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DRAFT REMEDIAL INVESTIGATION REPORT
USEPA OPERABLE UNIT 2
GROUNDWATER PLUME

Lehigh Valley Railroad Derailment Superfund Site
LeRoy, New York
Index Number CERCLA-02-2006-2006

Prepared For:
Lehigh Valley Railroad Company
CINCINNATI, OHIO 45202

Prepared By:
Unicorn Management Consultants, LLC
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February 2014

DOCUMENT AUTHORIZATION FORM

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1 INTRODUCTION

Unicorn Management Consultants, LLC (UMC) prepared this Draft Remedial Investigation Report (LVRR RI) on behalf of the Lehigh Valley Railroad Company (LVRR). LVRR is the respondent of the Settlement Agreement and Order on Consent for Pre-Remedial Design Investigations, Remedial Design, and Remedial Investigation/Feasibility Study, Index Number CERCLA-02-2006-2006 by signatory of the United States Environmental Protection Agency (USEPA) on September 22, 2006 (hereinafter, "SA") for the Lehigh Valley Railroad Derailment Superfund Site (Site) located in Genesee, Monroe and Livingston Counties, near the Town of LeRoy, New York. Appendix A of this LVRR RI contains a copy of the SA.

As further detailed in Section 2.0 of this report, the scope of the LVRR RI was incorporated in the SA, including a Record of Decision (ROD) prepared by the New York State Department of Environmental Conservation (NYSDEC) on March 28, 1997 and a Memorandum to supplement the ROD published by the USEPA on May 15, 2002 (Appendix A of the SA); a Statement of Work (SOW) (Appendix B of the SA); and the work plan titled Final Work Plan for Remedial Investigation / Feasibility Study, Lehigh Valley Superfund Site, Town of Leroy, Genesee County, NY prepared by Foster Wheeler Environmental Corporation (Foster Wheeler) on behalf of the USEPA dated February 2002 (USEPA 2002 RI/FS WP) (Appendix C of the SA); and, Addendum dated September 11, 2006 (Appendix C of the SA). Subsequent USEPA 2002 RI/FS WP Addendums 2, 3, 4, and 5 were prepared by UMC on October 30, 2009, July 28, 2010, September 7, 2010, and April 10, 2012 respectively, and approved by the USEPA. Addendum 6 dated November 20, 2012 prepared by UMC is pending USEPA approval. Appendix B of this LVRR RI contains copies of Addendums 2, 3, 4, 5, and 6 to the USEPA 2002 RI/FS WP.

1.1 PURPOSE OF REPORT

The LVRR RI has been prepared to define the nature and extent of groundwater contamination at the Site; specifically, with regards to USEPA defined Operable Unit 2 – groundwater plume. UMC conducted the LVRR RI consistent with the USEPA 2002 RI/FS WP and Addendums 2, 3, 4, 5 and 6.

The USEPA 2002 RI/FS WP states that the objectives of the LVRR RI are to:

- Collect additional Site investigation data necessary to support the characterization and development of remedial alternatives for the Site;
- Provide remedial alternatives so that a remedy can be selected to eliminate, reduce, or control risks to human health and the environment from groundwater contamination resulting from the train derailment spill and;
- Support a Record of Decision

1.2 REPORT ORGANIZATION

In support of the USEPA 2002 RI/FS WP objectives, the LVRR RI is comprised of 10 Sections:

- Section 1 presents an introduction to the LVRR RI including the purpose and organization of this report.
- Section 2 presents the Site background including Site location and history.
- Section 3 summarizes the Site's regulatory history and previous investigations.
- Section 4 summarizes the objectives and procedures of the Study Area investigations conducted by UMC on behalf of LVRR including, a Site reconnaissance investigation, a technical memorandum prepared for the Site, and phase 1 investigation activities.
- Section 5 discusses the physical characteristics of the Site including Site physiography, topography, geology, hydrology, hydrogeology, ecology, and cultural setting.
- Section 6 discusses the nature and extent of contamination as it relates to impacts to soil, vadose zone, groundwater, indoor air, surface water, and sediment.
- Section 7 discusses the fate and transport of contaminants of concern which includes a Site conceptual model, as well as, discussions related to contaminant persistence and migration.
- Section 8 summarizes LVRR RI findings and presents conclusions based on those findings.
- Section 9 lists the references used throughout this LVRR RI.
- Section 10 presents a glossary of abbreviations and acronyms used throughout this LVRR RI.

2 SITE BACKGROUND

On December 6, 1970, at approximately 3:00 AM, 25 cars of a southbound train COJ-32 (a 114 car freight train operated by LVRR) derailed at the Gulf Road crossing east of the Village of LeRoy, New York. Two 15,000 gallon capacity chemical tank cars discharged virgin trichloroethylene (TCE) onto the ground at the Gulf Road crossing and, a third car discharged crystalline cyanide onto the ground north of the Gulf Road crossing.

Site location, investigation history, regional conditions, and other conditions specific to the Site are discussed in the following sections.

2.1 SITE LOCATION

The Site is located within parts of Genesee, Livingston and Monroe Counties in New York State. Figure 1 is an index map depicting the approximate Site location. Figure 1 is included as an inset on all subsequent figures throughout this LVRR RI. The Site is divided into two areas of interest defined by the USEPA 2002 RI/FS WP.

The first area of interest is defined as the "Spill Area". The Spill Area encompasses approximately 10 acres of land in the vicinity of the former LVRR crossing at Gulf Road. The Spill Area consists of a former railroad bed; a former quarry materials staging area; the foundation of a former hotel; and, a small shed which is situated adjacent to the former hotel foundation. Currently, the Spill Area is undeveloped and covered mostly with grass, brush, and wooded areas. The coordinates of the approximate center of the Spill Area are 42º59'31"N and 77º56'1.0"W with an average elevation of approximately 760 feet above mean sea level (amsl).

The second area of interest, as defined in the USEPA 2002 RI/FS WP, is the "Study Area", roughly bounded by the Oatka Creek Valley to the north, the General Crushed Stone Quarry to the west, Route 5 to the south, and Spring Creek Valley to the east. The Study Area includes a TCE-impacted groundwater plume emanating from the Spill Area which extends eastward approximately 4.1 miles to spring fed Spring Creek. Spring Creek flows northward and discharges into Oatka Creek, which flows eastward and is the northern boundary of the Study Area. Oatka Creek is the main surface water body in the area with local streams discharging to it.

The land between the Spill Area and Spring Creek is mostly agricultural with a mixture of private residences. Wooded land is located between the sections used for farming. Gulf Road/Flint Hill Road runs along the northern portion of the Study Area while Leroy Caledonia Road is near the southern boundary of the Study Area. Located along Gulf Road/Flint Hill Road are several sporting clubs on whose lands seasonal hunting by club members occurs. The only commercial or industrial properties located in the Study Area are along Leroy Caledonia Road. The Genesee Country Museum is located in the east-central section of the Study Area off of Flint Hill Road. The museum owns property on both the north and south sides of the Flint Hill Road occupied by numerous buildings exhibiting life typical of the 19th century in western New York.

The approximate locations of the Spill Area and Study Area are depicted on Figure 2. Figure 2 is a regional map illustrating the Spill Area and Study Area relative to nearby residential/industrial areas, public water supply wells, schools, parks, wetlands, surface waters, other hazardous waste sites, etc. The Study Area, as depicted in Figure 2, is loosely defined as the rectangular area encompassing Oatka Creek from a point north of the Spill Area, eastward to a point east of the confluence of Spring Creek with Oatka Creek, and southward encompassing Mud Creek and other unnamed tributaries of Oatka Creek that flow northward across the Study Area. Figure 3 is a Study Area map showing the location of present and past structures/features. Figure 4 is a topographic contour map depicting the Study Area topography. Figure 5 identifies ecological concerns such as sensitive habitats, wetlands, threatened or endangered species within the vicinity of the Site.

2.2 SITE HISTORY

Following the December 6, 1970 LVRR train derailment, the discharged cyanide crystals were recovered by American Cyanamid Company from Niagara Falls, NY and the released TCE reportedly infiltrated directly into the ground and was not recovered.

In response to the environmental release resulting from the train derailment, LVRR contracted George L. Marshall to investigate the pollution of groundwater supplies in the vicinity of North LeRoy. Mr. Marshall presented a summary of his findings with conclusions and recommendations in a report titled *Trichloroethylene Spill At North Leroy, N.Y.* dated March 14, 1971 (1971 LVRR Report) (Reference 20). The 1971 LVRR Report stated that approximately 30,000 gallons of TCE were spilled at the Gulf Road Crossing from the derailment of Train COJ-32. The TCE entered into the groundwater system through well-developed east-west joints generally paralleling the south side of Gulf Road, and is slowly flowing eastward, as an emulsion. Groundwater movement in other directions is slower due to tight bedrock joints. The 1971

LVRR Report makes the following recommendations to remediate the TCE identified in the groundwater: (1) pumping the Tyler well; (2) raising the intakes of all affected wells after pumping the Tyler well; (3) installation of water filtering equipment; (4) pumping wells still producing TCE if rising and filtering are not successful; and, (5) digging percolation trenches opposite the Knickerbocker Hotel to flush out the TCE in the fill around the hotel. According to the Deposition of George L. Marshall held at the NYSDEC Avon, NY office location on April 15, 1992 (Reference 21), "Only the filtering using charcoal filters on the residential wells and the water flooding to drive the TCE out of the fill around the Knickerbocker Hotel" recommendations were acted upon. Section 3.2, contains a detailed discussion of the 1971 LVRR Report.

In September 1989, TCE was detected by the New York State Department of Health (NYSDOH) while sampling the Genesee County Campground well located more than 1.5 miles east of the Spill Area. Between 1990 and 1994 the NYSDOH, NYSDEC, and USEPA conducted a private well sampling campaign to assess the extent of TCE groundwater impacts. The sample results indicated that TCE was detected in 50 homes to the east and southeast of the Spill Area and that 35 private well supplies were impacted with TCE above the NYSDOH and USEPA drinking water standard of 5 micrograms per liter (µg/L). The NYSDOH and the NYSDEC requested assistance from the USEPA, who subsequently began installing granular activated carbon (GAC) treatment systems on the 35 impacted private water supplies in December 1991. The NYSDEC installed GAC treatment systems on three additional private water supply wells, for a total of 38 GAC system installations, the last of which was installed in 1994.

In November 1991, the Site was added to the NYS Registry of Inactive Hazardous Waste Disposal Sites. In September 1992, the NYSDEC initiated a Remedial Investigation and Feasibility Study (NYSDEC RI/FS) for the Site. The Remedial Investigation portion of the NYSDEC RI/FS was presented in three volumes: Volume I, Spill Site Soil Investigation, Hydrogeologic Investigation, and Fish & Wildlife Impact Analysis; Volume II, Quantitative Human Health Evaluation; and Volume III, Appendices to Volume I. According to the NYSDEC RI/FS Volume I, the objective of the investigation was to assess the aerial and vertical extent and distribution of residual TCE, TCE related breakdown products, and cyanide, if present, in the soil in the Spill Area; to establish the concentrations of residual chemicals and the potential implications of their continued presence under uncontrolled conditions; to evaluate the results of the investigation with respect to the need for soil Immediate Response Measures (IRM's); to treat the contaminated soil in the Spill Area as a separate operable unit; and, to provide recommendations to the NYSDEC as to the need to perform a Spill Area soil operable unit feasibility study. The Remedial Investigation Report was completed in October 1996, and two Feasibility Study Reports were completed in January and February 1997.

On March 28, 1997, the NYSDEC signed a ROD for the Lehigh Valley Derailment Site. The ROD selected an ex-situ soil vapor extraction (SVE) system and an in-situ bedrock vapor extraction (BVE) system as source control measures. A waterline extension was also selected to provide a safe, potable water supply to all affected residences and businesses. The ROD divided the Site into two operable units as follows: OU1 (groundwater operable unit) and OU2 (surface soils operable unit).

In August 1998, the NYSDEC submitted the NYSDEC RI/FS reports and ROD to the USEPA and requested that the Site be placed on the National Priorities List (NPL). The NYSDEC requested USEPA's approval of the ROD and requested that the USEPA assume lead-agency responsibility for implementing all aspects of the remedy other than the waterline extension. After review, the USEPA placed the Site on the NPL in January 1998.

On July 27, 1999, the USEPA concurred with the waterline component of the ROD selected remedy but did not concur with the source control components. The USEPA also stated that the ROD did not adequately address the restoration of groundwater to its beneficial use as required in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

The USEPA proceeded to evaluate the restoration of groundwater as a separate operable unit and redefined the ROD-presented operable units in a facsimile correspondence from USEPA legal counsel to LVRR legal counsel dated September 11, 2000. The USEPA redefined the operable units as follows: OU1 – waterline/source control and OU2 – groundwater plume. Construction for the waterline component of the ROD began in October 2001 and was completed in 2003, with over 70 connections. The design, construction, and implementation of the waterline component of the ROD (USEPA Operable Unit 1 – waterline/source control) selected remedy provided a current and future clean water supply for drinking, bathing, fire hydrants, etc., thereby eliminating human exposure to TCE impacted groundwater.

The USEPA prepared a SOW (Appendix B of the SA) to include: (a) certain pre-remedial design (pre-RD) investigations associated with the SVE and BVE components of the source-control remedy selected in the NYSDEC ROD for the Site as supplemented by the USEPA Memorandum dated May 15, 2002; and (b) the preparation of the remedial design of the SVE component of the remedy. In addition, the USEPA contracted Foster Wheeler to develop the USEPA 2002 RI/FS WP to address the OU2-groundwater plume pursuant to the ROD and SOW.

On September 22, 2006, LVRR and the USEPA entered into the SA. This LVRR RI report summarizes LVRR remedial investigation activities pursuant to the USEPA 2002 RI/FS WP and Addendums 2 through 6 prepared on behalf of LVRR and approved by the USEPA as referenced above in Section 1.

A summary of the Site's NYSDEC regulatory history and previous Site investigations is discussed further in Section 3.0.

3 SITE REGULATORY HISTORY AND PREVIOUS INVESTIGATIONS

3.1 EVALUATION OF EXISTING DATA AND DOCUMENTS

This section presents a summary of various historical Site investigation documents reviewed during the preparation of this LVRR RI (References 1 through 21).

A chronological summary of each of the documents reviewed is provided within the following subsections. As part of the evaluation of historical data existing monitoring and domestic well locations and depths, plume isoconcentration contours, aerial photography, and topography were entered into ArcView Geographic Information (GIS) software for the evaluation of the current plume delineation and identification of data gaps. Figure 6 illustrates the locations of all previous environmental sampling and monitoring well locations. In instances where locations were not surveyed for exact locations, areas of sampling were located based upon UMC's review of historical maps and text descriptions of sampling locations.

3.2 INITIAL LVRR REMEDIAL INVESTIGATION AND ACTION

3.2.1 March 14, 1971, Trichloroethylene Spill At North LeRoy, N.Y., George L. Marshall

In response to the environmental release resulting from the train derailment, LVRR retained George L. Marshall to investigate the pollution of groundwater supplies in the vicinity of North LeRoy. Mr. Marshall presented a summary of his findings with conclusions and recommendations in the above-referenced 1971 LVRR Report.

According to the 1971 LVRR Report the TCE entered into the groundwater system through well-developed east-west vertical fracture planes, or joints, and horizontal bedding planes between adjacent layers of rock generally paralleling the south side of Gulf Road, and is slowly flowing eastward, as an emulsion. Some of the joints and bedding planes have been enlarged by solution and contain water that percolates in from rainfall and streams flowing over them. Wells in the North LeRoy area draw water from this limestone and dolomite bedrock. Since, TCE is more dense than water and not particularly soluble in it, and because of the slowness of groundwater flow, the chemical is flocculating and settling downward into the lowest portions of the joint systems near the limestone-shale contact, well below the intakes of the North LeRoy wells, where it eventually will decompose. Any portion of the TCE mixture that doesn't settle out in the North LeRoy region will be carried northeastward into the large body of groundwater flowing eastward beneath Oatka Creek, where it will be thoroughly diluted and eventually settle out in the bottom of that aquifer and decompose.

The 1971 LVRR Report identified four private wells affected by the TCE release that may require pumping. The affected wells are identified as the Taylor well, Getman Well, Yauchzee well, and Mancuso well. The report recommended that the mixture of water and TCE pumped from the affected wells be discharged through spray irrigation equipment to the adjacent vacant wooded areas at least 1,000 feet away from the wells. The spraying would permit some of the TCE to evaporate and disperse the rest so that it can begin to decompose by sunlight.

As an additional recommendation the 1971 LVRR Report suggests raising the intakes of the affected wells to the following depths:

- Tyler well, 50 feet
- Getman, 70 feet
- Yauchzee, 80 feet
- Mancuso, 80 feet

If any well continued to produce TCE after raising its intake, then the well would require pumping. Upon analytical confirmation of the absence of TCE the well intakes could be lowered to their normal depths and normal use restored. The 1971 LVRR Report additionally recommended installing carbon filters to remove the taste and smell from the groundwater and that water from the affected wells should be filtered until the last traces of TCE are non-detected.

In addition to the TCE impacted wells, the 1971 LVRR Report identifies TCE from the Spill Area which has percolated into the fill in front of and around the basement of the Knickerbocker Hotel. Some of the TCE was observed in the basement of the hotel infiltrating through cracks in the foundation, which upon evaporation created a strong odor. The 1971 LVRR report recommended advancing trenches to bedrock adjacent to the railroad trackage, at a depth of four to six feet, fenced and/or covered over, and filled with water. The percolation trenches would be filled until the non- impacted water forced out and replaced the TCE in the fill and foundation and the odor discontinued. The General Crush Stone quarry granted permission to use water from their pond to infill the percolation trenches.

The 1971 LVRR Report concluded the following:

- After the derailment, the spilled TCE percolated down into the fracture and joint systems of underlying limestone beds that act as reservoirs for the groundwater of the region.
- TCE is heavier than water, and is almost insoluble in water. Eventually it will sink to the bottom of the fractures and joints of the bedrock aquifer and out of reach of the affected wells.
- Some of the TCE is emulsified in the groundwater. That problem can be alleviated by pumping the upper levels of the main joint systems. Unpolluted groundwater will be pulled from adjacent areas to flush out the emulsion.
- The 70 foot deep Tyler well lies within the major joint system into which most of the TCE percolated. That system contains approximately 5,000,000 gallons of water. As much as half may need to be pumped out in order to flush the emulsified chemical. Thorough pumping of this centrally located well may cleanse most of the affected area.
- Emulsion containing water pumped from the wells can readily be dispersed by running it through a pipeline to adjacent vacant wooded areas. Here it would be aerated and spread over the ground surface using spray irrigation techniques. The spraying will cause some evaporation of the TCE and disperse the rest so that it can begin to decompose in sunlight.
- The wells along Church Road containing very small concentrations of TCE may only require temporary rising of the intakes and filtering with available commercial charcoal filters such as those rented and serviced by Culligan.
- All affected wells may require charcoal filtering to remove residual tastes and smells, including those pumped
- Local distributers for water conditioning companies have been contacted relative to the use of filtering equipment. Initial response is optimistic, but waiting on confirmation from the manufactures.
- The TCE smell in the Knickerbocker Hotel can be removed by flushing out that (TCE) trapped in the fill around the building, with water placed in pits dug along the railroad right-of-way.

The 1971 LVRR Report recommended the following:

- Pump the Tyler well and dispose of the TCE contaminated water on adjacent woodland using spray irrigation equipment
- Temporarily raise the intakes of all affected wells after pumping the Tyler well. Install water filtering equipment.
- Pump those wells still producing TCE if raising and filtering are not successful by themselves.

- Dig water percolation trenches opposite the Knickerbocker Hotel to flush out the TCE in the fill around the hotel.

According to the Deposition of George L. Marshall held at the NYSDEC Avon, NY office location on April 15, 1992 (Reference 21), "Only the filtering using charcoal filters on the residential wells and the water flooding to drive the TCE out of the fill around the Knickerbocker Hotel" recommendations were acted upon.

3.3 NYSDEC REGULATORY HISTORY

As described in the Section 2, the December 1970 Lehigh Valley Railroad derailment and subsequent response actions resulted in TCE-impacted soil and groundwater. According to the SA (Appendix A, Reference 10 of this LVRR RI), seven impacted water supply wells were identified by LVRR by November 1971 with TCE detected at concentrations up to 171 parts per million (ppm). LVRR responded by providing drinking water to residents with impacted water supply wells beginning in June 1971, and later installed and maintained point-of-entry (POE) treatment systems at the affected wells. By September 1989, additional impacted water supply wells were identified more than 1.5 miles east of the Spill Area. The NYSDOH, USEPA, and NYSDEC collected additional samples from water supply wells from 1990 to 1994 and identified TCE in approximately 50 wells east or southeast of the Spill Area.

In 1991, the NYSDOH and NYSDEC listed the Site on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site, indicating that the Site posed a significant threat to the environment and/or public health and that remedial action was required. In December 1991, the USEPA and NYSDEC installed Point-of-Entry (POE) water treatment systems at 38 supply well locations and developed an Operation and Maintenance (O&M) program for the systems. The O&M program was funded under the New York State Superfund Program.

In order to obtain additional information relative to the derailment; including geologic and hydrogeologic conditions; and, groundwater and soil quality within the Spill and Study Areas, the NYSDEC RI/FS was performed from 1992 to 1997 (References 1-9). The details of the NYSDEC RI/FS are provided in subsequent sections of this LVRR RI. In general, elevated concentrations of TCE were detected in overburden soil, vadose-zone bedrock, and groundwater in the Spill Area and in bedrock groundwater within the down gradient plume extending approximately 3.5 miles from the Spill Area. Following review of the initial NYSDEC RI/FS results, the NYSDEC separated the Site into two Operable Units for administrative purposes. The NYSDEC RI/FS (References 3-5) focused primarily on the TCE-impacted overburden soil identified in the Spill Area. The impacted groundwater and vadose zone were to be assessed under separate NYSDEC reports.

Two feasibility studies were conducted in January and February 1997 (Reference 6) to assess remedial technologies and alternatives for TCE-impacted soil and groundwater. The NYSDEC published notice of the completion of the feasibility studies and of a proposed plan for a remedial action on February 14, 1997 (Reference 7). The NYSDEC selected soil and bedrock vapor extraction as source control measures and a water main extension to provide a potable water supply to impacted residents and businesses.

In March 1997 the NYSDEC issued a final ROD (Reference 10) for remedial actions at the Site. Specific details of the ROD are provided below. In general, the ROD presented the Operable

Units for the evaluation and remediation of soil and groundwater at the Site, established Remedial Action Objectives (RAOs) for impacted media at the Site, and selected remedial actions for both Operable Units. The ROD and subsequent NYSDEC documents established Operable Unit #1 (groundwater) and Operable Unit #2 (surface soils). The USEPA response to the ROD noted that future work (excluding the water line) associated with the Site would be completed under the purview of the USEPA. Subsequently, the USEPA proposed the Site for inclusion in the NPL on July 28, 1998 and placed the Site on the NPL list by publication in the Federal Register on January 19, 1999.

In a memorandum dated September 2000 (Reference 11), the Operable Units were redefined by the USEPA as Operable Unit #1 (waterline/source control) and Operable Unit #2 (groundwater plume).

A Final RI/FS Work Plan (2002 USEPA RI/FS WP) was completed by Foster Wheeler dated February 2002 for Operable Unit #2 groundwater plume. The 2002 USEPA RI/FS WP was later expanded by LVRR, upon USEPA approval, with a technical memorandum and six addenda (Appendix B and References 14-19 of this LVRR RI) discussed in detail in subsequent sections of this LVRR RI.

3.3.1 NYSDEC's Remedial Investigation/Feasibility Study

The NYSDEC RI/FS included data collection and analysis from 1992 to 1997, initially assessing the magnitude and extent of environmental impacts within both the Spill Area and surrounding Study Area. Ultimately, the subject of the NYSDEC RI/FS was refined to focus primarily on the NYSDEC defined Operable Unit #2 (soils).

The specific objectives of the NYSDEC RI/FS were to:

- Determine if a residual source or sources of TCE contamination existed at and/or in the vicinity of the Spill Area, and to identify the location and extent of the source(s);
- Determine if residual dense non-aqueous phase liquid (DNAPL) could be located in the subsurface and, if so, to identify a remedial alternative to optimize the control and/or removal of such DNAPL;
- Determine if preferred contaminant migration pathways existed in the subsurface and, if so, could they be identified, located, and utilized to understand current contaminant occurrences, to predict continued contaminant movement, to identify additional potential locations of contaminant concentrations, and to focus attention on areas that could be selected for efficient and effective remediation;
- Identify additional areas of historic or present contamination that could provide insight into contaminant migration, collection points and "hot spots" that could represent ongoing environmental or public health threats and could require remediation;
- Determine and assess present evidence of any threat to wildlife within the Study Area due to the impact of the spill, through the performance of a Habitat Based Assessment (Fish and Wildlife Impact Analysis);
- Determine and assess present evidence of any threat to the public health due to the spill, through the performance of a quantitative Health Risk Assessment (Human Health Evaluation);

- Perform a focused feasibility study of various options for providing alternative sources of potable water to the impacted water supplies within the Study Area;
- Perform a feasibility study of various alternatives to remediate the remaining effects of the spill and to select the alternative(s) most capable of effectively reducing or eliminating continuing impacts; and
- Provide the NYSDEC with the information necessary to select a remedy or remedies for the impacted areas/media.

Data quality objectives used throughout the NYSDEC RI/FS were established as follows:

Contaminant	**Data Quality Objectives**			
	Surface Water[1]	**Groundwater**[2]	**Soil**[3]	**Sediment**[4]
TCE	11 ppb	5 ppb	0.7 mg/kg	0.046 mg/kg, H(B) 5.225 mg/kg, A
DCE (total)	5 ppb	5 ppb	0.3 mg/kg	6.707 mg/kg, A
VC	No Standard	2 ppb	0.2 mg/kg	NA
Cyanide	100 ppb	100 ppb	Site-Specific	NA

Notes: NA = Not Applicable; H (B) = Health Bioaccumulation Based; A = Aquatic Based

Surface water and groundwater data quality objectives are in parts per billion (ppb)

Soil and sediment data quality objectives are in milligrams per kilogram (mg/kg)

1. NYSDEC Surface Water Standards and Guidance Values (6 NYCRR Part 703) and Technical and Operational Guidance Series (TOGS) 1.1.1
2. NYSDEC Class GA Drinking Water Standards and USEPA National Primary Drinking Water Standards and Maximum Contaminant Levels (MCL)
3. NYSDEC Division of Hazardous Waste Remediation Technical and Administrative Guidance Memorandum (TAGM): HWR-94-4046 REVISED, Determination of Soil Cleanup Objectives and Cleanup Levels
4. NYSDEC Division of Fish and Wildlife Technical Guidance for Screening Contaminated Sediments, November 1993.

Additional data quality objectives were established via laboratory performance in analyzing the samples collected throughout the duration of the project. These objectives were established to ensure that the data generated were of adequate quality for their intended uses.

Due to the large scope of the NYSDEC RI/FS, the work was documented throughout several reports. The title, scope of the reports, and findings are discussed in Sections 3.2.1.1 through 3.2.1.8, below.

3.3.1.1 August 1992 Task 2; Phase A Report, Dunn Geoscience Engineering Company, P.C.

The NYSDEC retained Dunn Geoscience Engineering Company, P.C. (Dunn) to provide the Task 2, Phase A Report (Reference 1) as the first phase of the NYSDEC RI/FS in a series of three reports as follows:

- Phase A: Initial background and Site/Study Area investigations;
- Phase B: Focused investigation of soil contamination at the Spill Area and an initial domestic well and environmental sampling programs; and
- Phase C: Comprehensive hydrogeologic investigation, habitat based assessment (Fish and Wildlife Impact Analysis) and health risk assessment (quantitative Human Health Evaluation.

The Task 2, Phase A Report documented the historical events associated with the spill and geologic and hydrogeologic conditions at the Site. Investigative methods included aerial mapping, historical aerial photo interpretation and fracture trace analysis; field reconnaissance and mapping; and, geophysical and soil gas surveys.

3.3.1.1.1 Information Development

Research into the spill history including former and current Site conditions was performed including interviews with local residents; eyewitnesses; representatives of the railroad and other potentially responsible parties; consultants and contractors who responded to the spill and were involved in spill response and follow-up efforts; and local municipal officials who were involved in spill response and follow up activities. In addition, several database searches were performed seeking information relative to the Site and surrounding area geology and hydrogeology. The databases included the United States Geologic Survey (USGS) and the New York State Museum and Science Service.

The research concluded that approximately 30,000 gallons of TCE was released to the Spill Area and migrated rapidly throughout the hydrogeologic systems at the Site. Dispersal of the TCE continued as both DNAPL and dissolved phase TCE. The TCE migrated to the east ultimately discharging in part to Spring Creek and into deeper zones of the aquifer system as evidenced by an apparent correlation of well depths and water quality across the Site.

3.3.1.1.2 Air Photo Interpretation/Fracture Trace Analysis

Approximately 26 black and white, low-altitude aerial photos taken in April 1980 across 110 square miles were analyzed under a mirror stereoscope for surficial deposits, and geomorphic and linear features. The analysis concluded the following:

- The results of regional glaciation are observable in landforms in the photo-study area. The virtual absence of overburden soil across wide areas provided easy access to bedrock joint systems by precipitation and stream flow, thus creating conditions under which those joint systems may be expanded through dissolution.
- To the extent that fracture traces, deformed topography, and sinking streams denote the presence of subsurface structures such as joints, fractures, collapsed voids or rubbleized bedrock, they may indicate zones of preferential groundwater flow. Elsewhere, groundwater flow is likely to be restricted to bedding planes in the limestone and would therefore occur at much slower rates.

- The virtual absence of surface water over wide areas, sinking streams, and the network of springs at Caledonia reflect the under-drained nature of the scoured bedrock surface.
- Knowledge of regional topography, the southerly bedrock dip, and probable overburden permeability suggests that recharge to the contaminated aquifer is provided by the sinking streams and by direct precipitation onto the scoured bedrock surfaces. The springs in Caledonia are probably the primary discharge area for the aquifer system underlying the Site. Groundwater flow beneath the Site at elevations roughly 655 feet (the elevation of the Caledonia springs) was generally in an easterly direction, consistent with the known orientation of the contaminant plume.

3.3.1.1.2.1 Field Reconnaissance

A field reconnaissance and mapping was performed at the Site identifying specific local active and inactive quarry operations, topographic and drainage features, cultural features, and points of interest to the history and development of the project. The reconnaissance resulted in the following conclusions:

- The disappearance of three streams on the scoured bedrock system further suggests that a well-developed joint system must exist in the Onondaga Formation. These joints, where present, provided a link between the surface and subsurface drainage observed within the Site.
- Voluminous springs in the Town of Caledonia, New York served as a discharge zone for the groundwater derived in part from the surface streams on the Site.
- Groundwater flow rates and volumes may be greatest beneath areas featuring disrupted topography, such as ridges and basins, if these features indicate that zones of broken rock extend below the water table.
- Observations of groundwater flow into quarries and along the base of the escarpment indicated that flow is predominantly toward the east-southeast, consistent with the known orientation of the contaminant plume.

3.3.1.1.3 Geophysical Surveys

Geophysical surveys were performed to evaluate subsurface features which could have an influence on the movement and fate of the Site-specific contaminants. Both Very Low Frequency Electro Magnetic (VLF EM) and Ground Penetrating Radar (GPR) methods were performed. The results of the VLF EM and GPR surveys were as follows:

- No VLF EM anomalies were detected across approximately four miles of profile above the detection limits of the method.
- Fracture traces and disturbed topography evident in the aerial photos were surveyed via GPR and found to indicate the presence of subsurface structures. The structures appear to extend to a sufficient depth to affect groundwater flow.
- Areas of faulted or fractured bedrock were located in the vicinity of the Spill Area.
- A structural basin was present at a depth of at least 30 feet to the south and west of the former Knickerbocker Hotel in the Spill Area.

- Several closed basins along Flint Hill Road were fault-controlled and may have overlain zones of preferential groundwater flow. The margins of other closed basins may also be underlain by transmissive bedrock.

3.3.1.1.4 Soil Gas Survey

The soil gas survey was conducted across the Spill Area in overburden soil and included the analysis of more than 70 samples collected up to four feet in depth and analyzed via field gas chromatography. The report narrative indicated that soil gas sample locations were selected across a grid on 50-foot centers both north and south of Gulf Road. Although not specific to the subject of this report (the groundwater operable unit), the general findings of the soil gas survey are as follows:

- The survey identified elevated concentrations of TCE within the Spill Area. The distribution of TCE concentrations indicated that the TCE migrated from the spill location along both sides of Gulf Road, to the southeast along the railroad bed, and to the north and west of the former Knickerbocker Hotel.
- The survey did not determine whether overburden soils or the underlying bedrock were the source of the TCE soil gas.

The Task 2 Phase A report included recommendations for additional investigations including:

- Further evaluation of the cyanide spill and clean-up efforts to determine the spill location for sampling and analysis.
- The completion of test pits across the Spill Area to bedrock to further delineate TCE impacts across the Spill Area.
- The installation and sampling of bedrock groundwater monitoring wells at various depths in the aquifer to evaluate the fate and transport of DNAPL down gradient of the Spill Area.
- The use of coring, surface geophysics, down-hole geophysics, and packer tests to evaluate the groundwater/hydrogeologic monitoring network.
- Surface water sampling along Mud Creek, Oatka Creek, the sinking streams, springs in Caledonia, and Spring Creek.
- A water budget analysis of the Site.
- The development of a conceptual model of the hydrogeologic regime at the Site.

3.3.1.2 May 1993 Domestic Well and Initial Environmental Sampling Report, Dunn Geoscience Engineering Company, P.C.[1]

The NYSDEC retained Dunn to draft the Domestic Well and Initial Environmental Sampling Report (Reference 2) to document initial investigative efforts in Phase B of the NYSDEC RI/FS.

[1] Only report pages 21 (Conclusions) and 22 (Recommendations) were reviewed in support of this summary. The remainder of detail was obtained from the historical summaries provided in the additionally referenced reports throughout this document.

In December 1992, samples were collected from water supply wells and from various environmental sampling locations within the valleys of Mud Creek, Spring Creek, and Oatka Creek. The water supply wells were selected for sampling to evaluate the groundwater quality in drinking water supply wells south of the Spill Area, and to determine whether DNAPL was present in the drinking water supply wells at these locations. The environmental sampling locations were selected based on historical information identifying these locations as potential collection/release points of contaminants originating from the spill.

The field parameters and analytical results for groundwater, surface water, and sediment sampling were presented in tables in the May 1999 Dunn Sampling Report. Copies of these tables are provided in this LVRR RI as Appendix C, identified therein as Table 2, Table 6-1A, Table 6-1B, Table 6-2, and Table 6-4. The water supply well locations are depicted on LVRR RI Figure 6. Based on the results of the sampling event, the following conclusions were made:

- No DNAPL was identified in the water supply wells sampled.
- The TCE concentration detected in a well identified as the Tyler/Dintruff well located on Gulf Road decreased by a multiplier of 60 since the well was sampled in 1971. The concentration of cyanide remained consistent with the 1971 sampling event.
- Surface water and sediment samples collected from Mud Creek, located north of the main line railroad grade, contained detectable concentrations of TCE and cyanide indicating a hydraulic connection between the impacted aquifer and the Mud Creek surface water.
- Sediment sampled in Mud Creek on either side of the arch culvert through the main line railroad fill contained detectable concentrations of contaminants. It was unknown whether the impacts were a result of groundwater flow migration from seasonal dewatering of the Dolomite Products quarry to Mud Creek or from the remedial flushing performed after the initial spill.
- No contaminants were identified in the Oatka Creek valley or the southern end of Spring Creek.
- The down gradient discharge location of Spring Creek contained detectable concentrations of contaminants.
- The Spring Creek pond sediment sample contained detectable concentrations of TCE; however, the surface water sample collected from the same location contained much lower concentrations. These results suggested that TCE may have accumulated in the sediments.

Based on these conclusions, the Report recommended the following:

- Additional water supply well sampling south of the Spill Area;
- The sampling of Spring Creek water and sediment associated with water diverted from Spring Creek for use by the NYSDEC Caledonia State Fish Hatchery;
- The collection of five sediment samples from Spring Creek pond;
- The collection of water samples from seeps discharging into the Dolomite Products quarry and from a sump located at the Dolomite Products quarry approximately 1,400 feet south west of the Spill Area (identified by a permit to discharge to Mud Creek); and

- The addition of TCE to the analytical requirements associated with the Dolomite Products SPDES permit for discharge to Mud Creek.

3.3.1.3 April 1994 Revised Feasibility Analysis of Water Supply Alternatives, Dunn Geoscience Engineering Company, P.C.

The NYSDEC retained Dunn to provide a Feasibility Analysis for water supply alternatives for the domestic water supply wells impacted by the release of TCE at the LVRR derailment. A copy of the document is provided in Reference 6. The report evaluated whether the extension of public water supplies to some or all of the impacted sites could be more cost effective than operation of the point of entry (POE) water treatment systems. At the time of the Feasibility Analysis, elevated concentrations (greater than 5 ppb, the USEPA MCL) of TCE were detected in 35 water supply wells.

The report identified three public water suppliers within the Study Area: the Town of LeRoy, the Village of Caledonia, and the Monroe County Water Authority (MCWA). Meetings were conducted with each of the three public water suppliers to assess the viability of water line extensions throughout all or part of the affected Study Area. The location of existing routes available for extension, the technical and administrative feasibility, and cost estimates for water line extensions were developed for each of the following potential water line extension routes:

- Route A: Extend Town of LeRoy water lines east along NYS Route 5 and northward along Church Road.
- Route B: Extend the MCWA lines southward along Spring Street across the Chessie railroad line.
- Route BA: Extend the MCWA lines south along Spring Street to the location of the domestic water supply well L-28.
- Route C: Extend Village of Caledonia water lines westward along NYS Route 5.
- Route D: Extend Route B lines southwest along Chessie right-of-way to NYS 5 and along NYS 5 east to the Caledonia Village line and west to domestic water supply well L-6.
- Route E: Extend Village of Caledonia water lines north along Spring Street to domestic water supply well L-31.
- Route F: Extend service from Route C or D west along NYS Route 5 to domestic water supply wells L-2 and L-10.

The viability assessment determined that:

- Due to low population density along the potential extension routes and the difficulty of excavating several feet into bedrock, Route A was omitted from consideration.
- Due to administrative difficulties and the high construction costs, Route C was also eliminated from consideration.
- Due to the relatively long distances involved with new line installation, upgrading of older lines, and related pressure and flow considerations, the new alternate routes were also excluded from consideration.

The report concluded that the implementation of Route B was both feasible and cost effective. A drive-by inventory was performed along the route and 144 homes and businesses were identified for possible connections to the extension. Subsequent field verification of soil and bedrock conditions along the proposed route, field verification of surface conditions, and the submittal of a proposed extension plan and cost estimate to MCWA were recommended.

3.3.1.4 October 1996 Remedial Investigation Report, Dunn Geoscience Engineering Company, P.C/Rust Environmental & Infrastructure[2]

The NYSDEC retained Dunn to provide the October 1996 Remedial Investigation Report which is a compilation of documents including a Spill Site Soil Investigation Report, Hydrogeologic Investigation, Fish and Wildlife Impact Analysis, and Human Health Evaluation (References 3-5). The documents addressed additional work completed in association with Phases B and C of the NYSDEC RI/FS. The scope and results of each document are summarized in the following sections.

3.3.1.4.1 Spill Site Soil Investigation Report

The Spill Site Soil Investigation Report documents additional investigations of overburden soil within the Spill Area, also referred to as the Phase B Investigation. Initially, the NYSDEC performed a limited sampling plan within the Spill Area. The objectives of the limited soil sampling were to confirm the soil gas survey results; establish if the soil gas results were representative of elevated levels of residual TCE contamination in the Spill Area; determine the chemical concentrations of TCE or other related compounds via analytical methods; and to provide information to be used in the planning of additional sampling events.

Implementation of the limited sampling plan was performed in September 1992. The NYSDEC collected a series of water and soil samples from springs/surface water in the vicinity, a monitoring well within the Spill Area, and two surface soil samples from locations previously sampled during the soil gas survey. The details of the monitoring well and springs/surface water sampling methods are detailed below.

The surface soil sample locations exhibited elevated concentrations of TCE in soil gas of 8.6 and 55 ppm. The samples were submitted for laboratory analysis for VOCs including TCE, cis-1,2-dichloroethene (cDCE), and trans-1,2-dichloroethene (tDCE), and vinyl chloride (VC). The surface soil analytical results identified TCE concentrations of 290 and 570,000 ppb.

Based on the results of the investigation in conjunction with historical information, the NYSDEC elected to further evaluate the extent of TCE-impacted overburden soil within the Spill Area.

In December 1992, the NYSDEC retained Dunn to complete 17 test pits across the Spill Area. The test pits served to provide information on the subsurface materials located within the Spill Area; to allow for soil sample geological logging, field screening for VOCs and chemical analysis; to determine the depth to bedrock; and to visually assess the bedrock surface for evidence of significant fractures.

[2] Dunn Geoscience Engineering Company, P.C. was acquired by Rust Environmental & Infrastructure (Rust) in May 1993 and remaining work tasks associated with the Remedial Investigation were completed by Rust.

A total of 22 soil samples and six quality control/quality assurance (QA/QC) samples were collected from the 14 test pits. Shallow groundwater located at the soil-bedrock interface at less than two feet below ground surface was observed in one of the 14 test pits and sampled for laboratory analysis. The results of the analytical program have been omitted from this report due to their relevance to the overburden soil (addressed under separate cover); however, in general, the report documented the following conclusions:

- The Phase B investigation originally identified 15,000 cubic yards of soil/fill within the Spill Area potentially contaminated with TCE (concentrations greater than 1 ppm).
- Localized elevated concentrations of various metals, cyanide, and pesticides were detected.
- The impacted soil/fill described above should be addressed independent of impacted groundwater as a separate operable unit.
- A feasibility study, health risk assessment, and appropriate remedial measures should be completed for the overburden soil independent of the impacted groundwater at the Site.

An initial round of environmental sampling was also completed in December 1992 including the sampling of drainage ways (surface water, sediment), ponds (surface water, sediment), springs, and seeps. The sampling results were summarized in the October 1996 Dunn RI Report as Tables 6-1A, 6-1B, and 6-2. Appendix C of this LVRR RI contains copies of these tables.

A Preliminary Determination of Soil Operable Unit Applicable or Relevant and Appropriate Requirements (ARARs) was completed to evaluate the Federal and State environmental and public health requirements applicable or relevant and appropriate to the contaminated soil. In addition, Federal and State criteria, advisories, and guidance were identified for use in evaluating remedial alternatives in the feasibility study. Specific details pertaining to the Soil Operable Unit ARARs has been omitted from this report; however, based on the evaluation, the following recommendations were identified:

- A qualitative health risk assessment should be performed relative to the soil contamination if deemed appropriate and/or necessary by the NYSDEC and NYSDOH.
- Interim Remedial Measures (IRMs) should be evaluated based on the results of the health risk assessment.

It was again concluded that the contaminated soil be addressed as a separate operable unit for evaluation of remedial alternatives independent of the impacted groundwater.

3.3.1.4.2 Hydrogeologic Investigation and Fish & Wildlife Impact Analysis

3.3.1.4.2.1 Hydrogeologic Investigation

Subsequent to investigative Phases A and B, described above, a drilling and monitoring well installation program was undertaken as Phase C of the NYSDEC RI/FS. Over a period of four months (July-October 1993) 18 locations within the Study Area were investigated, including the collection of rock cores and the completion of down-hole geophysical and video surveys (at select locations), with a total of 55 bedrock groundwater monitoring wells developed, tested and sampled. The monitoring and analytical program for Part C of the investigation included water level measures and the collection of groundwater, surface water, and sediment samples. The analytical program focused on TCE, the degradation by-products of TCE, and cyanide.

3.3.1.4.2.2 Ground Penetrating Radar Survey

An initial GPR survey was conducted at the Site in conjunction with Phase A of the NYSDEC RI/FS. In order to more precisely define drilling locations for Phase C of the NYSDEC RI/FS, an additional survey was conducted in July 1993 in the vicinity of several of the proposed monitoring well locations. Specifically, the GPR survey was used to identify and delineate zones of fractured or disturbed bedrock. Nearly 4,400 linear feet of radar images were acquired along 16 transects ranging in length from 120 to 795 feet. The penetration depths ranged from 30 to 70 feet below ground surface. An analysis of the results concluded that no faulted or fractured bedrock was evident in the data obtained.

3.3.1.4.2.3 Drilling Program/Monitoring Well Installation

Initial sampling of groundwater from existing water supply wells extending from the Spill Area to Spring Creek by the NYSDOH identified approximately eight clusters of water supply wells demonstrating evidence of contamination (see the details of Phase B of the NYSDEC RI/FS, above). The locations of these wells were identified on Figure 3-1 in the October 1996 NYSDEC RI Report which is reproduced as Figure 6 in this LVRR RI. Sampling data were summarized in Tables B-1G through B-4G, Tables B-1L through B-4L, Tables B-1M through B-4M, Table 2, Table 6-2, and Table 6-4 of the October 1996 NYSDEC RI Report, copies of which are provided in Appendix C of this LVRR RI.

The basis for location selection and drilling/investigative techniques performed at each of the eighteen investigation locations are described below. Overburden soil samples were collected from all drilling locations via continuous split-barrel sampling for field screening for VOCs, soil characterization, and where applicable (DC-1 and DC-2), visually screened for evidence of NAPL via hydrophobic dye testing.

Initially, the drilling program included the advancement of borings and the installation of monitoring wells at 14 locations identified as DC-1 through DC-14. Six of the initial 14 locations (DC-1, DC-4, DC-7, DC-8, DC-11, and DC-12) were selected for diamond coring to obtain bedrock samples. These locations were subject to core lithology logging, core field screening for VOCs, and borehole geophysical and video surveys. The remaining eight well locations (DC-2, DC-3, DC-5, DC-6, DC-9, DC-10, DC-13 and DC-14) were installed via down-hole air hammer and/or spin casing drilling techniques. Drill cuttings or rock chips were collected from the drill return stream for visual evaluation, VOC screening, comparison with rock cores, and for logging purposes.

Based on the results of geophysical logging of the initial six monitoring wells, an additional monitoring well was installed in the vicinity of monitoring well DC-7 identified as monitoring well DC-7R. Three additional monitoring well locations were also selected and were identified as monitoring wells DC-15, DC-16, and DC-17. These wells were installed without geophysical logging.

The 18 monitoring wells were installed to assess:

- One up gradient location to establish “background conditions”;
- Seven to investigate the possible presence of DNAPL; and,
- Ten to investigate the dissolved phase plume.

Upon further assessment of the geologic and topographic conditions, stratigraphy, water quality, and contaminant plume size at these 18 locations, multiple monitoring wells at many of the drilling locations were deemed appropriate. A total of 37 additional locations were identified and were also installed via down-hole air hammer and/or spin casing drilling techniques. The resulting monitoring well network is depicted on Figure 6 of this LVRR RI and included single monitoring wells at locations DC-7 and DC-16, and up to four monitoring wells each at locations DC-1 through DC-6, DC-7R, DC-8 through DC-15, DC-16, and DC-17.

Additional details pertaining to the geological and lithological findings are presented in Section 5 of this LVRR RI. Monitoring well construction and borehole stratigraphic details were provided in the October 1996 NYSDEC RI, copies of which are contained in Appendix D of this LVRR RI.

3.3.1.4.2.4 Field Screening of Groundwater Samples, NAPL Testing, and Special Testing

Once the groundwater monitoring wells were completed to depth, discrete-depth water samples were collected through a packer assembly and field analyzed for TCE and related compounds with a portable gas chromatogram. The samples were collected to identify and delineate the vertical extent of each contaminated groundwater zone, if any; to minimize the potential for cross contamination between groundwater zones; to provide a basis for determining the number of wells to be installed at each drilling location and their completion intervals; to determine the level of contamination for health and safety purposes; and to determine the disposition of drill cuttings and fluids. The results of the groundwater field screening for the monitoring well network are provided in Table 2-3 of the October 1996 NYSDEC RI Report, included in Appendix C of this LVRR RI.

Additional samples were collected from the following locations:

- Water supply wells M-2, M-13, M-14 on September 15, 1993
- Monitoring well DC-2 rock cuttings on September 16, 1993
- Limited preliminary monitoring well sampling on September 20, 1993
- Spring Street culvert sediment sampling on September 20, 1993
- Monitoring well DC-16 rock chips on September 30, 1993
- Monitoring well DC-17 rock chips on October 1, 1993.

The results of these sampling events are presented in Tables H-1 through H-6 in Appendix C of this LVRR RI.

Hydrophobic dye and/or UV florescence screening tests were performed on a single overburden soil sample and on the water samples collected during the installation of the monitoring well network for the presence of NAPL. The soil sample was collected from 0 to 1.3 feet below ground surface at monitoring well location DC-1. Evidence of NAPL was not observed in the soil sample or water samples.

3.3.1.4.2.5 Aquifer Testing

Aquifer testing to determine the hydraulic conductivity of the monitoring wells was performed across the monitoring well network in December 1993 and April 1994. In general, the average hydraulic conductivity for all bedrock units ranged from 1.6 x 10^{-6} centimeters per second (cm/sec) to 4.8 x 10^{-2} cm/sec.

3.3.1.4.2.6 Environmental Monitoring

Routine groundwater monitoring was performed from July 1993 to July 1994. A total of five sampling events were performed identified as Round 1 through Round 5. The dates and scope of the monitoring events are presented below:

- Round 1 (July 1993): Baseline sampling including environmental sampling of water and sediment from streams, springs and ponds. No water supply wells or monitoring wells were sampled during Round 1.
- Round 2 (November 1993): All monitoring wells (where water quantities allowed for viable sample collection), select water supply wells, and select environmental sampling (water and sediment). Field parameters (temperature, pH, specific conductivity, and turbidity) were collected following monitoring well purging. Many of the environmental sampling locations were sampled only during this event due to insufficient sample availability during Rounds 3-5.
- Round 3 (January 1994): All monitoring wells (where water quantities allowed for viable sample collection), select water supply wells, and select environmental sampling (water and sediment). Field parameters (temperature, pH, specific conductivity, and turbidity) were collected following monitoring well purging.
- Round 4 (April 1994): All monitoring wells (where water quantities allowed for viable sample collection), select water supply wells, and select environmental sampling (water and sediment). Field parameters (temperature, pH, specific conductivity, and turbidity) were collected following monitoring well purging.
- Round 5 (July 1994): All monitoring wells (where water quantities allowed for viable sample collection), select water supply wells, and select environmental sampling (water and sediment). Field parameters (temperature, pH, specific conductivity, and turbidity) were collected following monitoring well purging.

The analytical program included analysis for VOCs at most locations and cyanide analysis at select locations, primarily in the vicinity of Mud Creek. The sampling locations are included on Figure 6 of this LVRR RI and Tables 6-5 through 6-20, Table 7-1, and Tables T-RD2 through T-RD5, included in Appendix C of this LVRR RI.

3.3.1.4.2.7 Extent of Contamination

The results of Phase C of the NYSDEC RI/FS identified TCE contamination in the overburden soil/fill present in the Spill Area. Non-aqueous phase TCE was identified in bedrock fractures above and/or below the water table up to 600 feet from the derailment location. As later noted in a NYSDEC Feasibility Study to address TCE impacts (Reference 6), elevated concentrations of TCE between 1% and 5% of the aqueous solubility may have indicated the presence of TCE DNAPL in the vicinity of well clusters DC-1, DC-5 and DC-15. These materials were identified as a continuing source of contamination to groundwater marked by seasonal peaks of groundwater contamination identified down gradient of the source area during high-water periods.

Impacted groundwater in the source area is present from the top of the water table to the upper Camillus Formation. East of Church Road, impacted groundwater was identified in the Bertie and upper Camillus Formations. The total plume thickness was estimated at 70 feet. Groundwater overlying the plume in this area was not impacted. The plume extents were not delineated along Spring Street and to the south along Route 5 east of Callan Road. The narrowness of the plume at Church Road, and the proximity of contaminated water supply wells to non-impacted wells throughout the Study Area indicated that contaminant transport may be affected by high-angle fractures. The predominant contaminant transport mechanism appeared to be along bedding plane fractures.

A volume exchange time was calculated for the natural replacement of a pore volume of groundwater between 18 and 131 years.

3.3.1.4.2.8 Fish and Wildlife Impact Analysis

The Fish and Wildlife Impact Analysis (FWIA) did not address the entire Study Area because of major surficial features near the Spill Area (quarries, Mud Creek, etc.), the depth of the contamination below the ground surface throughout the majority of the Study Area, and the length and breadth of the Study Area. The FWIA focused on areas most likely to have been potentially impacted by the contamination originating from the derailment. These areas were located within the Spill Area and the Spring Creek area, approximately four miles east of the Spill Area. The primary contaminants of potential concern were TCE, cDCE, VC, and cyanide.

Potentially impacted habitats included the Mud Creek drainage way (including Gorge Pond), Oatka Creek, the Spring Creek drainage way (including the springs located along Spring Creek), and the Caledonia State Fish Hatchery. A comparison of the available environmental analytical results to published and/or calculated surface water and sediment standards/guidance values was performed. The Mud Creek and Spring Creek drainage ways spring and surface water quality contained concentrations of TCE below the standards/guidance values. Data from the Gorge Pond located in the Mud Creek drainage way and from Spring Creek indicated that water quality in Oatka Creek was not adversely impacted by spill-related contaminants via discharge of water from these two areas.

Sediment data from the Gorge Pond and the pond located north of the Genesee County Inn on Spring Creek indicated that the sediments in these ponds had not been significantly impacted by spill-related contaminants.

3.3.1.4.3 Human Health Evaluation

A baseline human health evaluation was conducted to assess the threat existing conditions at the Spill and Study Areas may pose to human health in accordance with applicable guidance provided by the USEPA. An assessment of potential exposure pathways identified two current long-term health concerns:

- Direct contact with Site soils by a nearby rural resident trespassing on the Site; and
- Ingestion and household use of groundwater by rural residents.

The human health evaluation indicated that direct contact with Site soils by a nearby rural resident trespassing on the Site may pose a carcinogenic health risk. The risk of developing cancer is primarily due to the presence of the carcinogenic polycyclic aromatic hydrocarbons (PAHs) detected on the Site (i.e., chrysene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene. PAHs are often associated with railroad construction/use materials, and are not related to the derailment. The non-carcinogenic hazards and excess cancer risks to nearby rural residents due to ingestion and household use of groundwater are primarily due to the presence of TCE.

The study also identified five future use scenarios that may pose health concerns:

- Direct contact with Site soils by future Site residents;
- Direct contact with Site soils and inhalation of volatile/fugitive dust aerosols by future Site construction workers;
- Ingestion and household use of groundwater by future residents;
- Direct contact with groundwater by future residents while in a wading pool; and
- Inhalation of indoor air by future Site residents.

Under these theoretical future soil exposure scenarios, the non-carcinogenic risks from the direct contact with impacted soil (and inhalation of volatiles and fugitive dust aerosols by future construction works) were primarily due to the presence of TCE. Excess cancer risks associated with future soil exposures by Site residents and construction works were primarily due to the presence of TCE and the carcinogenic PAHs, with the one detection of Aroclor-1260 in surface soil also contributing to the cancer risk posed to future Site residents.

The non-carcinogenic health hazards associated with ingestion and household use of groundwater by a future resident were due to TCE, carbon tetrachloride, PCE, and 1,2-DCE. TCE and carbon tetrachloride may have also contributed to the non-carcinogenic hazards associated with the hypothetical exposure of future residents to groundwater via use for filling a wading pool. The cancer risks associated with ingestion and use (household and wading pool) of groundwater by future Study Area residents was due to the presence of TCE, PCE, and carbon tetrachloride.

Indoor air samples were not collected from private residences during the course of the NYSDEC RI/FS. The screening methods used to evaluate potential inhalation exposures of future residents to volatile contaminants that may migrate into indoor air from soil and groundwater emissions indicate that the carcinogenic risks are primarily due to TCE and carbon tetrachloride. PCE also contributed to the excess cancer risk to future residents inhaling indoor air.

Based on the current understanding of the Site history, the only contaminants detected in environmental media at the Site were TCE and its breakdown products. The PAHs and inorganics detected were associated with railroad construction/use materials. The potential sources of carbon tetrachloride and PCE had not been determined.

3.3.1.4.4 Addendum to Hydrogeologic Investigation Report

The NYSDEC requested three additional groundwater sampling events in October 1994, January 1995, and April 1995 referred to respectively as Round 6, 7, and 8. The scope of work included select sampling of surface water locations, groundwater monitoring wells, and water supply wells. Groundwater levels were also gauged in all 55 wells within the monitoring network. The results of this work were presented in Tables 2 through 8 and C-1 through C-3 of the NYSDEC RI/FS Report, included in Appendix C of this LVRR RI.

As in prior sampling rounds, TCE remained the principal spill-related contaminant detected in surface water throughout the Study Area. Springs in the Mud Creek gorge continued to discharge surface water containing elevated concentrations of TCE in exceedance of the surface water guidance values. The TCE concentrations in the Mud Creek gorge generally decreased with increasing distance and stratigraphic depth from the spill. A sample collected in April 1995 exhibited the highest TCE concentration (990 ppb) detected to date in a Mud Creek gorge spring. A spring in the Town of Caledonia, New York, miles from the Spill Area, has consistently exhibited TCE concentrations comparable to those detected in the springs of the Mud Creek gorge. The data analysis could not identify a consistent seasonal pattern in the surface water analytical data.

The water supply wells sampled contained concentrations of TCE generally within the range of historical sampling data. Seasonal trends in the water supply well sampling results may have been apparent in water supply wells G-2, G-5S, and G-5D. Seasonal trends were most apparent in the TCE concentrations detected in domestic well G-5S where concentrations of 1,800 ppb and 0.7 ppb were detected in successive rounds.

With few exceptions, the results of the monitoring well network sampling also identified TCE concentrations within the range of historical sampling events. The monitoring well and domestic well data indicated that the TCE plume may be as narrow as 500 feet in the north-south direction in the vicinity of Church Road.

Cyanide-impacted water was detected in four monitoring wells and two domestic wells at levels below the groundwater and drinking water standards.

3.3.1.4.5 January & March 1994 Memorandums: Bailer/WaTerra Data

Appendix N of Volume III of the NYSDEC RI/FS Report (Reference 5) included memoranda dated January 11 and March 25, 1994. The memoranda documented a groundwater sampling event conducted on January 17, 1994. Duplicate samples were collected from the monitoring wells via two methodologies. The first methodology required purging of the monitoring well with a WaTerra inertial pump. Following purging, the pump was removed from the monitoring well and a hand bailer was used to collect a groundwater sample. This method of sampling was consistent with historical sampling events conducted by Rust Environmental & Infrastructure. The memoranda cited the labor-intensive characteristics of this sampling method as unwarranted if samples collected for VOCs directly from the WaTerra pump (following purging) provided synonymous results. The second sample collected during the January 17, 1994 sampling event was therefore collected directly from the WaTerra pump for comparison.

The January 11, 1994 Memorandum proposed duplicate sample collection from 15 monitoring wells with four alternative wells noted in the event that a substitution was required. All of the monitoring wells contained detectable concentrations of TCE ranging from 5.2 to 26 ppb.

The results of the sampling event were detailed in the March 25, 1994 memorandum. The memorandum determined that significant variability was observed in the reported TCE concentrations for monitoring wells with concentrations less than 5 ppb. Either PVC bailers or WaTerra tubing were used to collect VOC samples at selected locations during subsequent sampling events. The sampling methodology was determined based on a threshold of 20 ppb of TCE; those wells with historical TCE concentrations above the threshold were sampled by the WaTerra method and those below were sampled via bailer.

3.3.1.5 January 1997 Feasibility Study, Operable Unit #1 (Groundwater), Rust Environmental & Infrastructure

The NYSDEC retained Rust Environmental & Infrastructure to complete a feasibility study to evaluate remedial alternatives to address both unsaturated contaminated bedrock above the water table (vadose zone) and contaminated groundwater. These units were addressed under Operable Unit #1 at the time of the report. The results of the assessment were reported in the January 1997 Feasibility Study (Reference 6). The Feasibility Study was completed in three phases:

- Phase 1: Development of Remedial Alternatives: Identified various technologies applicable to remediating the contamination in the groundwater Operable Unit and developed potential remedial alternatives.
- Phase 2: Preliminary Screening of Alternatives: A preliminary screening of the alternatives identified in the first phase to refine the list into a manageable range of viable options.
- Phase 3: Detailed Analysis of Various Remedial Alternative Combinations

The subject report documents the completion of Phases 1 and 2. The preliminary remedial action objectives for groundwater were to:

- Control and/or recover the TCE present as DNAPL in order to eliminate TCE in the non-aqueous phase as a long-term source of groundwater contamination
- Control the migration of groundwater containing elevated concentrations of TCE to prevent further contamination of other groundwater bearing zones and surface water
- Reduce the levels of dissolved TCE in groundwater to comply with current New York State groundwater quality standards (5 ppb).

VOCs other than TCE (carbon tetrachloride, cDCE, and PCE) were identified as contaminants of concern (COCs) in the groundwater as part of the human health risk assessment; however, because these compounds are generally amenable to the same remedial technologies as TCE, only TCE was considered in the development of remedial alternatives.

In the first phase of the NYSDEC FS, the following remedial technologies were considered:

- Recovery/Extraction Technologies: The TCE recovery sources included the bedrock surface (as a DNAPL), within groundwater (aqueous phase), and from soil as a vapor (gas). The basic extraction technologies included groundwater/DNAPL recovery wells and vapor extraction points. Enhancements for these technologies included the use of horizontal extraction wells, bedrock blasting, hydro-fracturing, surfactant, and heat applications.
- Isolation/Migration Control Technologies: The isolation/migration control technologies included hydraulic barriers to intercept contaminated groundwater and capping of the Spill Area to reduce infiltration of precipitation through the TCE contaminated vadose zone.
- In Situ Treatment Technologies: Bioremediation, air sparging, and ozone sparging in situ treatment options were considered.

- Dual Treatment of Groundwater and Soil Vapor Extraction Technologies: Proven technologies for the treatment of extracted groundwater and vapors included air stripping, carbon adsorption, and catalytic oxidation.

The above remedial technologies were used to develop the following remedial alternative scenarios:

- Alternative A: No Action/Institutional Controls with Monitoring
- Alternative B: Hydraulic Barrier East of the Spill Site
- Alternative C: DNAPL and Dissolved Phase Cleanup at the Spill Site
- Alternative D: Dissolved Phase Cleanup Across the Entire Study Area
- Alternative E: Source Removal by Quarrying of DNAPL Contaminated Bedrock
- Alternative F: Supply of Potable Water by Continuing In-House Treatment Systems or by Extending Public Supply
- Alternatives G & H: Treatment of Extraction Groundwater and Vapors

Phase 2 of the NYSDEC RI/FS determined that the complete control or removal of the TCE was not practical due to the heterogeneity of the fractures and other porous features in which the contaminants were present. The TCE present within the fractured and porous bedrock as a DNAPL would have been difficult to recover as a result of interfacial surface tension between the DNAPL and water that tended to trap discontinuous tendrils and droplets of DNAPL in small openings in the bedrock. TCE adsorbed onto the bedrock was desorbed gradually into the groundwater and may have only been recovered by pumping large volumes of contaminated groundwater for extended periods of time. The heterogeneity of the bedrock fractures would have made it difficult to recover all the contaminated groundwater with a limited number of recovery wells.

The NYSDEC RI/FS also identified the potential for remedial processes to inadvertently mobilize DNAPL by disturbing the forces retarding the DNAPL migration. The mobilization could create new migration pathways and contaminate previously clean water supply wells, whereas the extension of a public water supply to the residences affected by the spill would afford the opportunity to engage in source removal without the attendant risk of impacting down gradient drinking water supplies. Alternatively, the creation of effective hydraulic barriers between the source area and receptors was considered as a precursor to removal activities. Extensive monitoring of groundwater gradients and quality before and during source removal would have been necessary to determine the adequacy of the hydraulic barrier.

