ANNUAL MONITORING REPORT – 2008/2009

PAYNESVILLE MUNICIPAL WATER SUPPLY / FORMER MIDTOWN SERVICE STATION
400 LAKE AVENUE SOUTH
PAYNESVILLE, MINNESOTA
MPCA SITE ID # LEAK00000131 AND LEAK00002181

Terracon Project No. 41987018
May 13, 2009

Prepared for:

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Remediation Division
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Terracon

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.

Introduction

This Annual Monitoring Report (AMR) includes groundwater monitoring results for monitoring events conducted since Terracon's Annual Monitoring Report dated June 12, 2008. In addition, this AMR includes the results of soil-gas sampling activities performed during November 2008, the replacement of monitoring well DW-8 during December 2008, and the results of indoor air sampling activities performed during February 2009.

Background

The Paynesville Municipal Water Supply / Former Midtown Service Station site is located within the City of Paynesville (Figures 1 and 2A). Based on available information and previous assessment work conducted by Terracon, the site has petroleum impacted soil, soil-gas, and groundwater in addition to a significant source mass of light non-aqueous phase liquid (NAPL) which appears to consist primarily of gasoline. Soil-gas impacts appear to be concentrated along Lake Avenue between the former Midtown Service Station and State Highway 23. Benzene and 1,2-dichloroethane have been detected in groundwater samples from City Wells CW-3 and CW-4 on several occasions in the past. The most recent corrective action for this issue involved assisting the City of Paynesville with the installation of new municipal water supply wells (CW-7 and CW-8) and utilizing City Well CW-4 as a plume-containment well. The available information indicates that the source of the impacts is a petroleum release that occurred at the former Midtown Service Station located at 400 Lake Avenue South (southwest corner of Lake Avenue South and Mill Street).

Previous soil-gas assessment activities were conducted at the site and included six soil probes (VP-1 through VP-6, Figure 2A) completed in the right-of-way of Lake Avenue as part of a Vapor Intrusion Assessment (VIA) Pilot Study performed for the MPCA. The results of the initial soil vapor monitoring work are discussed in Terracon's *VIA Pilot – Midtown Station* report dated January 21, 2005. Subsequent VIA activities included advancing four hand-driven soil-gas probes (VP-7 through VP-10, Figure 2A) to assess the vapor migration potential to receptors (i.e., buildings, residences) located near the previously identified source area. The results from soil gas probes VP-7 through VP-10 and soil gas probes VP-1A and VP-11 were discussed in Terracon's *Annual Monitoring Report* dated June 29, 2005.

Two additional soil-gas probes (VP-12 and VP-13) were advanced in conjunction with source area assessment during February/March 2007 to further assess the risk of vapor intrusion to nearby residences (347 Lake Avenue and 410 Lake Avenue). The results from soil gas probes VP-12 and VP-13 were discussed in Terracon's *Annual Monitoring Report* dated June 30, 2007.

Various petroleum-related volatile organic compounds (VOCs) have been detected in the soil-gas samples collected from the soil-gas probes advanced at the site. Soil gas probes VP-7, VP-8, VP-9, VP-10, VP-12, and VP-13 were completed near residences. In these and other soil-gas samples, one or more petroleum related VOCs were detected at concentrations that exceeded one of the MPCA soil-gas action levels (Tables 20A through 20C). Various petroleum-related VOCs have been detected in the air samples and soil-gas collected from the crawl space under the on-site residence and sub-slab soil gas samples were collected from the three homes located near the site during 2007/2008. However, the petroleum-related VOCs concentrations detected in air and soil gas samples collected from the crawl space, soil gas probe and sub-slab monitoring points do not exceed 10 times the MPCA residential Intrusion Screening Values (ISVs) established in February 2009 indicating the building should not be at risk of vapor intrusion resulting in VOCs concentration that exceed the MPCA ISVs. The results from crawl space and sub-slab soil gas sampling activities were discussed in *Terracon's Annual Monitoring Report – 2007/2008* dated June 12, 2008.

Terracon completed a review of the MPCA file for the former Midtown Service Station (LEAK00002181) in order to develop a limited focused feasibility study (FFS). The results of the FFS were submitted to the MPCA in Terracon's *Focused Feasibility Study* dated March 15, 2006. The FFS included a summary of the historic activities on site and assessment of the effectiveness of corrective actions that have previously targeted the source area at the site. The FFS also included recommendations for further definition of the source area to be remediated, proposed a plan for developing cleanup objectives for the site, and provided a summary of potential corrective actions. Corrective action alternatives evaluated in the FFS included: free product recovery, excavation, bioslurping (multi-phase extraction), soil excavation and in situ soil flushing. The FFS did not include a recommendation for implementing a specific corrective action to address the current extent and magnitude of the petroleum impacts in and near the source area.

During February and March 2007, 62 laser-induced fluorescence (LIF) probes (LIF-1 through LIF-58 and LIF-60 and LIF-61) and 13 soil probes (P-38 through P-50) confirming LIF probes were advanced in and surrounding the former Midtown Service Station to assess the horizontal and vertical extent of NAPL in soil pore spaces within the source area (Figures 2A and 2B) . The goal of the source area assessment was to develop a sufficient understanding of the source area hydrogeology, extent and magnitude of NAPL, migration pathways, and contaminant fate and transport mechanisms such that a Conceptual Corrective Action Design (CCAD) could be developed to address the risk to identified receptors. The results of the source area assessment activities indicated that in and near the source area the subsurface generally consists of up to 13-feet of fine to coarse grained sand with gravel and fill overlying a fine grained alluvium unit composed of sandy clay and clay to 17- to 24-feet bgs. The fine grained alluvium unit overlies a water bearing coarse grained alluvium unit consisting of fine to coarse grained sand that grades to gravel in some areas. The coarse grained alluvium unit extends to at least 35-feet bgs. Perched water was occasionally encountered within the upper sand / fill unit and in sand lenses within the fine grained alluvium unit. The water table was

encountered within the source area approximately 18-feet bgs. Data from the LIF probes indicated that the NAPL migrated laterally on top of the fine grained alluvium unit as well as downward to the water bearing coarse grained alluvium unit. The NAPL also migrated laterally in the water bearing coarse grained alluvium unit. The estimated horizontal extent of NAPL was approximately within a 160-foot radius of the former tank basins. The interpreted depth to the top of the NAPL ranged from 5-feet to 24-feet bgs. The interpreted depth to the bottom of the NAPL was generally near 25-feet bgs, but ranged from approximately 6- to 26-feet. Several areas were identified which required additional assessment to delineate the horizontal extent of the NAPL and better understand the vertical extent of NAPL. The results of the source area assessment activities are summarized in Terracon's *Annual Monitoring Report* dated June 30, 2007.

During January 2008, additional source area assessment activities were conducted, including advancing 23 LIF probes (LIF-62 through LIF-84) and five additional soil probes (P-51 through P-55) to confirm previous LIF data. The goal of the source area assessment was to develop a sufficient understanding of the source area hydrogeology, extent and magnitude of NAPL, migration pathways, and contaminant fate and transport mechanisms such that a Detailed Corrective Action Design (DCAD) could be developed to address the risk to identified receptors. The additional source area assessment activities included: additional assessment along the north, west and east edge of the proposed area for soil excavation; and further delineation of the horizontal extent along the northeast, northwest, southwest and southeast edges assessed during March 2007.

Based on interpretation of LIF data the inferred horizontal extent of NAPL consists of an approximately 320-feet by 200-feet oval shape with NAPL extending approximately 200-feet northwest of the former tank basins. The interpreted depth to the top of the NAPL ranges from 7.5-feet to 24-feet bgs. The interpreted depth to the bottom of the NAPL is generally near 25-feet bgs, but ranges from approximately 12.5- to 27-feet. The interpreted NAPL thickness is as much as 18.5 feet.

A total of five soil probes (P-51 through P-55) were also advanced during January 2008 to collect soil and groundwater samples to confirm data from the LIF probes indicating the horizontal extent of the NAPL and assess other aspects of petroleum impacts near the source area. The laboratory analytical results from the five soil samples collected did not detect concentrations of BTEX, MTBE or GRO at or greater than the laboratory reporting limits (RLs). Low concentrations of one or more BTEX compounds were detected in groundwater samples collected from soil probes P-51, P-53 and P-54; however, they did not exceed the MDH HRLs or HBVs. GRO concentrations in groundwater samples collected from soil probes P-51 and P-53 exceeded the MDH HRV of 200 µg/L.

Data from the LIF probes indicated that the NAPL migrated laterally on top of the fine grained alluvium unit as well as downward to the water bearing coarse grained alluvium unit. The NAPL also migrated laterally in the water bearing coarse grained alluvium unit. The results of the additional source area assessment activities are summarized in Terracon's *Annual Monitoring Report -2007/2008* dated June 12, 1008.

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.

Hydrogeologic Conditions

Depth to groundwater measurements were conducted at the following wells on a semi-annual basis during this reporting period (Figure 2).

Well ID	Map ID	Well ID	Map ID
DW-1	1	Midtown wells	
DW-2	2	MW-1	23
DW-3R	3	MW-10	24
DW-4	4	MW-10D	5
DW-5	45	MW-14	25
DW-6	46	MW-14D	6
DW-7S	48	MW-15	27
DW-7D	49	MW-17	28
DW-8S	57	MW-19	30
DW-8	55	MW-20	3130
DW-9	56	MW-21	50
MW-4	44	MW-22	51
MW-5	7	MW-23	52
MW-16	27	MW-24	53
City of Paynesville monitoring wells		MW-24	MW-25
CMW-42	42	RW-1	32
CMW-43	43		

Well construction information is summarized in Table 1. The groundwater level data is presented in Table 2. The fluid level data from wells screened in the drinking water aquifer between 75- and 95-feet below ground surface were used to prepare the groundwater contour maps depicted in Figures 3A and 3B. The groundwater contour maps developed using groundwater elevation data collected on November 10, 2008 and February 11, 2009 indicate the local horizontal groundwater flow direction in the drinking water aquifer is generally to the east-southeast which is consistent with previous collected data and the reported regional groundwater flow direction. Historical groundwater elevation data from water table monitoring wells in Paynesville indicate the local horizontal groundwater flow direction in the water table aquifer near the source area is to the north, towards the North Fork of the Crow River. However, local fluctuations and variations due to seasonal infiltration/exfiltration, geologic formations, groundwater pump-out, and/or other site features can affect the groundwater flow. Fluid

level data from select monitoring wells screened within the drinking water aquifer and/or located near recovery well DW-5 are depicted on hydrographs in Figures 4A and 4B. The hydrographs illustrate seasonal fluctuations in groundwater elevations and, in the case of wells CMW-42 and DW-5 (Figure 4A), the results of groundwater pumping activities.

Groundwater Sampling

The following table summarizes the groundwater monitoring/sampling schedule.

Location	Analysis	Quarterly	Semi-Annual	Annual
WTP Influent	VOCs		*	
WTP Effluent	VOCs		*	
CW-3	VOCs			*
CW-4	VOCs	*		
CW-5	VOCs			*
CW-6	VOCs			*
CW-7	VOCs			*
CW-8	VOCs			*
DW-3R	BTEX, MTBE, GRO		*	
DW-5	BTEX, MTBE, GRO		*	
DW-6	BTEX, MTBE, GRO		*	
DW-7S	BTEX, MTBE, GRO			*
DW-7D	BTEX, MTBE, GRO			*
DW-8	BTEX, MTBE, GRO		*	
DW-8S	VOC, GRO		*	
DW-9	BTEX, MTBE, GRO		*	
MW-10D	VOC, GRO, DRO		*	
MW-14D	BTEX, MTBE, GRO		*	
MW-16	BTEX, MTBE, GRO		*	
MW-17	BTEX, MTBE, GRO		*	

Groundwater samples were collected from the City Wells via sampling taps after purging. Groundwater samples were collected from the monitoring wells after purging three well volumes using disposable bailers, dedicated plastic purge pumps with polyethylene tubing, or a Grundfos Redi-Flow 2 sampling pump with dedicated polyethylene tubing as described in the attached sampling forms. The laboratory results are summarized in Table 11. Natural attenuation monitoring parameters are summarized in Table 13. Copies of laboratory reports are included in Appendix A, sampling methods are described in Appendix B and the sampling information forms are included in Appendix C.

Semi-annual and annual groundwater monitoring events occurred during November 2008 and February 2009. The annual groundwater monitoring event occurred in November 2008, while the semi-annual events occurred in November 2008 and February 2009. The most recent monitoring event was conducted in February 2009 and included collecting groundwater samples from wells DW-3R, DW-5, DW-6, DW-8, DW-8S DW-9, MW-10D, MW-16, MW-17, CW-4, and the Paynesville water treatment plant (WTP) influent and effluent. The laboratory analytical results for the groundwater samples from these monitoring locations were reported below laboratory reporting limits for target VOCs, except for concentrations of various petroleum related compounds detected in samples

collected from wells DW-5, DW-6, DW-8 and DW-9 and CW-4. The VOCs detected in the groundwater samples collected from monitoring well DW-5 include benzene at 58.8 micrograms per liter (µg/L), ethyl benzene at 11.5 µg/L, total xylenes at 16.8 µg/L, and gasoline range organics (GRO) at 186 µg/L. The VOCs detected in the groundwater samples from monitoring well DW-6 include benzene at a concentration of 10 µg/L and ethyl benzene at a concentration of 1.0 µg/L. The VOCs detected in the groundwater samples from monitoring well DW-8 include benzene at 2.0 µg/L. The VOCs detected in the groundwater sample from monitoring well DW-9 include benzene at 1,330 µg/L, ethyl benzene at 256 µg/L, and GRO at 3,920 µg/L. The VOCs detected in city Well CW-4 include benzene at a concentration of 0.73 µg/L.

Plume Containment Activities (CW-4)

City Well CW-4 is continually pumped to contain the dissolved phase petroleum plume. Water from the well is discharged to the City of Paynesville storm sewer without needing treatment under a National Pollutant Discharge Elimination System (NPDES) Permit. Groundwater samples are collected from the discharge from City Well CW-4 on a quarterly basis for laboratory analysis as required in the NPDES Permit. The groundwater samples were analyzed for the MDH list of VOCs. The target VOCs were not detected in the discharge samples collected during November 2008 and February 2009 with the exception of benzene detected at a concentration of 0.73 µg/L during the February 2009 sampling event. The groundwater analytical results are summarized in Tables 3A and 3B. The laboratory reports are included in Appendix A. The sampling information forms are included in Appendix C.

