO
Method : \\192.168.10.12\chem\10gcs5.i\123012dro.b\WDRO5-121612.m
Meth Date : 02-Jan-2013 13:22 jlries Quant Type: ESTD
Cal Date : 16-DEC-2012 15:02 Cal File: 351F0015.D
Als bottle: 24
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10MNJRWKS

Concentration Formula: Amt * DF * Uf * Vt/(Ws * Vi*(100-M)/100) * CpndVariable

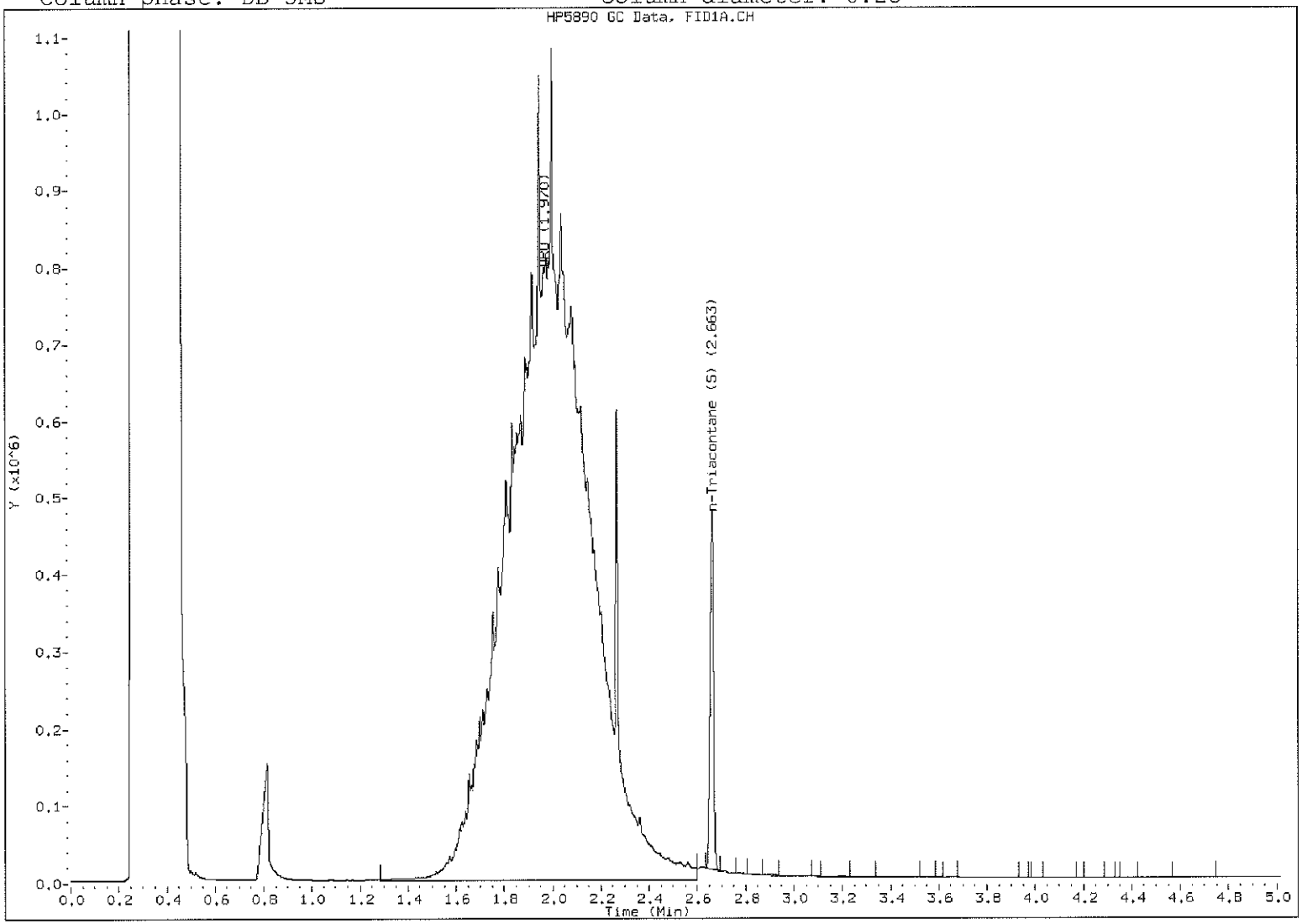
Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Correction factor
Vt	1.000	Volume of final extract (mL)
Ws	25.000	Weight of sample extracted (g)
Vi	1.000	Volume injected (uL)
M	0.00000	% Moisture
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	CONCENTRATIONS FINAL (mg/kg)
S	2 DRO	1.350-2.590			407942156	2982.94	119
$	5 n-Triacontane (S)	2.662	2.644	0.018	9042666	90.2174	3.61(aRM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\192.168.10.12\chem\10gcs5.i\123012dro.b/364F0071.D
Report Date: 01/02/2013
Sample ID: 10216355002
Client ID: Instrument: 10gcs5.i
Sample Information: 10216355002
Purge Volume: Operator: JLR
Column phase: DB-5MS Column diameter: 0.25



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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10216355

Page: of

1655876

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: WEC	Report To: Matt Johnson	Attention: Sheldon Grea
Address: 14 Cream Rivers Morris MN	Copy To:	Company Name:
		Address:
Email To: Johnsonm@wecc	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: 9309 Oshawa	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	DRO	VOC	O/G Methods	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	THL - 9309 - Soil - 01	SL		12/20/12	11:00				4	2						2			X	X	X		001
2	THL - 9309 - Soil - 02	SL		12/20/12	11:30				4	2						2			X	X	X		002
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

SUPERFUND/MULTI SITE PROJECT

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
LK# 17482				Lindsay Scott	12/26	1102	5°	N	N	Y
	Lindsay Scott	12/26	1185	PACE	12/27/12	1120	08			

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Seth Mills

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 12-20-12

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 13Nov2012 Page 1 of 1
	Document No.: F-MN-L-213-rev.05	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: WCEL **Project #:** WO#: 10216355

10216355

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☑ Commercial ☐ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☐ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ B88A912167504 ☑ 80512447 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.7 **Cooler Temp Corrected (°C):** 0.8 **Biological Tissue Frozen?** ☐ Yes ☐ No

Temp should be above freezing to 6°C **Date and Initials of Person Examining Contents:** 12/27/12 SL

Comments:

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: DMH **Date:** 12-27-12

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

January 10, 2013

Mr. Matt Johnson
West Central Env. Consultants
14 Green River Road
Morris, MN 56267

RE: Project: 9309 Oschendorf
Pace Project No.: 10216400

Dear Mr. Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on December 27, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Diane J. Anderson

Diane J. Anderson

diane.anderson@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 9309 Oschendorf
Pace Project No.: 10216400

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: 9309 Oschendorf
Pace Project No.: 10216400

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10216400001	**VIAI-9309-Air-01**	Air	12/20/12 11:15	12/27/12 11:20

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SAMPLE ANALYTE COUNT

Project: 9309 Oschendorf
Pace Project No.: 10216400

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10216400001	**VIAI-9309-Air-01**	TO-15	CJR	61

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ANALYTICAL RESULTS

Project: 9309 Oschendorf
Pace Project No.: 10216400

Sample: VIAI-9309-Air-01 **Lab ID: 10216400001** Collected: 12/20/12 11:15 Received: 12/27/12 11:20 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**18.7**	ug/m3	6.4	13.4		01/04/13 23:28	67-64-1	CH,L1, SS
Benzene	ND	ug/m3	4.4	13.4		01/04/13 23:28	71-43-2	
Benzyl chloride	ND	ug/m3	14.1	13.4		01/04/13 23:28	100-44-7	
Bromodichloromethane	ND	ug/m3	18.2	13.4		01/04/13 23:28	75-27-4	
Bromoform	ND	ug/m3	28.1	13.4		01/04/13 23:28	75-25-2	
Bromomethane	ND	ug/m3	10.6	13.4		01/04/13 23:28	74-83-9	
1,3-Butadiene	ND	ug/m3	6.0	13.4		01/04/13 23:28	106-99-0	
2-Butanone (MEK)	ND	ug/m3	8.0	13.4		01/04/13 23:28	78-93-3	
Carbon disulfide	ND	ug/m3	8.4	13.4		01/04/13 23:28	75-15-0	
Carbon tetrachloride	ND	ug/m3	8.6	13.4		01/04/13 23:28	56-23-5	
Chlorobenzene	ND	ug/m3	12.6	13.4		01/04/13 23:28	108-90-7	
Chloroethane	ND	ug/m3	7.2	13.4		01/04/13 23:28	75-00-3	
Chloroform	ND	ug/m3	13.3	13.4		01/04/13 23:28	67-66-3	
Chloromethane	ND	ug/m3	5.6	13.4		01/04/13 23:28	74-87-3	
Cyclohexane	ND	ug/m3	9.4	13.4		01/04/13 23:28	110-82-7	
Dibromochloromethane	ND	ug/m3	23.2	13.4		01/04/13 23:28	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	20.9	13.4		01/04/13 23:28	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	16.3	13.4		01/04/13 23:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	16.3	13.4		01/04/13 23:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	16.3	13.4		01/04/13 23:28	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	13.5	13.4		01/04/13 23:28	75-71-8	
1,1-Dichloroethane	ND	ug/m3	11.0	13.4		01/04/13 23:28	75-34-3	
1,2-Dichloroethane	ND	ug/m3	5.5	13.4		01/04/13 23:28	107-06-2	
1,1-Dichloroethene	ND	ug/m3	10.9	13.4		01/04/13 23:28	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	10.9	13.4		01/04/13 23:28	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	10.9	13.4		01/04/13 23:28	156-60-5	
1,2-Dichloropropane	ND	ug/m3	12.6	13.4		01/04/13 23:28	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	12.3	13.4		01/04/13 23:28	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	12.3	13.4		01/04/13 23:28	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	19.0	13.4		01/04/13 23:28	76-14-2	
Ethanol	**60.4**	ug/m3	5.1	13.4		01/04/13 23:28	64-17-5	
Ethyl acetate	ND	ug/m3	9.8	13.4		01/04/13 23:28	141-78-6	
Ethylbenzene	ND	ug/m3	11.8	13.4		01/04/13 23:28	100-41-4	
4-Ethyltoluene	ND	ug/m3	13.4	13.4		01/04/13 23:28	622-96-8	
n-Heptane	ND	ug/m3	11.1	13.4		01/04/13 23:28	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	29.5	13.4		01/04/13 23:28	87-68-3	
n-Hexane	ND	ug/m3	9.6	13.4		01/04/13 23:28	110-54-3	
2-Hexanone	ND	ug/m3	11.1	13.4		01/04/13 23:28	591-78-6	
Methylene Chloride	ND	ug/m3	9.5	13.4		01/04/13 23:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	11.1	13.4		01/04/13 23:28	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	9.8	13.4		01/04/13 23:28	1634-04-4	
Naphthalene	ND	ug/m3	14.3	13.4		01/04/13 23:28	91-20-3	
2-Propanol	ND	ug/m3	6.7	13.4		01/04/13 23:28	67-63-0	
Propylene	ND	ug/m3	4.7	13.4		01/04/13 23:28	115-07-1	
Styrene	ND	ug/m3	11.7	13.4		01/04/13 23:28	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	9.4	13.4		01/04/13 23:28	79-34-5	