Based on the above evaluation of remedial Implementability and anticipated effectiveness, the following combinations of remedial alternatives were identified for Phase 3 of the NYSDEC FS:

- Alternative 1: Domestic water supply well POE treatment/groundwater monitoring
- Alterative 2: Public water supply/groundwater monitoring
- Alternative 3A: POE treatment/hydraulic barrier consisting of vertical wells with blasted interceptor trench/groundwater treatment/organic vapor control/discharge to surface water/groundwater monitoring

- Alternative 3B: POE treatment/hydraulic barrier consisting of vertical wells with hydro-fracturing/groundwater treatment/organic vapor control/discharge to surface water/groundwater monitoring
- Alternative 3C: POE treatment/hydraulic barrier consisting of horizontal wells/groundwater treatment/organic vapor control/discharge to surface water/groundwater monitoring
- Alternative 4: Public water supply/Source control with groundwater recovery (vertical wells with fracture enhancement) and vapor extraction/Groundwater treatment/Organic vapor control/Discharge to surface water/Groundwater monitoring
- Alternative 5: Public water supply/Source control with bedrock quarrying/Groundwater and wash-water treatment/Organic vapor control/Discharge to surface water/Groundwater monitoring
- Alternative 6A: POE treatment/Hydraulic barrier with vertical wells and blasted interceptor trench/Source control with groundwater recovery (vertical wells with fracture enhancement) and vapor extraction/Groundwater Treatment/Organic vapor control/Discharge to surface water/Groundwater monitoring
- Alternative 6B: POE treatment/Hydraulic barrier with vertical wells and blasted interceptor trench/Source control with air sparging and vapor extraction/ Organic vapor control/ Groundwater monitoring
- Alternative 6C: POE treatment/Hydraulic barrier with vertical wells and blasted interceptor trench/Source control with ozone sparging and vapor extraction/Organic vapor control/ Groundwater monitoring
- Alternative 6D: POE treatment/Hydraulic barrier with vertical wells and blasted interceptor trench/Source control with bedrock quarrying/Groundwater and wastewater treatment/Organic vapor control/Discharge to surface water/Groundwater monitoring

3.3.1.6 January 1997 Feasibility Study, Document II, TAMS Consultants, Inc.

TAMS Consultants, Inc. was retained by the NYSDEC to complete Phase 3 of the NYSDEC RI/FS for the groundwater operable unit (Reference 6). Phase 3 of the NYSDEC RI/FS consisted of a detailed analysis of various remedial alternative combinations. The alternatives were previously identified in the January 1997 Feasibility Study, Operative Unit #1 (Reference 5) as Alternatives 1 through 6D. In accordance with the NYSDEC TAGM HWR-4030, Selection of Remedial Actions at Inactive Hazardous Waste Sites, revised May 15, 1990, the identified remedial alternatives were evaluated against the following seven criteria:

- Compliance with New York State Standards, Criteria, and Guidelines (SCGs);
- Overall protection of human health and the environment;
- Short-term impacts and effectiveness;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, and volume;
- Implementability; and

- Cost

The follow sections provide general summaries of the assessments for each alternative:

Alternative 1: Domestic Water Supply Well POE Treatment/Groundwater Monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- The POE systems require regular maintenance
- Additional private wells may become contaminated and go undetected until sampled as not all private wells down gradient of the Spill Area are routinely monitored.
- Alternative does not include provisions for the recovery of DNAPL or contaminated groundwater and will likely not comply with SCGs.
- No significant short-term impacts to the environment, community or the site worker are anticipated.
- This alternative does not provide for a reduction of toxicity, mobility, or volume.
- This alternative is the most readily implementable alternative as all components of the remedy are existing.

Alterative 2: Public Water Supply/Groundwater Monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- Installation of a public water supply system results in a more reliable source of water as compared to the POE systems (reducing the potential for impacted water supplies and risks to human health and the environment).
- Alternative does not include provisions for the recovery of DNAPL or contaminated groundwater and will likely not comply with SCGs.
- No significant short-term impacts to the environment, community or the Site workers are anticipated.
- The installation of a public water supply achieves long-term effectiveness of the remedy.
- This alternative does not provide for a reduction of toxicity, mobility, or volume.
- This alternative is readily implementable since conventional construction techniques will be used to install the public water supply system.

Alternative 3A: POE treatment/hydraulic barrier consisting of vertical wells with blasted interceptor trench/groundwater treatment/organic vapor control/discharge to surface water/groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- The POE systems require regular maintenance

- The hydraulic barrier will reduce down gradient migration of contaminated groundwater and, if effective, will reduce the potential for contamination of nearby surface water, contamination of down gradient and deeper aquifers, and thereby, the risk of human and environmental exposure.
- Alternative does not include provisions for the recovery of DNAPL or contaminated groundwater and will likely not comply with SCGs up gradient of the hydraulic barrier.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.
- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Short-term impacts to the community may arise during implementation.

<u>Alternative 3B:</u> POE treatment/hydraulic barrier consisting of vertical wells with hydro-fracturing/groundwater treatment/organic vapor control/discharge to surface water/groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- The hydraulic barrier will reduce down gradient migration of contaminated groundwater and, if effective, will reduce the potential for contamination of nearby surface water, contamination of down gradient and deeper aquifers, and thereby, the risk of human and environmental exposure.
- Alternative does not include provisions for the recovery of DNAPL or contaminated groundwater and will likely not comply with SCGs up gradient of the hydraulic barrier.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.
- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Short-term impacts to the community may arise during implementation.

<u>Alternative 3C:</u> POE treatment/hydraulic barrier consisting of horizontal wells/groundwater treatment/organic vapor control/discharge to surface water/groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- The hydraulic barrier will reduce down gradient migration of contaminated groundwater and, if effective, will reduce the potential for contamination of nearby surface water, contamination of down gradient and deeper aquifers, and thereby, the risk of human and environmental exposure.
- Alternative does not include provisions for the recovery of DNAPL and contaminated groundwater and will likely not comply with SCGs up gradient of the hydraulic barrier.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.

- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Short-term impacts to the community may arise during implementation.

Alternative 4: Public water supply/Source control with groundwater recovery (vertical wells with fracture enhancement) and vapor extraction/Groundwater treatment/Organic vapor control/Discharge to surface water/Groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- Installation of a public water supply system results in a more reliable source of water as compared to the POE systems (reducing the potential for impacted water supplies and risks to human health and the environment)..
- Includes provisions for the recovery of DNAPL and/or contaminated groundwater and may meet SCGs depending on the effectiveness of the source removal methods.
- Does not include installation of a hydraulic barrier for control of contaminant migration during remedial activities. The use of blasting for remedial implementation may result in the mobilization of DNAPL.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.
- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Short-term impacts to the community may arise during implementation.
- The installation of a public water supply achieves long-term effectiveness of the remedy.
- Source removal provides a more permanent solution for reducing risk associated with contamination. However, the magnitude of remaining risk is dependent on the efficacy of the remedial measure.

Alternative 5: Public water supply/Source control with bedrock quarrying/Groundwater and wash-water treatment/Organic vapor control/Discharge to surface water/Groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- Installation of a public water supply system results in a more reliable source of water as compared to the POE systems (reducing the potential for impacted water supplies and risks to human health and the environment)..
- Includes provisions for the recovery of DNAPL and/or contaminated groundwater and may meet SCGs depending on the effectiveness of the source removal methods.
- Does not include installation of a hydraulic barrier for control of contaminant migration during remedial activities.
- Quarrying may offer the most reliable means for removal of TCE from the subsurface.

- Control of TCE volatilization and compliance with SCGs may be difficult during blasting of the contaminated rock and subsequent transport of the rock to the processing facility.
- Crushing and washing of the quarried rock will require an enclosed building equipped with a vapor control system to meet air quality SCGs.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.
- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Comparatively higher short-term impacts to the environment, community or the Site worker are anticipated for quarrying activities.
- The installation of a public water supply achieves long-term effectiveness of the remedy.
- Source removal provides a more permanent solution for reducing risk associated with contamination. However, the magnitude of remaining risk is dependent on the efficacy of the remedial measure.

Alternative 6A: POE treatment/Hydraulic barrier with vertical wells and blasted interceptor trench/Source control with groundwater recovery (vertical wells with fracture enhancement) and vapor extraction/Groundwater Treatment/Organic vapor control/Discharge to surface water/Groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- Includes provisions for the recovery of DNAPL and/or contaminated groundwater and may meet SCGs depending on the effectiveness of the source removal methods. In turn, the potential for continued groundwater contamination, contamination of nearby surface waters and down gradient and deeper aquifers is reduced.
- The hydraulic barrier will reduce down gradient migration of contaminated groundwater and, if effective, will reduce the potential for contamination of nearby surface water, contamination of down gradient and deeper aquifers, and thereby, the risk of human and environmental exposure.
- The hydraulic barrier may also allow groundwater compliance with SCGs down gradient of the barrier during implementation of source removal activities.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.
- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Short-term impacts to the community may arise during implementation.
- Source removal provides a more permanent solution for reducing risk associated with contamination. However, the magnitude of remaining risk is dependent on the efficacy of the remedial measure.

Alternative 6B: POE treatment/Hydraulic barrier with vertical wells and blasted interceptor trench/Source control with air sparging and vapor extraction/ Organic vapor control/ Groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- Includes provisions for the recovery of DNAPL and/or contaminated groundwater and may meet SCGs depending on the effectiveness of the source removal methods. In turn, the potential for continued groundwater contamination, contamination of nearby surface waters and down gradient and deeper aquifers is reduced.
- The hydraulic barrier will reduce down gradient migration of contaminated groundwater and, if effective, will reduce the potential for contamination of nearby surface water, contamination of down gradient and deeper aquifers, and thereby, the risk of human and environmental exposure.
- The hydraulic barrier may also allow groundwater compliance with SCGs down gradient of the barrier during implementation of source removal activities.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.
- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Short-term impacts to the community may arise during implementation.
- Source removal provides a more permanent solution for reducing risk associated with contamination. However, the magnitude of remaining risk is dependent on the efficacy of the remedial measure.

Alternative 6C: POE treatment/Hydraulic barrier with vertical wells and blasted interceptor trench/Source control with ozone sparging and vapor extraction/Organic vapor control/ Groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- Includes provisions for the recovery of DNAPL and/or contaminated groundwater and may meet SCGs depending on the effectiveness of the source removal methods. In turn, the potential for continued groundwater contamination, contamination of nearby surface waters and down gradient and deeper aquifers is reduced.
- The hydraulic barrier will reduce down gradient migration of contaminated groundwater and, if effective, will reduce the potential for contamination of nearby surface water, contamination of down gradient and deeper aquifers, and thereby, the risk of human and environmental exposure.
- The hydraulic barrier may also allow groundwater compliance with SCGs down gradient of the barrier during implementation of source removal activities.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.

- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Short-term impacts to the community may arise during implementation.
- In-situ ozonation poses a potential environmental impact associated with the formation of degradation by-products of TCE.
- Source removal provides a more permanent solution for reducing risk associated with contamination. However, the magnitude of remaining risk is dependent on the efficacy of the remedial measure.

<u>Alternative 6D:</u> POE treatment/Hydraulic barrier with vertical wells and blasted interceptor trench/Source control with bedrock quarrying/Groundwater and wastewater treatment/Organic vapor control/Discharge to surface water/Groundwater monitoring

- Provides an adequate source of potable water to residents and businesses down gradient of the Site.
- Includes provisions for the recovery of DNAPL and/or contaminated groundwater and may meet SCGs depending on the effectiveness of the source removal methods.
- The hydraulic barrier will reduce down gradient migration of contaminated groundwater and, if effective, will reduce the potential for contamination of nearby surface water, contamination of down gradient and deeper aquifers, and thereby, the risk of human and environmental exposure.
- The hydraulic barrier may also allow groundwater compliance with SCGs down gradient of the barrier during implementation of source removal activities.
- Quarrying may offer the most reliable means for removal of TCE from the subsurface.
- Control of TCE volatilization and compliance with SCGs may be difficult during blasting of the contaminated rock and subsequent transport of the rock to the processing facility.
- Crushing and washing of the quarried rock will require an enclosed building equipped with a vapor control system to meet air quality SCGs.
- The groundwater treatment system will be designed to meet the surface water SCGs prior to discharge to Mud Creek.
- Organic vapor control systems will be designed to comply with SCGs for air quality prior to discharge to the atmosphere.
- Comparatively higher short-term impacts to the environment, community or the Site worker are anticipated for quarrying activities.
- Source removal provides a more permanent solution for reducing risk associated with contamination. However, the magnitude of remaining risk is dependent on the efficacy of the remedial measure.

Capital, operation and maintenance, and present worth costs for each alternative were also assessed. No conclusions or recommendations were presented in the report.

3.3.1.7 August 1997 Immediate Investigation Work Assignment, Parsons Engineering Science, Inc.

In July 1997, the NYSDEC retained Parsons Engineering Science, Inc. to perform an investigation with the following objectives:

- Evaluate subsurface and groundwater conditions in the vicinity of the Genesee Country Museum,
- Determine if groundwater at the museum poses a threat to future water supplies
- Assist in determining the benefits of extending the site remedy to include a water line in the vicinity of the museum along Flint Hill Road.

The above work was documented in an Immediate Investigation Work Assignment report (Reference 8). Three monitoring wells (MS-1 through MS-3) were installed in bedrock to depths ranging from 60 to 143.4 feet below ground surface in the vicinity of the Genesee Country Museum property. The collection of groundwater samples from the newly installed wells was not documented in the report.

3.3.2 NYSDEC's Proposed Remedial Action Plan and Record of Decision

A Proposed Remedial Action Plan (PRAP) was drafted by the NYSDEC (Reference 7) to address both the groundwater and soil operable units, to summarize alternatives considered, and to discuss the rationale for the selected remedies. The remedial alternative selected for the soil operable unit was identified as contaminated soil excavation and on-Site treatment by ex-situ vapor extraction. The details pertaining to the soil operable unit have been omitted from this report. The PRAP outlined the installation of a public water supply and the completion of an in-depth treatability study for the groundwater operable unit. At the time that the PRAP was drafted, the NYSDEC had nominated the Site for the National Priority List (NPL). The report notes that the remedial plan outlined was subject to change should the Site be accepted to the NPL by the USEPA.

The remedial goals established in the PRAP included:

- Provide for attainment of SCGs for groundwater quality and surface water quality at the limits of the area of concern to the extent practicable.
- Prevent, to the extent possible, migration of contaminants in groundwater and reduce the impacts of contaminated groundwater to the environment.
- Reduce, control, or eliminate, to the extent practicable, the soil and bedrock contamination present at the derailment Site.
- Eliminate the potential for human and wildlife exposure to soil containing Site related contaminants.
- Contain, treat, and/or dispose of contaminated soil in a manner consistent with applicable state and federal regulations and guidance.

The remedial action objectives (RAOs) for the groundwater operable unit were established based on the goal of attaining SCGs for groundwater quality to the extent practicable.

The NYSDEC Water Quality Regulations for surface water and groundwater (6 NYCRR Parts 700-705) provide the objectives for groundwater and surface water remediation as follows:

- Groundwater RAO: 5 ppb TCE
- Surface Water RAO: 11 ppb TCE

Although surface water contamination above the SCG was present at the Site, it was determined to be a result of the groundwater contamination. Any remedial measures which achieved SCGs for groundwater would indirectly do the same for surface water. Elevated concentrations of TCE were present in limited areas of both Mud Creek and Spring Creek. However, no significant human health risk was identified and the Fish and Wildlife Impact Analysis concluded that the contamination does not adversely affect wildlife. Therefore, no remediation was proposed for sediments.

Based on the results of the RI/FS, the NYSDEC considered the following remedial alternatives to achieve the above referenced remedial goals:

- Alternative 1: No Action/Continued Monitoring
- Alternative 2: Spring Street Waterline; POE for other impacted residents; Source Control; Plume Interception
- Alternative 3: Church/Gulf Road Waterline POE for other Impacted Residents; Plume Interception; Source Area Control
- Alternative 4: Large Scale Waterline with No Provisions for Fire Protection; Source Area Control
- Alternative 5: Large Scale Waterline with Provisions for Current Fire Flow Demand; Detailed Pilot Study; Source Area Control
- Alternative 6: Large Scale Waterline with Future Potential Fire Flow Demand; Plume Interception; Source Area Control

The remedial alternatives were considered using the same criteria used in the January 1997 Feasibility Analysis:

- Compliance with New York State SCGs;
- Overall protection of human health and the environment;
- Short-term impacts and effectiveness;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, and volume;
- Implementability; and
- Cost

Ultimately, the NYSDEC selected Alternative 5: A large scale water line extension (with provisions for current fire demand); source area control using soil and bedrock vapor extraction; and a detailed pilot study. The selection of Alternative 5 was based on the following analysis of each alternative:

- Alternative 1 (No action, continued monitoring) was protective of human health for current residents but did not protect the groundwater resource for future residents who build new homes. Alternative 1 did not meet the preference for permanent solutions or for remedies which reduce mobility, toxicity, and volume.
- Alternative 2 (Spring Street water line; plume interception; source control) was protective of human health but would require continued use of POE systems to provide drinking water supplies. The plume interceptor system would have required pumping and private water supplies located on Church Road were considered at risk for adverse impacts; the water supply wells could become less productive, more salty, or go dry.
- Alternative 3 (Church/Gulf Road waterline; plume interception; source control) addressed the concerns discussed above regarding wells on Church Road but a large number of private wells would continue to require POE systems.
- Alternative 4 (Large scale public water supply with source control) was less protective of the environment because it did not include plume interception. Any large-scale release of TCE resulting from invasive activities in the NAPL zone could escape into the main body of the aquifer. Alternative 4 would protect human health but not the groundwater.
- Alternative 5 (Large scale waterline with current demand fire flow; pilot study; source control) and Alternative 6 (large scale water line with potential future fire flow demand; plume interception; source control) both offered protection of human health by including a water line extension to all impacted residents. Both alternatives have short and long term effectiveness and are both implementable. Alternative 6 provided a greater degree of protection for the environment by including plume interception (not precluded by Alternative 5). The distinguishing selection criterion for the preference of Alternative 5 was cost.

At the time of the PRAP, the conceptual design of Alternative 5 included the following stages of implementation:

- Stage 1: Remedial Design Program: The remedial design program would be implemented to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program.
- Stage 2: Waterline Construction: The MCWA service would be extended via construction of a large scale water line extension to all homes with contaminated wells.
- Stage 3: Source Area Remediation Design/Detailed Pilot Study: This stage would include the design of the source area remediation and a detailed pilot study to determine the appropriate design parameters for the soil vapor extraction system and the bedrock vapor extraction system.
- Stage 4: Source Control: Stage 4 would include implementation of the source area control system(s).

In March 1997 the NYSDEC issued a final ROD (Reference 10) for remedial actions at the Site. As mentioned in Section 3.1, the ROD formally established two Operable Units to represent discrete portions of the Site to be addressed separately. Operable Unit #1 consisted of a two areas of impacted groundwater: a ten-acre “source area” immediately surrounding the Spill Site and the larger approximately 3.5 square mile area of additional impacts.

Operable Unit #2 consisted of an approximately 1.5 acre area of TCE-impacted soil (Spill Area). The ROD also established RAOs:

- Operable Unit #1 (Groundwater)
  - TCE concentration in groundwater: 5 ppb
  - TCE concentration in surface water: 11 ppb
- Operable Unit #2 (Soil)
  - TCE concentration in soil: 7 ppm
  - 1,2- DCE concentration in soil: 3 ppm

To achieve the above RAOs, the following remedies were selected:

- Design and construct a waterline extension to connect all impacted residents to a potable water supply. The waterline extension was designed to extend from the existing Monroe County Water Authority water main in the Town of Wheatland and service the Towns of Wheatland and LeRoy and the Villages of Caledonia and Mumford.
- Design of source control measures including a pilot study.
- Excavation of approximately 10,000 cubic yards of TCE contaminated soil from the Spill Area for on-site treatment via ex-situ soil vapor extraction and post-remedial placement back on site.
- Installation of a bedrock vapor extraction system within the 10-acre DNAPL (source) zone.
- A long term monitoring program.

The NYSDEC received concurrence from the NYSDOH on the above remedial selections as being protective of human health.

The NYSDEC ROD was reviewed by the USEPA which released a response letter dated July 27, 1999 (included with Reference 10). The USEPA concurred with the installation of the waterline extension but reserved comment on the proposed ex-situ remediation system for TCE-impacted soil pending review of the NYSDEC's ongoing review of innovative technologies for the treatment of the soil. The letter noted that subsequent work on the Site (excluding the waterline extension) would be performed under the purview of the USEPA.

3.3.3 NYSDEC's Pre-Design Activities

The NYSDEC pre-design activities associated with the groundwater Operable Unit were documented in two reports completed from 1998 to 1999. The work performed, data obtained, and key findings are presented in the following sections.

3.3.3.1 February 1999 DRAFT Pilot Study of TCE Vapor Extraction in Fractured Limestone, New York State Department of Environmental Services

The NYSDEC performed a bedrock vacuum extraction pilot test at the Site and presented the following details in the February 1999 report (Reference 13) including the design, implementation, and results of the pilot test. A total of 29 wells were installed across the 10-acre suspected NAPL area, as illustrated on Figure 6a of this LVRR RI. A total of 27 of the wells were completed to 60 feet below ground surface and were open-hole construction.

The remaining two wells were initially drilled to approximately 100 feet below ground surface and included rock core collection. Both visually-observed highly fractured and highly competent non-fractured rock samples were collected for laboratory analysis. Two analytical methods were used to determine TCE concentrations in the samples: the first by USEPA Method 5035 using 5 grams of crushed rock sample, and the other method developed by the NYSDEC using 50 grams of crushed rock sample. Final well installation at these two locations included sealing the borehole from 60 to 100 feet below ground surface and completing the well installation to 60 feet below ground surface.

The Pilot Study report did not include data tables or raw analytical data for the analyses referenced above; however, the results were discussed in part in the report narrative. The samples analyzed by the NYSDEC lab identified considerably higher concentrations of TCE than those analyzed by an independent lab via the USEPA methodology. The variability in the results was attributed to the size of samples collected and additional hold time provided by the NYSDEC method for the extraction of the TCE from the rock samples. A qualitative analysis of the data identified residual NAPL primarily in the upper 35-40 feet of the Site. The NAPL distribution was also distributed geologically with little or no TCE identified in the Clarence member of the Onondaga formation or within cherty zones in the limestone. Limestone or dolomite samples were identified as the most heavily contaminated. The distribution of NAPL was also dependent on the bedrock competency with higher concentrations of TCE present in fractured rock.

The bedrock vapor extraction pilot testing included two methods. The first was performed at eight extraction well locations and included the application of vacuum across the open rock interval of the well. Three extraction well locations were used for the second pilot testing method which included the installation of observation wells at 5, 15 and 50 feet from the extraction well. The observation wells were equipped with transducers for data collection during the application of a vacuum at the extraction well. Tests were also performed at these locations using well packers to isolate portions of the extraction well for vacuum application. The packer-isolated tests were designed to give detailed information on the variability of both TCE vapors and the radius of influence over the depth of the well. A computerized data logger was used to continuously collect applied and induced vacuum data from the extraction and observation wells. Real-time vapor concentrations were measured using an organic vapor analyzer. At three points during the test, vapor samples were collected using Summa Canisters for laboratory analysis.

The pilot test supporting data was not provided with the pilot test report. The following findings were presented within the report narrative: On average, the vapor extraction flow rate from the bedrock rated from 60 to 70 scfm from each well at an applied vacuum of 150 to 200 inches of water. No flow was observed in two of the extraction wells. The induced vacuum readings collected at the observation wells were variable with some wells generating an observable response with an extrapolated radius of influence greater than 50 feet. Other wells showed little to no influence at the observation wells at distances as short as 5 feet.

The packer-isolated interval tests were used to identify the highest concentrations of TCE present within the upper 15 feet of bedrock at the Spill Area. The TCE concentration decreased with depth significantly to the 32-42 foot bgs interval. Conversely, well clusters located 600 feet south of the spill Site produced TCE concentrations increasing with depth. The data indicated that the

DNAPL migrated along the bedding planes in a southerly direction and dropped into successively lower stratigraphic layers as it continued south.

The report concluded that the pilot test successfully further delineated the TCE plume and that a significant portion of the residual TCE is adsorbed into bedrock fracture and microfracture surfaces. In part because TCE diffusion into primary pore spaces within the bedrock occurred as a secondary contaminant distribution pathway, the application of bedrock vapor extraction was successful. However, once the initial TCE recovery rates decline, the mass-transfer of TCE from the microfractures into the vadose vapors will pose a challenge. Additional studies were recommended to further pursue the application of bedrock vapor extraction at the Site.

April 1999 Ex-Situ Soil Vapor Extraction and In-Situ Bedrock Vapor Extraction Pilot Test Report, IT Engineering of New York, P.C.

The NYSDEC retained IT Engineering of New York, P.C. to perform pilot testing for ex-situ soil vapor extraction (soil Operable Unit) and in-situ bedrock vapor extraction (groundwater Operable Unit). The results of the pilot test were reported in an Ex-Situ Soil Vapor Extraction and In-Situ Bedrock Vapor Extraction Pilot Test Report (Reference 13). A summary of the pilot test findings and details of the work conducted relative to the groundwater Operable Unit are included below.

In July and August 1998, 11 vapor extraction wells and 18 vacuum observation wells were installed to approximately 60 feet below ground surface across the Study Area, as illustrated on Figure 6a of this LVRR RI. The extraction wells were identified as EW-1 through EW-11. The observation wells were identified as OW-1 through OW-18 and were located at intervals of 5, 15, and 50 feet from the extraction wells. Observation wells OW-1 through OW-6 were installed in the vicinity of extraction well EW-1. Observation wells OW-7 through OW-12 were installed in the vicinity of extraction well EW-2. Observation wells OW-13 through OW-18 were installed in the vicinity of extraction well EW-3.

Two testing methods were implemented to assess the viability of BVE as a remedial option at the Site. The first method, performed at extraction wells EW-1 through EW-11, involved the application of vacuum and collection of data from individual extraction wells (without the use of observation wells). This method compared the air extraction flow rates and extracted air VOC concentrations at each point under various applied vacuums. This method targeted vadose zone bedrock contamination. The second test methods involved the use of monitoring and straddle packers to collect vacuum influence data across three monitoring intervals or zones. This method was applied at extraction wells EW-1 through EW-3.

The primary parameters used to evaluate the effectiveness of the BVE pilot test included observed flow rates, TCE concentrations in extracted vapor, and vacuum distribution and influence with distance from the extraction well.

3.3.3.1.1 Observed Flow Rates

Air flow rates were measured manually during each test using rotameter air flow gauges from the extraction well head and the blower air dilution valve. Bedrock vapor extraction step tests were conducted to determine the effects of varying vacuums on air extraction rates and VOC concentrations.

No air flow was observed at extraction wells EW-4 and EW-10 despite the application of varying vacuum. The results suggest that the conductivity of fractures within the boreholes was minimal. No further testing was conducted at these locations. Vacuum step tests were performed on the remaining individual extraction wells to assess air extraction rates as a function of vacuum. Air flow was observed in the remaining nine extraction wells in response to applied vacuum. These wells produced a maximum of 70 cubic feet per minute (cfm) at a vacuum of 200 inches of water.

3.3.3.1.2 Extracted Vapor Quality

The VOC concentrations were measured during all BVE tests using a portable OVM PID or a HNu PID. Readings were collected at 15 minute intervals throughout the tests.

Three bedrock vapor samples were collected at the beginning, middle and end of each extraction test. Immediately upon startup of the open borehole BVE tests, TCE concentrations ranged from 0.83 ppmv in EW-5 to 572 ppmv in EW-1. By the end of the BVE open borehole tests, TCE concentrations ranged from 1.19 ppmv in EW-5 to 206 ppmv in EW-1. The TCE concentrations generally decreased during the progression of each test. A similar pattern was observed throughout the BVE packer tests. Additionally, greater TCE concentrations were detected in the upper portions of the bedrock wells closer to the Spill Area. The TCE data and extraction flow rates were used to determine the mass removal rates for each BVE test. The average mass removal rates by extraction well ranged from 0.001 lbs/hr at EW-5 to 0.661 lbs/hr at EW-1. The calculated average mass removal rate across the Study Area was 0.238 lbs/hr.

3.3.3.1.3 Vacuum Distribution and Influence with Distance

Significant variability was observed in the radius of influence of applied vacuum to the bedrock extraction wells. The pilot study results indicated that extraction well EW-1 had vacuum influence up to 50 feet from the well. However, extraction wells EW-2 and EW-3 had significantly less influence. A preliminary conceptual model of the in-situ bedrock vapor extraction system presented in the NYSDEC Pilot Test Report estimated an average distance of vacuum influence of 30 feet.

The pilot report concluded that the application of BVE at the Site would require detailed mapping of the bedrock fracture network. Extraction wells should be placed at the intersection of major bedrock fractures to maximize contaminant removal while minimizing the number of extraction wells. The report recommended a high resolution seismic method for bedrock fracture mapping.

3.3.3.2 April 1999 Ex-Situ Soil Vapor Extraction and In-Situ Bedrock Vapor Extraction Pilot Test Report, IT Engineering of New York, P.C.

The NYSDEC retained IT Engineering of New York, P.C. to perform an ex-situ vapor extraction and in-situ bedrock vapor extraction pilot test. The results of the pilot testing were included in a Pilot Test Report (Reference 12). In addition, the report documented the collection of additional soil and bedrock data to supplement the NYSDEC RI/FS activities described above. The NYSDEC RI/FS findings and details of the data relevant to the groundwater operable unit and the information pertaining to the pilot study are detailed below.

During the installation of extraction wells associated with the pilot testing activities, rock coring was performed to characterize the rock quality and to assess the bedrock for TCE contamination. The cores were collected from sample locations within the Spill Area (EW-1) and approximately 500 feet from the edge of the Spill Area (EW-2). According to a 1991 USEPA report titled Fracture Trace Analysis of the Lehigh Valley Line Spill Area, EW-1 was installed along a northeast/southeast trending fracture trace.

The cores were advanced to 100 feet below ground surface. Extracted cores were analyzed by a HNu model PI-101 photoionization detector as they were removed from the core barrel. Samples were taken at approximately 10 foot intervals and biased towards areas of suspected contamination typically identified near a visible fracture in the rock matrix. Rock chip samples were collected for laboratory analysis for VOCs. The sample locations and results were presented in Tables 1.3-4 and 1.3-5, respectively, of Reference 12. Copies of the tables are included in Appendix C of this LVRR RI.

Elevated concentrations of TCE of 19,000 micrograms per kilogram (µg/kg), 38,000 µg/kg, and 20,000 µg/kg were detected at sample location EW-1 from depths of 6.0, 18.3, and 34.5 feet below ground surface. A TCE concentration of 310 µg/kg was detected in a sample collected from a depth of 23.3 feet below ground surface at sample location EW-2.

The results of the investigation indicated that the rock matrix within the Spill Area contained a relatively high amount of TCE mass and sufficient fracture conductivity for contaminant transport to depths of at least 34.5 feet below ground surface.

3.3.4 Lehigh Valley Railroad Derailment Site Listing on the National Priorities List

The NYSDEC completed RI/FS activities at the Spill and Study Areas and issued a ROD for remedial action at the Site in 1997. The ROD selected ex-situ soil vapor extraction and in-situ bedrock vapor extraction as source-control measures and a waterline extension to provide a potable water supply to affected residents and businesses. Based on the scope of the impacts identified with the LVRR derailment, the NYSDEC nominated the Site for the federal NPL. The USEPA proposed the Site for the NPL in July 1998. In August 1998, the NYSDEC submitted the RI/FS Reports and the 1997 ROD to the USEPA requesting that the USEPA approve of the ROD and assume responsibility for all future work on the Site with the exception of the waterline installation which would be completed under oversight of the NYSDEC. In January 1999, the USEPA placed the Site on the NPL by publication in the Federal Registrar.

The subsequent work and documentation relative to the waterline installation and source-control measures are detailed below:

3.3.4.1 Waterline Installation

In July 1999, the USEPA issued a letter in response to the 1997 ROD. The letter concurred with the installation of the waterline. Stearns & Wheler, LLC was retained by the NYSDEC to design and construct a water line distribution system from the Study Area to the MCWA. The details of the waterline installation are detailed in the August 2003 Final Remediation Report, Water Distribution System (Reference 9). The waterline design completion and project bidding processes were completed by December 2001 when the NYSDEC issued a Notice to Proceed to the construction contractor, Milherst Construction, Inc. The extension originated in the Town of LeRoy and crossed through three counties (Monroe, Livingston, and Genesee) and four town/villages (Town of Wheatland, Town of Caledonia, Town of LeRoy, and Village of Caledonia). The waterline consisted of the following components:

- 15 miles of 8-inch and 12-inch water main
- 1,000 feet of bored road and railroad crossings
- 30,000 cubic yards of rock removal

- 70 service connections
- pressure reducing and meter vaults
- 12 backflow preventers for both interior and exterior installations

The mainline pipe and water services were installed and the project was substantially completed in February 2003. The final restoration and punch-list items were completed in July 2003. The design, construction, and implementation of the waterline component of the ROD (USEPA Operable Unit 1 – waterline/source control) selected remedy provides a current and future clean water supply for drinking, bathing, fire hydrants, etc., thereby eliminating human exposure to TCE impacted groundwater.

3.3.4.2 Source-Control Measures

The July 1999 USEPA letter assumed future oversight of groundwater studies. The USEPA reserved concurrence to, and oversight of, the two source-control components of the remedy (ex-situ soil vapor extraction and in-situ bedrock vapor extraction) pending receipt of the results of pilot studies and pre-design activities performed by the NYSDEC. Once completed, the referenced reports were submitted to the USEPA and in May 2002, the USEPA concurred with the source-control measures contained in the ROD.

In February 2002, the USEPA approved the Final Work Plan (included in Reference 10) for the Remedial Investigation/Feasibility Study of the groundwater at the Site (subject of this report).

3.3.5 NYSDEC Historical Investigation Summary

The NYSDEC RI/FS data collected from 1992 to 1995 identified the following findings applicable to the groundwater Operable Unit by media.

3.3.5.1 Groundwater

Groundwater samples were collected from both pre-existing water supply wells in the area and groundwater monitoring wells installed for the purpose of data collection relevant to the spill. Groundwater quality data was first collected primarily from existing water supply wells from the time of the release until a network of groundwater monitoring wells was installed in 1993 in conjunction with the NYSDEC RI/FS. In the time leading up to the NYSDEC RI/FS, approximately 50 impacted water supply wells were identified. Of those wells, more than 35 contained TCE concentrations in exceedance of the SCGs generally located east of the Spill Area. Emulsified TCE was identified in water supply wells up to 1.5 miles east of the Spill Area shortly after the release and by 1992, TCE impacted groundwater was delineated up to 3.5 miles from the Spill Area.

The NYSDEC RI/FS included sampling of the water supply wells in December 1992 and July 1993, the installation of 55 groundwater monitoring wells from November 1993 to July 1994, and the sampling of both water supply and monitoring wells in November 1993; January, April, July, and October 1994; and January and April 1995.

The December 1992 sampling event focused on water supply wells located south of the Spill Area to fill a data gap in historical sampling events. The six monitoring wells sampled one mile south of the Spill Area did not contain concentrations of TCE in exceedance of the SCGs. The July and October 1993 sampling events were used for the collection of baseline data across the water supply well network and included 24 of the water supply wells in whole or in part.

Although significant variability in the groundwater monitoring data was identified throughout the sampling events, the TCE plume, defined in the NYSDEC RI/FS as the area where TCE concentrations generally exceed 1,000 ppb, extended across an area of approximately 66 acres originating from the Spill Area and extending east and southeast. The TCE plume was constricted in the vicinity of Church road where the north-south extent appeared to be less than 750 feet. The plume became considerably broader to the east of Church Road, up to one mile in the north-south direction. The TCE concentrations generally dropped to the 50 ppb range or less at well clusters and at many contaminated water supply wells east of Church Road. Contaminated groundwater was identified through the Falkirk member and upper Camillus Formation. The plume was no more than 70 feet thick in this area. Parts of the eastern end of the plume along Spring Street were characterized by relatively high levels of contamination. The TCE concentrations ranged from 25 to 100 ppb in water supply wells and one spring located approximately 1,000 feet from the Monroe-Livingston County line. Contamination was present within the Falkirk, Camillus, and upper Syracuse strata in this area. The maximum depth of contamination was unknown at the east end of the plume.

The area at and immediately down gradient of the Spill Area (totaling 10 acres) contained groundwater TCE concentrations generally an order of magnitude higher. Although DNAPL was not observed during the installation of groundwater monitoring wells, the elevated groundwater TCE concentrations and a seasonal “slug” of highly impacted groundwater detected during periods of elevated water table may have been indicative of a DNAPL plume within the bedrock vadose-zone. An area of groundwater of ten acres originating at the Spill Area contained TCE concentrations in excess of 1% of the solubility of TCE or 11,000 ppb. Specifically, these concentrations were detected in well clusters DC-1, DC-5 and DC-15. The DNAPL plume was assumed to extend throughout this area to a depth of up to 65 feet.

The total quantity of TCE calculated across the entire dissolved phase plume (where TCE concentrations were detected greater than 5 ppb) was estimated at approximately 200 gallons.

3.3.5.2 Surface Water

Nine rounds of surface water samples were collected in support of the NYSDEC RI/FS in December 1992; July and November 1993; January, April, July, and October 1994; and January and April 1995. The samples were collected from the Oatka Creek valley and two tributaries: Mud and Spring Creeks. Initial samples collected in December 1992 from the Mud Creek valley contained elevated concentrations of TCE ranging from 62 to 190 ppb. TCE was also detected in surface water samples near Spring Creek at 63 ppb. Contamination was not detected in springs in the Oatka Creek valley or at the south end of Spring Creek. Four contaminated springs were identified throughout subsequent sampling events within the Mud Creek gorge with TCE concentrations ranging from non-detect to 630 ppb. Five contaminated springs were identified in the vicinity of Spring Creek with concentrations ranging from less than one ppb to 1,900 ppb. In general, the spring and surface water samples identified decreasing concentrations of TCE with increasing stratigraphic depth and distance from the spill. Several of the sampling locations are seasonally dry.

3.3.5.3 Sediment

Sediment samples were generally collected at select locations in conjunction with surface water sampling in December 1992; July and November 1993; and, January, April and July 1994. The December 1992 sampling event included the collection of samples from nine locations. The samples identified elevated concentrations of TCE in exceedance of the SCGs in two locations: a pond on Spring Creek (170 µg/kg) and from the edge of a swallet in Mud Creek valley (71 µg/kg). Subsequent sampling events from Spring and Mud Creeks identified only low levels of TCE (4-5 µg/kg) within sediments. The NYSDEC RI/FS report concluded that the sediments in these locations were not significantly impacted by spill-related contaminants.

In addition to the results, conclusions and recommendations of the NYSDEC, other historical investigations, and the LVRR RI findings (subject of this report) relative to the Site conceptual model are discussed in subsequent sections of this report.

4 STUDY AREA INVESTIGATION

Pursuant to the USEPA 2002 RI/FS WP, Task 3, LVRR conducted remedial investigation activities to acquire additional data necessary to understand regional groundwater dynamics and contaminant transport within the Study Area. In addition, data was collected to support the development of Human Health and Ecological Risk Assessments and a Feasibility Study to determine potential groundwater remedial options.

LVRR remedial investigations were performed in two phases: (1) a Site Reconnaissance and (2) Phase 1 Field Investigation Activities (Phase 1). The Site Reconnaissance consisted of: Site mapping and property access support; a human health receptor reconnaissance; well inventory; ecological resources reconnaissance; existing well sampling; surface water and groundwater elevation survey; and a surface geophysical survey. The results of the Site Reconnaissance were presented in the April 24, 2009 UMC Technical Memorandum and supporting October 30, 2009 Addendum 2 to the USEPA 2002 RI/FS WP (Appendix B).

The Technical Memorandum and Addendum 2 included recommendations for the final locations of new monitoring wells; installation and construction methods of monitoring wells; sampling methodology of monitoring wells; various surface water and sediment sampling locations, and sampling parameters were presented to the USEPA for concurrence. Addendum 2 also requested the deferral of the design and performance of an aquifer test until the disposition of DNAPL and potential for contaminant remobilization is understood. Upon USEPA approval of the Technical Memorandum and Addendum 2, Phase 1 activities were initiated.

Phase 1 investigation activities consisted of the installation of monitoring well clusters; sampling of existing and new wells; sampling of surface water, sediment, seeps, and springs; four seasonal rounds of groundwater sampling and seven supplemental rounds of groundwater sampling; two storm groundwater sampling events; and, two rounds of monitored natural attenuation sampling targeted at a small subset of wells at the source area to evaluate the effects of seasonal variations and precipitation on groundwater quality.

In support of the Phase 1 activities, UMC, on behalf of LVRR, drafted the following Addendums to the USEPA 2002 RI/FS WP:

- Addendum 3: dated July 28, 2010 modifies monitoring well installation procedures.
- Addendum 4: dated September 7, 2010 modifies packer testing procedures and requests the use of a borehole camera to investigate water bearing fractures.
- Addendum 5: dated April 10, 2012 includes the installation of additional monitoring wells down gradient and cross gradient from the Study Area and a soil gas survey on the east side of Spring Creek.
- Addendum 6: dated November 20, 2012 includes surface water samples from Oatka Creek, Mud Creek and Spring Creek; and, the collection of groundwater samples from LVRR-38C and a residential well.

The LVRR Site Reconnaissance and Phase 1 remedial investigation objectives, methods, procedures, results, conclusions and recommendations are present in the following sections of this LVRR RI report.

4.1 INVESTIGATION OBJECTIVES

The objective of the LVRR remedial investigation activities is to obtain a current depiction of groundwater conditions including the current extent of the contaminant plume defined by the NYSDEC and the impact, if any, on human health and the environment. The following sections include a summary of LVRR RI activities performed in support of these objectives.

4.2 MOBILIZATION AND DEMOBILIZATION

In August 2008, UMC mobilized to LeRoy, NY to perform remedial investigation activities. UMC established a general assembly and work location referred to as the Support Zone near the former LVRR Gulf Road Crossing (Spill Area). The Support Zone was established within the pre-existing fenced area formerly utilized by the NYSDEC as a soil vapor extraction pilot test/drum storage area located on the Northwoods Sportsman Club Property on Gulf Road. The Support Zone is equipped with an office trailer, portable toilets, secure 40 foot storage container, and a 3,500 gallon water holding tank with secondary containment.

The Support Zone is used to coordinate and execute office based activities, onsite mobilization activities, and health and safety activities as follows:

<u>Office based activities required in support of mobilization included:</u> the initiation of utility services; coordination efforts of the mobilization/demobilization subcontractors; preparation of requisitions for field equipment and expendable field supplies; laboratory services coordination; and the delivery, storage, and setup of all equipment and supplies to the Site.

<u>Onsite mobilization activities included the following:</u> Site preparation; work station setup; organization and storage of all equipment and supplies; office trailer setup, procure temporary sanitary facilities; placement of secure 40-foot storage container; placement of a 3,500-gallon water tank with secondary containment; and the procurement of a general refuse dumpster and garbage removal services.

<u>Health and safety activities conducted during mobilization included</u>: the establishment of a decontamination area, work zone identification, Site-specific briefings for project team members,

the setup of a monitoring equipment calibration area, and the establishment of onsite health and safety files.

The Support Zone was utilized during all phases of the Site Reconnaissance and Phase 1 field investigations and is actively supporting quarterly groundwater sampling/monitoring and indoor air sampling/monitoring activities. In addition, the Support Zone was and will be utilized during USEPA operable unit 1 (waterline/source control) remedial activities; therefore, demobilization of the Support Zone has not been initiated.

4.3 QUALITY ASSURANCE PROJECT PLAN AND HEALTH AND SAFETY PLAN

A Site-specific Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASP) were prepared in accordance with the USEPA 2002 RI/FS WP and other USEPA Region 2 guidance and/or procedural requirements. The QAPP and HASP are updated, if necessary, as new conditions or tasks arise during the performance of field investigation activities.

4.4 QUALITY ASSURANCE PROJECT PLAN

The QAPP describes the project objectives and organization, functional activities, and quality assurance/quality control (QA/QC) protocols used to achieve the desired Data Quality Objectives (DQOs) for the Site. The QAPP also describes UMC's field activities and protocols for the investigatory phases of the LVRR RI. The QAPP includes the following information: sampling objectives; sample custody documentation; sample naming conventions, matrices, locations, collection frequencies, and types of analysis; sampling equipment and procedures; sample handling and preservation; QA/QC protocols and criteria utilized for data validation; USEPA Contract Laboratory Program (CLP) and non-CLP laboratories; Site access/control, security, contingency procedures, management responsibilities, equipment and waste storage areas, and other Site operational plans. For reference, the QAPP is presented in Appendix E

4.5 HEALTH AND SAFETY PLAN

A Site-specific HASP was prepared to provide adequate health and safety protection for field personnel in accordance with 29 CFR 1910.120 (1)(1) and (1)(2), 40 CFR 300.150, and other applicable codes and guidelines. The HASP addresses employee training, personal protective equipment, medical surveillance, standard operating procedures, and a contingency plan. For reference, the HASP is presented in Appendix E

4.6 COMMUNITY AIR MONITORING PLAN

In accordance with New York State Department of Health (NYSDOH) requirements, a Site specific Community Air Monitoring Plan (CAMP) and dust/particulate monitoring program were prepared and implemented at the Site. The CAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates at the downwind perimeter of each designated work area while ground-intrusive activities are in progress. The CAMP's intent is to provide a measure of protection for the downwind community including Site workers from potential airborne contaminant releases. The CAMP helps to confirm that the work activities do not spread contamination off-Site through the air. The action levels established by the NYSDOH require monitoring, corrective actions to abate elevated airborne contaminants, and/or work shutdown protocols.

UMC placed air monitoring stations upwind, downwind, and within proximity of the work areas during ground-intrusive work activities. The stations recorded ambient air VOC and particulate concentrations as work progressed. The measurements were recorded on Site-dedicated field CAMP data sheets. The concentrations were compared against background readings collected during station set-up and action levels established by the NYSDOH. No alerts were noted during the course of Site work indicating that no instantaneous ambient air VOC and/or particulate action levels exceeded the NYSDOH standards. Appendix F presents the CAMP and data collected during Phase 1 investigation activities.

The following sections summarize the Site Reconnaissance, Technical Memorandum, and Phase 1 investigation activities.

4.7 SITE RECONNAISSANCE INVESTIGATION

The purpose of the Site Reconnaissance was to gather information necessary to implement Phase 1activities pursuant to Section 3.3.1 of the USEPA 2002 RI/FS WP. The objectives of the Site Reconnaissance are as follows:

- Mapping and Access Support: Prepare a base map using USGS digital map data. Compile property owner addresses to assist the USEPA with gaining access to all areas to be investigated by LVRR.
- Human Health Receptor Reconnaissance: Identify surrounding area populations, the likely ways individuals may be exposed to Site contaminants, and the locations at which exposures may occur.
- Ecological Resources Reconnaissance: Identify potential sensitive terrestrial and aquatic ecological resources. Surface water, sediment, seep, and spring sampling locations will also be identified for potential sampling during Phase 1.
- Existing Well Sampling: Obtain current synoptic groundwater quality data in existing private and monitoring wells. Sample two existing monitoring well clusters, from within the source area, to define Phase 1 sampling parameters.
- Surface Water and Groundwater Elevation Survey: Obtain current synoptic surface water and groundwater elevation data to assist in determining the optimum locations for the new monitoring wells and for surface water and sediment sampling in Phase 1.
- Surface Geophysical Survey: Develop signature of known fracture traces for use in selecting monitoring well cluster locations and fracture control of groundwater flow.
- Technical Memorandum: To guide in the selection of the final sampling locations and analysis to be performed in Phase 1.

The following subsections document Site Reconnaissance activities conducted by UMC, on behalf of LVRR, from August 2008 to February 2009. The results of the Site Reconnaissance are presented in the April 24, 2009 Technical Memorandum and supporting October 30, 2009 Addendum 2 to the USEPA 2002 RI/FS WP (Appendix B of this LVRR RI) prepared by UMC and approved by the USEPA.

4.7.1 Mapping and Site Access Support

4.7.1.1 Mapping

Prior to mobilizing for the Site Reconnaissance, a scalable base map (Figure 3) was prepared using a photogrammetric survey of the Study Area. The base map is used for reference when locating private well, monitoring well, surface water, sediment, seep, and spring sampling locations; as well as, other significant Site features.

4.7.1.2 Site Access Support

The Site Reconnaissance and Phase 1 investigation tasks required widespread access throughout the Study Area. Local tax maps and utility right-of way maps were reviewed to identify properties requiring access. To protect property owner confidentiality, lot and block numbers, addresses, and other property owner identifiers were provided to the USEPA but are not included in this report.

4.7.2 Human Health Receptor Reconnaissance

A human health receptor reconnaissance was conducted to identify populations potentially exposed to groundwater at the Site, routes by which they will be exposed, and representative locations at which the exposures may occur.

Three potential routes of exposure to TCE in groundwater have been identified: (1) pumping of groundwater containing TCE; (2) discharge to surface water of groundwater containing TCE; and (3) transfer of TCE from groundwater containing TCE to soil vapor.

The first potential route of exposure was eliminated for most of the potentially exposed population by the waterline component of the ROD selected remedy (USEPA operable unit 1 – waterline/source control). The design, construction, and implementation of the waterline component of the ROD selected remedy provides a current and future clean water supply for drinking, bathing, fire hydrants, etc., thereby eliminating human exposure to TCE impacted groundwater.

Other potentially impacted wells were identified during the comprehensive Study Area well inventory and are discussed in subsequent sections of this report.

The second exposure route was evaluated by identifying seeps/springs and potential sediment sampling locations within the Study Area where potentially TCE impacted groundwater may have discharged to surface water. In total, 29 seeps/springs and 58 sediment sampling locations were identified and mapped for further investigations during the ecological resources reconnaissance.

The third exposure route is being assessed in accordance with the LVRR Indoor Air Monitoring Program (IAMP) through the sampling and monitoring of sub-slab, indoor, and ambient air from select properties within the Study Area.

The information collected by evaluating the various potential exposure routes will support the Site Reconnaissance and Phase 1 investigation activities which are discussed in subsequent sections of this report.

4.7.3 Well Inventory

A well inventory was conducted by LVRR in August 2008 to further evaluate potential exposures to TCE from the pumping of impacted groundwater. The 2002 USEPA RI/FS WP requires the evaluation of private (domestic and production) wells, municipal wells, and existing groundwater monitoring wells within the Study Area during the Site Reconnaissance for their inclusion in the Phase 1 sampling program. The evaluation included a review of local records, discussions with well owners, and discussions with local well drillers to establish well locations and access.

4.7.3.1 Private Well Inventory

The well inventory identified a total of 123 private wells within the Study Area, 49 of these wells are abandoned, 51 of the wells could not be evaluated due to lack of property access, and 23 were sampled during the Site Reconnaissance.

The private wells are identified throughout this LVRR RI using a letter designation for the county in which the well is located (G=Genesee) followed by a number signifying the order in which the well was identified (e.g. G-02). The private wells identified during the LVRR well inventory are listed on Table 2-1 and shown on Figure 2-5 within the Technical Memorandum included in Appendix B of this LVRR RI.

4.7.3.2 Existing Groundwater Monitoring Well Inventory

The LVRR August 2008 well inventory identified the locations, conditions, and confirmed the construction detail of 58 individual NYSDEC monitoring wells in 19 locations. LVRR was granted access to all wells, with the exception well cluster DC-08, for sampling during the Phase 1 investigations. The NYSDEC monitoring wells identified during the LVRR well inventory are listed on Table 2-3 and shown on Figure 2-4 within the Technical Memorandum included in Appendix B of this LVRR RI.

4.7.4 Ecological Resources Reconnaissance

An ecological resources reconnaissance was conducted by LVRR in 2008 to further evaluate potential exposures from TCE impacted groundwater discharging to surface water. The information collected during the ecological resources reconnaissance supports the ecological setting characterization required for the ecological risk assessment. Potential surface water, sediment, spring, seep, and other relevant sampling locations were located and identified during the ecological resources reconnaissance for sampling in Phase 1.

Aerial photographs and terrain maps were reviewed to determine potential spring, seep, and sediment sampling locations. Potential locations were then field verified by inspecting the banks and nearby slopes of Mud, Oatka, and Spring Creeks. A total of 29 springs/seeps and 58 sediment potential sampling locations were identified. The Technical Memorandum proposed the sampling of 18 spring/seep and 39 sediment sampling locations. The sampling locations were presented within Addendum 2 to the USEPA 2002 RI/FS WP and subsequently approved by the USEPA. The potential spring, seep, and sediment locations identified during the LVRR ecological resources reconnaissance are listed on Table 2-2 and shown on Figures 2-2 and 2-3 within the Technical Memorandum included in Appendix B of this LVRR RI.

4.7.5 Existing Well Sampling

Existing well sampling was conducted to determine the horizontal and vertical extents of the contaminant plume and obtain a depiction of groundwater conditions at the site based upon data representing the highest contaminant concentrations detected in samples collected from monitoring wells and various private wells.

4.7.5.1 Existing Groundwater Monitoring Well Sampling

4.7.5.1.1 Groundwater Monitoring Well Sampling Methodology

During the August 2008 well inventory, 58 individual NYSDEC monitoring wells were identified. Groundwater samples were collected from 54 for the 58 NYSDEC monitoring wells between August 2008 and February 2009. Property access was denied to the four wells identified as the DC-08 well cluster on Figure 2-4 in the Technical Memorandum included within Appendix B of this LVRR RI.

The NYSDEC monitoring wells were sampled in accordance with the USEPA 2002 RI/FS WP. Based on observations and depth measurements, little to no silt was observed in all of the 54 accessible wells; therefore, the wells were determined to be suitable for sampling. The wells were purged via dedicated disposable bailer to evacuate three well volumes of groundwater. The purge waste water was contained onsite within the 3500 gallon holding tank, secured within the Support Zone, for eventual treatment and discharge. After purging, groundwater samples were collected using the same dedicated disposable bailer and transferred into laboratory supplied pre-cleaned, pre-preserved containers. The samples were placed in a cooler on ice immediately after collection. Samples were transferred under chain of custody to the USEPA approved analytical laboratory, Columbia Analytical Services (CAS), in Rochester, NY for analysis.

Immediately after groundwater samples were collected for laboratory analysis, a field parameter sample was collected via dedicated disposable bailer and analyzed, in the field, using a multi-parameter meter. The following field parameters were analyzed: pH, specific conductivity, turbidity, dissolved oxygen, temperature, hardness, and oxidation-reduction potential. The field data was recorded on Monitoring Well Sampling Data Sheets which were submitted to the USEPA on November 14, 2008 and are summarized in the Technical Memorandum in Appendix B of this LVRR RI.

4.7.5.1.2 Groundwater Monitoring Well Sampling Results

All groundwater monitoring well samples were analyzed for VOCs and Cyanide. In accordance with the USEPA 2002 RI/FS WP, NYSDEC monitoring wells in well clusters DC-01 and DC-02 in the Spill Area were sampled for the “full range” of analytical parameters; i.e., in addition to the analysis of VOCs and cyanide, DC-01 and DC-02 were sampled for Semi-Volatile Organic Compounds (SVOCs), Pesticides/Polychlorinated biphenyls (PCBs), and Target Analyte List (TAL) metals. All laboratory data was validated by Trillium, Inc., Downington, PA (Trillium). Copies of the Site Reconnaissance groundwater analytical and data validation reports were submitted to the USEPA on November 14, 2008 and are included in Appendix G of this LVRR RI.

UMC collected samples from 54 individual NYSDEC groundwater monitoring wells. The following table summarizes the sampling results:

Compound	Number of Detections	Average Conc.	Maximum Detected Conc.	Minimum Detected Conc.	Number above MCL
TCE	40	819	12000	0.3	30
cDCE	16	27	260	0.3	7
tDCE	6	3.9	10	0.25	2
VC	2	7.9	13	2.8	2
Benzene	1	0.25	0.25	0.25	0
Methylene Chloride	4	11.4	31	0.14	0
Toluene	11	0.4	1.1	0.22	0
Xylenes	1	0.21	0.21	0.21	0
Cyanide	3	0.02	0.0309	0.0198	0

VOC concentrations are in micrograms per liter (µg/l)
Cyanide is in milligrams per liter (mg/l)
ND – Not detected

The results indicated that TCE and/or TCE degradation products were detected in 40 of 53 samples collected. The highest concentrations of TCE are located in the shallow wells near the Spill Area. Concentrations of TCE and the presence of TCE degradation products generally decrease with depth and lateral distance from the Spill Area.

The Site Reconnaissance TCE concentrations were compared to historical NYSDEC TCE concentrations. The results of the comparison showed an insignificant variation of TCE concentrations within individual wells; indicating that the TCE plume was in a steady state prior to NYSDEC's last round of groundwater sampling in 1995. For reference, Table 2-9 of the Technical Memorandum (Appendix B of this LVRR RI) presents a comparison of historical NYSDEC TCE concentrations to Site Reconnaissance TCE concentrations. Figure 2-6 of the Technical Memorandum (Appendix B of this LVRR RI) illustrates the historical NYSDEC TCE plume versus the Site Reconnaissance TCE plume.

In addition to TCE and/or TCE degradation products, the following non-TCE related VOCs were detected at concentrations below MCLs and are not considered site-specific contaminants of concern: Benzene, methylene chloride, toluene; and therefore, are not subject to this report.

Finally, three wells, DC-01A, DC-05A, and DC-15A, had detectable concentrations of cyanide below MCLs. All three wells are shallow and are located near the Spill Area. The cyanide results suggest that cyanide has not significantly migrated in groundwater vertically or laterally from the locus of the spill.

4.7.5.1.2.1 DC-01 and DC-02 "Full Range" Analytical Parameters

A "full range" of analytical parameters were sampled and analyzed from two Spill Area well clusters (DC-01 and DC-02) to determine if additional compounds of concern should be included in Phase 1 of the LVRR RI.

The results indicate that TCE and/or TCE degradation products were detected in all wells within both well clusters. The non-TCE related VOCs carbon disulfide and methylene chloride were detected at estimated concentrations in one well within the clusters.

Two SVOCs were detected, butylbenzylphthalate and di-n-butylphthalate; both of these compounds are common plasticizers and their presence may be due to leaching from sampling or laboratory equipment.

Eighteen TAL metals were detected in the samples collected from DC-01 and DC-02. The highest concentrations detected were calcium, magnesium, and sodium; all major chemical constituents of the native rock at the Site. Other detected metals are also naturally occurring; their detected concentrations and distributions do not point to an anthropogenic source.

Cyanide was detected only in DC-01A at 0.0198 mg/L.

Pesticides and PCBs were not detected in any of the DC-01 and DC-02 well clusters.

Based on the "full range" sampling results from the DC-01 and DC-02 well clusters, no additional contaminants of concern were identified or recommended for sampling during Phase 1 of this LVRR RI.

4.7.5.2 Private Well Sampling

4.7.5.2.1 Private Well Sampling Methodology

In accordance with the USEPA 2002 RI/FS WP, private wells were selected for sampling during the Site Reconnaissance. The following criteria were considered when evaluating the private wells for sampling:

- Spatial distribution of the wells with respect to the plume identified by NYSDEC;
- Contaminant concentrations;
- Groundwater flow direction;
- Presence of pumping wells.

The USEPA 2002 RI/FS WP identified 29 private wells meeting the above-referenced criteria; however, after contacting the property owners and conducting field inspections of the wells it was determined that 24 of the 29 private wells selected in the USEPA 2002 RI/FS WP were abandoned coincident with the NYSDEC waterline expansion ROD selected remedy. Therefore, access was sought for other private wells meeting the above-referenced criteria. Private wells meeting the above-referenced criteria were identified in the Site Reconnaissance Well Inventory. A total of 23 wells were selected for groundwater sampling and analysis during the Site Reconnaissance. The private well locations sampled during the Site Reconnaissance are illustrated on Figure 2-5 of the Technical Memorandum in Appendix B of this LVRR RI.

Prior to collecting a groundwater sample from the private wells, the wells were evaluated to determine if they had operable pumps and/or treatment systems. If a well had a pump, then a non-treated spigot, was used to purge and sample groundwater. Groundwater was purged from the non-treated spigots for approximately 15 minutes prior to sample collection. Wells which did not have an operable pump were sampled with either a submersible pump with dedicated tubing or with dedicated disposable bailers.

After purging, groundwater samples were collected and transferred into laboratory supplied pre-cleaned, pre-preserved containers. The samples were placed in a cooler on ice immediately after collection. Samples were transferred under chain of custody to the USEPA approved analytical laboratory, Columbia Analytical Services (CAS), in Rochester, NY for analysis.

The field data was recorded on Domestic Well Sampling Data Sheets which were submitted to the USEPA on November 14, 2009 and are summarized within the Technical Memorandum in Appendix B of this LVRR RI.

4.7.5.2.2 Private Well Results

In accordance with the USEPA 2002 RI/FS WP, all private well groundwater samples were analyzed for VOCs and Cyanide. All laboratory data was validated by Trillium. Copies of the analytical and data validation reports were submitted to the USEPA on November 14, 2008 and are included in Appendix G of this LVRR RI.

The results indicate that TCE and/or TCE degradation products were detected in the following private wells:

- Detectable concentrations of TCE were reported in the samples collected from L-14 (70 µg/l) and L-33B (22 µg/l). L-14 is a well located near the race track on Flint Hill Road used to wet the dirt race track; the water is not used for drinking. L-33B is located on Spring Street and is used for irrigation. Both properties are connected to the public water supply.
- An estimated concentration of VC (0.44 µg/l) was present in the sample collected from M-20. M-20 is located on the museum property east of the main parking lots.

In addition to TCE and/or TCE degradation products, the following non-TCE related VOCs were detected at concentrations below MCLs and are not considered site-specific contaminants of concern: acetone, bromoform , ethylbenzene, xylenes, and toluene. Toluene was detected above its MCL in M-20 at a concentration of 3.4 µg/l; however toluene is not considered a site-specific contaminant of concern.

Cyanide was not detected in any of the private well samples.

4.7.6 Surface and Groundwater Elevation Survey

In accordance with the USEPA 2002 RI/FS WP, a surface water elevation survey was conducted in conjunction with a groundwater elevation survey to determine the groundwater and surface water relationships in the Study Area and to establish whether a groundwater divide exists below Spring Creek. This information along with well sampling east of Spring Creek will assist in determining whether or not groundwater contamination has migrated past Spring Creek.

4.7.6.1 Surface Water Elevation Survey

The surface water elevation survey included the vertical and horizontal locations of surface water, sediment, spring, seep and other relevant locations identified during the Ecological Resources Reconnaissance.

4.7.6.1.1 Surface Water Elevation Survey Methodology

To obtain surface water elevation measurements, staff gauges were mounted in five gallon buckets filled with concrete and placed in low energy portions of select waterways. Whenever possible, the buckets were secured by partial burial into the streambeds. Staff gauges identified as SG-01 through SG-09 were placed in the surface waters between August 2008 and February 2009. The locations of the nine staff gauges are shown on Figure 2-7 of the Technical Memorandum (Appendix B of this LVRR RI).

On February 25, 2009, Clough Harbor & Associates of Rochester, NY (CHA) was contracted to survey the staff gauges and monitoring wells. Staff gauge data was collected at the same time as their position and elevation were surveyed by CHA. Field observations at the time documented that the staff gauges, which were placed in or near streambeds, were found to have moved or were completely missing. A visible strand line (high water mark) ten feet or more was observed above the surface of Oatka Creek.

4.7.6.2 Existing Groundwater Monitoring Well Elevation Survey

In accordance with the USEPA 2002 RI/FS WP, a groundwater elevation survey was conducted which consisted of recording groundwater elevation measurements from all assessable NYSDEC monitoring wells in the same one-day period as the surface water elevation measurements. The data from both surveys was evaluated to determine groundwater discharge locations and assist in selecting Phase 1 sampling locations.

4.7.6.2.1 Existing Groundwater Monitoring Well Elevation Survey Methodology

On February 25, 2009, all NYSDEC monitoring wells (except the DC-08 cluster) were gauged for depth to groundwater using an electronic oil/water interface probe on the same day the staff gauges were surveyed. All measurements were recorded from a surveyed point on the top of the well casing or from the top of the steel standpipe for open borehole wells. The depth to groundwater reading was then subtracted from the well casing elevations to calculate groundwater elevations.

4.7.6.2.2 Surface Water and Existing Groundwater Monitoring Well Elevation Survey Results

On February 25, 2009, depth to water measurements were obtained from the NYSDEC wells on the same day as surface water locations were surveyed so that a synoptic round of groundwater and surface water elevations were obtained. Figure 2-7 of the Technical Memorandum (Appendix B of this LVRR RI) depicts the surface water and groundwater elevations measured on February 25, 2009.

4.7.7 Surface Geophysical Survey Reconnaissance

Pursuant to the USEPA 2002 RI/FS WP, a Very Low Frequency (VLF) electromagnetic survey was conducted to identify and evaluate possible subsurface pathways of contaminant transport and assist in the selection of additional monitoring well locations and screening depths. The survey was conducted to the east and southeast of the Spill Area where post-glacial vertical fractures were observed during a Foster Wheeler site visit on November 14, 2000.