The groundwater pumping rate for City Well CW-4 was observed to be decreasing during the summer of 2005 from approximately 103 gallons per minute (gpm) until it was shutdown on August 31, 2005 to replace the RPZ backflow preventer on the well that had failed. The pump was restarted on September 14, 2005 and the maximum pumping rate was approximately 90 gpm. The pump in City Well CW-4 failed during March 2006. A new pump was installed in City Well CW-4 on May 5, 2006, but it had the wrong voltage motor. The pump was reinstalled in City Well CW-4 on June 1, 2006 and started the next day. The pumping rate was set to approximately 90 gpm. The pump installed in the well during May / June 2006 can operate at lower pumping rates than the previous pump. Water coming from the well was observed to be steaming when the sampling point was opened on May 20, 2008. The well was shutdown for investigation after it was allowed to pump at approximately 25 gpm for approximately one hour before the sample was collected. Further investigation by the City of Paynesville found the discharge line between the well and storm sewer was apparently blocked at a valve or the valve had somehow become closed. The pump would not restart. Thein Well Company (Thein) was contracted to remove and inspect the well pump to determine if it could be repaired or needed to be replaced. Thein found the pump and motor to be in good condition, but there was a hole in the drop pipe which apparently caused the pump to circulate water within the well until it overheated. The drop pipe and fittings were replaced on CW-4 and the pump was reinstalled and restarted by Thein Well on June 27, 2008.

The groundwater pumping rate for City Well CW-4 during the period from July 2006 to June 2007 was approximately 100 gpm. The groundwater pumping rate for City Well CW-4 during the current reporting period from July 2008 to February 2009 was approximately 100 gpm and appears to be controlling dissolved phase petroleum plume migration in the direction of City Wells CW-3, CW-5, CW-6, and CW-7. The pumping rate of City Well CW-4 should be limited so that it does not promote excessive migration of the contaminant plume to the north or downward into the drinking water aquifer.

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.
Not Applicable

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.
Sub-slab soil gas monitoring points were installed during late 2007 and early 2008 at the residences located at 154 Mill Street, 347 South Lake Avenue and 410 South Lake Avenue. A third set of soil gas samples were collected during November 2008 from the sub-slab monitoring points. The soil-gas samples were collected in Certified Summa canisters equipped with a flow controller as described in Appendix C. The soil gas samples were analyzed for the MPCA list of VOCs using EPA Method TO-15. The soil gas samples were also analyzed for carbon dioxide, methane and oxygen. The sub-slab soil-gas analytical results are summarized in Tables 20E – 20G. Laboratory analytical results are included in Appendix A. The sample information forms and Indoor Air Building Surveys are included in Appendix D.

A variety of petroleum and non-petroleum related volatile organic compounds (VOCs) were detected in the soil gas samples collected from sub-slab monitoring points SSMP-1 through SSMP-3 at concentrations less than the MPCA residential Intrusion Screening Values (ISVs) (Tables 20E – 20G). The soil gas sample collected from sub-slab monitoring point SSMP-1 (154 Mill Street) contained trichloroethene (TCE) at a concentration of 15.1 micrograms per cubic meters of air (ug/m^3) which exceeds the MPCA residential ISV of a factor of 10.

Indoor air samples were collected at the residence located at 154 Mill Street to assess whether vapors associated with the source area were intruding through the dirt crawl space and intruding into occupied spaces of the residence. TCE was detected at a

concentration of 1.6 ug/m^3 in the air sample collected from the crawl space, 3.6 ug/m^3 in the air sample collected from the basement, 29.6 ug/m^3 in the air sample collected from the main living space and 127 ug/m^3 in the air sample collected from ambient air sample collected from outside of the residence (Tables 20H – 20K). The TCE concentrations detected in the air samples collected from the basement, main level and ambient air samples exceeded the MPCA acute ISV of 3 ug/m^3, however it is unclear from the limited amount of data whether the source of the TCE is in the subsurface, the home or outside ambient air.

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.

Fluid level data collected during this reporting period detected measurable free product in monitoring wells MW-1, MW-18, MW-20, MW-22, MW-24 and MW-25 (Table 10). Product recovery activities were not performed.

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.

In December 2008, an additional monitoring well (MW-8S) was installed adjacent to monitoring well MW-8 to provide a fixed down-gradient shallow monitoring point. The well was advanced to a depth of 35-feet bgs. Groundwater was encountered at approximately 20-feet bgs. Soil samples recovered from the soil boring in the field were screened for the presence of organic vapors using a photo-ionization detector (PID) equipped with a 10.6 eV lamp using a polyethylene bag headspace screening method consistent with MPCA guidelines. Based on field headspace screening results and olfactory and visual observation of soil samples collected from the soil boring, petroleum impacts were not detected.

The subsurface consists of approximately 15-feet of gravelly sand overlying clayey sand and sand to a depth of 22-feet bgs where water bearing sand was encountered to a depth of 35-feet bgs. A 5-foot screen was set between 25- and 30-feet bgs to monitor groundwater quality near what appears to be the top of the drinking water aquifer. The soil boring log and well construction record are included in Appendix D.

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.

The results of the source area assessment activities indicated that in and near the source area the subsurface generally consists of up to 13-feet of fine to coarse grained sand with gravel and fill overlying a fine grained alluvium unit composed of sandy clay and clay to 17- to 24-feet bgs. The fine grained alluvium unit overlies a water bearing coarse

grained alluvium unit consisting of fine to coarse grained sand that grades to gravel in some areas. The coarse grained alluvium unit extends to at least 35-feet bgs and may be the top of the drinking water aquifer. Perched water is occasionally encountered within the upper sand / fill unit and in sand lenses within the fine grained alluvium unit. The water table was encountered within the source area and down-gradient at approximately 18- to 20-feet bgs. Data from the LIF probes indicated that the NAPL migrated laterally on top of the fine grained alluvium unit as well as downward to the water bearing coarse grained alluvium unit. The NAPL also migrated laterally in the water bearing coarse grained alluvium unit. Based on interpretation of LIF data the inferred horizontal extent of NAPL consists of an approximately 320-feet by 200-feet oval shape with NAPL extending approximately 200-feet northwest of the former tank basins. The interpreted depth to the top of the NAPL ranges from 7.5-feet to 24-feet bgs. The interpreted depth to the bottom of the NAPL is generally near 25-feet bgs, but ranges from approximately 12.5- to 27-feet. The interpreted NAPL thickness is as much as 18.5 feet.

The NAPL is the apparent source of a dissolved phase petroleum plume that extends 900-feet to the north-northwest (CW-4) and to the east-northeast (DW-8), and to a depth of at least 90-feet bgs. It is anticipated that the dissolved phase petroleum plume extends to a similar distance and depth to the north and northeast of the source area. City Well CW-4 is being pumped to contain the dissolved phase plume. Impacts to potential vapor receptors have not been identified although a substantial petroleum vapor cloud is present at the site and to the north along Lake Avenue.

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.

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.

The dissolved phase petroleum plume emanating from the former Midtown Service Station continues to impact the water quality in the water table aquifer at the site and off-site to the north and northeast. In addition, the petroleum impacted groundwater appears to migrate downward into the underlying drinking water aquifer to the north-northwest and east-northeast of the site. The primary source of the dissolved phase petroleum plume appears to be NAPL which has consistently been observed in several monitoring wells on the former Midtown Service Station property (MW-1, MW-20, MW-21, MW-22, MW-24 and MW-25). Groundwater quality data indicates the dissolved phase petroleum plume within the drinking water aquifer is responsive to groundwater pumping activities. In comparing data from similar time periods, the City Well CW-4 pumping rates and laboratory analytical data for groundwater samples collected from wells at the site appear to correlate well. During increased groundwater pumping rates at City Well CW-4, dissolved phase petroleum concentrations for samples collected from City Well CW-4 at times increase while those in nearby monitoring wells MW-17 and DW-3/3R have remained below laboratory reporting limits or at concentrations below their respective MDH HRLs or HBVs. However, benzene concentrations in groundwater samples from monitoring wells that appear to be completed near the top of the drinking water aquifer (DW-5, DW-6 and possibly DW-9) consistently exceed the MDH HRL indicating that the dissolved phase petroleum plume continues to impact the drinking water aquifer and poses a continuing risk of once again impacting one of the City Wells if pumping activities at City Well CW-4 cease. Continued analysis of groundwater samples from the water treatment plant, City Wells, and select monitoring wells should be performed in order to monitor the quality of the water supply and plume stability or migration.

The results from vapor intrusion assessment activities completed to date have detected concentrations of 1,2,4-trimethylbenzene, naphthalene and/or TCE in sub-slab soil-gas samples collected from beneath the residences located at 154 Mill Street, 347 Lake Avenue, and 410 Lake Avenue. Concentrations of 1,2,4-trimethylbenzne and TCE have also been detected in indoor air samples collected the residence located at 154 Mill Street. The concentrations of petroleum related VOCs detected in the soil gas samples collected from the sub-slab monitoring points have been less than 10 times the MPCA residential ISVs suggesting the residences are not at risk of vapors intruding into the structures exceeding the residential ISVs. However, the chlorinated solvent TCE was detected in the most recent soil gas sample from monitoring point SSMP-1 (154 Mill Street) at a concentration of 15.1 ug/m^3 which exceeds the MPCA residential ISV of 3 ug/m^3. TCE was also detected in air samples collected from the crawl space (1.6 ug/m^3), basement (3.6 ug/m^3) main level (29.6 ug/m^3) and outside ambient air (127 ug/m^3) suggesting the source may not be in the subsurface.

Based upon the result from the groundwater monitoring and source area assessment activities, Terracon recommends that correction actions be taken to address the NAPL impacted soil in the source area at the site. On going groundwater monitoring activities should continue at the former Midtown Service Station. Terracon recommends the following:

- Continue groundwater extraction activities utilizing City Well CW-4 to contain the dissolved phase petroleum plume. Continue to adjust the pumping rate of City Well CW-4 to establish an extraction rate that helps prevent excessive migration of the dissolved phase petroleum plume in the direction of either well CW-4 or wells DW-7S, DW-7D, CW-3, CW-5, CW-6 and CW-7. Continue to collect quarterly discharge samples from City Well CW-4 for laboratory analysis. The discharge samples should be analyzed for the MDH list of VOCs per the requirement of the NPDES Permit.

- Collect annual groundwater samples from City Wells CW-3, CW-5, CW-6, CW-7 and CW-8; and semi-annual samples from the water treatment plant influent and effluent. The groundwater samples should be analyzed for the MDH list of VOCs. The sampling schedule should be adjusted to monthly if the dissolved phase petroleum plume appears to become unstable.

- Conduct semi-annual site visits to collect fluid level data from wells DW-1, DW-2, DW-3R, DW-4, DW-5, DW-6, DW-7S, DW-7D, DW-8, and DW-9; Midtown wells MW-1, MW-10, MW-10D, MW-14, MW-14D, MW-15, MW-16, MW-17, MW-18, MW-19, MW-20, MW-21, MW-22, MW-23, MW-24, MW-25, and RW-1; Johnson Motors wells MW-4 and MW-5; City of Paynesville monitoring wells identified as CMW-42 and CMW-43.

- Collect semi-annual groundwater quality samples for laboratory analysis from monitoring wells DW-3R, DW-5, DW-6, DW-8, DW-8S, DW-9, MW-16 and MW-17; and annual samples from monitoring wells DW-7S and DW-7D. Well DW-5 should be

NOTE: THE GROUNDWATER CONTOURS ILLUSTRATED ARE BASED UPON INTERPOLATION AND EXTRAPOLATION OF WATER LEVEL DATA OBTAINED FROM THE WELLS SHOWN ON 11/10/08. ACTUAL CONDITIONS MAY VARY.

LEGEND

- (8) WELL LOCATION
- (56) "SITE" WELLS
- ⊗ PRIVATE POTABLE WELLS
- ⊗ MUNICIPAL POTABLE WELLS
- MW-10D(90) WELL NAME (WELL DEPTH IN FT)
- GROUNDWATER CONTOUR LINE
- [1152.44] GROUNDWATER ELEVATION (FT AMSL)
- GROUNDWATER FLOW DIRECTION

MINNIE ST.
LAKE AVE.
INDUSTRIAL LOOP "B"
RAILROAD ST.
JAMES ST.
AUGUSTA AVE.
WASHBURNE AVE.
HOFFMAN ST.
HOFFMAN ST. (STATE HWY. 23)
POWERS AVE.
CARFIELD AVE.
MARK DR.
MILL ST.
SOUTH ST.
(T.H. 134)
KERCHNER AVE.

ACMW-2(31) (21)
(22) AEMW-3(27)
DW-1(90) [1152.44]
(20) AGMW-1(43)
DW-2(85) [1152.44]
(9) CW-3(93)
CITY GARAGE
SEALED
CW-4 (110)
JOHNSON MOTORS
JMMW-4(19)
JMMW-5(89)
SEALED
DW-4(90) [1152.35]
SEALED
DW-6(10)
CASEY'S
MW-16 (26)
DW-5(67)
MW-17 (62)
MTMW-14D(90) [1152.13]
NURSERY
CITY WELL FIELD
CW-5 (90)
CMW-42(95) [1147.99]
CMW-43(95) [1148.02]
CW-6 (97)
MTMW-10D(90) [1151.73]
MTMW-10(27)
DW-9(31.5)
DW-8S(35)
DW-8(90) [1152.09]
DW-3R(90) [1149.79]
FORMER MOTOWN
DW-7S (35) (48)
DW-7D (95) (49) [1151.81]
(SEE FIGURES 2A & 2B FOR WELL LOCATIONS)

1152.0
1151.0
1150.0
1149.0
1148.0
1147.0

N

0 100 200 400
SCALE IN FEET

Project Mngr: PJW	Project No. 41987018	Terracon Consulting Engineers and Scientists	GROUNDWATER CONTOUR MAP (11/10/08)
Drawn By: CDR	Scale: AS SHOWN		PAYNESVILLE MUNICIPAL WATER SUPPLY
Checked By:	File No.		MPCA
			MINNESOTA HIGHWAY 23
		HOFFMAN ROAD E WHITE BEAR LAKE, MN 55110 (651) 770-1500 FAX. (651) 770-1657	PAYNESVILLE

FIG. No 3A (GW 11.10.0

NOTE: THE GROUNDWATER CONTOURS ILLUSTRATED ARE BASED UPON INTERPOLATIONS OF WATER LEVEL DATA OBTAINED FROM WELLS ON 2/11/09. ACTUAL CONDITIONS MAY VARY.