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ANALYTICAL RESULTS

Project: 9309 Oschendorf
Pace Project No.: 10216400

Sample: VIAI-9309-Air-01 **Lab ID: 10216400001** Collected: 12/20/12 11:15 Received: 12/27/12 11:20 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Tetrachloroethene	ND	ug/m3	9.2	13.4		01/04/13 23:28	127-18-4	
Tetrahydrofuran	ND	ug/m3	8.0	13.4		01/04/13 23:28	109-99-9	
Toluene	**17.3**	ug/m3	10.3	13.4		01/04/13 23:28	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	20.2	13.4		01/04/13 23:28	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	14.9	13.4		01/04/13 23:28	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	7.4	13.4		01/04/13 23:28	79-00-5	
Trichloroethene	ND	ug/m3	7.4	13.4		01/04/13 23:28	79-01-6	
Trichlorofluoromethane	ND	ug/m3	15.3	13.4		01/04/13 23:28	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	21.4	13.4		01/04/13 23:28	76-13-1	
1,2,4-Trimethylbenzene	**22.8**	ug/m3	13.4	13.4		01/04/13 23:28	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/m3	13.4	13.4		01/04/13 23:28	108-67-8	
Vinyl acetate	ND	ug/m3	9.6	13.4		01/04/13 23:28	108-05-4	
Vinyl chloride	ND	ug/m3	3.5	13.4		01/04/13 23:28	75-01-4	
m&p-Xylene	ND	ug/m3	23.6	13.4		01/04/13 23:28	179601-23-1	
o-Xylene	ND	ug/m3	11.8	13.4		01/04/13 23:28	95-47-6	

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QUALITY CONTROL DATA

Project: 9309 Oschendorf
Pace Project No.: 10216400

QC Batch: AIR/16522
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10216400001

METHOD BLANK: 1359520
Matrix: Air
Associated Lab Samples: 10216400001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	1.1	01/04/13 14:08	
1,1,2,2-Tetrachloroethane	ug/m3	ND	0.70	01/04/13 14:08	
1,1,2-Trichloroethane	ug/m3	ND	0.55	01/04/13 14:08	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	1.6	01/04/13 14:08	
1,1-Dichloroethane	ug/m3	ND	0.82	01/04/13 14:08	
1,1-Dichloroethene	ug/m3	ND	0.81	01/04/13 14:08	
1,2,4-Trichlorobenzene	ug/m3	ND	1.5	01/04/13 14:08	
1,2,4-Trimethylbenzene	ug/m3	ND	1.0	01/04/13 14:08	
1,2-Dibromoethane (EDB)	ug/m3	ND	1.6	01/04/13 14:08	
1,2-Dichlorobenzene	ug/m3	ND	1.2	01/04/13 14:08	
1,2-Dichloroethane	ug/m3	ND	0.41	01/04/13 14:08	
1,2-Dichloropropane	ug/m3	ND	0.94	01/04/13 14:08	
1,3,5-Trimethylbenzene	ug/m3	ND	1.0	01/04/13 14:08	
1,3-Butadiene	ug/m3	ND	0.45	01/04/13 14:08	
1,3-Dichlorobenzene	ug/m3	ND	1.2	01/04/13 14:08	
1,4-Dichlorobenzene	ug/m3	ND	1.2	01/04/13 14:08	
2-Butanone (MEK)	ug/m3	ND	0.60	01/04/13 14:08	
2-Hexanone	ug/m3	ND	0.83	01/04/13 14:08	
2-Propanol	ug/m3	ND	0.50	01/04/13 14:08	
4-Ethyltoluene	ug/m3	ND	1.0	01/04/13 14:08	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	0.83	01/04/13 14:08	
Acetone	ug/m3	ND	0.48	01/04/13 14:08	
Benzene	ug/m3	ND	0.32	01/04/13 14:08	
Benzyl chloride	ug/m3	ND	1.0	01/04/13 14:08	
Bromodichloromethane	ug/m3	ND	1.4	01/04/13 14:08	
Bromoform	ug/m3	ND	2.1	01/04/13 14:08	
Bromomethane	ug/m3	ND	0.79	01/04/13 14:08	
Carbon disulfide	ug/m3	ND	0.63	01/04/13 14:08	
Carbon tetrachloride	ug/m3	ND	0.64	01/04/13 14:08	
Chlorobenzene	ug/m3	ND	0.94	01/04/13 14:08	
Chloroethane	ug/m3	ND	0.54	01/04/13 14:08	
Chloroform	ug/m3	ND	0.99	01/04/13 14:08	
Chloromethane	ug/m3	ND	0.42	01/04/13 14:08	
cis-1,2-Dichloroethene	ug/m3	ND	0.81	01/04/13 14:08	
cis-1,3-Dichloropropene	ug/m3	ND	0.92	01/04/13 14:08	
Cyclohexane	ug/m3	ND	0.70	01/04/13 14:08	
Dibromochloromethane	ug/m3	ND	1.7	01/04/13 14:08	
Dichlorodifluoromethane	ug/m3	ND	1.0	01/04/13 14:08	
Dichlorotetrafluoroethane	ug/m3	ND	1.4	01/04/13 14:08	
Ethanol	ug/m3	ND	0.38	01/04/13 14:08	
Ethyl acetate	ug/m3	ND	0.73	01/04/13 14:08	
Ethylbenzene	ug/m3	ND	0.88	01/04/13 14:08	
Hexachloro-1,3-butadiene	ug/m3	ND	2.2	01/04/13 14:08	

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QUALITY CONTROL DATA

Project: 9309 Oschendorf
Pace Project No.: 10216400

METHOD BLANK: 1359520 Matrix: Air

Associated Lab Samples: 10216400001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
m&p-Xylene	ug/m3	ND	1.8	01/04/13 14:08	
Methyl-tert-butyl ether	ug/m3	ND	0.73	01/04/13 14:08	
Methylene Chloride	ug/m3	ND	0.71	01/04/13 14:08	
n-Heptane	ug/m3	ND	0.83	01/04/13 14:08	
n-Hexane	ug/m3	ND	0.72	01/04/13 14:08	
Naphthalene	ug/m3	ND	1.1	01/04/13 14:08	
o-Xylene	ug/m3	ND	0.88	01/04/13 14:08	
Propylene	ug/m3	ND	0.35	01/04/13 14:08	
Styrene	ug/m3	ND	0.87	01/04/13 14:08	
Tetrachloroethene	ug/m3	ND	0.69	01/04/13 14:08	
Tetrahydrofuran	ug/m3	ND	0.60	01/04/13 14:08	
Toluene	ug/m3	ND	0.77	01/04/13 14:08	
trans-1,2-Dichloroethene	ug/m3	ND	0.81	01/04/13 14:08	
trans-1,3-Dichloropropene	ug/m3	ND	0.92	01/04/13 14:08	
Trichloroethene	ug/m3	ND	0.55	01/04/13 14:08	
Trichlorofluoromethane	ug/m3	ND	1.1	01/04/13 14:08	
Vinyl acetate	ug/m3	ND	0.72	01/04/13 14:08	
Vinyl chloride	ug/m3	ND	0.26	01/04/13 14:08	

LABORATORY CONTROL SAMPLE: 1359521

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	55.5	54.2	98	69-131	
1,1,2,2-Tetrachloroethane	ug/m3	69.8	73.6	105	66-135	
1,1,2-Trichloroethane	ug/m3	55.5	61.8	111	68-132	
1,1,2-Trichlorotrifluoroethane	ug/m3	77.9	70.5	90	65-130	
1,1-Dichloroethane	ug/m3	41.2	47.1	114	66-131	
1,1-Dichloroethene	ug/m3	40.3	47.7	118	64-136	
1,2,4-Trichlorobenzene	ug/m3	75.5	98.8	131	30-150	CH,SS
1,2,4-Trimethylbenzene	ug/m3	50	47.8	96	71-135	
1,2-Dibromoethane (EDB)	ug/m3	78.1	75.9	97	72-132	
1,2-Dichlorobenzene	ug/m3	61.2	63.6	104	68-148	
1,2-Dichloroethane	ug/m3	41.2	45.8	111	66-136	
1,2-Dichloropropane	ug/m3	47	50.0	106	68-133	
1,3,5-Trimethylbenzene	ug/m3	50	49.5	99	69-136	
1,3-Butadiene	ug/m3	22.5	18.8	83	69-134	
1,3-Dichlorobenzene	ug/m3	61.2	65.5	107	70-134	
1,4-Dichlorobenzene	ug/m3	61.2	62.7	103	66-134	
2-Butanone (MEK)	ug/m3	30	48.4	161	69-141	CH,L1,SS
2-Hexanone	ug/m3	41.7	50.3	121	74-132	
2-Propanol	ug/m3	25	32.3	129	64-139	
4-Ethyltoluene	ug/m3	50	55.2	110	71-134	
4-Methyl-2-pentanone (MIBK)	ug/m3	41.7	51.9	125	74-131	
Acetone	ug/m3	24.2	38.1	158	62-142	CH,L1,SS
Benzene	ug/m3	32.5	31.3	96	72-136	

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: 9309 Oschendorf
Pace Project No.: 10216400