As referenced in the USEPA 2002 RI/FS WP, following deglaciation, regional isostatic rebound resulted in the formation of east-west trending vertical fractures. Therefore, VLF survey lines were conducted across the narrow portion of the plume that appears to be structurally controlled. The results of the VLF survey lines across the narrow portion of the plume were compared to the results from the observed unloading feature. Similar results verify that vertical fracturing is controlling the plume dimensions (narrow and constricted) for the first two miles down gradient of the Spill Area. The results will also be used to finalize the location for a well cluster located in a vertical fractured area.

Two additional east-west VLF lines, located north of the plume across Mud Creek and Gorge Pond, were conducted to determine if these two gorge areas exist due to fracture orientation in these areas parallel to the Creek. Foster Wheeler observed that Mud Creek may represent a fracture lineament which runs from the Spill Area; therefore, there is potential for Mud Creek to be affected by the plume emanating from the Site.

Finally, a north-south VLF survey line conducted along Spring Street near the east edge of the plume was surveyed to identify if fractures are controlling the spring/seep discharges to Spring Creek.

4.7.7.1 Very Low Frequency Electromagnetic Survey

LVRR contracted Hager-Richter Geosciences, Inc. (HRG) to perform a Very-Low Frequency (VLF) Electromagnetic survey from August 26 to 28, 2008 to identify any potential fractures or zones of high conductance through which groundwater may migrate. During the survey, a UMC technician accompanied HRG personnel and located the survey transects using global positioning system (GPS). HRG conducted ten VLF transects (VLF-1, VLF-2, VLF-3, VLF-4, VLF-5, VLF-6, VLF-7, VLF-8, VLF-8a, and VLF-9) within the Study Area along the transect lines specified above in the USEPA 2002 RI/FS WP.

HRG surmised that the VLF survey was inconclusive and of limited value; specifically:

- "No VLF anomaly is associated with the "unloading feature observed by others" and located west of McIntyre Road and south of Route 5. Although the "others" are not directly quoted, the NYSDEC states that some of the joints and fractures were due to stress release associated with glacial rebound (Reference 1).
- The survey detected a possible conductive zone interpreted as a possible fracture zone extending across VLF lines 1 through 4 and possibly line 5. This interpretation may be strengthened by anomalies on previous VLF line 3.
- Several anomalies on isolated VLF lines are indicative of possible conductive zones that may be fracture zones, but the extent and orientation cannot be determined on the basis of the present data set."

The HRG report is included presented in the Technical Memorandum (Appendix B of this LVRR RI). Figure 2-8 of the Technical Memorandum (Appendix B of this LVRR RI) illustrates the locations of the VLF transects.

4.8 TECHNICAL MEMORANDUM AND ADDENDUM 2

In accordance with the USEPA 2002 RI/FS WP, Section 3.3.1.8, a Technical Memorandum was prepared to present the field and analytical data obtained during the Site Reconnaissance. The Technical Memorandum includes:

- Rationale for new monitoring well cluster locations, depth, and construction details;
- Private and municipal wells to be sampled;
- Spring and Seep locations and recommended sampling program
- Surface water and sediment sampling locations; and,
- Groundwater monitoring program (i.e. wells to be sampled, frequency of sampling, and analytical parameters)
- Proposed Phase 1 analyses to be performed (type, media, and number)

The following subsections summarize the April 2009 LVRR Technical Memorandum submitted to the EPA in response to the Site Reconnaissance conducted between August 2008 and February 2009, and the October 2009 Addendum 2 submitted to amend the USEPA 2002 RI/FS WP, respectively.

4.8.1 April 2009 LVRR TECHNICAL MEMORANDUM

The Technical Memorandum addresses the findings of the Site Reconnaissance performed between August 2008 and February 2009. As described in the Technical Memorandum, the following objectives were accomplished and/or reported as a result of the Site Reconnaissance:

- A photogrammetric survey was performed and incorporated into a geographic information system (GIS) to create a scalable base map for the site (USEPA 2002 RI/FS WP Section 3.3.1.1 mapping requirements).
- A Human Health Inventory identified three (3) exposure routes to TCE-contaminated groundwater: 1) pumping of groundwater containing TCE; 2) discharge to surface water of groundwater containing TCE; and, 3) transfer of TCE from groundwater to soil vapor. The first exposure route was considered addressed for most of the exposed population due to the water line expansion ROD selected remedy.
- An inventory of non-monitoring private wells was performed (see Table 2-1 of the Technical Memorandum provided in Appendix B of the LVRR RI).
- Potential spring, seep, and sediment sampling locations were identified and GPS'd (see Table 2-2, Figure 2-2, and Figure 2-3 of the Technical Memorandum provided in Appendix B of the LVRR RI for the sampling locations).
- Fifty-four (54) of the fifty-eight (58) NYSDEC installed monitoring wells were assessed for condition, GPS'd, and sampled (access to the four wells within the DC-08 cluster was not granted by the property owner). All of the wells were sampled for VOCs and Cyanide. Wells in two (2) clusters, DC-01 and DC-02, were additionally sampled for the "full range" of analytical parameters (SVOCs, Pesticides/PCBs, and TAL metals). The analytical results were validated by Trillium and summarized in Tables 2-6 through 2-9 of the Technical Memorandum provided in Appendix B of the LVRR RI.

- UMC updated the private/domestic well survey for the study area. Per the USEPA 2002 RI/FS WP, 24 of the 29 wells to be sampled were confirmed as abandoned due to the water line extension ROD selected remedy. Eighteen additional wells were confirmed outside of the recon area as potential sampling points (see Table 2-2 of Technical Memorandum provided in Appendix B of this LVRR RI). UMC sampled a total of 23 available private wells during the recon.
- Staff gauges were installed in several waterways within the study area. A synoptic round of staff gauge data and groundwater elevation data were simultaneously collected on February 25, 2009 and depicted on Figure 2-7 of the Technical Memorandum provided in Appendix B of this LVRR RI.
- A very low frequency (VLF) electromagnetic survey was conducted to identify any potential fractures or zones of high conductance through which groundwater may migrate (see Table 2-8 of Technical Memorandum provided in Appendix B of this LVRR RI). The survey was inconclusive.

Based on the Site Reconnaissance findings, the Technical Memorandum recommended the installation of an additional thirteen (13) monitoring wells. The Flexible Liner Underground Technology (FLUTe) NAPL ribbon sampler would be deployed at selected locations to determine the presence of NAPL. Down-hole geophysics would be conducted in each borehole under pumping and non-pumping conditions. Packer testing would be conducted on select zones in each borehole and samples would be analyzed via an on-site laboratory for TCE analysis. Continuous hydraulic conductivity profiling would be performed and FLUTe multi-level samplers would be installed in each borehole.

A pumping test at a well within a newly installed well cluster was recommended in the Hydrogeological Assessment Task of the USEPA 2002 RI/FS WP. The Technical Memorandum recommended that an additional boring be installed in this cluster, down-hole geophysics and continuous conductivity profiling be performed in all of the wells within the cluster, and FLUTe multilevel samplers be installed in the additional boring.

The Technical Memorandum proposed that all new monitoring wells be sampled via FLUTe sampling procedures and all existing wells be sampled via passive diffusive bag (PDB) samplers. Seventeen (17) spring/seep locations and thirty-four (34) sediment sampling locations, as indicated on Tables 3-3 and 3-4 of the Technical Memorandum (see Appendix B of this LVRR RI), respectively, would be sampled during the Phase I implementation of the USEPA 2002 RI/FS WP.

4.8.2 October 2009 Addendum 2

Based on the recommendations of the Technical Memorandum, the October 2009 Addendum 2 captured the following amendments to the USEPA 2002 RI/FS WP:

- Seventeen (17) monitoring wells would be installed *(*amending Section 3.3.3, Subtask 3.0.3 of the USEPA 2002 RI/FS WP*)*
- Design of the Aquifer Pump Test (USEPA 2002 RI/FS WP Section 3.3.3 Hydrogeological Assessment (Subtask 3.0.3); Section 3.3.4 Monitoring Well Drilling and Testing (Subtask 3.0.4); and, Section 3.3.4.4 Aquifer Testing (Subtask 3.04.04) would be

postponed until disposition of the NAPL and potential for remobilization was better understood.

- Monitoring wells would be installed as follows (amending Section 3.3.4 Monitoring Well Drilling and Testing (Subtask 3.0.4) and Section 3.3.4.1 Down-hole Geophysics and Packer Testing (Subtask 3.04.01 of the USEPA 2002 RI/FS WP):
    - A six inch diameter core would be advanced by air rotary methods at each drilling location to depths indicated on Table 1 of Addendum 2 (provided in Appendix B of this LVRR RI).
    - A FLUTe Liner NAPL Ribbon sampler would be deployed to determine presence of NAPL at select locations (LVRR-19, 20, 28, 29 and 30);
    - Down-hole geophysics (optical televiewer, acoustic televiewer, deviation, caliper, temperature, gamma, spontaneous potential, fluid resistivity, and bore-hole flow meter measurement under ambient and pumping conditions) would be conducted in each borehole;
    - Packer testing would be conducted and groundwater samples collected for on-site laboratory analysis of TCE on select zones in each bore hole;
    - Continuous hydraulic conductivity profiling using FLUTe Liner technology would be performed in each bore hole; and
    - A FLUTe System multi-zone sampling system would be installed in each bore hole.
- Newly installed wells would be sampled via the FLUTe methodology and existing wells would be sampled via PDB samplers. This amended Section 3.3.5.1 Monitoring Well Groundwater Sampling (Subtask 3.05.01) of the USEPA 2002 RI/FS WP.
- Spring/seep and sediment samples were to be collected as indicated at locations presented on Tables 2 and 3 and corresponding figures of the October 2009 Addendum 2 submission (see Appendix B of this LVRR RI).

4.9 PHASE 1 - REMEDIAL INVESTIGATION ACTIVITIES

Upon USEPA approval of the Technical Memorandum and Addendum 2 to the USEPA 2002 RI/FS WP, Phase 1 field investigation activities were initiated. Phase 1 activities included: installation of monitoring well clusters; sampling of existing and new wells; sampling of surface water, sediment, seeps, and springs; four seasonal rounds of groundwater sampling (plus an additional seven rounds), and one storm event groundwater sampling event (plus one additional storm event sampling to account for cyanide) targeted at a small subset of wells at the source area to evaluate the effects of seasonal variations and precipitation on groundwater quality.

4.9.1 Hydrogeologic Assessment

Pursuant to the USEPA 2002 RI/FS WP, a hydrogeologic assessment of the Sites groundwater system was conducted. The purpose of the hydrogeologic assessment is to:

- Sufficiently characterize the groundwater system and contaminant migration pathways to develop remedial alternatives for migration of Site impacts and evaluate risks to human health and the environment.
- Delineate the down gradient extent of the groundwater contamination in the area of Caledonia; and,
- Determine the ultimate discharge area for the groundwater contaminant plume.

The mechanism of contaminant transport (movement along bedding planes or vertical fractures, fractures systems or preferred fracture pathway, etc.) was evaluated to provide the basis for an effective remedial program and assessment of risk.

As summarized in the USEPA 2002 RI/FS WP, the NYSDEC RI/FS investigation included delineation of the contaminated groundwater plume based on groundwater quality data obtained from the sampling of a combination of private wells and monitoring wells. The NYSDEC installed 58 monitoring wells in 19 clusters within the NYSDEC plume, during the NYSDEC RI/FS (1993 – 1997). The NYSDEC wells provide limited vertical control to determine the depth and preferred pathways of contaminant transport. The domestic wells are typically open-hole bedrock wells and provide little information concerning depth or thickness of the contaminant plume.

To better understand the occurrence (horizontal and vertical) and movement of contaminants in the subsurface, the LVRR hydrogeologic assessment included the installation of monitoring well clusters, designated as LVRR-18 through LVRR-42, in areas where data gaps exist. The wells were screened in distinct water bearing zones to evaluate preferred groundwater pathways. LVRR monitoring well locations and rationale for each cluster location is discussed in the following sections.

4.9.1.1 Rationale for Test Boring and Monitoring Well Installation Locations

The monitoring well cluster locations were selected based upon data gaps identified in the conclusions of the NYSDEC RI/FS report. All of the monitoring wells installed by the NYSDEC are located within the NYSDEC defined plume; therefore, horizontal delineation of the plume was required in all directions.

In addition, the NYSDEC plume delineation was based upon both private well and monitoring well sampling. The private wells are not valid groundwater monitoring points due to their open borehole construction (many of unknown depth) and therefore, the private wells cannot be used to vertically delineate the groundwater plume.

In accordance with the USEPA 2002 RI/FS WP, LVRR installed monitoring well clusters up gradient, side gradient, and down gradient of the Spill Area. The rationale for selecting each LVRR well location is provided in Table 1 of Addendum 2 to the USEPA 2002 RI/FS WP (Appendix B of this LVRR RI). A depiction of the LVRR monitoring well locations is presented as Figure 1 of Addendum 2 to the USEPA 2002 RI/FS WP (Appendix B of this LVRR RI).

The following sections detail the LVRR monitoring well installations, testing methods, and procedures.

4.9.1.2 Bedrock Test Boring and Monitoring Well Installations

Bedrock test borings and monitoring well installations were conducted consistent with Section 3.3.4 of the USEPA 2002 RI/FS WP and Addendums 2, 3, 4, 5 and 6 to the USEPA 2002 RI/FS WP (Appendix B of this LVRR RI).

Addendum 2 to the USEPA 2002 RI/FS WP identified LVRR monitoring well locations and the rationale for each wells location; revised the monitoring well installation and construction details; and modified monitoring well sampling methodology. Specifically, Addendum 2 allowed for the installation of multi-level groundwater sampling systems manufactured by FLUTe located in Velarde, NM. The FLUTe technology consists of two major parts including a temporary liner installed after the test borings are completed to limit vertical cross contamination of the boring, and a permanent multi-level liner installed after the sampling zones were selected. The FLUTe technology includes the ability to conduct down-hole testing in open boreholes including an assessment of the bedrock for the occurrence of NAPL and the profiling of bedrock hydraulic parameters.

Addendum 3 to the USEPA 2002 RI/FS WP allowed for the installation of conventional monitoring well clusters at some locations, due to observed weathered and karstic conditions in some of the test borings, resulting in borehole collapse and difficulties with FLUTe system installations.

Prior to the monitoring well installations, down-hole testing was conducted in the stratigraphically deepest boring at each location including: FLUTe NAPL testing, FLUTe profiling of bedrock hydraulic parameters, geophysical testing, and packer testing. In addition to these tests, rock coring and core testing was conducted at three locations. Addendum 4 to the USEPA 2002 RI/FS WP revises the test boring intervals selected for packer testing at each location.

Addendum 5 to the USEPA 2002 RI/FS WP allowed for the installation of one conventional monitoring well cluster north of the Spill Area on Neid Road and five clusters at the distal end of the TCE plume east of Spring Creek. No down-hole testing was conducted in these test borings prior to monitoring well installations.

Addendum 6 to the USEPA 2002 RI/FS WP includes the collection of a groundwater sample from LVRR-38C and a sample from a private well. Addendum 6 is discussed in subsequent sections of this LVRR RI.

Figure 7 of this LVRR RI depicts LVRR monitoring well locations and identifies wells installed as FLUTe systems and those installed as conventional monitoring well clusters. Table 1 of this LVRR RI summarizes monitoring well construction and elevation details, total boring depths, and sampling intervals. Monitoring well installation procedures are summarized in subsequent sections of this report. Section 6 includes a discussion of bedrock test boring and down-hole test findings. A discussion of bedrock test boring and down-hole testing procedures follows.

4.9.1.2.1 Bedrock Test Boring Installations and Testing

As referenced in the USEPA 2002 RI/FS WP, rock cores were obtained from bedrock test borings during the NYSDEC RI/FS to establish stratigraphy and correlate bedrock units between well clusters. The formation descriptions and fossil assemblages identified in the NYSDEC RI/FS and available regional publications were used to correlate the geologic units and determine the depth of each geologic formation present at each LVRR well cluster location.

4.9.1.2.1.1 Rock Coring

Nothnagle Drilling, Inc. (Nothnagle), located in Scottsville, NY was contracted by UMC on behalf of LVRR to perform bedrock coring at locations LVRR-33E, LVRR-35, and LVRR-36 between June 7 and June 17, 2010 as depicted on Figure 7. Consistent with the USEPA 2002 RI/FS WP and objectives of the hydrogeologic assessment, the rock coring was conducted to assist in targeting monitoring well depths to specific stratigraphic intervals. A UMC geologist observed and logged the rock coring activities conducted by Nothnagle. A discussion of rock coring procedures follows.

4.9.1.2.1.1.1 Rock Coring Procedures

Prior to the commencement of coring, Nothnagle advanced eight inch diameter open boreholes to competent bedrock at each location using hollow-stem augers. Competent bedrock was observed in borings LVRR-33E, LVRR-35, and LVRR-36 at depths of approximately 11, 10, and, 12 feet below the ground surface (bgs), respectively. Above these depths, the bedrock was weathered and not competent. Nothnagle then set eight inch diameter steel casing in concrete in the boreholes and the concrete was allowed to cure at least 24 hours prior to the beginning of coring.

Nothnagle then installed three inch diameter steel casing inside the eight inch casing to stabilize the drill rod and coring tool. Nothnagle conducted the bedrock coring using an HQ-size core barrel, generating approximately five foot long rock core intervals with 2.5 inch diameters.

Nothnagle conducted the bedrock coring at locations LVRR-33, and LVRR-35 to depths of approximately 170 feet and 180.5 feet bgs, respectively, to assess bedrock in those areas within and below the vadose zone. These depths correspond to the approximate bottom of the Study Area, at the base of the Camillus Formation and top of the underlying Syracuse Formation.

Following coring, Nothnagle over-drilled the borings to a diameter of approximately six inches using an air-rotary hammer to accommodate subsequent down-hole testing and monitoring well installations. Once down-hole testing as described below was completed, a FLUTe-style monitoring well system was installed in test boring LVRR-35. A conventional monitoring well was eventually installed in boring LVRR-33 and four additional borings were conducted proximate to LVRR-33 screened at stratigraphically higher intervals.

Nothnagle conducted the bedrock coring at location LVRR-36 to the approximate water table, corresponding to a depth of approximately 65 feet bgs, to assess bedrock in the Spill Area within the vadose zone. Following subsequent over-drilling and down-hole testing, Nothnagle abandoned boring LVRR-36 by grouting the boring to the ground surface using concrete/bentonite slurry.

As coring progressed, the coring rate in feet per hour (ft/hr) and the recovered core length in inches for each five foot core run were recorded. The total core recovery and rock quality designation (RQD) were measured as percentages for each five foot core run and recorded. In total, Nothnagle conducted approximately 381 feet of rock coring. Due to weathered and karstic conditions observed in some intervals resulting in little or no recovery, a total of approximately 294 feet of rock core was recovered. Appendix H contains copies of LVRR monitoring well boring logs which include rock coring observations. The rock coring observations are discussed further in Section 6 of this LVRR RI.

As rock coring and subsequent over-drilling progressed, Nothnagle collected rock cuttings, and formation water in containment areas constructed around each borehole casing. Nothnagle constructed the containment areas with dimensioned lumber lined with plastic sheeting. All down-hole drilling equipment including rods, augers, coring tools and hammers were decontaminated following the completion of each boring using a steam cleaner and the resultant water was collected in the containment area. Nothnagle transferred the rock cuttings from the containment area at each location into 55 gallon drums, and the formation and decontamination water was transferred into a truck-mounted holding tank at the completion of drilling, or as necessary at each boring location. The drums were then properly labeled and transported to the secure Support Zone. The water was transferred from the truck-mounted holding tank to the holding tank within the Support Zone. The investigation derived waste was subsequently characterized and disposed of off-Site consistent with section 3.3.7 of the USEPA 2002 RI/FS WP. Investigation derived waste characterization and disposal is discussed in subsequent sections of this LVRR RI.

4.9.1.2.1.1.2 Rock Coring Analysis Procedures

As rock coring progressed, rock core samples were collected by the USEPA-approved subcontractor Stone Environmental, Inc. (Stone), located in Montpelier, VT. Stone collected and prepared the rock core samples for rock matrix and pore water VOC concentration analyses, as well as, select physical property analyses. Appendix I contains an electronic copy of Stone's report detailing rock core sampling procedures, laboratory procedures, and analytical results. Section 6 of this LVRR RI includes a summary of Stone's rock core sample findings. A summary of rock core sampling and analysis procedures conducted by Stone follows.

Immediately following retrieval of each core run, Stone transferred the core to a PVC tray lined with aluminum foil. Stone then selected core sample intervals for each run based on fracture distributions and lithology. Samples approximately 0.1 feet thick were broken from both the fracture surfaces and from the intervening unfractured rock using a hammer and chisel. Stone wrapped the samples in aluminum foil and placed them in sealed plastic bags. Stone collected 323 rock samples from the recovered core for rock matrix and pore water VOC analyses, resulting in an average spacing of approximately 1.2 samples per linear foot of coring. Following sampling, Stone recorded the sample depth interval, lithologic, grain size, and other relevant information and observations into an electronic field database.

Stone then transferred the rock core samples to their mobile processing area located in an enclosed trailer near the drill rig. There the samples were unwrapped and individually placed in a stainless steel trimming cell where the outer portion of the sample that had been exposed to the coring tool was removed with a hammer and chisel. The remaining sample was then placed in a stainless steel cell and crushed under a pressure of approximately 6,000 pounds per square inch (psi) using a hydraulic press. The crushed sample was then transferred to a pre-labeled 40 milliliter (mL) VOA vial containing 15 mL of purge-and-trap grade methanol. Stone wrapped the VOA vials and screw caps with Teflon tape, wrapped the vials individually with bubble wrap and placed them in sealed plastic bags. Samples were kept in coolers on ice and transported under chain-of-custody to the Stone laboratory in Montpelier, VT. At the laboratory, the samples were stored in a temperature-verified freezer until being extracted and analyzed for VOCs.

In addition to samples collected for VOC analyses, Stone collected twenty intact core samples, ranging in length from approximately 0.4 feet to 0.6 feet for select physical properties analyses including porosity, bulk density, percent moisture, and total organic carbon (TOC). Samples collected for physical property analyses were not collected until after the collection of samples for VOC analyses were completed for a given run. Samples collected by Stone for physical properties analyses were wrapped first with saran wrap and then aluminum foil, and then sealed in plastic bags with a vacuum sealer to limit moisture loss. Each sample was then individually bubble wrapped and shipped on ice under chain-of-custody to Golder Associates in Mississauga, Ontario, Canada for the physical properties analyses.

Stone prepared and analyzed seventeen field duplicate samples by using left over portions of selected field samples. Fifteen methanol blanks were collected from the one liter bottles of purge-and-trap grade methanol used to prepare 40 mL VOA vials to assess possible contamination in the methanol used to preserve and extract samples. In addition, Stone decontaminated the trimming cells, crushing cells, chisels, and all other equipment associated with sample processing between each sample preparation and prepared equipment blank samples to assess the effectiveness of the decontamination process. The equipment blank samples were collected at the beginning of each day and at a minimum rate of one for every 20 samples collected. To collect equipment blank samples, Kim-wipes were placed in previously prepared VOA vials containing 15 mL of purge-and-trap grade methanol, removed from the vials and then used to wipe the inside of the decontaminated crushing cells and other equipment that had come in contact with samples. The Kim-wipes were then placed back into the vials they were removed from and analyzed for VOCs.

Stone conducted the rock core sample analyses between June 14, 2010 and July 23, 2010 at the Stone laboratory in Montpelier, Vermont. Microwave assisted extraction (MAE) was used for VOC mass extraction into the methanol. The methanol extracts were analyzed for seven target VOCs including 1,1,1 trichloroethane (1,1,1-TCA), 1,1- dichlorothene (1,1 -DCE), 1,1-dichloroethane (1,1-DCA), cDCE), tetrachloroethene (PCE), tDCE, and TCE. Although some of these compounds are not related to the LVRR derailment, they are included in the analytical method and were therefore reported by Stone. Methanol-preserved rock core samples were analyzed by Stone consistent with Stone's standard operating procedure (SOP) SEI-10.18.0, titled, "The Determination of Volatile Organic Compounds By Gas Chromatography / Dual ECD Detectors in Rock Samples (Using Cool On Column Injection and Split Method Injection)" for chlorinated VOCs identified as 6520RockA and 6520RockB or GC/ECD RockA or GC/ECD RockB. Although this method is not provided under the National Environmental Laboratory Accreditation Conference (NELAC) fields of testing, the analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the standards for standard methods as applicable.

Following the rock core sample analysis, Stone estimated matrix pore water concentrations for each VOC analyte based on the bulk rock VOC concentrations and physical property analytical results including wet rock bulk density, dry rock bulk density, matrix porosity, and the soil-water partitioning coefficient. The estimate assumes the matrix porosity is 100 percent saturated with water and that the VOC mass occurs in only the dissolved and sorbed phases. Pore water concentrations approaching or exceeding aqueous solubility limits for a given analyte may indicate the presence of NAPL.

On June 15, 2010, the USEPA-approved third party data validator Trillium conducted a field quality control audit focusing on the rock core sample collection and preparation procedures. On June 17, 2010, Trillium also performed a quality control audit of Stone's Montpelier, VT laboratory. The results of the field audit are included in Appendix I of this LVRR RI. Section 4.5 provides a discussion of rock core sample data validation performed by Trillium.

Table 3 in the attached Stone report summarizes the results for rock core samples collected for physical property analyses. Table 4 in the Stone report summarizes bulk rock VOC concentrations observed in rock core samples expressed in micrograms per kilogram (µg/kg). Table 5 in the Stone report summarizes the rock matrix pore water concentrations estimated by Stone for each VOC analyte expressed in microgram per liter (µg/l). Section 6 of this LVRR RI summarizes the rock core sample analytical results provided by Stone.

Following rock core sampling conducted by Stone, the rock cores were placed in driller-supplied five foot long core boxes partitioned into six sections with a total core capacity of approximately 30 feet, separating each core run with wooden blocks labeled with the run interval. The outside of the boxes were labeled with the borehole designation and overall core interval. The rock core boxes were stored within the secure Support Zone.

4.9.1.2.1.2 Additional Bedrock Test Borings

4.9.1.2.1.2.1 Additional Bedrock Test Boring Procedures

In total, 44 bedrock test borings were conducted as part of the LVRR Phase I activities and down-hole testing was conducted in select borings. Twelve of the borings were completed as FLUTe-style monitoring wells. The remaining borings were conducted in 11 clusters and completed as conventional monitoring wells. The clusters consist of between one and five monitoring wells screened at various depths based on down-hole test data and/or other considerations such as an analysis of the elevation of targeted stratigraphic intervals.

All of the test borings were advanced by Nothnagle pursuant to the USEPA 2002 RI/FS WP, Addendum 2 to the USEPA 2002 RI/FS WP, and the following procedures:

- Eight inch diameter open boreholes were advanced to competent bedrock at each location using hollow-stem augers.
- Eight inch diameter steel casing was set in concrete in the boreholes and allowed to cure at least 24 hours.
- Borings were advanced to target depths using six inch diameter air-rotary hammer techniques.
- Investigation derived waste was captured in containment areas constructed at each boring location and transported to a secure area on the Site for subsequent characterization and disposal consistent with section 3.3.7 of the USEPA 2002 RI/FS WP.

A UMC geologist logged the bedrock test borings conducted by Nothnagle. Appendix H contains boring logs prepared by UMC depicting test boring observations and monitoring well installation details.

As discussed above, difficulties that arose attempting the completion of test borings and FLUTe system installations at some locations necessitated the development and implementation of Addendum 3 to the USEPA 2002 RI/FS WP, allowing for the installation of conventional monitoring well clusters. These same difficulties necessitated the single boring conducted at location LVRR-23 and the three borings conducted at location LVRR 24 to be advanced to their target depths using hollow-stem augers followed by conventional monitoring well installations inside the augers. Conventional monitoring wells were finished at the ground surface using standup casings or flush-mounted road boxes set in concrete. Test boring and monitoring well installation difficulties that arose at these and other locations are discussed further in subsequent sections of this LVRR RI.

4.9.1.2.1.3 FLUTe NAPL Testing and Profiling

Addendum 2 to the USEPA 2002 RI/FS WP requires that FLUTe profiling be conducted in the bedrock test borings during the LVRR Phase I activities, and that FLUTe NAPL testing be conducted in select borings. FLUTe profiling was conducted to assess aquifer hydraulic parameters prior to additional testing and final FLUTe multi-zone sampling system installations. FLUTe profiling findings are summarized in Section 6. The objective of FLUTe NAPL testing is to identify fracture zones or other openings in the borehole bedrock that contain NAPL. In addition to FLUTe NAPL testing, UMC employed an oil/water interface probe in the monitoring wells in the Spill Area to assess the presence of light non-aqueous phase liquid (LNAPL) on the groundwater surface and dense non-aqueous phase liquid (DNAPL) at the bottom of the monitoring wells. The probe was lowered into the monitoring well until either a solid tone or a beeping tone was heard. The solid tone indicates the presence of water and the beeping tone indicates the presence of LNAPL. The probe was then lowered to the bottom of the well to assess for the presence of DNAPL. Interface probe findings are discussed in Section 6. A summary of FLUTe NAPL testing procedures follows.

4.9.1.2.1.3.1 FLUTe NAPL Testing Procedures

FLUTe NAPL testing was conducted in boreholes LVRR-20, LVRR-28, LVRR-29, LVRR-30 and LVRR-35 by FLUTe personnel with UMC oversight. The testing was conducted after the completion of the borings to their target depths by Nothnagle.

FLUTe NAPL testing generally consists of lowering a temporary blank liner supplied by FLUTe into an open borehole. The blank liner has no tubing, sampling ports or other attachments. The liners are constructed of flexible, polyurethane coated nylon fabric. Liners used for NAPL testing are covered with a NAPL-reactive coating. The NAPL, if present, produces a color reaction on the liner coating, allowing the NAPL thickness and depth to be estimated following liner retrieval.

FLUte added approximately five to ten gallons of water into the NAPL liners and slowly lowered the liners into the boreholes until the static water level in the borings was reached. FLUTe then slowly added more water to the liners, allowing the liners to sink slowly through the water column until they reached the bottom of the boreholes. FLUTe controlled the rate of decent of the liners with tether lines attached to the closed bottom of the liners. FLUTe then continued adding water to the liners until the water level in the liners was approximately five to ten feet higher than the static groundwater level in the borings. The resultant hydraulic pressure caused the liners to fully expand, pressing the NAPL-reactive coating on the liners firmly against the borehole walls.

FLUTe left the liners in place in the boreholes for a minimum of one hour to allow full absorption of any NAPL present with the reactive coating. FLUTe then recovered the liners by slowly pumping water from the liners while simultaneously pulling upward on the tether lines. This process caused the liners to be inverted as they were retrieved, so that the NAPL-reactive coating only came in contact with the boring wall it was originally pressed against.

FLUTe then rolled the retrieved liners out on plastic sheeting on the ground surface, peeled back the liner cover exposing the NAPL-reactive coating, and assessed the coating for staining. FLUTe NAPL testing findings are discussed in Section 6 of this LVRR RI.

4.9.1.2.1.3.2 FLUTe Profiling Procedures

FLUTe profiling was conducted in the stratigraphically deepest test borings at locations LVRR-18, LVRR-20, LVRR-21, LVRR-26 through LVRR-32, LVRR-34, and LVRR-35 by FLUTe personnel with UMC oversight.

FLUTe profiling allows for assessment of the hydraulic conductivity and transmissivity of the entire bedrock section exposed in the borehole as well as for specific intervals of the bedrock within the borehole. The profiling identifies borehole bedrock fractures that transmit water as well as intervening intervals of bedrock that are non-transmissive. The FLUTe profiling findings were used to augment rock coring, evaluate geophysical test findings to determine specific depth intervals for packer testing, and ultimately for choosing FLUTe and conventional monitoring well sampling zones. A summary of FLUTe profiling procedures follows.

FLUTe profiling is conducted simultaneously as a temporary blank liner is lowered into an open borehole. The liner is lowered into the borehole by adding water to the interior of the liner resulting in a hydraulic pressure that drives the liner downward and presses the liner firmly against the borehole wall as it descends. The liner in turn forces formation water in the open borehole below the liner into the surrounding formation through transmissive zones, if present, and effectively seals off those zones as the liner descends.

FLUTe lowered the liner into the open borehole at each location using a tether line attached to the bottom of the liner and fed off of a reeled mechanism that was securely anchored to the borehole casing. The mechanism controlled the tether line tension, and electronically recorded the depth and velocity of liner decent into the borehole. A pressure gauge lowered into the liner monitored the water level in the liner during the decent and the resultant hydraulic head which is directly related to the driving force. Analysis of the data resulted in an estimate of the transmissivity of the borehole bedrock and the distribution of that transmissivity in specific intervals, allowing for the identification of significant flow paths. Typically, liner decent slows with increased depth in the borehole as stratigraphically lower transmissive zones within the borehole bedrock are sealed off. FLUTe continued the profiling in each borehole until the liner was fully extended to the bottom of the borehole or until the rate of decent decreased to less than approximately 0.1 feet per minute (ft/min), indicating no significant remaining transmissivity below the liner.

FLUTe recorded the profiling data electronically into a spreadsheet and then reduced the data to generate hydraulic parameter plots of the boreholes. Appendix J contains raw spreadsheet data and the resulting transmissivity plots provided by FLUTe for each borehole tested. These plots depict: "Transmissivity" profiles identifying the transmissivity of the fractures in the boring; "Borehole transmissivity below the depth" profiles showing the cumulative transmissivity of the boring with depth; "Transmissivity over a defined interval" profiles showing the transmissivity of specific sections of the boring, and; "Interval conductivity" profiles showing the hydraulic conductivity for different intervals of the boring, with calculated intervals of one foot.

Following FLUTe profiling, the temporary liners were retrieved from the boreholes allowing for additional down-hole testing. The liners were removed by pumping water from the liners and simultaneously pulling upward on the tether lines using a ratcheting winch. Following completion of each successive down-hole testing event, and pending design, construction, delivery, and installation of the FLUTe multi-zone sampling systems, the temporary liners were reinstalled, serving to limit the vertical migration of contaminants within the boreholes.

4.9.1.2.1.4 Down-hole Geophysics and Packer Testing

Section 3.3.4.1 of the USEPA 2002 RI/FS WP requires that geophysical testing be performed in select test borings to identify major fracture zones, voids and lithologic units to assist in targeting specific intervals for packer testing and subsequent selection of monitoring well completion intervals. In addition, Section 3.2.2.6 of the LVRR Remedial Design (RD) Work Plan (submitted under separate cover) requires that borehole geophysical testing is performed in select NYSDEC monitoring wells completed as open boreholes. Although these geophysical data are not required to be submitted in this LVRR RI report, the data provide additional information for the characterization of the Site and is therefore included in this LVRR RI report.

Section 3.3.4.1 of the USEPA 2002 RI/FS WP also requires that borehole packer testing be performed at three locations to supplement the geophysical test results. Addendum 2 to the USEPA 2002 RI/FS WP changed the packer testing requirement to include all new test borings. Geophysical and packer test findings are discussed in Section 6 of this LVRR RI. A discussion of geophysical and packer test procedures follows.

4.9.1.2.1.4.1 Down-hole Geophysics Procedures

Geophysical testing was conducted prior to packer testing and monitoring well installations in the stratigraphically deepest open boreholes at locations LVRR-18, LVRR-20, LVRR-21, and LVRR-26 through LVRR-35. Please note, the USEPA 2002 RI/FS WP specified the use of down-hole camera, caliper and natural gamma testing. In addition to these test methods, Addendum 2 to the USEPA 2002 RI/FS WP revised the geophysical testing to include acoustic televiewer (ABI), optical televiewer (OBI), deviation, fluid temperature (FTemp), spontaneous potential, fluid resistivity (FRes), and borehole flow meter logging under ambient and pumping conditions.

Geophysical testing conducted consistent with the LVRR RD Work Plan was conducted in NYSDEC open boreholes DC-01, DC-03, DC-05, DC-06, DC-15, DC-16, DC-17, EW-01, EW-03, EW-07, EW-08, EW-10 and a former residential water supply well located near the intersection of Gulf Road and Neid Road designated as the DW-07 as depicted on Figure 7a. The LVRR RD Work Plan required the use of OBI, caliper, FTemp, natural gamma, and spontaneous potential logging methods.

The USEPA-approved subcontractor, Geophysical Applications, Inc. (GAI), located in Holliston MA, conducted geophysical well logging activities at the Site between August 3 and September 12, 2010. A UMC representative observed the well logging activities conducted by GAI. GAI provided UMC with a report dated January 2011 and titled “Draft Borehole Geophysics Logging Report, Lehigh Valley Railroad Derailment Superfund Site, LeRoy, New York” (GAI report). Appendix K of this LVRR RI contains an electronic copy of the GAI report. Section 6 of this LVRR RI discusses GAI’s geophysical well logging findings. A summary of GAI’s geophysical well logging procedures follows.

GAI conducted the following geophysical well logging activities:

- Natural gamma logging in select NYSDEC 2-inch PVC or stainless-steel-constructed monitoring wells located in, or in the vicinity of, the Spill Area including wells DC-1D, DC-3D, DC-5D, DC-6D, DC-15B, and DC-17B.
- FTemp, FRes, caliper, natural gamma, single-point resistance (SPR), and OBI logging in select NYSDEC open bedrock boreholes located in or in the vicinity of the Spill Area including wells DC-1A, DC-3A, DC-5A, DC-6A, DC-15A, DC-16, EW-1, EW-3, EW-7, EW-8, EW-10, NRW, and newly installed bedrock boring LVRR-36.
- FTemp, FRes, caliper, natural gamma, SPR logs, ABI, OBI, and heat-pulse flowmeter logging during both ambient and pumping conditions in LVRR bedrock borings LVRR-18, LVRR-20 and LVRR-21 and LVRR-26 through LVRR-35. Borehole deviation plots were calculated for these wells from the ABI log deviation data channels.

GAI referenced borehole log depths to the top of the steel or PVC casing in each borehole and employed an optical depth encoder capable of maintaining depth measurements to an accuracy of approximately +/- 0.2 feet throughout the borehole.

GAI employed a Mount Sopris model 4MXB logging winch with Mount Sopris caliper and polygamma probes to obtain the conventional geophysical-log data. These logs were recorded at 0.1-foot depth increments as determined by the logging winch's digital depth encoder. FTemp and FRes logs were recorded during the first logging run at most boreholes, using a downward logging speed of approximately five ft/min. A sub-assembly on the bottom of the caliper probe obtained these fluid measurements. Caliper logging was subsequently performed while pulling the probe upward through the borehole at approximately twelve ft/min.

GAI recorded natural gamma logs in all boreholes while lowering a polygamma probe at approximately six ft/min. SPR logs were obtained while retrieving the probe at approximately 15 ft/min.

GAI obtained ABI data using an Advanced Logic Technologies (ALT) model ABI40 acoustic televiewer probe, with the Mount Sopris winch and an ALT model Abox electronics console. ATV data were recorded at 0.01-foot depth intervals, with 1.25-degree arc-segments for each 360-degree scan around the borehole wall, at a logging speed of approximately 3.6 ft/min.

GAI obtained OBI images using an ALT model OBI40 MK IV optical televiewer probe, also with the Mount Sopris winch and ALT model Abox electronics console. OBI images were recorded at 0.007-foot depth increments, with 1-degree arc-segments for each 360-degree scan around the borehole wall. The logging speed was approximately 3 to 4.5 ft/min with this probe.

GAI recorded flowmeter data with a Mount Sopris heat-pulse flowmeter probe, at specific depths inferred from field plots of the caliper, FRes and FTemp logs. Flowmeter data were initially recorded under ambient conditions. The same test depths were subsequently repeated while pumping water from the borehole with a variable-speed Fultz pump.

GAI recorded all geophysical log data on a laptop computer hard drive and then copied the data to a CD-ROM as a backup precaution. GAI adjusted post-survey plot scales to optimize detail and merged all conventional logs and flowmeter data onto one plot for each borehole to aid data correlation.

GAI decontaminated the logging cables and probes between logging runs using an Alconox scrub and tap water rinse. Pumped fluids were temporarily contained in 55 gallon drums provided by

UMC and subsequently transferred to a holding tank located in the secure Support Zone for later characterization and off-Site disposal.

The GAI report notes Site-specific logging limitations and procedural variations as follows:

- The caliper-probe's arms can measure borehole diameters up to approximately 16 inches. Caliper logs can most-confidently detect fractures that cross a borehole at moderate angles of less than approximately 70 degrees from horizontal and may not accurately detect near-vertical fractures.
- Thick sections of dry overburden hampered electric current needed for accurate SPR logs in some boreholes.
- The heat-pulse flowmeter probe can typically measure water flow rates between approximately 0.02 and 1.2 gallons per minute (gpm) when fitted with diverter petals that touch the borehole wall. Higher flow rates may be erroneously characterized as zero flow by the probe. The flowmeter probe was fitted with under-sized diverter petals in some boreholes where ambient flow rates appeared to exceed the probe's ordinary upper measurement limit.
- Hydraulically-active fracture zones were inferred by correlating numerous geophysical logs. These interpretations are a subjective judgment based upon available data.
- Acoustic and optical televiewer probes rely on three-component magnetometers to orient the recorded images with respect to magnetic north. These images become distorted when the magnetometers approach the bottom of steel casing, typically beginning approximately four feet below the steel. A short length of the un-oriented televiewer images, rotated to match a distinctive feature on the borehole wall, overlay the magnetically distorted portions of televiewer images presented in the GAI report. Down-dip azimuths of planar features inferred from televiewer logs a few feet below the steel casing are therefore approximate.

GAI's borehole geophysical test findings are discussed in Section 6 of this LVRR RI.

4.9.1.2.1.4.2 Packer Testing Analysis Procedures

Following completion of the bedrock coring and down-hole testing discussed above, UMC consulted with its subcontractors including personnel representing F.P. Haeni, LLC, (F.P. Haeni) located in Deep River, CT, Stone, GAI, and FLUTe. The objective of the consultation was to assess the rock coring and down-hole test findings and identify test boring intervals from which additional groundwater chemical and hydraulic data obtained during packer testing would assist in the understanding of the Site hydrogeology, the refinement of the Conceptual Site Model (CSM), and the evaluation of potential remedial options. The assessment criteria included considering boring intervals with obvious features through which water can be transmitted and apparent unfractured zones to assess rock matrix contaminant diffusion effects. In addition, the nature of the contaminant concentration gradient between the secondary porosity (fractures, solution channels) and the primary porosity (rock matrix pore water) was considered. This gradient in large part controls whether the contaminant mass is moving into the rock matrix from the fractures or out of the matrix into the fractures.

Based on the consultation conclusions, UMC prepared Addendum 4 to the USEPA 2002 RI/FS WP, revising the selection of test boring intervals for packer testing. Packer testing was conducted in test borings LVRR-18, LVRR-20, LVRR-21, and LVRR-26 through LVRR-35. In each borehole between four and nine intervals were selected for packer testing. Each packer test interval spanned five vertical feet of the borehole. Groundwater quality and hydraulic head measurement data was collected from each packer test interval. Table 2 lists the packer test zones in each boring and Table 3 lists the associated analytical results.

Nothnagle performed the packer testing in September 2010 with UMC oversight. Test boring LVRR-18 is located hydraulically up gradient of the release area, boring LVRR-34 is located side gradient of the release area, LVFRR-35 is located within the Spill Area and the remaining borings in which packer testing was conducted are located hydraulically down gradient of the release area. Packer testing was not conducted in the test borings located in the far down gradient portion of the Site along Spring Street and east of Spring Creek where conventional monitoring well installations were conducted.

The packer testing assembly provided by Nothnagle consisted of two packers mounted on two inch diameter perforated steel pipe. Testing at each interval consisted of lowering the packer assembly to the desired interval by adding five foot sections of un-perforated pipe and inflating the packers. Groundwater was then purged from the interval between the packers using a submersible pump lowered inside the pipe to a depth between the packers. The groundwater was then allowed to recharge into the packer interval and a groundwater sample was collected. Hydraulic head measurements were collected from the packed-off interval and above and below the packer assembly during purging and sampling. A more detailed discussion of hydraulic head measurement and groundwater sampling procedures conducted during packer testing follows.

Packer Testing Hydraulic Head Measurements

Hydraulic head measurement data was collected from above the upper-most packer, between the packers and below the lower-most packer using pressure transducers attached to the packer assembly. The upper transducer was placed approximately 1.5 feet above the upper-most packer. The middle transducer was placed approximately half way between the packers during the first test conducted in test boring LVRR-35. However, assessment of the packer test data collected from boring LVRR-35 indicated that the groundwater level between the packers was drawn down during the test to a level below which the transducer could record before the interval was completely purged. Therefore, the middle transducer was moved down in subsequent tests to a level approximately one foot above the bottom-most packer, allowing the collection of hydraulic head data over a greater range. The lower transducer was placed approximately 1.5 feet below the bottom-most packer. Following completion of the hydraulic head testing, the pressure transducer data was downloaded onto a computer.

The transducers were set to zero prior to installation into the borings. Prior to installing the packers into the wells, the depth to groundwater was measured in each boring relative to the top of the boring casing. The casing elevations and horizontal locations were surveyed relative to the North American Vertical Datum of *1988* (1988 NVGD). The collection of survey and groundwater elevation data is discussed in subsequent sections of this report. The hydraulic head in each packer interval was recorded during pumping and then subtracted from the known casing elevation to assess groundwater elevations. The head measurements for the interval between the packers was then compared to the head measurement data collected above and below the packers to assess if the packers provided a good seal during the testing. If the head measurements for the zones above and below the packers showed no change during the testing, the packers were considered to have provided a good seal, indicating that the groundwater sample collected from the packed-off interval was representative of that interval.

Hydraulic head measurements for each test interval were plotted to graphically illustrate the groundwater elevation changes for each interval during the test. The first hydraulic head reading for each test interval was also plotted on a graph to show head changes per interval for the boring. Appendix L of this LVRR RI contains packer test graphs. Table 2 presents the hydraulic head readings and packer elevations. Hydraulic head measurement findings are discussed in Section 6.

Packer Testing Groundwater Sample Collection

UMC collected groundwater samples from each packer interval to assess if the interval is transmitting impacted groundwater. Groundwater was purged from the packer interval at rates varying between 0.33 gallons per minute (gpm) and 1.25 gpm until the interval was dry or one volume of water was removed. Each packer interval measured approximately five feet long by a nominal diameter of six inches, resulting in a volume of approximately 7.33 gallons per test interval. To collect groundwater samples from above and below the packer assembly, the assembly was removed from the well and the bottom packer was disconnected. The assembly was then reinstalled into the well and only the top packer was inflated. To collect a sample from the top zone, the pump was installed into the boring annulus and water was extracted. Each zone was allowed to recharge prior to sample collection.

The groundwater samples collected by UMC during packer testing were submitted to CAS of Rochester, NY for VOC analysis consistent with USEPA Method 8260. The samples were labeled with a unique sample identification consisting of the well number and the packer test interval, placed into a cooler with ice, and transported to CAS under chain-of-custody.

Table 3 summarizes the analytical results for groundwater samples collected during packer testing. Please note that packer test interval groundwater samples were collected for assessment of the vertical distribution of VOCs in Site groundwater and were not used to assess regulatory compliance. Appendix M of this LVRR RI contains CAS packer test groundwater sampling analytical reports. The analytical results for groundwater samples collected during packer testing are discussed in Section 6 of this LVRR RI.

4.9.1.2.2 Monitoring Well Installations

The monitoring well network installed by the NYSDEC during the 1990's did not adequately delineate the horizontal and vertical extent of the dissolved-phase TCE plume. Therefore, additional monitoring wells were installed by LVRR, including both FLUTe multi-zone sampling systems and conventional monitoring well clusters. A discussion of monitoring well installation procedures follows.

4.9.1.2.2.1 FLUTe Well Installation Procedures

The FLUTe multi-zone sampling systems were installed by FLUTe personnel with UMC oversight. The FLUTe systems were installed in test borings LVRR-18, LVRR-20, LVRR-21, LVRR-26 through LVRR-32, LVRR-34, and LVRR-35. Prior to conducting the installations, UMC consulted with F.P. Haeni, Stone, GAI, and FLUTe representatives to review the rock core, down-hole test, and packer test findings and select FLUTe system sampling intervals for each test boring. Based on this consultation, the FLUTe systems consist of liners with four or five sampling intervals per well, each covering five foot intervals of the borehole. Appendix H contains boring logs depicting FLUTe-style monitoring well sampling intervals and construction details. Table 1 lists the design specifications for each FLUTe system including the top and bottom elevations of each sampling interval.

Specific FLUTe liners with LVRR well number and placement of sampling intervals were constructed by FLUTe at their Velarde, NM facility and delivered to the Site. FLUTe then removed the temporary blank liners from the test borings and installed the sampling system liners in the borings consistent with the procedures employed for the blank liner installations discussed above. The blank liners were disposed of as solid waste.

The sampling intervals in the liners are constructed as follows: five foot long spacers through which groundwater from a given interval enters the resulting space between the liner and borehole wall; a ¼-inch plastic tube extending from the sampling interval to the ground surface through which nitrogen is injected to purge groundwater from the interval; a ¼-inch plastic tube extending from the sampling interval to the ground surface from which the groundwater sample is collected; and, two check valves including one installed on the purge tube and one on the sampling tube. Each FLUTe-style monitoring well was completed at the ground surface with a steel standpipe and locking cover.

Table 4 lists the depth below the ground surface and the elevation of the top of stratigraphic units encountered in test borings conducted during the LVRR Phase I activities. All of the test borings in which FLUTe systems were installed were advanced into and, in some cases entirely through, the Camillus Formation and into the underlying Syracuse Formation. Many of the borings were drilled into the karst section of the Camillus Formation, typically encountered in the lower portion of that formation. Analysis of groundwater samples historically collected from this section by the NYSDEC, UMC in 2008, and UMC during packer testing in 2010 did not detect TCE at elevated concentrations, most likely as a result of the high dilution and flow rates, possibly turbulent groundwater, in this section of the formation. Based on this condition, coupled with the large groundwater elevation fluctuations observed in the area resulting in correspondingly large pressure changes, UMC and FLUTe concluded that the FLUTe system liners may be filled with grout rather than following the standard procedure using water as the filler. By using the grout-filled sampling liners boings are continuously sealed; however, the additional weight of the grout could cause the sampling systems to fail. If the FLUTe sampling systems were filled with water, as is the typical case, continuous monitoring and frequent adjustments of the water level in the liners would be necessary to compensate for the change in external pressure of the sampling system resulting from the large groundwater fluctuations.

Therefore, based on these conditions and the difficulties that arose attempting to install FLUTe liners in karstic sections, it was decided, along with consultation and concurrence from the USEPA, that portions of borings in this section of the Camillus Formation would be filled with gravel from the bottom of the boring to the bottom depth of the FLUTe sampling liner. This provided a stable base on which the grout-filled liners could rest, eliminating the potential of failure due to the weight of the grout. In addition, the procedure allowed for vertical groundwater flow through the gravel and effective sampling of groundwater in the lower karstic section of the Camillus Formation from the lower-most sampling interval.

4.9.1.2.2.2 Conventional Well Installation Procedures

Conventional monitoring wells were installed (Addendum 3 to the USEPA 2002 RI/FS WP) at some boring locations because the geology at those locations did not allow for the installation of FLUTe systems. Specifically, borings conducted to the stratigraphically lowest intervals at locations LVRR-24 and LVRR-25 collapsed during drilling, preventing installation of FLUTe systems. At location LVRR-33, sharp pieces of chert repeatedly cut through the FLUTe temporary blank liner as attempts were made to install it. Consequently, conventional monitoring wells were installed in these borings and between three and five conventional wells were installed proximate to the borings screened at stratigraphically higher intervals.

Conventional monitoring well clusters were also installed at location LVRR-37, north of the Spill Area on Neid Road which consists of four wells, and at locations LVRR-38 through LVRR-42, located east of Spring Creek which consist of three wells each. Borings LVRR-22 and LVRR-23 also collapsed during drilling due to saturated overburden and weathered bedrock conditions, requiring the installation of one conventional monitoring well at each of the respective locations. Conventional monitoring well construction details and screened intervals are depicted on the boring logs in Appendix H and are summarized on Table 1. A discussion of conventional monitoring well construction procedures follows.

The conventional monitoring well installations were conducted by Nothnagle with UMC oversight. The wells were constructed by installing 10 feet of two inch diameter PVC screen at the target depth in each boring with solid PVC riser pipe placed from the screen to the ground surface. Filter sand was then placed in the boring annulus to approximately two feet above the top of the screen. A two foot thick layer of bentonite was then installed in the annulus above the sand pack and the remainder of the boring was filled with a cement/bentonite grout. The wells were completed at the ground surface with standup casings set in concrete with the exception of the three wells installed at location LVRR-24 which were completed with flush-mounted road boxes.

Following conventional monitoring well installation, Nothnagle developed the wells by purging each well of groundwater and fine materials produced during drilling. The developing process consisted of using a surge block to agitate the well to mobilize the fine materials and a pump to remove the water and fines evacuating the water and fine particles. Each well was developed until the water ran clear or until no further change in groundwater turbidity was visually observed. Nothnagle collected the investigation derived waste as described above and transported the material to the secure Support Zone for later characterization and off-Site disposal.

4.9.1.2.3 Groundwater and Surface Water Elevation Measurements

The USEPA 2002 RI/FS WP required surface water elevations to be collected during each quarterly groundwater event. The objectives of measuring the surface water elevations are to:

- Correlate groundwater and surface water elevations; and,
- Assist in calculating the discharge of potentially contaminated groundwater to surface water bodies.

The USEPA 2002 RI/FS WP states that surface water levels should be measured from the staff gauges placed during the Site Reconnaissance on the same day as synoptic groundwater level measurements from monitoring wells. However, due to significant weather events in 2009 the staff gauges were moved or destroyed by forces of nature. The moved staff gauges were not resurveyed and the missing staff gauges were not replaced. Therefore, the only LVRR RI synoptic surface water and groundwater measurements were collected during the Site Reconnaissance on February 25, 2009.

4.9.1.2.3.1 Groundwater Elevation Measurement Procedures

UMC measured the depth to groundwater in Site monitoring wells during the LVRR Phase 1 groundwater sampling events conducted by UMC between December 2010 and August 2013. Depth to groundwater measurements were obtained using an electronic water level meter. In addition, continuous depth to groundwater measurements were recorded in select Site monitoring wells by UMC and others using pressure transducers. The depth to groundwater measurements were compared to surveyed elevations to assess groundwater elevations, hydraulic head levels, and the resultant groundwater flow paths and potential contaminant migration pathways within specific stratigraphic units of the aquifer system between the Spill Area and the down gradient groundwater discharge area at Spring Creek. Section 6 of this LVRR RI discusses Site groundwater elevation findings and conclusions. A discussion of depth to groundwater measurement procedures follows.

Sampling Event Depth to Groundwater Measurements

The FLUTe-style monitoring well sampling zones were purged of three volumes of groundwater prior to sample collection and depth to groundwater measurements were obtained from each zone following the first purge. Depth to groundwater measurements must be collected following the first purge in FLUTe wells because if the groundwater levels rise and then declined in the time prior to the measurement, the check valve in the purge tube would prevent the water in the tube from draining, resulting in an erroneously high measurement. Purging removes the water in the tube and allows groundwater to recharge to the actual static level at the time of measurement.

The depth to groundwater measurements were obtained in each FLUTe sampling zone by lowering an electronic water level probe into the purge tube following completion of the first purge. The purge tube for each sampling zone extends a short distance above the top of the FLUTe well casing. The depth to groundwater measurement in each sampling zone was made relative to the tops of the sampling tube whose elevation was calculated by adding the height of the tube above a surveyed point on the top of the FLUTe well casing. UMC notes that in some cases the FLUTe sampling intervals were dry or did not recharge within a practicable time period, and no depth to groundwater measurements were obtained for those intervals during those sampling events.

Depth to groundwater was measured in the conventional monitoring wells during groundwater sampling events using an electronic interface probe. The measurements were made relative to a surveyed point on the top of the PVC or stainless steel casing in the wells or from the top of the steel standpipe in open borehole wells. Some conventional monitoring wells were dry at the time of sampling and no measurements were obtained from those wells during those sampling events.

Tables 5a through 5m list the depth to groundwater measurements in Site monitoring wells obtained during the LVRR Phase I sampling events conducted by UMC between December 2010 and August 2013. These tables also indicate the groundwater elevations in Site monitoring wells during those events, calculated by subtracting the depth to groundwater measurements from the surveyed casing elevations, or, in the case of FLUTe wells, from the elevations of the tops of the sampling tubes for each interval.

Appendix N of this LVRR RI contains hydrographs depicting graphical presentations of the groundwater elevation data obtained during the Phase I RI sampling events conducted by UMC between December 2010 and August 2013.

Figures 8a through 8m depict groundwater elevation contours based on depth to groundwater measurements obtained during the Site Reconnaissance investigation (2008) discussed in previous sections of this LVRR RI and Phase I sampling events conducted by UMC between December 2010 and August 2013.

4.9.1.2.3.2 Surface Water Elevation Measurement Procedures

Section 3.3.4.3 of the USEPA 2002 RI/FS Work Plan requires that stream gauging be performed to correlate groundwater and surface water elevations and to assist in calculating the discharge of potentially contaminated groundwater to surface water bodies during four consecutive groundwater sampling events.

As discussed in above sections, staff gauges were installed and surveyed during the Site Reconnaissance Investigation and a comprehensive round of groundwater and surface water elevation data was collected February 25, 2009. The staff gauges were apparently destroyed as the result of high runoff and/or ice flows at some time after the completion of the Site Reconnaissance investigation and the initiation of Phase I activities. Surface water elevation measurement findings as they relate to potential discharge of groundwater to surface water are discussed in Section 6 of this LVRR RI.

4.9.1.3 Soil Gas Survey and Groundwater Sample Collection

As per Addendum 5 to the USEPA 2002 RI/FS WP a soil gas survey was conducted to determine if the TCE plume extends beyond Spring Creek to the east. Addendum 5 was drafted in response to dissolved TCE concentrations present in LVRR-24, which is located on the east bank of Spring Creek. Since, no monitoring points were located further east, the determination could not be made that dissolved TCE concentrations do not migrate beneath Spring Creek and discharge further to the east.

Therefore, UMC investigated the area east of Spring Creek by performing a soil gas survey transect along North Street from the railroad crossing near Guthrie Road southward to approximately Freeman Drive. Figure 17 of this LVRR RI illustrates the location of this transect.

Soil vapor sampling points were located at 250-foot intervals along this transect. Two samples were collected from each location and submitted to the USEPA approved laboratory for analysis. A shallow sample was collected from between the ground surface and five feet bgs and the second from just above the water table. Between these two samples the soil vapor concentration was measured in two-foot intervals using a PID. The vapor samples were collected according to UMC SOP DCN1-38 Soil Gas Sampling. Where refusal was encountered above the water table, a sampling point was installed and a sample collected, provided this point was more than four feet beneath the shallow sample point.

Once the Summa canisters were filled, they were labeled and delivered to the laboratory under chain-of-custody for analysis. Each sample was analyzed for VOCs according to Method TO-15. The borings continued into groundwater where a grab groundwater sample was collected from less than three feet below the water table. (Note: The concentration in groundwater in the upper meter is what affects soil gas. Any deeper than about a meter below the water table is not relevant to soil gas.) The groundwater samples were delivered to the laboratory for analysis of volatile organic compounds according to EPA Method 8260. Table19 of this LVRR RI summarizes the soil gas analytical data and Appendix Z contains the validated soil gas analytical reports.

4.9.2 Environmental Sampling

UMC conducted environmental sampling consistent with the USEPA 2002 RI/FS WP and Addendums 2, 3, 4, 5, and 6 to the USEPA 2002 RI/FS WP. The environmental sampling included the collection of groundwater samples, spring and seep samples, sediment samples, and surface water samples. Environmental sampling results are discussed in Section 6 of this LVRR RI. A discussion of environmental sampling procedures and analyses follows.

4.9.2.1 Groundwater Sampling

UMC conducted eleven groundwater sampling events between December 2010 and August 2013 to characterize the contaminant plume with regard to COC distribution and concentration. In addition, UMC collected groundwater samples from select monitoring wells in September and November 2012 following significant storm events to assess the influence of the resultant changes in groundwater levels on COC distribution and concentrations. UMC also collected groundwater samples from select monitoring wells during the first quarterly sampling event conducted between December 2010 and February 2011, and events conducted in August 2013, with the objective of assessing monitored natural attenuation (MNA) parameters and their influence on the fate and transport of VOCs of concern.

Groundwater sampling procedures employed during a particular sampling event were dependent on the objectives of the event and the type of monitoring well that was sampled. The FLUTe wells were sampled consistent with methods developed by FLUTe. FLUTe-style monitoring wells cannot practicably be sampled for assessment of MNA parameters only plume characterization. Therefore, select conventional monitoring wells were sampled consistent with low-flow sampling techniques, to assess Site groundwater MNA parameters. Storm event sampling of conventional monitoring wells was also conducted consistent with low-flow sampling techniques. During the remaining sampling events, the conventional monitoring wells were sampled using passive diffusion bags (PDBs). In all cases, prior to sample collection, UMC measured and recorded the depth to groundwater in each FLUTe interval and each conventional monitoring well as described in above sections of this LVRR RI.

Storm event sampling and analysis procedures and MNA characterization and analysis procedures are discussed in subsequent sections of this LVRR RI. A discussion of contaminant plume characterization sampling and analysis procedures follows.

4.9.2.1.1 Contaminant Plume Characterization Sampling

Pursuant to the USEPA 2002 RI/FS WP, quarterly groundwater sampling was conducted to supplement the data collected during the Site Reconnaissance. All new and existing monitoring wells were sampled at three month intervals representative of seasonal conditions. Limited scope post storm sampling events were conducted to assess intermittent high water groundwater conditions. The first round of groundwater sampling was conducted no more than two weeks following well installation completion.

4.9.2.1.1.1 Contaminant Plume Characterization Sampling Procedures

FLUTe-style monitoring well sampling consists of attaching a tank of nitrogen gas to the injection port of the interval to be sampled and injecting nitrogen into the port at a specific pressure, which in turn pushes water from the sample interval to the surface through the sampling tube. The pressure is well-specific and was calculated for each FLUTe well by FLUTe to optimize the sample extraction. Nitrogen was selected as the purge gas because it is inert and readily available. The FLUTe well sampling procedure consists of three purges of the interval being sampled, allowing the interval to recharge between purges. As discussed in above sections, UMC measured the depth to groundwater in each sampling interval following the first purge. Following the third purge a groundwater sample is collected from the sampling tube directly into laboratory-supplied containers.

UMC notes that on some occasions, due to slow recharge rates, the sampling interval did not immediately recharge following purging. However, UMC was generally able to complete the purging process in stages over the course of the sampling event. On some occasions, the purging process could not practicably be completed and samples were collected as "grab" samples prior to leaving the Site. On other occasions, the sampling interval was dry or did not recharge sufficiently for sample collection and no sample was collected from the interval during that sampling event.

Conventional monitoring well sampling events conducted for contaminant plume characterization were conducted using passive diffusion bags (PDBs). PDBs were developed by the USGS as a cost-effective method of groundwater and surface water sample collection for VOC analysis. PDBs are constructed of semi-permeable polyethylene membranes through which VOCs can penetrate. The PDBs are filled with distilled and analyte-free water and submerged into VOC-impacted water allowing the VOCs to diffuse across the membrane until VOC concentration equilibrium is reached between water in the sampler and the surrounding water.

The PDBs employed by UMC during the LVRR Phase I activities were laboratory supplied and filled with laboratory grade analyte-free water. The PDBs measure 24-inches in length and 1.25 inches in diameter, resulting in a capacity of approximately 250 milliliters (ml). Conventional monitoring well sampling conducted by UMC using the PDBs consisted of attaching the PDBs to dedicated stainless steel cables and lowering the cable and PDB into the well to the approximate middle of the screened interval in PVC wells or the middle of the saturated interval in open boreholes. After leaving the PDBs in place for a minimum of two weeks, UMC measured the depth to groundwater in each well, and then retrieved the bags, cut them open and slowly transferred the water into laboratory-supplied containers.

Quality assurance/quality control (QA/QC) samples were collected during the contaminant plume characterization sampling events. Duplicate samples were collected from the monitoring wells to check laboratory accuracy and precision. One duplicate sample was collected for every 20 groundwater samples collected. Matrix spike/matrix spike duplicate (MS/MSD) samples were collected at a frequency of one for every 20 samples collected, to assess if the sample matrix was interfering with the laboratory analyses and reporting.