LEGEND

- (8) WELL LOCATION
- (56) "SITE" WELLS
- ⊗ PRIVATE POTABLE WELLS
- MUNICIPAL POTABLE WELLS
- MW-10D(90) WELL NAME (WELL DEPTH IN FT)
- GROUNDWATER CONTOUR LINE
- [1151.22] GROUNDWATER ELEVATION (FT AMSL)
- GROUNDWATER FLOW DIRECTION

MINNIE ST.
LAKE AVE.
INDUSTRIAL LOOP "A"
RAILROAD ST.
JAMES ST.
HOFFMAN ST.
HOFFMAN ST. (STATE HWY. 23)
WASHBURNE AVE.
AUGUSTA AVE.
POMEROY AVE.
GARFIELD AVE.
HAPE DR.
WILL ST.
SOUTH ST.
(T.H. 124)
FORMER MOTOWN
CITY GARAGE
JOHNSON MOTORS
CASEY'S
FARMER'S UNION CO-OP
NURSERY
CITY WELL FIELD

ACMW-2(31) (21)
(22) AEMW-3(27)
DW-1(90) [1151.49]
DW-2(85) [1151.22]
(20) AGMW-1(43)
(9) CW-3(93)
SEALED
CW-4 (110)
(34) SEALED
(44) JMMW-4(19)
(7) JMMW-5(89)
SEALED
DW-6(10)
MW-16 (26)
DW-5(67)
MW-17 (62)
(6) MTMW-14D(90) [1151.18]
MTMW-10D(90) [1150.74]
MTMW-10(27)
(56) DW-9(31.5)
(57) DW-8S(35)
(55) DW-8(90) [1151.03]
(3) DW-3R(90) [1149.79]
DW-4(90) (4) [1151.09]
SEALED
(13)
(11) CW-5 (90)
(42) CMW-42(95) [1144.01]
CMW-43(95) (43) [1145.89]
(12) CW-6 (97)
DW-7S (35) (46)
DW-7D (95) (49)
[1150.70]
(SEE FIGURES 2A & 2B FOR WELL LOCATIONS)

1151.0
1150.0
1149.0
1148.0
1147.0
1146.0

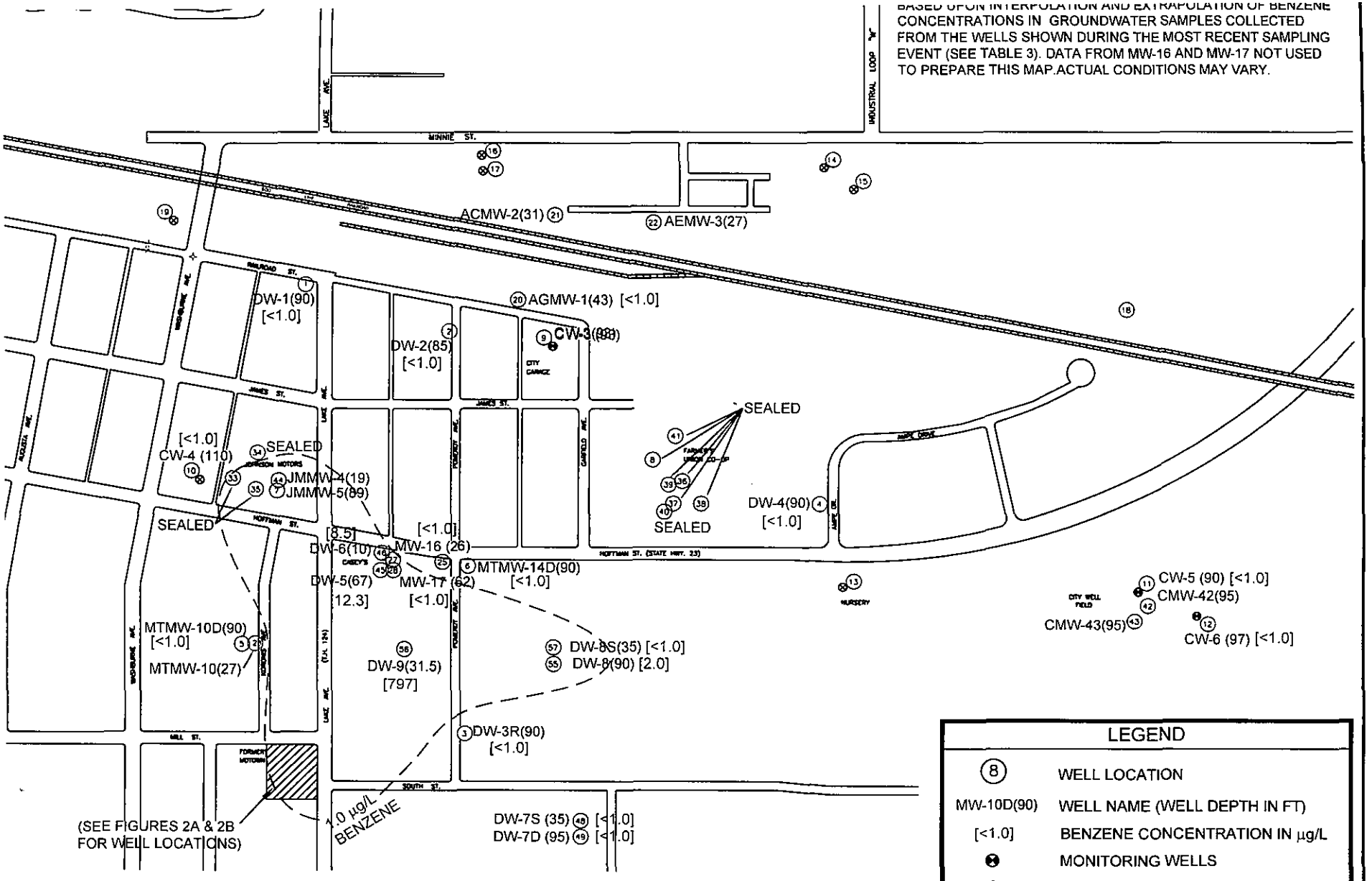
N

0 100 200 400
SCALE IN FEET

Project Mngr: PJW	Project No. 41987018	Terracon	GROUNDWATER CONTOUR MAP (2/11/09)
Drawn By: CDR	Scale: AS S		PAYNESVILLE MUNICIPAL WATER SUPPLY
Checked By: CDB	File No. 4198		MPCA
Approved By: PJW	Date:		MINNESOTA HIGHWAY 23
			PAYNESVILLE

FIG. No
3B
(GW 2.11.0

BASED UPON INTERPOLATION AND EXTRAPOLATION OF BENZENE CONCENTRATIONS IN GROUNDWATER SAMPLES COLLECTED FROM THE WELLS SHOWN DURING THE MOST RECENT SAMPLING EVENT (SEE TABLE 3). DATA FROM MW-16 AND MW-17 NOT USED TO PREPARE THIS MAP.ACTUAL CONDITIONS MAY VARY.



100 200 400
SCALE IN FEET

Project Mngr:	PJW
Drawn By:	JLM (41)
Checked By:	PJW
Approved By:	PJW
Project No.	41987018
Scale:	AS SHOWN
File No.	41987018gw
Date:	05/11/09

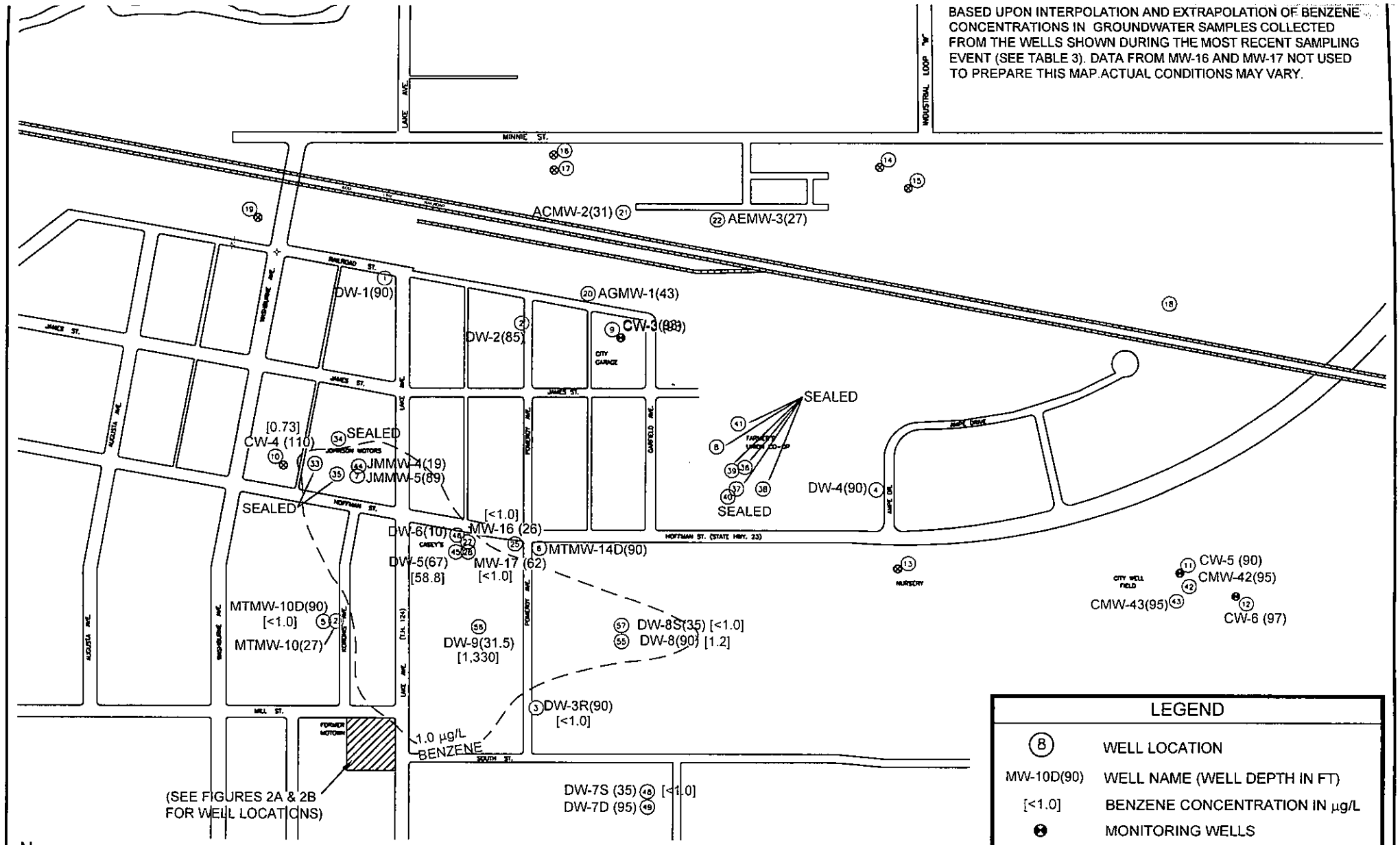
Terracon
Consulting Engineers and Scientists
3535 HOFFMAN ROAD E WHITE BEAR LAKE, MN 55110
PH. (651) 770-1500 FAX. (651) 770-1657

BENZENE CONCENTRATION MAP (NOVEMBER 2008)
PAYNESVILLE MUNICIPAL WATER SUPPLY
MPCA
MINNESOTA HIGHWAY 23
PAYNESVILLE MINNESOTA

FIG. No.
7A
(FIG7A)

Tables

BASED UPON INTERPOLATION AND EXTRAPOLATION OF BENZENE CONCENTRATIONS IN GROUNDWATER SAMPLES COLLECTED FROM THE WELLS SHOWN DURING THE MOST RECENT SAMPLING EVENT (SEE TABLE 3). DATA FROM MW-16 AND MW-17 NOT USED TO PREPARE THIS MAP.ACTUAL CONDITIONS MAY VARY.



LEGEND	
(8)	WELL LOCATION
MW-10D(90)	WELL NAME (WELL DEPTH IN FT)
[<1.0]	BENZENE CONCENTRATION IN µg/L
⊗	MONITORING WELLS
⊗	WATER WELLS

Project Mngr: PJW	Project No. 41987018	Terracon Consulting Engineers and Scientists	BENZENE CONCENTRATION MAP (FEBRUARY 2009)
Drawn By: JLM (41)	Scale: AS SHOWN	3535 HOFFMAN ROAD E WHITE BEAR LAKE, MN 55110	PAYNESVILLE MUNICIPAL WATER SUPPLY
Checked By: PJW	File No: 41987018gw	PH. (651) 770-1500 FAX. (651) 770-1657	MPCA
Approved By: PJW	Date: 05/11/09		MINNESOTA HIGHWAY 23
			PAYNESVILLE MINNESOTA

FIG. No. 7B (FIG7B)

Tables

TABLE 20A - SOIL GAS ANALYTICAL RESULTS
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

Sample Location (depth in feet)		Sample Date	Sample Duration	Benzene (ug/m3)	Ethylbenzene (ug/m3)	Toluene (ug/m3)	Total Hydrocarbons as Gas (ug/m3)	1,3,5-Trimethylbenzene (ug/m3)	1,2,4-Trimethylbenzene (ug/m3)	m-& p-Xylene (ug/m3)	o-Xylene (ug/m3)	Method
Soil Vapor Assessment												
VP-1 2' - 0724	1	11/04/04	Grab	**20.5**	18.5	35.2	1,650	<17	<17	<30	<15	TO-15
VP-1 5' - 0633	1	11/04/04	Grab	<11	<15	16.5	<580	<17	<17	<30	<15	TO-15
VP-1A 5' - 0682		10/18/05	Grab	**520**	**16,800**	**5,360**	-	**1,750**	**1,500**	**38,400**	**7,060**	TO-14
VP-2 5' - 0145	1	11/04/04	Grab	**24.4**	53	54.4	5,990	<18	<17	31.8	<16	TO-15
VP-2 16' - 0501	1	11/04/04	Grab	**34.1**	34	105.0	8,290	<17	**44.5**	75.9	27.4	TO-15
VP-3 5' - 0561	1	11/04/04	Grab	<750	**1000**	**880**	72,900	<1100	<1100	<2000	<1000	TO-15
VP-3 19.5' - 0357	1	11/04/04	Grab	<6000	<8100	<7000	16,900,000	<9200	<9000	<16000	<8100	TO-15
VP-4 5' - 0722	1	11/04/04	Grab	**61.4**	39.3	64.4	38,400	<17	**25**	36.2	15.9	TO-15
VP-4 14' - 0088	1	11/04/04	Grab	<45	<61	<53	46,900	<69	<68	<120	<61	TO-15
VP-5 5' - 0354	1	11/04/04	Grab	<12	<16	28.0	10,500	<18	**19.5**	48.1	<16	TO-15
VP-5 14' - 0007	1	11/04/04	Grab	**15.6**	21.6	69.3	3,290	<18	**63.5**	79.5	30.0	TO-15
VP-6 5' - 0324	1	11/04/04	Grab	**23.1**	<16	18.8	4,730	<18	**18.0**	<30	<16	TO-15
VP-6 12' - 0414	1	11/04/04	Grab	**14.6**	19.4	48.7	2,740	<17	**52.0**	75.9	27.8	TO-15
VP-7 8.5' - 0741		04/21/05	Grab	<3.2	5.3	8.4	525	<4.9	**12.0**	21.2	8.4	TO-15
VP-8 5.5' - 0803		04/21/05	Grab	**66.2**	20.7	56.7	2,010	<4.5	**13.5**	32.2	13.2	TO-15
VP-9 5.5' - 0126		04/21/05	Grab	**5.9**	14.6	17.6	677	5.0	**15.5**	26.9	11.9	TO-15
VP-10 6.5' - 0566		04/21/05	Grab	**12.7**	30.9	26.8	1,980	**15.0**	**34.5**	71.5	36.2	TO-15
VP-11 6' - 0425		10/18/05	Grab	<5.3	167	49.7	-	**27.1**	**50.7**	417	48.4	TO-15
VP-11 6' - 1033 (dup)		10/18/05	Grab	**4.5**	42.4	15.9	-	**7.6**	**17.4**	107	15.9	TO-15
VP-12 8' - 0017		02/23/07	Grab	**18.0**	25.2	34.9	-	<3.4	**7.5**	13.8	5.5	TO-15
VP-13 8' - 0147		02/23/07	Grab	**30.4**	18.0	45.7	-	<3.4	**11.9**	22.5	8.4	TO-15