LABORATORY CONTROL SAMPLE: 1359521

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzyl chloride	ug/m3	52.5	63.0	120	70-134	
Bromodichloromethane	ug/m3	68.2	77.8	114	69-135	
Bromoform	ug/m3	105	109	104	72-133	
Bromomethane	ug/m3	39.5	28.2	71	65-125	
Carbon disulfide	ug/m3	31.7	30.3	96	68-127	
Carbon tetrachloride	ug/m3	64	75.1	117	64-133	
Chlorobenzene	ug/m3	46.8	44.2	94	65-135	
Chloroethane	ug/m3	26.8	23.7	88	63-129	
Chloroform	ug/m3	49.7	48.1	97	66-129	
Chloromethane	ug/m3	21	19.6	93	57-135	
cis-1,2-Dichloroethene	ug/m3	40.3	36.5	91	73-135	
cis-1,3-Dichloropropene	ug/m3	46.2	52.6	114	75-137	
Cyclohexane	ug/m3	35	38.6	110	73-139	
Dibromochloromethane	ug/m3	86.6	89.6	103	73-130	
Dichlorodifluoromethane	ug/m3	50.3	50.4	100	64-131	
Dichlorotetrafluoroethane	ug/m3	71.1	59.3	83	64-131	
Ethanol	ug/m3	19.2	19.7	103	62-134	
Ethyl acetate	ug/m3	36.6	44.2	121	73-136	
Ethylbenzene	ug/m3	44.2	42.4	96	74-136	
Hexachloro-1,3-butadiene	ug/m3	108	159	146	30-150	CH,SS
m&p-Xylene	ug/m3	44.2	42.1	95	72-135	
Methyl-tert-butyl ether	ug/m3	36.7	34.0	93	71-134	
Methylene Chloride	ug/m3	35.3	39.5	112	59-140	
n-Heptane	ug/m3	41.7	48.3	116	73-136	
n-Hexane	ug/m3	35.8	56.3	157	67-136	CH,L1
Naphthalene	ug/m3	53.3	75.2	141	30-150	CH,SS
o-Xylene	ug/m3	44.2	43.6	99	74-135	
Propylene	ug/m3	17.5	17.9	102	66-138	
Styrene	ug/m3	43.3	49.1	113	73-135	
Tetrachloroethene	ug/m3	69	60.8	88	66-135	
Tetrahydrofuran	ug/m3	30	32.2	107	73-130	
Toluene	ug/m3	38.3	47.2	123	71-134	
trans-1,2-Dichloroethene	ug/m3	40.3	31.8	79	68-129	
trans-1,3-Dichloropropene	ug/m3	46.2	50.9	110	75-129	
Trichloroethene	ug/m3	54.6	52.0	95	68-134	
Trichlorofluoromethane	ug/m3	57.1	61.3	107	61-134	
Vinyl acetate	ug/m3	35.8	42.7	119	70-139	
Vinyl chloride	ug/m3	26	22.5	87	64-134	

SAMPLE DUPLICATE: 1360617

Parameter	Units	10215436001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	ND	ND		25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	ND		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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(612)607-1700

QUALITY CONTROL DATA

Project: 9309 Oschendorf
Pace Project No.: 10216400

SAMPLE DUPLICATE: 1360617

Parameter	Units	10215436001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2,4-Trichlorobenzene	ug/m3	ND	ND		25	
1,2,4-Trimethylbenzene	ug/m3	ND	ND		25	
1,2-Dibromoethane (EDB)	ug/m3	ND	ND		25	
1,2-Dichlorobenzene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
1,2-Dichloropropane	ug/m3	ND	ND		25	
1,3,5-Trimethylbenzene	ug/m3	ND	ND		25	
1,3-Butadiene	ug/m3	ND	ND		25	
1,3-Dichlorobenzene	ug/m3	ND	ND		25	
1,4-Dichlorobenzene	ug/m3	ND	ND		25	
2-Butanone (MEK)	ug/m3	0.93	0.72	25	25	CH,L1,SS
2-Hexanone	ug/m3	ND	ND		25	
2-Propanol	ug/m3	ND	ND		25	
4-Ethyltoluene	ug/m3	ND	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	ND		25	
Acetone	ug/m3	ND	3.2		25	CH,L1,SS
Benzene	ug/m3	0.34	.31J		25	
Benzyl chloride	ug/m3	ND	ND		25	
Bromodichloromethane	ug/m3	ND	ND		25	
Bromoform	ug/m3	ND	ND		25	
Bromomethane	ug/m3	ND	ND		25	
Carbon disulfide	ug/m3	2.5	2.3	9	25	
Carbon tetrachloride	ug/m3	1.8	1.8	.1	25	
Chlorobenzene	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
Chloroform	ug/m3	ND	ND		25	
Chloromethane	ug/m3	0.70	0.72	3	25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
cis-1,3-Dichloropropene	ug/m3	ND	ND		25	
Cyclohexane	ug/m3	ND	ND		25	
Dibromochloromethane	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	2.5	2.4	2	25	
Dichlorotetrafluoroethane	ug/m3	ND	ND		25	
Ethanol	ug/m3	2.2	2.0	6	25	
Ethyl acetate	ug/m3	ND	ND		25	
Ethylbenzene	ug/m3	ND	ND		25	
Hexachloro-1,3-butadiene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	ND		25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
Methylene Chloride	ug/m3	0.90	0.85	6	25	
n-Heptane	ug/m3	ND	ND		25	
n-Hexane	ug/m3	0.44	ND		25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	ND		25	
Propylene	ug/m3	ND	ND		25	
Styrene	ug/m3	1.1	1.1	5	25	
Tetrachloroethene	ug/m3	ND	ND		25	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: 9309 Oschendorf
Pace Project No.: 10216400

SAMPLE DUPLICATE: 1360617

Parameter	Units	10215436001 Result	Dup Result	RPD	Max RPD	Qualifiers
Tetrahydrofuran	ug/m3	ND	ND		25	
Toluene	ug/m3	0.82	.75J		25	
trans-1,2-Dichloroethene	ug/m3	ND	ND		25	
trans-1,3-Dichloropropene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Trichlorofluoromethane	ug/m3	1.5	1.5	.3	25	
Vinyl acetate	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

SAMPLE DUPLICATE: 1360618

Parameter	Units	10215523001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	ND	ND		25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	ND		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2,4-Trichlorobenzene	ug/m3	ND	ND		25	
1,2,4-Trimethylbenzene	ug/m3	ND	ND		25	
1,2-Dibromoethane (EDB)	ug/m3	ND	ND		25	
1,2-Dichlorobenzene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
1,2-Dichloropropane	ug/m3	ND	ND		25	
1,3,5-Trimethylbenzene	ug/m3	ND	.26J		25	
1,3-Butadiene	ug/m3	ND	ND		25	
1,3-Dichlorobenzene	ug/m3	ND	ND		25	
1,4-Dichlorobenzene	ug/m3	ND	ND		25	
2-Butanone (MEK)	ug/m3	ND	ND		25	
2-Hexanone	ug/m3	ND	ND		25	
2-Propanol	ug/m3	ND	ND		25	
4-Ethyltoluene	ug/m3	ND	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	ND		25	
Acetone	ug/m3	12.9	14.9	14	25	CH,L1,SS
Benzene	ug/m3	0.98	1.0	3	25	
Benzyl chloride	ug/m3	ND	ND		25	
Bromodichloromethane	ug/m3	ND	ND		25	
Bromoform	ug/m3	ND	ND		25	
Bromomethane	ug/m3	ND	ND		25	
Carbon disulfide	ug/m3	ND	ND		25	
Carbon tetrachloride	ug/m3	2.3	2.3	.04	25	
Chlorobenzene	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
Chloroform	ug/m3	ND	ND		25	
Chloromethane	ug/m3	0.71	0.84	17	25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
cis-1,3-Dichloropropene	ug/m3	ND	ND		25	

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QUALITY CONTROL DATA

Project: 9309 Oschendorf
Pace Project No.: 10216400

SAMPLE DUPLICATE: 1360618

Parameter	Units	10215523001 Result	Dup Result	RPD	Max RPD	Qualifiers
Cyclohexane	ug/m3	1.2	1.3	9	25	
Dibromochloromethane	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	2.2	2.4	8	25	
Dichlorotetrafluoroethane	ug/m3	ND	ND		25	
Ethanol	ug/m3	23.0	27.2	17	25	
Ethyl acetate	ug/m3	1.1	1.2	12	25	
Ethylbenzene	ug/m3	ND	.58J		25	
Hexachloro-1,3-butadiene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	2J		25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
Methylene Chloride	ug/m3	1.3	1.3	6	25	
n-Heptane	ug/m3	1.4	1.6	9	25	
n-Hexane	ug/m3	1.3	1.4	11	25	CH,L1
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	.58J		25	
Propylene	ug/m3	ND	ND		25	
Styrene	ug/m3	ND	ND		25	
Tetrachloroethene	ug/m3	ND	ND		25	
Tetrahydrofuran	ug/m3	ND	ND		25	
Toluene	ug/m3	5.0	5.4	8	25	
trans-1,2-Dichloroethene	ug/m3	ND	ND		25	
trans-1,3-Dichloropropene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Trichlorofluoromethane	ug/m3	ND	1.5J		25	
Vinyl acetate	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

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QUALIFIERS

Project: 9309 Oschendorf
Pace Project No.: 10216400

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SAMPLE QUALIFIERS

Sample: 10216400001

[1]	The Total Hydrocarbon (THC) pattern occured in the second half of the chromatogram (after toluene).
[2]	Sample was analyzed in hold but unreportable due to QC Failure. Sample re-analyzed beyond the recommended MPCA Guidance Document 4-01a 14 day holding time. Analysis occurred within 30 days of collection, the EPA method TO-15 recommended holding time.

ANALYTE QUALIFIERS

CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 9309 Oschendorf
Pace Project No.: 10216400

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10216400001	**VIAI-9309-Air-01**	TO-15	AIR/16522		

Data File: \\192.168.10.12\chem\10air0.i\010413.b\00424.D
Report Date: 07-Jan-2013 13:11

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name:
Lab Smp Id: 10216400001
Operator : CJR
Sample Location:
Sample Matrix: AIR
Analysis Type: VOA
Inj Date: 04-JAN-2013 23:28

Client SDG: 010413.b

Sample Date:
Sample Point:
Date Received:
Level: LOW

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	3.833	1220	J
2.		Unknown	15.228	453	J
3.	81983-70-2	Cyclohexane, 2-propyl-1,1,3	15.979	410	NJ
4.	1000152-47-	trans-Decalin, 2-methyl-	16.096	580	NJ
5.		Unknown	16.295	447	J
6.		Unknown	16.462	460	J
7.		Unknown	16.599	402	J
8.	1000111-72-	cis,trans-1,6-Dimethylspiro	16.791	399	NJ
9.		Unknown	17.021	380	J
10.		Unknown	17.399	296	J

Data File: \\192.168.10.12\chem\10air0.i\010413.b\00424.D
Report Date: 07-Jan-2013 13:11

Pace Analytical Services, Inc.