UMC labeled the groundwater and QA/QC samples with a well and interval-specific identification, and the sample collection date and time. The sample containers were then wrapped in bubble wrap and placed in a cooler on ice to maintain the temperature at 4ºC. A laboratory-prepared trip blank was included in each cooler and submitted for analysis to assess the potential for cross contamination between samples during sample transport. The packed coolers were then either transported to the laboratory by courier or transported directly to the laboratory buy UMC under chain-of-custody.

4.9.2.1.1.2 Contaminant Plume Characterization Analysis Procedures

The FLUTe and conventional monitoring well groundwater and QA/QC samples collected by UMC for contaminant plume characterization were submitted to the laboratory for VOC analysis by USEPA Method 8260. The analytical results for groundwater samples collected for contaminant plume characterization are discussed in Section 6 of this LVRR RI.

4.9.2.1.2 **Storm Event Sampling**

According to the USEPA 2002 RI/FS WP, the purpose of the storm sampling event is to evaluate the influx of surface water through the fractured bedrock and its impact on groundwater quality. The NYSDEC RI/FS established that elevation rises in the water table are significant during precipitation events and that VOCs are mobilized from the unsaturated zone, resulting in anomalous VOC concentrations down gradient of the Spill Site.

Also, the NYSDEC RI/FS observed that during storm events seeps may occur in the wetland west of Spring Creek. Therefore, during the storm event sampling a visual inspection for the presence of seeps in the wetland west of Spring Creek was conducted. No seeps were identified for sampling during the storm event sampling.

The USEPA 2002 RI/FS WP requires the limited collection of groundwater samples from eight monitoring well clusters within the Spill Area within three days of a summer rainfall event resulting in rainfall amounts of two inches or greater. For the purposes of this LVRR RI, UMC interprets the summer season to include the months of June, July, August, and September.

To determine if a summer storm event produced a sufficient amount of precipitation, UMC followed weather stations on Weather Underground (www.weatherunderground.com) on a daily basis to monitor the weather in LeRoy. The stations records daily temperature, dew point, humidity, wind speed, barometric pressure and precipitation. During the four summer months of 2011, no rain event of two or more inches of precipitation occurred. Consequently, UMC did not conduct storm event groundwater sampling during 2011. The following table presents the largest precipitation events per month from December 2010 to December 2011:

Month	Date	Precipitation in Inches
December 2010	1st and 2nd	2.24
January 2011	4th and 5th	0.16
February 2011	28th	0.24
March 2011	23rd and 24th	0.58
April 2011	25th	0.82
May 2011	14th and 15th	1.89
June 2011	4th and 5th	0.54
July 2011	25th and 26th	0.74
August 2011	7th	1.19
September 2011	28th	0.55
October 2011	12th to 15th	1.8
November 2011	23rd	1.26
December 2011	15th and 16th	0.74

On September 4 and 5, 2012, approximately 2.36 and 2.38 inches of rainfall respectively were reported in the Leroy, NY area (KNYLEROY2 onwww.weatherunderground.com). In response, UMC conducted storm event groundwater sampling between September 6 and 8, 2012. UMC conducted a second round of storm event groundwater sampling in November 2012 to include Cyanide analysis. On October 29 and 30, 2012, approximately 1.91 and 0.31 inches of rainfall was reported (KNYAVON6 on www.weatherunderground.com) and UMC conducted storm event groundwater sampling between November 2 and 4, 2012.

The following table presents the largest precipitation events per month from January 2012 to December 2012:

Month	Date	Precipitation in Inches
January 2012	27th	0.29
February 2012	22nd and 23rd	0.26 and 0.26
March 2012	31st	0.25
April 2012	23rd	0.39
May 2012	22nd and 23rd	0.46 and 0.46
June 2012	1st and 2nd	0.72 and 0.74
July 2012	31st	2.61
August 2012	1st	2.62
September 2012	4th and 5h	2.36 and 2.38
October 2012	6th	0.93
November 2012	12th and 13th	0.20 and 0.21
December 2012	26th	0.31

Appendix O contains copies of weather records for the months of June through September 2011 and the months of June through November 2012.

A discussion of storm event sampling procedures and analysis follows.

4.9.2.1.2.1 Storm Event Sampling Procedures

Consistent with the USEPA 2002 RI/FS WP, UMC collected groundwater samples from conventional monitoring well clusters DC1, DC-2, DC-3, DC-6, and DC-7R and FLUTe monitoring wells LVRR-18, LVRR-20, and LVRR-27 following the September 2012 and November 2012 storm events. UMC collected the storm event groundwater samples from the FLUTe wells consistent with the FLUTe well sampling procedures discussed above.

The storm event groundwater samples collected from the conventional monitoring well clusters were collected consistent UMC's QAPP. The low-flow sampling was performed using bladder pumps and dedicated Teflon-coated polyethylene tubing. Prior to pump installation, UMC measured the depth to groundwater in each well. The pump was then lowered into the well with the intake set at approximately the mid-screen level or in the middle of the saturated section in the case of open boreholes. Studies have shown that the placement of the pump intake in a well has no bearing on the dissolved concentrations in samples collected and that the hydraulic conductivity of a borehole was five times that of the bedrock, proving that water movement in the well bore would be vertical within the boring and that fractures would not provide significant water unless the boring was nearly evacuated of the water in it (Reference 36). Water from fractures will enter the boring and then move vertically to the pump intake. Fractures with the highest hydraulic conductivity will produce the most water. Consequently, and because not all fractures produce water, the mid-screen section was selected for the pump intake to be representative of the water quality of the well.

The bladder pumps were driven with carbon dioxide (CO_2) or nitrogen at a pumping rate generally less than 200 milliliters per minute (ml/min). During purging, the water level in the well was monitored using an electric water level meter and the extracted groundwater was directed into a Horiba U-52 Multi-parameter flow-through cell and monitoring system (Horiba). The Horiba continuously monitored the groundwater pH, dissolved oxygen (DO), oxygen-reduction potential (ORP), temperature, specific conductivity and turbidity as purging proceeded. When these parameters, as well as groundwater drawdown in the well, stabilized within accepted limits for three consecutive readings, a groundwater sample was collected from the well. Sampling was performed by disconnecting the sampling tube from the low-flow cell and collecting the sample directly into laboratory-supplied containers. Stabilized storm event groundwater sample low-flow parameter readings are presented on Table 6a and 6b.

Following sampling, the bladder pump and water level meter were removed from the well and the tubing was disposed of as solid waste. The bladder pump, water level meter, Horiba, and flow-through cell were then decontaminated prior to use in the next well. The decontamination procedure consisted of disassembling the pump and flow through cell and rinsing all of the sampling components with Alconox and deionized water. The components were then dried with paper towel and the pump and flow-through cell were re-assembled.

UMC collected storm event duplicate and MS/MSD samples for QA/QC purposes at a frequency of one per every 20 groundwater samples collected. In addition, to assess the effectiveness of the decontamination process, one equipment blank sample was collected for every 20 samples collected using low-flow methods. The equipment blank samples were prepared at a frequency of one sample per every 20 groundwater samples collected by running laboratory-supplied de-ionized water through the pump by the same method employed for sample collection.

UMC labeled and packaged the storm event groundwater and QA/QC samples along with laboratory-supplied trip blanks as described above for transport to the laboratory under chain-of-custody.

4.9.2.1.2.2 Storm Event Sampling Analysis Procedures

UMC submitted September and November 2012 storm event groundwater and QA/QC samples to the laboratory for VOC analysis consistent with USEPA Method 8260. In addition, the November 2012 storm event groundwater and QA/QC samples were submitted to the laboratory for cyanide analysis consistent with the USEPA 2002 RI/FS WP. The trip blanks submitted with storm event groundwater samples were analyzed for VOCs only. Storm event groundwater sample analytical results are discussed in Section 6 of this LVRR RI.

4.9.2.1.3 Monitored Natural Attenuation (MNA) Characterization Sampling

The USEPA 2002 RI/FS WP requires the acquisition of groundwater quality data needed to evaluate chlorinated solvent attenuation and to evaluate flow and migration regimes for attenuation process effectiveness, limitations, and constraints. The NYSDEC RI/FS determined that the groundwater contaminant plume extends more than three miles to the east from the Spill Area. Zones of negative vertical gradient (downflow) and positive vertical gradient (upflow) exist along the axis of the plume. Storm events have been shown to significantly impact both plume migration and chemistry. Therefore, in response to these conditions the evaluation of MNA parameters from 25 Site monitoring wells is required during the first quarterly groundwater sampling event of Phase 1.

The first quarter sampling event of the LVRR Phase 1 was conducted between December 2010 and February 2011 by UMC. Groundwater samples collected for MNA characterization were collected from NYSDEC well clusters and from LVRR clusters installed prior to well installations conducted of as part of Addendum 5 to the USEPA 2002 RI/FS WP. Table 7 of this LVRR RI contains a list of all monitoring wells sampled for MNA parameters during the first Phase 1 quarterly sampling event. A second MNA sampling event was conducted by UMC in August and November 2013; however, UMC is awaiting the third party validated data report and therefore the findings of the second MNA event will be submitted under separate cover.

A discussion of MNA characterization sampling and analysis procedures follows.

4.9.2.1.3.1 MNA Characterization Sampling Procedures

UMC conducted the MNA characterization groundwater sampling consistent with the low-flow sampling procedure discussed above. Stabilized low-flow parameter readings collected by UMC during the MNA characterization sampling are presented on Table 7.

UMC collected duplicate, MS/MSD, and equipment blank samples for QA/QC purposes during MNA characterization sampling consistent with the procedures and frequencies discussed above. UMC labeled and packaged the MNA characterization groundwater and QA/QC samples along with laboratory-supplied trip blanks as described above for transport to the laboratory under chain-of-custody.

4.9.2.1.3.2 MNA Characterization Analysis Procedures

Groundwater and QA/QC samples collected by UMC for the purposes of MNA characterization were field analyzed for the following parameters:

- Dissolved oxygen,
- pH,
- Oxidation reduction potential,
- Turbidity,
- Conductivity, and
- Temperature

Groundwater and QA/QC samples collected by UMC for the purposes of MNA characterization were submitted to the laboratory for the following analyses:

- VOC analysis, Method 8260
- Oil and Grease analysis, Method 1664
- Sulfate and Chloride analysis, Method 300.0
- Nitrate and Nitrite analysis, Method 353.2
- Ammonia analysis, Method 350.1
- Total Phosphorous analysis, Method 365.1
- Chemical Oxygen Demand (COD), Method 410.4

- Total Calcium (Ca), Potassium (K), and Manganese (Mn) analysis, Method SW846
- Methane, Ethane, Ethylene, Propane, and Propene analysis, Method RSK 175
- Alkalinity and Hardness analysis, Method SM2320B
- Sulfide analysis, Method SM4500
- Biological Oxygen Demand (BOD) analysis, Method SM5210B
- Total Organic Carbon (TOC) analysis, Method 5310C
- Heterotrophic Plate Count (HPC) analysis, Method SM9215B
- Microtoxicity analysis, Method D5660

The results of these analyses as well as pertinent stabilized field measurement parameter readings, are discussed in Section 6. Sections 7 and 8 discuss the results as they pertain to the fate and transport of Site COCs and the potential for degradation of Site COCs by natural attenuation mechanisms.

4.9.3 Sediment, Spring/Seep, and Surface Water Sampling

The NYSDEC RI/FS identified seeps and springs, both perennial and intermittent, throughout the Study Area in Mud Creek and Spring Creek. The NYSDEC also identified seeps in the wetland west of Spring Street that during storm events produced large quantities water impacted with high concentrations of TCE. The NYSDEC surface water data showed variable concentrations of TCE from springs/seeps discharging to Mud Creek. The NYSDEC specific sampling locations could not be ascertained from the NYSDEC RI/FS or other historical investigation documents. Therefore, to meet the following objectives set forth in the USEPA 2002 RI/FS WP, UMC collected spring/seep samples from Mud Creek, Gorge Pond, Spring Creek, and the wetland area east of Spring Creek.

Specifically, Section 3.3.5.2 of the USEPA 2002 RI/FS WP requires that spring/seep water, spring/seep sediment, stream surface water, and stream sediment sampling be conducted during the Phase I activities with the objective of:

- Evaluating the potential for contaminated groundwater to impact various surface water bodies located north and east of the Study Area;
- Evaluating the potential for specific stratigraphic horizons to transmit contaminated groundwater;
- Developing trend analysis data for surface water and sediment sampling results;
- Evaluating the potential impact to sediments from the discharge of contaminated groundwater from springs/seeps, and;
- Gathering analytical data for use in the Human Health and Ecological Risk Assessments.

Additionally, Section 3.3.5.2 of the USEPA 2002 RI/FS WP requires that the spring/seep, surface water, and sediment sampling is conducted in the following areas, located in the Study Area:

- Oatka Creek;
- Mud Creek;

- Gorge Pond;
- Spring Creek, and;
- Wetlands east of Spring Creek.

Section 3.3.1.4 of the USEPA 2002 RI/FS WP requires that data collected during the Ecological Resource Reconnaissance be evaluated to assess the optimum locations for spring/seep, surface water, and sediment sampling in these areas, and that locations recommended for sampling, as well as all other locations identified during the reconnaissance, be presented in the Technical Memorandum.

Table 8a lists the spring/seep, surface water, and sediment locations identified by UMC in Oatka Creek, Mud Creek, Gorge Pond, Spring Creek, and the wetland area located east of Spring Creek during the 2008 Site Reconnaissance. Table 8a also identifies the locations recommended by UMC for sampling as presented in the April 2009, Technical Memorandum and Addendum 2 that were subsequently approved by the USEPA; and, correlates them with samples collected in support of the SLRA.

As indicated on Table 8a, UMC collected the spring/seep, surface water, and sediment samples during three events conducted during the Phase I activities including: an initial event conducted in December 2009 through January 2010; a second event conducted in January 2012, and; a third event conducted in November 2012. Samples collected during the December 2009/January 2010 event was collected consistent with requirements of the April 2009, Technical Memorandum and Addendum 2.

Accordingly, prior to collecting the December 2009/January 2010 event samples, UMC collected and recorded field parameter data including pH, specific conductivity, DO, total dissolved solids (TDS), ORP, and temperature at each location using a Horiba U-52 Multi-parameter monitoring system. Table 8b lists the spring/seep field parameter data collected by UMC during the December 2009/January 2010 sampling event. UMC also recorded longitude and latitude coordinates at each sample location using a hand-held Trimble, Global Positioning System (GPS) unit.

Spring/seep, surface water, and sediment samples collected during the January 2012 and November 2012 events were collected following the assessment of the initial sampling event results. These samples were collected to fill in perceived data gaps and no field parameter or longitude/latitude data was collected.

Figure 9a depicts spring/seep, surface water, and sediment sample locations and their corresponding sample identifications for samples collected during the Phase I December 2009/January 2010 sampling event. Figure 9b depicts spring/seep, surface water, and sediment sample locations and their corresponding sample identifications for samples collected during the January 2012 and November 2012 sampling events.

UMC collected duplicate, MS/MSD, and equipment blank samples for QA/QC purposes during the spring/seep, surface water, and sediment sampling events consistent with the procedures and frequencies discussed above. UMC labeled and packaged the spring/seep, surface water, and sediment and QA/QC samples along with laboratory-supplied trip blanks as described above for transport to the laboratory under chain-of-custody. A summary of specific spring/seep, surface water, and sediment sampling and analysis procedures follows.

4.9.3.1 Spring/Seep Sampling and Analysis Procedures

UMC collected spring/seep samples generally as "grab" samples by submerging a sample collection container into the spring/seep, collecting a water sample and pouring the sample into laboratory-supplied containers. Seven of the eleven spring/seep locations sampled during the December 2009/January 2010 event in the Spring Creek drainage were sampled using both grab methods and by employing PDBs. In addition, five spring/seep locations in the Spring Creek drainage were sampled using PDBs only during the January 2012 event.

Spring/seep samples collected via PDBs were collected consistent with the procedure outlined in Addendum 1 to the LVRR QAPP. This procedure generally consists of placing a laboratory-filled PDB into a protective polyethylene-mesh covering, which in turn is placed into a two inch diameter slotted PVC tube and secured with end caps. If sufficient sediment was present at the sample location, the assembly was buried completely in the water saturated sediment and secured via a tether line to a nearby tree or rock. In the absence of sediment, the assembly was completely submerged in the spring/seep, weighted down with rocks and secured with a tether line. A survey flag or wooden stake was labeled with the sample identifier and driven into the ground in the vicinity of each location. After a minimum of two weeks to allow chemical equilibrium to be reached between the spring/seep water and the PDB water, the assemblies were retrieved and the contents of the PDBs were poured directly into laboratory-supplied sample containers.

All of the spring/seep samples collected as grab samples during the December 2009/January 2010 event were submitted for laboratory VOC and cyanide analysis by USEPA Methods 8260B and 335.4, respectively. Those collected using PDBs were submitted for VOC analysis only.

Select spring/seep samples collected during the December 2009/January 2010 event were also submitted for SVOC (Method 8270C), pesticide (Method 8081A), poly-chlorinated biphenyl (PCB) (Method 8082), and metals (Method 6010B) analysis.

Spring/seep samples collected during the January 2012 and November 2012 events were submitted for laboratory VOC analysis only.

Spring/seep samples are identified by the sample identifiers "SP" or "PDB", indicating spring/seep collected as grab samples or using PDB methods, followed by the numeric sample location identifier on the LVRR RI Tables and Figures. The exception to this nomenclature is spring/seep sample MUDCREEK-01, collected during the January 2012 event. A summary of spring/seep sampling locations in each of the drainage areas studied follows.

4.9.3.1.1 Mud Creek

As described in the USEPA 2002 RI/FS WP and based upon UMC's field observations, the channel of Mud Creek passes immediately to the east of the Spill Area, flows northeast discharging into Oatka Creek, and includes Mud Creek Gorge. The NYSDEC RI/FS indicates that the Mud Creek Gorge exists due to erosion along northeast trending vertical fractures. These fractures in conjunction with sub-horizontal bedding planes and fractures, transmit a significant amount of groundwater, some of which discharges along the steep walls of the gorge. Discharge of impacted groundwater to Mud Creek Gorge was documented in the NYSDEC RI/FS.

Pursuant to the USEPA 2002 RI/FS WP, the Site Reconnaissance identified seeps at various stratigraphic horizons on opposite sides of Mud Creek Gorge walls for sampling during the Phase 1 investigations. Sampling locations were chosen that represented different vertical horizons to evaluate the potential for specific stratigraphic horizons to transmit impacted groundwater. When possible, samples were collected from opposite sides of the Mud Creek Gorge to evaluate whether the vertical fractures that influenced the formation of the gorge acted as a discharge boundary for impacted groundwater.

Based on a description provided in the USEPA 2002 RI/FS WP and UMC's field observations, the upper reaches of Mud Creek in the vicinity of the Spill Area is intermittent and perennial further downstream, fed by springs in the vicinity of Mud Creek Gorge.

Three spring/seep locations were sampled by UMC in Mud Creek during the December 2009/January 2010 event and one sample was collected during the January 2012 event using grab sampling methods only. The sampling locations are near the base of a waterfall immediately upstream of Mud Creek Gorge. A fourth spring/seep location near the top of the waterfall was proposed for sampling in the Technical Memorandum but was dormant during the December 2009/January 2010 sampling event.

4.9.3.1.2 Gorge Pond

The USEPA 2002 RI/FS WP describes Gorge Pond as being located on the bedrock slope of Oatka Creek Valley, east of Mud Creek. Gorge Pond is spring fed as no inflow or outflow is noted on aerial photographs or topographic maps. It is likely that Gorge Pond exists due to erosion along northeast trending vertical fractures. These fractures in conjunction with sub-horizontal bedding planes and fractures may transmit groundwater to Gorge Pond.

The NYSDEC did not collect data from Gorge pond during their investigations. However, the NYSDEC RI/FS indicated that a cluster of TCE impacted wells exists to the west of this feature, while a cluster of clean wells exists to the east.

Based on UMC's field observations, Gorge Pond is an intermittently wet area with minimal seasonal outflow to Oatka Creek. Sample locations that represent different vertical horizons intended to evaluate the potential for specific stratigraphic horizons to transmit groundwater could not be identified. Therefore, no spring/seeps were identified in the vicinity of Gorge Pond during the Site Reconnaissance; and no samples were proposed for sampling during the Phase 1 investigations or included in the USEPA-approved Addendum 2 to the USEPA 2002 RI/FS WP.

4.9.3.1.3 Spring Creek

The NYSDEC RI/FS states that Spring Creek is fed by springs that originate on the west side of the creek. These springs were identified to represent discharge from the upper Bertie Formation, along bedding planes and sub-horizontal fractures. The NYSDEC could not determine if vertical fractures influenced the groundwater discharge in this area.

UMC observed Spring Creek as a seasonal, largely spring-fed stream that flows generally from south to north and is tributary to Oatka Creek. Spring Creek generally defines the eastern limit of the Study Area. The majority of the Spring Creek spring/seeps proposed for sampling in the Technical Memorandum are located within or in close proximity to the western side of the stream channel, while the remainder are located in seasonally wet areas further west of the channel.

Eleven spring/seep locations along Spring Creek were sampled by UMC during the December 2009/January 2010 event using grab methods. Of these 11 locations, seven were also sampled using PDB sampling methods.

Two additional spring/seep locations were proposed for sampling in the Technical Memorandum but were dormant during the December 2009/January 2010 sampling event. One of these locations, as well as, four other locations, were sampled during the January 2012 event using PDB sampling methods.

4.9.3.2 Sediment Sampling and Analysis Procedures

As stated in the USEPA 2002 RI/FS WP, sediment sampling locations were based upon several criteria: to evaluate the surface water quality in areas where it is known that TCE-contaminated surface water discharges from the bedrock (i.e., springs/seeps) into surface water; to evaluate the persistence of TCE in surface water and sediment; and in support of the ecological risk assessment. When possible, sediment and surface water samples were collocated and collected at the same time from areas down gradient of the Study Area and from upstream background locations.

All of the sediment samples collected during the December 2009/January 2010 event were submitted for laboratory analysis of VOCs (Method 8260B), cyanide (Method 9012A), total organic carbon (Lloyd Khan), and Total Percent Solids analysis. Select sediment samples collected during the December 2009/January 2010 event were also submitted for SVOCs (Method 8270C), pesticide (Method 8081A), PCBs (Method 8082 from SW-846), and *Inductively Coupled Plasma (*ICP) metals analysis (Methods 6010B and 7471A).

Sediment samples collected during the January 2012 and November 2012 events were submitted for laboratory VOC analysis only.

UMC collected the sediment samples for VOC analysis using laboratory-supplied En Core® samplers. Prior to sampling, approximately two inches of sediment and surficial organic debris was removed using a stainless steel hand trowel, and then the sampler was inserted into the exposed sediment. The filled sampler was then capped for storage and delivery to the laboratory. Sediment samples collected for the remaining analyses were collected using a stainless steel hand trowel, generally at depths of between two and six inches below the stream bed bottom, and transferred directly into laboratory-supplied containers.

Sediment samples are identified by the prefix “SED”, indicating sediment, followed by the numeric sample location identifier on the LVRR RI Tables and Figures. A summary of sediment sampling locations investigated during this LVRR RI follows.

4.9.3.2.1 Mud Creek and Mud Creek Gorge

As described in the USEPA 2002 RI/FS WP, Mud Creek is an intermittent stream along its reach across the outcrop belt of the Onondaga Formation in the area of the Spill Site. The losing portion of the stream channel begins at Route 5 (approximately one mile south [up gradient] of the Spill Site) and continues to the lower portion of the Mud Creek Gorge, where perennial spring discharge feeds the stream. Surface water and sediment samples were collected for comparison to spring/seep sample results to evaluate the potential for TCE to remain persistent in the surface water and sediment. Overland flow only occurs along this reach of the creek during spring run-off events. Therefore, the USEPA 2002 RI/FS WP determined that no relevant up gradient background location can be sampled which is representative of the stream flow across the Study Area. Since TCE is extremely volatile and does not persist in surface water, the surface water/sediment sampling locations were located at near shore quite water locations where fine sediment deposition occurs. Thereby, biasing the sample locations toward areas where TCE is likely to be present.

UMC collected six sediment samples from the Mud Creek drainage during the December 2009/January 2010 event, co-located with surface water samples as depicted on Figure 9a. One of the Mud Creek sediment samples (LVRRSD-00) was collected upstream of the Spill Area, while the remainder were collected in downstream sections of Mud Creek, both upstream and downstream of Mud Creek Gorge.

4.9.3.2.2 Gorge Pond

The USEPA 2002 RI/FS WP describes Gorge Pond as a spring fed pond with minimal surface water inflow or outflow. The lack of surface water flowing through the pond may create an environment in which TCE could be persistent. The locations were primarily based on the limited size of the pond. Since TCE is extremely volatile and does not persist in surface water, the surface water/sediment sampling locations were located at near shore quite water locations where fine sediment deposition occurs. Thereby, biasing the sample locations toward areas where TCE is likely to be present.

UMC collected two sediment samples from Gorge Pond during the December 2009/January 2010 event, as depicted on Figure 9a. One of these locations was co-located and collected simultaneously with surface water sample LVRR-SW-50.

4.9.3.2.3 Spring Creek

According to the USEPA 2002 RI/FS WP, Spring Creek is a significant discharge boundary for shallow bedrock groundwater flow. The creek is fed primarily by springs originating from sub-horizontal bedding plane fractures, and to a lesser extent, vertical fractures in the bedrock. The creek runs perpendicular to the axis of the NYSDEC defined plume, with the highest concentrations found approximately half way between Caledonia and Mumford (the length of the creek located in the Study Area). Surface water and sediment samples were collected for comparison to spring /seep sample results to evaluate the potential for TCE to remain persistent in the surface water and sediment. The results will also be evaluated for use in the ecological risk assessment. The sampling locations were selected based upon the length of the creek through the Study Area. Since TCE is extremely volatile and does not persist in surface water, the surface water/sediment sampling locations were located at near shore quite water locations where fine sediment deposition occurs. Thereby, biasing the sample locations toward areas where TCE is likely to be present.

UMC collected sixteen sediment samples from Spring Creek during the December 2009/January 2010 event, fifteen of which are co-located with surface water and/or spring/seep samples as depicted on Figure 9a. Six of these locations were re-sampled during the January 2012 event as depicted on Figure 9b.

One Spring Creek sediment location proposed for sampling in the USEPA-approved Technical Memorandum was not sampled due to insufficient sediment.

4.9.3.2.4 Oatka Creek

As described in the USEPA 2002 RI/FS WP, the Oatka Creek basin is the discharge point for surface water within the Mud Creek drainage basin. Oatka Creek is suspected to be influenced by local groundwater regimes. This groundwater regime is believed to be highly influenced by the

Mud and Spring Creek sub-basins. The creek flows eastward and is assumed to be the northern hydraulic boundary of the Study Area. Surface water/sediment samples were collected along the reach of the creek through the Study Area and upstream outside the suspected area of influence of the groundwater plume. The sampling locations were selected based upon the length of Oatka Creek and its confluence with tributaries. The upstream location will provide a reference sample for comparison to downstream locations. In addition, samples were collected upstream and downstream from the confluence with Mud and Spring Creek to evaluate the potential for TCE discharge and persistence from those creeks into Oatka Creek.

UMC collected thirteen sediment samples from the Oatka Creek drainage during the December 2009/January 2010 event, twelve of which were co-located and collected simultaneously with surface water samples as depicted on Figure 9a.

One additional Oatka Creek sediment location proposed for sampling in the USEPA-approved Technical Memorandum was not sampled because of frozen ice-bound conditions.

4.9.3.2.5 Wetland Area East of Spring Creek

The USEPA 2002 RI/FS WP describes a large wetland area located approximately 1.5 miles east of Spring Creek which is suspected to be a discharge point for groundwater flow from the Lehigh Valley aquifer. This wetland also receives flow from Oatka Creek. The wetland occupies a buried bedrock valley filled with glacially deposited sediments. Surface water/sediment sampling will determine the potential for upward flow from the bedrock to discharge into the wetland. The sample locations were collected at intervals along a north-south line (perpendicular to the axis of the plume) to evaluate the potential for plume discharge into the wetlands.

UMC collected two sediment samples from the wetland area east of Spring Creek during the December 2009/January 2010 event, as depicted on Figure 9a.

4.9.3.3 Surface Water Sampling and Analysis Procedures

When possible, sediment and surface water samples were collocated and collected at the same time from areas down gradient of the Study Area and from upstream background locations.

The surface water samples collected by UMC were generally collected as grab samples by submerging a sample collection container into the top 6 inches of the water, collecting a sample and pouring the sample into laboratory-supplied containers. In the case of sampling in deeper sections of the stream, or in sections with steep, unstable banks, a sample collection container was extended on a wooden pole into the stream channel, and the sample was then transferred to laboratory-supplied containers.

All of the surface water samples collected during the December 2009/January 2010 event were submitted for laboratory VOC and cyanide analysis by USEPA Methods 8260B and 335.4, respectively. Select surface water samples collected during the December 2009/January 2010 event were also submitted for SVOC (Method 8270C), pesticide (Method 8081A), PCB (Method 8082), and metals (Method 6010B) analysis.

Surface water samples collected during the January 2012 and November 2012 events were submitted for laboratory VOC analysis only.

Surface water samples are identified in the LVRR RI by the prefix “SW”, indicating surface water, followed by the numeric sample location identifier on LVRR RI Tables and Figures.

Exceptions to this nomenclature are surface water samples OATKA UPS-01 and CONFLUENCE-01, collected during the December 2009/January 2010 event, and; SPRING UPS-01, and SPRING CSW-01 through SPRING CSW-08, collected during the January 2012 and November 2012 events. A summary of surface water sampling locations in each of the drainage areas studied follows.

4.9.3.3.1 Mud Creek

Four surface water samples were collected by UMC from Mud Creek during the December 2009/January 2010 sampling event. Three of the samples were collected downstream of Mud Creek Gorge, while the fourth sample was collected approximately 500 feet east of the Spill Area. The samples were co-located and collected simultaneously with sediment samples. One of the locations, designated as LVRRSW-08, was re-sampled during the January 2012 event.

Three additional Mud Creek surface water locations proposed for sampling in the USEPA-approved Technical Memorandum were not sampled because the stream was dry or because only the co-located springs/seeps were producing water.

4.9.3.3.2 Gorge Pond

One surface water sample was collected at Gorge Pond during the December 2009/January 2010 sampling event, co-located and collected simultaneously with a sediment sample. A second proposed surface water location was not sampled due to stagnant and frozen conditions.

4.9.3.3.3 Spring Creek

The Spring Creek surface water samples were generally collected at evenly spaced intervals along the stream or in wet and poorly drained areas west of the stream.

Three surface water samples were collected by UMC from Spring Creek during the December 2009/January 2010 sampling event. Two of these locations, designated as LVRRSW-14 and LVRRSW-18, were re-sampled during the January 2012 sampling event.

Three additional Spring Creek surface water locations proposed for sampling in the EPA-approved Technical Memorandum were not sampled because only the co-located springs/seeps were producing water.

As depicted on Figure 9b, six surface water samples were collected along Spring Creek during the January 2012 event. Three of these locations were re-sampled during the November 2012 event. Surface water samples were collected at seven additional locations along Spring Creek during the November 2012 event.

4.9.3.3.4 Oatka Creek

Eleven surface water samples were collected by UMC from Oatka Creek during the December 2009/January 2010 sampling event. Oatka Creek surface water sample LVRRSW-55 is located immediately downstream of the confluence of Mud Creek with Oatka Creek. Surface water sample LVRRSW-48 is located immediately downstream of the confluence of the Guthrie Creek with Oatka Creek. The remainder of the Oatka Creek surface water samples are located upstream of the confluence of Spring Creek with Oatka Creek. These samples were generally collected from small seasonal streams or wetland areas that discharge northward to Oatka Creek or directly from Oatka Creek. The samples were all co-located and were collected simultaneously with sediment samples. One surface water location proposed for sampling in the USEPA-approved

Technical Memorandum at sediment sample location LVRRSD-54, was not sampled due to stagnant and frozen conditions.

Two surface water sampling locations, designated as OATKA UPS-01 and CONFLUENCE-01, were sampled during January 2012 event. These samples were collected upstream and downstream, respectively, of the confluence of Spring Creek with Oatka Creek.

4.9.3.3.5 Wetland Area East of Spring Creek

One surface water sample was collected from the wetland area east of Spring Creek during the December 2009/January 2010 sampling event. A second surface water location proposed for sampling in the USEPA-approved Technical Memorandum was not sampled due to stagnant and frozen conditions.

4.9.4 Ecological Characterization

Pursuant to the USEPA 2002 RI/FS WP and as part of the ecological reconnaissance, a qualitative vegetation habitat survey was performed to identify terrestrial habitats associated with Mud Creek, Spring Creek, select reaches of Oatka Creek, and the wetland area located to the east of Spring Creek. The ecological characterization investigation activities were included in the Screening Level Ecological Risk Assessment (SLERA) and the Baseline Ecological Risk Assessment (BERA) submitted to the USEPA under separate cover.

4.9.5 Indoor Air Vapor Investigation

The USEPA 2002 RI/FS WP Addendum dated September 11, 2006 requires an assessment of the potential for vapor intrusion pathways at the Site. The indoor air vapor investigation activities were submitted to the USEPA under separate cover within the following two documents:

- UMC, on behalf of LVRR, prepared and submitted an Indoor Air Monitoring Plan (IAMP) on March 14, 2008, and Amendments 1, 2, and 3 to the IAMP which were approved by USEPA on March 19, 2008.
- UMC, on behalf of LVRR, submitted the Revised IAMP Report dated July 19, 2013 which, includes sampling results obtained from the implementation of the IAMP during the 2007-2008, 2008-2009, 2009-2010, 2010-2011, 2011-2012, and 2012-2013 heating seasons (November 14 – March 31).

Please refer to the above-referenced reports (Appendix U) and Section 6 of this LVRR RI for detailed discussions regarding the ongoing vapor intrusion pathway investigations at the Site.

4.9.6 Investigation Derived Waste (IDW) Characterization and Disposal

In accordance with the USEPA 2002 RI/FS WP, all IDW generated during the field sampling efforts were characterized and disposed in accordance with local, state, and federal regulations. All refuse not contaminated by hazardous materials was disposed of as conventional municipal solid waste. All rock cuttings; unused samples; decontamination wash/rinse water; unused sample preservation and equipment decontamination fluids; contaminated personal protective clothing, debris, and expendables generated onsite during the field investigation was characterized to determine their appropriate disposition. Materials determined to be hazardous waste were transported under waste manifest to an acceptable Treatment, Storage, or Disposal Facility (TSDF) for disposal.

4.9.6.1 Drill Cuttings IDW

During drilling, all drill cuttings were collected into 55-gallon drums at the borings and then transported to the Site compound off of Gulf Road for temporary storage. The drums with the drill cuttings along with the drums with the NYSDEC drill cuttings from the 1990's were sampled for disposal characteristics during February 2012. These included VOCs according to USEPA Method 8260, TCLP VC, and total and amendable cyanide. Each drum was sampled to demonstrate that the cuttings were not acutely hazardous and to separate solids from liquids. The analytical results are summarized on Table 9a and the laboratory reports are presented in Appendix P.

Once the drums were sampled, they were examined for shipping condition. Those drums that were determined to be intact and met the DOT shipping requirements were placed into a tractor-trailer and shipped to the disposal facility. Those drums that were found to be compromised were placed into roll-off containers and shipped in bulk. Liquid drums that were leaking were placed in an over pack and shipped with the intact drums.

Waste shipments began on February 22 and were completed on February 27, 2012. One tractor-trailer of drums and one roll-off were removed on February 22, a second roll-off was removed on February 24, and the second trailer and third roll-offs were removed on February 27, 2012. The waste was shipped to Wayne Disposal, Inc. in Belleville, Michigan. A total of 237 drums were removed from the Site, 165 intact drums in three tractor trailer trucks and 72 drums emptied into three (3) in roll-off containers. Waste disposal manifests are included in Appendix Q.

4.9.6.2 Monitoring Well Development/Sampling IDW

Purge water collected during drilling and purging of the monitoring wells during sampling was contained and stored in a 21,000-gallon holding tank located in the Support Zone. Section 3.3.7.3 of the USEPA 2002 RI/FS WP allows for the discharge of water to the ground surface after treatment. On May 24, 2010, UMC requested that groundwater with TCE concentrations less than 5 µg/l be discharged to the ground surface without treatment. NYSDEC responded on May 26, 2010 by email that discharge of uncontaminated water to the ground surface was appropriate and discharge of water with contaminants exceeding the groundwater standards needed treatment. Water with TCE concentrations exceeding 5 µg/l, the groundwater standard, was treated with granular activated carbon prior to discharge to the ground surface. Table 9b summarizes the purge water sampling prior to discharge and the laboratory reports are in Appendix P.

4.10 DATA EVALUATION

The stream sediment, surface water, spring water and groundwater analytical results were evaluated for usability. This evaluation is not intended for compliance with the regulatory criteria or as a human health or ecological risk assessment. Rather, it is intended to determine if the data can be relied on to base reasonable and scientific conclusions. All data were submitted to Trillium for validation prior to evaluation for usefulness. Trillium reviewed the analytical data packages for accuracy and precision and noted any discrepancies with the reported values by the laboratory. These discrepancies were either flagged, the concentrations changed, and/or the data was rejected. UMC reviewed the validated data and included the noted changes in the reported concentrations on the data tables. Any rejected data was not used.

UMC reviewed the data accepted by the data validator to evaluate the data for usability. The usability of the data accepted by the validator was based on laboratory reporting and detection limits. If the sample reporting or detection limits exceeded the regulatory criteria that data may not be usable. Possible reasons for increased reporting or detection limits for specific compounds would be high concentrations of one compound in the sample raising the limits for the remaining compounds to levels above the regulatory criteria. In such cases this data was deemed to be usable because at least one compound had a valid reported concentration. For samples where the reported concentrations exceeded the regulatory criteria because of matrix interference or the analytical limits could not reach the regulatory criteria were found to not be usable and UMC stated that no conclusion could be made regarding compliance with the regulatory criteria.

There are samples where compounds (cDCE, toluene) reporting or detection limits exceeded the regulatory criteria but the TCE concentrations in these samples were high resulting in the higher reporting limits. The data was usable because, even though not all compounds could be compared to the regulatory criteria, TCE could be compared and was found to exceed the regulatory criteria. If one compound exceeded the criteria then a conclusion could be made regarding the sample usability and a scientifically defensible conclusion could be made.

In general, the data were found to be usable. The samples where usability was not attained were SOVCs in surface water samples collected during 2009; the metals antimony and thallium in surface water and antimony in spring water in samples collected during 2009, the pesticides in surface and spring water samples, and PCBs in spring water samples. The groundwater samples collected from the domestic and monitoring wells during the 2008 Reconnaissance Investigation revealed that the elevated reporting limits were a result of high TCE concentrations.

Samples collected during December 2010 from LVRR-29-1, -2, -3, and -4 had reporting limits above the regulatory criteria. However, the laboratory detections limits were below the criteria and any detection above the detection limits were "J" qualified as an estimated concentration. Therefore, any concentration above the criteria would have been reported as estimated. All other elevated reporting limits were a result of high TCE concentrations. These data results are usable and scientifically defensible conclusions can be drawn from these results.

A sample collected from LVRR-34-2 during March 2011 had elevated reporting limits. The results from this sample cannot be scientifically supported or used to evaluate compliance with the regulatory criteria. Several compounds in LVRR-21-3 were rejected by the validator; however, the rejected compounds were not LVRR COCs. The reporting limits for the valid compounds in this sample are below the regulatory criteria and a decision can be made regarding compliance with the criteria.

Elevated reporting limits for other samples were a result of high toluene or TCE concentrations. With the exceptions noted above, these sample results are usable and scientifically defensible conclusions can be drawn from these results.

Some of the samples collected during the June, September, and December 2011 sampling events had elevated reporting limits due to high toluene or TCE concentrations. These data results are usable and scientifically defensible conclusions can be drawn from these results.

After review of the data, it has been found to be usable to formulate scientifically defensible conclusions and draw comparisons to the established regulatory criteria or compliance criteria established in the 1997 ROD. A more complete data evaluation will be submitted under separate cover.

5 PHYSICAL CHARACTERISTICS

5.1 SITE PHYSIOGRAPHY

The Study Area is situated in the Allegheny Plateau Physiographic Province of western New York within the LeRoy and Caledonia 7.5 minute USGS topographic quadrangles. The major surface drainage feature in the Study Area is Oatka Creek, which flows from west to east, generally along the northern edge of the Study Area. Mud Creek, a tributary of Oatka Creek, flows from south to north through the western portion of the Study Area. South to north-flowing Spring Creek is also a tributary of Oatka Creek and generally defines the eastern boundary of the Study Area. Figure 3 is a map showing the Study Area features.

The northeastern portion of the Spill Area slopes downward toward the northeast and Mud Creek. The southeastern portion of the Spill Area slopes downward to the east and southeast to Mud Creek. The western section of the Spill Area is generally higher in elevation and contains piles of quarried rock debris, remnant of historical quarrying activities in the area.

East of the Spill Area to Spring Creek the topography generally slopes downward in an undulating surface. The ground elevation at the Spill Area is approximately 760 to 770 feet above mean sea level (msl). The elevation of the upstream end of Spring Creek in the vicinity of Mill Street is approximately 650 feet above msl while the elevation of Spring Creek at its downstream end at the confluence with Oatka Creek is approximately 600 feet above msl. North of Gulf Road/Flint Hill Road, the topography slopes downward to the north to Oatka Creek. The confluence of Oatka Creek and Mud Creek is approximately 630 feet above msl. Figure 4 is a topographic map showing the Study Area features.

5.2 SITE GEOLOGY

The geology of the area was investigated to identify the various properties of the overburden material and bedrock to determine where the contaminant mass is located and the potential pathways for contaminant migration. The Study Area is underlain by glacial and glacialfluvial deposits of Quaternary Age which are in turn underlain by sedimentary rocks that dip gently to the south and consist primarily of carbonates and shale of Silurian and Devonian age. A comprehensive summary of the regional geology of western New York and geology of the Site, including the Study Area and Spill Area, can be found in the NYSDEC RI/FS and is summarized again in the Section 1.2.3 of the USEPA 2002 RI/FS WP. A summary of the geologic conditions of the Site based on the NYSDEC RI/FS, and UMC's Site observations, and research follows.

5.2.1 Unconsolidated Overburden Material

Unconsolidated overburden material at the Site generally consists of sandy loam underlain by glacial till deposited as ground moraine and in pro-glacial lacustrine environments during the Pleistocene Epoch. During the Pleistocene Epoch, four stages of continental glacial advancement occurred, covering all of western New York. The final Wisconsin glaciation destroyed all evidence of the previous three glaciations in the western New York area. This Wisconsin event left sub-glacial deposits of till, eskers, and drumlins; terminal moraines, proglacial deposits of glacio-fluvial and glacio-deltaic material; and englacial deposits of eskers and flow-till.

Although not differentiated in the field by UMC, surficial soil at the Site is documented in the NYSDEC RI/FS to be representative of the Benson Channery loam, the Farmington loam, Farmington cherty, stony loam, and the Honoeye silty loam. All of these soils are described as dark brown to grayish brown, well drained silty soils with an average thickness of between 20 and 40 inches underlain by glacial till or weathered bedrock. The NYSDEC RI/FS indicates glacial till materials at the Site are representative of the Valley Heads drift sheet consisting of a hard, poorly sorted matrix of fine to coarse grained gravel and sand and clayey silt.

Soil samples collected by UMC from test borings conducted in the eastern portion of the Spill Area in wooded or grass covered areas, were observed by UMC to generally consist of between two to six inches of sandy loam with trace amounts of organic material underlain by light to reddish brown fine- to coarse-grained sand with trace amounts of silt and up to 50% fine to coarse-grained gravel. These overburden materials were in turn underlain by weathered light to medium-grey cherty limestone bedrock. UMC interprets the unconsolidated overburden material in these areas to be representative of glaciofluvial sediment while the underlying bedrock is representative of the Devonian-age Onondaga Formation as described below.

Soil samples collected by UMC from test borings conducted in the western portion of the Spill Area on property previously owned by LVRR or on property currently owned by the westerly abutting Hanson Aggregates of New York generally consists of light- to medium-grey fine- to coarse-grained sand with up to 50% fine- to coarse-grained gravel and a trace of silt. UMC interprets these materials to be fill which was likely historically generated at nearby quarries and subsequently placed in working areas around the quarries and in the former LVRR right-of-way. UMC observed trace amounts of apparent coal and/or asphaltic material in the fill material located generally along the former LVRR right-of-way both south and north of Gulf Road. The fill material generally extends downward to the weathered limestone bedrock but is occasionally underlain by between one to six inches of yellowish brown silty fine-grained sand or fine-grained sandy silt. These sediments are interpreted by UMC to be representative of a residual soil that was partially eroded prior to overlying fill emplacement. Overburden materials were generally observed to be dry, with occasionally moist to damp conditions in the sandy silt/silty sand material immediately overlying bedrock.

Test boring split-spoon refusal was generally observed at depths of less than one foot to a maximum depth of 10.6 feet and an average depth of approximately 5 feet within the Spill Area. The depth to bedrock was observed to be generally deeper in the northern portion of the Spill Area north of Gulf Road.

Though not specifically characterized due to the air hammer drilling techniques employed, overburden in the overall Study Area east of the Spill Area generally ranged in thickness between approximately two feet and 10 feet. However, along Spring Creek, bedrock was encountered at LVRR-22, LVRR-24, and LVRR-25 at depths between approximately 25 and 50 feet below the ground surface, considerably deeper than in borings advanced west of Spring Creek.

5.2.2 Bedrock Geology

UMC conducted a review of available literature, bedrock test boring and coring data, and test boring geophysical data to assess the Site bedrock stratigraphy. Bedrock test boring and coring, and geophysical logging as they pertain to Site geologic and hydrogeologic findings and their influence on contaminant distribution and migration is discussed in Section 6.

Table 10 is a generalized stratigraphic column for the Study Area. Table 4 indicates the ground surface elevation, and the thickness and inferred elevation of the top and bottom of bedrock units observed in DC/LVRR borings based on UMC's assessment of available bedrock boring and geophysical data. Figure 10a is a geologic cross section, constructed generally along the longitudinal axis of the contaminant plume between Gulf Road and Spring Street, depicting inferred geologic units encountered in borings along the section and FLUTe or PVC screened intervals in the borings. Figure 10b is a geologic cross section along Church Road, generally transverse to the contaminant plume, depicting inferred bedrock units and FLUTe or PVC screened intervals in borings along the section.

A description of the Site and Site vicinity bedrock stratigraphy follows based on UMC's assessment of available literature, bedrock test boring and coring data, and test boring geophysical data.

5.2.3 Bedrock Stratigraphy

The NYSDEC RI/FS mapped the geologic units encountered in the Study Area as illustrated on Figure 4-2 of the NYSDEC RI/FS. As illustrated on the figure, the rock units exposed at the ground surface in the Study Area are generally encountered in stream cuts along Oatka Creek and Mud Creek. The figure indicates that over most of the Study Area, the Late Devonian-age Onondaga Formation is the upper most rock unit, dipping gently to the south. However, in the northern and eastern portions of the Study Area, stratigraphically lower Early Devonian and Late Silurian-age formations are exposed north and east of an erosional line resulting in an erosional surface sloping north and east into the Oatka Creek and Spring Creek drainages.

Consistent with the USEPA 2002 RI/FS WP, Section 1.2.3, the Silurian-age Syracuse Formation is defined as the base of the Study Area for this investigation due to the presence of evaporates which preclude its use as a potable water supply. None of the current or former water supply wells in the area penetrate into or below the Syracuse Formation. The Syracuse Formation is overlain in ascending order by the Silurian-age Camillius, Bertie and Akron Formations and the Devonian-age Bois Blanc and Onondaga Formations.

A description of these formations in stratigraphically lower to higher order follows, based on UMC's review of available geologic literature and test boring and coring, and geophysical logging observations.

5.2.3.1 Silurian System

5.2.3.1.1 Syracuse Formation

The Upper Syracuse Formation is composed of thinly bedded to very thinly bedded dolomite with veinlets and/or interbeds of evaporates including anhydrite, gypsum and halite. Gypsum has been mined in Erie, Genesee and Monroe Counties, with the gypsum beds being between 150 and 225 feet below the base of the Onondaga Formation.

The Syracuse Formation outcrops in the Study Area only along Oatka Creek. The NYSDEC cored several locations (DC-01, DC-07, and DC-08) during their investigations and found dolomite present in the Upper Syracuse Formation. The Syracuse Formation is interpreted to be the upper-most bedrock unit encountered in boring LVRR-23, which was advanced approximately 4 feet into the formation. Many of the remaining borings were advanced into the Syracuse Formation, including DC-9C, to approximately 32.7 feet into the formation. Defined as the base of the Study Area, no groundwater samples were collected directly from the Syracuse Formation.

5.2.3.1.2 Camillus Formation

The Camillus Formation overlies the Syracuse Formation and is comprised of green shales, anhydrite, and occasional dolomite. Dolomite is found in increasing amounts in western New York and Ontario, Canada. The evaporates anhydrite and gypsum are associated with the shale. The lower 40 to 50 feet of the formation is a highly fractured and solution weathered karstic zone with very high transmissivities. Both the NYSDEC and UMC experienced drilling difficulties in this portion of the Camillus Formation including lost circulation of air and numerous borehole collapses resulting in difficulty or failure to reach desired completion depths.

In the Study Area, the Camillus Formation is approximately 65 feet thick and consists of a medium light gray to dark grey, fine grained, crystalline argillaceous dolomite. The Camillus Formation is present below the unconsolidated overburden and outcrops occasionally in the Spring Creek area, and in sections along Oatka Creek. The Camillus Formation is the upper-most bedrock unit encountered in LVRR borings 22, 24C, and 25C, and DC-13B. Borings LVRR-26, and LVRR-34, and DC borings 10D, 11D, and 12D, were advanced into the Camillus, but were not advanced through its entire thickness. In the remaining borings, the Camillus Formation ranged from approximately 45 feet thick in LVRR-31 to 71 feet thick in LVRR-28.

Figure 11a illustrates the Camillus Formation thickness in the Study Area. The figure indicates the Camillus Formation is thickest in the southern portion of the Study Area, along and south of Route 5. However, it should be noted that not all borings were advanced to the base of the Camillus Formation. Figure 11b is a map showing the top of the Camillus Formation. This figure indicates the Camillus Formation dips to the south at less than one degree. Along the west side of Spring Creek, the elevation of the top of the Camillus Formation is approximately 650 feet, whereas on the east side of the creek it is approximately 600 feet, suggesting a fault is present beneath Spring Creek.

5.2.3.1.3 Bertie Formation

The Bertie Formation is subdivided into three members including, in stratigraphically lower to higher order, the Falkirk, Scajaquada, and the Williamsville Members. The Bertie Formation is documented to be approximately 45 feet thick and consists of argillaceous dolomites. Where complete sections are found, the Bertie Formation is overlain conformably by the Akron Formation. In other cases, the Scajaquada Member is overlain unconformably by the Bois Blanc Formation.

Figure 12a illustrates the Bertie Formation thickness in the Study Area. The Bertie Formation was generally encountered throughout the Study Area, ranging in thickness between 31 and 35 feet. However, in the central section along Lime Rock and McIntyre Roads the Bertie is approximately 40 feet thick. Figure 12b is a contour map of the top of the Bertie Formation. This map indicates the Bertie dips southward at less than one degree. The Williamsville and upper portions of the Scajaquada Members have been eroded away and are not present in the eastern and northern portions of the Study Area.

Joints are present in the outcrops in the Study Area with two sets; one striking northeast and dipping steeply (60° to 70° SE) and the second striking northerly and dipping vertically. Joint orientations in other areas were widely divergent. The joints in the Bertie did not correlate with joints measured in the overlying Onondaga.

Descriptions of the Falkirk, Scajaquada, and Williamsville Members of the Bertie Formation follows in stratigraphically lower to higher order.

5.2.3.1.3.1 Falkirk Member

The Falkirk Member ranges from approximately 25 to 35 feet in thickness and consists of a fine grained to microcrystalline, thinly bedded to massive, dolomite. The NYSDEC RI/FS documents that fractures of narrow aperture commonly occur throughout the Falkirk Member but that heavily fractured intervals are rare.

Test borings LVRR-36, DC-7, and DC-16 were advanced into the Falkirk Member but did not penetrate its entire thickness. In the remaining borings, the member ranges from approximately 21 feet thick in boring LVRR-33E to 33.30 feet thick in DC-5D.

5.2.3.1.3.2 Scajaquada Member

The Scajaquada Member consists of medium dark gray to pale yellowish brown dolomite layers with dark gray argillaceous seams and partings, ranging from one to eight feet thick, with the member thinning from east to west. The member is thinly bedded, fine grained, and occasionally has a laminated appearance.

In complete sections, the Scajaquada Member is overlain by the Falkrik Member. However, in the areas of LVRR borings 18, 20, 27 through 30, and 34 through 36, and DC borings 1D, 2D, 3D, 4D, 5D, 6D, 7, 7RD, 11D, and 15B, the Scajaquada is unconformably overlain by the Bois Blanc Formation. In these borings, the member ranges from approximately 0.20 feet thick in DC-6D to 11 feet thick in LVRR-31.

5.2.3.1.3.3 Williamsville Member

The Williamsville Member consists of a medium light gray to light gray, crystalline, massive dolomite documented be 5 to 8 feet thick.

The Williamsville Member outcrops along an erosional line south of Oatka Creek. The member ranges from approximately four feet thick in boring LVRR-21, located just south of Gorge Pond, to 11 feet thick in LVRR-31, located just north of Route 5. The Williamsville is present just east of Church Road to the erosional line south of Oatka Creek. West of Lime Rock Road, the member pinches out to the south and west.

5.2.3.1.4 Akron Formation

The Akron Formation is described as a thinly bedded, medium gray to yellowish gray, fine grained crystalline dolomite, five to eight feet thick in the Site area. The upper contact of the Akron Formation with overlying Devonian-age strata is sharp and unconformable.

The Akron Formation is absent in most DC/LVRR borings, ranging in thickness from approximately one foot thick in boring DC-16 to 7.80 feet thick in boring DC-12D and is completely missing from DC-07 and borings to the west. The Akron Formation, like the Williamsville Member of the Bertie Formation beneath it, pinches out between Church Road and

Lime Rock Road and is not present to the west. The NYSDEC RI/FS also shows the Akron pinching out between Church Road and Lime Rock Road. In the Lime Rock Road area, the formation also pinches out to the south between DC-10 and DC-11. The missing Akron Formation and Williamsville Member of the Bertie Formation are a result of a period of erosion which also eroded portions of the Scajaquada Member of the Bertie Formation.

Figure 13a is a thickness map of the Akron showing its greatest thickness along Lime Rock Road and McIntyre Road. Figure 13b is a contour map of the top of the Akron. This map shows the Akron slopes toward the south at less than one degree.

5.2.3.2 Devonian System

The Devonian-age formations encountered in the Study Area include, in ascending order, the Bois Blanc and the Onondaga Formations. Descriptions of the Bois Blanc and Onondaga Formations follow.

5.2.3.2.1 Bois Blanc Formation

The Bois Blanc Formation is the basal formation of the Devonian System and lies unconformably above the Akron formation. This unconformable contact is called the Walbridge Disconformity. The formation is documented to thin rapidly east of Buffalo, being approximately 3 feet thick in the Study Area and becoming discontinuous and disappearing completely east of the Genesee River Valley. The formation is described as a medium to light gray, fine to course grained limestone or cherty limestone with a limey sandstone base considered to have formed by reworking of now eroded Silurian strata.

The Bois Blanc Formation ranges from approximately 0.30 feet thick in boring DC-12D to seven feet thick in boring LVRR-34. Figure 14a illustrates the Bois Blanc Formation thickness in the Study Area. The map indicates that the formation is thickest from LVRR-20 southeastward to LVRR-34, averaging approximately six feet thick. Figure 14b is a contour map of the top of the Bois Blank and it shows the formation dipping slightly to the south at less than a degree. The thickness of the Bois Blanc Formation in the Spill Area is considerably thinner, averaging approximately one foot thick. The Bois Blanc thins to the east to two to four feet thick along Church Road and two feet along Lime Rock Road. Further to the east in the vicinity of McIntyre Road the formation is approximately one foot thick. Between Lime Rock Road and Spring Street the Bois Blanc Formation is eroded off.

5.2.3.2.2 Onondaga Formation

The Onondaga Formation consists of five members, including in stratigraphically lower to higher order, the Edgecliff, Clarence, Nedrow, Moorehouse, and Seneca Members. The complete Onondaga Formation section is documented to be approximately 140 feet thick. The Moorehouse and Seneca Members are separated by an approximately two to four inch thick paleo-volcanic ash bed known as the Tioga Bentonite.

The Moorehouse Member, Tioga Bentonite and Seneca Member were not encountered in any of the LVRR borings. The NYSDEC RI/FS indicates the lower-most portion of Moorehouse Member was observed in DC-11 borings to a depth of approximately 7 feet below the ground surface, indicating the overlying Tioga Bentonite and Seneca Member has been eroded off in that area. All of the remaining members of the Onondaga Formation are represented in DC/LVRR borings, with the exception of borings LVRR-20 through LVRR-25, DC-3, DC-6, DC-8, DC-9, DC-13, DC-14 and DC-17, where only the lower-most Clarence and Edgecliff Members are present. The Nedrow Member has been eroded in the northern portion of the Study Area and all members of the Onondaga have been eroded in the eastern section in the vicinity of Spring Creek.

The members of the Onondaga Formations are exposed with decreasing topography in the stream valleys. In the vicinity of the Genesee Country Museum, the rock outcroppings change direction from a general east-west trend along Oatka Creek to a more northwest-southeast direction extending from the museum property to center of the Village of Caledonia. This is expressed as a decline in topography. This decline is most evident along Flint Hill Road by the museum property where the topography decreases from approximately 700 ft amsl to approximately 630 ft amsl in the Village of Mumford.

Descriptions of the Onondaga Formation members observed in DC/LVRR borings follows in stratigraphically lower to higher order.

5.2.3.2.2.1 Edgecliff Member

The Edgecliff Member is the basal member of the Onondaga and it consists of a medium-dark gray to medium-light gray, thinly-bedded to massive, coarse-grained fossiliferous limestone. Light colored chert nodules are scattered throughout the member and are more common toward the top as it grades into the overlying Clarence Member.

The Edgecliff Member is the only member of the Onondaga to be present in boring LVRR-21, with a thickness of approximately 2.85 feet. In the remaining borings, the member ranges in thickness from approximately 3 feet thick in LVRR-26 to 13 feet thick in LVRR-30.

5.2.3.2.2.2 Clarence Member

The Clarence Member consists of a light gray to medium dark gray, medium grained to microcrystalline, medium to thinly bedded limestone containing up to 70% chert. The member is documented to be approximately 31 feet thick and has been subdivided into three units based on chert content. The lower unit and upper units contain 50% chert and the middle unit contains 70% chert. The member crops out in stream cuts at Mud Creek Falls and in site-vicinity quarries and exhibits poorly developed joint systems in those areas. The Clarence Member is the upper-most rock unit encountered in test borings LVRR-20, DC-3, DC-6, DC-8, DC-9, and DC-17 and has likely been partially eroded in these areas. In the remaining borings, the member ranges from approximately 19 feet thick in LVRR-29 to 43 feet thick in LVRR-27.

5.2.3.2.2.3 Nedrow Member

The Nedrow Member is documented to be up to approximately 43 feet thick and consists of a medium gray to medium light gray, very fine grained to coarse grained, crystalline shaly limestone or calcareous shale with up to 20% chert. The member is fossiliferous with corals, gastropods and brachiopods. The Nedrow Member is documented to be approximately 22 feet thick in the westerly abutting General Crushed Stone Quarry.

As indicated on Table 4, the Nedrow Member is the upper-most unit observed in most borings, ranging from approximately 6 feet thick in boring LVRR-32 to 44.9 feet thick in boring DC-7RD. The full thickness of the unit was not observed in most borings, in most cases not exceeding 15 feet, indicating that the unit has been partially eroded off in most areas of the Site.

5.2.3.2.2.4 Moorehouse Member

The Moorehouse Member is described as being approximately 25 feet thick and consisting of a medium gray, finely crystalline, argillaceous limestone with chert nodules throughout.

As discussed above, the Moorehouse Member was observed only in the DC-11, LVRR-26, and LVRR-27 borings at a thickness of less than 10 feet. The member is only present in the southern portions of the area along Route 5.

5.2.4 Structural Geology

The regional structural geology consists of generally flat-lying stratigraphy with the geologic formations dipping gently (0.5 to 1.0 degree) to the south. Regionally, macro-scale, low-amplitude folds with fold axes trending in a north to northeast direction are present. Folding is not a significant structural feature in the Leroy area. The area is also crossed by small (local) to large (regional) faults. The largest fault in the region is the north-south trending Claredon-Linden Fault zone, located between the towns of Claredon and Linden to the west of the Study Area. The Claredon-Linden fault may extend across Lake Ontario into Canada. Geophysical studies revealed that the fault extends to a depth of approximately 9.6 kilometers with magnetic anomalies that are due to the Precambrian basement rocks. A sharp change in the magnetic pattern across the fault line suggests the Precambrian basement controls the fault (Reference 29).

In 2010, Reddy and Kappel (Reference 32) also mapped the top of bedrock in Genesee County. Their map (Plate 6, Map 2) shows a trough in the top of bedrock from south and east of LeRoy, trending to the northeast by Circular Hill Road, immediately west of the Study Area. East of Circular Hill Road, through the Spill Area and then eastward to the county line, the top of bedrock is fairly uniform and slopes to the north. Since the formations dip to the south, this surface is an erosional surface. This trough is generally coincident with the LeRoy Fault shown by Reddy and Kappel on their Figure 2. This map also showed two other faults, although these were interpreted but not mapped, to the east of Le Roy. The motions of these faults were not identified but the eastern most one, the Retsof Fault, runs through the Study Area with a north-south trend (Reference 32).

A news release on March 14, 2000 in the University of Buffalo News reported on a meeting of the Northeastern Section of the Geological Society of America held in New Brunswick, New Jersey from March 13 to 15, 2000. Dr. Robert D. Jacobi and his students from the University of Buffalo reported the findings, both as poster presentations and in presentation papers, of the presence of faults in the upstate New York area. They identified numerous faults in western New York, some dating back to the Precambrian, that extend from Buffalo to Albany (Reference 41).

Studies conducted by others used aerial photographs and topographic maps to identify the location of faults in the area west of Batavia to just east of Caledonia, including the Study Area, to assess groundwater flow paths and the potential of groundwater impact from fertilizer application. The results of these studies are presented in Reference 33, Figures 4 through 6. A review of these figures reveals that the number (or frequency) and size of the fractures increases from west to east, with the highest number in the LeRoy area. Two sets of fractures predominate; one trending in a northeast-southwest direction and the second in a northwest-southeast direction.

However, in the Study Area, between LeRoy and Caledonia, the trend of the fractures becomes more easterly. Additionally, two large fractures are mapped on Reference 33, Figure 4 in the vicinity of the Spill Area, both trend in general northeast-southwest direction. Further east in Caledonia, a fracture is identified along Spring Creek trending in a north-south direction.

Furthermore, a large number of solution and patterned sinkholes are located in the Spill Area and the area just to the west with fractures trending in east-west directions (Reference 33).

The fault along Spring Creek, herein referred to as the Spring Creek Fault, extends from near the center of the Village of Caledonia northward to Oatka Creek. Oatka Creek flow direction changes as it passes by the fault. West of the fault, the flow direction is southeastward whereas east of the fault the flow direction is northeastward. Additionally, a stream valley north of Oatka Creek aligns with Spring Creek, suggesting the Spring Creek Fault crosses and extends north of Oatka Creek. Outcrops located between Spring Street and the west bank of Spring Creek dip to the west at up to approximately 20º. Other outcrops in the same area closer to Spring Creek exhibit various directions of dip. Given that the general dip of the geologic formations in the area is about 1° to the south, the changes in dip direction and magnitude suggests deformation or displacement along Spring Creek has occurred. Figure 15a is a map showing the expected location of the Spring Creek Fault.

Figure 15b is a Cross Section (C-C') across the Spring Creek Fault. This section shows a vertical displacement of the Camillus across Spring Creek of approximately 55 feet, with the east side down thrown. Contacts for the cross section were obtained from the NYSDEC RI/FS.

5.3 SITE HYDROLOGY AND HYDROGEOLOGY

The surface water hydrology in the Spill and Study areas include several streams and overland flows. Oatka Creek, located north of the Study Area, is the largest surface water body in the area and is an eastward flowing stream. Most of the streams in the area are northward or northeastward flowing and discharge into Oatka Creek. As discussed above, two tributaries of Oatka Creek are located in the Study Area including Mud Creek, located just east and south of the Spill Area, and Spring Creek, located at the east end of the Study Area. Mud Creek flows northeastward and Spring Creek flows northward.