Terracon

TABLE 20A - SOIL GAS ANALYTICAL RESULTS
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

Sample Location (depth in feet)		Sample Date	Sample Duration	Benzene (ug/m3)	Ethylbenzene (ug/m3)	Toluene (ug/m3)	Total Hydrocarbons as Gas (ug/m3)	1,3,5-Trimethylbenzene (ug/m3)	1,2,4-Trimethylbenzene (ug/m3)	m-& p-Xylene (ug/m3)	o-Xylene (ug/m3)	Method
QA/QC Samples												
Method Blank: 25167		11/04/04	-	ND	ND	ND	-	ND	ND	ND	ND	TO-15
Method Blank: 81927		04/21/05	-	ND	ND	ND	-	ND	ND	ND	ND	TO-15
Method Blank: 156048		10/18/05	-	ND	ND	ND	-	ND	ND	ND	ND	TO-15
Method Blank: 317227		02/23/07	-	ND	ND	ND	-	ND	ND	ND	ND	TO-15
MDH HRV Acute / *Chronic*	A	-	-	1000 / *1.3 - 4.5*	10000 / *NE*	37000 / *400*	NE	NE	NE	43000t / *NE*	43000t / *NE*	-
EPA Rfc	B			NE	1,000	NE	NE	6	6	700t	700t	-
MDH ISC	C	-	-	NE	NE	NE	NE	NE	NE	NE	NE	-
MPCA Residential ISVs	D			4.5	1000	5000	NE	7	6	100	100	-

5/6/09

Notes: Analytical data reported in micrograms per cubic meter (ug/m3).
Results at or below the laboratory reporting limits (RLs) were preceded by the less than symbol (<).
Concentrations above MPCA screening levels (A through C) are in bold.
A. MDH Health Risk Value (http://www.health.state.mn.us/divs/eh/air/hrvtable.htm, 3/21/05)
B. EPA Reference concentrations
C. MDH Interim Screening Concentration
D. MPCA Residential Intrusion Screening Values

ND - Non-detect
NE - Not Established
1. Sample diluted during laboratory analysis.

TABLE 20B - OTHER NOTABLE SOIL GAS ANALYTICAL RESULTS
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

Sample Location (depth in feet)		Sample Date	Sample Duration	Acetone	1,3-Butadiene	2-Butanone (MEK)	Cyclohexane	4-Ethyltoluene	Methylene Chloride	n-Heptane	n-Hexane	Propylene	Tetrahydro-furan	Method
				(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	
Soil Vapor Assessment														
VP-1 2' - 0724	1	11/04/04	Grab	54.8	<7.9	20.7	<12	<18	<12	<15	19.7	87.1	<10	TO-15
VP-1 5' - 0633	1	11/04/04	Grab	32.1	<7.9	<11	<12	<18	<12	<15	<13	16.4	<10	TO-15
VP-2 5' - 0145	1	11/04/04	Grab	<9.2	<8.1	<11	<13	<18	<13	37.9	177	<6.1	<11	TO-15
VP-2 16' - 0501	1,3	11/04/04	Grab	280	**99.2**	124	<12	27.5	<12	30.8	53	359	40.8	TO-15
VP-3 5' - 0561	1	11/04/04	Grab	<590	<520	<730	<800	<1200	**4,240**	<960	<840	<390[2]	<690	TO-15
VP-3 19.5' - 0357	1	11/04/04	Grab	<4700	<4100	<5800	<6400	<9300	<6500	<7700	<6700	<3100	<5500	TO-15
VP-4 5' - 0722	1	11/04/04	Grab	321	<7.9	121	<12	<18	<12	<15	<13	227	<10	TO-15
VP-4 14' - 0088	1	11/04/04	Grab	128.0	<31	51.0	261	<71	<49	<58	<51	<24[2]	<42	TO-15
VP-5 5' - 0354	1	11/04/04	Grab	133.0	<8.3	42.0	<13	<19	<13	<15	<14	250[2]	<11	TO-15
VP-5 14' - 0007	1	11/04/04	Grab	161	<8.1	44.7	<13	37	<13	<15	24	268	<11	TO-15
VP-6 5' - 0324	1	11/04/04	Grab	46.1	<8.1	15.6	<13	<18	<13	<15	<13	213	<11	TO-15
VP-6 12' - 0414	1	11/04/04	Grab	101	<7.9	37.8	<12	30.5	<12	<15	<13	<5.9[2]	<10	TO-15
VP-7 8.5' - 0741	3	04/21/05	Grab	4.83	**5.85**	8.99	<3.4	20.5	<3.5	<4.1	<3.6	<6.6	<2.9	TO-15
VP-8 5.5' - 0803	3	04/21/05	Grab	3.62	**103**	10.5	5.6	13.5	<3.2	15	26.2	341	<2.7	TO-15
VP-9 5.5' - 0126	3	04/21/05	Grab	3.38	**8.77**	8.09	3.85	12	<3	5.42	7.52	12.1	<2.6	TO-15
VP-10 6.5' - 0566	3	04/21/05	Grab	7.49	**21.8**	14.7	25.9	21	<2.6	15	21.9	27.8	<2.2	TO-15
VP-1A 5' - 0682		10/18/05	Grab	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	TO-14
VP-11 6' - 0425	*	10/18/05	Grab	<3.9	<3.7	<4.9	12,900	60.6	<5.8	11,600	**27,800**	<2.8	<4.9	TO-15
VP-11 6' - 1033 (dup)	*	10/18/05	Grab	<0.81	<0.76	<1.0	460	15.6	<1.2	426	964	<0.59	<1.0	TO-15
VP-12 8' - 0017	*,3	02/23/07	Grab	49.6	**9.8**	8.20	15.2	3.7	<0.95	21.5	21.7	85.4	13.1	TO-15
VP-13 8' - 0147	*	02/23/07	Grab	104	<0.60	23.6	22.5	6.0	<1.1	24.1	50.1	361	19.6	TO-15
QA/QC Samples														
Method Blank: 25167		11/04/04	-	ND	ND	ND	ND	ND	ND	ND	ND	ND[2]	ND	TO-15
Method Blank: 81927		04/21/05	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	TO-15
Method Blank: 156048		10/18/05	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	TO-15
Method Blank: 317227		02/23/07	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	TO-15
MDH HRV Acute / *Chronic*	A	-	-	NE / *NE*	0.04 / *NE*	NE / *NE*	NE / NE	NE / NE	10,000 / 20	NE / NE	2000 / *NE*	NE / *NE*	NE / *NE*	-
EPA Rfc	B			350	2	1000	NE	NE	NE	NE	200	NE	NE	-
MDH ISC	C	-	-	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	-
MPCA Residential ISVs	D	-	-	31000	0.3	5000	6000	NE	20	NE	2000	3000	NE	-

Notes: Analytical data reported in micrograms per cubic meter (ug/m3).
Results at or below the laboratory reporting limits (RLs) were preceded by the less than symbol (<).
Concentrations above MPCA screening levels (A through C) are in bold.
A. MDH Health Risk Value (http://www.health.state.mn.us/divs/eh/air/hrvtable.htm, 3/21/05)
B. EPA Reference concentrations
C. MDH Interim Screening Concentration
D. MPCA Residential Intrusion Screening Values

ND - Non-detect above RLs.
NE - Not Established
* - Other VOCs Detected (see laboratory report)
1. Sample diluted during laboratory analysis.
2. Initial calibration for this compound is outside of method control limits, therefore results is an estimation.
3. 1,3-Butadiene may have been misidentified

5/6/09

TABLE 20C - RESULTS OF SOIL GAS SAMPLES FOR VAPOR INTRUSION SCREENING
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	VP-12			VP-13									INTRUSION SCREENING VALUES		
DATE SAMPLE	2/23/07			2/23/07											
DEPTH (-#) or HEIGHT (+#) in feet	-8			-8											
PID Reading (ppm)	-			-											
PARAMETERS	Result ($\mu g/m^3$)	RL ($\mu g/m^3$)	Q	Result ($\mu g/m^3$)	RL ($\mu g/m^3$)	Q	Result ($\mu g/m^3$)	RL ($\mu g/m^3$)	Q	Result ($\mu g/m^3$)	RL ($\mu g/m^3$)	Q	Res. ISV ($\mu g/m3$)	Com/Indust. ISV ($\mu g/m3$)	Acute ISV ($\mu g/m3$)
1,1,1-Trichloroethane	ND	1.5		ND	1.5								5,000	10,000	140000
1,1,2,2-Tetrachloroethane	ND	1.9		ND	1.9								0.2	1	NE
1,1,2-Trichloroethane	ND	1.5		ND	1.5								0.6	2	NE
1,1,2-Trichlorotrifluoroethane	ND	2.1		ND	2.1								30,000	80000	NE
1,1-Dichloroethane	ND	1.1		ND	1.1								500	1000	NE
1,1-Dichloroethene	ND	1.1		ND	1.1								200	600	NE
1,2,4-Trichlorobenzene	ND	1.3		ND	1.3								4	10	NE
1,2,4-Trimethylbenzene	**7.5**	3.4		**11.9**	3.4								7.0	20	NE
1,2-Dibromoethane (EDB)	ND	2.1		ND	2.1								0.02	0.06	NE
1,2-Dichlorobenzene	ND	1.6		ND	1.6								200	600	NE
1,2-Dichloroethane	ND	1.1		ND	1.1								0.4	1	NE
1,2-Dichloropropane	ND	1.3		ND	1.3								4	10	200
1,3,5-Trimethylbenzene	ND	3.4		ND	3.4								6.0	20	NE
1,3-Butadiene	**9.8**	0.60		ND	0.60								0.3	1	NE
1,3-Dichlorobenzene	ND	1.6		ND	1.6								NE	NE	NE
1,4-Dichlorobenzene	ND	1.6		ND	1.6								60	200	10000
2-Butanone (MEK)	8.2	0.80		23.6	0.80								5,000	10,000	10000
2-Hexanone	ND	1.1		ND	1.1								NE	NE	NE
2-Propanol	-	-		-	-								7,000	20,000	3200
4-Ethyltoluene	3.7	3.4		6.0	3.4								NE	NE	NE
4-Methyl-2-pentanone (MIBK)	ND	1.1		13.1	1.1								3,000	8000	NE
Acetone	49.6	0.64	L1, SS	104	6.4	D6, L1, SS							31000	87,000	60000
Benzene	**18.0**	0.87		**30.4**	0.87								4.5	13	1000
Bromodichloromethane	ND	1.9		ND	1.9								NE	NE	NE
Bromoform	ND	2.8		ND	2.8								9	30	NE
Bromomethane	ND	1.1		2.0	1.1								5	10	2000
Carbon disulfide	5.0	0.84		3.4	0.84								700	2,000	6000
Carbon tetrachloride	ND	1.7		ND	1.7								0.7	2	1900
Chlorobenzene	ND	1.3		ND	1.3								50	100	NE
Chloroethane	ND	0.72		ND	0.72								10,000	30,000	100000
Chloroform	ND	1.3		ND	1.3								100	300	150
Chloromethane	ND	0.56		ND	0.56								90	300	1000
Cyclohexane	15.2	0.91		22.5	0.91								6,000	20000	NE
Dibromochloromethane	ND	2.3		ND	2.3								NE	NE	NE
Dichlorodifluoromethane	2.4	1.3		3.4	1.3								200	600	NE
Dichlorotetrafluoroethane	ND	1.9		ND	1.9								NE	NE	NE
Ethanol	-	-		-	-								15,000	42,000	180000
Ethyl acetate	ND	0.98		ND	0.98								3,000	8,000	40000
Ethylbenzene	25.2	1.2		18.0	1.2								1,000	3,000	10000
Hexachloro-1,3-butadiene	ND	2.9		ND	2.9								0.5	1	NE
Methyl-tert-butyl ether	ND	0.98		ND	0.98								3,000	8,000	7000
Methylene Chloride	ND	0.95		ND	0.95								20	60	10000
Naphthalene	**5.1**	3.6		**5.5**	3.6								9	30	NE

TABLE 20C - RESULTS OF SOIL GAS SAMPLES FOR VAPOR INTRUSION SCREENING
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	VP-12			VP-13									INTRUSION SCREENING VALUES		
DATE SAMPLE	2/23/07			2/23/07											
DEPTH (-#) or HEIGHT (+#) in feet	-8			-8											
PID Reading (ppm)	-			-											
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
Propylene	85.4	0.47	E	361	4.7	D6							3,000	8000	NE
Styrene	1.4	1.2		2.4	1.2								1,000	3,000	21000
Tetrachloroethene	ND	1.9		ND	1.9								20	60	20000
Tetrahydrofuran	13.1	0.80	L1, SS	19.6	0.80	L1, SS							NE	NE	NE
Toluene	34.9	1.0		45.7	1.0								5,000	10,000	37000
Trichloroethene	ND	1.5		ND	1.5								3	8	2000
Trichlorofluoromethane	ND	1.5		ND	1.5								700	2000	NE
Vinyl acetate	ND	0.95		ND	0.95								200	600	NE
Vinyl chloride	ND	0.70		ND	0.70								1	3	180000
cis-1,2-Dichloroethene	ND	1.1		ND	1.1								NE	NE	NE
cis-1,3-Dichloropropene	ND	1.2		ND	1.2								20	60	NE
m&p-Xylene	13.8	2.4		22.5	2.4								100	300	43000
n-Heptane	21.5	1.1		24.1	1.1								NE	NE	NE
n-Hexane	21.7	0.96		50.1	0.96								2,000	6000	NE
o-Xylene	5.5	1.2		8.4	1.2								100	300	43000
trans-1,2-Dichloroethene	ND	1.1		ND	1.1								60	200	800
trans-1,3-Dichloropropene	ND	1.2		ND	1.2								20	60	NE

Notes: Analytical data reported in micrograms per cubic meter (µg/m3).
Results below the laboratory reporting limits (RLs) were preceded by the less than symbol (<) or listed as not detected (ND).
Bold indicates parameter concentration above the respective action level criteria.
NE indicates action levels are not established for the respective parameter.
RL column includes laboratory reporting limits for the respective parameter.
* The action levels shown are for TOTAL Xylenes (combined m&p-Xylene and o-Xylene).
ISV = MPCA Intrusion Screening Value (ISV) (MPCA, Risk-Based Guidance for Vapor Intrusion Pathway 9/08)
Q column includes footnotes for referencing laboratory reporting qualifiers.
D6 = The relative percent difference (RPD) between the sample and the sample duplicate exceeds laboratory control limits.
E = Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
SS = Analyte did not meet the secondary source verfilication criteria for the initial calibration. The reported result should be considered and estimate.
[1] = Collected using certified canister and 200 cubic centimeter per minute (30 min) flow controller.