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10air0.i\010413.b\00424.D
Lab Smp Id: 10216400001
Inj Date : 04-JAN-2013 23:28
Operator : CJR Inst ID: 10air0.i
Smp Info :
Misc Info : 16522
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10air0.i\010413.b\TO15_002-13.m
Meth Date : 07-Jan-2013 11:43 creindl Quant Type: ISTD
Cal Date : 02-JAN-2013 14:01 Cal File: 00213.D
Als bottle: 24
Dil Factor: 13.40000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10MNCREINDL

Concentration Formula: Amt * DF * Uf * CpndVariable

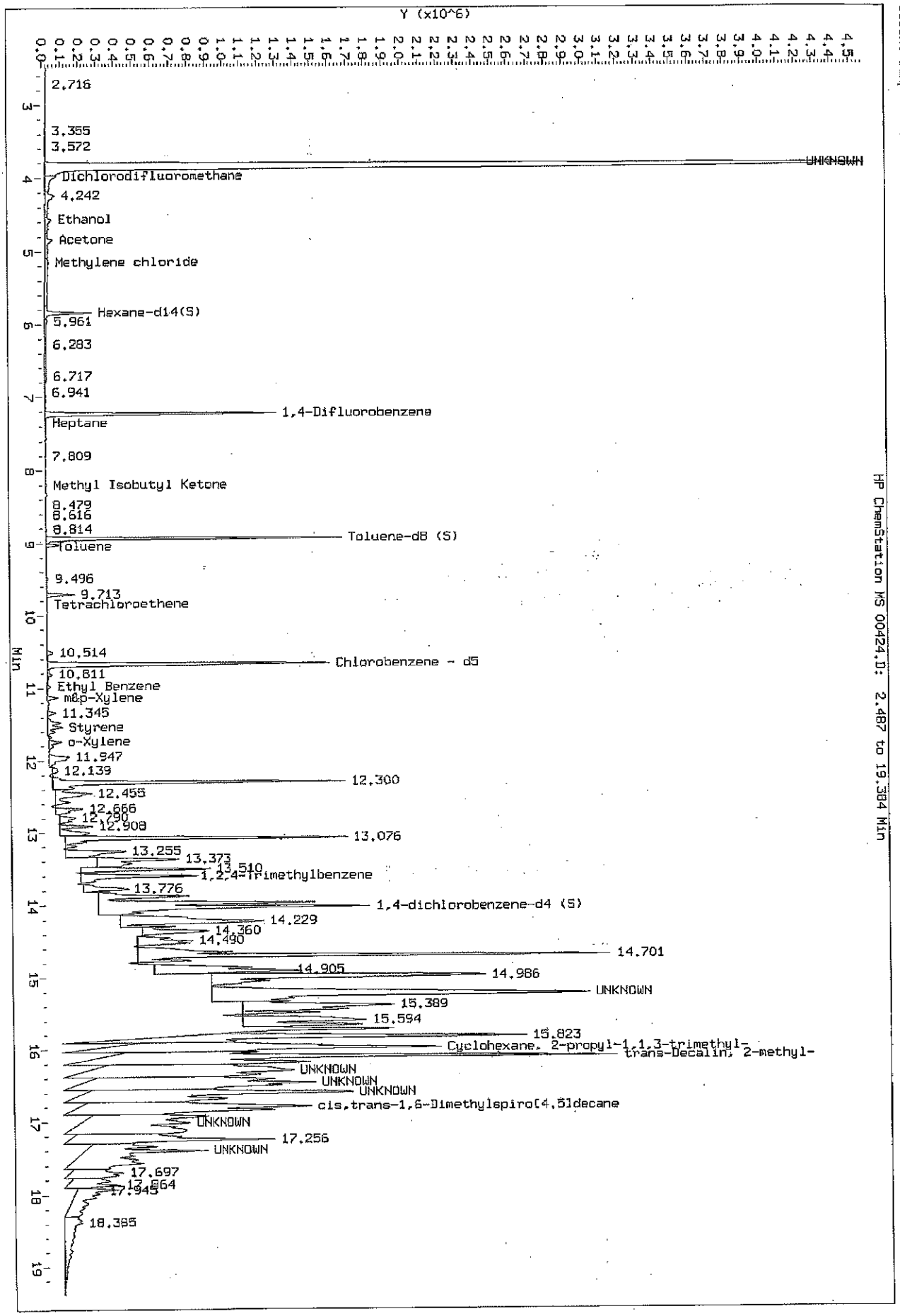
Name	Value	Description
DF	13.400	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

ISTD	RT	AREA	AMOUNT
* 38 1,4-Difluorobenzene	7.226	2212379	10.000
* 55 Chlorobenzene - d5	10.675	3077553	10.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
3.833	20148069	91.0696946	1220	0		0	38
Unknown				CAS #:			
15.228	10412089	33.8323577	453	0		0	55
Cyclohexane, 2-propyl-1,1,3-trimethyl-				CAS #: 81983-70-2			
15.979	9407442	30.5679241	410	70	NIST05.L	35081	55
trans-Decalin, 2-methyl-				CAS #: 1000152-47-3			
16.096	13329215	43.3110754	580	81	NIST05.L	24396	55
Unknown				CAS #:			
16.295	10270254	33.3714910	447	0		0	55

Data File: \\192.168.10.12\chem\10air0.i\010413.b\00424.D
Report Date: 07-Jan-2013 13:11

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
16.462	10557839	34.3059498	460	0		0	55
Unknown				CAS #:			
16.599	9226701	29.9806362	402	0		0	55
cis,trans-1,6-Dimethylspiro[4.5]decane				CAS #:	1000111-72-3		
16.791	9160909	29.7668564	399	92	NIST05.L	33565	55
Unknown				CAS #:			
17.021	8733295	28.3773968	380	0		0	55
Unknown				CAS #:			
17.399	6787591	22.0551520	296	0		0	55


Data File: \\192.168.10.12\chem\10air0.i\010413.b\00424.D
Injection Date: 04-JAN-2013 23:28
Instrument: 10air0.i
Client Sample ID:
HP ChemStation MS 00424.D: 2.487 to 19.384 Min
Y (x10^6)
Min
2.716
3.355
3.572
UNKNOWN
Dichlorodifluoromethane
4.242
Ethanol
Acetone
Methylene chloride
Hexane-d14(S)
5.961
6.283
6.717
6.941
1,4-Difluorobenzene
Heptane
7.809
Methyl Isobutyl Ketone
8.479
8.616
8.814
Toluene-d8 (S)
Toluene
9.496
9.713
Tetrachloroethene
10.514
Chlorobenzene - d5
10.811
Ethyl Benzene
m&p-Xylene
11.345
Styrene
o-Xylene
11.947
12.139
12.300
12.455
12.666
12.790
12.908
13.076
13.255
13.373
13.510
1,2,4-Trimethylbenzene
13.776
1,4-dichlorobenzene-d4 (S)
14.229
14.360
14.490
14.701
14.905
14.986
UNKNOWN
15.389
15.594
15.823
Cyclohexane, 2-propyl-1,1,3-trimethyl-
trans-Decalin, 2-methyl-
UNKNOWN
UNKNOWN
UNKNOWN
cis,trans-1,6-Dimethylspiro[4.5]decane
UNKNOWN
17.256
UNKNOWN
17.697
17.864
17.945
18.385

Pace Analytical®
www.pacelabs.com

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10216400

17256

Page: of

Section A Required Client Information:

Company: WCEC
Address: 14 Green River Rd Morris MN
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Matt Johnson
Copy To:
Purchase Order No.:
Project Name: Ostrander
Project Number: 9309

Section C Invoice Information:

Attention: Sheldon Green
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager/Sales Rep.
Pace Profile #:

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other

Location of Sampling by State:

Reporting Units: ug/m³ mg/m³ PPBV PPMV Other

Report Level II. III. IV. Other

Section D Required Client Information

AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	Section D Required Client Information / AIR SAMPLE ID	MEDIA CODE	PID Reading (Client only)	COLLECTED COMPOSITE START END/GRAB DATE	COLLECTED COMPOSITE START END/GRAB TIME	COLLECTED COMPOSITE - DATE	COLLECTED COMPOSITE - TIME	Canister Pressure (Initial Field - psig)	Canister Pressure (Final Field - psig)	Summa Can Number	Flow Control Number	Method: PM10	3C- Fixed Gas (%)	TO-3	TO-3M (Methane)	TO-4 (PCBs)	TO-13 (PAH)	TO-14	TO-15	TO15 Short List*	Pace Lab ID
1	V1A1-9309-Air-01	6L		12-20-12	11:15					170								X			
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

SUPERFUND/MULTISITE PROJECT

Comments: Valve - Threads where tubing is attached Seem Damaged

Lk# 17482

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
			Lindsey Scott	12/26	1045
Lindsey Scott	12/6	1100		12/27/12	11:20

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER: DATE Signed (MM / DD / YY): 12-20-12

SAMPLE CONDITIONS			
Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact
3°	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

ORIGINAL

Pace Analytical®	Document Name: Air Sample Condition Upon Receipt	Document Revised: 13Nov2012 Page 1 of 1
	Document No.: F-MN-A-106-rev.06	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: WCEC

Project #: WO#: 10216400

10216400

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☑ Other: Speedee

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other:

Temperature (TO17 and TO13 samples only) (°C): AMB **Corrected Temp (°C):** **Thermometer Used:** ☐ B88A912167504 ☐ 80512447

Temp should be above freezing to 6°C

Date & Initials of Person Examining Contents: 12/27/12

Comments:

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Media: Air Can				11.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.

Samples Received: 1 Can, 1 gauge

Canisters		Flow Controllers		Stand Alone G	
Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID
V1A1-9309-Air-01	Pace 0190				AAA

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: DRM **Date:** 12/27/12

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

APPENDIX B

Methodologies and Procedures

SOIL SAMPLING PROCEDURES
Hand Auger

Ochsendorf Residence
Hector, MN
WCEC Project No.: 12-9309-30

Hand Auger
Test hole borings were conducted with a 3" Dutch hand Auger. Hand auger borings were completed to the approximate depth of 5 feet. The hand auger was decontaminated between each hole.

Headspace Analysis of Soil Samples
Soil samples for on-site screening were placed in plastic, a Ziplock@-style bags. Each bag was half-filled with soil and sealed. Headspace development proceeded for a minimum of 10 minutes; each bag was shaken for 15 seconds before and after this period. Analysis was performed with a photoionization detector (PID). To perform the field headspace analysis, the PID was inserted through the plastic bag to a depth of approximately one-half of the total headspace, and maximum meter response over a period of 5 seconds was recorded.

The PID used was a Minnie Rae Plus model PGM75K with a 10.6 eV lamp. The PID was calibrated on site each morning, noon, and afternoon with compressed isobutylene gas to read parts-per-million volume/volume of benzene vapors.

Laboratory Analysis of Soil and Water Samples
Soil samples were collected in laboratory-supplied, test-specific sample containers, then stored and shipped in ice-filled containers along with a chain of custody form(s). Water samples were analyzed for benzene, ethyl-benzene, toluene, and xylene (BTEX), methyl tertiary butyl ether (MTBE), volatile organic compounds (VOCs), gasoline range organics (GRO), and/or diesel range organics (DRO).

VAPOR INTRUSION SAMPLING PROCEDURES

Ochsendorf Residence
Hector, MN
WCEC Project No.: 12-9309-30

Vapor Sampling- Soil Gas

Soil gas sampling points are advanced to 4 feet below grade using direct push technology (Geoprobe®). The soil gas sampling device is a four-foot long steel rod with a 1-inch outside diameter (OD). A slotted aluminum drive point attached to 1/4" OD polyethylene tubing is attached to the rod and driven to a desired depth by a hydraulic drive/push hammer. When desired depth is reached, the steel rod is detached from the aluminum drive point, leaving the tubing and drive point in the ground. To create a seal above the point, 2 cup of coarse sand is poured into the boring to cover the aluminum drive point, followed by 1 cup of bentonite and 2 cup of distilled water. The bentonite water combination may be repeated, and then bentonite is used to backfill the remaining hole, followed by more distilled water. This process is to ensure samples collected are representative of sub-surface vapors. Upon completion of sampling, the borings are backfilled or grouted in accordance with Minnesota Department of Health (MDH) guidelines. New tubing and drive points are used for each boring/sample to eliminate cross contamination.