The fractures and sinkholes documented in the Study Area likely provide pathways of low resistance through which surface water can infiltrate underlying bedrock. A water budget study on Mud Creek was conducted by Mr. Paul Richards to evaluate the impact the Onondaga Formation has on surface water and groundwater. Mud Creek flows through a large sink hole located just southeast of the LVRR derailment Site. The purpose of the study was to determine if Mud Creek is an important contributor of water to the Oatka Creek flow by focusing on Mud Creek flooding and seasonal groundwater rises. Transducers were placed upstream and downstream of the sinkhole to measure the water across the sinkhole. The study found that only during January through April and at times of high karst flooding events does Mud Creek water pass across the sinkhole and contribute flow to Oatka Creek. The remainder of the time, Mud Creek water infiltrates into the Onondaga Formation through sinkholes and fractures and joins the local groundwater flow eastward toward Spring Creek (Reference 34).

In addition, Mr. Richards studied the water budget of Spring Creek to determine the source of the water feeding the stream. He placed transducers in Spring Creek and Oatka Creek to monitor the water flow and found that there was little fluctuation in the Spring Creek water flow while Oatka Creek showed large changes in water flow. He then compared the water levels in Spring Creek to those in monitoring well DC-05, located approximately 4 miles west of Spring Creek and close to Mud Creek. He found that the water levels showed a nearly identical fluctuation pattern. The study noted the flow indexes of nearby streams, which he calculated using the USGS water shed areas for each steam. Comparing the flow index for Spring Creek to nearby creeks, Mr. Richards found the Spring Creek flow index was significantly higher than the other area streams, and he concluded that the Spring Creek watershed did not provide all the water to the Spring Creek flow. Using water from other streams feeding Spring Creek through sinkholes, the Spring Creek flow index approached that of the other area streams. Mr. Richards concluded that Spring Creek is supplied by water from other streams infiltrating into the aquifer through sinkholes, moving eastward to and then discharging to Spring Creek (Reference 35).

Groundwater levels in the Study Area have been measured since the 1990's beginning with the NYSDEC RI/FS and more recently by Mr. Richards, et.al. The NYSDEC monitored groundwater levels during 1993 and 1994 from 55 monitoring wells in 18 clusters and presented their data on Table 5-7 of the NYSDEC RI/FS. The NYSDEC reported that the lowest levels were during November 1993 or September 1994 while the highest levels were during March or April 1994. Groundwater level fluctuations of up to 58 feet were noted during this monitoring period. The groundwater levels in wells west of Mud Creek fluctuated between 30 and 40 feet. The levels in the DC-12 cluster fluctuated between 40 and 58 feet (DC-7R). Wells near Spring Creek (DC-14) showed a change of about 10 feet. During the monitoring period the NYSDEC also observed that there was little vertical difference between wells of differing depths within each cluster.

From April 5 to June 8, 1994, the NYSDEC continuously monitored 17 wells along Church Road to determine if snow melt or rainfall events resulted in groundwater level rises. During that time period, eight events occurred. Groundwater levels rose after four of the events, and of the remaining four events responses were not observed in all monitoring wells. The NYSDEC also noted that water levels rose without a precipitation event. Furthermore, on May 6 of 1994, water levels declined sharply (by as much as 2 feet). Since this data was obtained during the spring, snowmelt was not a factor. The reason for the decline was not determined.

The NYSDEC collected groundwater samples from the monitoring wells and analyzed the samples for VOCs and cyanide to identify the distribution of TCE and cyanide in the groundwater. The NYSDEC plotted the VOC detections on a map to illustrate the VOC distribution in the subsurface and found that the dissolved-phase TCE extended from the Spill Area eastward. They interpreted the plume to narrow as it passed beneath Church Road and then flow easterly to Spring Creek approximately four miles down gradient to the east. The TCE concentrations decreased from about 1,000 µg/l just down gradient from the Spill Area to about 5.0 µg/l in the Spring Creek area. Cyanide was detected only in samples from the Spill Area and was determined not to be an environment concern; the NYSDEC removed cyanide from the sampling program.

From August 2008 to February 2009, UMC performed a Site Reconnaissance investigation for this LVRR RI. This investigation included the gauging of (measuring groundwater levels in) groundwater monitoring wells installed by the NYSDEC for depth to groundwater. The groundwater elevations for each well were calculated and the horizontal hydraulic gradient was found to be toward the east. During this investigation, UMC collected groundwater samples from the wells and analyzed the samples for VOCs to determine if changes in groundwater concentrations and TCE plume geometry occurred since the NYSDEC RI/FS. The 2008/2009 analytical results were similar to the 1996 results, indicating a plume extending from the Spill Area eastward with concentrations declining from about 1,000 µg/l at the Spill Area to about 5.0 µg/l in the Spring Creek area. Given the amount of time that passed between the two investigations (over 10 years) some changes were expected. However, the strong similarity between the two sampling rounds demonstrates that the dissolve-phase TCE plume is in a state of dynamic equilibrium.

In 2010, Richards's et al, monitored groundwater wells in the Study Area and beyond to identify the groundwater flow paths. They noted that groundwater mounding occurs in the Onondaga Formation because zones exist where the "conveyance capacity of fractures can be lower than the rate of allogenic recharge." This can result in groundwater rising into the soil where it can come into contact with the agriculture-related contaminants. Richards reports that the "water tables are extremely dynamic, with water tables rising in the early spring as fast as 50 feet per day." They also found that the water table fluctuations are not always associated with local precipitation or snow melt events. They concluded that the water level fluctuations are a regional phenomenon with groundwater flowing through large fractures from the highlands to the south to the Study Area. Infiltrating surface water and groundwater originating from the highlands to the south would move through these fractures to their discharge points further north and east. Over time dissolution of the carbonate bedrock by the groundwater would enlarge the fractures allowing for large quantities of water to be transmitted through the solution cavities. Differential dissolution of the various formations resulted in some units being highly transmissive, such as the Camillus, while other units were less transmissive. The large number of sinkholes and fractures in the Study Area allows water to penetrate the bedrock and then migrate through the solution-enhanced fractures and move from the Spill Area eastward to its discharge area near Spring Creek. (Reference 33)

Regional hydrogeology studies concluded that large rainfall events and snow melt on the highlands to the south flooded the streams that flow north. When these streams reach the carbonates of the plain south of Lake Ontario, they flood the karstic aquifers with large volumes of water resulting in water level increases up to 50 feet. These flooding events typically occur during the spring. Groundwater then migrates through the aquifers and discharges in larger streams (Reference 32 and 33).

UMC measured groundwater levels in the monitoring wells to obtain information on the hydrogeologic characteristics of the aquifer. Groundwater levels in the monitoring wells were separated into data collected from specific geologic formations. The purpose of this was to evaluate each formation for differences in flow patterns and to determine if there are variations in the groundwater flow in the various geologic formations. The screen depths for each monitoring well was evaluated based on the well bore data collected by UMC and the NYSDEC RI/FS. Table 1 lists the well screen completion depths and the geologic formation(s) in which the screen is situated.

Prior to producing groundwater contour maps, the groundwater elevations were calculated by subtracting depth to groundwater from the surveyed casing elevation (Tables 5a through 5m). The groundwater elevations for wells were plotted on figures.

Figures 8a through 8m of this LVRR RI show the groundwater contours for the Study Area and Appendix N contains hydrographs illustrating the elevation changes within each well and formation over time. A discussion of our findings per formation is summarized in the following paragraphs. Please note that due to the thin structural presence of the Bois Blanc and Akron Formations groundwater within these formations was not evaluated separately from the Onondaga, Bertie, Camillus and the Syracuse Formations. Additionally, wells completed in the overburden are also included in the groundwater evaluations.

The Onondaga Formation hydraulic gradient in the Spill Area is complex but generally dips downward toward the south, possibly a result of infiltration from the abandoned quarries to the north or the effect of dewatering at the Dolomite Quarry to the west. East of the Spill Area, the hydraulic gradient is in a general eastward direction. However, during September, at the height of the drought, the hydraulic gradient is toward the south, possibly reflecting the declining water levels. Surface water from Mud Creek infiltrates into the subsurface at a large sink hole just east of the Spill Area (References 34 and 35) and this infiltrating water may affect the groundwater gradient and possibly the groundwater flow direction in the Onondaga Formation. However, it should be noted that in anisotropic aquifers groundwater flow direction is not perpendicular to groundwater contours.

The Bertie Formation hydraulic gradient in the Spill Area is similar to that of the overlying Onondaga Formation. To the east and southeast of the Spill Area, the March, June and December 2011 maps suggest recharge and drainage is occurring in the vicinity of DC-03. This well is located in a large sink hole concluding that Mud Creek is infiltrating into the subsurface formations in this area (References 33, 34, and 35), this conclusion is further supported by the LVRR RI groundwater contours. East of the Spill Area the hydraulic gradient slopes downward in a general easterly direction toward Spring Creek. There is some fluctuation in the contour direction most likely reflecting variations in recharge and discharge.

The Camillus Formation receives infiltration from overlying formations in the vicinity of the Spill Area. Further to the east, from Lime Rock Road to Spring Creek, the hydraulic gradient slopes downward in a general eastward direction.

The Syracuse Formation hydraulic gradient slopes downward to the east or northeast and is the base formation for evaluated within the Study Area. NYSDEC monitoring well DC-17B is the only well in the vicinity of the Spill Area that is completed in the Syracuse Formation. At mid-plume, DC-09C is completed in the Syracuse Formation. The remaining three wells completed in the Syracuse Formation are down gradient (DC-13, LVRR-22 and LVRR-23). LVRR-23 is partially completed in the Syracuse Formation and partially in the overburden.

Two monitoring wells are completed in the overburden (LVRR-24A and LVRR-25A) and one is partially completed in the overburden (LVRR-23). Because these wells are on opposite sides of streams and adjacent to different streams, groundwater contour maps were not generated.

Groundwater flow direction is generally interpreted to be perpendicular to the groundwater contour lines. However, in fractured bedrock and karst terrain, the groundwater flow direction may not be the same as the hydraulic gradient over small areas. By comparing the groundwater elevation contours with the TCE concentrations, a conclusion can be drawn whether the groundwater flow direction is perpendicular to the groundwater contours or in some other direction. Using the TCE plume as a tracer, the plume extends to the east of the Spill Area and it is perpendicular to the groundwater elevation contours, demonstrating that groundwater flow is perpendicular to the groundwater contours. The groundwater flow direction for the Church Road area eastward is easterly. With depth, in the Syracuse Formation, the flow direction in the eastern section of the Study Area by Spring Road appears to be slightly north of east, most likely a result of discharge location. In the Spill Area, the flow direction is from the north and the abandoned quarries southward toward the Spill Area. Along Mud Creek from the Dolomite Quarry to Gulf Road, surface water infiltrates into bedrock through sink holes. This results in a complicated flow pattern that generally flows to the east, south and west from the abandoned quarries.

5.4 SITE ECOLOGY

5.4.1 Land Use/Major Vegetative Communities

Zoning maps for the Town of Leroy, Town of Caledonia, Town of Wheatland and Village of Caledonia were reviewed to identify the land use in the area. In Leroy, the land north of Gulf Road and south of Gulf Road west of Church Road is zoned as Industrial. East of Church Road to the town line In the Town of Caledonia, the area north of Route 5 to the town line is zoned as Light Industry. In the town of Wheatland, the areas along Flint Hill Road, George Road, and Spring Street are zoned as Residential while the remainder of the town between the residential zoned land and the towns of Leroy to the west and Caledonia to the south is zoned as Agricultural. In the Village of Mumford, zoning is a mix or residential, business, and industrial. East of North Street is zoned as Agricultural. Along Spring and Oatka Creeks, the land is zoned as Flood. Zoning in the Village of Caledonia along Spring Creek and westward to the village line with the Town of Caledonia is zoned as Residential. Land along Route 5 leading west out of the village center is zoned as Commercial and the portion along the western Village border with the Town of Caledonia is zoned as Industrial.

Land use north and west of the Spill Area is for quarry operations. Northwest of the Spill Area, north of Gulf Road and along Neid Road are residential properties. West and south of the Spill Area is a hunting club, which extends southward to the railroad tracks and eastward to Church Road. South of the railroad tracks is commercial properties. Residential properties are located on the east side of Church Road. North of Gulf/Flint Hill Road are private residences and a hunting club. South of Gulf/Flint Hill Road, between Church and Lime Rock Roads are private residences, a hunting club and a private camp ground. South of the railroad tracks along Route 5 are private residences with a few commercial properties. Between Lime Rock Road and Spring Street and north of the railroad tracks are a race track and a hunting club along Lime Rock Road, agricultural land and the Genesee Country Museum. Along Spring Street are residential properties. The land along Route 5 has commercial and industrial properties. In the Village of Caledonia and Town of Caledonia east of Spring Creek the properties are residential, commercial and agricultural. Just east of the village center is Jones Chemical.

The US Department of Agriculture has a website (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm) which shows the soil types for a given area. The website was reviewed for those portions of Genesee, Monroe and Livingston Counties within the study area. This map shows the soil between the Spill Area and Spring Creek is mostly Benson soils with some loam soils between the Spill Area and Lime Rock Road. East of Lime Rock Road to Spring Street cobbly loam and loam predominate with some gravely fine sand. The soils along Oatka and Spring Creek consist of loam and muck. Large areas of rubbleland are present west and north of the Spill Area and north of Gulf Road from the intersection with Church Road eastward approximately one mile.

The US Geological Survey has a website (http://gapanalysis.usgs.gov) that reports the land cover for an area. This website was consulted for the Macrogroup Level and the Ecological System Level to identify the land cover of the area. The Macrogroup Level map shows that along Oatka and Spring Creeks the area is covered by Northern & Central Floodplain Forest & Scrub. Much of the northern portion of the area is mapped as Central mesophytic Hardwood Forest while the southern portion is mapped as herbaceous Agricultural Vegetation. Areas just west of the Spill Area are shown as Recently Disturbed or Modified. The Ecological System Level map shows that along Oatka and Spring Creeks and portions of Mud Creek are Central Interior and Appalachian Floodplain Systems. The slopes of Oatka Creek and the north end of Spring Creek are mapped as Appalachian Hemlock-Hardwoods Forest. The western section of the area from approximately Church Road westward is mapped as North-Central Interior Dry-Mesic Oak Forest and Woodland. The area west of Church Road and south of Gulf Road is shown as Cultivated Cropland.

The NYSDEC has identified the surface water quality of the streams in the area and lists Oatka Creek as a Class B water; Mud Creek as Class B, B(T), and B(TS) water; and Spring Creek as Class C, C(T), and C(TS) water. The usages for Class B water is for primary and secondary contact recreation and fishing and the waters are suitable for fish and wildlife propagation and survival. Class C uses is for fishing and they are suitable for fish and wildlife propagation and survival and for primary and secondary contact recreation. The T and TS notations are for trout streams and trout spawning streams. The 2001 Genesee River Basin Waterbody Inventory and Priorities Waterbodies List shows that for public bathing Oatka Creek is threatened water body but for recreation and aesthetics it is a stressed water body. The type of pollutant is algal/weed growth, nutrients, and silt/sediment primarily from agriculture and stream bank erosion.

5.4.2 Wetlands

UMC contracted URS to perform a wetlands survey of the 10-acre parcel identified in the SA (Reference 1) as the Spill Area. URS did not identify wetlands within the 10-acre Spill Area. Figure 2 of their report shows several areas north of Gulf Road and west of Neid Road that are mapped as being on the National Wetlands Inventory. These appear to be located in areas of former quarries. URS also identified wetlands listed as NYSDEC freshwater wetlands along Oatka Creek west of Mud Creek.

The NYSDEC's Environmental Resource Mapper was consulted to identify other wetlands that might be located between the Spill Area and Spring Creek. Three areas of state-regulated fresh-water wetlands were identified; along Oatka Creek west of Mud Creek, as previously identified by URS, along Oatka Creek west of Mumford to the Genesee Country Museum, and along Spring Creek. The upstream Oatka Creek wetlands are approximately 45 acres in size and have been identified as CH-27 and CH-28. The wetlands along Oatka Creek near Mumford are approximately 27 acres in size and have been identified as WH-8. The wetlands along Spring Creek are about 88 acres in area and they have been identified as CA-1. The NYSDEC classifies these as Class II wetlands. NYSDEC has four classes of wetlands; Class I through IV, with Class I being the most valuable. Class II wetlands are a high quality wetland that is an ecologically significant plant community/habitat. .

No wetlands were identified between Gulf Road on the north and Route 5 on the south from the Spill Area to Spring Creek or east of Spring Creek.

5.4.3 Surface Water Bodies

The largest surface water body in the area is Oatka Creek; an eastward flowing stream located approximately 3,700 feet north of the Spill Area. Oatka Creek flows northward through the center of Leroy for several miles to Oatka Creek Trail where it turns eastward and discharges to the Genesee River in Scottsville. At times of low flow, in Leroy center Oatka Creek infiltrates into the bedrock resulting in a dry river bed for a short distance north of Leroy Center.

Mud Creek, located approximately 300 feet east of the Spill Area, is the nearest surface water body to the TCE release. It is an intermittent stream that rarely flows during the summer, fall or winter. Surface flow of Mud Creek infiltrates into the bedrock at a sinkhole located southeast of the Spill Area and south of Gulf Road. Only during times of spring runoff or during large regional rainfall events when the infiltrating precipitation fills the bedrock fractures preventing the Mud Creek surface water from infiltrating does the water flow past the sinkhole and discharge to Oatka Creek (Reference 34). A pond is located along Mud Creek north of Gulf Road several hundred feet upstream of Oatka Creek.

Spring Creek is located approximately four miles east of the Spill Area in the towns of Caledonia and Wheatland. This creek is a northward flowing stream that discharges to Oatka Creek at the Village of Mumford in the Town of Wheatland. It is approximately one and a half miles long with springs being the source of its water.

Between Mud Creek and Spring Creek are several small northward flowing streams along Route 5. These streams are intermittent and flow north of Route 5 only during times of high flow. Like Mud Creek, the base flow of these streams infiltrates the bedrock where the water then flows eastward with the groundwater flow.

On the property of the Genesee County Museum are several ponds located south of Oatka Creek between the base of the bedrock outcroppings of the Bertie and Onondaga Formations. These ponds, and associated wetlands, are in a linear orientation extending in an east-west direction parallel to the bedrock escarpment.

5.4.4 Endangered, Threatened or Special Fish and Wildlife Species and Significant Habitats or Rare Plant Species

The US Fish and Wildlife website was consulted to determine if there are any endangered or threatened species in the Study Area. The results of the query revealed that no species are endangered in the area. The NYSDEC Environmental Resource Mapper was checked for Rare Plants and Rare Animals in the area. The website shows an area of Rare Plants and Rare Animals extending from Oatka Creek southward to near Rout 5 and westward from the Site Area to approximately Lime Rock Road. The description states that this layer “shows generalized locations of animals and plants that are rare in New York State, including but not limited to those listed as Endangered and Threatened.” The website revealed that there are no rare animals in the area. Rare plants and natural communities, however, are located in the Spill Area and eastward to approximately Church Road. No rare plants or natural communities were located east of Lime Rock Road.

The Environmental Resource Mapper website identified natural communities near the Spill Area and along Church Road including Calcareous cliff community, Limestone woodland, Hemlock-northern hardwood forest and Maple-basswood rich mesic forest. Along Mud Creek, these communities were identified in addition to Rich sloping fen and Floodplain forest. The website did not list natural communities in the Lime Rock Road area or Spring Creek area.

URS performed a Screening Level Ecological Risk Assessment (SLERA) for the site. As part of the SLERA, a review of Rare, Threatened and Endangered Species was performed as part of a Fish and Wildlife Impact Analysis (FWIA) by consulting the US Fish and Wildlife Service and the NYSDEC. Through this process four threatened and five rare plants species were identified that occur near the site. These species are listed below.

- The threatened species were:
    - *Trollius laxus* spp. (Spreading globeflower);
    - *Hydrastis canadensis* (Golden-Seal);
    - *Desmodium ciliare* (Tick-Trefoil); and
    - *Desmodium glabellum* (Tall Tick-Clover).
- The rare species were:
    - *Jeffersonia diphylla* (Twin-leaf);
    - *Lathyrus ochroleucus* (Wild-pea);
    - *Carex willdenowii* (Willdenow sedge);
    - *Agrimonia rostellata* (Woodland Agrimony Plant); and
    - *Triglochin palustre* (Marsh Arrow-Grass Plant).

URS also contacted the New York Heritage Program regarding the potential for threatened or endangered species or species of concern to exist at or near the Site in a letter dated February 18, 2013. A response letter from the NYSDEC, Division of Fish, Wildlife & Marine Recourses, dated February 26, 2013, identified 21 rare or state-listed animals and plants and significant natural communities in the vicinity of impacted area. These species are listed in the NYSDEC letter and in Table 3-1 of the SLERA. To summarize, the following are listed as threatened or endangered:

Resource	Name	Listing	Heritage Conservation Status
Animal Assemblages	Waterfowl Winter Concentration Area	-	-
Wetland Aquatic Communities	Floodplain Forest	-	High Quality Occurrence/Rare Community Type
	Marl Pond Shore	-	High Quality Occurrence/Rare Community Type
	Northern White Cedar Swamp	-	High Quality Occurrence/Rare Community Type
	Rich sloping Fen	-	High Quality Occurrence/Rare Community Type
Upland/Terrestrial Communities	Calcareous Cliff Community	-	High Quality Occurrence/Uncommon Community Type
	Hemlock-Northern Hardwood Forest	-	High Quality Occurrence
	Limestone Woodland	-	High Quality Occurrence/Rare Community Type
	Maple-Basswood Rich Mesic Forest	-	High Quality Occurrence/Uncommon Community Type
	Rocky Summit Grassland	-	High Quality Occurrence/Uncommon Community Type
Vascular Plants	Golden-deal	Threatened	Imperiled in NYS
	Goosefoot Corn-salad	Endangered	Critically Imperiled in NYS
	Green Gentian	Threatened	Imperiled in NYS
	James Sedge	Threatened	Imperiled in NYS
	Little-leaf Tick-trefoil	Threatened	Imperiled in NYS
	Marsh Arrow-grass	Threatened	Imperiled in NYS
	Spreading Globeflower	Rare	Vulnerable in NYS/Globally Uncommon
	Twin-leaf	Threatened	Imperiled in NYS
	Willdenow's Sedge	Rare	Imperiled in NYS
	Woodland Agrimony	Threatened	Imperiled in NYS
	Yellow Giant-hyssop	Threatened	Imperiled in NYS

URS also consulted the US Fish and Wildlife Service's Information, Planning, and Conservation System was reviewed for a preliminary species list and an official species list. Three threatened, endangered, or candidate species, and/or designated critical habitat within the vicinity of the Site:

- Houghton's goldenrod (*Solidago houghtonii*), threatened;
- Bog Turtle (*Clemmys muhlenbergii*), northern population, threatened; and
- Eastern Massasauga (*Sistrurus catenatus*), candidate.

The search also identified freshwater emergent wetlands, freshwater forested/shrub wetlands, and freshwater ponds intersecting the Site area. As the area may be potential habitat for turtles, a bog turtle survey may be required if remedial actions are proposed for the Site in the future. The preliminary and official species lists are provided in Appendix B of the SLERA (Appendix S of this LVRR RI).

5.5 SITE CULTURAL SETTING

Pratt & Pratt Archaeological Consultants, Inc. (Pratt) of Cazenovia, New York performed several Phase I Cultural Resource Surveys during the course of the investigations since 1999. During 1999 two Phase I surveys were performed (Phase I A and Phase I B), both for the NYSDEC for the Lehigh Valley Water Project. The first was performed prior to the installation of the water lines and the second was performed at the conclusion of the water line installation. During 2010, Pratt performed a Phase I Cultural Resource Survey for UMC on behalf of LVRR for the 10 acre Spill Area to update the previous surveys.

5.5.1 Phase IA Cultural Resource Survey

Pratt and Pratt performed a Phase 1A Cultural Resource Survey of the Study Area during the NYSDEC RI/FS to identify any potential historical or cultural Sites of historic interest. This study consisted of a background and literature search followed by a reconnaissance survey of the area. The purpose was to identify Sites located not only in the Spill Area but also near the construction zones identified for the installation of the water supply lines. Pratt identified 12 prehistoric/protohistoric Sites in the area. None were in the Spill Area. Twelve prehistoric Sites were identified: Three (3) were located north of Oatka Creek, three (3) south of Route 5, one (1) was located in the center of Caledonia, and two (2) east of Caledonia. One (1) is located near the confluence of Spring Creek with Oatka Creek in Mumford. One is located south of the GCM wells and the last is located on the west side of Spring Creek west of the NYSDEC fish hatchery. The last two, identified by Pratt as P-4 and P-3, respectively, are the only prehistoric Sites located within the Study Area. Pratt identified P-4 as a "mound now destroyed; cited by Squire was 3 miles south of Wheatland Forks. The mound contained human bones (Parker 1922:586." Pratt identified P-3 as "an Archaic camp (OPRAH #A051-02-0025)." OPRAH is the New York State Office of Parks, Recreation and Historic Preservation of the New York State Museum.

Pratt identified numerous historical Sites in the Town and Village of Caledonia. Pratt recommended that a Phase IB cultural resource evaluation be performed to include subsurface testing in prehistoric areas that have not been disturbed and near rail beds.

5.5.2 Phase IB Cultural Resources Survey

The Phase IB Cultural Resources Survey performed by Pratt for the NYSDEC RI/FS was performed along the planned route for the installation of the public water line and two locations outside the Study Area. The survey consisted of performing transects in the area and excavating test pits at 50-foot intervals. No significant cultural resources were identified.

5.5.3 Updated Cultural Resource Survey

Pratt updated their earlier Phase I Cultural Resource Survey to concentrate on the 10-acre Spill Area to identify any pre-historical, historical or cultural activities which occurred at the Spill Area. Pratt performed the Phase I survey by visually inspecting the area, excavating test pits, and reviewing historical and scientific references. Pratt concluded that no prehistoric or protohistoric Sites are known to exist within one mile of the Spill Area.

Three historic Sites are located within one mile; lime kilns (4400 feet south), General Crushed Stone (1600 feet north), and the former Knickerbocker Inn (within the Study Area). The former Knickerbocker Inn was destroyed by fire in 1988 and has not been rebuilt; only the foundation, a small shed, a burning area and a concrete slab cover for a septic tank, driveway and parking area remain. None of these qualify for the National Register of Historic Places. One nearby property is listed on the National Register of Historic Places is the Marion Steam Shovel located 1000 feet west of the Spill Area. This is outside and up gradient of the Spill Area.

Pratt concluded that no significant cultural resources were located within the 10 acre Spill Area and no further evaluation is recommended. A copy of the Pratt report is included in Appendix R.

6 NATURE AND EXTENT OF CONTAMINATION

Pursuant to the USEPA 2002 RI/FS WP, the nature and extent section of this LVRR RI will present a comprehensive understanding of the Study Area related contaminants that pose the most significant risk to human health and the environment and exceed the ARARs. Valid sampling results from previous investigations were considered when interpreting site-related contamination.

Also, this section will discuss the vertical and horizontal extents of contamination and any data gaps, as necessary; the physical and chemical properties of contaminants; any potential NAPL; and, site-specific background levels of contaminants of concern, if applicable.

6.1 SOILS AND VADOSE ZONE

The soils and vadose zone are addressed under separate cover as the USEPA defined Operable Unit 1.

6.2 GROUNDWATER

6.2.1 Rock Core Sampling

As referenced in the USEPA 2002 RI/FS WP and Section 4 of this LVRR RI, rock cores were obtained from bedrock test borings during the NYSDEC RI/FS to establish stratigraphy and correlate bedrock units between well clusters. The formation descriptions and fossil assemblages identified in the NYSDEC RI/FS and available regional publications were used to correlate the geologic units and determine the depth of each geologic formation present at each LVRR well cluster location.

Nothnagle Drilling, Inc. (Nothnagle), located in Scottsville, NY was contracted by UMC on behalf of LVRR to perform bedrock coring at locations LVRR-33E, LVRR-35, and LVRR-36 between June 7 and June 17, 2010 as depicted on Figure 7. Consistent with the USEPA 2002 RI/FS WP and objectives of the hydrogeologic assessment, the rock coring was conducted to assist in targeting monitoring well depths to specific stratigraphic intervals. A UMC geologist observed and logged the rock coring activities conducted by Nothnagle. A discussion of rock coring procedures is included in Section 4 of this LVRR RI.

Stone Environmental, Inc. (Stone) was retained by Unicorn Management Consultants, LLC., (UMC) to support a program of rock core sampling and laboratory analysis at three locations (LVRR-36, LVRR-35, and LVRR-33) at the Lehigh Valley Railroad Derailment Site in LeRoy, NY. The purpose of this work was to assess the distribution of chlorinated volatile organic compounds (VOCs) within the bedrock matrix at the three locations at the site.

Sampling was conducted during drilling with an HQ core barrel of three core holes, from June 7 to June17, 2010. A total of 381 linear feet of rock was drilled from the three coring locations. Due to poor recoveries in highly weathered dolostone at the base of the Camillus Formation, only 294 linear feet of rock was recovered. A total of 323 rock samples were collected for VOC analysis.

In addition, 17 field duplicates, 18 equipment blank samples, 15 methanol blank samples, and 12 trip blank samples, were also collected for VOC analysis. Twenty intact core samples were collected for physical property analyses. Extraction and VOC analyses of the rock core samples were conducted at the Stone laboratory in Montpelier, Vermont between June 14 and July 21, 2010.

Results of physical property analyses for bulk density, porosity, and organic carbon content were used in conjunction with the VOC data for the calculation of rock pore water concentrations, as presented in the Stone report (Appendix I of this LVRR RI). The rock core sample analytical results and discussion are presented in the following subsections.

6.2.1.1 Rock Core Sample Analytical Results

Stone summarizes the bulk rock VOC concentrations observed in bedrock core samples collected from bedrock coring locations LVRR-33, LVRR-35, and LVRR-36 on Table 4 of their Stone report. This table presents the data as the number of samples collected, the number of detections, and the maximum, minimum, and mean concentrations present in each sample. According to Stone's Table 4, TCE and PCE were detected in all three coring locations. TCE was present in the rock matrix in LVRR-33, LVRR-35 and LVRR-36, with the highest concentrations in LVRR-36. As noted in the text and shown on figures 1, 2 and 3 of the Stone report, TCE concentrations in the rock matrix in LVRR-35 and LVRR-36 are at least an order of magnitude higher in samples collected above the water table than in samples collected from below the water table. However, in LVRR-33, TCE in the rock matrix is higher below the water table. The likely explanation for this is that LVRR-35 and LVRR-36 are in the Spill Area and the rock above the water table was directly impacted by the TCE release, whereas, LVRR-33 is considerably down gradient of the Spill Area and was impacted by TCE migrating through the bedrock network with groundwater.

In addition, Stone's Table 4 identified cDCE, tDCE, 1,1-DCE, and 1,1,1-TCA detections in core samples collected at locations LVRR-36 and LVRR-35 but not in samples collected from LVRR-33. Thereby indicating that incomplete natural attenuation of the TCE is occurring within the Spill Area.

Table 5 in the Stone report summarizes the rock matrix pore water concentrations estimated by Stone for each VOC analyte expressed in µg/l. A summary of the estimated minimum, maximum and mean rock matrix pore water concentrations for each VOC analyte at the three bedrock coring locations is presented within Stone's Table 9. In the Stone report, Figures 1, 2, and 3 are plots of the estimated pore water concentrations vs. elevation at each of the three coring locations. The Stone figures indicate the elevation of each sample point, the location of the sample relative to features observed in the rock samples such as fractures or bedding planes, a graphic indication of the degree and location of fractures observed in the core, the lithologic formation and member name from which the samples were collected, and a description of the rock in each core interval as noted by Stone and UMC geologists. The static water level observed in each core hole prior to over-drilling is also indicated.

A vertical green line on each plot indicates the aqueous solubility for TCE of 1,380 milligrams per liter (mg/l) at 20°C (Reference 31) for comparison to estimated TCE pore water concentrations. The vertical yellow lines on the plots indicate the analytical results for groundwater samples collected from each respective interval during packer testing.

The rock core results demonstrated that there is a large mass of TCE in the rock matrix porosity both above and below the water table, NAPL is not present in the rock fractures (verified by other methods such as FLUTe NAPL Ribbon and monitoring with an interface probe, as will be discussed below), the secondary porosity is much less (probable orders of magnitude less) than the primary porosity, and contaminant mass is present throughout the plume footprint based on core analysis down gradient (LVRR-33) of the Spill Area.

A summary of the spatial distribution of estimated rock pore water TCE concentrations at each coring location follows.

6.2.1.1.1 LVRR-36

LVRR-36 is located within the Spill Area. Static water level in the open hole at boring LVRR-36 was observed at an elevation of approximately 721 feet amsl. Estimated pore water concentrations above this elevation are generally one to two orders of magnitude higher than the solubility limit for TCE, indicating that NAPL is likely present in the primary or matrix pore water and/or in microfractures in that interval. Below the observed static water level, the estimated TCE pore water concentrations are an order of magnitude or more below the solubility limit.

6.2.1.1.2 LVRR-35

LVRR-35 is located in the Spill Area. Estimated rock pore water TCE concentrations in the upper approximately 15 feet of boring LVRR-35 are generally in the range of tens of thousands to hundreds of thousands of µg/L. The estimated pore water concentration at an elevation of 736.5 ft amsl exceeded the solubility limit for TCE indicating that NAPL is present in the primary or matrix pore water at that depth though not in the fractures.

From an elevation of approximately 730 feet amsl to the elevation of the open hole static groundwater level at approximately 710 feet amsl, estimated pore water TCE concentrations are generally lower than those in the upper 15 feet of the hole or are non-detect. Concentrations generally increase again below the approximate open hole static groundwater level to an elevation of approximately 695 feet amsl. Pore water concentrations generally decrease below an elevation of approximately 695 feet, reaching generally non-detect concentrations below an elevation of approximately 675 feet. This elevation approximately coincides with the top of the Camillus Formation.

TCE concentrations in fracture water observed in the uppermost packer test interval in boring LVRR-35 (discussed further below) are generally one to two orders of magnitude lower than the corresponding estimated pore water concentrations for that interval indicating that TCE is diffusing out of the rock matrix into fracture water. Observed fracture water TCE concentrations in the four packer test intervals conducted between elevations of approximately 689 feet and 662 feet amsl are generally in equilibrium with estimated pore water concentrations for those intervals. During packer testing, a groundwater sample was collected from an approximately 74-foot thick interval below a single packer placed at an elevation of approximately 652 feet amsl due to the karstic nature and unstable borehole conditions below that elevation. The TCE concentration observed in that fracture (or solution channel) is approximately one to two orders of magnitude higher than estimated pore water concentrations for that interval indicating vertical mixing of groundwater likely occurred in the borehole prior to final monitoring well construction.

6.2.1.1.3 LVRR-33

LVRR-33 is located in the Study Area down gradient of the Spill Area. Estimates of rock pore water concentrations at location LVRR-33 indicate concentrations generally between 10 μg/l and 100 μg/l and occasionally exceeding 100 μg/l from the static groundwater level of approximately 685 feet above mean sea level (amsl) to the top of bedrock.

The plot indicates the fracture water sample TCE concentration detected in the uppermost packer test interval is essentially in equilibrium with the estimated matrix pore water concentration in that interval. However, fracture water TCE concentrations detected in deeper packer test intervals are lower than the estimated matrix pore water concentrations in those intervals indicating that TCE is diffusing out of the matrix into fracture water. These data also indicate that groundwater concentrations in this area were higher in the past and have declined over time.

The highest estimated rock pore water concentrations at location LVRR-33 were generally observed in the upper Camillus Formation between approximately 100 feet and 115 feet bgs with concentrations exceeding 1,000 μg/l.

6.2.1.2 Rock Core Sample TCE Mass Distribution

Stone estimated the TCE mass distribution in each borehole by multiplying the rock matrix TCE concentrations at each sample depth by the representative depth interval for that sample, and by the rock bulk density. Stone then grouped the depth intervals into sections based on concentration patterns in the core holes. The mass attributed to each interval was summed for each core hole to provide a scaling estimate of the total mass in grams of target analytes potentially present on a unit area basis. These data are summarized graphically on Stone's Figure 4.

As illustrated on Stone's Figure 4, approximately 3,100 grams per square meter (g/m^2) of TCE are estimated to be present in the rock matrix porosity above the observed static water level at boring location LVRR-36. Beneath the static water level to the borehole bottom, approximately 9.7 g/m^2 of TCE are estimated to be present in the rock matrix.

At boring location LVRR-35, approximately 221 g/m^2 of TCE are estimated to be present in the rock matrix pore water above the observed static water level. The Edgecliff member of the Onondaga Formation and the Bois Blanc and Akron Formations underlie the static water level in boring LVRR-35. The rock matrix pore water in these units in the vicinity of boring LVRR-35 is estimated to contain 45 g/m^2 of TCE.

At boring location LVRR-33, the majority of TCE mass estimated to be present in the rock matrix is present below the observed static water level in the Falkirk member of the Bertie Formation and the upper portion of the Camillus Formation. Very little mass is estimated to be present above the observed static water level at boring location LVRR-33.

The Stone report concludes the following:

- There is a substantial amount of NAPL in the matrix porosity above the observed static water level at boring location LVRR-36. There does not appear to be any NAPL below this level.
- There is a very substantial amount of TCE mass in the rock matrix porosity above (3kg in a square meter of rock) and below (9.7 g in a square meter of rock) the observed static water level at boring location LVRR-36.
- The presence of NAPL is evident in one rock matrix sample collected at 736.5 ft amsl, above the observed static water level at boring location LVRR-35.
- There is a substantial amount of TCE mass above the observed static water level at boring location LVRR-35 (~3 g in a square meter of rock).
- While the Nedrow and Clarence members of the Onondaga Formation contain significant TCE mass at boring locations LVRR-36 and LVRR-35, very little mass is evident in those units at location LVRR-33.
- Significant TCE mass extends into the top of the Camillus Formation at boring location LVRR-35 at an elevation of approximately 655 feet amsl, corresponding to a depth of approximately 93 feet bgs.
- Most of the TCE mass at boring location LVRR-33 occurs below the static water level in the Scajaquada and Falkirk members of the Bertie Formation and in the top of the Camillus Formation. However, TCE is evident in the rock matrix throughout the rock column at this location with concentrations estimated to be in the tens of µg/L range within the Nedrow Formation near the ground surface.
- At LVRR-35 the water in the fractures is essentially in equilibrium with the matrix pore water.
- At boring location LVRR-33, TCE concentrations in groundwater samples collected during packer testing are generally between one and three orders of magnitude lower than the estimated rock matrix pore water concentrations indicating that TCE is diffusing out of the rock matrix and into the fractures in this part of the plume.

6.2.1.3 Rock Core Sampling Conclusions

Based on Stone's data, the Spill Area contains NAPL in the bedrock primary porosity above the water table and a substantial amount of TCE mass in bedrock matrix porosity both above and below the water table. Significant mass in LVRR-35 is present to the top of the Camillus, indicating that the higher flow of the Camillus flushes the TCE-impacted groundwater out of the fractures at a higher rate than the diffusion from the rock matrix can recharge from above. In the down gradient area by LVRR-33, the TCE in the matrix pore water is distributed throughout the rock column. Here the TCE is diffusing out of the rock matrix and into the groundwater.

The matrix diffusion phenomenon identified by Stone serves as a long-term source of TCE, sustaining a dilute TCE impacted groundwater plume throughout the Study Area.

6.2.2 FLUTe NAPL Testing and Profiling

6.2.2.1 FLUTe NAPL Testing Results and Discussion

As discussed above, to evaluate for the presence of NAPL in bedrock, UMC employed an electronic interface probe in monitoring wells located within the Spill Area and conducted FLUTe NAPL ribbon testing in test borings LVRR-20, LVRR-28, LVRR-29, LVRR-30 and LVRR-35 following completion of the borings to final depth and prior to installation of FLUTe-style monitoring wells in the borings.

UMC did not observe measurable NAPL in Spill Area monitoring wells using the interface probe. FLUTe NAPL ribbon testing did not detect NAPL in borings LVRR-20, LVRR-28, LVRR-29, LVRR-30 and LVRR-35.

The interface probe and FLUTe NAPL tests did not indicate the presence of separate-phase NAPL.

6.2.2.2 FLUTe Profiling Results and Discussion

As discussed above, FLUTe profiling was conducted in the stratigraphically deepest test borings at locations LVRR-18, LVRR-20, LVRR-21, LVRR-26 through LVRR-32, LVRR-34, and LVRR-35 following completion of the borings to final depth and prior to installation of FLUTe-style monitoring wells in the borings. The FLUTe profiling was conducted to assess of the hydraulic conductivity and transmissivity of the borehole bedrock. Appendix J contains a tabulation and graphical presentation of profiling findings provided by FLUTe. A discussion of FLUTe profiling results follows.

The profiling of test boring LVRR-35, located in the Spill Area, indicates a transmissive zone is present in the boring at a depth of approximately 80 feet bgs and a second transmissive zone is present at a depth between approximately 95 feet to 110 ft bgs. A note on the LVRR-35 profile states that the flow zone at 80 ft bgs is not reliable. A third transmissive zone is present in the boring at approximately 165 feet bgs. No significant transmissive zones are indicated between 110 feet bgs and 165 ft bgs. The “Borehole transmissivity below the depth” profile for boring LVRR-35 indicates that the majority of water (40%) is transmitted through the zone between approximately 95 feet and 110 feet bgs. Approximately 15% is transmitted through each zone at 80 feet and 165 feet. The remainder of the boring transmits the remaining 30%. Please note that the estimated fractions of water transmitted presented were calculated from groundwater under test conditions and may not be the same as under ambient conditions. For example, the gradient in a given fracture zone may be very small under normal conditions, and even though it is transmissive, it might not transmit a significant amount of water.

The profiling of test boring LVRR-33, located on Lime Rock Road, indicates several transmissive zones are present in the boring at depths between approximately 115 feet and 160 feet bgs. A note on the profile states that the data is reliable below 110 feet. Cascading water entering the boring at a depth of about 61 feet bgs collapsed the liner resulting in unreliable data at shallower depths. The transmissive zones are nearly uniformly distributed with depth below 110 feet and no single zone transmits significantly more water than the others. These zones are located in the upper Camillus Formation, which has large solution features and is capable of transmitting large amounts of water.

Table 11 of this LVRR RI summarizes the hydraulic properties obtained by FLUTe profiling for the different geologic formations. In summary, FLUTe profiling generally indicates that discrete fractures in the bedrock transmit the majority of the groundwater while the remainder of the bedrock transmits little or no water. These fractures are not evenly distributed vertically in the borings tested and the number of fractures and fracture locations in each boring varies. However, in general, transmissive zones are present near the top of each boring just below the water table for depths up to approximately 40 feet bgs followed by a section with low transmissivity and then a highly transmissive zone near the bottom of each boring in the Camillus Formation. All of the profiles indicate that a karstic zone is present at the base of the Camillus Formation, approximately 125 feet to 190 feet bgs, through which large volumes of water are transmitted. The extremely high transmissivity of this karstic zone created difficulty in the implementation of the FLUTe profiling, in some cases resulting in unreliable data.

This pattern is similar to that identified by the geophysical investigation (findings discussed below) and results in limiting the downward vertical movement of groundwater from the upper bedrock section to the lower bedrock section. It also allows for the rapid horizontal transmission of groundwater in the Camillus Formation.

6.2.3 Geophysical Logging

6.2.3.1 Geophysical Logging Results and Discussion

As discussed above, consistent with the USEPA 2002 RI/FS WP, geophysical testing was conducted in the stratigraphically deepest open boreholes at locations LVRR-18, LVRR-20, LVRR-21, and LVRR-26 through LVRR-35 following completion of the boreholes to target depths and prior to the installation of FLUTe style or conventional monitoring wells in the boreholes. In addition, consistent LVRR Remedial Design Work Plan for USEPA defined Operable Unit 1 (addressed under separate cover), geophysical testing was conducted in NYSDEC open boreholes DC-01, DC-03, DC-05, DC-06, DC-15, DC-16, DC-17, EW-01, EW-03, EW-07, EW-08, EW-10 and the former residential water supply well located on Neid Road designated as DW-07. The geophysical testing was conducted by GAI with UMC oversight to identify major fracture zones, voids and lithologic units to assist in targeting specific intervals for packer testing and subsequent selection of monitoring well completion intervals. Appendix K of this LVRR RI contains an electronic copy of the GAI report provided to UMC. A discussion of geophysical testing results follows.

GAI compiled the geophysical data onto log plots, which are presented as figures part one and two within Appendix K of this LVRR RI. Also within Appendix K of this LVRR RI stratigraphic changes are superimposed on GAI's log plots, inferred from UMC's analysis of GAI's and the NYSDEC RI/FS geophysical data and borehole drilling and coring observations.

The stratigraphic changes superimposed on GAI's log plots by UMC are inferred largely from gamma log signatures that, as with the NYSDEC RI/FS gamma log data, are generally repeatable across the Study Area. As GAI and the NYSDEC note, increased magnitude gamma signatures generally characterize the Edgecliff Member of the Onondaga Formation, the Bois Blanc Formation, and the Scajaquada Member of the Bertie Formation. These gamma anomalies serve as markers that were used to correlate stratigraphy between borings throughout the Study Area.

As noted above, GAI conducted only gamma logging in borings DC-1D, DC-3D, DC-5D, DC-6D, DC-15B and DC-17B because PVC or stainless steel monitoring wells were constructed in the borings. A full suite of logs was run in the open borehole in each of these DC series well clusters. The distinctive gamma log signatures discussed above are evident on the DC-1D, DC-3D, DC-5D, DC-6D, DC-15B and DC-17B log plots.

GAI's log plots for the remaining borings include annotations that describe interpreted hydraulically active planar-feature depths, based on correlations between all of the available log data. A summary of GAI's observations of note for these boreholes was prepared by UMC and is included in Appendix K.

6.2.3.2 Geophysical Testing Conclusions

In summary, most features identified during geophysical testing are characterized by shallow dips, typically less than 20 degrees from horizontal. The directions of the dips varied widely. These are likely bedding plane partings, fractures or joints. Relatively few high angle planar features were observed using borehole geophysics, likely due to the vertical orientation of the boreholes. However vertical and near vertical joints have been observed in outcrops and in cores and are relatively common in the area.

The geophysical methods employed typically indicated 8 to 15 transmissive zones in each borehole. All holes that extended deep enough encountered a karstic zone at the base of the Camillus Formation.

The flow meter data results are summarized on Table 12. These revealed that in the Spill Area and in the up gradient wells, a general downward vertical flow was present. The very deep levels of LVRR-18 and the shallow sections of LVRR-35 had an upward flow. LVRR-20 on Neid Road has an upward flow in all sections except the very shallow where there is no vertical flow. The four wells on Church Road (LVRR-27 through LVRR-30) all have a general upward vertical flow. The wells at the edges of the mid-plume area (LVRR-21 on the north and LVRR-26 and LVRR-31 on the south) have a general upward vertical flow. This vertical flow pattern indicates that in the Spill Area, TCE could move downward into the bedrock with the groundwater flow. Down gradient, the downward vertical flow could transport the TCE to deeper levels of the aquifer. Upward flow at the edges of the plume can limit the TCE migration to the north and south.

With regard to stratigraphy, relatively high natural gamma readings in the geophysical logs are generally observed and are generally repeatable in boreholes across the site. These readings likely indicate higher clay mineral content in these rock units which correlate with changes in lithology equating to formation or member contacts.

6.2.4 Packer Testing

6.2.4.1 Packer Testing Results and Discussion

As discussed above, consistent with Section 3.3.4.1 of the USEPA 2002 RI/FS WP and Addendums 2 and 4 to the USEPA 2002 RI/FS WP, packer testing was conducted in the stratigraphically deepest open boreholes at locations LVRR-18, LVRR-20, LVRR-21, and LVRR-26 through LVRR-35 following completion of the boreholes to target depths and prior to the installation of FLUTe style or conventional monitoring wells in the boreholes. A discussion of packer test findings follows.

6.2.4.1.1 Packer Test Hydraulic Head Measurement Results

Table 2 of this LVRR RI lists the packer test zone intervals, elevations, and hydraulic head readings for the zones tested in each boring. The packer test analytical data is presented in Appendix M and the packer test hydraulic head measurement results are presented graphically in Appendix L. The graphs illustrate the differences in hydraulic head for each interval tested, for each of the three transducers deployed during testing. In general, a downward vertical component of the hydraulic gradient is present in the portion of the Study Area where the packer testing was performed. A discussion of the hydraulic head measurement results for packer testing conducted in the Spill Area and areas located generally up gradient, cross gradient, and down gradient of the Spill Area follows.

6.2.4.1.1.1 Up Gradient Well (LVRR-18)

Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. The water level above the packers for each interval except the deepest exhibited a rising water level during the tests. Water levels for the test intervals exhibited a downward vertical gradient except for the deepest interval, which had an upward vertical gradient.

6.2.4.1.1.2 Cross Gradient Well (LVRR-34)

Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. The water level above the packers for each interval exhibited a rising water level during the tests. Water levels for the test intervals exhibited a downward vertical gradient except for the 677 foot to 682 foot elevation interval. The packed-off zone exhibited an upward vertical gradient while the zones above and below the packers showed a downward vertical gradient. The geophysical televiewers show a horizontal feature in this zone.

6.2.4.1.1.3 Spill Area Well (LVRR-35)

Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. Water levels for the test intervals exhibited a downward vertical gradient.

6.2.4.1.1.4 Near Down Gradient Well (LVRR-20)

Evaluation of the packer test data shows that the packers generally achieved a good seal during each test. The test on the 35 ft to 40 ft zone showed possible leakage between the packed-off zone and the zone above, suggesting that the upper packer did not completely seal off the test zone. However, this zone was pumped dry and did not recharge. Several other test zones from this well were also pumped dry and did not recharge (707 to 698 feet, 697 to 692 feet, and 661 to 656 feet). Packers in the other test zones achieved a good seal. Water levels for the test intervals exhibited a downward vertical gradient with the gradient increasing with depth.

6.2.4.1.1.5 Church Road Down Gradient Wells (LVRR-27, LVRR-28, LVRR-29, LVRR-30)

LVRR-27 is the most southerly of the wells on Church Road. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. Zones shallower than the 677 foot elevation were dry before the test began. The 672 foot to 667 foot elevation zone was pumped dry and did not recharge. In the remaining zones the packers achieved a good seal. The water levels exhibited an increasing downward vertical gradient to the 637 foot to 632 foot elevation zone and then the downward vertical gradient decreased.

LVRR-30 is located north of LVRR-27 on Church Road. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. Water levels for the test intervals exhibited a downward vertical gradient with depth.

LVRR-28 is located north of LVRR-30 on Church Road. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. Water levels for the test intervals exhibited a downward vertical gradient with depth. The downward vertical gradient appears to increase between the two bottom testing intervals of approximately 650 feet and 600 feet. The Camillus Formation with its large voids and high flow is located in this section.

LVRR-29 is the northern most well located along Church Road. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. All test intervals in this well were pumped dry, however the bottom two intervals recharged sufficiently to collect samples. The downward vertical gradient appears to increase between the bottom two test intervals of approximately 666 feet and 651 feet. As with LVRR-28, the Camillus Formation with its large voids and high flow is located in this section.

The downward vertical gradient along Church Road is greater to the south at shallow depths but increases significantly to the north at deeper depths.

6.2.4.1.1.6 Central Down Gradient Wells (LVRR-21, LVRR-32 and LVRR-33)

LVRR-32 is the southernmost well in the central portion of the Study Area and is located on Lime Rock Road. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. Water levels for the test intervals exhibited a downward vertical gradient with depth. The downward gradient increased to an elevation of approximately 637 feet and then decreased to the deepest test at an elevation of 630 feet.

LVRR-33 is located north of LVRR-32 on Lime Rock Road. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. Graphs of the water levels for each test interval show that the head in the zone above the packers was lower than the head in the zone below the packers. UMC believes that the transducers recording the water levels were inadvertently switched during data downloading. The interval between 680 feet and 670 feet was pumped dry during both tests conducted in that zone. Water levels for the test intervals exhibited a downward vertical gradient with depth.

LVRR-21 is located north of Flint Hill Road. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. The intervals shallower than 672 feet elevation and between 670feet and 675 feet were pumped dry. Water levels for the test intervals exhibited a downward vertical gradient with depth. The downward gradient increased at depths below 666 feet.

In the central portion of this area (LVRR-32 and LVRR-33), the downward vertical hydraulic gradient appears to be less than in the area up gradient near the Spill Area and Church Road.

6.2.4.1.1.7 Down Gradient Wells (LVRR-26 and LVRR-31) - McIntyre Road and Route 5

LVRR-26 is located on McIntyre Road. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. All tested zones in this well produced water in sufficient quantities so that no drawdown was produced by pumping. Water levels for the test intervals exhibited a downward vertical gradient with depth. The downward vertical gradient increased to an elevation of about 613 feet and then decreased below that elevation.

LVRR-31 is located on Route 5 adjacent to the Genesee Valley Rail Road crossing. Evaluation of the packer test data shows that the packers achieved a good seal during each test; no leakage was identified between the packer zones during the tests. Water levels for the test intervals exhibited a downward vertical gradient with depth.

Packer testing conducted in Site monitoring wells indicates that in the Spill Area and down gradient of the Spill Area to Lime Rock Road there is a general downward vertical gradient. This gradient is less in the Lime Rock Road portion of the Study Area than in the Spill Area. Additionally, packer test data collected from the mid-Study Area wells LVRR-26 (McIntyre Road), LVRR-32 and LVRR-33 (Lime Rock Road) indicate that the vertical gradient decreases with increased depth. In the Spill Area the opposite pattern is indicated.

Vertical gradients observed in the Spring Creek area monitoring well clusters, assessed during quarterly groundwater sampling events using an electronic water level meter, are smaller than in the up gradient portions of the Study Area. At the LVRR-24 cluster, vertical gradients are upward, with the largest head difference at 0.19 feet. At the LVRR-25 cluster, the vertical gradients have been both upward and downward. The largest head difference is about 2.33 feet, an upward gradient observed during the March 2011 sampling event.

6.2.4.2 Packer Test Groundwater Sample Analytical Results

UMC collected groundwater samples from each packer zone that provided sufficient water for sample collection. The sample results were used to evaluate the contaminant concentration gradients between the immobile matrix pore water and the mobile fracture water, not to evaluate groundwater quality or demonstrate compliance with groundwater protection criteria. Packer test groundwater sample laboratory reports are presented in Appendix M and Table 3 of this LVRR RI summarizes the analytical results for groundwater samples collected during packer testing.

As discussed above, Stone collected rock core samples from LVRR-36, LVRR-35 and LVRR-33 and analyzed the samples for TCE concentrations. Two of these borings, LVRR-35 and LVRR-33, were also packer tested. UMC compared the water concentrations obtained from the packer testing to the estimated pore water concentrations reported by Stone for the respective core sections. Stone graphically compared these data in the plots labeled Figures 1, 2 and 3 in Appendix T.

Stone compared the groundwater analytical results collected during packer testing conducted in LVRR-35 located in the Spill Area to the estimated pore water matrix concentrations observed in rock core samples collected from LVRR-35 and LVRR-36. This comparison indicates that the TCE concentrations in the rock matrix pore water are roughly in equilibrium with the groundwater in the rock fractures. A similar comparison to samples collected down gradient at Lime Rock Road in LVRR-33 indicated that the matrix pore water has a higher TCE concentration then the fracture groundwater. Stone concluded that this demonstrated the TCE has not been flushed out of the rock matrix and will continue to be a source of TCE contamination to groundwater. Stone also stated that the rock matrix water at LVRR-33 would continue contaminate the fracture groundwater by molecular diffusion.

6.2.4.3 Packer Testing Conclusions

The packer testing evaluated the hydraulic heads at varying elevations in borings located both in the Spill Area and the central portion of the Study Area. Packer testing was not conducted in the far down gradient portion of the Study Area in the vicinity of and east of Spring Creek. Packer test results indicate that there is a downward vertical gradient in the Spill Area and in the central portion of the Study Area. However, the downward vertical gradient is less in the central area than in the up gradient Spill Area. Furthermore, the packer testing was not completed to the base of the Camillus Formation because of the inability of the packers to provide a good seal in the karstic zone located at depth. These findings are in agreement with the geophysical flow meter results.

Groundwater sample analytical results obtained during the packer testing indicate that groundwater TCE concentrations decrease with depth and with distance down gradient from the Spill Area. However, comparison of these concentrations to the matrix pore water concentrations reported by Stone show that the TCE in the fracture water is in near equilibrium with the TCE in the matrix pore water in the Spill Area. The TCE in the matrix pore water at Lime Rock Road is higher than the TCE in the fracture water. This indicates that the Spill Area will continue to act as a source of TCE in bedrock in the Lime Rock Road area.

6.2.5 Groundwater Elevation Measurements

6.2.5.1 Seasonal Groundwater Elevation Fluctuations

Groundwater levels were measured in Site monitoring wells using an electronic interface probe prior to groundwater sample collection in each of 11 quarterly groundwater sampling events conducted between December 2010 and August 2013. In addition, groundwater levels were measured in select monitoring wells in September and November 2012 following significant storm events. In total, groundwater level measurements were collected from Site monitoring wells during 13 events as follows:

1st sampling quarter – December 2010 and January 2011

2nd sampling quarter – March 2011

3rd sampling quarter – June 2011

4th sampling quarter – September 2011

5th sampling quarter – December 2011

6th sampling quarter – February 2012

7th sampling quarter – June 2012

Storm Event Sampling – September 2012

8th sampling quarter – October 2012

Storm Event Sampling – November 2012

9th sampling quarter – March 2013

10th sampling quarter – May 2013

11th sampling quarter – August 2013

Table 5A through Table 5M summarize depth to groundwater and groundwater elevations observed during each of the 13 events. Appendix N contains hydrographs that depict groundwater elevation fluctuations observed in each monitoring well over the course of the 13 events. A discussion of groundwater elevation fluctuations during this time period follows.

Over the entire Study Area, the highest groundwater elevations were generally observed during the March 2011 event, with an average elevation for all wells of 707.39 feet amsl. The lowest elevations were generally observed during the October 2012 event at an average elevation of 669.66 feet amsl. The average groundwater elevations observed in wells selected for monitoring during the September and October storm events were 697.34 and 709.04 feet amsl, respectively, slightly higher than those observed in the preceding or following events.

The largest fluctuation in groundwater elevation for a single well over the course of the 13 events was 104.49 feet, observed in well LVRR-26-3, located in the south-central portion of the Study Area with a FLUTe port set in the Camillus Formation. The smallest fluctuations in groundwater elevation during the 13 events were generally observed in wells located along Spring Creek and east of Spring Creek with fluctuations ranging between 2.44 feet and 0.15 feet. The PVC screens in these wells are also set in the Camillus Formation.

In order to facilitate discussion of Study Area horizontal and vertical hydrologic and contaminant distribution dynamics, monitoring wells in the overall Study Area have been divided into sub-areas generally up gradient and down gradient of the Spill Area as follows:

- Up gradient Wells including DC-04 and LVRR-18
- Spill Area Wells including DC-01, DC-02, DC-05, DC-15, DC-16, and LVRR-35
- Wells Immediately Down gradient of the Spill Area including DC-03, DC-06, DC-17, LVRR-20, LVRR-34, and LVR-37
- Church Road Wells including DC-07, DC-07R, LVRR-27, LVRR-28, LVRR-29 and LVRR-30
- Lime Rock Road Wells including DC-09, DC-10, DC-11, DC-12, LVRR-21, LVRR-26,
- LVRR-31, LVRR-32 and LVRR-33
- Spring Street Wells including DC-13, DC-14, GCM, LVRR-22, and LVRR-23
- Spring Creek Wells including LVRR-24 and LVRR-25
- Wells East of Spring Creek including LVRR-38, LVRR-39, LVRR-40, LVRR-41, and LVRR-42

The following table summarizes the general groundwater elevation fluctuations in all wells in these portions of the Study Area regardless of the stratigraphic unit in which they are installed.

Area	Mean Fluctuation	Maximum Fluctuation	Minimum Fluctuation	Fluctuation Range
Up gradient Wells	34.83	48.56	5.48	43.08
Spill Area Wells	33.29	62.83	14.37	48.46
Immediately Down Gradient Wells	27.17	49.88	1.81	48.07
Church Road Wells	48.22	63.35	21.33	42.02
Lime Rock Road Wells	41.23	104.49	8.29	96.20
Spring Street Wells	16.95	41.27	2.44	38.83
Spring Creek Wells	1.88	3.84	0.84	3.00
Wells East of Spring Creek	0.94	2.00	0.15	1.85

All measurements are in feet.

The above table indicates that mean groundwater elevation fluctuations are generally greatest in wells located along or in the vicinity of Church Road and Lime Rock Road, ranging between 41.23 and 48.22 feet. Mean groundwater fluctuations decrease to the west in Spill Area and up gradient wells but still range between approximately 27.17 and 34.83 feet. Mean groundwater fluctuations are lowest in the eastern portion of the Study Area in wells in the vicinity of Spring Street, Spring Creek, and east of Spring Creek, ranging between approximately 0.94 and 16.95 feet. This is a general evaluation and does not examine the fluctuations vertically in the geologic formations of interest.

To further assess groundwater elevation fluctuations both vertically and horizontally, the screened section of each well, corresponding to specific geologic formations of interest, was considered. The mean groundwater elevation fluctuations and fluctuation ranges are summarized in the following table:

Geologic Formation	Up Gradient Wells	Spill Area Wells	Immediately Down Gradient Wells	Church Road Wells	Lime Rock Road Wells	Spring Street Wells	Spring Creek Wells	Wells East of Spring Creek
Mean Groundwater Fluctuation								
Onondaga	32.40	30.28	30.74	44.91	39.51			
Bertie	35.51	30.71	23.29	48.96	44.38	22.65		
Camillus	36.56	37.26	28.64	48.95	39.66	23.56	1.88	0.94
Syracuse		32.52	23.59		32.87	4.35		
Fluctuation Range								
Onondaga	40.44	34.35	34.26	38.54	89.74			
Bertie	35.81	23.04	39.25	28.06	87.09	36.94		
Camillus	19.69	30.41	42.25	30.01	51.35	3.48	3.00	1.77
Syracuse						4.79		

As with overall mean groundwater elevation fluctuations, the mean groundwater fluctuations observed in the Onandoga, Bertie, and Camillus Formations and in the underlying Syracuse Formation, is greatest in wells located along and in the vicinity of Church Road and Lime Rock Road, ranging between approximately 32.87 and 48.96 feet. Mean groundwater elevation fluctuations in these formations are generally less to the west, ranging between approximately 23.29 and 37.26 feet. East of Lime Rock Road, mean groundwater elevation fluctuations are lowest ranging between approximately 0.94 and 23.56 feet. Mean water level fluctuation ranges are relatively constant with depth, increasing or decreasing slightly in stratigraphically deeper formations.

The groundwater fluctuation range by formation was evaluated to identify the magnitude of change. The greatest fluctuation ranges are observed in wells located along or in the vicinity of Lime Rock Road with ranges in the Onandoga, Bertie, and Camillus Formations of 89.74, 87.09, and 51.35 feet, respectively. The fluctuation ranges are generally less to the west and east of Lime Rock Road. Fluctuation ranges observed in up gradient wells, and wells along Lime Rock Road and Spring Street are considerably less in the Camillus Formation (19.69, 51.35, and 3.48 feet, respectively) as compared to the overlying Bertie and Onandoga Formations. However, fluctuation ranges observed in wells in the Spill Area, immediately down gradient of the Spill Area, and along Church Road are only slightly less or are slightly greater in the Camillus Formation as compared to the overlying Onandoga and Bertie Formations. This is likely due to sink holes and weathered zones in the western-most portion of the Study Area that allow surface water to penetrate through the Onandoga and Bertie Formations into the Camillus Formation.

The hydrographs for individual wells in Appendix N reflect the seasonal groundwater elevation fluctuations discussed above. In addition, they indicate fluctuations in elevation before and after the September 2012 and October 2012 storm events. The expected overall increase in elevations in response to the September 2012 storm event is not evident, likely due to the longer time periods between events allowing for aquifer response. However, increases in elevation in response to the October 2012 storm event are evident since a period of only one week had elapsed following the 8'th quarter monitoring event, allowing comparison over a shorter time period. Increases in groundwater elevation on the order of approximately 15 to 20 feet are evident in response to the October 2012 storm event, generally greater in the Camillus Formation than in the overlying formations. Groundwater elevations observed during storm events and their potential impact on observed Study Area groundwater quality are discussed below.