TABLE 20E - RESULTS OF SOIL GAS SAMPLES FOR VAPOR INTRUSION SCREENING (154 MILL ST.)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	SSMP-1 [1] (154 Mill St)			SSMP-1 [1] (154 Mill St)			SSMP-1 [1] (1274) (154 Mill St)			1274 Cert. (154 Mill St)			INTRUSION SCREENING VALUES		
DATE SAMPLE	11/7/07			4/8/08			11/11/08			11/11/08					
DEPTH (-#) or HEIGHT (+#) in feet	-0.3			-0.3			-0.3			-0.3					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m³)	Com/Indust. ISV (µg/m³)	Acute ISV (µg/m³)
1,1,1-Trichloroethane	ND	1.5		ND	1.9		1.6	1.6		ND	1.1		5,000	10,000	140000
1,1,2,2-Tetrachloroethane	ND	1.9		ND	2.4		ND	2.1		ND	1.4		0.2	1	NE
1,1,2-Trichloroethane	ND	1.5		ND	1.9		ND	1.6		ND	1.1		0.6	2	NE
1,1,2-Trichlorotrifluoroethane	ND	2.2		ND	2.8		ND	2.4		ND	1.6		30,000	80000	NE
1,1-Dichloroethane	ND	1.1		ND	1.4		ND	1.2		ND	0.82		500	1000	NE
1,1-Dichloroethene	ND	1.1		ND	1.4		ND	1.2		ND	0.81		200	600	NE
1,2,4-Trichlorobenzene	ND	1.4		ND	1.7		ND	1.5		ND	0.99		4	10	NE
1,2,4-Trimethylbenzene	6.3	3.4		ND	4.4		ND	3.7	L2	ND	2.5		7.0	20	NE
1,2-Dibromoethane (EDB)	ND	2.2		ND	2.8		ND	2.4		ND	1.6		0.02	0.06	NE
1,2-Dichlorobenzene	ND	1.7		ND	2.1		20.0	1.8		ND	1.2		200	600	NE
1,2-Dichloroethane	ND	1.1		ND	1.4		ND	1.2		ND	0.82		0.4	1	NE
1,2-Dichloropropane	ND	1.3		ND	1.6		ND	1.4		ND	0.94		4	10	200
1,3,5-Trimethylbenzene	ND	3.4		ND	4.4		ND	3.7	L2	ND	2.5		6.0	20	NE
1,3-Butadiene	ND	0.62		ND	0.78		ND	0.67		ND	0.45		0.3	1	NE
1,3-Dichlorobenzene	ND	1.7		ND	2.1		ND	1.8		ND	1.2		NE	NE	NE
1,4-Dichlorobenzene	ND	1.7		ND	2.1		4.7	1.8		ND	1.2		60	200	10000
2-Butanone (MEK)	12.8	0.83		ND	1.0		6.0	0.89		ND	0.60		5,000	10,000	10000
2-Hexanone	2.8	1.1		ND	1.4		ND	1.2		ND	0.83		NE	NE	NE
2-Propanol	ND	3.4		ND	4.4		ND	3.7		ND	2.5		7,000	20,000	3200
4-Ethyltoluene	ND	3.4		ND	4.4		ND	3.7		ND	2.5		NE	NE	NE
4-Methyl-2-pentanone (MIBK)	1.9	1.1		ND	1.4		ND	1.2		ND	0.83		3,000	8000	NE
Acetone	73.2	0.66	E	9.5	0.84		23.6	0.71		ND	0.48		31000	87,000	60000
Benzene	1.0	0.90		ND	1.1		ND	0.96		ND	0.65		4.5	13	1000
Bromodichloromethane	ND	1.9		ND	2.4		ND	2.1		ND	1.4		NE	NE	NE
Bromoform	ND	2.9		ND	3.7		ND	3.1		ND	2.1		9	30	NE
Bromomethane	ND	1.1		ND	1.4		ND	1.2		ND	0.79		5	10	2000
Carbon disulfide	3.3	0.87		ND	1.1		ND	0.93		ND	0.63		700	2,000	6000
Carbon tetrachloride	ND	1.8		ND	2.3		ND	1.9		ND	1.3		0.7	2	1900
Chlorobenzene	ND	1.3		ND	1.6		2.0	1.4		ND	0.94		50	100	NE
Chloroethane	ND	0.75		ND	0.94		ND	0.80		ND	0.54		10,000	30,000	100000
Chloroform	ND	1.4		ND	1.7		ND	1.5		ND	0.99		100	300	150
Chloromethane	ND	0.58		ND	0.73		ND	0.62		ND	0.42		90	300	1000
Cyclohexane	ND	0.94		ND	1.2		ND	1.0		ND	0.68		6,000	20000	NE
Dibromochloromethane	ND	2.3		ND	3.0		ND	2.5		ND	1.7		NE	NE	NE
Dichlorodifluoromethane	2.1	1.4		ND	1.7		2.6	1.5		ND	1.0		200	600	NE
Dichlorotetrafluoroethane	ND	1.9		ND	2.4		ND	2.1		ND	1.4		NE	NE	NE
Ethanol	54.0	2.6	E	ND	3.3		13.8	2.8	L1	ND	1.9		15,000	42,000	180000
Ethyl acetate	ND	1.0		ND	1.3		ND	1.1		ND	0.73		3,000	8,000	40000
Ethylbenzene	2.5	1.2		ND	1.5		ND	1.3		ND	0.88		1,000	3,000	10000
Hexachloro-1,3-butadiene	ND	3.0		ND	3.8		ND	3.3		ND	2.2		0.5	1	NE
Methyl-tert-butyl ether	ND	1.0		ND	1.3		ND	1.1		ND	0.73		3,000	8,000	7000
Methylene Chloride	1.1	0.98		ND	1.2		2.1	1.1		ND	0.71		20	60	10000
Naphthalene	7.8	3.7	SS	**14.0**	4.7		6.9	4.0		ND	2.7		9	30	NE
Propylene	ND	0.48		ND	0.61		ND	0.52		ND	0.35		3,000	8000	NE
Styrene	1.7	1.2		ND	1.5		1.7	1.3		ND	0.87		1,000	3,000	21000
Tetrachloroethene	ND	1.9		ND	2.4		ND	2.1		ND	1.4		20	60	20000
Tetrahydrofuran	ND	0.83		ND	1.0		ND	0.89		ND	0.60		NE	NE	NE

TABLE 20E - RESULTS OF SOIL GAS SAMPLES FOR VAPOR INTRUSION SCREENING (154 MILL ST.)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	SSMP-1 [1] (154 Mill St)			SSMP-1 [1] (154 Mill St)			SSMP-1 [1] (1274) (154 Mill St)			1274 Cert. (154 Mill St)			INTRUSION SCREENING VALUES		
DATE SAMPLE	11/7/07			4/8/08			11/11/08			11/11/08					
DEPTH (-#) or HEIGHT (+#) in feet	-0.3			-0.3			-0.3			-0.3					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m³)	Com/Indust. ISV (µg/m³)	Acute ISV (µg/m³)
Toluene	6.5	1.1		1.3	1.3		3.8	1.1		ND	0.77		5,000	10,000	37000
Trichloroethene	ND	1.5		ND	1.9		**15.1**	1.6		ND	1.1		3	8	2000
Trichlorofluoromethane	1.6	1.5		ND	1.9		1.6	1.6		ND	1.1		700	2000	NE
Vinyl acetate	ND	0.98		ND	1.2		2.3	1.1		ND	0.71		200	600	NE
Vinyl chloride	ND	0.72		ND	0.90		ND	0.77		ND	0.52		1	3	180000
cis-1,2-Dichloroethene	ND	1.1		ND	1.4		2.1	1.2		ND	0.81		NE	NE	NE
cis-1,3-Dichloropropene	ND	1.3		ND	1.6		ND	1.4		ND	0.92		20	60	NE
m&p-Xylene	4.5	2.4		ND	3.1		ND	2.6		ND	1.8		100	300	43000
n-Heptane	ND	1.1		ND	1.4		ND	1.2		ND	0.83		NE	NE	NE
n-Hexane	1.0	0.99		ND	1.3		ND	1.1		ND	0.72		2,000	6000	NE
o-Xylene	1.9	1.2		ND	1.5		ND	1.3		ND	0.88		100	300	43000
trans-1,2-Dichloroethene	ND	1.1		ND	1.4		ND	1.2		ND	0.81		60	200	800
trans-1,3-Dichloropropene	ND	1.3		ND	1.6		ND	1.4		ND	0.92		20	60	NE
Carbon dioxide	-	-		-	-		0.98	0.74	A	-	-		NE	NE	NE
Methane	-	-		-	-		ND	1.5	A	-	-		NE	NE	NE
Oxygen	-	-		-	-		22.9	3.0	A	-	-		NE	NE	NE

Notes: Analytical data reported in micrograms per cubic meter (µg/m3).
Results below the laboratory reporting limits (RLs) were preceded by the less than symbol (<) or listed as not detected (ND).
Bold indicates parameter concentration above the respective action level criteria.
NE indicates action levels are not established for the respective parameter.
RL column includes laboratory reporting limits for the respective parameter.
* The action levels shown are for TOTAL Xylenes (combined m&p-Xylene and o-Xylene).
ISV = MPCA Intrusion Screening Value (ISV) (MPCA, Risk-Based Guidance for Vapor Intrusion Pathway 9/08)
Q column includes footnotes for referencing laboratory reporting qualifiers.
D6 = The relative percent difference (RPD) between the sample and the sample duplicate exceeds laboratory control limits.
E = Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Result may be biased high.
L2 = Analyte recovery in the LCS was below QC limits. Result may be biased low.
SS = Analyte did not meet the secondary source verfiication criteria for the initial calibration. The reported result should be considered an estimate.
D3 = Sample diluted due to presence of high levels of non-target analytes or other matrix interference.
IR = Internal standard recovery associated with this analyte exceeds upper control limit. Reported result estimated.
A = Concentration in percent
1 = Collected using certified canister and 200 cubic centimeter per minute (30 min) flow controller.

5/6/09

TABLE 20F - RESULTS OF SOIL GAS SAMPLES FOR VAPOR INTRUSION SCREENING (347 LAKE AVE.)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	SSMP-2 [1] (347 Lake Ave)			SSMP-2 [1] (347 Lake Ave)			SSMP-2 [1] (1240) (347 Lake Ave)			1240 Cert. (347 Lake Ave)			INTRUSION SCREENING VALUES		
DATE SAMPLE	1/11/2008			4/8/08			11/11/08			11/11/08					
DEPTH (-#) or HEIGHT (+#) in feet	-0.3			-0.3			-0.3			-0.3					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
1,1,1-Trichloroethane	ND	1.6		ND	1.8		ND	1.7		ND	1.1		5,000	10,000	140000
1,1,2,2-Tetrachloroethane	ND	2.0		ND	2.3		ND	2.2		ND	1.4		0.2	1	NE
1,1,2-Trichloroethane	ND	1.6		ND	1.8		ND	1.7		ND	1.1		0.6	2	NE
1,1,2-Trichlorotrifluoroethane	ND	2.3		ND	2.7		ND	2.5		ND	1.6		30,000	80000	NE
1,1-Dichloroethane	ND	1.2		ND	1.4		ND	1.3		ND	0.82		500	1000	NE
1,1-Dichloroethene	ND	1.2		ND	1.3		ND	1.2		ND	0.81		200	600	NE
1,2,4-Trichlorobenzene	ND	1.4		ND	1.6		ND	1.5		ND	0.99		4	10	NE
1,2,4-Trimethylbenzene	5.2	3.6		4.5	4.2		ND	3.8	L2	ND	2.5		7.0	20	NE
1,2-Dibromoethane (EDB)	ND	2.3		ND	2.7		ND	2.5		ND	1.6		0.02	0.06	NE
1,2-Dichlorobenzene	ND	1.7		ND	2.0		ND	1.8		ND	1.2		200	600	NE
1,2-Dichloroethane	ND	1.2		ND	1.4		ND	1.3		ND	0.82		0.4	1	NE
1,2-Dichloropropane	ND	1.3		ND	1.6		ND	1.4		ND	0.94		4	10	200
1,3,5-Trimethylbenzene	ND	3.6		ND	4.2		ND	3.8	L2	ND	2.5		6.0	20	NE
1,3-Butadiene	ND	0.64		ND	0.75		ND	0.69		ND	0.45		0.3	1	NE
1,3-Dichlorobenzene	ND	1.7		ND	2.0		ND	1.8		ND	1.2		NE	NE	NE
1,4-Dichlorobenzene	ND	1.7		ND	2.0		ND	1.8		ND	1.2		60	200	10000
2-Butanone (MEK)	16.0	0.86		ND	1.0		2.1	0.92		ND	0.60		5,000	10,000	10000
2-Hexanone	1.7	1.2		ND	1.4		ND	1.3		ND	0.83		NE	NE	NE
2-Propanol	9.1	3.6		ND	4.2		ND	3.8		ND	2.5		7,000	20,000	3200
4-Ethyltoluene	ND	3.6		ND	4.2		ND	3.8		ND	2.5		NE	NE	NE
4-Methyl-2-pentanone (MIBK)	2.6	1.2		ND	1.4		ND	1.3		ND	0.83		3,000	8000	NE
Acetone	130	0.69	E	23.1	0.80		10.0	0.74		ND	0.48		31000	87,000	60000
Benzene	ND	0.93		1.8	1.1		ND	1.0		ND	0.65		4.5	13	1000
Bromodichloromethane	ND	2.0		ND	2.3		ND	2.2		ND	1.4		NE	NE	NE
Bromoform	ND	3.0		ND	3.5		ND	3.2		ND	2.1		9	30	NE
Bromomethane	ND	1.1		ND	1.3		ND	1.2		ND	0.79		5	10	2000
Carbon disulfide	2.1	0.90		ND	1.0		ND	0.97		ND	0.63		700	2,000	6000
Carbon tetrachloride	ND	1.9		ND	2.2		ND	2.0		ND	1.3		0.7	2	1900
Chlorobenzene	ND	1.3		ND	1.6		ND	1.4		ND	0.94		50	100	NE
Chloroethane	ND	0.77		ND	0.90		ND	0.83		ND	0.54		10,000	30,000	100000
Chloroform	ND	1.4		ND	1.6		ND	1.5		ND	0.99		100	300	150
Chloromethane	ND	0.60		ND	0.70		ND	0.65		ND	0.42		90	300	1000
Cyclohexane	ND	0.97		1.8	1.1		ND	1.0		ND	0.68		6,000	20000	NE
Dibromochloromethane	ND	2.4		ND	2.8		ND	2.6		ND	1.7		NE	NE	NE
Dichlorodifluoromethane	ND	1.4		4.0	1.7		2.6	1.5		ND	1.0		200	600	NE
Dichlorotetrafluoroethane	ND	2.0		ND	2.3		ND	2.2		ND	1.4		NE	NE	NE
Ethanol	33.5	2.7		10	3.2	SS	ND	2.9		ND	1.9		15,000	42,000	180000
Ethyl acetate	ND	1.0		ND	1.2		ND	1.1		ND	0.73		3,000	8,000	40000
Ethylbenzene	ND	1.3		2.4	1.5		ND	1.4		ND	0.88		1,000	3,000	10000
Hexachloro-1,3-butadiene	ND	3.1		ND	3.7		ND	3.4		ND	2.2		0.5	1	NE
Methyl-tert-butyl ether	ND	1.0		ND	1.2		ND	1.1		ND	0.73		3,000	8,000	7000
Methylene Chloride	ND	1.0		9.3	1.2		2.4	1.1		ND	0.71		20	60	10000
Naphthalene	**18.7**	3.9	L1	ND	4.5		ND	4.2		ND	2.7		9	30	NE
Propylene	ND	0.50		ND	0.58		ND	0.54		ND	0.35		3,000	8000	NE
Styrene	ND	1.2		ND	1.4		ND	1.3		ND	0.87		1,000	3,000	21000
Tetrachloroethene	ND	2.0		ND	2.3		ND	2.2		ND	1.4		20	60	20000
Tetrahydrofuran	ND	0.86		ND	1.0		ND	0.92		ND	0.60		NE	NE	NE