Vapor Sampling- Sub-Slab

WCEC used an electric concrete coring tool to obtain a soil gas sample from beneath the slab-on-grade. An aluminum drive point attached to 1/4" OD polyethylene tubing is installed just below the cement slab. Coarse sand is used to cover the aluminum drive point and bentonite is used to backfill a portion of the hole, then sealed at the surface with cement to prevent infiltration of ambient air. After the first round of sampling the tubing was sealed with a removable plug. Upon completion of the second sampling event, the sampling points was removed and patched with cement.

Sub-Slab Sampling

A central location, away from foundation footings and floor penetrations, on the basement floor or slab-on-grade is required for sub-slab sampling. Once an appropriate location is found, an electric concrete coring tool (KVA Drill) with a 3/4" wide by 1' long bit is used to drill a hole through the basement foundation or slab-on-grade in order to advance a disposable aluminum sampling point to a desired sub-slab depth. The aluminum point is attached to 1/4" outside diameter (OD) polyethylene tubing, which is woven through a hollow steel push rod (1" OD), and is driven to a desired depth by a hammer. When a desired depth is reached, the steel rod is detached from the aluminum drive point, leaving the tubing and drive point in the ground. In most cases, a sample obtained immediately below the slab is required, therefore, the steel rods are used simply to secure the point directly under the slab. After any steel rods are removed, coarse sand is used to cover the aluminum point and bentonite is used to backfill the remaining hole. The boring is sealed at the surface either with grout or cement to prevent infiltration of ambient air.

Prior to collecting the sample, a minimum of two volumes (i.e. total volume of the sampling point tube) is purged utilizing a graduated syringe. To isolate soil gas from surface air inside of the tubing,

a locking type clamp is used on the tubing between purging and sampling. After the tubing is purged, an in-line moisture trap is installed to prevent moisture from entering the Summa® canister. A sample is collected by attaching the top end of the tubing to the Summa® canister instrumented with a vacuum gauge. Vacuum gauges are only used one time and the vacuum pressure in any remaining canisters is assumed. The Summa® canister valve is closed after the vacuum gauge indicates that the canister is full.

Upon completion, the sampling points are backfilled or grouted in accordance with Minnesota Department of Health (MDH) guidelines and the concrete is patched. All tubing and drive points are replaced after each sample to eliminate sample carryover problems.

Indoor Air Sampling

WCEC's method of indoor air sampling follows the MPCA Guidance Document 4-01a, which involves the use of a Summa® canister analyzed using the EPA TO-15 (full-scan) method for the compounds listed in the Minnesota Soil Gas List (Appendix A of MPCA Guidance Document 4-01a). Prior to collecting indoor samples, a pre-sampling indoor inspection is performed. An Indoor Air Quality Survey is also completed at least two weeks prior to sample collection. A completed questionnaire, as well as details of what modifications the occupants were requested to make and to what extent they complied with the request is gathered. Per inspection and questionnaire results, vapor sampling points are determined. Ideally, samples are collected from the lowest level of the structure near the suspected source and from the main floor and/or other commonly used spaces to assess worst-case exposures and the distribution of contaminants within the structure.

For main floor and/or commonly used spaces, the Summa® canister sample port is placed in the breathing zone, approximately 3-5 feet from the floor, in the center of the room. For the lowest level of the structure (e.g., basements), the Summa® canister sample port is placed directly near the point of suspected vapor entry (e.g., sump).

A flow controller is attached to the Summa® canister to regulate flow over a 24 hour period. After 24 hours WCEC returns to close the valve on the canister, collect the canister and record the time on the Air Sampling Form and the Chain-of-Custody. If a grab sample is required, a flow controller is not used. On every indoor air sample, WCEC uses an in-line moisture trap to prevent moisture from entering the canister.

Soil Gas Sample Collection

Prior to collecting the sample, a minimum of two volumes (i.e., total volume of the sampling point tube) is purged from the tube utilizing a graduated syringe. To isolate soil gas from surface air inside of the tubing, a locking-type clamp is used on the tubing during purging and between purging and sampling. After the tubing is purged, an in-line moisture trap is installed to prevent moisture from entering the Summa7 canister. A sample is collected by attaching the top end of the tubing to the Summa7 canister instrumented with a vacuum gauge. The time was noted, and the valve was opened. After the vacuum gauge indicated that the Summa® canister was full, the valve was closed and the total sampling time was recorded. Since the pressure gauge can only be used once (due to moisture), the sampling time of the first canister was used as a guide when collecting subsequent soil gas samples at the site.

Organic Vapor Measurement

A photoionization detector (PID) is used to record the organic vapor measurement. To perform the field analysis, the inert tubing that was used to fill the canister is connected to the PID. The maximum meter response over a period of 5 seconds is recorded. This measurement is recorded onto the chain of custody form and sample field sheet.

The PID used is a Minnie Rae Plus model PGM75K with a 10.6 eV lamp. The PID is fresh air calibrated and span calibrated with compressed isobutylene gas to read parts-per-million volume/volume of benzene vapors at the site prior to use and as needed. In addition, it is calibrated monthly with compressed isobutylene gas to read parts-per-million volume/volume of benzene vapors.

Laboratory Analysis of Vapor Samples

Soil gas samples are collected in laboratory-supplied, test-specific sample containers, then shipped along with a chain of custody form(s). Soil gas samples are analyzed by EPA method TO-15 (full scan) for compounds in the Minnesota Soil Gas List. In situations where high contamination levels are known to exist, such as with elevated organic vapor field screening readings, the use of EPA method TO-14 will be allowable. This determination should be made only by the laboratory.

VAPOR SURVEY PROCEDURES

Ochsendorf Residence
Hector, MN
WCEC Project #: 12-9309-30

Equipment and Calibration

Vapor surveys are performed using a MiniRAE photoionization detector (PID) equipped with a 10.6 eV lamp. The PID is fresh air calibrated and span calibrated with isobutylene at the site prior to use and as needed throughout surveying. In addition, it is calibrated monthly with compressed isobutylene gas to read parts-per-million volume/volume of benzene vapors.

Utility Vapor Survey

Utility vapor surveys are coordinated with city personnel when (if) possible. Storm and sanitary sewer covers (STACs) are removed from the sanitary and storm sewer unless slotted. The PID is fitted with tubing and a squeeze bulb to draw sample to the unit and obtain remote readings where appropriate along the column of the utility. All site specific vapor survey points are surveyed and measurements are recorded within the sampling field sheets.
Note: The PID is fresh air calibrated with tubing attached prior to utility measurement.

Basement Vapor Survey

Basement vapor surveys are performed using the PID to assess the ambient air at vapor accumulation and/or entry points within the basement. Possible areas of vapor accumulation and/or entry include basement sewer drains, sumps, cracks in the foundation, building corners, crawl spaces, and in any area of poor circulation. All measurements are collected low to the ground where vapors are concentrated. All site specific vapor survey points are surveyed and measurements are recorded within the sampling field sheets.

QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES
Ochsendorf Residence
Hector, MN

Sampling/Handling Procedures
Disposable latex gloves were used by field technicians at all times during sampling. Gloves were replaced when soiled and between each sampling point to minimize cross and background contamination. Sampling equipment and sampling canisters were kept away from potential sources of cross and background contamination and were replaced if deemed necessary.

Equipment Decontamination
Between uses, all non-disposable sampling equipment was scrubbed in a solution of biodegradable Alconox detergent and distilled water, rinsed with distilled water, rinsed with methyl alcohol, and finally triple-rinsed with distilled water. Water disposal was in accordance with state guidelines.

Chain of Custody
Samples were logged onto a lab-specific chain-of-custody form immediately after a sample was collected. This record contains the following information: project number, sample description, matrix, number of containers, type of preservative, analyses requested, sampling date, sampler(s), sampler's signature(s), WCEC relinquishing signature(s), date, and time.

The last page of the chain-of-custody form was retained by WCEC; the remainder of the form was shipped with the samples to the appropriate laboratory. At the laboratory, the chain-of-custody form was signed by the appropriate laboratory personnel at the time the samples were received. A copy of this chain-of-custody form was included in each laboratory report sent to WCEC. As few persons as possible handled the samples and chain-of-custody form(s).

APPENDIX C

Geologic Logs and Soil Borings

WCEC SOIL BORING LOG

LEAK NUMBER:	**17842**	BORING #:	**TH2**
PROJECT NUMBER:	**12-9309-30**	DATE:	**12/20/2012**
PROJECT NAME:	**Ochsendorf Property**	TIME -start:	
DRILLER:	**Kevin Boike**	-end:	
DRILLING METHOD:	**Hand Auger**	SURFACE ELEVATION:	
BENCHMARK:		GPS	

Depth (feet)	Sampling Information T	A	R	ASTM	Depth	Material Description: Size/Description	Moisture	Color	Other	Screened Interval	WL	PID (ppm)	PID Converted	Lithology symbol
0	HA				0-5	Organic Clay with some coarse sand interspersed	Moist	Brown	Slightly Plastic Slight organic odor			0.0	0	
5												0.0	0	
10														
15														
20														
25														

Comments:

No Groundwater is present. Only enough moisture within the soil to be slightly plastic.

Water Level Measurements	
Water Level	Product Level
N/A	

KEY

Sampling Info:
T = sample type
A = attempt
R = recovery
B = blow count
N = N value

Definitions:
WL = Water Level
Elapsed time = time between end of drilling & sampling.

Sample Types:
MS = macro
LB = large bore
DT = Dual Tube
SP15 = Screen point
HA = hand auger
SS = split spoon

Analysis:
LS = lab soil sample
LW =lab water sample
S = sieve analysis

Topsoil
Sand/Gravel Fill
Silt
Sand
Silty Sand
Clay
Silty Clay
Sandy Clay
Sand/Gravel
Clayey Sand

screened interval for temporary well

WCEC SOIL BORING LOG

LEAK NUMBER:	**17842**	BORING #:	**TH3**
PROJECT NUMBER:	**12-9309-30**	DATE:	**12/20/2012**
PROJECT NAME:	**Ochsendorf Property**	TIME -start:	
DRILLER:	**Kevin Boike**	-end:	
DRILLING METHOD:	**Hand Auger**	SURFACE ELEVATION:	
BENCHMARK:		GPS	

Depth (feet)	Sampling Information T	A	R	ASTM	Depth	Material Description: Size/Description	Moisture	Color	Other	Screened Interval	WL	PID (ppm)	PID Converted	Lithology symbol
0	HA				0-5	Organic Clay with some coarse sand interspersed	Moist	Brown	Slightly Plastic Slight organic odor			0.0	0	
5												0.0	0	
10														
15														
20														
25														

Comments:	Water Level Measurements	
	Water Level	Product Level
No Groundwater is present. Only enough moisture within the soil to be slightly plastic.	N/A	

Topsoil		Clay		screened interval for temporary well
Sand/Gravel Fill		Silty Clay		
Silt		Sandy Clay		
Sand		Sand/Gravel		
Silty Sand		Clayey Sand		

KEY

Sampling Info:
T = sample type
A = attempt
R = recovery
B = blow count
N = N value

Definitions:
WL = Water Level
Elapsed time = time between end of drilling & sampling.