In addition to hydrographs for each monitoring well, Appendix N contains a hydrograph depicting groundwater elevation fluctuations by stratigraphic unit. This hydrograph plots the mean groundwater elevation observed in all wells screened in the geologic units of interest for each sampling event. The hydrographs reflect the overall seasonal variation discussed above with highest elevations observed in March 2011 and lowest elevations in October 2012. The hydrographs also reflect the magnitude of seasonal groundwater level fluctuations that are typical of the aquifer system across the Study Area, ranging on the order of approximately 25 feet in the Onandoga Formation, 35 feet in the Bertie Formation and 55 feet in the Camillus Formation. The hydrographs also indicate that, for the time period observed, groundwater elevations are consistently highest in the Onandoga Formation and are lower in successively lower geologic units. The exception to this trend is the elevations observed in the Camillus Formation during the September and October storm events when elevations in the Camillus approached and were slightly higher than in the overlying Bertie Formation. This trend likely reflects the relatively higher transmissivity and resultant quicker response time to storm water infiltration in the Camillus Formation as compared to overlying formations.

Analyzing the mean groundwater level fluctuations the Onondaga, Bertie, and Camillus Formations reveals flow patterns during times of high water. In the Onondaga Formation, the highest mean groundwater level fluctuations down gradient of the Spill Area are in the wells DC-07 and LVRR-27 located on Church Road and LVRR-26 on McIntyre Road. Both LVRR-26 and LVRR-27 are along the southern boundary of the study area, and the high water-level fluctuations in the Onondaga Formation at these locations indicate flooding from surface water bodies. The pattern is similar for the Bertie Formation with high mean groundwater level fluctuations along Church Road, McIntyre Road, and Lime Rock Road. The highest mean fluctuations on Church Road in the Bertie Formation are in the northern wells (LVRR-28 and LVRR-29), and in wells LVRR-26 on Lime Rock Road and LVRR-32 on McIntyre Road. A similar pattern is evident in wells screened in the Camillus Formation with the highest mean groundwater level fluctuations observed in wells along Church Road and Lime Rock Road.

The relatively large groundwater elevation fluctuations observed both laterally and vertically across the Study Area results in groundwater flooding bedrock during part of the year that is heavily impacted by TCE in the Spill Area. During this time, TCE is dissolved into the groundwater. As the water levels recede, TCE-impacted groundwater moves to lower levels of the aquifer and then down gradient with advective flow. The large water level fluctuations would prevent vapor extraction from being effective in bedrock because the zone with the high TCE concentration would be flooded for a good portion of the year. Even after the water levels subside, the small fractures where the TCE resides would still be flooded and would take considerably more time to drain than the water in the larger fractures. Groundwater flow through fractures or porous media requires that the capillary pressure must overcome the interfacial tension. The smaller the opening the higher the interfacial tension must be for the movement of water or any other liquid. As a result, water movement through smaller fractures will not occur until the water in the larger fractures has drained, reducing the hydrostatic pressure and allowing the capillary pressure in the small fracture to overcome the interfacial tension. Additionally, if NAPL is present in the small fractures the presence of a second fluid would effectively increase the required capillary pressure. Flow of such a mixture would follow Darcy's Law for Two-Phase Flow.

6.2.6 Groundwater Flow Direction and Gradient

As concluded in the NYSDEC RI/FS, analysis of groundwater elevation data indicates relatively little variation in groundwater flow direction in the formations of interest. It should be noted that groundwater flow direction is generally interpreted to be perpendicular to the groundwater contour lines. However, in fractured bedrock and karst terrain, the groundwater flow direction may not be the same as the hydraulic gradient over small areas. By comparing the groundwater elevation contours with the TCE concentrations (discussed below), a conclusion can be drawn whether the groundwater flow direction is perpendicular to the groundwater contours or in some other direction. Using the TCE plume as a tracer, the plume extends generally to the east of the Spill Area and it is perpendicular to the groundwater elevation contours, demonstrating that groundwater flow is generally perpendicular to the groundwater contours.

Based on this conclusion, the overall groundwater flow direction is easterly. Locally, a complex flow pattern is evident in each formation in the vicinity of the Spill Area, likely the result of influences from nearby quarrying operations and infiltration of surface water through sinkholes in the vicinity of Mud Creek. This results in a complicated flow pattern that generally flows to the east, south and west from the abandoned quarries. East of the Spill Area, groundwater flow direction in each formation is consistently to the east, generally shifting to the northeast in the vicinity of Spring Creek.

Based on this analysis, Figure 8A through Figure 8M depict groundwater elevation contours for each of the 11 quarterly monitoring events and the September and November 2012 storm events. The high and low groundwater elevations observed in each monitoring well during each event, regardless of stratigraphic unit, are plotted on these figures resulting in high (red) and low (blue) groundwater elevation contour sets. The figures consistently indicate a pattern of groundwater flow direction similar to that described above; complex in the Spill Area and generally eastward east of the Spill Area, shifting to the northeast in the vicinity of Spring Creek. Assuming an average difference in groundwater elevation of 100 feet across the approximately 20,000 foot breadth of the Study Area, the horizontal groundwater gradient between the Spill Area and Spring Creek is approximately 0.005 feet per foot (ft/ft).

The hydrographs in Appendix N indicate an overall downward hydraulic gradient across the Study Area between the Onandoga Formation and successively lower stratigraphic units and seasonally variable hydraulic gradients between the underlying Bertie and Camillus Formations. Wells indicating seasonally upward vertical gradients from lower to higher stratigraphic units include well LVRR-20 located on Neid Road, LVRR-34 located immediately down gradient of the Spill Area, LVRR-31 located on railroad property adjacent to Route 5 in the southwest portion of the Study Area, and wells LVRR-24 and LVRR-25 located on Spring Creek. A pronounced upward vertical gradient is evident between the Camillus Formation and overlying overburden and weathered bedrock in wells LVRR-38 and LVRR-40, and LVRR-42 located east of Spring Creek, supporting the conclusion that this area is a discharge zone for Study Area groundwater.

6.2.7 Groundwater Quality

UMC conducted eleven quarterly groundwater sampling events between December 2010 and August 2013 to characterize the contaminant plume with regard to COC distribution and concentration. In addition, UMC collected groundwater samples from select monitoring wells in September and early November 2012 following significant storm events in September and late October 2012 to assess the influence of the resultant changes in groundwater levels on TCE distribution and concentrations. UMC also collected groundwater samples from select monitoring wells during the first quarterly sampling event with the objective of assessing MNA parameters and their influence on the fate and transport of VOCs of concern. A discussion of the results of these groundwater sampling events follows.

6.2.7.1 Contaminant Plume Characterization Results and Discussion

Tables 16A through 16K summarize groundwater analytical results for sampling events conducted during the 11 quarterly events. The tables list only those VOCs that were reported during one or more sampling event. Appendix Y contains laboratory analytical reports for each event and provides a complete listing of the tested analytes. A general overview of the quarterly groundwater sampling event results follows, focusing only on reported TCE and chlorinated solvent-related degradation product concentrations. Table 18 indicates TCE concentrations observed in groundwater samples collected during the quarterly and storm events, the stratigraphic unit screened in each well, and the mean TCE concentration observed in each well during the sampling events. Other VOCs reported in quarterly and storm event groundwater samples, including petroleum-related VOCs and their potential influence on chlorinated solvent-related VOC degradation processes, are discussed below.

6.2.7.1.1 Summary of Quarterly Groundwater Sampling Event Results

6.2.7.1.1.1 First Quarterly Event (December 2010/January 2011)

The highest TCE concentration reported during the first quarterly event was in DC-01A at 12,000 µg/l. Other Spill Area wells contained TCE in concentrations up to 4,600 µg/l in DC-15A. Wells down gradient of the Spill Area reported TCE concentrations up to 1,600 µg/l in LVRR-20-2. Wells along Church Road reported concentrations up to 440 µg/l in LVRR-30-1, LVRR-30-2, and LVRR-30-3. Other Church Road wells and several wells east of Church Road contained TCE at concentrations below 100 µg/l. Groundwater samples collected from monitoring wells along Lime Rock Road were generally in the double digit range, highest in LVRR-32-2 at 95µg/l. TCE concentrations were reported in the single digit range in wells DC-13 and DC-14 located along Spring Street. TCE was reported in LVRR-24A and LVRR-24B, located on the east side of Spring Creek, at concentrations of 13 µg/l and 7.1 µg/l, respectively. These data indicate steadily decreasing TCE concentrations with distance down gradient from the Spill Area.

Other chlorinated solvent-related VOC detections included cDEC, detected at a maximum concentration of 72 µg/l in DC-06B located immediately down gradient of the Spill Area and tDCE detected at a maximum concentration of 2 µg/l in DC-01A located in the Spill Area.

6.2.7.1.1.2 Second Quarterly Event (March 2011)

The highest TCE concentration reported during the second quarterly event was 12,000 µg/l from well DC-01A. Other Spill Area wells contained TCE concentrations up to 4,500 µg/l in LVRR-

35-1. TCE concentrations observed in monitoring wells located immediately down gradient of the Spill Area were highest in LVRR-20-2 with a concentration of 870 µg/l. TCE concentrations along Church Road were highest in LVRR-30 at concentrations between 140 µg/l and 500 µg/l. Other Church Road wells contained TCE at 150 µg/l or less. Lime Rock Road wells reported TCE concentrations up to 80 µg/l in LVRR-32-1. TCE concentrations were in the single digit range in DC-13 and DC-14 wells located along Spring Street and were reported at up to 35 µg/l in GCM wells located west of Spring Creek. TCE was reported in LVRR-24A and LVRR-24B, located on the east side of Spring Creek, at concentrations of 13 µg/l and 3.1 µg/l, respectively. Again, TCE concentrations generally decreased with distance down gradient from the Spill Area.

The chlorinated solvent-related VOC cDEC was detected at a maximum concentration of 45 µg/l in LVRR-20-2 located immediately down gradient of the Spill Area. Also, tDCE was detected at single digit or estimated concentrations only.

6.2.7.1.1.3 Third Quarterly Event (June 2011)

The highest observed TCE concentration reported in the Spill Area during the third quarterly event was 6,300 µg/l in DC-01A. TCE was reported in wells down gradient of the Spill Area in concentrations up to 780 µg/l in LVRR-20-2. TCE concentrations along Church Road were observed at a maximum of 440 µg/l in LVRR-30-2 and decreased down gradient with concentrations generally not exceeding the single or double digit ranges in wells located along Lime Rock Road and Spring Street. TCE concentrations were reported in LVRR-24A and LVRR-24B, located on the east side of Spring Creek, at concentrations of 14 µg/l and 3.5 µg/l, respectively.

cDEC was detected at a maximum concentration of 160 µg/l in LVRR-35-2 located in the Spill Area. Finally, tDCE was detected in several samples at estimated concentrations only.

6.2.7.1.1.4 Fourth Quarterly Event (September 2011)

The highest TCE detection reported during the fourth quarterly event was 11,000 µg/l in DC-15A. Other wells in the Spill Area contained TCE concentrations up to 6,900 µg/l in DC-01A. TCE concentrations in down gradient wells ranged up to 1,000 µg/l in DC-06B while TCE concentrations reported in wells along Church Road ranged up to 450 µg/l in LVRR-30-2. TCE concentrations were in the single or double digit range in wells along Lime Rock Road and were reported in LVRR-24A and LVRR-24B, located on the east side of Spring Creek, at 13µg/l and 5.2 µg/l, respectively.

The highest concentration reported for the TCE degradation product cDCE was in Spill Area well LVRR-35-2 at 430 µg/l. Finally, tDCE was detected in several samples at estimated concentrations only.

6.2.7.1.1.5 Fifth Quarterly Event (December 2011)

The highest TCE concentration reported during the fifth quarterly event was detected in DC-01A at 6,000 µg/l. TCE concentrations were again approximately an order of magnitude less in wells immediately down gradient of the Spill Area and decreased overall again along Church Road with concentrations generally in the single digit or double digit range. TCE concentrations decreased to a maximum concentration of 85 µg/l in LVRR-32-2 located on Lime Rock Road and 14 µg/l and 5.4 µg/l in LVRR-24A and LVRR-24B, respectively, located along Spring Creek.

The highest concentration reported for the TCE degradation product cDCE was in Spill Area well LVRR-35-2 at 180 µg/l. Finally, tDCE was detected in several samples at estimated concentrations only.

6.2.7.1.1.6 Sixth Quarterly Event (February 2012)

The highest TCE concentration reported during the sixth quarterly event was reported in DC-01A at 3,300 µg/l. Other wells in the Spill Area reported TCE concentrations as high as 3,100 µg/l in LVR-35-2 and 2,700 µg/l in DC-05A. TCE concentrations were reported as high as 540 µg/l in DC-17A located immediately down gradient of the Spill Area and decreased to a maximum of 410 µg/l further down gradient in LVRR-30-2 located on Church Road. TCE concentrations generally decreased to double digit or single digit levels down gradient of Church Road and were reported at 13 µg/l and 3.9 µg/l in LVRR-24A and LVRR-24B, respectively, located on Spring Creek.

The highest concentration reported for the TCE degradation product cDCE was in Spill Area well LVRR-35-2 at 87 µg/l. Finally, tDCE was detected in several samples at estimated concentrations only.

6.2.7.1.1.7 Seventh Quarterly Event (June 2012)

The highest TCE concentration reported during the seventh quarterly event was reported in DC-01A at 12,000 µg/l. Other wells in the Spill Area reported TCE concentrations as high as 3,300 µg/l in LVR-35-2, 5,100 µg/l in DC-05A, and 3,900 µg/l in DC-15A. TCE concentrations were reported as high as 1,500 µg/l in DC-17A located immediately down gradient of the Spill Area and decreased to a maximum of 240 µg/l further down gradient in LVRR-30-2 located on Church Road. TCE concentrations generally decreased down gradient of Church Road and were reported at 10 µg/l and 4.8 µg/l in LVRR-24A and LVRR-24B, respectively, located east of Spring Creek.

The highest concentration reported for cDCE was in Spill Area well LVRR-35-2 at 92 µg/l and tDCE was detected in several samples at estimated concentrations only.

6.2.7.1.1.8 Eighth Quarterly Event (October 2012)

The highest TCE concentration reported during the eighth quarterly event was reported in DC-01A and DC-15A, each at 11,000 µg/l. TCE concentrations reported in wells immediately down gradient of the Spill Area decreased to maximums of 740 µg/l in DC-03B, 150 µg/l in DC-07RB located on Church Road, and 52 µg/l in LVRR-33C located on Lime rock Road. TCE concentrations were reported at 14 µg/l and 3.8 µg/l in LVRR-24A and LVRR-24B, respectively, located east of Spring Creek.

The eighth quarterly event was the first quarterly event in which Amendment 6 to the USEPA 2002 RI/FS WP monitoring wells were sampled to delineate the vertical and horizontal extent of TCE east of Spring Creek in the extreme eastern portion of the Study Area. TCE was reported at an estimated concentration of 0.27 µg/l in LVRR-38C, located east of Spring Creek. TCE concentrations were reported in Amendment 6 wells LVRR-37B and LVRR-37C, located on Neid Road, immediately down gradient of the Spill Area at 5.3 µg/l and 11 µg/l, respectively.

Analysis of groundwater samples collected from the other wells in LVRR-38 cluster, and wells in the LVRR-39, LVRR-40, LVRR-41, and LVRR-42 clusters located east of Spring Creek did not detect TCE or other chlorinated solvent-related VOCs in concentrations exceeding laboratory reporting limits.

The highest concentration reported for cDCE during the eighth quarterly event was in Spill Area well DC-06B at 130 µg/l and tDCE was detected in several samples at single digit or estimated concentrations only.

6.2.7.1.1.9 Ninth Quarterly Event (March 2013)

The highest TCE concentration observed during the ninth quarterly event was reported in DC-01A at 4,800 µg/l. Wells located immediately down gradient of the Spill Area reported TCE concentrations up to 830 µg/l in DC-03B. TCE concentrations decreased further to a maximum of 360 µg/l in LVRR-30-2, located along Church Road, and 83 µg/l in LVRR-33B located on Lime Rock Road. TCE concentrations generally decreased further along Spring Street and Spring Creek with concentrations reported in LVRR-24A and LVRR-24B of 15 µg/l and 7 µg/l, respectively.

TCE was reported in Amendment 6 to the USEPA 2002 RI/FS WP wells LVRR-37B and LVRR-37C at 17 µg/l and 91 µg/l, respectively. TCE or other chlorinated solvent-related VOCs were not reported in concentrations exceeding laboratory reporting limits in Amendment 6 wells located east of Spring Creek.

The highest concentration reported for cDCE during the ninth quarterly event was in Spill Area well DC-05B at 60 µg/l and tDCE was detected in several samples at estimated concentrations only.

6.2.7.1.1.10 Tenth Quarterly Event (May 2013)

During the tenth quarterly event, TCE concentrations continued to reach four digit concentrations in Spill Area wells DC-01A, DC-02B, DC-5A, DC-15A, DC-16, LVRR-35-1, and LVRR-35-2, ranging between 1,300 µg/l and 4,300 µg/l. TCE concentrations decreased down gradient of the Spill Area to a maximum of 350 µg/l in LVRR-30-2, located along Church Road, and 76 µg/l in LVRR-33B located on Lime Rock Road. TCE concentrations generally decreased further along Spring Street and Spring Creek with concentrations reported in LVRR-24A and LVRR-24B of 15 µg/l and 5.2 µg/l, respectively.

TCE was reported in Amendment 6 to the USEPA 2002 RI/FS WP wells LVRR-37B and LVRR-37C at 13 µg/l and 45 µg/l, respectively. TCE or other chlorinated solvent-related VOCs were not reported in concentrations exceeding laboratory reporting limits in Amendment 6 wells located east of Spring Creek.

The highest concentration reported for cDCE during the tenth quarterly event was in LVRR-20-3, located immediately down gradient of the Spill Area, at 100 µg/l and tDCE was detected in LVRR-20-1 at 2 µg/l and in several other samples at estimated concentrations only.

6.2.7.1.1.11 Eleventh Quarterly Event (August 2013)

During the eleventh quarterly event, TCE concentrations continued to reach four digit concentrations in Spill Area wells DC-01A, DC-02B, DC-15A, DC-16, LVRR-35-1, and LVRR-35-2, ranging between 1,700 µg/l and 2,700 µg/l. TCE concentrations decreased down gradient of the Spill Area to a maximum of 360 µg/l in LVRR-30-2, located along Church Road, and 73 µg/l in LVRR-33B located on Lime Rock Road. TCE concentrations generally decreased further along Spring Street and Spring Creek with concentrations reported in LVRR-24A and LVRR-24B of 13 µg/l and 3.9 µg/l, respectively.

TCE was reported in Amendment 6 to the USEPA 2002 RI/FS WP wells LVRR-37B and LVRR-37C at 20 µg/l and 34 µg/l, respectively. TCE or other chlorinated solvent-related VOCs were not reported in Amendment 6 wells located east of Spring Creek in concentrations exceeding laboratory reporting limits.

The highest concentration reported for cDCE during the eleventh quarterly event was in LVRR-20-3, located immediately down gradient of the Spill Area, at 42 µg/l and tDCE was detected in several samples at estimated concentrations only.

6.2.7.1.2 Storm Event Sampling

6.2.7.1.2.1 Storm Event Sampling Results and Discussion

As discussed above, UMC collected groundwater samples from conventional monitoring well clusters DC-01, DC-02, DC-03, DC-06, and DC-7R and FLUTe monitoring wells LVRR-18, LVRR-20, and LVRR-27 following two storm events that occurred in September and October 2012. The September storm event samples were submitted for laboratory VOC analysis only. October storm event samples were submitted for VOC and cyanide analysis. Table 6A and Table 6B summarize the September and October 2012 storm event analytical results, respectively, and include stabilized low-flow parameter readings collected from conventional monitoring wells by UMC during those events. Laboratory analysis of October storm event samples DC-01A and DC-01B detected cyanide at concentrations of 0.167 and 0.031milligrams per liter (mg/l). These concentrations do not exceed the NYSDEC SCG for cyanide of 0.2 mg/l. Analysis of the remaining October storm event samples did not detect cyanide in concentrations exceeding laboratory reporting limits.

A discussion of storm event groundwater elevation observations and TCE concentrations relative to section of the overall Study Area in which the wells are located follows.

6.2.7.1.2.1.1 Up gradient Well (LVRR-18)

Analysis of groundwater samples collected from LVRR-18 during both the September and October storm events did not detect TCE in concentrations exceeding laboratory reporting limits. These results are consistent with quarterly sampling results.

UMC compared storm event groundwater elevation observations with quarterly event observations to assess the influx of surface water through the fractured bedrock and its impact on groundwater quality. The following table indicates groundwater elevations observed in the LVRR-18 cluster during the September and October storm events and the elevations observed in quarterly events before and after those events.

Elevations are in feet above mean sea level.

Well ID (screened formation)	7'th Qtr.	Sept. Storm Event	8'th Qtr.	Oct. Storm Event	9'th Qtr.
LVRR-18-1 (Onondaga)	735.69	731.65	731.03	741.70	742.77
LVRR-18-2 (Onondaga)	730.16	724.78	722.93	734.83	737.63
LVRR-18-3 (Bertie)	719.27	709.85	695.74	723.24	730.74
LVRR-18-4 (Bertie)	718.99	710.08	699.55	723.02	730.06
LVRR-18-5 (Camillus)	720.11	708.55	NM	721.08	730.24

Overall groundwater elevations observed in up gradient wells during the September 2012 storm event are lower as compared to seventh quarter elevations and higher as compared to eighth quarter elevations. The largest differences appear to have occurred in the Bertie Formation with elevations approximately 11 to 14 feet higher during the September storm event as compared to the 8th quarter event.

The October 2012 storm event groundwater elevations observed in up gradient wells are approximately 10 to 12 feet higher in LVRR-18-1 and LVRR-18-2, screened in the Onondaga Formation, as compared to eighth quarter elevations, and approximately 23 to 28 feet higher in LVRR-18-3 and LVRR-18-5, screened in the Bertie Formation as compared to eighth quarter elevations.

Although the September and October 2012 storm events appear to have had a significant influence on groundwater elevations in the up gradient reaches of the Study Area, ranging from as much as approximately 10 to 28 feet in the Onondaga and Bertie Formations, the resultant influx of surface water into underlying bedrock does not appear to have had a significant impact on groundwater quality in the area.

6.2.7.1.2.1.2 Spill Area Wells (DC-01 and DC-02)

The following table lists groundwater elevations and TCE concentrations observed in wells DC-01 and DC-02 during the September and October 2012 storm events and for the preceding and following quarterly events.

Elevations are in feet above mean sea level. TCE concentrations are in micrograms per liter (µg/l).

Well ID (screened formation)	7'th Qtr. (TCE)	Sept. Storm Event (TCE)	8'th Qtr. (TCE)	Oct. Storm Event (TCE)	9'th Qtr. (TCE)
DC-01A (Onondaga)	721.01 (12,000)	710.47 (11,000)	707.64 (11,000)	721.68 (6,700)	724.58 (4,800)
DC-01B (Bertie)	719.06 (180)	707.14 (880)	697.12 (5,200)	718.77 (3,600)	724.45 (440)
DC-01C (Camillus)	718.95 (230)	705.33 (360)	696.11 (420)	716.22 (390)	725.37 (340)
DC-01D (Camillus)	719.25 (9.5)	705.48 (9.1)	696.41 (7.7)	716.46 (9.4)	725.75 (6.0)
DC-02A (Onondaga)	743.91 (48)	742.55 (94)	742.61 (88)	743.92 (67)	742.54 (53)
DC-02B (Bertie)	714.01 (3,400)	705.90 (2,600)	698.02 (1,200)	714.90 (3,500)	716.37 (3,600)
DC-02C (Camillus)	719.40 (9.3)	705.42 (2.9)	696.42 (380)	716.17 (350)	725.21 (15)
DC-02D (Camillus)	718.69 (3.2)	705.45 (0.55)	686.46 (0.42)	716.10 (0.71)	725.70 (0.35)

Overall groundwater elevations observed in Spill Area wells during the September 2012 storm event are generally lower as compared to seventh quarter elevations and generally higher as compared to eighth quarter elevations. The largest differences appear to have occurred in the Bertie and Camillus Formations with elevations approximately 9 to 19 feet higher during the September 2012 storm event as compared to the eighth quarter event. TCE concentrations observed in DC-01 and DC-02 during the September 2012 storm event, though variably higher or lower, are within the same order of magnitude as those observed during the seventh and eighth quarter events. A consistent pattern of variability between the September 2012 storm event groundwater elevation and TCE concentrations, and the seventh and eighth quarter TCE concentrations and groundwater elevations is not evident.

The October 2012 storm event groundwater elevations are approximately 20 to 29 feet higher in DC-01 and DC-02 wells screened in the Bertie and Camillus Formations, and approximately 1 to 14 feet higher as compared to eighth quarter elevations. October storm event elevations are generally lower than observed ninth quarter elevations. TCE concentrations observed in DC-01 and DC-02 wells during the October 2012 storm event, though variably higher or lower, are within the same order of magnitude as those observed during the eighth and ninth quarter events. A consistent pattern of variability between the October 2012 storm event TCE concentrations and groundwater elevations, and the seventh and eighth quarter TCE concentrations and groundwater elevations is not evident.

6.2.7.1.2.1.3 Wells Immediately Down Gradient of the Spill Area (DC-03, DC-06, and LVRR-20)

The following table lists groundwater elevations and TCE concentrations observed in wells DC-03, DC-06, and LVRR-20 during the September and October 2012 storm events and for the preceding and following quarterly events.

Well ID (screened formation)	7'th Qtr. (TCE)	Sept. Storm Event (TCE)	8'th Qtr. (TCE)	Oct. Storm Event (TCE)	9'th Qtr. (TCE)
DC-03A (Onondaga)	708.34 (16)	702.79 (9.8)	707.79 (7.6)	712.70 (5.3)	710.63 (ND)
DC-03B (Bertie)	697.20 (540)	687.86 (420)	684.86 (740)	700.05 (630)	707.13 (830)
DC-03C (Camillus)	697.55 (ND)	686.55 (230)	682.18 (ND)	699.53 (2.0)	706.69 (ND)
DC-03D (Camillus)	706.80 (ND)	692.21 (ND)	686.18 (ND)	706.07 (ND)	715.45 (ND)
DC-06A (Onondaga)	742.01 (140)	740.08 (140)	740.01 (61)	742.25 (85)	742.15 (120)
DC-06B (Bertie)	708.46 (1,100)	699.71 (1,500)	694.39 (460)	708.76 (990)	713.13 (200)
DC-06C (Camillus)	711.90 (2.9)	700.15 (2.3)	693.61 (290)	710.66 (37)	717.76 (15)
DC-06D (Camillus)	716.00 (ND)	702.18 (ND)	693.13 (ND)	713.64 (ND)	722.61 (3.9)
LVRR-20-1 (Onondaga)	NM (8.7)	686.27 (not sampled)	677.97 (not sampled)	NM (not sampled)	678.16 (ND)
LVRR-20-2 (Bertie)	690.68 (760)	697.45 (780)	687.69 (730)	693.65 (800)	692.85 (630)
LVRR-20-3 (Bertie)	692.50 (260)	693.10 (570)	691.64 (530)	695.91 (680)	697.70 (200)
LVRR-20-4 (Camillus)	707.03 (ND)	696.46 (ND)	690.00 (2.4)	707.21 (ND)	716.16 (ND)
LVRR-20-5 (Camillus)	710.57 (not sampled)	701.20 (ND)	693.81 (not sampled)	694.93 (not sampled)	NM (not sampled)

Overall groundwater elevations observed in wells immediately down gradient of the Spill Area during the September 2012 storm event are generally lower as compared to seventh quarter elevations and between approximately 2 to 10 feet higher as compared to eighth quarter elevations. The largest differences appear to have occurred in DC-06D and LVRR-20-5, screened in the lower Camillus Formation, and LVRR-20-2, screened in the Bertie Formation with elevations approximately 9 to 10 feet higher during the September 2012 storm event as compared to the eighth quarter event. TCE concentrations observed in DC-03, DC-06, and LVRR-20 wells during the September 2012 storm event, though variably higher or lower, are generally within the same order of magnitude as those observed during the seventh and eighth quarter events.

Exceptions to this pattern are DC-03C, screened in the upper Camillus Formation with a TCE concentration of 230 µg/l as compared to non-detect concentrations observed during the seventh and eighth quarter events, and DC-06B, screened in the Bertie Formation with a concentration of 1,500 µg/l as compared to 460 µg/l reported in the eighth quarter event. Additionally, the LVRR-20-3 TCE concentration of 570 µg/l observed during the October 2012 storm event is between 40 µg/l and 310 µg/l higher than concentrations observed during the seventh and eighth quarter events. LVRR-20-3 is screened in the Bertie Formation. This data may support the NYSDEC RI/FS conclusion that groundwater elevation rises, due to an influx of surface water, promotes VOC mobilization from the unsaturated zone, resulting in anomalous VOC concentrations down gradient of the Spill Area.

The October 2012 storm event groundwater elevations are approximately 5 to 20 feet higher as compared to eighth quarter elevations with the largest differences observed in the Camillus Formation. The October 2012 storm event elevations are generally lower than observed ninth quarter elevations. TCE concentrations observed during the October 2012 storm event, though variably higher or lower, are within the same order of magnitude as those observed during the eighth and ninth quarter events. However, the DC-06B TCE concentration of 990 µg/l observed during the October 2012 storm event is between 530 µg/l and 790 µg/l higher than concentrations observed during the eighth and ninth quarter events. The LVRR-20-2 TCE concentration of 800 µg/l observed during the October 2012 storm event is between 70 µg/l and 170 µg/l higher than concentrations observed during the eighth and ninth quarter events. The LVRR-20-3 TCE concentration of 680 µg/l observed during the October 2012 storm event is between 150 µg/l and 480 µg/l higher than concentrations observed during the eighth and ninth quarter events. This data may support the NYSDEC RI/FS conclusion that groundwater elevation rises, due to an influx of surface water, promotes VOC mobilization from the unsaturated zone, resulting in anomalous VOC concentrations down gradient of the Spill Area.

6.2.7.1.2.1.4 Church Road Wells (DC-07R, and LVRR-27)

The following table lists groundwater elevations and TCE concentrations observed in wells DC-07R and LVRR-27 during the September and October 2012 storm events and for the preceding and following quarterly events.

Well ID (screened formation)	7'th Qtr. (TCE)	Sept. Storm Event (TCE)	8'th Qtr. (TCE)	Oct. Storm Event (TCE)	9'th Qtr. (TCE)
DC-07RA (Onondaga)	686.28 (54)	NM (not sampled)	NM (4.4)	NM (not sampled)	701.06 (42)
DC-07RB (Bertie)	686.29 (140)	670.93 (150)	671.47 (150)	689.31 (160)	701.37 (170)
DC-07RC (Camillus)	687.00 (1.7)	671.58 (1.7)	667.12 (0.93)	689.98 (3.5)	701.88 (1.1)
DC-07RD (Camillus)	687.14 (ND)	672.04 (ND)	667.56 (ND)	690.24 (ND)	701.94 (ND)
LVRR-27-1 (Onondaga)	680.01 (ND)	661.06 (not sampled)	NM (not sampled)	689.01 (ND)	701.13 (ND)
LVRR-27-2 (Onondaga)	684.24 (ND)	670.63 (ND)	NM (not sampled)	688.78 (ND)	700.73 (ND)
LVRR-27-3 (Bertie)	684.38 (ND)	670.89 (ND)	NM (not sampled)	688.89 (ND)	700.78 (ND)
LVRR-27-4 (Bertie)	684.32 (ND)	670.33 (ND)	NM (not sampled)	688.75 (ND)	700.67 (ND)
LVRR-27-5 (Camillus)	666.19 (ND)	663.28 (ND)	NM (not sampled)	679.97 (ND)	673.27 (ND)

Overall groundwater elevations observed in Church Road wells during the September 2012 storm event are generally lower as compared to seventh quarter elevations. Groundwater elevations observed in DC-07RB, DC-07RC, and DC-07RD during the September 2012 storm event is not significantly different from those observed during the eighth quarter event. Dry conditions observed in the remaining wells during the eighth quarter event did not allow for a comparison of elevations with the September 2012 storm event elevations. TCE concentrations observed during the September 2012 storm event were not significantly different from those observed during the seventh and eighth quarter events. A consistent pattern of variability between September 2012 storm event TCE concentrations and groundwater elevations, and the seventh and eighth quarter TCE concentrations and groundwater elevations is not evident.

Groundwater elevations observed in DC-07RB, DC-07RC, and DC-07RD during the October 2012 storm event are approximately 18 to 23 feet higher than those observed during the eighth quarter event. Dry conditions observed in the remaining wells during the eighth quarter event did not allow for a comparison of elevations with the October 2012 storm event elevations. Groundwater elevations observed during the ninth quarter event are generally 10 to 12 feet higher than those observed during the October 2012 storm event. TCE concentrations observed during the October 2012 storm event were not significantly different from those observed during the eighth and ninth quarter events. A consistent pattern of variability between October 2012 storm event TCE concentrations and groundwater elevations, and the eighth and ninth quarter TCE concentrations and groundwater elevations is not evident.

6.2.7.1.3 Monitored Natural Attenuation

6.2.7.1.3.1 Monitored Natural Attenuation Analytical Results and Discussion

As discussed above, UMC collected groundwater samples from conventional monitoring wells LVRR-22 through LVRR-25, LVRR-33, DC-01 through DC-07, and DC-9 through DC-17 during the first quarterly sampling event and submitted the samples to the USEPA approved laboratory for MNA characterization analyses. UMC conducted the MNA characterization groundwater sampling consistent with low-flow sampling procedures. Table 7 summarizes MNA sampling results and stabilized low-flow parameter readings collected by UMC during the first quarter sampling event. UMC conducted this assessment consistent with the USEPA 2002 RI/FS WP and the September 1998 USEPA document titled "Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water" (Reference 26).

6.2.7.1.3.1.1 Low Flow Parameters

MNA samples were analyzed for the following low-flow stabilization parameters:

- pH was observed in MNA groundwater samples ranging between 6.24 std. units and 7.92 sd. units. The average pH observed in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 7.12 std. units, 7.01 std. units, and 7.24 std. units, respectively.
- Conductivity was observed in MNA groundwater samples ranging between 0.47 microsiemens per centimeter (mS/cm) and 3.00 mS/cm. The average conductivity observed in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 0.71 mS/cm, 0.97 mS/cm, and 2.77 mS/cm, respectively.
- Turbidity was observed in MNA groundwater samples ranging between zero nephelometric turbidity units (NTU) and 44.50 NTU. The average turbidity observed in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 1.96 NTU, 7.70 NTU, and 1.45 NTU, respectively.
- Temperature was observed in MNA groundwater samples ranging between 4.75 degrees cellsius (C^o) and 10.45 NTU. The average temperature observed in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 8.65 C^o, 7.62 C^o, and 7.70 C^o, respectively.

- ORP was observed in MNA groundwater samples ranging between -259 millivolts (mV) and 288 mV. The average ORP observed in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 168.31 mV, 139.64 mV, and 225.00 mV, respectively.

6.2.7.1.3.1.2 Metals

Of the 61 samples analyzed for metals, calcium was detected in all 61, manganese was present in 17 and potassium was reported in 39. The dissolved calcium concentrations ranged from 597,000 to 78,900 µg/l with a mean concentration of 238,741 µg/L. The dissolved manganese and potassium maximum concentrations were 440 µg/l and 8,420 µg/l, respectively. The samples low concentrations were 10.4 µg/l and 2,000 µg/l, respectively; and their mean concentrations were 47 µg/l and 2,697 µg/l, respectively. The highest calcium concentration was detected in LVRR-23, the highest manganese was present in the sample collected from LVRR-33C, and the highest potassium concentration was in LVRR-33B.

The presence of dissolved calcium is expected in a carbonate aquifer and variations in concentrations may reflect differences in rock and groundwater chemistry. Manganese comprises approximately 3% of dolomite. Given that dolomite is present in the formations, its detection in the groundwater is expected. Potassium is also a common element in limestone. Detections of these metals are expected in a carbonate aquifer.

Ferrous iron was detected in low concentrations, less than 1 mg/l, in all samples except LVRR-23 (5.0 mg/l). These overall low ferrous iron concentrations are not indicative of reductive dechlorination degradation pathways. LVRR-23 is located in the wetlands adjacent to Oatka Creek in the eastern portion of the Study Area. The reducing conditions typical of wetlands would result in higher ferrous iron concentrations. Dissolved oxygen in this well was 0.02 mg/l and methane was 40 mg/l, typical for reducing conditions. The elevated methane concentrations are methanogenic reducing conditions typical of wetlands and do not indicate methanogenic biodegradation of TCE.

6.2.7.1.3.1.3 Dissolved Gases

Dissolved oxygen concentrations were observed in 21 of the 61 samples at less than 0.5 mg/l. These concentrations were generally lowest in wells screened in the Camillus Formation with an average DO concentration of 1.21 mg/l. Average DO concentrations increased in successively higher stratigraphic units with average DO concentrations of 1.91 mg/l in groundwater samples collected from wells screened in the Bertie Formation and 5.98 mg/l in wells screened in the Onondaga Formation. Lower DO concentrations are expected in deeper aquifer units with longer groundwater residence times, whereas higher concentrations are expected in upper aquifer units as a result of influx of oxygenated surface water.

Dissolved CO_2 concentrations ranged between 6 and 60 µg/l with the exception a concentration of greater than 100 µg/l reported in LVRR-23. Average CO_2 concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 22 µg/l, 28.5 µg/l, and 24.49 µg/l, respectively.

Ethane was detected in three samples including LVRR-33B screened in the Bertie Formation at 1.50 µg/l, LVRR-33E screened in the Camillus Formation at 0.30 µg/l, and LVRR-23 screened in overburden and weathered bedrock of the Syracuse Formation at 2.80 µg/l.

Methane was present in 32 samples, with the highest concentration of 54 mg/l detected in LVRR-33C, screened in the Camillus Formation. Average methane concentrations in the Onondaga, Bertie, and Camillus Formations were 2.52 µg/l, 16.34 µg/l, and 4.46 µg/l, respectively. With the exception of LVRR-33C, LVRR-33D, LVRR-33E, and LVRR-23, methane concentrations were below 10 µg/l. Methane in LVRR-33C was 54 µg/l, 38 µg/l in LVRRD, 23 µg/l in LVRR-33E, and 40 µg/l in LVRR-23. LVRR-23 is located proximate to Oatka Creek and wet areas with high groundwater levels where methane anaerobic conditions and elevated methane concentrations in groundwater are expected. The elevated methane concentrations observed in LVRR-33 groundwater may be related to methanogenesis of TCE.

Ethene and propene were not detected in the samples. One sample (LVRR-33B screened in the Bertie Formation) contained an estimated propane concentration of 0.81 mg/l.

6.2.7.1.3.1.4 General Chemistry

Concentrations of the general chemistry natural attenuation parameters fluctuated within limited ranges. Alkalinity ranged between 159 and 340 mg/l. Average alkalinity concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 242 mg/l, 293 mg/l, and 286 mg/l, respectively.

Ammonia was reported in MNA groundwater samples at concentrations ranging between 0.1 mg/l and 0.44 mg/l. Average ammonia concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 0.01 mg/l, 0.12 mg/l, and 0.09 mg/l, respectively.

BOD was reported at concentrations that did not exceed laboratory detection limits with the exception of DC-16 (217 mg/l) and DC-07RA (2 mg/l), both screened across the lower Onondaga and upper Bertie Formations, and LVR-33E (7.1 mg/l) screened in the Camillus Formation.

TOC was reported in MNA groundwater samples at concentrations ranging between 0.80 mg/l and 5.10 mg/l. Average TOC concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 2.83 mg/l, 2.70 mg/l, and 1.38 mg/l, respectively.

COD was reported in MNA groundwater samples at concentrations ranging between 6.90 mg/l and 45.60 mg/l. COD concentrations in MNA groundwater samples collected from the Bertie Formation were reported at below reportable limits. Average COD concentrations in groundwater samples collected from the Onondaga and Camillus Formations were 7.70 mg/l, and 13.12 mg/l, respectively.

Chloride was reported in MNA groundwater samples at concentrations ranging between 2.2 mg/l and 69.10 mg/l. Average chloride concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 30.27 mg/l, 37.61 mg/l, and 38.58 mg/l, respectively.

Hardness was reported in MNA groundwater samples at concentrations ranging between 213 mg/l and 1,860 mg/l. Average hardness concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 383.77 mg/l, 583.71 mg/l, and 970.61 mg/l, respectively.

Nitrate was reported in MNA groundwater samples at concentrations ranging between 0.01 mg/l and 18.60 mg/l. Average nitrate concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 3.09 mg/l, 1.44 mg/l, and 1.03 mg/l, respectively.

Nitrite concentrations reported in MNA groundwater samples did not exceed 0.02 mg/l and averaged 0.01 mg/l in the Onondaga, Bertie, and Camillus Formations.

Analysis of MNA groundwater samples did not detect oil and grease at concentrations exceeding laboratory reporting limits.

Phosphorus concentrations reported in MNA groundwater samples did not exceed 0.06 mg/l and averaged between 0.01 mg/l and 0.02 mg/l in the Onondaga, Bertie, and Camillus Formations.

Sulfate was reported in MNA groundwater samples at concentrations ranging between 14.30 mg/l and 1,630 mg/l. Average sulfate concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 60.04 mg/l, 243.56 mg/l, and 693.18 mg/l, respectively.

Sulfide was reported in MNA groundwater samples at concentrations ranging between 0.99 mg/l and 1,630 mg/l. Average sulfide concentrations in groundwater samples collected from the Onondaga, Bertie, and Camillus Formations were 1.55 mg/l, 1.34 mg/l, and 1.38 mg/l, respectively.

6.2.7.1.4 TCE Concentration Trends and Distribution

To assess historical dissolved-phase TCE concentration tends and distribution both horizontally and vertically within the Study Area, UMC analyzed reported TCE concentrations by geologic formations of interest including, in order of stratigraphically higher to lower, the Onondaga, Bertie, Camillus and Syracuse Formations. This assessment included a comparison of quarterly event groundwater samples as well as storm event groundwater samples (discussed below) to the ARARs referenced in the May 15, 2002 USEPA memorandum. Specifically, the ARAR listed as number seven in the memorandum, establishes the NYSDEC SCG for TCE in groundwater of 5 µg/l, which encompasses the federal ARARs. In addition, the quarterly and storm event groundwater sample analytical results were compared to the NYSDEC SCGs and the NYSDEC Groundwater Guidance Values (GGVs). Tables 16A through 16K list the Site specific SCG for TCE and the NYSDEC SCG for other detected analytes.

Table 18 lists TCE concentrations reported in quarterly and storm event groundwater samples, and indicates the Site-specific SCG exceedance reported for that analyte.

Appendix V contains line graphs depicting historical Site groundwater TCE concentration trends in each monitoring well cluster and bar graphs depicting the mean TCE concentrations for all sampling events in each sub-section of the overall Study Area by stratigraphic unit.

Appendix V also contains a line graph depicting the mean TCE concentration over the course all sampling events for wells in each sub-area of the overall Study Area divided by the stratigraphic unit in which they are screened. This graph reflects an overall pattern of generally lower mean TCE concentrations in successively deeper stratigraphic units. The graph also reflects generally higher mean TCE concentrations reported in each stratigraphic unit for sampling events conducted during the NYSDEC RI/FS between November 1993 and April 1995 as compared to subsequent events. This pattern is generally consistent with historical TCE concentration trends in individual monitoring wells, likely reflecting a general decrease in TCE concentrations in the 13 year time period between the April 1995 event conducted by the NYSDEC and the LVRR Site Reconnaissance conducted 2008.

Analysis of quarterly groundwater samples detected TCE at concentrations exceeding the Site-specific SCG of 5 µg/l. In addition, the chlorinated solvent-related VOC cDCE was reported in concentrations exceeding the NYSDEC SCG of 5 µg/l. The chlorinated solvent-related VOCs tDCE, 1,1-DCE, PCE, 1,2,4-trichlorobenzene, chloroform, chloromethane, dichlorodifluoromethane, methylene chloride, and vinyl chloride were detected at concentrations or estimated concentrations that do not exceed their respective NYSDEC SCGs. Further discussion of the historical TCE concentrations observed in groundwater in sub-areas across the Study Area and the vertical and horizontal extent of TCE impacts in Study Area groundwater follows. A discussion of the additionally reported chlorinated solvent-related VOC concentrations as indicators of potential chlorinated solvent-related VOC degradation processes is presented below.

6.2.7.1.4.1 Up Gradient Wells (DC-04 and LVRR-18)

As indicated on Table 18, analysis of the NYSDEC November 1993 and NYSDEC June 1994 groundwater samples collected from DC-04C and the NYSDEC November 1993 sample collected from DC-04D detected TCE at concentrations of 17 µg/l, 6.7 µg/l, and 18 µg/l, respectively, exceeding the Site-specific SCG for TCE of 5 µg/l. TCE was detected in analysis of the NYSDEC October 1994 sample collected from DC-04C and the NYSDEC January 1995 sample collected from DC-04D at estimated concentrations of 0.9 µg/l and 0.6 µg/l, respectively, which do not exceed the Site-specific SCG for TCE of 5 µg/l.

Both DC-04C and DC-04D are screened in the Camillus Formation. TCE has not been detected in these wells or other up gradient wells in concentrations exceeding the Site-specific SCG for TCE of 5 µg/l since the NYSDEC January 1994 event. Based on these data, UMC concludes that observed up gradient TCE groundwater concentrations are representative of overall Study Area groundwater quality with respect to TCE.

6.2.7.1.4.2 Spill Area Wells (DC-01, DC-02, DC-05, DC-15, DC-16 and LVRR-35)

As indicated on Table 18 and corresponding graphs in Appendix V, TCE concentrations observed in groundwater samples collected from Spill Area monitoring wells are variable but generally stable since the LVRR 2008 Site Reconnaissance. Concentrations observed in Spill Area monitoring wells during historical sampling events have generally ranged from one to four orders of magnitude higher than the Site-specific SCG for TCE of 5 µg/l. Notable exceptions are wells DC-02D, DC-05C, and DC-05D, screened in the Camillus Formation and DC-15B, screened in the Syracuse Formation. Analysis of groundwater samples collected from these wells since at least the second quarterly event has not detected TCE in concentrations exceeding the Site-specific SCG for TCE of 5 µg/l.

As indicated on the bar graph prepared for Spill Area wells, the mean TCE concentrations observed in Spill Area monitoring well groundwater samples were generally highest in the Onondaga Formation with a mean concentration for all events, for the six wells screened in that formation of 5,185 µg/l. Mean concentrations decreased in successively lower stratigraphic units as follows: 1,606 µg/l for five wells screened in the Bertie Formation; 779 µg/l for eight wells screened in the Camillus Formation; and, 30 µg/l for a single well screened in the Syracuse Formation. This pattern indicates that TCE-impacted groundwater moving downward through the Onondaga and Bertie Formations undergoes rapid dilution and dispersion in the underlying karstic and more hydraulically transmissive Camillus Formation.

Exceptions to this pattern were observed in comparison of DC-02A and DC-02B concentrations, and LVRR-35-1 and LVRR-35-2 concentrations, with higher mean TCE concentrations observed in the Bertie Formation as compared to the Onondaga Formation. The DC-02 line graph indicates that TCE concentrations reported since the NYSDEC April 1995 event are generally one to three orders of magnitude higher in the Bertie formation as compared to the Onondaga and Camillus Formations. The LVRR-35 line graph also indicates higher concentrations in the Bertie Formation but generally in the same order of magnitude as the overlying Onondaga Formation and one to three orders of magnitude higher than the underlying Camillus Formation. This pattern again indicates a rapid dilution and dispersion of TCE-impacted groundwater as it migrates downward through the Bertie Formation into the Camillus Formation.

6.2.7.1.4.3 Wells Immediately Down Gradient of the Spill Area (DC-03, DC-06, DC-17, LVRR-20, LVRR-34, and LVRR-37)

As indicated on Table 18 and corresponding graphs in Appendix V, TCE concentrations observed in groundwater samples collected from wells located immediately down gradient of the Spill Area are variable but generally stable within the same order of magnitude since at least the LVRR 2008 Site Reconnaissance. As indicated on the bar graph prepared for wells down gradient of the Spill Area, TCE concentrations observed in wells screened in the Onondaga and Bertie Formations are generally one to three orders of magnitude higher than the Site-specific SCG for TCE of 5 µg/l.

The exceptions are those samples collected from LVRR-34-1 through LVRR-34-5, with concentrations occasionally exceeding the SCG Site-specific standard. LVRR-34 is located south and more side gradient of the Spill Area as compared to other wells in this sub-group, and is the furthest upstream well cluster along the Mud Creek drainage where it is more or less annually flowing. As such, the influx of surface water to LVRR-34 from Mud Creek likely effectively dilutes TCE-impacted groundwater.

As indicated on the line and bar graphs prepared for wells down gradient of the Spill Area and contrary to the apparent pattern in Spill Area wells, TCE concentrations in this sub-area are generally greater in the Bertie Formation as compared to the overlying Onondaga Formation. However, mean concentrations in the Onondaga Formation (128 µg/l) and Bertie Formation (448 µg/l) are an order of magnitude less than concentrations observed in those formations in Spill Area wells. The lowest concentrations observed in the down gradient well samples are those collected from the Camillus formation, again an order of magnitude lower than those observed in the Camillus Formation in Spill Area wells, with an overall mean concentration of 16 µg/l. This is evident of generally decreasing TCE concentrations down gradient of the Spill Area both horizontally and vertically and evident of rapid dilution and dispersion of TCE-impacted groundwater in the Camillus Formation. In addition, the higher concentrations observed in the Bertie Formation as opposed to the overlying Onondaga Formation is indicative of the downward hydraulic gradient in this area evidenced by the earlier assessment of groundwater elevation and geophysical data.

Analysis of groundwater samples historically collected from down gradient well DC-17B, the only well in this sub-area screened in the Syracuse Formation, has detected TCE at a mean concentration of 132 µg/l. However, this concentration is skewed by concentrations observed prior to the LVRR 2008 Site Reconnaissance, reported as high as 1,200 µg/l in the NYSDEC April 1995 event. Analysis of groundwater samples collected from DC-17B since has detected TCE at concentrations less than the Site-specific SCG standard with the exception of the samples collected during the eighth and tenth quarterly events.

6.2.7.1.4.4 Church Road Wells (DC-07, DC-07R, LVRR-27, LVRR-28, LVRR-29 and LVRR-30)

As indicated on Table 18 and corresponding graphs in Appendix V, TCE concentrations observed in Church Road wells during historical sampling events have generally been stable and within the same order of magnitude. Additionally, TCE concentrations are generally lower with relatively fewer Site-specific SCG exceedances as compared to wells in or closer to the Spill Area. The Site-specific SCG for TCE of 5 μg/l is exceeded in DC-07RA and DC-07RB, screened in the Onondaga and Bertie Formations, respectively, and in LVRR-28-2 and LVRR-28-3, both of which are screened in the Bertie Formation. The SCG standard for TCE is generally exceeded by one to two orders of magnitude in these wells. The SCG standard for TCE has been approached and occasionally slightly exceeded in LVRR-29-4 and LVRR-29-5, both of which are screened in the Camillus Formation. The SCG standard for TCE is generally exceeded by two orders of magnitude in LVRR-30-1 and LVRR-30-2, both of which are screened in the Bertie Formation, and also in LVRR-30-4, screened in the upper portion of the Camillus Formation. Analysis of groundwater samples historically collected from LVRR-30-5, screened in the lower and more karstic Camillus Formation, have generally not detected TCE in concentrations exceeding laboratory reporting limits. Laboratory analysis of groundwater samples historically collected from the LVRR-27 cluster has not detected TCE in concentrations exceeding the SCG standard. The SCG standard for TCE has not been exceeded in DC-07, screened in the Onondaga Formation, since the first quarter sampling event.

6.2.7.1.4.5 Lime Rock Road Wells (DC-09, DC-10, DC-11, DC-12, LVRR-21, LVRR-26, LVRR-31, LVRR-32, and LVRR-33)

As indicated on Table 18 and corresponding graphs in Appendix V, historical TCE concentrations observed in Lime Rock Road wells have been generally stable since the LVRR 2008 Site Reconnaissance and are overall generally lower than those observed in wells in and closer to the Spill Area. TCE concentrations observed in DC-09A, screened in the Bertie Formation generally exceed, but are in the same order of magnitude as the Site-specific SCG for TCE of 5 μg/l. TCE has been detected at estimated concentrations only in DC-09B, screened in the Camillus Formation and have not exceeded laboratory reporting limits in DC-09C, screened in the Syracuse Formation.

TCE has been detected at estimated concentrations only in DC-10A, screened in the Onondaga Formation, but have generally exceeded the SCG standard by one order of magnitude in DC-10B, screened in the Bertie Formation. TCE has been detected at estimated concentrations only or at concentrations that do not exceed laboratory reporting limits in DC-10C and DC-10D, screened in the Camillus Formation.

TCE concentrations have not exceeded laboratory reporting limits in DC-11A or DC-11B, screened in the Onondaga and Bertie Formations, respectively, since the NYSDEC October 1994 sampling event.

TCE has been detected at estimated concentrations only in DC-12A, screened in the Onondaga Formation. TCE concentrations generally exceed the SCG standard by one order of magnitude in DC-12B, screened in the Bertie Formation and in DC-12C screened in the upper Camillus Formation. Analysis of groundwater samples collected from DC-12D, screened in the lower more karstic Camillus Formation, has detected TCE in single digit concentrations only that do not exceed the Site specific SCG for TCE of 5 μg/l.

Analysis of groundwater samples collected from LVRR-21 and LVRR-26 cluster wells has not detected TCE in concentrations exceeding laboratory reporting limits with the exception of the estimated concentration of 0.42 µg/l detected in LVRR-26-5 during the eleventh quarter event.

TCE has historically been detected in LVRR-31-1, LVRR-31-2, and LVRR-31-3, all screened in the Bertie Formation, at single digit concentrations that generally exceed the Site-specific SCG for TCE of 5 µg/l. TCE has been detected at estimated concentrations only in LVRR-31-4, also screened in the Bertie Formation, since the fourth quarter event.

Analysis of LVRR-32-1 and LVRR-32-2 groundwater samples collected from the Bertie Formation and LVRR-32-3 samples collected from the upper Camillus Formation have generally detected TCE at concentrations one order of magnitude higher than the SCG standard. Single digit concentrations of TCE that occasionally exceed the SCG standard have historically been detected in LVRR-32-4 while only estimated concentrations have been detected in LVRR-32-5, both of which are screened in the lower more karstic Camillus Formation.

An estimated concentration of 0.41 µg/l was reported for the eleventh quarter groundwater sample collected from LVRR-33A, screened in the Onondaga Formation, with concentrations that did not exceed laboratory reporting limits in the earlier events. TCE was reported at concentrations generally one order of magnitude higher than the SCG standard in LVRR-33B and LVRR-33C, screened in the Onondaga and Bertie Formations, respectively. TCE was not reported in concentrations exceeding laboratory reporting limits in LVRR-33D or LVRR-33E, screened in the Bertie and Camillus Formations, respectively.

6.2.7.1.4.6 Spring Street Wells (DC-13, DC-14, GCM, LVRR-22, and LVRR-23)

With the exception of GCM wells that are located significantly west of Spring Street, TCE generally does not exceed single digit concentrations in Spring Street wells, continuing the pattern of decreasing concentrations down gradient of the Spill Area. TCE concentrations an order of magnitude higher than the Site-specific SCG for TCE of 5 µg/l were generally reported in GCM-1 and GCM-2, screened in the Bertie and upper Camillus Formations, respectively. TCE was not reported in concentrations exceeding laboratory reporting limits in GCM-3, screened in the lower more karstic Camillus Formation.

Generally single digit concentrations of TCE that exceed the Site-specific SCG for TCE of 5 µg/l are reported in DC-13A and DC-13B, screened in the Camillus and Syracuse Formations, respectively.

Single digit or estimated concentrations of TCE have been reported in DC-14A and DC-14B, screened in the Bertie and Camillus Formations, respectively, including single digit concentrations reported during the three most recent events that slightly exceed the SCG standard.

TCE was not reported in LVRR-22 or LVRR-23 groundwater samples in concentrations exceeding laboratory reporting limits. Both LVVRR-22 and LVRR-23 are screened in the Syracuse Formation.

6.2.7.1.4.7 Spring Creek Wells (LVRR-24, and LVRR-25)

TCE concentrations generally one order of magnitude higher than the Site-specific SCG for TCE of 5 µg/l were reported in LVRR-24A groundwater samples while single digit concentrations less than or slightly exceeding the SCG standard were reported in LVRR-24B. TCE was not detected in LVRR-24C groundwater samples in concentrations exceeding laboratory reporting limits.

LVRR-24A is screened in overburden and weathered bedrock of the Camillus Formation while LVRR-24B and LVRR-24C are screened in the upper and lower Camillus Formation, respectively.

Analysis of groundwater samples historically collected from the LVRR-25 well cluster did not detect TCE in concentrations exceeding laboratory reporting limits. Wells in the LVRR-25 cluster are screened in the Camillus Formation.

6.2.7.1.4.8 Wells East of Spring Creek (LVRR-38, LVRR-39, LVRR-40, LVRR-41, and LVRR-42)

Laboratory analysis of LVRR-38C collected during the eighth quarter event detected TCE at an estimated concentration of 0.27 µg/l. Analysis of the remaining groundwater samples collected from wells east of Spring Creek did not detect TCE in concentrations exceeding laboratory reporting limits. All of the wells located east of Spring Creek are screened in the Camillus Formation.

6.2.7.1.5 Summary of TCE Concentration Trends and Distribution Findings

Though variable, occasionally by an order of magnitude, the line graphs presented in Appendix V indicate that TCE concentrations in the Study Area, both horizontally and vertically, have been relatively stable since the 2008 Site Reconnaissance Investigation event. Additionally, the graphs indicate that TCE concentrations decrease horizontally down gradient of the Spill Area, as well as vertically in the stratigraphic units of interest. The graphs indicate that TCE concentrations generally decrease to levels that do not exceed the Site-specific SCG for TCE of 5 µg/l in the vicinity of Spring Creek and east of Spring Creek. The graphs indicate that TCE concentrations reach levels below the SCG standard within the limits of the Study Area in all of the stratigraphic units of interest and generally reach levels below laboratory reporting limits in the lower more karstic Camillus Formation.

Figures 16A through 16M depict TCE isoconcentration contours for each quarterly and storm event based on the highest TCE concentration observed at each well, regardless of the stratigraphic unit from which the sample was collected. These figures illustrate the overall horizontal extent of Study Area groundwater that exceeds the Site-specific SCG for TCE of 5 µg/l. Figures 16A1, 2, 3, and 4 through Figures 16M1, 2, 3, and 4 depict isoconcentration contours for each quarterly and storm event based on the highest TCE concentration observed in the Onondaga, the Bertie, Camillus, and Syracuse Formations. These figures illustrate the vertical extent of Study Area groundwater that exceeds the Site-specific SCG for TCE of 5 µg/l.

Figures 16A through 16M generally indicate TCE concentrations in the Study Area, both horizontally and vertically, have been relatively stable since the 2008 Site Reconnaissance Investigation event. From an overall horizontal perspective (i.e. the highest TCE concentrations observed in each well regardless of stratigraphic unit), the 5 µg/l TCE isoconcentration contours depicted on the figures indicate the SCG standard for TCE is reached within the limits of the Study Area and decrease to levels that do not exceed 5 µg/l in the vicinity of Spring Creek and east of Spring Creek. Additionally, the figures indicate that TCE concentrations generally decrease in stratigraphically lower units and reach levels below laboratory reporting limits in the lower more karstic Camillus Formation within the limits of the Study Area. Figures depicting isoconcentration contours for the Camillus Formation (Figures 16A3 through 16M3) generally indicate TCE concentrations in the Camillus Formation are below reportable limits between Church Road and Lime Rock Road. This condition may be related to the slight narrowing of the

TCE plume generally observed in the overlying Bertie Formation and a decrease of infiltration of TCE-impacted groundwater into the underlying Camillus Formation coupled with the high transmissivity, dilution, and dispersion effects of the Camillus Formation in that area.

Based on TCE concentration trend and distribution observations, UMC concludes that the horizontal and vertical extent of the TCE-impacted groundwater plume is defined within the limits of the Study Area and is in a state of dynamic equilibrium. Further, in conjunction with these observations and considering analysis of groundwater elevation and geophysical data, as well as, stream sediment and surface water analytical results (discussed below), UMC concludes that Spring Creek and the apparent fault zone oriented along its course act as a discharge zone for TCE-impacted groundwater preventing plume advancement further to the east.

The following section discusses groundwater discharge as it relates to springs/seeps, surface water, and sediments.

6.3 SEDIMENT, SPRING/SEEP, AND SURFACE WATER

UMC collected sediment, spring/seep, and surface water samples to: (1) evaluate the potential for contaminated groundwater to impact various surface water bodies; (2) evaluate the potential for specific stratigraphic horizons to transmit contaminated groundwater; (3) develop trend analysis data for surface water and sediment sampling results; (4) evaluate the potential impact to sediments from the discharge of contaminated groundwater from springs/seeps; and (5) gather analytical data for use in the Human Health and Ecological Risk Assessments.

A summary of sediment, spring/seep, and surface water analytical results and discussion follows. For reference, Tables 13A through 13F summarize sediment sample analytical results for VOCs, cyanide, SVOCs, metals, pesticides, and PCBs, respectively. Tables 14A through 14F and 15A through 15F summarize spring/seep and surface water sample analytical results, respectively. It should be noted that the NYSDEC RI/FS and the NYSDEC ROD established the COC for the Site as TCE. The analyses for other compounds were conducted for risk assessment purposes.

Figures 9a and 9b depict sediment, spring/seep, and surface water sample TCE analytical results, respectively, for samples collected during the December 2009/January 2010, January 2012, and November 2012 sampling events.

Appendix U contains electronic copies of surface water, spring/seep, and sediment sample analytical reports for the December 2009/January 2010, January 2012, and November 2012 events.

6.3.1 Sediment Quality Analytical Results and Discussion

6.3.1.1 VOCs in Sediment

Table 13A summarizes Site sediment sample VOC, TOC, and total solids analytical results. Pursuant to the USEPA 2002 RI/FS WP, the sediment analytical results were compared to the ARARs referenced in the May 15, 2002 USEPA memorandum. Specifically, the ARAR listed as number seven in the May 15, 2002 USEPA memorandum, acknowledges the NYSDEC SCG for TCE in Sediments of 46 ppb (µg/kg) which, encompasses the federal ARARs.

In addition, to evaluate if the VOC concentrations in the sediment samples pose a potential risk to human health or the environment, the Specific Sediment Criteria (SSC) was calculated for each sediment sample and each analyte using the equation found on Page 8 of the NYSDEC Technical Guidance for Screening Contaminated Sediments (NYSDEC Sediment Criteria). The NYSDEC Sediment Criteria incorporates EPA sediment criteria. The criteria lists four types of screening values for VOCs in sediment; Human Health Bioaccumulation, Benthic Aquatic Life Acute Toxicity, Benthic Aquatic Life Chronic Toxicity, and Wildlife Bioaccumulation. The most stringent is the Human Health Bioaccumulation.

Analysis of sediment sample LVRRSD-03 detected TCE at a concentration of 48 µg/kg which exceeds the above-referenced site specific SCG of 46 ppb. To determine the SSC for TCE for Human Health Bioaccumulation in sediment sample LVRRSD-03, the sediment criteria for Human Health Bioaccumulation of 2 micrograms per gram (µg/g) of organic carbon, as listed in Table 1 of the NYSDEC Sediment Criteria, was multiplied by the fraction of organic carbon for sample LVRRSD-03 of 17.8 g/kg. This results in a SSC for sediment sample LVRRSD-03 for Human Health Bioaccumulation of 35.6 µg/kg. The concentration of 48 µg/kg TCE detected in sediment sample LVRRSD-03 exceeds the calculated SSC for Human Health Bioaccumulation of 35.6 µg/kg.

TCE was also reported in several sediment samples at estimated concentrations ranging between 0.48 µg/kg to 9.7 µg/kg. These concentrations do not exceed their respective SSC or the SCG.

There are no Benthic Aquatic Life Acute Toxicity, Benthic Aquatic Life Chronic Toxicity, or Wildlife Bioaccumulation guidance values listed for TCE in the NYSDEC Sediment Criteria.

The TCE degradation product cDCE was detected in three sediment samples at estimated concentrations ranging between 0.80 µg/kg and 0.98 µg/kg. There are no listed guidance values for cDCE in the NYSDEC Sediment Criteria and a site-specific SCG is not established in the USEPA 2002 RI/FS WP.