Terracon

TABLE 20F - RESULTS OF SOIL GAS SAMPLES FOR VAPOR INTRUSION SCREENING (347 LAKE AVE.)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	SSMP-2 [1] (347 Lake Ave)			SSMP-2 [1] (347 Lake Ave)			SSMP-2 [1] (1240) (347 Lake Ave)			1240 Cert. (347 Lake Ave)			INTRUSION SCREENING VALUES		
DATE SAMPLE	1/11/2008			4/8/08			11/11/08			11/11/08					
DEPTH (-#) or HEIGHT (+#) in feet	-0.3			-0.3			-0.3			-0.3					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
Toluene	ND	1.1		7.2	1.3		ND	1.2		ND	0.77		5,000	10,000	37000
Trichloroethene	ND	1.6		ND	1.8		ND	1.7		ND	1.1		3	8	2000
Trichlorofluoromethane	ND	1.6		ND	1.8		ND	1.7		ND	1.1		700	2000	NE
Vinyl acetate	3.0	1.0		ND	1.2		2.6	1.1		ND	0.71		200	600	NE
Vinyl chloride	ND	0.74		ND	0.86		ND	0.80		ND	0.52		1	3	180000
cis-1,2-Dichloroethene	ND	1.2		ND	1.3		ND	1.2		ND	0.81		NE	NE	NE
cis-1,3-Dichloropropene	ND	1.3		ND	1.5		ND	1.4		ND	0.92		20	60	NE
m&p-Xylene	ND	2.5		7.1	2.9		ND	2.7		ND	1.8		100	300	43000
n-Heptane	ND	1.2		1.5	1.4		ND	1.3		ND	0.83		NE	NE	NE
n-Hexane	ND	1.0		4.2	1.2		ND	1.1		ND	0.72		2,000	6000	NE
o-Xylene	ND	1.3		2.8	1.5		ND	1.4		ND	0.88		100	300	43000
trans-1,2-Dichloroethene	ND	1.2		ND	1.3		ND	1.2		ND	0.81		60	200	800
trans-1,3-Dichloropropene	ND	1.3		ND	1.5		ND	1.4		ND	0.92		20	60	NE
Carbon dioxide	-	-		-	-		2.9	0.77	A	-	-		NE	NE	NE
Methane	-	-		-	-		ND	1.5	A	-	-		NE	NE	NE
Oxygen	-	-		-	-		20.1	3.1	A	-	-		NE	NE	NE

Notes: Analytical data reported in micrograms per cubic meter (ug/m3). 5/6/09
Results below the laboratory reporting limits (RLs) were preceded by the less than symbol (<) or listed as not detected (ND).
Bold indicates parameter concentration above the respective action level criteria.
NE indicates action levels are not established for the respective parameter.
RL column includes laboratory reporting limits for the respective parameter.
* The action levels shown are for TOTAL Xylenes (combined m&p-Xylene and o-Xylene).
Q column includes footnotes for referencing laboratory reporting qualifiers.
ISV = MPCA Intrusion Screening Value (ISV) (MPCA, Risk-Based Guidance for Vapor Intrusion Pathway 9/08)
D6 = The relative percent difference (RPD) between the sample and the sample duplicate exceeds laboratory control limits.
E = Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Result may be biased high.
L2 = Analyte recovery in the LCS was below QC limits. Result may be biased low.
SS = Analyte did not meet the secondary source verfiication criteria for the initial calibration. The reported result should be considered an estimate.
D3 = Sample diluted due to presence of high levels of non-target analytes or other matrix interference.
IR = Internal standard recovery associated with this analyte exceeds upper control limit. Reported result estimated.
A = Concentration in percent
[1] = Collected using certified canister and 200 cubic centimeter per minute (30 min) flow controller.

TABLE 20G - RESULTS OF SOIL GAS SAMPLES FOR VAPOR INTRUSION SCREENING (410 LAKE AVE.)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	SSMP-3 [1] (410 Lake Ave)			SSMP-3 [1] (0255) (410 Lake Ave)			0255 Cert. (410 Lake Ave)			SSMP-3 [1] (1047) (410 Lake Ave)			1047 Cert. (410 Lake Ave)			INTRUSION SCREENING VALUES		
DATE SAMPLE	1/11/2008			5/20/08			5/20/08			11/11/08			11/11/08					
DEPTH (-#) or HEIGHT (+#) in feet	-0.3			-0.3			-			-0.3			-					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
1,1,1-Trichloroethane	ND	1.6		ND	1.5		ND	1.1		ND	1.7		ND	1.1		5,000	10,000	140000
1,1,2,2-Tetrachloroethane	ND	2.0		ND	1.9		ND	1.4		ND	2.2		ND	1.4		0.2	1	NE
1,1,2-Trichloroethane	ND	1.6		ND	1.5		ND	1.1		ND	1.7		ND	1.1		0.6	2	NE
1,1,2-Trichlorotrifluoroethane	ND	2.3		ND	2.1		ND	1.6		ND	2.5		ND	1.6		30,000	80000	NE
1,1-Dichloroethane	ND	1.2		ND	1.1		ND	0.82		ND	1.3		ND	0.82		500	1000	NE
1,1-Dichloroethene	ND	1.2		ND	1.1		ND	0.81		ND	1.2		ND	0.81		200	600	NE
1,2,4-Trichlorobenzene	ND	1.4		ND	1.3		ND	0.99		ND	1.5		ND	0.99		4	10	NE
1,2,4-Trimethylbenzene	ND	3.6		ND	3.4		ND	2.5		ND	3.8	L2	ND	2.5		7.0	20	NE
1,2-Dibromoethane (EDB)	ND	2.3		ND	2.1		ND	1.6		ND	2.5		ND	1.6		0.02	0.06	NE
1,2-Dichlorobenzene	ND	1.7		ND	1.6		ND	1.2		ND	1.8		ND	1.2		200	600	NE
1,2-Dichloroethane	ND	1.2		ND	1.1		ND	0.82		ND	1.3		ND	0.82		0.4	1	NE
1,2-Dichloropropane	ND	1.3		ND	1.3		ND	0.94		ND	1.4		ND	0.94		4	10	200
1,3,5-Trimethylbenzene	ND	3.6		ND	3.4		ND	2.5		ND	3.8	L2	ND	2.5		6.0	20	NE
1,3-Butadiene	ND	0.64		ND	0.60		ND	0.45		ND	0.69		ND	0.45		0.3	1	NE
1,3-Dichlorobenzene	ND	1.7		ND	1.6		ND	1.2		ND	1.8		ND	1.2		NE	NE	NE
1,4-Dichlorobenzene	ND	1.7		ND	1.6		ND	1.2		ND	1.8		ND	1.2		60	200	10000
2-Butanone (MEK)	3.0	0.86		1.1	0.80		ND	0.60		2.0	0.92		ND	0.60		5,000	10,000	10000
2-Hexanone	ND	1.2		ND	1.1		ND	0.83		ND	1.3		ND	0.83		NE	NE	NE
2-Propanol	ND	3.6		ND	3.4		ND	2.5		ND	3.8		ND	2.5		7,000	20,000	3200
4-Ethyltoluene	ND	3.6		ND	3.4		ND	2.5		ND	3.8		ND	2.5		NE	NE	NE
4-Methyl-2-pentanone (MIBK)	ND	1.2		ND	1.1		ND	0.83		ND	1.3		ND	0.83		3,000	8000	NE
Acetone	13.6	0.69		12.2	0.64		ND	0.48		5.8	0.74		ND	0.48		31000	87,000	60000
Benzene	ND	0.93		ND	0.87		ND	0.65		ND	1.0		ND	0.65		4.5	13	1000
Bromodichloromethane	ND	2.0		ND	1.9		ND	1.4		ND	2.2		ND	1.4		NE	NE	NE
Bromoform	ND	3.0		ND	2.8		ND	2.1		ND	3.2		ND	2.1		9	30	NE
Bromomethane	ND	1.1		ND	1.1		ND	0.79		ND	1.2		ND	0.79		5	10	2000
Carbon disulfide	1.7	0.90		ND	0.84		ND	0.63		ND	0.97		ND	0.63		700	2,000	6000
Carbon tetrachloride	ND	1.9		ND	1.7		ND	1.3		ND	2.0		ND	1.3		0.7	2	1900
Chlorobenzene	ND	1.3		ND	1.3		ND	0.94		ND	1.4		ND	0.94		50	100	NE
Chloroethane	ND	0.77		ND	0.72		ND	0.54		ND	0.83		ND	0.54		10,000	30,000	100000
Chloroform	ND	1.4		ND	1.3		ND	0.99		ND	1.5		ND	0.99		100	300	150
Chloromethane	ND	0.60		ND	0.56		ND	0.42		ND	0.65		ND	0.42		90	300	1000
Cyclohexane	ND	0.97		ND	0.91		ND	0.68		ND	1.0		ND	0.68		6,000	20000	NE
Dibromochloromethane	ND	2.4		ND	2.3		ND	1.7		ND	2.6		ND	1.7		NE	NE	NE
Dichlorodifluoromethane	ND	1.4		2.7	1.3		ND	1.0		3.0	1.5		ND	1.0		200	600	NE
Dichlorotetrafluoroethane	ND	2.0		ND	1.9		ND	1.4		ND	2.2		ND	1.4		NE	NE	NE
Ethanol	33.1	2.7		16.3	2.5		ND	1.9		13.7	2.9	L1	ND	1.9		15,000	42,000	180000
Ethyl acetate	ND	1.0		ND	0.98		ND	0.73		ND	1.1		ND	0.73		3,000	8,000	40000
Ethylbenzene	ND	1.3		ND	1.2		ND	0.88		ND	1.4		ND	0.88		1,000	3,000	10000
Hexachloro-1,3-butadiene	ND	3.1		ND	2.9		ND	2.2		ND	3.4		ND	2.2		0.5	1	NE
Methyl-tert-butyl ether	ND	1.0		ND	0.98		ND	0.73		ND	1.1		ND	0.73		3,000	8,000	7000
Methylene Chloride	112	1.0	E	22.0	0.95		ND	0.71		2.6	1.1		ND	0.71		20	60	10000
Naphthalene	4.7	3.9	L1	ND	3.6		ND	2.7		ND	4.2		ND	2.7		9	30	NE
Propylene	1.0	0.50		ND	0.47		ND	0.35		ND	0.54		ND	0.35		3,000	8000	NE
Styrene	ND	1.2		ND	1.2		ND	0.87		ND	1.3		ND	0.87		1,000	3,000	21000
Tetrachloroethene	ND	2.0		28.1	1.9		ND	1.4		ND	2.2		ND	1.4		20	60	20000
Tetrahydrofuran	ND	0.86		ND	0.80		ND	0.60		ND	0.92		ND	0.60		NE	NE	NE
Toluene	ND	1.1		2.1	1.0		ND	0.77		1.4	1.2		ND	0.77		5,000	10,000	37000
Trichloroethene	ND	1.6		ND	1.5		ND	1.1		ND	1.7		ND	1.1		3	8	2000
Trichlorofluoromethane	ND	1.6		ND	1.5		ND	1.1		ND	1.7		ND	1.1		700	2000	NE
Vinyl acetate	ND	1.0		ND	0.95		ND	0.71		ND	1.1		ND	0.71		200	600	NE
Vinyl chloride	ND	0.74		ND	0.70		ND	0.52		ND	0.80		ND	0.52		1	3	180000
cis-1,2-Dichloroethene	ND	1.2		ND	1.1		ND	0.81		ND	1.2		ND	0.81		NE	NE	NE
cis-1,3-Dichloropropene	ND	1.3		ND	1.2		ND	0.92		ND	1.4		ND	0.92		20	60	NE
m&p-Xylene	ND	2.5		ND	2.4		ND	1.8		ND	2.7		ND	1.8		100	300	43000
n-Heptane	ND	1.2		ND	1.1		ND	0.83		ND	1.3		ND	0.83		NE	NE	NE