Sample Types:
MS = macro
LB = large bore
DT = Dual Tube
SP15 = Screen point
HA = hand auger
SS = split spoon

Analysis:
LS = lab soil sample
LW =lab water sample
S = sieve analysis

APPENDIX D

Field or Sampling Data Sheets

Form 4 - DRILLING

Site Name Oschendorf Res

9309

Job Type MS

22. Purpose: ☐ Preliminary test hole ☒ EOC test hole ☐ Monitor well ☐ Remediation ☐ Other

23. WCEC staff Scott Mill + Kevin Boike Date 12-20-12

24. Driller Name / address / phone:

Kevin Boike

25. Site manager / owner present? Names

26. Weather: temperature humidity wind

precipitation trends

27. Instrument CALIBRATION: (write times of calibration, if different) Instrument TYPE? ☒ PID ☐ FID

9:00 AM Calibration At 10:30

12:00 NOON

3:00 PM

Any problems with the instrument?

28. Number of holes drilled: 2 29. Any holes you would have liked to drill that you couldn't?

Why? Where? No

0. General Stratigraphy (Describe)

Clay - Brown

Rationale for pattern of drilling: (Location, distances, powerlines, etc.?)

Boring within known Spill Area

Form 11

TELEPHONE LOG

DATE	PERSON CALLED	PHONE # CALLED	REGARDING?

Notes

FIELD MAP CHECKLIST

-] Benchmark Loc.
-] NORTH ARROW

Wheel Tape
- ☐ Decimal
- ☐ Feet

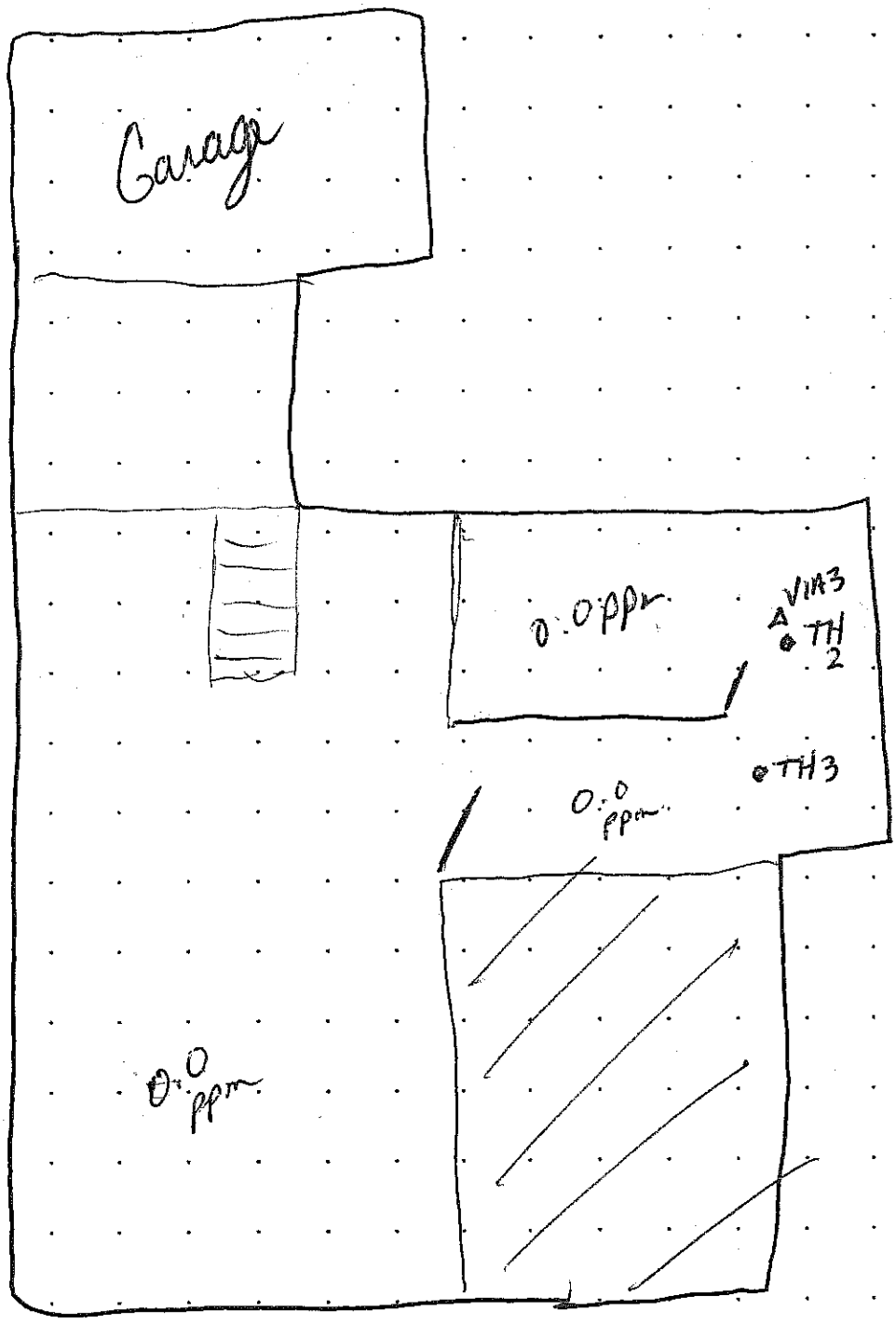
-] Scale
-] Site Buildings
-] Adjacent Bldgs.
-] Street Names
-] Surface cover
-] Trees
-] Property line/fence
-] AST's (contents)
-] UST's (contents)
-] Vent pipes?
-] Product lines
-] Pumps/islands
-] Former tanks
-] Chemical storage
-] Drill hole locations
-] Monitor well loc. (esp. flush mount)
-] Excavation

Utilities (depth?)
- ☐ sewer
- ☐ water
- ☐ telephone
- ☐ electric
- ☐ storm drains
- ☐ drainage ditch

-] Basement drains
-] Tile drains
-] Known local wells
-] Junk piles
-] Sidewalks

PHOTO LOG DESCRIPTIONS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____



0 SCALE 1cm = [ ]'

Drawn by:

Date:

WCEC ENVIRONMENTAL CONSULTANTS

PROJECT No. : 9309

FIELD MAP

- Monitor Well
- Test Hole
- Date __/__/__
- Bench Mark
- Sample Loc.
- Other
- Storm Sewer
- Sewer
- Water
- Gas
- Tracks
- Fiberoptic/phone
- Underground Power
- Overhead Utility
- Fence/prop line

LSI Checklist

Before

Order Sumas
Gopher locate
MDH sealing notification
MPCA notification
Check lab jars and Geoprobe supplies
Site Map and 500 foot Receptor Map
Well Survey (MGS, MPCA website, MDH website)
Check Gopher online for utility responses

***Review and bring site scope of work (PF bid or MS work plan). Anything not in scope is a change order and should be approved by PM before completed.

On-Site

- Have all identified utilities responded?
- Are *private* utilities (sewer, water, underground electrical, phone, gas) to buildings marked?
- 5 TH: One worst case and others to define extent in all directions (strategically placed in other potentially contaminated areas if present).

~Complete 4 THs to 5 ft below WT or 10 ft below deepest PID hit.
~Complete stratigraphy TH *in clean area* to 20 ft below WT or 20 ft below highest *site* PID
~Complete saturation test on worst case area/depth to determine if residual NAPL is present at the site (if present; attempt to define extent via addnl sat tests)
~Record any free product (free phase NAPL) identified and attempt to recover. Record details.
~If contamination at 2 ft or shallower, complete PID and saturation test of each sample and attempt to define via addnl shallow borings (ex TH2a, TH2b, etc).
~3 grain size to evaluate potential aquifer: collect at water table and other porous units (bring back all bags for reference).
~ If groundwater does not collect, set temporary well to straddle observed or suspected water table (consider using more than 5 ft of screen for greater surface area).

- 5 VIA: One worst case and others to define extent in proximity to identified receptors. See GD for depth.
- Measure/map site features including adjacent utilities, manholes, & ditches. Measure/map THs and VIAs.
- Survey THs and document/describe benchmark (survey surface water elevation if w/in 500 ft)
- 500 ft Property Survey: complete Table 15 and map locations on 500 ft map
- Identify surface waters within ¼ mile (= 1320 feet): complete Table 17 (if w/in 500 ft include on map).
- Utility Receptor Survey: complete Table 18 (measure sewer depths via manholes).
- Complete PID vapor survey of any at risk receptors (manholes, basements): assign ID and map location.
- Document justification and rationale for any of the above tasks that are a change order.

***Example* Change Orders encountered while on-site**

Vertical extent of contamination greater than 15 ft bsg (requires boring greater than 25 ft)
Contamination identified at 2 ft or shallower (requires saturation test(s) and addnl shallow borings to define)
Free product identification (requires recovery)
Water sample cannot be collected immediately upon completion of the boring (requires 2nd attempt and possible temp/well return trip)
More than 15 properties w/in 500 ft of site
PID vapor survey at more than 8 points and/or at offsite property

Bring

Drilling packet	MPCA GDs	Soil jars/MeOH/dry wt bags	GPS?
Site map	Locate w/utility ph #'s	VOC/GRO vials	Camera
500 foot map	Receptor survey cards	1 liter amber jars (DRO)	Batteries
Chain-of-custody's	PID/cal gas/charger	Trip blanks	Safety vest

Geoprobe/Grout Trailer

fill water tank
survey equipment
water probe
liners (macro/LB)
cutting shoe (sand & clay)
1 ¼ in rods
push/pull caps
rod clamp and wiper
pipe wrenches
core opener tools
scale
screens/casings
check valves
3/8" tubing
mini bailers/rope
alconox
wire brush
ear plugs/muffs
grout casing
5 gallon buckets (min 2)
grout/benseal
tar patch
concrete patch
walking wheel
distilled water
paper towels
ziplock bags
gloves

Dual Tube

liners
set screws
wrench
bumpers
push cap
cutting shoe
1" rods
DT puller
torch/propane

Screen Point

screens
expendable points w/O rings
wire

VIA

VIA toolbox
vise grip & syringe
¼" tubing
aluminum vapor points
flint sand

WCEC SOIL BORING LOG

LEAK NUMBER:
PROJECT NUMBER: 9309
PROJECT NAME:
DRILLER: KB
DRILLING METHOD: Hand Auger
BENCHMARK:

BORING #: TH2
DATE: 12-20-12
TIME -start:
-end:
SURFACE ELEVATION:

Depth (feet)	Sampling Information T	A	R	B	N	ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
0							Organic Clay with Coarse Sand Brown Moist				
										0	
							Slightly plastic organic Odor				
										0	
5											
10											
15											
20											
25											

Water Level Measurements

Date	Time	Elapsed Time	Water Level	Product Level
			N/A	—

Comments:

KEY

Sampling Info:
T = sample type
A = attempt
R = recovery
B = blow count
N = N value

Definitions:
WL = Water Level
Elapsed time = time between end of drilling & sampling.