Other VOCs including acetone, 2-butanone (MEK), carbon disulfide, ethylbenzene, styrene, and toluene were detected in the analysis of one or more Site sediment samples at estimated concentrations only that do not exceed the NYSDEC Sediment Criteria and a site-specific SCG is not established for those analytes in the USEPA 2002 RI/FS WP. A Baseline Human Health Risk Assessment was performed as part of this LVRR RI; and, submitted under separate cover, to fully evaluate the risk to human health from potential exposure to TCE and cDCE.

Figures 9a and 9b depict TCE concentrations detected in Site sediment samples. Site sediment sample LVRRSD-03 was collected from Mud Creek, approximately 1,500 feet northeast of the Spill Area. Site sediment sampling indicates that stream sediment has been impacted by the release of TCE at location LVRRSD-03 in Mud Creek. Sampling of the stream sediment revealed no detectable concentrations of Site COCs in sediment samples collected from Oatka Creek, Spring Creek, Guthrie Creek, or the wetland area east of Spring Creek.

Since spring flooding can scour the stream beds and erode away TCE-impacted sediment, detectable TCE concentrations in sediment may indicate continued impact from contaminated groundwater to the stream bed. Surface water at Mud Creek discharges to Oatka Creek only during times of high flow, usually during the spring. During other times of the year Mud Creek infiltrates into the aquifer. Also, the flow at Spring Creek is not significantly affected by seasonal variations and most of the Spring Creek flow is from groundwater (Reference 34 and 35). This shows that surface water would have the largest effect on sediments after the spring high water influx but groundwater could have a continuous ongoing effect on sediment quality.

6.3.1.2 Cyanide in Sediment

Table 13B summarizes Site sediment sample cyanide analytical results. Analysis of Site sediment samples did not detect cyanide at concentrations exceeding laboratory reporting limit (RL). There are no listed guidance values for cyanide in the NYSDEC Sediment Criteria and a site-specific SCG is not established in the USEPA 2002 RI/FS WP.

6.3.1.3 SVOCs in Sediment

Table 13C summarizes Site sediment sample SVOC analytical results. SVOCs are not considered Site COCs and a site-specific SCG is not established for SVOCs in the USEPA 2002 RI/FS WP. Analysis of Site sediment sample LVRR-55 detected several SVOCs at estimated concentrations only. The estimated concentration of 150 µg/kg benzo(a)pyrene detected in sediment sample LVRRSD-55 exceeds the calculated SSC for Human Health Bioaccumulation of 66.17 µg/kg. In addition, the detection limits reported for benzo(a)pyrene were higher than the calculated SSC for the Human Health Bioaccumulation criteria for that analyte, meaning that no conclusion can be drawn regarding potential risk to human health. However, since SVOCs are not Site COCs, any detection would be from a source not related to the Site.

6.3.1.4 Metals in Sediment

Table 13D summarizes Site sediment sample metals analytical results. Metals are not considered Site COCs and a site-specific SCG is not established for metals in the USEPA 2002 RI/FS WP. Metals were detected in the Site sediment samples at known and estimated concentrations. These results were compared to two levels listed in the NYSDEC Sediment Criteria including the Lowest Effect Level and Severe Effect Level. Copper was detected in Site sediment samples LVRRSD-55 and LVRRSD-28 at estimated concentrations that exceed the Lowest Effect Level. Manganese was detected in Site sediment samples LVRRSD-55, LVRRSD-08, and LVRRSD-04 at estimated concentrations exceeding the Lowest Effect Level. Nickel was detected in Site sediment samples LVRRSD-55 and LVRRSD-28 at estimated concentrations exceeding the Lowest Effect Level. Zinc was detected in Site sediment sample LVRRSD-55 at concentrations exceeding the Lowest Effect Level. None of the detections exceeded the Severe Effect Level. Since metals are not Site COCs, any detection would be from a source not related to the Site.

6.3.1.5 Pesticides in Sediment

Table 13E summarizes Site sediment sample pesticides analytical results. Pesticides are not considered Site COCs and a site-specific SCG is not established for pesticides in the USEPA 2002 RI/FS WP. Analysis of Site sediment samples did not detect pesticides at concentrations exceeding RLs. However, in a number of samples the laboratory reporting limits for 4,4-DDD, 4,4-DDE, 4,4-DDT, heptachlor and heptachlor epoxide were higher than the calculated SCC for the Human Health Bioaccumulation criteria for those analytes, meaning that no conclusion can be drawn regarding potential risk to human health. However, since pesticides are not considered Site COCs, any detection would be from a source not related to the Site.

6.3.1.6 PCBs in Sediment

Table 13F summarizes Site sediment sample PCB analytical results. PCBs are not considered Site COCs and a site-specific SCG is not established for PCBs in the USEPA 2002 RI/FS WP.

Analysis of Site sediment samples did not detect PCBs at concentrations exceeding laboratory RLs. The NYSDEC Sediment Criteria includes levels for total Aroclors but not for individual Aroclors. The laboratory did not report total Aroclors for the samples; therefore, UMC used the highest laboratory reporting limit per sample as the total Aroclor for each sample. The laboratory reporting limit for total Aroclor for each sample was higher than the Human Health Bioaccumulation value but lower than the Benthic Aquatic Life Acute Toxicity, Benthic Aquatic Life Chronic Toxicity, and Wildlife Bioaccumulation levels. Therefore, no conclusion can be drawn regarding potential risk to human health. However, since PCBs are not considered Site COCs, any detection would be from a source not related to the Site.

6.3.2 Spring/Seep Water Quality Analytical Results and Discussion

6.3.2.1 VOCs in Springs/Seeps

Table 14A summarizes Site spring/seep sample VOC analytical results. Site spring/seep samples were compared to the ARARs referenced in the May 15, 2002 USEPA memorandum. Specifically, the ARAR listed as number seven in the May 15, 2002 USEPA memorandum, acknowledging the NYSDEC SCG for TCE in Spring Water of 5 ppb (µg/l) which encompasses the federal ARARs.

In addition, the spring/seep sample VOC analytical results were compared to the NYSDEC SCGs and the NYSDEC Groundwater Guidance Values (GGVs). TCE was detected in samples LVRRSP-02, LVRRSP-03, LVRRSP-04, MUDCREEK-01, LVRRSP07PDB, and LVRRSP-08 at concentrations or estimated concentrations ranging between 5.1 µg/l and 390 µg/l, exceeding the site-specific SCG of 5ppb for TCE. The TCE concentration in the LVRRSP-02 sample exceeded the calibration range and was re-analyzed after dilution. The diluted sample reported a slightly lower TCE concentration that also exceeded the site-specific SCGs.

TCE was detected in spring/seep samples LVRRSP-07, Spring-PDB-02, Spring-PDB-03, and Spring-PDB-04 at concentrations ranging between 1 µg/l and 5 µg/l, below or equal to the site-specific SCG of 5 µg/l for TCE.

TCE was detected at estimated concentrations in spring/seep samples LVRRSP-12, and LVRRSP12PDB that do not exceed the site-specific SCG of 5 µg/l for TCE.

The original and diluted LVRRSP-02 samples contained cDCE at concentrations of 14 µg/l and 11 µg/l, respectively, exceeding the NYSDEC GWQS for cDCE of 5 µg/l. cDCE was detected in the LVRRSP-04 sample at a concentration of 2.4 µg/l, below the NYSDEC SCG for that analyte and a site-specific SCG is not established for cDCE in the USEPA 2002 RI/FS WP.

The VOCs acetone and methylene chloride were each detected in one or more spring/seep samples at concentrations that do not exceed their respective NYSDEC SCGs or GGVs and a site-specific SCG is not established for those analytes in the USEPA 2002 RI/FS WP. Acetone and methylene chloride are not Site COCs.

Figure 9a and 9b depicts TCE concentrations detected in Site spring/seep samples. The spring/seep sample analytical results indicate that groundwater containing TCE and cDCE in concentrations exceeding the site-specific SCG for TCE in spring water of 5 ppb is discharging to surface water at Mud Creek just northeast of the Spill Area. The results also indicate that groundwater with TCE concentrations less than site-specific SCG are discharging to surface water at Spring Creek from springs along the west bank and beneath Spring Creek.

6.3.2.2 Cyanide in Springs/Seeps

Table 14B summarizes the spring/seep sample cyanide analytical results. Analysis of spring/seep samples collected by UMC did not detect cyanide in concentrations exceeding laboratory RLs.

6.3.2.3 SVOCs in Springs/Seeps

Table 14C summarizes the spring/seep sample SVOC analytical results. Analysis of spring/seep samples collected by UMC did not detect SVOCs in concentrations exceeding laboratory RLs. However, the laboratory reporting limit for several SVOCs was above their respective NYSDEC GWQSs or GGVs and a site-specific SCG is not established for SVOCs in the USEPA 2002 RI/FS WP. Therefore, no conclusion can be made regarding the water quality for these compounds. Since SVOCs are not considered Site COCs, any detection would be from a source not related to the Site.

6.3.2.4 Metals in Springs/Seeps

Table 14D summarizes the spring/seep sample total metals results. Aluminum and iron were detected in sample LVRRSP-04 and sodium was detected in sample LVRRSP-02 at concentrations exceeding the respective NYSDEC GWQSs; however, a site-specific SCG is not established for metals in the USEPA 2002 RI/FS WP for those analytes. Since metals are not considered Site COCs, any detections are from a sources not related to the Site.

6.3.2.5 Pesticides in Springs/Seeps

Table 14E summarizes the spring/seep sample pesticide analytical results. Analysis of spring/seep samples collected by UMC did not detect pesticides in concentrations exceeding laboratory RLs. The laboratory reporting limits for some of the pesticides were above their respective NYSDEC GWQSs; however a site-specific SCG is not established for pesticides in the USEPA 2002 RI/FS WP. Therefore, no conclusion can be made regarding the water quality for those analytes. Since pesticides are not considered Site COCs, any detection would be from a source not related to the Site.

6.3.2.6 PCBs in Springs/Seeps

Table 14F summarizes the spring/seep sample PCB analytical results. Analysis of spring/seep samples collected by UMC did not detect PCBs in concentrations exceeding laboratory RLs. The laboratory RLs for total Aroclor exceeds the NYSDEC GWQSs for that analyte; however, a site-specific SCG is not established for PCBs in the USEPA 2002 RI/FS WP. Therefore, no conclusion can be made regarding the water quality for total Aroclor. Since PCBs are not considered Site COCs, any detection would be from a source not related to the Site.

6.3.3 Surface Water Quality Analytical Results and Discussion

6.3.3.1 VOCs in Surface Water

Table 15A summarizes surface water sample VOC analytical results. Pursuant to the USEPA 2002 RI/FS WP, the surface water analytical results were compared to the ARARs referenced in the May 15, 2002 USEPA memorandum. Specifically, the ARAR listed as number seven in the

May 15, 2002 USEPA memorandum, acknowledges the NYSDEC SCG for TCE in surface water of 11 ppb (µg/l) which encompasses the federal ARARs.

In addition, surface water sample analytical results were compared to the New York State Ambient Surface Water Quality Standard (NYSASWQS) for drinking, fish consumption, aquatic (chronic and acute), and aesthetic criteria.

TCE was detected in surface water samples LVRRSW-14 (1.6 µg/l), Swale S-01 (1.1 µg/l), Spring UPS SW-01 (1.2 µg/l), Spring CSW-03 (2.0 µg/l), Spring CSW-08 (1.6 µg/l), LVRR SW-08 (4.8 µg/l), and LVRR-SW-55 (1.1 µg/l), and at estimated concentrations in several other samples. These concentrations do not exceed the site-specific SCGs or the NYSASWQS.

PCE was detected in surface water sample LVRRSW-28 and a duplicate sample collected at that location at concentrations of 5.0 µg/l and 5.6 µg/l, respectively. These concentrations exceed the NYSASWQS for drinking and fish consumption; however, a site-specific SCG is not established for PCE in the USEPA 2002 RI/FS WP. PCE is not a Site COC. Please note that surface water sample LVRRSW-28 was collected down gradient of a facility where releases of PCE have been documented.

Acetone was detected in several surface water samples and the VOCs methylene chloride, chloroform, bromomethane, 2-butanone, and carbon disulfide were detected in several samples at estimated concentrations that do not exceed their respective NYSASWQS and a site-specific SCG is not established for those analytes in the USEPA 2002 RI/FS WP.

The laboratory reporting limits for 1,2-dichlorothane, 1,1-dichloroethene and PCE were above the NYSASWQS for drinking; however a site-specific SCG is not established for those analytes in the USEPA 2002 RI/FS WP. Therefore, no conclusion can be made regarding compliance with the NYSASWQS for these compounds. The laboratory reporting limits were not elevated due to laboratory or sample matrix effects, and the screening criteria are below the 1.0 µg/l reporting limit. It should be noted that the drinking water MCLs for these compounds are greater than the surface water screening criteria and the laboratory reporting limits.

Figure 9a and 9b depicts TCE concentrations detected in Site surface water samples. Surface water samples with detectable TCE concentrations include LVRR SW-08 and LVRR-SW-55, collected upstream and downstream, respectively, of the confluence of Mud Creek with Oatka Creek, and; LVRRSW-14, Swale S-01, Spring UPS SW-01, Spring CSW-03, and Spring CSW-08, collected in the Spring Creek drainage. Surface water sample analytical results indicate that dilution effectively reduces TCE concentrations to below applicable site-specific SCG for surface water of 11 ppb. Surface water bodies in the area infiltrate large quantities of water to the aquifer which then migrate eastward and discharge to Spring Creek. Most surface streams do not extend across the exposed Onondaga Formation and discharge to Oatka Creek. Mud Creek, the largest stream to cross the Onondaga, discharges to Oatka Creek only during times of high groundwater flow, during other times of the year the surface water infiltrates into the aquifer at a sink hole just south of Gulf Road. The loss of flow in Mud Creek can be up to 23 cubic feet per second. The Spring Creek flow has been observed to rise up to 39.6 cfs, nearly 12 times greater than the other creeks in the area and larger than the drainage area can provide. When the infiltrating water flow from other streams was added to the estimated flow anticipated for the drainage area, it nearly matched the calculated water balance for Spring Creek. This demonstrates that significant groundwater recharge from other streams discharge to Spring Creek increasing the Spring Creek flow (References 34 and 35). Infiltrating surface water throughout the study area will result in significant dilution of TCE-impacted groundwater. This is expanded on in Section 7.

Since 2003, the area from the spill Site eastward to Spring Creek and from Gulf Road/Flint Hill Road southward to Route 5 has been serviced by public water. Drinking water outside this area is supplied by wells. Surface water is not used for drinking.

6.3.3.2 Cyanide in Surface Water

Table 15B summarizes Site surface water sample cyanide analytical results. Analysis of surface water sample LVRRSW-56 detected cyanide at a concentration of 0.011 milligrams per liter (mg/l). This concentration does not exceed the most stringent NYSASWQS for chronic aquatic of 5.2 mg/l and a site-specific SCG is not established for cyanide in the USEPA 2002 RI/FS WP. Surface water sample LVRRSW-56 was collected in the Mud Creek drainage, approximately 500 feet east of the Spill Area.

6.3.3.3 SVOCs in Surface Water

Table 15C summarizes Site surface water sample SVOC analytical results. Analysis of surface water samples did not detect SVOCs at concentrations exceeding laboratory RLs. The laboratory RLs exceeded the NYSASWQS for several compounds; however, a site-specific SCG is not established for SVOCs in the USEPA 2002 RI/FS WP. Therefore, no conclusion can be made regarding the water quality for these compounds. Since SVOCs are not considered Site COCs, any detection would be from a source not related to the Site.

6.3.3.4 Metals in Surface Water

Table 15D summarizes the Site surface water sample total metals results. Aluminum, iron, lead, magnesium, manganese, and thallium were detected at concentrations exceeding one or more NYSASWQS; however, a site-specific SCG is not established for metals in the USEPA 2002 RI/FS WP. The laboratory RLs for antimony, cobalt, mercury, and vanadium wee above one or more NYSASWQS. Therefore, no conclusion can be made regarding the water quality for these analytes. Since metals are not considered Site COCs, any detection would be from a source not related to the Site.

6.3.3.5 Pesticides in Surface Water

Table 15E summarizes Site surface water sample pesticide analytical results. Analysis of surface water samples did not detect pesticides at concentrations exceeding laboratory RLs. The laboratory RLs for several of the pesticides were above the NYSASWQS; however, a site-specific SCG is not established for pesticides in the USEPA 2002 RI/FS WP. Therefore, no conclusion can be made regarding the water quality for these compounds. Since pesticides are not considered Site COCs, any detection would be from a source not related to the Site.

6.3.3.6 PCBs in Surface Water

Table 15F summarizes Site surface water sample PCB analytical results. Analysis of surface water samples did not detect PCBs at concentrations exceeding laboratory RLs. The laboratory RLs for total Aroclor exceeds the NYSDEC GWQSs for that analyte; however, a site-specific SCG is not established for PCBs in the USEPA 2002 RI/FS WP. Therefore, no conclusion can be made regarding the water quality for total Aroclor. Since PCBs are not considered Site COCs, any detection would be from a source not related to the Site.

The following section discusses the potential for vapor intrusion from TCE impacted groundwater migrating into dwellings located near the site.

6.4 SOIL GAS AND ASSOCIATED GROUNDWATER SAMPLE LABORATORY ANALYTICAL RESULTS

6.4.1 Soil Gas Sample Results

Laboratory analysis of the soil gas samples collected by UNC detected TCE in concentrations ranging from 0.26 micrograms per cubic meter (μg/m^3) in SG01S, to 5.1 μg/m^3 in SG02D, with an average overall concentration of 1.76 μg/m^3.

Other chlorinated solvent-related VOCs detected in the soil gas samples include PCE ranging in concentration from 0.46 μg/m^3 to 20 μg/m^3, chloroform from 0.33 μg/m^3 to 57 μg/m^3, carbon tetrachloride ranging from 0.098 μg/m^3 to 0.74 μg/m^3, and 1,1,1-TCA from 2.6 μg/m^3 to 6.6 μg/m^3.

The chlorinated solvent-related VOCs dichlorodifluoromethane, 1,2-dichloro-1,1,2,2-tetrafluoroethane, trichlorofluoromethane, methylene chloride, chloroethane, cis-1,2-DCE, 1,1-DCA, Bromodichloromethane, and bromoform were detected in the soil gas samples at estimated concentrations only.

The hydrocarbon-related VOCs benzene, toluene, ethylbenzene, and xylene (collectively known as BTEX) were observed in soil gas samples in total concentrations ranging from 0.87 μg/m^3 to 108.6 μg/m^3. Other hydrocarbon-related VOCs detected include 1,3 butadiene n-hexane, cyclohexane, n-heptane, 4-ethyltoluene, 1,3,5-trimethylbenzene, and isopropanol in total concentrations ranging from 3.2 μg/m^3 to 512 μg/m^3.

6.4.2 Soil Gas Groundwater Sample Results

Groundwater samples were collected at soil gas sample locations SG01, SG02, and SG03. Chlorinated solvent-related VOCs were not detected in the groundwater samples.

BTEX compounds were detected in SG01 and SG02 at total concentrations of 3.6 and 2.2 μg/l, respectively. Other hydrocarbon-related VOCs were detected in groundwater samples SG01 and SG02 at total concentrations of 3.6 μg/l and 2.7 μg/l, respectively.

6.5 INDOOR AIR

6.5.1 Indoor Air Vapor Monitoring

Addendum 1 to the RI/FS Work Plan required LVRR to develop and implement an Indoor Air Monitoring Plan (IAMP) to address the USEPA's concerns about potential vapor intrusion in dwellings located near the Site. UMC prepared and the USEPA approved the IAMP based on NYSDOH Air Matrix 1. Air Matrix 1 was developed by NYSDOH based on USEPA vapor intrusion screening levels. The plan included a phased sampling approach with the initial phase of soil vapor intrusion (SVI) sampling performed at fourteen (14) locations (on parts of Gulf Road, Church Road and Lime Rock Road) closest to the spill location, where historical TCE concentrations in groundwater were highest. This first sampling phase took place during March 2008. Air Matrix 1 is a comparison of the reported vapor concentrations to established criteria which then provides four possible outcomes: no further action, identify source, additional monitoring, or mitigation. Additionally, sampling must performed during the NYSDOH defined heating season from November to March.

Air Matrix 1 requires more than one round of sampling to demonstrate that SVI is not an issue. Therefore, a second round of SVI sampling was performed during February of 2009. During this sampling round, the scope of the IAMP was expanded to include a total of thirty-six (36) locations. The additional sampling locations were added because the results of the first round during 2008 showed SVI was a concern. Additionally, locations during the first sampling round that were found to require additional monitoring or mitigation were re-sampled during a third sampling round performed during March 2009. After the results of the second and third sampling rounds were reviewed, UMC proposed adding eighteen new locations to the IAMP to provide additional coverage. This fourth round of sampling was performed during February 2010.

Nine locations were identified during the 2008 and 2009 sampling rounds as requiring installation of SVI mitigation systems, these systems were installed during February 2010. Following installation of the systems, confirmation sampling was performed during March 2010 to verify that the systems were working properly and the TCE vapors were effectively mitigated. During December 2010 the SVI mitigation system installed at a Church Road residence was modified to improve performance.

During February 2011 a fifth round of sampling was performed to addressed locations that had been identified during previous sampling as requiring additional monitoring or having exhibited TCE concentrations in the indoor air that were likely to be a result of chemical storage within the structure rather than from vapor intrusion. At this time, samples were also collected from locations with mitigation systems to confirm their proper operation and effectiveness.

The data from the February 2011 sampling was evaluated and several locations identified where additional monitoring or mitigation was required under Air Matrix 1. Therefore, during December 2011, an additional two SVI mitigation systems were installed at those locations.

The Indoor Air Monitoring Report (Reference 42) presents the results of the vapor sampling, locations tested, and mitigation performed.

The vapor intrusion sampling demonstrated that TCE vapors were entering into the basements of structures in the area, with some at concentrations requiring installation of mitigation systems. The locations with the highest concentrations are generally along the axis of the dissolved-phase TCE plume core; however, two mitigation systems are located along Route 5 just west of the center of the Village of Caledonia. Indoor air monitoring and sampling continues to be investigated throughout the Study Area.

The following section addresses the fate and transport of TCE impacted groundwater throughout the Study Area.

7 FATE AND TRANSPORT

In accordance with the USEPA 2002 RI/FS WP, this report will address contaminant characteristics, transport processes, and contaminant migration trends. In addition, the physical properties of site contaminants such as, density, solubility, and mobility will be discussed in relation to patterns of contaminant transport.

7.1 CONCEPTUAL SITE MODEL

The discussion below is the current Conceptual Site Model for the Lehigh Valley Railroad Derailment Site. This CSM is based on the historical data summarized above as well as the data generated through the LVRR RI which is the subject of this report.

On December 6, 1970 at 3:00 am, a derailment of a train in LeRoy, NY resulted in the release of approximately 30,000 gallons of trichloroethene (TCE) and cyanide crystals to the ground surface. TCE is a NAPL with a relatively low viscosity making it a relatively mobile liquid in the subsurface, e.g., more mobile than water. Dissolution of the TCE and subsequent transport by groundwater flow has resulted in a plume extending approximately 4.1 miles to the east where it discharges in the vicinity of Spring Creek. At its widest, the plume is approximately 1.5 miles wide. The aquifer affected by the spill occurs primarily in carbonate sedimentary rocks of the Camillus, Bertie, Akron, Bois Blanc, and Onondaga Formations. These limestones and dolostones have significant primary porosity (pore spaces in the rock matrix) although the transmission of groundwater occurs almost exclusively through the secondary porosity (fractures, joints and solution-enlarged channels).

Due to the relatively flat lying topography and the karstic nature of the near surface landforms, infiltrating precipitation and meltwater recharge groundwater very rapidly and with large volumes of water. This recharge leads to very rapid changes in hydraulic head in the aquifer, reportedly causing water level fluctuations of tens of feet over periods of a few hours. Additionally, surface water streams provide significant volumes of water to the aquifer system. As the streams flow north across the Study Area, the water infiltrates into the rock and then flows eastward to the discharge location (References 33, 34, and 35).

Relatively little NAPL TCE was retained in the unconsolidated porous media (overburden) due to the thin mantle of unconsolidated material over rock. Four primary mechanisms affected NAPL TCE in the unsaturated zone:

1. NAPL volatilized and spread in the gas phase, some of it moving into the atmosphere, some of it into the pore water in the rock matrix and some partitioned into the water table.
2) Infiltrating precipitation and meltwater dissolved the TCE and carried it downward to the saturated zone
3) The rapidly rising and falling water table dissolved the TCE and transported it horizontally in a transient manner.
4) NAPL dissolved into water present in the fractures and diffused into the matrix pore water under a concentration gradient.

The NAPL likely moved downward through joints and high angle fractures as it spread out laterally on near-horizontal bedding planes. Low angle (<20^0 from horizontal) planar features, likely bedding plane partings or fractures, dominate groundwater flow in the Spill Area.

A sudden spill of 30,000 gallons of TCE likely produced extensive pools of NAPL with sufficient pressure head to invade very small aperture microfractures in addition to larger openings. NAPL penetrated well below the water table in the Spill Area. The NAPL in the fractures subsequently began to dissolve into the groundwater in the fractures. The dissolution of the NAPL resulted in a concentration gradient with high concentrations in the fractures adjacent to the NAPL and concentrations of zero (initially) in the pore water in the rock matrix. This concentration gradient drove contaminant mass from the fractures into the matrix pore water by diffusion. Over the 40 years since the spill, most of the NAPL has disappeared from the fractures due to dissolution and diffusion into the rock matrix, as well as, and through advective/dispersive solute transport down gradient, particularly below the water table. NAPL likely persists in microfractures in the unsaturated zone, but NAPL has not been observed directly at the Site. Currently, most of the contaminant mass is present either dissolved in water in the matrix pore spaces or sorbed to organic matter in the matrix. Very little of the mass is present in the fractures. The mass in the matrix is essentially immobile relative to the flow of groundwater (or soil gas) in the fractures. The mass in the matrix moves at a diffusion-controlled rate and represents a very long term source of contamination to the groundwater in the fractures. The mass in the matrix porosity is not readily accessible by remedial technologies.

As the dissolved plume advanced out of the Spill Area and moved down gradient, the high concentrations of dissolved TCE began to migrate into the pore water in the rock matrix just as it had in the Spill Area. This served to retard the advance of the plume slightly, but given the very high transmissivities of the fractured and solution-weathered rock, particularly in the karstic zone at the base of the Camillus Formation, the plume advanced quickly. The mass continued to move into the matrix pore water from the fractures in the down gradient portions of the plume until the NAPL below the water table in the Spill Area had been completely dissolved away. Once this occurred, the solute concentrations in the source area began to decline. As the decline continued in some areas of the plume, such as the area along Lime Rock Road near LVRR-33, the concentrations in the fractures dropped below the concentrations in the pore water. At this point, mass in the matrix pore water reversed the direction of its migration and began to diffuse back into the fracture water. This condition, commonly referred to as back-diffusion, is expected to persist for a very long time. Thus, the rock matrix throughout the entirety of the dissolved plume can be viewed as an ongoing secondary source of groundwater contamination. In this context, the spill zone is only a part of the source material for the dissolved plume.

In the Spill Area the aqueous concentrations of TCE in the matrix pore water are very similar to those in the fractures. This rough state of dynamic equilibrium is likely influenced by transient recharge and fluctuations in the volumetric rate of flow of groundwater through the fractures. The ratio of the concentrations in the fracture water and the matrix pore water is also highly variable spatially. For many years (decades) after the spill the direction of the diffusive transport was into the matrix blocks. That condition is nearing its end and it is expected that in coming decades, the direction of diffusive transport will be out of the matrix blocks and into the fractures.

The bottom of the contaminated portion of the flow system is the base of the Camillus formation where an extensive karstic zone results in extremely high flow rates of water. While contamination may have penetrated into this zone, the extremely high flux of groundwater appears to have flushed and diluted the contamination out of this zone. It is likely that turbulent flow occurs in portions of the karstic zone. This zone also dominates the flow of the upper portions of the flow system by serving as an under drain and causing generally downward vertical components of the hydraulic gradient in most parts of the Study Area.

TCE contour maps of the Study Area show that the TCE penetrated the Onondaga Formation in the Spill Area and move in a narrow plume to the southeast. Near the Spill Area, there is a large sink hole through which Mud Creek flows and loses much of its water to the bedrock. From this area, contaminated water in the Bertie Formation is forced southward before it flows eastward through a narrow area beneath Church Road. East of Church Road, the TCE plume in the Bertie Formation spreads out to the north and south as it migrates eastward to Spring Creek. In the Camillus Formation, there is a gap in TCE detections between Church Road and Lime Rock

Road. Richards et al., (Reference 33) postulated that sink holes are the surface representations of faults. They identified a large sink hole just west of Lime Rock Road in the vicinity of LVRR-32 and LVRR-33. These wells contain TCE concentrations in the Camillus Formation. Wells further north and south do not contain TCE or have very low TCE concentrations. This suggests that the sink hole plays an important role in transmitting TCE-impacted groundwater downward from the Bertie Formation to the Camillus Formation.

In down gradient parts of the plume (e.g., Lime Rock Road and areas to the east) the potentiometric surface is closer to the ground surface than it is in the Spill Zone. The rapid rises in the potentiometric surface in response to recharge events result in the water table reaching the surface or near-surface. In some cases this results in groundwater entering basements near the discharge zone. In other cases, the rapid rise in the water table displaces the "soil gas" (i.e., the gas phase in the void spaces in the vadose zone in the rock and overburden) and pushes it upward. This phenomenon may result in periodic "slugs" of contaminated soil gas being pushed into basements in down-plume areas.

The groundwater flow system is believed to discharge to seeps, springs and streams in the vicinity of Spring Creek. However, some groundwater flow may pass under the Spring Creek area and travel further east. Groundwater samples collected from monitoring wells and from three domestic wells east of Spring Creek did not contain TCE. This demonstrates that Spring Creek is the discharge zone for TCE-impacted groundwater from the LVRR derailment. Downward vertical components of the hydraulic gradient predominate in the Spill Area and become less pronounced in the vicinity of Lime Rock Road based on packer test data, multilevel well data, and borehole geophysical data. Boreholes near Spring Creek were not tested. Upward vertical components of the hydraulic gradient would be expected in the Spring Creek area as groundwater can be visually observed discharging to surface water. Spring Creek is believed to be a surface expression of a fault with a displacement of approximately 55 feet with the east side of the fault downthrown. As groundwater moves eastward it encounters the fault zone and moves upward to the surface and discharges as springs forming Spring Creek.

Figure 18 is a schematic diagram of the CSM. It shows the groundwater flow throughout the area as well as the TCE impact at the Spill Site. The TCE plume migration horizontally down gradient and vertically is then illustrated as well as vapor intrusion into structures in the area.

7.1.1 Sources

As per the USEPA 2002 RI/FS WP and historical documentation, the source of the groundwater contamination is the TCE/cyanide spill which resulted from a train derailment as described in Section 2 of this LVRR RI.

As a result of the trail derailment spill, approximately 30,000 gallons of TCE was released to the ground surface, infiltrated the subsurface, and entered the bedrock fracture network. When the TCE first entered the bedrock network, a strong concentration gradient existed from the open fractures to the uncontaminated rock matrix, resulting in diffusion of solutes (TCE and groundwater) from the fractures into the bedrock matrix. This forward diffusion process continued until the solute storage capacity of the matrix was reached or the concentration of TCE in the fractures was equal to that in the matrix.

Therefore, dissolved and NAPL contaminants in the bedrock matrices serve as a long term source of contamination, sustaining dilute groundwater plumes for extended periods of time. The intensity and longevity of the dilute groundwater plume will be impacted by the diffusional flux between the rock matrix and adjacent conductive fractures, as well as, the fate of contaminants residing in the rock matrix itself.

The current source for the dissolved-phase TCE is NAPL located in microfractures in the bedrock and high dissolved-phase concentrations that have penetrated the rock matrix. The highest concentrations were observed in the rock matrix above the water table in LVRR-36 and lesser concentrations in the rock matrix below the water table. The impacted bedrock extends at least as far down gradient (approximately two miles) as LVRR-33. Due to the high concentrations of TCE in the impacted bedrock and the presence of NAPL, the bedrock will continue to be a source of dissolved TCE for the foreseeable future.

TCE has impacted the soil overlying the bedrock in the Spill Area; however, since the soil is thin, no more the 12 feet thick, and the TCE has been subject to volatilization since 1970, the mass of TCE in the soil is considerably lower than in the bedrock. Further, since the TCE mass in the bedrock is orders of magnitude greater than in the soil, water infiltrating through the soil will have a lower TCE concentration than water infiltrating through the bedrock – the soil is not a significant contributor of TCE to the groundwater system. A remedial design has been prepared for the TCE-impacted soil and this design was approved by the USEPA during September 2013. Once the soil has been remediated, it will no longer contribute to the TCE contamination.

Stone estimated the amount of TCE mass in the rock matrix to be approximately 141,700 kg in the Spill Area and 2,200 kg in the Lime Rock Road area. This mass equates to approximately 26,500 gallons of TCE. The estimated amount of TCE released during the derailment was 30,000 gallons. The majority of the remaining TCE mass resides within the bedrock, has volatilized into the vapor phase, remains in the soil above the bedrock, or has partitioned into the dissolved phase.

7.1.2 Potential Routes of Migration

Several potential migration routes for dissolved-phase TCE have been identified in the area. These include Mud Creek, Spring Creek and Oatka Creek surface water bodies and groundwater. Overland flow of TCE from the spill could have discharged directly to Mud Creek immediately or shortly after the derailment. Also as an initial remedial effort, shortly after the derailment, approximately 1,000,000 gallons of water was introduced into trenches in an attempt to wash TCE into Oatka Creek via Mud Creek.

Mud Creek in the Spill Area is a losing stream (References 33 and 34). However, during the spring or at times of high water, Mud Creek flow will pass the sinkhole and eventually discharge to Oatka Creek. Additionally, northeast of the site at the Mud Creek falls, groundwater discharges in the form of springs contributing to Mud Creek flow downstream of the Spill Area. This groundwater discharge may contribute TCE to Mud Creek and eventually Oatka Creek.

During the spill, some of the TCE would have volatilized into the atmosphere but most of it would have penetrated into the overburden and then infiltrated downward into the bedrock. The TCE would then adsorb onto the soil grains, infiltrate into the bedrock fractures and penetrate into the bedrock matrix. Infiltrating precipitation and snow melt would dissolve some of the TCE and carry it downward to the saturated zone. Rising and falling groundwater levels will dissolve TCE trapped in bedrock fractures and transport it downward to the saturated zone where it will move horizontally with the regional groundwater flow.

Once TCE is dissolved in the groundwater, it will move eastward with the regional groundwater flow. The groundwater flow also has a vertical flow component where deeper geologic formations are also impacted by TCE, likely through sinkhole features, bedrock joints, and fractures penetrating multiple formations. As Groundwater moves eastward it discharges into springs located at the base of an escarpment along the south side of Oatka Creek and at Spring Creek. The springs at the base of the escarpment manifest themselves as ponds or wetlands south of the Oatka Creek channel. TCE in the groundwater may discharge from these springs to surface water bodies.

At Spring Creek, a fault has disturbed the bedrock resulting in a preferential upward flow of the groundwater forming spring and the Spring Creek channel. TCE dissolved in the groundwater will be discharged at these springs and flow northward with Spring Creek to Oatka Creek. Groundwater samples collected east of Spring Creek do not have TCE detections, indicating that Spring Creek is the eastward limit of the TCE plume.

TCE will volatilize from impacted groundwater into vapor above the groundwater. Once in the vapor phase, the TCE will move from areas of high to low pressure in the unsaturated zone. The TCE vapor will discharge into the low pressure areas, including basements, and then to the atmosphere. During the winter when the ground is frozen, the likely path of migration is to basements rather than directly to the atmosphere.

7.1.3 Potential Receptors

Potential receptors of TCE-impacted media are human and ecological. Human receptors are likely from drinking, bathing or swimming in TCE-impacted water, breathing TCE vapors, or physical contact with TCE-impacted soil. Residential water supply in the area is from the Monroe County Water Authority. This system was installed in 2003 to all properties with impacted wells. Most wells were abandoned according to NYSDEC protocol; however, a few wells were not abandoned at the request of the property owner to use for irrigation. Dermal contact with TCE-impacted water either from irrigation or swimming and direct contact with TCE-impacted soil or sediment are other potential exposure points. Although only the soil in the Spill Area contains TCE and this soil has an approved remedial action plan. Inhalation of TCE vapors, typically during showering, is possible. However, with the installation of the public water supply, this is unlikely. The Human Health Risk Assessment will provide more details regarding the potential receptors, exposure pathways, and exposure points for human health risk.

Ecological receptors include both terrestrial and aquatic communities. The terrestrial communities include wildlife and domesticated animals. Their likely exposure to TCE would be by consuming water or direct contact by wading in water or with impacted soil or sediment. Aquatic communities include fish, water fowl, and plants. TCE-impacted stream water could impact fish and benthic organisms living and propagating in the streams, water fowl in eating fish in the streams and potentially nesting along their banks, and plants in streams and wetlands. The Screening Level Ecological Risk Assessment provides more detail on the risks to these species.

7.2 CONTAMINANT MIGRATION

Contaminant migration in the area is primarily through groundwater until it reaches the discharge points along Mud and Spring Creeks and potentially springs at the base of the escarpment south of Oatka Creek.

7.2.1 Movement of Groundwater

Advective flow is expressed as the average linear velocity, which, in a porous medium, is equal to the product of the hydraulic conductivity and the hydraulic gradient divided by the porosity. As with any average rate, some water molecules move faster than this rate and some move slower. Contaminant transport by advective flow would produce a sharp concentration front before which the TCE concentration would be background and behind which the TCE concentration would be that of the source zone.

Groundwater flow is generally laminar (the molecules move in relatively straight paths) and follows Darcy's law, that is, the ratio of the inertial to viscous forces of the fluid is expressed by the Reynolds number. When the Reynolds number is less than 10, subsurface flow is laminar. However when the velocity increases, and the Reynolds number increases, the molecules follow chaotic paths with eddys and swirls. This type of flow may occur in fractured flow systems where fracture apertures are large. Turbulent flow is common in karstic flow systems where solution weathering results in large conduits in which very high flow velocities occur. Turbulent conditions were observed in LVRR-33 and the sound of cascading water was heard in LVRR-32. Both borings intercepted a underground stream which flowed into the borings. A video camera was inserted into LVRR-33 to observe the water cascading into the boring at a depth of approximately 55 feet (approximately 695 feet amsl). This was significantly above the static water level in the boring at the time of about 90 feet (655 feet amsl). Water was outflowing from the boring at depth (in the Camillus karstic zone) faster than the stream could replenish it. Since the boring was competed as a well, the screened section is not set in the karst zone and the water levels have stabilized.

Groundwater flow within the Study Area occurs through a combination of laminar (or Darcian) flow in the fractures and turbulent flow in the karstic solution channels. The geophysical logging of exploratory borings identified large solution cavities in the Camillus Formation and fractures in the Onondaga and Bertie Formations through which water is transmitted. The large water level fluctuations and rapid response observed in the spring and after heavy precipitation events demonstrates limited storage in the bedrock. This is indicative of fracture flow. Similar water level fluctuations were identified by the NYSDEC RI/FS and confirmed by UMC.

The turbulent flow observed in the solution channels and possibly some fractures along with the large quantity of infiltrating water from the surface streams results in significant dilution of TCE concentrations in the groundwater plume. The fracture flow also reduces the residence time the TCE stays in the fractures system. However, the overall residence time of the TCE in the flow system is very long due to the diffusive flux of TCE into the (and later back out of) the primary porosity.

7.2.2 Solubility

TCE will dissolve into water in small amounts depending on the water temperature. Most studies have been performed at water temperatures of 20 to 25 degrees Celsius (C). Typical groundwater temperatures are nearer to 10 degrees C. Although this difference will reflect in different solubility's, the difference shouldn't be significant nor will it change the interpretations or conclusions of the dissolved-phase TCE transport or receptor impacts.

Published values for TCE solubility in water at temperatures of 20 to 25 degrees C range from 1,000 to 1500 milligrams per liter (mg/l). Reference 43 contains a graph that shows the aqueous solubility of TCE as a function of temperature in degrees C. This curve implies that the lowest TCE solubility is approximately 40 degrees C with increasing solubility at higher and lower temperatures. This suggests that the solubility of TCE at the expected groundwater temperature of approximately 10 degrees C would be above the lower end of the published TCE solubility's listed above.

7.3 CONTAMINANT PERSISTENCE

TCE is readily degraded in the air and in surface water but is persistent in soil and groundwater. The half-life of TCE in air is about one week and will take day to week to break down in surface water. Little degradation occurs in soil or groundwater because of limited volatilization and lack of exposure to surface processes.

7.3.1 Physical Factors

Physical factors affecting TCE persistence and degradation in the subsurface environment include sorption onto soil or rock, volatilization to the atmosphere or soil gas, and diffusion into the bedrock matrix.

Sorption is the process by which TCE attaches to organic carbon contained in the rocks or onto mineral surfaces. Sorption onto organic carbon occurs when TCE diffuses into the pores of the carbon and is sorbed onto the walls of the pores. Sorption onto mineral grains occurs by electrostatic forces between TCE and minerals in the rock, typically oxides of aluminum or iron. The rocks in the Study Area are carbonates of limestone and dolomite with some shales. Although there is a significant amount of carbon in carbonates, it is inorganic carbon that is not available for sorption. Carbonates contain little organic carbon to which the TCE would sorb.

Most of the transport that occurs in the flow system at the Site occurs in the fractures and solution channels. Flow velocities in these pathways are quite fast and in some cases the surface area of the fracture/channel is small relative to the volume of flow through it. There is relatively little organic matter on the fracture walls so sorption in the secondary porosity is relatively minor and results in no discernible retardation. The rock beneath the Site also does not contain much aluminum or iron, as is typical for carbonates. Sorption does not play a significant role in degradation or retardation of the TCE plume. However, organic matter present in the primary porosity (an average of approximately 0.14% organic carbon) significantly increases the amount of mass stored in the primary porosity. Diffusion of TCE in to the pore water in the primary porosity (average of 8% primary porosity) results in sorbed mass and dissolved mass being stored in the primary porosity. This results in a very significant retardation of the plume.

7.3.1.1 Volatilization

TCE vapors have been detected in 22 structures, 12 of which required vapor mitigation systems, extending down gradient from the Spill Area approximately 3.5 miles. The presence of the TCE vapors demonstrates that volatilization of TCE from impacted groundwater is occurring and substantial amounts of TCE are being partitioned from the groundwater to soil gas. Volatilization from the groundwater to soil gas follows Henry's Law, which is the relationship of the concentration of TCE in groundwater and the concentration of TCE in soil vapor above the contaminated groundwater. This is a linear relationship which shows that volatilization will be greatest where the groundwater concentrations are highest – near the Spill Area. The effects of volatilization will decrease away from the Spill Area. Furthermore, the partitioning of TCE from groundwater to soil gas generally happens only near the saturated/unsaturated interface. However, in a karstic environment such as that present at the Site, there may be flow channels (and sink holes) which are not fully occupied by water. When air space is present in these flow channels, volatilization will occur and this mass may exit the system to the atmosphere at some point in the flow system. Sink holes may act as natural "air strippers" in some cases, when water cascades down a sink hole from a fracture or flow channel. TCE impacted groundwater far below the water table will not volatilize into the soil vapor. Volatilization is important only for the shallow groundwater and where partially filled flow channels exist in karst.

TCE has penetrated into the bedrock matrix in the Spill Area, as is evidence from the rock core analytical results from LVRR-35 and LVRR-36, and in the mid-plume area, as shown by the rock core data from LVRR-33. On Lime Rock Road at LVRR-33, the TCE penetrating into the bedrock likely came from high concentrations of TCE dissolved in groundwater rather than from separate phase. Since this location is about 1.5 miles down gradient from the Spill Area, this demonstrates that molecular diffusion is an important process in attenuating TCE transport.

Molecular diffusion is the process by which molecules of a substance move through another substance from areas of high concentration to areas of low concentration. This process is important for the movement of TCE from the bedrock fractures to the matrix pore water (and back out again) but not for migration through the aquifer since the distance scales are so long and the flow velocities in the secondary porosity are so high. The process is much too slow and is overwhelmed by other transport mechanisms.

7.3.2 Chemical Factors

TCE is a clear, colorless or bluish liquid with a sweet chloroform-like odor. The chemical properties of TCE were obtained from the USEPA's Clu-in website (http://www.clu-in.org/contaminantfocus/default.focus/sec/trichloroethylene_(tce)/cat/Chemistry_and_Behavior/) and are:

Melting Point	-73 C
Boiling Point	87 C
Molecular Weight	131.4
Density/Specific Gravity	1.465 at 20 C
Vapor Pressure	57.8 mm at 20 C
Log Kow	2.29
Koc (partition coefficient)	126 g/ml
Solubility at 25 C	1,100 mg/l
Henry's Law Constant	0.01 atm-cu m/mole
Bioconcentration Factor	17 to 39 in fish

The high vapor pressure and low adsorption coefficient for TCE shows that it has a low potential to adsorb onto soil or sediment. The Clu-in website states that four to six percent of TCE concentrations will adsorb onto silty clay loams, with no sorption onto calcium-saturated montmorillonite clay. Given that the bedrock contains high amounts of calcium and the soil in the area may also contain significant quantities of calcium, sorption is not a significant mechanism for TCE mass retention.

The Henry's Law constant indicates that TCE will readily evaporate from the dissolved-phase in water in a short time. The Clu-in web site states that the half-life could be on the order to several minutes to hours but it may take several days to weeks to break down in surface water.

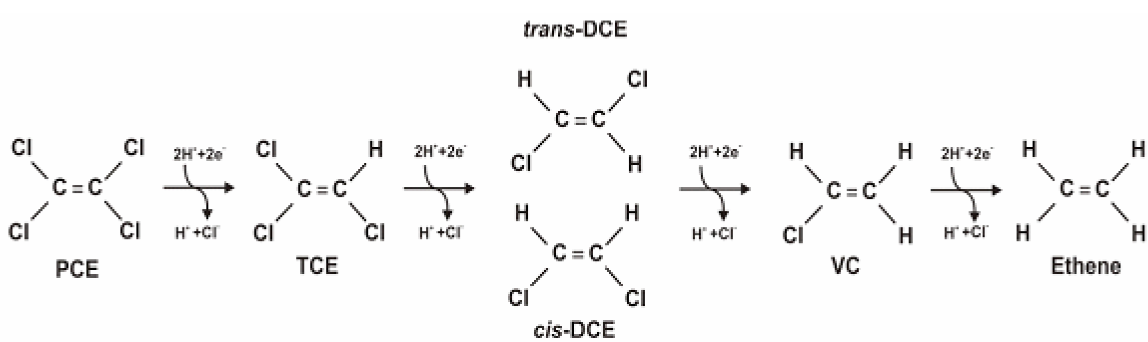
7.3.3 Biological Factors

7.3.3.1 Biological Degradation

Biological degradation can be accomplished by several methods including iron reduction, sulfate reduction, nitrate reduction, methanogenesis and reductive dechlorination. Consequently, the groundwater samples were analyzed for a number of parameters to determine if biodegradation of TCE is occurring. The samples were collected and analyzed in accordance with protocols established by the USEPA in Seminars on Monitored Natural Attenuation for Groundwater (Reference 27) and in USEPA's Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater (Reference 26). This screening process assigns a score to each parameter based on its presence or absence and concentration in a sample. The scores were then summed and a total score was established for each sample. The total score then provides an interpretation if there is sufficient evidence for natural attenuation. A total score of 0 to 5 represents inadequate evidence, 6 to 15 represents limited evidence, 16 to 20 represents adequate evidence, and over 20 represents strong evidence that natural attenuation is occurring. Table 20 presents the samples collected for natural attenuation monitoring and the scores for the individual parameters and the samples total scores. The evidence for natural attenuation at the LVRR Site using this method is characterized as either inadequate or limited, indicating that natural attenuation may not be an important factor in the fate of TCE.

7.3.3.1.1 Abiotic Degradation

Processes resulting in the degradation of chlorinated compounds involve the sequential replacement of a chlorine atom with a hydrogen atom resulting in dechlorination and eventually, non-chlorinated end products. For example, the chlorinated ethenes are transformed sequentially from PCE to TCE to the DCE isomers (cDCE or tDCE) to VC and then to ethene, illustrated as follows:



Source: http://www.clu-in.org/download/studentpapers/moretti_dnaplbioremediation.pdf

In this reaction, hydrogen is the electron donor, which is oxidized. The chlorinated ethene molecule is the electron acceptor, which is reduced.

This degradation sequence can occur as a result of microbial activity under aerobic and anaerobic conditions or through abiotic processes involving reactions not associated with biological activity. The following sections provide a general discussion of aerobic and anaerobic degradation processes.

7.3.3.1.1.1 Aerobic Oxidation Processes

Abiotic degradation is a physical process by which contaminants are degraded and it includes processes such as hydrolysis, dehydrohalogenation, oxidation and reduction. Hydrolysis is a substitution and is typically slow. As the halogen ions increase the reaction rate also increases to years or hundreds of years (Reference 28). Dehydrohalogenation occurs when an alkane changes to an alkene and in the process a chlorine atom is and an acid is formed. Oxidation and reduction are the exchange of electrons. When a compound is oxidized an electron is added whereas when it is reduced an electron is removed. The oxidation/reduction potential (ORP), as measured during the first quarter, is a measure of the transfer of electrons. The ORP data fluctuate between positive and negative but are not of sufficient magnitude throughout the Study Area for oxidation or reduction to be an important factor in degradation. The ORP in DC-05 and LVRR-33 suggests that oxidation/reduction in these areas may result in degradation. In both of these wells the ORP is strongly negative.

In aerobic subsurface zones, certain chlorinated compounds can be oxidized to carbon dioxide, water, and chloride by direct and cometabolic mechanisms.

7.3.3.1.1.1.1 Direct Aerobic Oxidation

Direct aerobic oxidation is the microbial breakdown of a compound in which the compound serves as an electron donor and as a primary growth substrate for a microorganism mediating the reaction. Electrons that are generated by the oxidation of the compound are transferred to an electron acceptor such as oxygen. The microorganism can then obtain energy for cell maintenance and growth from the oxidized compound. In general, only the less chlorinated compounds (compounds with one or two chlorines) can be used directly by microorganisms as electron donors. Chlorinated compounds that can be oxidized directly under aerobic conditions include DCE, DCA, VC, chloroethane, methylene chloride, and chloromethane.

Analysis of groundwater samples collected from site monitoring wells sampling events detected the chlorinated compounds TCE with occasional DCE and even fewer detections of VC and chloroethane. TCE cannot be oxidized but the other compounds can be oxidized into carbon dioxide, water, chlorine, and electrons, in conjunction with the reduction of oxygen to water.

7.3.3.1.1.1.2 Cometabolic aerobic oxidation

Cometabolic aerobic oxidation is the microbial breakdown of a contaminant in which the contaminant is oxidized incidentally by an enzyme or cofactor produced during microbial metabolism of another compound. In such a case, the oxidation of the contaminant does not yield any energy or growth benefit for the microorganism involved in the reaction. The chlorinated compounds that have been observed to be oxidized cometabolically under aerobic conditions include TCE, DCE, VC, TCA, DCA, chloroform, and methylene chloride. The electron donors observed in cometabolic aerobic oxidation include methane, ethane, ethylene, propane, butane, aromatic hydrocarbons such as toluene and phenol, and ammonia. Under aerobic conditions, an enzyme mediates the electron donation reaction. That reaction has the tendency to convert chlorinated compounds into unstable epoxides. Unstable epoxides degrade rapidly in water to alcohols and fatty acids, which are readily degradable.

7.3.3.1.1.2 Anaerobic Reductive Dechlorination Process

Anaerobic reductive dechlorination (ARD) processes can effectively biodegrade all of the common chloroethenes, chloroethanes, and chloromethanes. ARD processes affect each of the chlorinated compounds differently. For example, of the chlorinated ethenes, PCE and TCE are the most susceptible to ARD because they are the most oxidized. Conversely, VC is the least susceptible to ARD because it is the least oxidized of these compounds. Therefore, as PCE and TCE degrade, the potential exists for VC to accumulate when the rate at which it is generated is greater than the rate at which it is degraded. In such a system, parent compound concentrations will decrease and daughter product concentrations will initially increase and then decrease as the daughter product is used as an electron acceptor or is oxidized.

ARD processes have been observed to occur both directly and cometabolically, and under methanogenic conditions.

7.3.3.1.1.2.1 Direct ARD

In direct ARD, the mediating bacteria use chlorinated compounds directly as electron acceptors in energy-producing redox reactions. Direct ARD is a biological reaction in which bacteria gain energy and grow as one or more chlorine atoms on a chlorinated molecule are replaced with hydrogen in an anaerobic environment. In this reaction, the chlorinated compound serves as the electron acceptor and hydrogen serves as the direct electron donor. Hydrogen used in this reaction is typically supplied by fermentation of naturally occurring organic substrates.

Biodegradation of an organic substrate depletes the aquifer of DO and lowers the ORP of groundwater, thereby stimulating conditions conducive to ARD processes. ARD processes progress more efficiently when DO concentrations approach zero, ORP levels are less than zero millivolts (mV) and pH is within the range of between 6 and 8 standard units. After DO is consumed, anaerobic microorganisms typically use native electron acceptors as available in the following order of preference: nitrate, non-aqueous iron (Fe^{+3}) and manganese (Mn^{+4}), sulfate, and finally carbon dioxide.

7.3.3.1.1.2.2 Cometabolic ARD

Cometabolic ARD is a reaction in which a chlorinated compound is reduced by a non-specific enzyme or co-factor produced during microbial metabolism of an organic substrate in an anaerobic environment. Cometabolism of the chlorinated compound does not yield any energy or growth benefit for the microbe mediating the reaction. For the cometabolic process to be sustained, sufficient organic substrate is required to support growth of the transforming microorganisms.

Evidence of cometabolic ARD is scant and suggests that the process is not nearly as important a degradation mechanism for chlorinated solvents in the saturated zone as direct ARD. Therefore, if cometabolic ARD is occurring at the Site, the rate of the reaction is likely slower than can be detected on a field scale.

7.3.3.1.1.2.3 Methanogenic ARD

The fastest and most complete reductive dechlorination of chlorinated compounds typically occurs under methanogenic conditions. Under methanogenic conditions, carbon dioxide is used as an electron acceptor and is reduced by methanogenic bacteria to produce methane. Methanogenesis generally occurs after oxygen, nitrate, ferric iron, and sulfate have been depleted in the treatment zone. The presence of methane in groundwater is indicative of strongly reducing conditions because methanogenic bacteria are obligate anaerobes. The presence of methane above background concentrations in chlorinated solvent-impacted groundwater is an indication that the groundwater geochemical conditions are favorable for ARD.

7.3.3.1.1.3 Abiotic Reductive Dechlorination Processes

Chlorinated compounds dissolved in groundwater may be degraded by abiotic processes involving reactions not associated with biological activity. Abiotic reductive dechlorination reactions include hydrogenolysis and dihaloelimination. Hydrogenolysis involves the replacement of chlorine or another halogen atom by a hydrogen atom, while dihaloelimination is the removal of two chlorine or other halogen atoms accompanied by the formation of a double carbon-carbon bond. Research suggests these reactions often do not take place in the absence of biological activity, even if such activity is only indirectly responsible for the reaction. Therefore, discerning the relative contribution of biotic vs. abiotic reductive dechlorination processes on a field scale is difficult and beyond the scope of this investigation.

7.3.4 Contaminant Transport – Groundwater

TCE in the environment is subject to several physical processes that may affect its concentration in bedrock, soil, and water. These include sorption, volatilization, diffusion, dispersion, and dilution. Typically, dissolved contaminants will migrate along with the groundwater flow to the point of discharge. Depending on the contaminant and soil/bedrock type, the contaminant migration rate may be slower than the groundwater flow rate because of contaminant retardation. This is a process where the contaminant is sorbed onto the soil/bedrock by various processes resulting in a slower transport velocity. However, in fractured and karstic bedrock, the majority of the groundwater flow is through fractures and solution features, not through the rock matrix. As explained above, this results in turbulent flow in the solution features and large fractures and laminar flow in the smaller fractures. Consequently, the residence time for the water to remain in contact with the rock is low and the openings through which the water flows are large allowing for large quantities of water to pass through in short time periods. This results in little retardation of the TCE and a large amount of dilution for TCE diffusion into the groundwater.

TCE concentrations can be diluted by adding fresh water to the groundwater system. In porous media dilution rarely affects plume concentrations, as hydrodynamic dispersion is a very weak process. However, dispersion is much more significant in fractured rock flow systems and in karstic systems where turbulent (non-Darcy) flow may occur; dilution can be a very significant mechanism for reduction of contaminant concentrations. Large amounts of Site surface water infiltrate into the groundwater system from streams and flow eastward to Spring Creek. Groundwater contours for the Onondaga and Bertie Formations show infiltration from surface water in areas where sink holes were identified (References 33, 34, and 35). In spite of the lack of degradation (either biotic or abiotic), TCE concentrations show significant reductions down gradient of the Spill Area. These reductions are largely attributable to dilution from the infiltration of fresh surface water.

Mechanical dispersion is the process by which water flows through the aquifer at different rates to reach the same discharge point. This is caused by a physical property of the aquifer called dispersivity which is scale and time dependent. Contaminants dissolved in the groundwater will move down gradient at different travel rates because of a variety of factors resulting in the spreading out of the plume. Dispersion is defined in three dimensions; lengthwise along the plume axis is longitudinal, across the plume is transverse horizontal, and the third is transverse vertical. Because of the different travel times, a contaminant plume becomes spread out as it migrates down gradient.

7.3.5 Contaminant Transport – Surface Water and Sediment

TCE that enters surface water bodies as a NAPL will sink through the water column and sediment until it encounters an impermeable layer. The liquid may be present in sediment as a residual NAPL, as in soil, if the capillary pressure is insufficient to allow for continued migration. Once the NAPL becomes immobile or during its time in the surface water, a portion will dissolve into the surface water. Groundwater contaminated with dissolved-phase TCE will mix with the surface water and dilutes the TCE concentrations. Once in the surface water, it will be diluted with clean water and will volatilize into the atmosphere. Because of the high Henry's Constant, TCE will rapidly partition from the dissolved-phase to the vapor phase, sometimes with a half-life of minutes to hours. If the dissolved TCE is not near the surface where volatilization can readily occur, breakdown of the TCE can take days to weeks.

TCE may be more persistent in sediment because of the presence of potentially high amounts of organic carbon from vegetative matter in the stream bed and from possible entrapment of NAPL in the sediment pore spaces. Once in the sediment, NAPL or adsorbed TCE can be a continuing source of dissolved TCE to the surface water. The risks associated with TCE in stream water and sediment is evaluated in the Screening Level Ecological Risk Assessment submitted under separate cover.

8 CONCLUSIONS

The LVRR RI meets the objectives set forth in the USEPA 2002 RI/FS WP by successfully collecting additional Site investigation data necessary to support the characterization and development of remedial alternatives for the Site so that a remedy can be selected to eliminate, reduce, or control risks to human health and the environment from groundwater contamination resulting from the train derailment spill and; thereby, supporting a Record of Decision. The objectives were accomplished through the following LVRR RI activities and conclusions:

- A Site Reconnaissance investigation to determine the current Site conditions and compare those with the results of the investigations performed in the 1990s;
- A Technical Memorandum to document the finding of the Site Reconnaissance and identify data gaps to be investigated during the LVRR Phase I investigations.
- The LVRR Phase I investigations pursuant to the USEPA 2002 RI/FS WP and Addendums 2, 3, 4, 5, and 6.

The LVRR RI conclusions are as follows:

- Groundwater flow is predominantly toward the east;
- Cyanide was detected in three wells near the Spill Area;
- Cyanide has not migrated down gradient and is not a concern or risk to human health or the environment;
- TCE was detected in both domestic and monitoring wells at concentrations exceeding the site-specific SCG for TCE in groundwater of 5 µg/l;
- The design, construction, and implementation of the waterline component of the ROD (USEPA Operable Unit 1 – waterline/source control) selected remedy provides a current and future clean water supply for drinking, bathing, fire hydrants, etc., thereby eliminating human exposure to TCE impacted groundwater.
- The LVRR SLERA concluded that there is adequate information to conclude that ecological risks from TCE impacted groundwater is negligible; therefore, no further action is warranted on the basis of ecological risk.
- Stream sediment contained elevated concentrations of TCE with decreasing concentrations with distance from the Spill Area; sediment in Mud Creek and Spring Creek contained TCE with Mud Creek containing significantly higher concentrations than Spring Creek. TCE was not detected in sediments from Guthrie Creek or Oatka Creek.
- Spring/seep water contained detectable concentrations of TCE; the highest concentrations, between 100µg/l and 440µg/l, were detected in springs along Mud Creek just downstream of the Spill Area. Non-detect to low concentrations of TCE (single digits) were reported in samples collected from Spring Creek.
- TCE was not detected in surface water samples above the site-specific NYSDEC SCG of 11 ppb.
- Spring Creek is the eastern boundary of the Study Area and provides hydraulic control of the TCE plume.
- Groundwater sampling by LVRR between December 2010 and August 2013 confirms that the TCE plume is in dynamic equilibrium and the geometry of the plume has minimally changed over the last 15 years, since the NYSDEC RI/FS.
- Comparison of TCE groundwater concentrations measured by LVRR in 2010 through 2013 with those from the NYSDEC RI/FS events from the 1990's show significant declines in TCE concentrations. This is likely due to the dissolution of NAPL below the water table; and, of most, but not all of the NAPL, above the water table in the Spill Area.
- Geophysical testing by LVRR revealed that fractures were generally shallow in dip and that large solution cavities were present in the subsurface, especially in the Camillus Formation. Also, the geophysical testing indicates that the bedrock fracture network is impossible to accurately predict or map.
- Borehole flow meter data showed that downward gradients were present in the Onondaga and Bertie Formations and both downward and upward gradients were present in the Camillus Formation.
- FLUTe profiling demonstrated that the highest transmissivities were in the Bertie Formation followed by the Camillus Formation. However, in the karst section of the Camillus Formation the flow exceeded the measurement range of the FLUTe equipment.

- Groundwater sampling for natural attenuation parameters showed that natural attenuation of TCE may be occurring in isolated locations but, in general, biological degradation of TCE is not an important factor. Volatilization of TCE is important for groundwater near the water table and possible in sinkholes and solution channels. Other physical attenuation mechanisms, such as sorption do not play major roles. Mechanical dispersion and especially dilution are the dominant processes for the reduction of TCE concentrations in groundwater.
- The Bertie Formation appears to be the geologic formation that is the primary transport pathway. Sinkholes, up gradient of the Spill Area, allow water to penetrate from the Onondaga Formation into the Bertie Formation where it then moves eastward along faults. Large sinkholes allow water to penetrate deeper into the Camillus Formation where the groundwater then moves rapidly through the karst section of that formation. The actions of the sinkholes mitigate the TCE concentrations through volatilization and dilution.
- TCE has penetrated into the rock matrix through molecular diffusion. In the Spill Area, the TCE concentrations in the pore water are elevated above the TCE solubility limit concentration, implying the presence of NAPL. Here the TCE is still moving from the fractures into the rock matrix though the system may be close to equilibrium. Over time the TCE concentrations in the fractures are expected to decline below the TCE concentrations in the rock matrix pore water; thereby, TCE mass will begin to diffuse back out from the rock matrix back into the fractures. In the Lime Rock Road area, TCE has also penetrated the rock matrix but here the TCE concentration is lower in the fractures, indicating that the TCE is diffusing out of the rock matrix and into the fracture water.

- Groundwater elevation fluctuations indicate that groundwater floods the bedrock during select times of the year. During this time, as groundwater traverses through the bedrock, TCE is dissolved into the groundwater. As the water levels recede, TCE-impacted groundwater moves to lower levels of the aquifer and then down gradient with advective flow. The groundwater level fluctuations prevent vapor extraction from being effective remedial option within bedrock because the bedrock with the high TCE concentrations has been observed to be flooded for a good portion of the year. Even after the water levels subside, the small fractures where the TCE resides would still be flooded and would take considerably more time to drain than the water in the larger fractures. Groundwater flow through fractures or porous media requires that the capillary pressure overcome the interfacial tension. The smaller the opening the higher the interfacial tension must be for the movement of water or any other liquid. As a result, water movement through smaller fractures will not occur until the water in the larger fractures has drained, reducing the hydrostatic pressure and allowing the capillary pressure in the small fracture to overcome the interfacial tension. Additionally, if NAPL is present in the small fractures the presence of a second fluid would effectively increase the required capillary pressure. Flow of such a mixture would follow Darcy's Law for Two-Phase Flow.