Terracon

TABLE 20G - RESULTS OF SOIL GAS SAMPLES FOR VAPOR INTRUSION SCREENING (410 LAKE AVE.)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	SSMP-3 [1] (410 Lake Ave)			SSMP-3 [1] (0255) (410 Lake Ave)			0255 Cert. (410 Lake Ave)			SSMP-3 [1] (1047) (410 Lake Ave)			1047 Cert. (410 Lake Ave)			INTRUSION SCREENING VALUES		
DATE SAMPLE	1/11/2008			5/20/08			5/20/08			11/11/08			11/11/08					
DEPTH (-#) or HEIGHT (+#) in feet	-0.3			-0.3			-			-0.3			-					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
n-Hexane	ND	1.0		3.2	0.96		ND	0.72		ND	1.1		ND	0.72		2,000	6000	NE
o-Xylene	ND	1.3		ND	1.2		ND	0.88		ND	1.4		ND	0.88		100	300	43000
trans-1,2-Dichloroethene	ND	1.2		ND	1.1		ND	0.81		ND	1.2		ND	0.81		60	200	800
trans-1,3-Dichloropropene	ND	1.3		ND	1.2		ND	0.92		ND	1.4		ND	0.92		20	60	NE
Carbon dioxide	-	-		-	-		-	-		0.97	0.77	A	-	-		NE	NE	NE
Methane	-	-		-	-		-	-		ND	1.5	A	-	-		NE	NE	NE
Oxygen	-	-		-	-		-	-		20.6	3.1	A	-	-		NE	NE	NE

Notes: Analytical data reported in micrograms per cubic meter (ug/m3). 5/6/09
Results below the laboratory reporting limits (RLs) were preceded by the less than symbol (<) or listed as not detected (ND).
Bold indicates parameter concentration above the respective action level criteria.
NE indicates action levels are not established for the respective parameter.
RL column includes laboratory reporting limits for the respective parameter.
* The action levels shown are for TOTAL Xylenes (combined m&p-Xylene and o-Xylene).
Q column includes footnotes for referencing laboratory reporting qualifiers.
D6 = The relative percent difference (RDP) between the sample and the sample duplicate exceeds laboratory control limits
E = Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Result may be biased high.
L2 = Analyte recovery in the LCS was below QC limits. Result may be biased low.
SS = Analyte did not meet the secondary source verfiication criteria for the initial calibration. The reported result should be considered and estimate.
D3 = Sample diluted due to presence of high levels of non-target analytes or other matrix interference.
IR = Internal standard recovery associated with this analyte exceeds upper control limit. Reported result estimated.
A = Concentration in percent
[1] = Collected using certified canister and 200 cubic centimeter per minute (30 min) flow controller.

TABLE 20H - RESULTS OF INDOOR AIR SAMPLES (154 MILL ST. MAIN LEVEL)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	Main Level (1047)			1047 Certification			INTRUSION SCREENING VALUES		
DATE SAMPLE	2/12/09			2/12/09					
DEPTH (-#) or HEIGHT (+#) in feet	3			-					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
1,1,1-Trichloroethane	2.3	1.5		ND	1.1		5,000	10,000	140000
1,1,2,2-Tetrachloroethane	ND	1.9		ND	1.4		0.2	1	NE
1,1,2-Trichloroethane	ND	1.5		ND	1.1		0.6	2	NE
1,1,2-Trichlorotrifluoroethane	ND	2.1		ND	1.6		30,000	80000	NE
1,1-Dichloroethane	ND	1.1		ND	0.82		500	1000	NE
1,1-Dichloroethene	ND	1.1		ND	0.81		200	600	NE
1,2,4-Trichlorobenzene	ND	1.3		ND	0.99		4	10	NE
1,2,4-Trimethylbenzene	3.8	3.4		ND	2.5		7.0	20	NE
1,2-Dibromoethane (EDB)	ND	2.1		ND	1.6		0.02	0.06	NE
1,2-Dichlorobenzene	ND	1.6		ND	1.2		200	600	NE
1,2-Dichloroethane	ND	1.1		ND	0.82		0.4	1	NE
1,2-Dichloropropane	ND	1.3		ND	0.94		4	10	200
1,3,5-Trimethylbenzene	ND	3.4		ND	2.5		6.0	20	NE
1,3-Butadiene	ND	0.60		ND	0.45		0.3	1	NE
1,3-Dichlorobenzene	ND	1.6		ND	1.2		NE	NE	NE
1,4-Dichlorobenzene	ND	1.6		ND	1.2		60	200	10000
2-Butanone (MEK)	ND	0.80		ND	0.60		5,000	10,000	10000
2-Hexanone	ND	1.1		ND	0.83		NE	NE	NE
2-Propanol	23.9	3.4		ND	2.5		7,000	20,000	3200
4-Ethyltoluene	ND	3.4		ND	2.5		NE	NE	NE
4-Methyl-2-pentanone (MIBK)	ND	1.1		ND	0.83		3,000	8000	NE
Acetone	23.6	0.64		ND	0.48		31000	87,000	60000
Benzene	1.3	0.87		ND	0.65		4.5	13	1000
Bromodichloromethane	ND	1.9		ND	1.4		NE	NE	NE
Bromoform	ND	2.8		ND	2.1		9	30	NE
Bromomethane	ND	1.1		ND	0.79		5	10	2000
Carbon disulfide	ND	0.84		ND	0.63		700	2,000	6000
Carbon tetrachloride	ND	1.7		ND	1.3		0.7	2	1900
Chlorobenzene	ND	1.3		ND	0.94		50	100	NE
Chloroethane	ND	0.72		ND	0.54		10,000	30,000	100000
Chloroform	ND	1.3		ND	0.99		100	300	150
Chloromethane	ND	0.56		ND	0.42		90	300	1000
Cyclohexane	1.8	0.91		ND	0.68		6,000	20000	NE
Dibromochloromethane	ND	2.3		ND	1.7		NE	NE	NE
Dichlorodifluoromethane	2.1	1.3		ND	1.0		200	600	NE
Dichlorotetrafluoroethane	ND	1.9		ND	1.4		NE	NE	NE
Ethanol	257	2.5	E	ND	1.9		15,000	42,000	180000
Ethyl acetate	25.2	0.98		ND	0.73		3,000	8,000	40000
Ethylbenzene	2.0	1.2		ND	0.88		1,000	3,000	10000
Hexachloro-1,3-butadiene	ND	2.9		ND	2.2		0.5	1	NE
Methyl-tert-butyl ether	ND	0.98		ND	0.73		3,000	8,000	7000
Methylene Chloride	3.3	0.95		ND	0.71		20	60	10000
Naphthalene	ND	3.6		ND	2.7		9	30	NE
Propylene	ND	0.47		ND	0.35		3,000	8000	NE
Styrene	1.2	1.2		ND	0.87		1,000	3,000	21000
Tetrachloroethene	ND	1.9		ND	1.4		20	60	20000
Tetrahydrofuran	ND	0.80		ND	0.60		NE	NE	NE
Toluene	13.4	1.0		ND	0.77		5,000	10,000	37000
Trichloroethene	**29.6**	1.5		ND	1.1		3	8	2000
Trichlorofluoromethane	ND	1.5		ND	1.1		700	2000	NE
Vinyl acetate	ND	0.95		ND	0.71		200	600	NE
Vinyl chloride	ND	0.70		ND	0.52		1	3	180000
cis-1,2-Dichloroethene	ND	1.1		ND	0.81		NE	NE	NE
cis-1,3-Dichloropropene	ND	1.2		ND	0.92		20	60	NE
m&p-Xylene	7.6	2.4		ND	1.8		100	300	43000
n-Heptane	ND	1.1		ND	0.83		NE	NE	NE
n-Hexane	ND	0.96		ND	0.72		2,000	6000	NE
o-Xylene	2.5	1.2		ND	0.88		100	300	43000
trans-1,2-Dichloroethene	ND	1.1		ND	0.81		60	200	800
trans-1,3-Dichloropropene	ND	1.2		ND	0.92		20	60	NE

Notes: Analytical data reported in micrograms per cubic meter (µg/m3). 5/6/09
Results below the laboratory reporting limits (RLs) were preceded by the less than symbol (<) or listed as not detected (ND).
Bold indicates parameter concentration above the respective action level criteria.
NE indicates action levels are not established for the respective parameter.
RL column includes laboratory reporting limits for the respective parameter.
* The action levels shown are for TOTAL Xylenes (combined m&p-Xylene and o-Xylene).
ISV = MPCA Intrusion Screening Value (ISV) (MPCA, Risk-Based Guidance for Vapor Intrusion Pathway 9/08)
Q column includes footnotes for referencing laboratory reporting qualifiers.
D6 = The relative percent difference (RPD) between the sample and the sample duplicate exceeds laboratory control limits.
E = Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Result may be biased high.
L2 = Analyte recovery in the LCS was below QC limits. Result may be biased low.
SS = Analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimat
D3 = Sample diluted due to presence of high levels of non-target analytes or other matrix interference.
IR = Internal standard recovery associated with this analyte exceeds upper control limit. Reported result estimated.
A = Concentration in percent
1 = Collected using certified canister and 200 cubic centimeter per minute (30 min) flow controller.

TABLE 20I - RESULTS OF INDOOR AIR SAMPLES (154 MILL ST. BASEMENT)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	Basement (1266)			1266 Certification			INTRUSION SCREENING VALUES		
DATE SAMPLE	2/12/09			2/12/09					
DEPTH (-#) or HEIGHT (+#) in feet	3			-					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
1,1,1-Trichloroethane	ND	1.6		ND	1.1		5,000	10,000	140000
1,1,2,2-Tetrachloroethane	ND	2.0		ND	1.4		0.2	1	NE
1,1,2-Trichloroethane	ND	1.6		ND	1.1		0.6	2	NE
1,1,2-Trichlorotrifluoroethane	ND	2.3		ND	1.6		30,000	80000	NE
1,1-Dichloroethane	ND	1.2		ND	0.82		500	1000	NE
1,1-Dichloroethene	ND	1.2		ND	0.81		200	600	NE
1,2,4-Trichlorobenzene	ND	1.4		ND	0.99		4	10	NE
1,2,4-Trimethylbenzene	ND	3.6		ND	2.5		7.0	20	NE
1,2-Dibromoethane (EDB)	ND	2.3		ND	1.6		0.02	0.06	NE
1,2-Dichlorobenzene	ND	1.7		ND	1.2		200	600	NE
1,2-Dichloroethane	ND	1.2		ND	0.82		0.4	1	NE
1,2-Dichloropropane	ND	1.3		ND	0.94		4	10	200
1,3,5-Trimethylbenzene	ND	3.6		ND	2.5		6.0	20	NE
1,3-Butadiene	ND	0.64		ND	0.45		0.3	1	NE
1,3-Dichlorobenzene	ND	1.7		ND	1.2		NE	NE	NE
1,4-Dichlorobenzene	ND	1.7		ND	1.2		60	200	10000
2-Butanone (MEK)	3.0	0.86		ND	0.60		5,000	10,000	10000
2-Hexanone	ND	1.2		ND	0.83		NE	NE	NE
2-Propanol	14.6	3.6		ND	2.5		7,000	20,000	3200
4-Ethyltoluene	ND	3.6		ND	2.5		NE	NE	NE
4-Methyl-2-pentanone (MIBK)	ND	1.2		ND	0.83		3,000	8000	NE
Acetone	25.9	0.69		ND	0.48		31000	87,000	60000
Benzene	1.1	0.93		ND	0.65		4.5	13	1000
Bromodichloromethane	ND	2.0		ND	1.4		NE	NE	NE
Bromoform	ND	3.0		ND	2.1		9	30	NE
Bromomethane	ND	1.1		ND	0.79		5	10	2000
Carbon disulfide	ND	0.90		ND	0.63		700	2,000	6000
Carbon tetrachloride	ND	1.9		ND	1.3		0.7	2	1900
Chlorobenzene	ND	1.3		ND	0.94		50	100	NE
Chloroethane	ND	0.77		ND	0.54		10,000	30,000	100000
Chloroform	ND	1.4		ND	0.99		100	300	150
Chloromethane	1.0	0.60		ND	0.42		90	300	1000
Cyclohexane	ND	0.97		ND	0.68		6,000	20000	NE
Dibromochloromethane	ND	2.4		ND	1.7		NE	NE	NE
Dichlorodifluoromethane	2.4	1.4		ND	1.0		200	600	NE
Dichlorotetrafluoroethane	ND	2.0		ND	1.4		NE	NE	NE
Ethanol	206	2.7	E,L1	ND	1.9		15,000	42,000	180000
Ethyl acetate	11.3	1.0		ND	0.73		3,000	8,000	40000
Ethylbenzene	1.3	1.3		ND	0.88		1,000	3,000	10000
Hexachloro-1,3-butadiene	ND	3.1		ND	2.2		0.5	1	NE
Methyl-tert-butyl ether	ND	1.0		ND	0.73		3,000	8,000	7000
Methylene Chloride	1.1	1.0		ND	0.71		20	60	10000
Naphthalene	ND	3.9		ND	2.7		9	30	NE
Propylene	ND	0.50		ND	0.35		3,000	8000	NE
Styrene	ND	1.2		ND	0.87		1,000	3,000	21000
Tetrachloroethene	ND	2.0		ND	1.4		20	60	20000
Tetrahydrofuran	ND	0.86		ND	0.60		NE	NE	NE
Toluene	6.9	1.1		ND	0.77		5,000	10,000	37000
Trichloroethene	3.6	1.6		ND	1.1		3	8	2000
Trichlorofluoromethane	ND	1.6		ND	1.1		700	2000	NE
Vinyl acetate	ND	1.0		ND	0.71		200	600	NE
Vinyl chloride	ND	0.74		ND	0.52		1	3	180000
cis-1,2-Dichloroethene	ND	1.2		ND	0.81		NE	NE	NE
cis-1,3-Dichloropropene	ND	1.3		ND	0.92		20	60	NE
m&p-Xylene	5.6	2.5		ND	1.8		100	300	43000
n-Heptane	ND	1.2		ND	0.83		NE	NE	NE
n-Hexane	1.1	1.0		ND	0.72		2,000	6000	NE
o-Xylene	1.8	1.3		ND	0.88		100	300	43000
trans-1,2-Dichloroethene	ND	1.2		ND	0.81		60	200	800
trans-1,3-Dichloropropene	ND	1.3		ND	0.92		20	60	NE

Notes: Analytical data reported in micrograms per cubic meter (µg/m3). 5/6/09
Results below the laboratory reporting limits (RLs) were preceded by the less than symbol (<) or listed as not detected (ND).
Bold indicates parameter concentration above the respective action level criteria.
NE indicates action levels are not established for the respective parameter.
RL column includes laboratory reporting limits for the respective parameter.
* The action levels shown are for TOTAL Xylenes (combined m&p-Xylene and o-Xylene).
ISV = MPCA Intrusion Screening Value (ISV) (MPCA, Risk-Based Guidance for Vapor Intrusion Pathway 9/08)
Q column includes footnotes for referencing laboratory reporting qualifiers.
D6 = The relative percent difference (RPD) between the sample and the sample duplicate exceeds laboratory control limits.
E = Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Result may be biased high.
L2 = Analyte recovery in the LCS was below QC limits. Result may be biased low.
SS = Analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estim
D3 = Sample diluted due to presence of high levels of non-target analytes or other matrix interference.
IR = Internal standard recovery associated with this analyte exceeds upper control limit. Reported result estimated.
A = Concentration in percent
1 = Collected using certified canister and 200 cubic centimeter per minute (30 min) flow controller.