Sample Types:
SS = split spoon
GS = grab sample
HA = hand auger
LB = large bore
MS = macro

Analysis:
LS = lab soil sample
LW = lab water sample

WCEC SOIL BORING LOG

LEAK NUMBER: 9309
PROJECT NUMBER:
PROJECT NAME:
DRILLER: KB
DRILLING METHOD:
BENCHMARK:

BORING #: TH3
DATE: 12-20-12
TIME -start:
-end:
SURFACE ELEVATION:

Depth (feet)	Sampling Information T	A	R	B	N	ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
0		1	1				Organic Clay with Coarse Sand			0	
		1	1				Brown moist				
		1	1				Slightly Plastic			0	
		1	1				Organic odor				
5											
10											
15											
20											
25											

Water Level Measurements

Date	Time	Elapsed Time	Water Level	Product Level
			N/A	—

Comments:

KEY

Sampling Info:
T = sample type
A = attempt
R = recovery
B = blow count
N = N value

Definitions:
WL = Water Level
Elapsed time = time between end of drilling & sampling.

Sample Types:
SS = split spoon
GS = grab sample
HA = hand auger
LB = large bore
MS = macro

Analysis:
LS = lab soil sample
LW = lab water sample

WCEC SOIL BORING LOG

LEAK NUMBER:
PROJECT NUMBER:
PROJECT NAME:
DRILLER:
DRILLING METHOD:
BENCHMARK:

BORING #:
DATE:
TIME -start:
-end:
SURFACE ELEVATION:

Depth (feet)	Sampling Information T	A	R	B	N	ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
0											
5											
10											
15											
20											
25											

Water Level Measurements				
Date	Time	Elapsed Time	Water Level	Product Level

Comments:

KEY

Sampling Info:	Sample Types:
T = sample type	SS = split spoon
A = attempt	GS = grab sample
R = recovery	HA = hand auger
B = blow count	LB = large bore
N = N value	MS = macro
Definitions:	**Analysis:**
WL = Water Level	LS = lab soil sample
Elapsed time = time between end of drilling & sampling.	LW = lab water sample

WCEC SOIL BORING LOG

LEAK NUMBER:
PROJECT NUMBER:
PROJECT NAME:
DRILLER:
DRILLING METHOD:
BENCHMARK:

BORING #:
DATE:
TIME -start:
-end:
SURFACE ELEVATION:

Depth (feet)	Sampling Information T	A	R	B	N	ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
0											
5											
10											
15											
20											
25											

Water Level Measurements

Date	Time	Elapsed Time	Water Level	Product Level

Comments:

KEY

Sampling Info:
T = sample type
A = attempt
R = recovery
B = blow count
N = N value

Definitions:
WL = Water Level
Elapsed time = time between end of drilling & sampling.

Sample Types:
SS = split spoon
GS = grab sample
HA = hand auger
LB = large bore
MS = macro

Analysis:
LS = lab soil sample
LW = lab water sample

WCEC SOIL BORING LOG

LEAK NUMBER:
PROJECT NUMBER:
PROJECT NAME:
DRILLER:
DRILLING METHOD:
BENCHMARK:

BORING #:
DATE:
TIME -start:
-end:
SURFACE ELEVATION:

Depth (feet)	Sampling Information T	A	R	B	N	ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
0											
5											
10											
15											
20											
25											

Water Level Measurements

Date	Time	Elapsed Time	Water Level	Product Level

Comments:

KEY

Sampling Info:
T = sample type
A = attempt
R = recovery
B = blow count
N = N value

Definitions:
WL = Water Level
Elapsed time = time between end of drilling & sampling.

Sample Types:
SS = split spoon
GS = grab sample
HA = hand auger
LB = large bore
MS = macro

Analysis:
LS = lab soil sample
LW = lab water sample

WCEC SOIL BORING LOG (cont)

LEAK NUMBER:
PROJECT NUMBER:
PROJECT NAME:

BORING #:
DATE:

Depth (feet)	Sampling Information T	A	R	B	N	ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
25											
30											
35											
40											
45											
50											

Comments:

KEY

Sampling Info:
T = sample type
A = attempt
R = recovery
B = blow count
N = N value

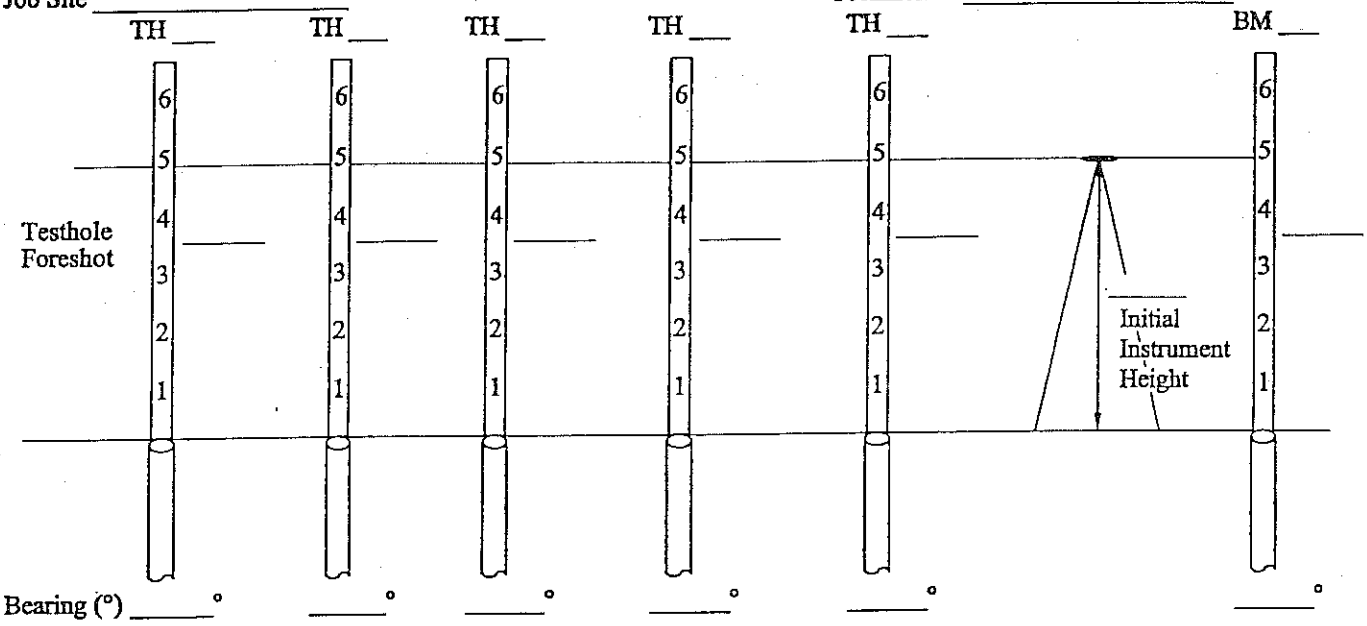
Sample Types:
SS = split spoon
GS = grab sample
HA = hand auger
LB = large bore
MS = macro sampler

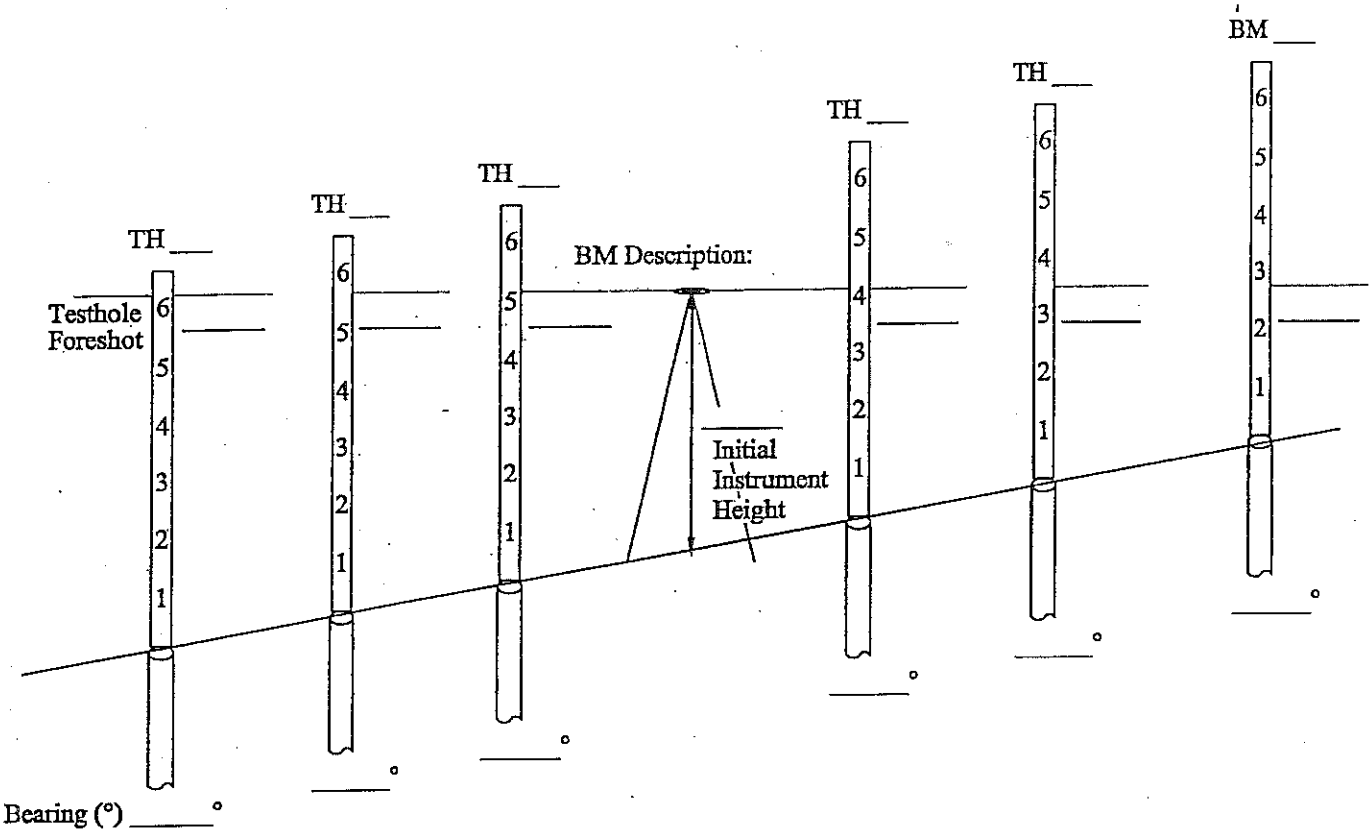
Definitions:
WL = Water Level
Elapsed time = time from end of drilling period to sampling time.