TABLE 20J - RESULTS OF INDOOR AIR SAMPLES (154 MILL ST. CRAWL SPACE)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	Crawl Space (0661)			0661 Certification			INTRUSION SCREENING VALUES		
DATE SAMPLE	2/12/09			2/12/09					
DEPTH (-#) or HEIGHT (+#) in feet	6			-					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
1,1,1-Trichloroethane	2.1	1.6		ND	1.1		5,000	10,000	140000
1,1,2,2-Tetrachloroethane	ND	2.1		ND	1.4		0.2	1	NE
1,1,2-Trichloroethane	ND	1.6		ND	1.1		0.6	2	NE
1,1,2-Trichlorotrifluoroethane	ND	2.4		ND	1.6		30,000	80000	NE
1,1-Dichloroethane	ND	1.2		ND	0.82		500	1000	NE
1,1-Dichloroethene	ND	1.2		ND	0.81		200	600	NE
1,2,4-Trichlorobenzene	ND	1.5		ND	0.99		4	10	NE
1,2,4-Trimethylbenzene	8.6	3.7		ND	2.5		7.0	20	NE
1,2-Dibromoethane (EDB)	ND	2.4		ND	1.6		0.02	0.06	NE
1,2-Dichlorobenzene	ND	1.8		ND	1.2		200	600	NE
1,2-Dichloroethane	ND	1.2		ND	0.82		0.4	1	NE
1,2-Dichloropropane	ND	1.4		ND	0.94		4	10	200
1,3,5-Trimethylbenzene	ND	3.7		ND	2.5		6.0	20	NE
1,3-Butadiene	ND	0.67		ND	0.45		0.3	1	NE
1,3-Dichlorobenzene	ND	1.8		ND	1.2		NE	NE	NE
1,4-Dichlorobenzene	ND	1.8		ND	1.2		60	200	10000
2-Butanone (MEK)	ND	0.89		ND	0.60		5,000	10,000	10000
2-Hexanone	ND	1.2		ND	0.83		NE	NE	NE
2-Propanol	22.5	3.7		ND	2.5		7,000	20,000	3200
4-Ethyltoluene	ND	3.7		ND	2.5		NE	NE	NE
4-Methyl-2-pentanone (MIBK)	ND	1.2		ND	0.83		3,000	8000	NE
Acetone	17.0	0.71		ND	0.48		31000	87,000	60000
Benzene	1.6	0.96		ND	0.65		4.5	13	1000
Bromodichloromethane	ND	2.1		ND	1.4		NE	NE	NE
Bromoform	ND	3.1		ND	2.1		9	30	NE
Bromomethane	ND	1.2		ND	0.79		5	10	2000
Carbon disulfide	ND	0.93		ND	0.63		700	2,000	6000
Carbon tetrachloride	ND	1.9		ND	1.3		0.7	2	1900
Chlorobenzene	ND	1.4		ND	0.94		50	100	NE
Chloroethane	ND	0.80		ND	0.54		10,000	30,000	100000
Chloroform	ND	1.5		ND	0.99		100	300	150
Chloromethane	ND	0.62		ND	0.42		90	300	1000
Cyclohexane	ND	1.0		ND	0.68		6,000	20000	NE
Dibromochloromethane	ND	2.5		ND	1.7		NE	NE	NE
Dichlorodifluoromethane	2.1	1.5		ND	1.0		200	600	NE
Dichlorotetrafluoroethane	ND	2.1		ND	1.4		NE	NE	NE
Ethanol	248	2.8	E	ND	1.9		15,000	42,000	180000
Ethyl acetate	17.8	1.1		ND	0.73		3,000	8,000	40000
Ethylbenzene	2.9	1.3		ND	0.88		1,000	3,000	10000
Hexachloro-1,3-butadiene	ND	3.3		ND	2.2		0.5	1	NE
Methyl-tert-butyl ether	ND	1.1		ND	0.73		3,000	8,000	7000
Methylene Chloride	1.4	1.1		ND	0.71		20	60	10000
Naphthalene	ND	4.0		ND	2.7		9	30	NE
Propylene	ND	0.52		ND	0.35		3,000	8000	NE
Styrene	1.3	1.3		ND	0.87		1,000	3,000	21000
Tetrachloroethene	ND	2.1		ND	1.4		20	60	20000
Tetrahydrofuran	ND	0.89		ND	0.60		NE	NE	NE
Toluene	10.9	1.1		ND	0.77		5,000	10,000	37000
Trichloroethene	1.6	1.6		ND	1.1		3	8	2000
Trichlorofluoromethane	ND	1.6		ND	1.1		700	2000	NE
Vinyl acetate	ND	1.1		ND	0.71		200	600	NE
Vinyl chloride	ND	0.77		ND	0.52		1	3	180000
cis-1,2-Dichloroethene	ND	1.2		ND	0.81		NE	NE	NE
cis-1,3-Dichloropropene	ND	1.4		ND	0.92		20	60	NE
m&p-Xylene	15.7	2.6		ND	1.8		100	300	43000
n-Heptane	ND	1.2		ND	0.83		NE	NE	NE
n-Hexane	1.7	1.1		ND	0.72		2,000	6000	NE
o-Xylene	4.8	1.3		ND	0.88		100	300	43000
trans-1,2-Dichloroethene	ND	1.2		ND	0.81		60	200	800
trans-1,3-Dichloropropene	ND	1.4		ND	0.92		20	60	NE

Notes: Analytical data reported in micrograms per cubic meter (µg/m3). 5/6/09
Results below the laboratory reporting limits (RLs) were preceded by the less than symbol (<) or listed as not detected (ND).
Bold indicates parameter concentration above the respective action level criteria.
NE indicates action levels are not established for the respective parameter.
RL column includes laboratory reporting limits for the respective parameter.
* The action levels shown are for TOTAL Xylenes (combined m&p-Xylene and o-Xylene).
ISV = MPCA Intrusion Screening Value (ISV) (MPCA, Risk-Based Guidance for Vapor Intrusion Pathway 9/08)
Q column includes footnotes for referencing laboratory reporting qualifiers.
D6 = The relative percent difference (RPD) between the sample and the sample duplicate exceeds laboratory control limits.
E = Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Result may be biased high.
L2 = Analyte recovery in the LCS was below QC limits. Result may be biased low.
SS = Analyte did not meet the secondary source verfiication criteria for the initial calibration. The reported result should be considered an estim
D3 = Sample diluted due to presence of high levels of non-target analytes or other matrix interference.
IR = Internal standard recovery associated with this analyte exceeds upper control limit. Reported result estimated.
A = Concentration in percent
1 = Collected using certified canister and 200 cubic centimeter per minute (30 min) flow controller.

TABLE 20K - RESULTS OF AMBIENT AIR SAMPLES (154 MILL ST.)
PAYNESVILLE PUBLIC WATER SUPPLY - MPCA
PAYNESVILLE, MINNESOTA 56362
TERRACON PROJECT NO. 41987018

SAMPLE LOCATION	Ambient (0148)			0148 Certification			INTRUSION SCREENING VALUES		
DATE SAMPLE	2/12/09			2/12/09					
DEPTH (-#) or HEIGHT (+#) in feet	0			-					
PARAMETERS	Result (µg/m³)	RL (µg/m³)	Q	Result (µg/m³)	RL (µg/m³)	Q	Res. ISV (µg/m3)	Com/Indust. ISV (µg/m3)	Acute ISV (µg/m3)
1,1,1-Trichloroethane	ND	1.4		ND	1.1		5,000	10,000	140000
1,1,2,2-Tetrachloroethane	ND	1.8		ND	1.4		0.2	1	NE
1,1,2-Trichloroethane	ND	1.4		ND	1.1		0.6	2	NE
1,1,2-Trichlorotrifluoroethane	ND	2.0		ND	1.6		30,000	80000	NE
1,1-Dichloroethane	ND	1.0		ND	0.82		500	1000	NE
1,1-Dichloroethene	ND	1.0		ND	0.81		200	600	NE
1,2,4-Trichlorobenzene	ND	1.2		ND	0.99		4	10	NE
1,2,4-Trimethylbenzene	ND	3.1		ND	2.5		7.0	20	NE
1,2-Dibromoethane (EDB)	ND	2.0		ND	1.6		0.02	0.06	NE
1,2-Dichlorobenzene	ND	1.5		ND	1.2		200	600	NE
1,2-Dichloroethane	ND	1.0		ND	0.82		0.4	1	NE
1,2-Dichloropropane	ND	1.2		ND	0.94		4	10	200
1,3,5-Trimethylbenzene	ND	3.1		ND	2.5		6.0	20	NE
1,3-Butadiene	ND	0.56		ND	0.45		0.3	1	NE
1,3-Dichlorobenzene	ND	1.5		ND	1.2		NE	NE	NE
1,4-Dichlorobenzene	ND	1.5		ND	1.2		60	200	10000
2-Butanone (MEK)	3.3	0.75		ND	0.60		5,000	10,000	10000
2-Hexanone	ND	1.0		ND	0.83		NE	NE	NE
2-Propanol	ND	3.1		ND	2.5		7,000	20,000	3200
4-Ethyltoluene	ND	3.1		ND	2.5		NE	NE	NE
4-Methyl-2-pentanone (MIBK)	ND	1.0		ND	0.83		3,000	8000	NE
Acetone	10.4	0.60		ND	0.48		31000	87,000	60000
Benzene	1.7	0.81		ND	0.65		4.5	13	1000
Bromodichloromethane	ND	1.8		ND	1.4		NE	NE	NE
Bromoform	ND	2.6		ND	2.1		9	30	NE
Bromomethane	ND	0.99		ND	0.79		5	10	2000
Carbon disulfide	ND	0.79		ND	0.63		700	2,000	6000
Carbon tetrachloride	ND	1.6		ND	1.3		0.7	2	1900
Chlorobenzene	ND	1.2		ND	0.94		50	100	NE
Chloroethane	ND	0.68		ND	0.54		10,000	30,000	100000
Chloroform	ND	1.2		ND	0.99		100	300	150
Chloromethane	0.73	0.52		ND	0.42		90	300	1000
Cyclohexane	ND	0.85		ND	0.68		6,000	20000	NE
Dibromochloromethane	ND	2.1		ND	1.7		NE	NE	NE
Dichlorodifluoromethane	2.2	1.2		ND	1.0		200	600	NE
Dichlorotetrafluoroethane	ND	1.8		ND	1.4		NE	NE	NE
Ethanol	14.3	2.4	L1	ND	1.9		15,000	42,000	180000
Ethyl acetate	ND	0.91		ND	0.73		3,000	8,000	40000
Ethylbenzene	ND	1.1		ND	0.88		1,000	3,000	10000
Hexachloro-1,3-butadiene	ND	2.8		ND	2.2		0.5	1	NE
Methyl-tert-butyl ether	ND	0.91		ND	0.73		3,000	8,000	7000
Methylene Chloride	2.0	0.89		ND	0.71		20	60	10000
Naphthalene	ND	3.4		ND	2.7		9	30	NE
Propylene	ND	0.44		ND	0.35		3,000	8000	NE
Styrene	ND	1.1		ND	0.87		1,000	3,000	21000
Tetrachloroethene	ND	1.8		ND	1.4		20	60	20000
Tetrahydrofuran	2.7	0.75		ND	0.60		NE	NE	NE
Toluene	4.6	0.96		ND	0.77		5,000	10,000	37000
Trichloroethene	**127**	1.4		ND	1.1		3	8	2000
Trichlorofluoromethane	ND	1.4		ND	1.1		700	2000	NE
Vinyl acetate	ND	0.89		ND	0.71		200	600	NE
Vinyl chloride	ND	0.65		ND	0.52		1	3	180000
cis-1,2-Dichloroethene	2.2	1.0		ND	0.81		NE	NE	NE
cis-1,3-Dichloropropene	ND	1.2		ND	0.92		20	60	NE
m&p-Xylene	4.7	2.2		ND	1.8		100	300	43000
n-Heptane	ND	1.0		ND	0.83		NE	NE	NE
n-Hexane	1.3	0.90		ND	0.72		2,000	6000	NE
o-Xylene	1.6	1.1		ND	0.88		100	300	43000
trans-1,2-Dichloroethene	ND	1.0		ND	0.81		60	200	800
trans-1,3-Dichloropropene	ND	1.2		ND	0.92		20	60	NE

Notes: Analytical data reported in micrograms per cubic meter (µg/m3). 5/6/09
Results below the laboratory reporting limits (RLs) were preceded by the less than symbol (<) or listed as not detected (ND).
Bold indicates parameter concentration above the respective action level criteria.
NE indicates action levels are not established for the respective parameter.
RL column includes laboratory reporting limits for the respective parameter.
* The action levels shown are for TOTAL Xylenes (combined m&p-Xylene and o-Xylene).
ISV = MPCA Intrusion Screening Value (ISV) (MPCA, Risk-Based Guidance for Vapor Intrusion Pathway 9/08)
Q column includes footnotes for referencing laboratory reporting qualifiers.
D6 = The relative percent difference (RPD) between the sample and the sample duplicate exceeds laboratory control limits.
E = Analyte concentration exceeded the calibration range. The reported result is estimated.
L1 = Analyte recovery in the laboratory control sample (LCS) was above QC limits. Result may be biased high.
L2 = Analyte recovery in the LCS was below QC limits. Result may be biased low.
SS = Analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimat
D3 = Sample diluted due to presence of high levels of non-target analytes or other matrix interference.
IR = Internal standard recovery associated with this analyte exceeds upper control limit. Reported result estimated.
A = Concentration in percent
1 = Collected using certified canister and 200 cubic centimeter per minute (30 min) flow controller.