Analysis:
LS = lab soil sample
LW = lab water sample

TESTHOLE SURVEY & FIELD INFORMATION SHEET
West Central Environmental Consultants, Inc.

Job Number _____ Date _____
Job Site _____ Technicians _____





Benchmark used:

VAPOR INTRUSION SAMPLING FIELD SHEET
West Central Environmental Consultants, Inc.

Job Number 9309 Date 12-20-12
Job Name
Technicians Scott

	Vapor Instusion Points				
Sample ID	V1A3				
Sample Location	Basement				
Date	12-20-12				
Time	1:00				
Sample Depth ~~in feet~~ (soil gas or sub-slab)	5 feet				
Sample Height ~~in feet~~ (indoor or outdoor)	—				
Total Length of Tubing (ft) above and below grade	6 ft				
Sampling Method	Summa				
Sampling Device	↓				
Purge Volume (cc)					
Purge Device	Syringe				
Summa Canister Vacuum					
Moisture of Sampling Zone	None				
Soil type	Clay w/Sand				
PID (ppm)	0.0				

Calculating purge volume

h=total length of tubing (ft)

$\pi r^2 * h$= total volume in cubic feet r=inside radius of tubing (ft)

Note: For 0.17" ID tubing, use 0.00062*h=total volume in cubic feet. To convert cubic feet to cubic centimeters, multiply the total volume by 28316.85. This equals the volume of air (cc) in the tube. Multiply this value by 2 to determine the volume of air needed to be purged prior to sampling.

Reminder: Indicate PID value on chain of custody. Analyze samples for TO-15 (full scan MN Soil Gas List)

Field Notes:
No petro vapors

UTILITY VAPOR SURVEY - FIELD SHEET
West Central Environmental Consultants, Inc.

Job Number_____ Date_____
Job Site_____ Precip/temp/wind_____
Technician_____ Ambient odors/airborne dust_____

Location ID (ex. MH1, CB1, Basement 1, Basement 2, etc) **Record location on Map**					
Description (sanitary or storm, manhole or catch basin, name of basement, crawl space, sump, etc)					
Location (ex. NE corner of Ave and St, north side Hwy, NW corner of basement, etc)					
PID reading (ppm)					
Percent LEL (ppm / 130 = %)*					
Depth below surface grade (ft)					
Time of reading					
Water present (flowing/not flowing/dry)					
Sheen present on water surface? (Y/N)					
Water sample obtained? (Y/N)					
Other					
Calibration Date Time Fresh Air Pass ? (Y/N) Span Pass ? (Y/N) Gas Lot #					

* using LEL of gasoline = 1.3% = 13000 ppm; may be biased high if monitoring vapors from heavier products such as diesel.

Notes:_____

Table 5: Contaminated Surface Soil Results

Sample ID	Headspace 10 ppm or Greater[1] Y/N	Petroleum Saturated Y/N

[1]As measured with a photoionization detector (PID).
Add additional rows as needed.
Notes:

Table 17: Surface Water Receptor Information

Map ID[1]	Name and Type[2]	Distance and Direction from Plume Edge (ft)	Clean Boring/Well Between?[3] (Y or N)

[1]Property IDs should correspond to surface water feature ID on the Potential Receptor Map.
[2]Type includes, but is not limited to, lake, retention pond, infiltration pond, ditch, intermittent stream, river, creek, rain garden, etc.
[3]If the surface water feature is upgradient or cross-gradient from the site, indicate so with "NA" for not applicable.
Notes:

Table 15: Properties Located Within 500 Feet of the Release Source.

Prop ID[1]	Property Address	Distance From Site (ft)	Water Supply Well			Public Water Supply		Basement (Y or N)	Sump (Y or N)	Possible Petroleum Sources (Y or N)	Comments (including property use)
			Well Present (Y or N)	How Determined[2]	Well Use[3]	Utilized (Y or N)	Confirmed By City (Y or N)				
site											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

[1]Property IDs should correspond to labeled properties in the Potential Receptor Map

[2]For example, visual observation, personal contact, telephone, returned postcard, assumed (i.e., no postcard returned)

[3]For example, domestic, industrial, municipal, livestock, lawn/gardening, irrigation.

Any properties over 15, are covered under a change order (Pehsfind, Standard scope)

Notes:

Table 18: Utility receptor Information

Utility ID[1]	Description	Construction Material	Depth to Top of Structure	Diameter	Flow Direction (for liquids)	Year Installed	Backfill Material	Distance to Water Table
Ex 1	*Sanitary sewer main between Main St and 1st Ave*	*PVC*	*7 ft*	*2 ft*	*West*	*1984*	*Sand*	*Top of structure at water table*
Ex 2	*Water main between Main St and 1st Ave*	*Polyethylene*	*8 ft*	*4 in*	*West*	*1996*	*Sand*	*1 ft below water table*
Ex 3	*On-site water service line*	*Copper*	*6 ft.*	*2 in*	*South*	*19809*	*Native soils*	*1 ft above water table*
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

[1]ID should correspond to an identified utility line on the Potential Receptor Map.
Add more rows as needed.
Notes:

Utility ID[1]	Name, title, and telephone number for public entity contacted to obtain information or other source of information
Ex 1, 2	*Mary Smith, City engineer, xxx-xxx-xxxx*
Ex 3	*Site owner*

[1]ID should correspond to the same IDs in the above table.
Add more rows as needed.
Notes:

APPENDIX E

Guidance Document 1-03a *Spatial Data Reporting Form*

Petroleum Remediation Program
Minnesota Pollution Control Agency
http://www.pca.state.mn.us/programs/lust_p.html

Spatial Data Reporting Form

Guidance Document 1-03a
(For complete instructions, see Guidance Document 1-03.)

Part 1. Background

Has a site location data point been submitted for this site (circle/highlight)? YES or **NO**
If yes, you do not need to complete Part 2 of this form but should complete Part 3 if there are additional site features to report. This form can be submitted electronically if desired (e.g., as an e-mail attachment to the project manager).

MPCA Site ID: LEAK00**17482**
Site Name: **Ochsendorf Residence, Hector**
Data Collection Date: **12-20-12**
Name of Person Who Collected Data: **Seth Miller**
Organization Name: **West Central Environmental Consultants, Inc.**
Organization Type: **Environmental Contractor**

Part 2. Site Location (use one of the three spatial data reporting formats provided)

Point Description: **Tank basin**
Collection Method: **GPS**
Datum (circle/highlight): **WGS84** NAD83

1) Longitude (dd mm ss.ss):	Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): **94.720008 W**	Latitude (dd.dddddd): **44.674635 N**
3) UTM - X (Easting):	UTM - Y (Northing):
UTM Zone:	

Part 3. Other Site Features
Location of emergency response boring (ER), test hole (TH1-TH3), & Site Well

Point Description: **ER**
Collection Method: **GPS**
Datum (circle/highlight): **WGS84** NAD83
11) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): **94.720013 W** Latitude (dd.dddddd): **44.674639 N**
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: **TH2**
Collection Method: **GPS**
Datum (circle/highlight): **WGS84** NAD83
11) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): **94.720005 W** Latitude (dd.dddddd): **44.674633 N**
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: **TH3**
Collection Method: **GPS**
Datum (circle/highlight): **WGS84** NAD83
11) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): **94.720000 W** Latitude (dd.dddddd): **44.674610**
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:
44.674610

Point Description: **Site Well**
Collection Method: **GPS**
Datum (circle/highlight): **WGS84** NAD83
11) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): **94.720161 W** Latitude (dd.dddddd): **44.674614 N**
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

APPENDIX F

Guidance Document 2-05 *Release Information Worksheet*

Minnesota Pollution Control Agency

Release Information Worksheet

Guidance Document 2-05
Petroleum Remediation Program

The Release Information Worksheet is necessary in order to meet the Public Record Provision of the Energy Policy Act of 2005. Complete the worksheet below to document tank and release information. This form may be included as an appendix in Guidance Document 4-06 or 4-08, or it may be submitted independently. Please type or print clearly. Do not revise or delete text or questions from this form.

A. General information

Site name/city: **Christian Ochsendorf Property – Hector, MN** MPCA Site ID#: LEAK000 **17482**

B. Tank material (check all that apply):

☒ Steel ☐ Fiberglass

C. Piping material (check all that apply):

☐ Steel ☐ Fiberglass ☐ Flexible plastic ☐ Copper ☒ Other (specify): Unknown

D. Identify the known source(s) of the release or contamination encountered (Only check those options that were verified, if source is unknown check Other and describe):

☐ Piping ☒ Tank ☐ Dispenser ☐ Submersible turbine pump ☐ Delivery problem

☐ Other (specify):

E. Identify the cause of the release (tank and/or piping) (check all that apply):

☐ Overfill ☐ Mechanical or physical damage ☐ Install problem ☐ Corrosion ☐ Spill ☐ Unknown

☒ Other (specify): Removal of unused fuel oil AST in basement

F. Identify how the release was detected (check all that apply):

☐ Removal ☐ Line leak detection ☐ Tank leak detection ☒ Visual/Olfactory ☐ Site assessment

☐ Other (specify):

G. Has the site ever stored E85 in any former or current tank? ☐ Yes ☒ No

H. Has the site ever stored leaded gasoline in any former or current tank? ☐ Yes ☒ No

Web pages and phone numbers:

MPCA staff:	http://www.pca.state.mn.us/pca/staff/index.cfm
MPCA phone:	**651-296-6300 or 1-800-657-3864**
Petroleum Remediation Program Web page:	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Info. Request:	http://www.pca.state.mn.us/about/inforequest.html
MPCA VIC Program:	http://www.pca.state.mn.us/cleanup/vic.html
MPCA Petroleum Brownfields Program:	http://www.pca.state.mn.us/programs/vpic_p.html
PetroFund Web page:	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
PetroFund phone:	**651-215-1775 or 1-800-638-0418**
State Duty Officer:	**651-649-5451 or 1-800-422-0798**

Minnesota Pollution Control Agency • 520 Lafayette Rd. N., St. Paul, MN 55155-4194 • www.pca.state.mn.us
651-296-6300 • 800-657-3864 • TTY 651-282-5332 or 800-657-3864 • Available in alternative formats

APPENDIX G

Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet.*

Not applicable