- Groundwater contour maps show the groundwater gradient in and near the Spill Area sloped downward to the east, south and southwest. The westward direction is toward the Dolomite quarry. Extensive dewatering at the quarry, up to approximately 800,000 gallons per day, can depress the groundwater levels resulting in a localized groundwater flow toward the quarry and groundwater contours showing a hydraulic gradient to the southwest. Groundwater moving from the Spill Area to the quarry would not migrate beyond the quarry since that is the location where the groundwater is being extracted.

- The large sink hole along Mud Creek east of the Site is a vertical conduit for surface water to penetrate into the bedrock. Surface water in Mud Creek flows downstream where it encounters the sinkhole. Only during times of high flow does the surface water pass the sinkhole and discharge to Oatka Creek. Since the sinkhole is a vertical zone of weakness in the bedrock allowing surface water to move vertically downward, any groundwater moving through the area will also move vertically downward potentially carrying dissolved TCE with it.

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10 GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirements
BERA	Baseline Ecological Risk Assessment
bgs	Below Ground Surface
CBD	Commerce Business Daily
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLASS	Contract Laboratory Analytical Support Services
CLP	Contract Laboratory Program
COCs	Chemicals of Concern
COPCs	Chemicals of Potential Concern
COPECs	Contaminants of Potential Ecological Concern
CPI	Characters Per Inch
CRC	Community Relations Coordinator
CRP	Community Relations Plan
CT	Central Tendency
DCE	1,2-Dichloroethene
DER	Data Evaluation Report
DESA	Division of Environmental Science and Assessment
DNAPL	Dense Non-Aqueous Phase Liquid
DQOs	Data Quality Objectives
EPIC	Environmental Photographic Interpretation Center
ERAGS	Ecological Risk Assessment Guidance for Superfund
ERRS	Emergency and Rapid Response Services
ESB	Eco-Screening Benchmark
ETQ	Ecological Toxicity Quotient
Fa	Farmington Loam
FARs	Federal Acquisition Regulations
FOL	Field Operations Leader
FS	Feasibility Study
FID	Flame Ionization System
FWIA	Fish and Wildlife Impact Analysis
GAC	Granular Activated Carbon

GC	Gas Chromatograph
GIS	Geographic Information System
GPR	Ground Penetrating Radar
GPS	Global Positioning System
GRAs	General Response Actions
HASP	Health and Safety Plan
HSA	Hollow-Stem Auger
HSO	Health and Safety Officer
IDW	Investigation Derived Waste
IT	IT Corporation
LNAPL	Light Non-Aqueous Phase Liquid
LOE	Level-of-Effort
MCL	Maximum Contaminant Level
MEC	Maximum Exposure Concentration
MNA	Monitored Natural Attenuation
MSL	Mean Sea Level
NAPL	Non-Aqueous Phase Liquid
NCEA	National Center for Environmental Assessment
ND	Non-Detect
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
ODC	Other Direct Cost
O&M	Operation and Maintenance
OU	Operable Unit
PAH	Polynuclear Aromatic Hydrocarbon
PAR	Pathways Analysis Report
PCBs	Polychlorinated Biphenyls
PCI	Post Construction Investigation
PID	Photoionization Detector
PO/CO	Project Officer/Contracting Officer
POI	Project Officer Interface

ppb	Parts Per Billion
ppm	Parts Per Million
PRAP	Proposed Remedial Action Plan
PVC	Polyvinyl chloride
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RAGS	Risk Assessment Guidelines for Superfund
RAOs	Remedial Action Objectives
RAS	Routine Analytical Services
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDI	Remedial Design Investigation
RI/FS	Remedial Investigation and Feasibility Study
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RSCC	Regional Sample Control Center
RTDF	Remedial Technologies Development Forum
SCM	Site Conceptual Model
SLERA	Screening Level Ecological Risk Assessment
SMOP	Scientific Management Decision Point
SMP	Site Management Plan
SOP	Standard Operating Procedure
SOW	Statement of Work
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TBC	To Be Considered
TCE	Trichloroethene
TCL	Target Compound List
TIC	Tentatively Identified Compound
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TSDF	Treatment, Storage, or Disposal Facility

UCL	Upper Confidence Limit
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VET	Volume Exchange Time
VLF	Very Low Frequency
VOC	Volatile Organic Compound
WACR	Work Assignment Closeout Report
WAF	Work Assignment Form
WAM	Work Assignment Manager

Table 1
Monitoring Well Construction Details

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Total Boring Depth Below Ground Surface (construction)	Ground Surface Elevation	Top of FLUTe or Steel Casing Elevation	Top of FLUTe Sample Port or PVC Riser Elevation	FLUTe Interval or PVC Screened Interval Below Ground Surface	Depth to Top of Backfill Below Ground Surface	FLUTe Interval or PVC Screened Interval Elevation	Geologic Formation
LVRR-18-1	171.4 (FLUTe well)	771.06	772.61	773.16	53.5-58.5	119.5	717.56-712.56	Onandoga
LVRR-18-2				773.10	63.5-68.5		707.56-702.56	Onandoga
LVRR-18-3				773.06	78.5-83.5		692.56-687.56	Bertie
LVRR-18-4				773.15	88.5-93.5		682.56-677.56	Bertie
LVRR-18-5				773.13	118.5-171.4		652.53-599.66	Camillus
LVRR-20-1	137.4 (FLUTe well)	735.45	737.42	737.90	28-33	95	707.45-702.45	Onandoga
LVRR-20-2				737.90	46-51		689.45-684.45	Bertie
LVRR-20-3				737.92	59-64		676.45-671.45	Bertie
LVRR-20-4				737.92	80-85		655.45-650.45	Camillus
LVRR-20-5				737.89	94-137.4		639.45-598.05	Camillus/Syracuse
LVRR-21-1	124.7 (FLUTe well)	726.71	727.86	728.54	51-56	116	675.71-670.71	Camillus
LVRR-21-2				728.53	61-66		665.71-660.71	Camillus
LVRR-21-3				728.58	81-86		645.71-640.71	Camillus
LVRR-21-4				728.62	115-124.7		611.71-602.01	Syracuse
LVRR-26-1	195 (FLUTe well)	722.53	724.23	724.78	52-57	149	670.53-665.53	Onandoga
LVRR-26-2				724.80	65-70		657.53-652.53	Onandoga
LVRR-26-3				724.75	112-117		610.53-605.53	Bertie
LVRR-26-4				724.80	128-134		594.33-589.33	Bertie
LVRR-26-5				724.82	148-195		574.53-527.53	Camillus
LVRR-27-1	223 (FLUTe well)	773.67	775.48	776.13	93-98	151	680.67-675.67	Onandoga
LVRR-27-2				776.13	103-108		670.67-665.67	Bois Blanc/Bertie
LVRR-27-3				776.23	115-120		658.67-653.67	Bertie
LVRR-27-4				776.12	137-142		636.67-631.67	Camillus
LVRR-27-5				776.07	150-223		623.67-550.67	Camillus/Syracuse
LVRR-28-1	162 (FLUTe well)	746.71	747.68	748.16	59-64	115	687.71-682.71	Bertie
LVRR-28-2				748.17	69-74		677.71-672.71	Bertie
LVRR-28-3				748.19	79-84		667.71-662.71	Bertie
LVRR-28-4				748.19	99-104		647.71-642.71	Camillus
LVRR-28-5				748.23	114-162		632.71-584.71	Camillus/Syracuse
LVRR-29-1	160 (FLUTe well)	745.18	746.57	747.15	54.5-59.5	109.5	690.68-685.68	Bertie
LVRR-29-2				747.14	65.5-70.5		679.68-674.68	Bertie
LVRR-29-3				747.09	75.5-80.5		669.68-664.68	Bertie
LVRR-29-4				747.17	88.5-98.5		656.68-646.68	Camillus
LVRR-29-5				747.18	108.5-160		636.85-585.18	Camillus/Syracuse
LVRR-30-1	184 (FLUTe well)	765.85	767.19	767.66	85.5-90.5	134.5	680.35-675.35	Bertie
LVRR-30-2				767.68	95.5-100.5		670.35-665.35	Bertie
LVRR-30-3				767.70	108.5-113.5		657.35-652.35	Bertie
LVRR-30-4				767.72	123.5-128.5		642.35-637.35	Camillus
LVRR-30-5				767.76	133.5-184		632.35-581.85	Camillus/Syracuse
LVRR-31-1	176 (FLUTe well)	708.27	710.01	710.49	51-56	113	657.27-652.27	Bertie
LVRR-31-2				710.51	68-73		640.27-635.27	Bertie
LVRR-31-3				710.49	78-83		630.27-625.27	Bertie
LVRR-31-4				710.52	98-103		610.27-605.27	Bertie/Camillus
LVRR-31-5				710.53	112-176		596.27-532.27	Camillus/Syracuse
LVRR-32-1	160 (FLUTe well)	737.32	738.97	739.49	70-75	111	667.32-662.32	Bertie
LVRR-32-2				739.58	80-85		657.32-652.32	Bertie
LVRR-32-3				739.67	96-101		641.32-636.32	Camillus
LVRR-32-4				739.70	103-108		634.32-629.32	Camillus
LVRR-32-5				739.51	110-160		627.32-577.32	Camillus/Syracuse
LVRR-34-1	153 (FLUTe well)	761.96	762.56	763.08	53-58	114	708.96-703.96	Onandoga
LVRR-34-2				763.13	60-65		701.96-696.96	Onandoga
LVRR-34-3				763.09	78-83		683.96-678.96	Bois Blanc
LVRR-34-4				763.19	93-98		668.96-663.96	Bertie
LVRR-34-5				763.21	113-153		648.96-608.96	Camillus
LVRR-35-1	180 (FLUTe well)	757.80	759.17	759.68	48.5-53.5	116.5	709.30-704.30	Onandoga
LVRR-35-2				759.67	58.5-63.5		699.30-694.30	Bertie
LVRR-35-3				759.71	68.5-73.5		689.30-684.30	Bertie
LVRR-35-4				759.70	103.5-108.5		654.30-649.30	Camillus
LVRR-35-5				759.69	115.5-180		642.30-577.80	Camillus/Syracuse
LVRR-22	39 (2" PVC)	636.61	638.92	638.98	29-39	not backfilled	607.61-597.61	Camillus
LVRR-23	30 (2" PVC)	604.75	607.53	607.46	20-30	not backfilled	584.75-574.75	Overburden/Weathered Bedrock/Syracuse
LVRR-24A	20 (2" PVC)	633.30	633.30 (flush curb box)	632.83	10-20	not backfilled	623.30-613.30	Overburden/Weathered Bedrock/Camillus
LVRR-24B	40 (2" PVC)	633.27	633.27 (flush curb box)	632.85	30-40	not backfilled	603.27-593.27	Camillus
LVRR-24C	60 (2" PVC)	633.37	633.37 (flush curb box)	632.86	50-60	not backfilled	585.37-575.37	Camillus
LVRR-25A	39 (2" PVC)	653.82	653.30 (flush curb box)	654.85	29-39	not backfilled	624.82-614.82	Overburden/Weathered Bedrock/Camillus
LVRR-25B	69.4 (2" PVC)	653.56	655.00	654.80	59.4-69.4	not backfilled	594.16-584.16	Camillus
LVRR-25C	100 (2" PVC)	653.35	654.91	654.57	90-100	not backfilled	563.35-553.35	Camillus
LVRR-33A	75 (2" PVC)	750.94	752.44	752.08	65-75	not backfilled	685.94-675.94	Bertie
LVRR-33B	85 (2" PVC)	750.80	752.20	751.93	75-85	not backfilled	675.80-665.80	Bertie
LVRR-33C	115 (2" PVC)	750.72	751.62	751.24	105-115	not backfilled	645.72-635.72	Camillus
LVRR-33D	130 (2" PVC)	750.49	752.09	751.76	120-130	not backfilled	630.49-620.49	Camillus
LVRR-33E	170 (2" PVC)	750.62	752.17	751.82	150-160	not backfilled	600.62-590.62	Camillus

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LVRR-37A	30 (2" PVC)	744.22	747.17	746.93	20-30	not backfilled	724.22-714.22	Onandoga
LVRR-37B	60 (2" PVC)	744.27	747.16	746.90	50-60	not backfilled	694.27-684.27	Bertie
LVRR-37C	75 (2" PVC)	744.37	747.02	746.83	65-75	not backfilled	679.37-669.37	Bertie/Camillus
LVRR-37D	91 (2" PVC)	744.27	747.16	746.90	81-91	not backfilled	663.27-653.27	Camillus
LVRR-38A	35 (2" PVC)	632.99	635.18	634.89	25-35	not backfilled	607.99-597.99	Weathered Bedrock/Camillus
LVRR-38B	45 (2" PVC)	633.12	634.83	634.94	35-45	not backfilled	598.12-588.12	Camillus
LVRR-38C	62 (2" PVC)	633.03	635.32	635.07	52-62	not backfilled	581.03-571.03	Camillus
LVRR-39A	35 (2" PVC)	644.05	647.36	647.16	25-35	not backfilled	619.05-609.05	Weathered Bedrock/Camillus
LVRR-39B	45 (2" PVC)	644.03	646.93	646.95	35-45	not backfilled	609.03-599.03	Camillus
LVRR-39C	65 (2" PVC)	644.03	646.93	646.95	55-65	not backfilled	589.03-579.03	Camillus
LVRR-40A	15 (2" PVC)	624.22	627.14	626.49	5-15	not backfilled	619.22-609.22	Weathered Bedrock/Camillus
LVRR-40B	35 (2" PVC)	624.00	627.08	627.68	25-35	not backfilled	599.00-589.00	Weathered Bedrock/Camillus
LVRR-40C	57 (2" PVC)	624.00	627.08	627.68	45-55	569	579.00-569.00	Camillus
LVRR-41A	35 (2" PVC)	650.11	653.15	653.16	25-35	not backfilled	625.11-615.11	Overburden
LVRR-41B	45 (2" PVC)	650.01	653.03	653.09	35-45	585.01	615.01-605.01	Weathered Bedrock/Camillus
LVRR-41C	65 (2" PVC)	650.01	653.03	653.09	55-65	585.01	595.01-585.01	Camillus
LVRR-42A	20 (2" PVC)	636.41	639.42	639.41	10-20	not backfilled	626.41-616.41	Overburden/Weathered Bedrock/Camillus
LVRR-42B	40 (2" PVC)	636.35	639.28	639.29	30-40	576.35	606.35-596.35	Weathered Bedrock/Camillus
LVRR-42C	60 (2" PVC)	636.35	639.28	639.29	50-60	576.35	586.35-576.35	Camillus
DC-01 A	60 (open boring)	760.5	761.23	761.23	Oct-60	not backfilled	750.5-700.5	Onandoga/Bois Blanc
DC-01 B	80 (2" PVC)	760.7	NA	761.54	60-80	not backfilled	700.70-680.70	Bertie
DC-01 C	120 (2" PVC)	760.6	NA	761.77	100-120	not backfilled	660.60-640.60	Camillus
DC-01 D	160 (2" PVC)	761.9	NA	763.25	135-155	not backfilled	626.90-606.90	Camillus
DC-02 A	41.5 (open boring)	760.9	NA	762.74	10-41.5	not backfilled	750.9-719.4	Onandoga
DC-02 B	73.2 (2" PVC)	761	NA	762.87	50-70	70	711-791	Bois Blanc/Bertie
DC-02 C	106.5 (2" PVC)	761.1	NA	762.81	85.4-105.4	not backfilled	675.70-655.70	Camillus
DC-02 D	150.9 (2" PVC)	760.7	NA	762.6	130.5-150.5	not backfilled	630.20-610.20	Camillus
DC-03 A	43 (open boring)	737.6	NA	739.14	7-43	not backfilled	730.6-694.6	Onandoga/Bois Blanc
DC-03 B	68 (2" PVC)	737.9	NA	738.7	48-68	not backfilled	689.90-669.90	Bertie
DC-03 C	100 (2" PVC)	738.3		739.48	80-100	not backfilled	658.30-638.30	Camillus
DC-03 D	146.2 (2" PVC)	738.8	NA	740.59	125-145	145	613.80-593.80	Camillus
DC-04 A	46 (open boring)	768.4	NA	768.9	30.7-46	not backfilled	737.7-722.4	Onandoga
DC-04 B	70.8 (2" PVC)	768.3	NA	769.28	50-70	70	718.30-698.30	Bois Blanc/Bertie
DC-04 C	132.6 (2" PVC)	768.3	NA	769.32	110.3-130.3	130.3	658.00-638.00	Camillus
DC-04 D	174 (2" PVC)	767.7	NA	769.41	145.4-165.4	165.4	622.30-602.30	Camillus/Syracuse
DC-05 A	60.5 (open boring)	763.2	NA	764.75	10-60.5	not backfilled	753.2-702.7	Onandoga
DC-05 B	80.5 (2" PVC)	763.2	NA	764.75	60-80	80	703.20-683.20	Onandoga/Bois Blanc/Bertie
DC-05 C	132 (2" PVC)	763.2	NA	764.18	110.5-130.5	130.5	652.70-632.70	Camillus
DC-05 D	167 (2" PVC)	763.1	NA	764.35	144.5-164.5	164.5	618.60-598.60	Camillus
DC-06 A	30 (open boring)	763.2	NA	764.75	10-30	not backfilled	753.2-733.2	Onandoga
DC-06 B	55 (2" PVC)	737.1	NA	738.28	35-55	not backfilled	702.10-682.10	Bois Blanc/Bertie
DC-06 C	92.1 (2" PVC)	737.3	NA	738.76	70-90	90	667.30-647.30	Camillus
DC-06 D	138 (2" PVC)	737.6	NA	737.81	112-132	132	625.60-605.60	Camillus
DC-7R A	95.1 (open boring)	765.6	NA	767.16	10-95.1	not backfilled	755.6-670.5	Onandoga/Bois Blanc/Bertie
DC-7R B	125 (2" PVC)	765.7	NA	766.97	103-123	123	662.70-642.70	Bertie

Table 1
Monitoring Well Construction Details

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

DC-7R C	161.2 (2" PVC)	765.3	NA	766.18	140-160	160	625.30-605.30	Camillus
DC-7R D	208.5 (2" PVC)	766	NA	766.84	187.9-201.9	201.9	578.10-564.10	Camillus/Syracuse
DC-07	170.8 (open boring)	741.9	NA	743.22	13.8-90	85	651.9-728.1	Onandoga/Bois Blanc/Bertie
DC-09 A	91 (2" PVC)	746.7	NA	747.81	70-90	90	676.70-656.70	Bertie/Camillus
DC-09 B	152 (2" PVC)	747	NA	747.21	130-150	150	617.00-597.00	Camillus/Syracuse
DC-09 C	179 (2" PVC)	747.2	NA	747.88	159-179	not backfilled	588.20-568.20	Syracuse
DC-10 A	60 (open boring)	738.2	NA	739.09	5-60	not backfilled	733.2-693.2	Onandoga/Bois Blanc/Bertie
DC-10 B	85 (2" PVC)	737.6	NA	739.25	65-85	not backfilled	672.60-652.60	Bertie
DC-10 C	110 (2" PVC)	737.6	NA	738.44	88-108	108	649.80-629.80	Camillus
DC-10 D	130.2 (2" PVC)	737.5	NA	739.12	109.9-129.9	129.9	627.60-607.60	Camillus
DC-11 A	93.2 (2" PVC)	751.7	NA	752.37	72.4-92.4	92.4	679.30-659.30	Onandoga/Bois Blanc/Bertie
DC-11 B	160.5 (2" PVC)	751.5	NA	752.21	139.9-159.9	159.9	611.60-591.60	Camillus
DC-12 A	65 (open boring)	725.3	NA	726.81	13-65	not backfilled	712.3-660.3	Onandoga
DC-12 B	106 (2" PVC)	725.1	NA	726.37	85-105	105	640.10-620.10	Bertie
DC-12 C	136 (2" PVC)	725.1	NA	726.27	115-135	135	610.10-590.10	Bertie/Camillus
DC-12 D	160 (2" PVC)	724.9	NA	725.92	138.8-158.8	158.8	586.10-566.10	Camillus
DC-13 A	25 (2" PVC)	649.7	NA	651.62	10-25	not backfilled	639.70-624.70	Camillus
DC-13 B	60 (2" PVC)	650.1	NA	651.9	40-60	not backfilled	610.10-590.10	Camillus/Syracuse
DC-14 A	25 (2" PVC)	664.1	NA	666.02	5-25	not backfilled	659.10-639.10	Bertie
DC-14 B	61.2 (2" PVC)	664.2	NA	666.11	40-60	60	624.20-604.20	Camillus
DC-15 A	65 (open boring)	759.6	NA	761.49	10-65	not backfilled	749.6-694.6	Onandoga/Bois Blanc/Bertie
DC-15 B	185 (2" PVC)	760.1	NA	761.98	160-180	180	600.10-580.10	Syracuse
DC-16	169.8 (open boring)	762.1	NA	762.94	5-70	64.8	757.1-692.7	Onandoga/Bois Blanc/Bertie
DC-17 A	65 (open boring)	738.1	NA	739.74	10-65	not backfilled	694.3-673.1	Onandoga/Bois Blanc/Bertie
DC-17 B	165 (2" PVC)	738.3	NA	740.2	144.6-164.6	164.6	593.70-573.70	Syracuse
GCM-1	57 (2" PVC)	685.34	687.59	687.74	37-57	not backfilled	648.34-628.34	Bertie
GCM-2	84 (2" PVC)	685.19	687.69	687.45	64-84	not backfilled	621.19-601.19	Camillus
GCM-3	140 (2" PVC)	685.26	687.52	687.08	88-128	not backfilled	597.26-557.26	Camillus

Notes:
1) Elevations are expressed in feet above mean sea level (amsl).
2) NA indicates not available.

Table 2
Packer Test Intervals and Hydraulic Head Elevations
September 9 and 18, 2010

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Packer Test Interval (feet bgs)	Casing Elevation (feet amsl)	Top of Packer Elevation (feet amsl)	Hydraulic Head Elevation (feet amsl)	Well ID	Packer Test Interval (feet bgs)	Casing Elevation (feet amsl)	Top of Packer Elevation (feet amsl)	Hydraulic Head Elevation (feet amsl)
LVRR-18	<58’	772.61	714.61	704.47	LVRR-20	<30’	737.42	707.42	694.98
	58’ – 63’		714.61	704.20		30’ – 35’		707.42	695.03
	63’ – 68’		709.61	695.25		35’ – 40’		702.42	694.19
	76’ – 83’		696.61	681.21		40’ – 45’		697.42	689.36
	>140'		632.61	704.46		48’ – 53’		689.42	685.00
						59’ – 64’		678.42	674.16
						76’ – 81’		661.42	651.03
						87’ – 92’		650.42	641.15
						>125.5’		611.92	602.81
LVRR-21	55’ – 60’	727.86	672.86	664.53	LVRR-26	<58'	724.23	666.23	655.18
	59’ – 64’		668.86	653.93		61’-66’		663.23	655.31
	66’ – 71’		661.86	653.37		70’ – 75’		654.23	646.64
	89’ – 94’		638.86	630.89		116’–121’		608.23	600.01
	>114’		613.86	605.85		128’–133’		596.23	587.99
						>145’		579.23	571.88
LVRR-27	98’	775.48	677.48	dry	LVRR-28	<66’	747.68	681.68	670.76
	103’–108’		672.48	660.68		81’ – 86’		666.68	652.83
	108’–113’		667.48	655.98		87’ – 92’		660.68	650.83
	117’–122’		658.48	650.83		97’– 102’		650.68	644.35
	138’–143’		637.48	629.73		>151’		596.68	588.82
	>143’		632.48	624.23					
LVRR-29	<65’	746.57	681.57	dry	LVRR-30	<94’	767.19	673.19	663.53
	65’ – 70’		681.57	671.60		110’–115’		657.19	649.51
	70’ – 75’		676.57	663.42		127’– 132’		640.19	629.84
	75’ – 80’		671.57	657.98		137’– 142’		630.19	618.36
	95’ – 100’		651.57	638.61		161’		606.19	599.26
LVRR-31	<55’	710.01	655.01	641.72	LVRR-32	<60’	738.97	678.97	-
	70’ – 75’		640.01	619.07		75’ – 80’		663.97	655.62
	75’ – 80’		635.01	622.39		80’ – 85’		658.97	646.01
	80’ – 85’		630.01	607.44		96’– 101’		642.97	628.01
	104’– 109’		606.01	589.68		103’– 108’		635.97	624.35
	>125’		585.01	576.96		>108’		630.97	632.02
LVRR-33	<72’	752.09	680.09	672.54	LVRR-34	55’ – 60’	762.56	707.56	-
	72’ – 77’		680.09	672.60		60’ – 65’		702.56	693.06
	77’ – 82’		675.09	699.48		66’ – 71’		696.56	682.25
	82’ – 87’		670.09	659.36		80’ – 85’		682.56	670.58
	87’ – 92’		665.09	660.35		85’ – 90’		677.56	689.53
	100’– 105’		652.09	642.86		>90’		672.56	663.16
	105’– 110’		647.09	640.32					
	>110’		642.09	636.29					
LVRR-35	<55’	759.17	704.17						
	55’ – 60’		704.17	702.09					
	69’ – 74’		690.17	683.17					
	76’ – 81’		683.17	672.42					
	85’ – 90’		674.17	667.12					
	91’ – 96’		668.17	661.29					
	>106’		653.17	647.06					

Notes:

1) Elevations are in feet above mean sea level (amsl).

2) Packer test intervals are in feet below the ground surface (bgs).

3) The packer testing was conducted between September 9 and 18, 2010.

Unicorn Management Consultants, LLC

Table 3
Packer Test Groundwater Analytical Results

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Sample Depth Interval	Acetone	Bromodichloro-methane	Carbon Disulfide	Chloroform	Dibromochloro-methane	cis-1,2-DCE	Trans-1,2-DCE	Methyl cyclohexane	Methylene Chloride	Toluene	TCE	Vinyl Chloride
LVRR-18	<58’	<5.0	<3.8	<1.0	<9.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	<2.9	<1.0
	58’- 63’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0
	63’ – 68’	<5.0	<1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	<1.0
	76’ – 83’	<5.0	<1.3	<1.0	<2.7	0.62 J	<1.0	<1.0	0.22 J	<1.0	1.8	3.1	<1.0
	>140'	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.9	<1.0	<1.0
LVRR-20	<30’	2.3 J	<1.0	<1.0	<2.5	<1.0	12	4.3	<1.0	<1.0	<9.6	13	<1.0
	30’ – 35’	Dry											
	35’ – 40’	Dry											
	40’ – 45’	Dry											
	48’ – 53’	<5.0	<1.0	<1.0	<1.0	<1.0	1.3	0.42 J	<1.0	<1.0	<2.0	22	<1.0
	48’ – 53’ DUP	<5.0	<1.0	<1.0	<1.0	<1.0	1.3	0.35 J	<1.0	<1.0	<2.1	22	<1.0
	59’ – 64’	<5.0	<1.0	<1.0	<1.0	<1.0	7.1	0.29 J	<1.0	<1.0	<1.4	510	<1.0
	76’ – 81’	Dry											
	87’ – 92’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
	>125.5’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.1	<2.7	<1.0
LVRR-21	<55’	Dry											
	59’ – 64’	<5.0	<1.3	<1.0	<2.9	<1.0	<1.0	<1.0	<1.0	<1.0	13	3.6	<1.0
	66’ – 71’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.0	<1.0	<1.0
	75’ – 80’	Dry											
	89’ – 94’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.7	<1.0	<1.0
	>114’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	<1.0	<1.0
LVRR-26	<58’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.9	<1.0	<1.0
	61’ – 66’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.5	<1.0	<1.0
	70’ – 75’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.1	<1.0	<1.0
	116’ – 121’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0
	128’ – 133’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0
	>145’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.2	<1.0	<1.0
LVRR-27	<98’’	Dry											
	103’ – 108’	Dry											
	108’ – 113’	<10	<2.0	<2.0	1.5 J	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.8	<2.0
	117’ – 122’	<5.0	<1.0	<1.0	0.20 J	<1.0	<1.0	<1.0	<1.0	<1.0	0.30 J	1.1	<1.0
	138’ – 143’	<5.0	<1.0	<1.0	0.45 J	<1.0	<1.0	<1.0	<1.0	<1.0	0.34 J	0.96 J	<1.0
	>143’	<5.0	<1.0	<1.0	0.78 J	<1.0	<1.0	<1.0	<1.0	<1.0	0.39 J	1.1	<1.0
LVRR-28	<66’	<25	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<8.6	16	<5.0
	81’ – 86’	<25	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0	<5.0	<5.9	17	<5.0
	87’ – 92’	<5.0	<1.0	<1.0	<1.0	<1.0	0.24 J	<1.0	<1.0	<1.0	<2.1	<6.4	<1.0
	97’ – 102’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.6	<1.0
	97’ – 102’ DUP	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.8	<1.0
	>151’	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.6	<4.5	<1.0
LVRR-29	<65’	Dry											
	65’ – 70’	Dry											
	70’ – 75’	Dry											
	75’ – 80’	<5.0	0.53 J	<1.0	<1.0	0.26 J	<1.0	<1.0	<1.0	<1.0	4.4	<3.8	<1.0
	95’ – 100’	<5.0 UJ	0.62 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.8	<3.7	<1.0
	>113’	Packer Torn											

Table 3
Packer Test Groundwater Analytical Results

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Sample Depth Interval	Acetone	Bromodichloro-methane	Carbon Disulfide	Chloroform	Dibromochloro-methane	cis-1,2-DCE	Trans-1,2-DCE	Methyl cyclohexane	Methylene Chloride	Toluene	TCE	Vinyl Chloride
LVRR-30	<94'	2.4 J	2.4	1.0	1.0	1.0	<1.0	<1.0	<1.0	<1.0	3.5	<14	<1.0
	110' – 115'	<5.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	42	<1.0
	127' – 132'	<5.0	<1.0	<1.0	<1.0	<1.0	0.73 J	<1.0	<1.0	<1.0	<1.5	16	<1.0
	137' – 142'	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.3	<2.9	<1.0
	>161'	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.71 J	<2.4	<1.0
LVRR-31	<55'	<10	1.8 J	<2.0	3.4	0.84 J	<2.0	<2.0	<2.0	<2.0	<2.0	11	<2.0
	70' – 75'	Dry											
	75' – 80'	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.3	<1.0
	75' – 80' DUP	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.3	<1.0
	80' – 85'	Dry											
	104' – 109'	3.9 J	0.43 J	<1.0	0.76 J	0.21 J	<1.0	<1.0	<1.0	<1.0	1.1	2.8	<1.0
	>125'	3.7 J	R	R	R	R	R	R	R	R	<1.0 UJ	1.4 J	R
LVRR-32	<60'	Dry											
	75' – 80'	<5.0	<1.0	<1.0	0.50 J	<1.0	0.50 J	<1.0	<1.0	<1.0	1.1	93	<1.0
	75' – 80' DUP	<5.0	<1.0	<1.0	0.52 J	<1.0	0.52 J	<1.0	<1.0	<1.0	1.0	90	<1.0
	80' – 85'	<5.0	1.0	<1.0	2.4	0.57 J	0.41 J	<1.0	<1.0	<1.0	2.8	69	<1.0
	96' – 101'	<5.0	1.4	<1.0	2.6	0.69 J	0.35 J	<1.0	<1.0	<1.0	1.6	69	<1.0
	103' – 108'	<5.0	<1.0	<1.0	0.67 J	0.22 J	0.41 J	<1.0	<1.0	<1.0	2.5	71	<1.0
	>108'	<5.0	<1.0	<1.0	0.36 J	<1.0	0.56 J	<1.0	<1.0	<1.0	2.1	92	<1.0
LVRR-33	<72'	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.5	<2.8	<1.0
	72' – 77'	Dry											
	77' – 82'	Dry											
	82' – 87'	2.3 J	<1.2	0.42 J	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	23	8.5	<1.0
	87' – 92'	<5.0	<1.0	0.49 J	<1.1	<1.0	<1.0	<1.0	<1.0	<1.0	6.8	11	<1.0
	100' – 105'	2.1 J	<1.4	0.77 J	<3.3	<1.0	<1.0	<1.0	<1.0	<1.0	7.8	5.5	<1.0
	105' – 110'	2.6 J	<1.0	0.58 J	<2.2	<1.0	<1.0	<1.0	<1.0	<1.0	6.6	4.9	<1.0
	>110'	<5.0	<1.0	0.43 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.9	<1.2	<1.0
LVRR-34	60' – 65'	1.7 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	16	37	<1.0
	66' – 71'	<50 UJ	<10	<10	<10	<10	<10	<10	<10	<10	25	<21	<10
	80' – 85'	<50 UJ	<10	<10	<10	<10	<10	<10	<10	<10	16	<18	<10
	85' – 90'	<50 UJ	<10	<10	<10	<10	<10	<10	<10	<10	8.0 J	<10	<10
	>90'	<5.0 UJ	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	<5.0	<1.0
LVRR-35	<55'	Dry											
	55' – 60'	<130	<25	<25	<25	<25	27	<25	<25	<25	7.3 J	4400	15 J
	69' – 74'	<25	<5.0	<5.0	<5.0	<5.0	1.7 J	<5.0	<5.0	<5.0	2.1 J	670	<5.0
	76' – 81'	<25	<5.0	<5.0	<5.0	<5.0	3.4 J	<5.0	<5.0	<5.0	8.8	900	<5.0
	76' – 81' DUP	<25	<5.0	<5.0	<5.0	<5.0	3.2 J	<5.0	<5.0	<5.0	11	920	<5.0
	85' – 90'	<10	<2.0	<2.0	<2.0	<2.0	1.3 J	<2.0	<2.0	<2.0	3.4	450	<2.0
	91' – 96'	<10	<2.0	<2.0	<2.0	<2.0	2.7	<2.0	<2.0	<2.0	4.8	340	<2.0
	>106'	<10	<2.0	<2.0	<2.0	<2.0	1.9 J	<2.0	<2.0	1.7 J	2.4	550	0.56 J

Notes:
1) All concentrations are in micrograms per liter (ug/l).
2) J Indicates estimated concentration
3) R Indicates validation rejected results
4) UJ Indicates analyte was not detected above the reporting limit, but is an estimate.
5) <5.0 Indicates not detected at or above the laboratory detection limit.
6) Sample depth intervals are in feet below the ground surface.

Table 4
Geologic Formation Elevation and Thickness

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Well ID	Ground Surface Elevation	Depth to Top of Geologic Formation						Top of Geologic Formation Elevation						Geologic Formation Thickness				
		Onondaga	Bois Blanc	Akron	Bertie	Camillus	Syracuse	Onondaga	Bois Blanc	Akron	Bertie	Camillus	Syracuse	Onondaga	Bois Blanc	Akron	Bertie	Camillus
DC-01	761.9	0	55	NP	56	90	154	761.9	706.9	NP	705.9	671.9	607.9	55	1	NP	34	64
DC-02	760.7	0	52	NP	53	87	151	760.7	708.7	NP	707.7	673.7	609.7	52	1	NP	34	64
DC-03	738.8	0	42	NP	47	79	144	738.8	696.8	NP	691.8	659.8	594.8	42	5	NP	32	65
DC-04	767.7	0	51	NP	53	86	152	767.7	716.7	NP	714.7	681.7	615.7	51	2	NP	33	66
DC-05	763.1	0	65	NP	66	100	165	763.1	698.1	NP	697.1	663.1	598.1	65	1	NP	34	65
DC-06	737.6	0	32	NP	38	70	135	737.6	705.6	NP	699.6	667.6	602.6	32	6	NP	32	65
DC-07	741.9	0	58	NP	62	94	161	741.9	683.9	NP	679.9	647.9	580.9	58	4	NP	32	67
DC-07R	766	0	85	NP	91	123	190	766	681	NP	675	643	576	85	6	NP	32	67
DC-08	745.3	0	19	20	26	68	133	745.3	726.3	725.3	719.3	677.3	612.3	19	1	6	42	65
DC-09	747.2	0	34	35	41	82	146	747.2	713.2	712.2	706.2	665.2	601.2	34	1	6	41	64
DC-10	737.5	0	42	43	49	90	155	737.5	695.5	694.5	688.5	647.5	582.5	42	1	6	41	65
DC-11	751.5	0	87	NP	89	129	NE	751.5	664.5	NP	662.5	622.5	NE	87	2	NP	40	NC
DC-12	724.9	0	64	65	73	118	NE	724.9	660.9	659.9	651.9	606.9	NE	64	1	8	45	NC
DC-13	650.1	NP	NP	NP	NP	NP	48	NP	NP	NP	NP	NP	602.1	NP	NP	NP	NP	NC
DC-14	664.2	NP	NP	NP	NP	33	99	NP	NP	NP	NP	631.2	565.2	NP	NP	NP	NP	66
DC-15	760.1	0	56	NP	57	90	155	760.1	704.1	NP	703.1	670.1	605.1	56	1	NP	33	65
DC-16	762.1	0	56	NP	57	90	155	762.1	706.1	NP	705.1	672.1	607.1	56	1	NP	33	65
DC-17	738.3	0	36	NP	41	73	138	738.3	702.3	NP	697.3	665.3	600.3	36	5	NP	32	65
LVRR-18	771.06	0	65	NP	68	100	165	771.06	706.06	NP	703.06	671.06	606.06	65	3	NP	32	65
LVRR-20	735.45	0	30	NP	36	65	130	735.45	705.45	NP	699.45	670.45	605.45	30	6	NP	29	65
LVRR-21	726.71	0	11	13	16	51	115	726.71	715.71	713.71	710.71	675.71	611.71	11	2	3	35	64
LVRR-22	636.61	NP	NP	NP	NP	25	NE	NP	NP	NP	NP	611.61	NE	NP	NP	NP	NP	NC
LVRR-23	604.75	NP	NP	NP	NP	NP	26	NP	NP	NP	NP	NP	578.75	NP	NP	NP	NP	NC
LVRR-24	633.37	NP	NP	NP	NP	30	NE	NP	NP	NP	NP	603.37	NE	NP	NP	NP	NP	NC
LVRR-25	653.35	NP	NP	NP	NP	50	NE	NP	NP	NP	NP	603.35	NE	NP	NP	NP	NP	NC
LVRR-26	722.53	0	82	83	90	134	NE	722.53	640.53	639.53	632.53	588.53	NE	82	1	7	44	NC
LVRR-27	773.67	0	103	NP	105	136	200	773.67	670.67	NP	668.67	637.67	573.67	103	2	NP	31	NC
LVRR-28	746.71	0	56	NP	58	88	159	746.71	690.71	NP	688.71	658.71	587.71	56	2	NP	30	71
LVRR-29	745.18	0	51	NP	54	84	149	745.18	694.18	NP	691.18	661.18	596.18	51	3	NP	30	65
LVRR-30	765.85	0	82	NP	86	116	177	765.85	683.85	NP	679.85	649.85	588.85	82	4	NP	30	61
LVRR-31	708.27	0	45	46	52	100	145	708.27	663.27	662.27	656.27	608.27	563.27	45	1	6	48	45
LVRR-32	737.32	0	44	46	53	94	156	737.32	693.32	691.32	684.32	643.32	581.32	44	2	7	41	62
LVRR-33	750.49	0	58	60	67	100	NE	750.49	692.49	690.49	683.49	650.49	NE	58	2	7	33	NC
LVRR-34	761.96	0	77	NP	84	116	NE	761.96	684.96	NP	677.96	645.96	NE	77	7	NP	32	NC
LVRR-35	757.8	0	55	NP	58	90	156	757.8	702.8	NP	699.8	667.8	601.8	55	3	NP	32	66
LVRR-37	744.27	0	39	NP	45	74	NE	744.27	705.27	NP	699.27	670.27	NE	39	6	0	29	NC
LVRR-38	633.03	NP	NP	NP	NP	40	NE	NP	NP	NP	NP	593.03	NE	NP	NP	NP	NP	NC
LVRR-39	644.03	NP	NP	NP	NP	35	NE	NP	NP	NP	NP	609.03	NE	NP	NP	NP	NP	NC
LVRR-40	624	NP	NP	NP	NP	45	NE	NP	NP	NP	NP	579	NE	NP	NP	NP	NP	NC
LVRR-41	650.01	NP	NP	NP	NP	40	NE	NP	NP	NP	NP	610.01	NE	NP	NP	NP	NP	NC
LVRR-42	636.35	NP	NP	NP	NP	45	NE	NP	NP	NP	NP	591.35	NE	NP	NP	NP	NP	NC
GCM-1	685.34	NP	NP	NP	37.5	NE	NE	NP	NP	NP	647.84	NE	NE	NP	NP	NP	NC	NE
GCM-2	685.19	NP	NP	NP	NP	64	NE	NP	NP	NP	NP	621.19		NP	NP	NP	NP	NC
GCM-3	685.26	NP	NP	NP	NP	88	NE	NP	NP	NP	NP	597.26	NE	NP	NP	NP	NP	NC

Notes:

1) Elevations are in feet above mean sea level.
2) Depths to the top of geologic formations are in feet below the ground surface.
3) Thicknesses of geologic formations are in feet.
4) The ground surface elevation is listed for FLUTe style monitoring wells or the deepest boring in a conventional monitoring well cluster.
5) NP - Indicates geologic formation was not encountered in the boring.
6) NE - Indicates boring was not conducted to this formation depth.
7) NC - Indicates the boring was not conducted through the entire thickness of the formation.

Unicorn Management Consultants, LLC

Table 5A
Groundwater Elevations
1'st Quarterly Event
(December 2010/January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	32.60	740.56
LVRR-18-2	773.10	36.75	736.35
LVRR-18-3	773.06	NM	NM
LVRR-18-4	773.15	48.72	724.43
LVRR-18-5	773.13	42.45	730.68
LVRR-20-1	737.90	NM	NM
LVRR-20-2	737.90	40.04	697.86
LVRR-20-3	737.92	40.14	697.78
LVRR-20-4	737.92	21.20	716.72
LVRR-20-5	737.89	21.65	716.24
LVRR-21-1	728.54	NM	NM
LVRR-21-2	728.53	39.62	688.91
LVRR-21-3	728.58	42.31	686.27
LVRR-21-4	728.62	42.78	685.84
LVRR-26-1	724.78	44.19	680.59
LVRR-26-2	724.80	44.50	680.30
LVRR-26-3	724.75	42.78	681.97
LVRR-26-4	724.80	42.88	681.92
LVRR-26-5	724.82	44.30	680.52
LVRR-27-1	776.13	74.50	701.63
LVRR-27-2	776.13	74.92	701.21
LVRR-27-3	776.23	74.93	701.30
LVRR-27-4	776.12	74.88	701.24
LVRR-27-5	776.07	74.82	701.25
LVRR-28-1	748.16	41.10	707.06
LVRR-28-2	748.17	41.05	707.12
LVRR-28-3	748.19	41.01	707.18
LVRR-28-4	748.19	41.32	706.87
LVRR-28-5	748.23	NM	NM
LVRR-29-1	747.15	37.12	710.03
LVRR-29-2	747.14	37.40	709.74
LVRR-29-3	747.09	39.15	707.94
LVRR-29-4	747.17	42.81	704.36
LVRR-29-5	747.18	50.47	696.71

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	NM	NM
LVRR-30-2	767.68	66.43	701.25
LVRR-30-3	767.70	NM	NM
LVRR-30-4	767.72	66.40	701.32
LVRR-30-5	767.76	66.21	701.55
LVRR-31-1	710.49	NM	NM
LVRR-31-2	710.51	NM	NM
LVRR-31-3	710.49	NM	NM
LVRR-31-4	710.52	NM	NM
LVRR-31-5	710.53	NM	NM
LVRR-32-1	739.49	42.84	696.65
LVRR-32-2	739.58	42.59	696.99
LVRR-32-3	739.67	42.74	696.93
LVRR-32-4	739.70	69.60	670.10
LVRR-32-5	739.51	42.91	696.60
LVRR-34-1	763.08	52.20	710.88
LVRR-34-2	763.13	51.43	711.70
LVRR-34-3	763.09	68.65	694.44
LVRR-34-4	763.19	69.89	693.30
LVRR-34-5	763.21	50.24	712.97
LVRR-35-1	759.68	35.32	724.36
LVRR-35-2	759.67	36.26	723.41
LVRR-35-3	759.71	36.22	723.49
LVRR-35-4	759.70	36.56	723.14
LVRR-35-5	759.69	36.58	723.11
LVRR-22	638.98	7.37	631.61
LVRR-23	607.46	5.27	602.19
LVRR-24 A	632.83	0.75	632.08
LVRR-24 B	632.85	0.63	632.22
LVRR-24 C	632.86	0.69	632.17
LVRR-25 A	654.85	5.77	649.08
LVRR-25 B	654.80	6.60	648.20
LVRR-25 C	654.57	6.44	648.13

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	59.46	692.62
LVRR-33 B	751.93	58.21	693.72
LVRR-33 C	751.24	57.53	693.71
LVRR-33 D	751.76	56.27	695.49
LVRR-33 E	751.82	56.16	695.66
DC-01 A	761.23	41.40	719.83
DC-01 B	761.54	35.61	725.93
DC-01 C	761.77	32.42	729.35
DC-01 D	763.25	36.38	726.87
DC-02 A	762.74	18.73	744.01
DC-02 B	762.87	44.64	718.23
DC-02 C	762.81	37.25	725.56
DC-02 D	762.60	35.71	726.89
DC-03 A	739.14	31.99	707.15
DC-03 B	738.70	48.21	690.49
DC-03 C	739.48	42.84	696.64
DC-03 D	740.59	32.72	707.87
DC-04 A	768.90	41.11	727.79
DC-04 B	769.28	50.78	718.50
DC-04 C	769.32	43.00	726.32
DC-04 D	769.41	40.23	729.18
DC-05 A	764.75	34.81	729.94
DC-05 B	764.75	36.99	727.76
DC-05 C	764.18	37.81	726.37
DC-05 D	764.35	38.02	726.33
DC-06 A	764.75	17.25	747.50
DC-06 B	738.28	19.85	718.43
DC-06 C	738.76	17.23	721.53
DC-06 D	737.81	13.12	724.69
DC-7R A	767.16	59.55	707.61
DC-7R B	766.97	58.81	708.16
DC-7R C	766.18	57.57	708.61
DC-7R D	766.84	58.21	708.63
DC-07	743.22	18.75	724.47

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-09 A	747.81	53.73	694.08
DC-09 B	747.21	54.25	692.96
DC-09 C	747.88	55.07	692.81
DC-10 A	739.09	36.12	702.97
DC-10 B	739.25	36.21	703.04
DC-10 C	738.44	35.40	703.04
DC-10 D	739.12	35.71	703.41
DC-11 A	752.37	48.12	704.25
DC-11 B	752.21	47.89	704.32
DC-12 A	726.81	26.85	699.96
DC-12 B	726.37	34.54	691.83
DC-12 C	726.27	34.65	691.62
DC-12 D	725.92	40.88	685.04
DC-13 A	651.62	7.54	644.08
DC-13 B	651.90	12.57	639.33
DC-14 A	666.02	15.99	650.03
DC-14 B	666.11	16.14	649.97
DC-15 A	761.49	31.76	729.73
DC-15 B	761.98	42.70	719.28
DC-16	762.94	33.87	729.07
DC-17 A	739.74	28.86	710.88
DC-17 B	740.20	33.28	706.92
GCM-1	687.74		687.74
GCM-2	687.45		687.45
GCM-3	687.08		687.08

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Table 5B
Groundwater Elevations
2'nd Quarterly Event
(March 2011)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation	Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation	Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation	Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	24.47	748.69	LVRR-30-1	767.66	47.20	720.46	LVRR-33 A	752.08	57.63	694.45	DC-09 A	747.81	51.44	696.37
LVRR-18-2	773.10	29.66	743.44	LVRR-30-2	767.68	47.22	720.46	LVRR-33 B	751.93	58.29	693.64	DC-09 B	747.21	51.75	695.46
LVRR-18-3	773.06	35.46	737.60	LVRR-30-3	767.70	NM	NM	LVRR-33 C	751.24	57.65	693.59	DC-09 C	747.88	52.59	695.29
LVRR-18-4	773.15	35.35	737.80	LVRR-30-4	767.72	47.10	720.62	LVRR-33 D	751.76	56.76	695.00	DC-10 A	739.09	37.96	701.13
LVRR-18-5	773.13	34.33	738.80	LVRR-30-5	767.76	46.94	720.82	LVRR-33 E	751.82	56.86	694.96	DC-10 B	739.25	38.01	701.24
LVRR-20-1	737.90	53.06	684.84	LVRR-31-1	710.49	18.82	691.67	DC-01 A	761.23	28.34	732.89	DC-10 C	738.44	37.17	701.27
LVRR-20-2	737.90	36.23	701.67	LVRR-31-2	710.51	32.41	678.10	DC-01 B	761.54	32.08	729.46	DC-10 D	739.12	37.50	701.62
LVRR-20-3	737.92	35.67	702.25	LVRR-31-3	710.49	33.28	677.21	DC-01 C	761.77	32.73	729.04	DC-11 A	752.37	50.42	701.95
LVRR-20-4	737.92	12.98	724.94	LVRR-31-4	710.52	33.08	677.44	DC-01 D	763.25	34.10	729.15	DC-11 B	752.21	50.17	702.04
LVRR-20-5	737.89	12.24	725.65	LVRR-31-5	710.53	31.98	678.55	DC-02 A	762.74	18.48	744.26	DC-12 A	726.81	28.79	698.02
LVRR-21-1	728.54	31.45	697.09	LVRR-32-1	739.49	22.09	717.40	DC-02 B	762.87	43.54	719.33	DC-12 B	726.37	36.30	690.07
LVRR-21-2	728.53	22.13	706.40	LVRR-32-2	739.58	21.75	717.83	DC-02 C	762.81	33.97	728.84	DC-12 C	726.27	36.38	689.89
LVRR-21-3	728.58	25.78	702.80	LVRR-32-3	739.67	22.92	716.75	DC-02 D	762.60	33.57	729.03	DC-12 D	725.92	42.24	683.68
LVRR-21-4	728.62	26.11	702.51	LVRR-32-4	739.70	Dry	NM	DC-03 A	739.14	9.03	730.11	DC-13 A	651.62	7.33	644.29
LVRR-26-1	724.78	13.26	711.52	LVRR-32-5	739.51	22.04	717.47	DC-03 B	738.70	25.88	712.82	DC-13 B	651.90	12.17	639.73
LVRR-26-2	724.80	14.01	710.79	LVRR-34-1	763.08	33.72	729.36	DC-03 C	739.48	27.06	712.42	DC-14 A	666.02	15.70	650.32
LVRR-26-3	724.75	11.96	712.79	LVRR-34-2	763.13	34.14	728.99	DC-03 D	740.59	22.01	718.58	DC-14 B	666.11	15.85	650.26
LVRR-26-4	724.80	12.05	712.75	LVRR-34-3	763.09	40.99	722.10	DC-04 A	768.90	41.28	727.62	DC-15 A	761.49	25.56	735.93
LVRR-26-5	724.82	14.81	710.01	LVRR-34-4	763.19	41.72	721.47	DC-04 B	769.28	50.53	718.75	DC-15 B	761.98	34.78	727.20
LVRR-27-1	776.13	55.20	720.93	LVRR-34-5	763.21	33.56	729.65	DC-04 C	769.32	41.07	728.25	DC-16	762.94	30.33	732.61
LVRR-27-2	776.13	56.51	719.62	LVRR-35-1	759.68	28.10	731.58	DC-04 D	769.41	37.76	731.65	DC-17 A	739.74	20.21	719.53
LVRR-27-3	776.23	55.49	720.74	LVRR-35-2	759.67	28.61	731.06	DC-05 A	764.75	30.81	733.94	DC-17 B	740.20	22.78	717.42
LVRR-27-4	776.12	55.51	720.61	LVRR-35-3	759.71	28.42	731.29	DC-05 B	764.75	33.65	731.10	GCM-1	687.74	32.62	655.12
LVRR-27-5	776.07	55.56	720.51	LVRR-35-4	759.70	27.44	732.26	DC-05 C	764.18	35.59	728.59	GCM-2	687.45	33.11	654.34
LVRR-28-1	748.16	21.99	726.17	LVRR-35-5	759.69	27.23	732.46	DC-05 D	764.35	35.77	728.58	GCM-3	687.08	33.75	653.33
LVRR-28-2	748.17	22.00	726.17	LVRR-22	638.98	7.32	631.66	DC-06 A	764.75	9.38	755.37				
LVRR-28-3	748.19	21.88	726.31	LVRR-23	607.46	5.01	602.45	DC-06 B	738.28	14.02	724.26				
LVRR-28-4	748.19	22.67	725.52	LVRR-24 A	632.83	0.75	632.08	DC-06 C	738.76	13.88	724.88				
LVRR-28-5	748.23	25.43	722.80	LVRR-24 B	632.85	0.60	632.25	DC-06 D	737.81	13.32	724.49				
LVRR-29-1	747.15	21.84	725.31	LVRR-24 C	632.86	0.60	632.26	DC-7R A	767.16	60.88	706.28				
LVRR-29-2	747.14	22.05	725.09	LVRR-25 A	654.85	8.83	646.02	DC-7R B	766.97	59.98	706.99				
LVRR-29-3	747.09	22.50	724.59	LVRR-25 B	654.80	6.45	648.35	DC-7R C	766.18	58.60	707.58				
LVRR-29-4	747.17	23.33	723.84	LVRR-25 C	654.57	6.45	648.12	DC-7R D	766.84	59.35	707.49				
LVRR-29-5	747.18	24.75	722.43					DC-07	743.22	19.09	724.13				

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Table 5C
Groundwater Elevations
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	26.40	746.76
LVRR-18-2	773.10	30.91	742.19
LVRR-18-3	773.06	40.05	733.01
LVRR-18-4	773.15	40.99	732.16
LVRR-18-5	773.13	40.48	732.65
LVRR-20-1	737.90	49.51	688.39
LVRR-20-2	737.90	40.89	697.01
LVRR-20-3	737.92	41.12	696.80
LVRR-20-4	737.92	22.06	715.86
LVRR-20-5	737.89	19.72	718.17
LVRR-21-1	728.54	40.81	687.73
LVRR-21-2	728.53	41.05	687.48
LVRR-21-3	728.58	42.62	685.96
LVRR-21-4	728.62	42.55	686.07
LVRR-26-1	724.78	43.12	681.66
LVRR-26-2	724.80	41.20	683.60
LVRR-26-3	724.75	41.59	683.16
LVRR-26-4	724.80	41.82	682.98
LVRR-26-5	724.82	42.58	682.24
LVRR-27-1	776.13	84.80	691.33
LVRR-27-2	776.13	84.73	691.40
LVRR-27-3	776.23	84.78	691.45
LVRR-27-4	776.12	84.66	691.46
LVRR-27-5	776.07	100.99	675.08
LVRR-28-1	748.16	53.11	695.05
LVRR-28-2	748.17	53.41	694.76
LVRR-28-3	748.19	53.42	694.77
LVRR-28-4	748.19	53.10	695.09
LVRR-28-5	748.23	NM	NM
LVRR-29-1	747.15	36.80	710.35
LVRR-29-2	747.14	37.02	710.12
LVRR-29-3	747.09	38.04	709.05
LVRR-29-4	747.17	41.61	705.56
LVRR-29-5	747.18	51.87	695.31

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	60.40	707.26
LVRR-30-2	767.68	76.53	691.15
LVRR-30-3	767.70	38.70	729.00
LVRR-30-4	767.72	75.69	692.03
LVRR-30-5	767.76	75.78	691.98
LVRR-31-1	710.49	40.99	669.50
LVRR-31-2	710.51	53.45	657.06
LVRR-31-3	710.49	46.54	663.95
LVRR-31-4	710.52	50.46	660.06
LVRR-31-5	710.53	51.87	658.66
LVRR-32-1	739.49	53.36	686.13
LVRR-32-2	739.58	52.83	686.75
LVRR-32-3	739.67	54.70	684.97
LVRR-32-4	739.70	78.62	661.08
LVRR-32-5	739.51	53.15	686.36
LVRR-34-1	763.08	78.49	684.59
LVRR-34-2	763.13	51.56	711.57
LVRR-34-3	763.09	53.96	709.13
LVRR-34-4	763.19	66.93	696.26
LVRR-34-5	763.21	45.71	717.50
LVRR-35-1	759.68	31.72	727.96
LVRR-35-2	759.67	37.67	722.00
LVRR-35-3	759.71	35.25	724.46
LVRR-35-4	759.70	36.19	723.51
LVRR-35-5	759.69	37.71	721.98
LVRR-22	638.98	8.13	630.85
LVRR-23	607.46	7.74	599.72
LVRR-24 A	632.83	1.36	631.47
LVRR-24 B	632.85	1.19	631.66
LVRR-24 C	632.86	1.24	631.62
LVRR-25 A	654.85	7.10	647.75
LVRR-25 B	654.80	7.53	647.27
LVRR-25 C	654.57	7.34	647.23

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	65.36	686.72
LVRR-33 B	751.93	71.64	680.29
LVRR-33 C	751.24	71.02	680.22
LVRR-33 D	751.76	69.78	681.98
LVRR-33 E	751.82	69.68	682.14
DC-01 A	761.23	37.36	723.87
DC-01 B	761.54	38.45	723.09
DC-01 C	761.77	36.98	724.79
DC-01 D	763.25	37.99	725.26
DC-02 A	762.74	23.15	739.59
DC-02 B	762.87	46.68	716.19
DC-02 C	762.81	37.92	724.89
DC-02 D	762.60	37.35	725.25
DC-03 A	739.14	32.31	706.83
DC-03 B	738.70	39.92	698.78
DC-03 C	739.48	40.07	699.41
DC-03 D	740.59	28.19	712.40
DC-04 A	768.90	41.54	727.36
DC-04 B	769.28	52.01	717.27
DC-04 C	769.32	44.43	724.89
DC-04 D	769.41	42.12	727.29
DC-05 A	764.75	39.76	724.99
DC-05 B	764.75	39.08	725.67
DC-05 C	764.18	39.78	724.40
DC-05 D	764.35	39.99	724.36
DC-06 A	764.75	22.25	742.50
DC-06 B	738.28	26.26	712.02
DC-06 C	738.76	21.63	717.13
DC-06 D	737.81	15.65	722.16
DC-7R A	767.16	75.00	692.16
DC-7R B	766.97	74.64	692.33
DC-7R C	766.18	73.18	693.00
DC-7R D	766.84	73.59	693.25
DC-07	743.22	48.35	694.87

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-09 A	747.81	66.90	680.91
DC-09 B	747.21	66.14	681.07
DC-09 C	747.88	66.76	681.12
DC-10 A	739.09	51.39	687.70
DC-10 B	739.25	51.71	687.54
DC-10 C	738.44	50.89	687.55
DC-10 D	739.12	51.10	688.02
DC-11 A	752.37	63.44	688.93
DC-11 B	752.21	63.25	688.96
DC-12 A	726.81	42.98	683.83
DC-12 B	726.37	48.14	678.23
DC-12 C	726.27	48.19	678.08
DC-12 D	725.92	52.57	673.35
DC-13 A	651.62	10.50	641.12
DC-13 B	651.90	14.52	637.38
DC-14 A	666.02	17.32	648.70
DC-14 B	666.11	17.48	648.63
DC-15 A	761.49	36.31	725.18
DC-15 B	761.98	37.36	724.62
DC-16	762.94	79.05	683.89
DC-17 A	739.74	26.14	713.60
DC-17 B	740.20	29.61	710.59
GCM-1	687.74	37.27	650.47
GCM-2	687.45	36.33	651.12
GCM-3	687.08	36.58	650.50

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Unicorn Management Consultants, LLC

Table 5D
Groundwater Elevations
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	45.01	728.15
LVRR-18-2	773.10	49.03	724.07
LVRR-18-3	773.06	61.19	711.87
LVRR-18-4	773.15	61.24	711.91
LVRR-18-5	773.13	58.81	714.32
LVRR-20-1	737.90	50.80	687.10
LVRR-20-2	737.90	42.71	695.19
LVRR-20-3	737.92	43.52	694.40
LVRR-20-4	737.92	37.71	700.21
LVRR-20-5	737.89	32.30	705.59
LVRR-21-1	728.54	Dry	NM
LVRR-21-2	728.53	58.87	669.66
LVRR-21-3	728.58	69.25	659.33
LVRR-21-4	728.62	59.37	669.25
LVRR-26-1	724.78	54.89	669.89
LVRR-26-2	724.80	54.90	669.90
LVRR-26-3	724.75	54.29	670.46
LVRR-26-4	724.80	54.38	670.42
LVRR-26-5	724.82	55.69	669.13
LVRR-27-1	776.13	113.15	662.98
LVRR-27-2	776.13	99.91	676.22
LVRR-27-3	776.23	99.56	676.67
LVRR-27-4	776.12	99.98	676.14
LVRR-27-5	776.07	118.91	657.16
LVRR-28-1	748.16	81.69	666.47
LVRR-28-2	748.17	69.07	679.10
LVRR-28-3	748.19	68.87	679.32
LVRR-28-4	748.19	68.78	679.41
LVRR-28-5	748.23	NM	NM
LVRR-29-1	747.15	53.10	694.05
LVRR-29-2	747.14	53.99	693.15
LVRR-29-3	747.09	54.30	692.79
LVRR-29-4	747.17	56.67	690.50
LVRR-29-5	747.18	75.14	672.04

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	Dry	NM
LVRR-30-2	767.68	91.59	676.09
LVRR-30-3	767.70	NM	NM
LVRR-30-4	767.72	91.84	675.88
LVRR-30-5	767.76	91.48	676.28
LVRR-31-1	710.49	51.56	658.93
LVRR-31-2	710.51	63.96	646.55
LVRR-31-3	710.49	56.48	654.01
LVRR-31-4	710.52	60.20	650.32
LVRR-31-5	710.53	55.73	654.80
LVRR-32-1	739.49	67.26	672.23
LVRR-32-2	739.58	66.37	673.21
LVRR-32-3	739.67	71.42	668.25
LVRR-32-4	739.70	78.79	660.91
LVRR-32-5	739.51	66.87	672.64
LVRR-34-1	763.08	57.65	705.43
LVRR-34-2	763.13	60.02	703.11
LVRR-34-3	763.09	80.54	682.55
LVRR-34-4	763.19	Dry	NM
LVRR-34-5	763.21	59.75	703.46
LVRR-35-1	759.68	NM	NM
LVRR-35-2	759.67	NM	NM
LVRR-35-3	759.71	NM	NM
LVRR-35-4	759.70	NM	NM
LVRR-35-5	759.69	NM	NM
LVRR-22	638.98	9.76	629.22
LVRR-23	607.46	8.39	599.07
LVRR-24 A	632.83	1.59	631.24
LVRR-24 B	632.85	1.51	631.34
LVRR-24 C	632.86	1.55	631.31
LVRR-25 A	654.85	9.61	645.24
LVRR-25 B	654.80	8.89	645.91
LVRR-25 C	654.57	8.77	645.80

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	65.56	686.52
LVRR-33 B	751.93	84.00	667.93
LVRR-33 C	751.24	83.36	667.88
LVRR-33 D	751.76	82.52	669.24
LVRR-33 E	751.82	82.41	669.41
DC-01 A	761.23	52.07	709.16
DC-01 B	761.54	52.85	708.69
DC-01 C	761.77	52.79	708.98
DC-01 D	763.25	53.90	709.35
DC-02 A	762.74	31.42	731.32
DC-02 B	762.87	56.66	706.21
DC-02 C	762.81	53.49	709.32
DC-02 D	762.60	53.02	709.58
DC-03 A	739.14	39.65	699.49
DC-03 B	738.70	50.68	688.02
DC-03 C	739.48	51.76	687.72
DC-03 D	740.59	43.92	696.67
DC-04 A	768.90	44.71	724.19
DC-04 B	769.28	62.46	706.82
DC-04 C	769.32	58.95	710.37
DC-04 D	769.41	57.23	712.18
DC-05 A	764.75	55.43	709.32
DC-05 B	764.75	55.28	709.47
DC-05 C	764.18	56.19	707.99
DC-05 D	764.35	56.38	707.97
DC-06 A	764.75	27.03	737.72
DC-06 B	738.28	37.58	700.70
DC-06 C	738.76	35.75	703.01
DC-06 D	737.81	31.12	706.69
DC-7R A	767.16	Dry	NM
DC-7R B	766.97	89.58	677.39
DC-7R C	766.18	89.19	676.99
DC-7R D	766.84	89.49	677.35
DC-07	743.22	64.22	679.00

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-09 A	747.81	80.14	667.67
DC-09 B	747.21	79.59	667.62
DC-09 C	747.88	80.19	667.69
DC-10 A	739.09	59.10	679.99
DC-10 B	739.25	65.46	673.79
DC-10 C	738.44	64.64	673.80
DC-10 D	739.12	65.03	674.09
DC-11 A	752.37	77.60	674.77
DC-11 B	752.21	77.43	674.78
DC-12 A	726.81	56.06	670.75
DC-12 B	726.37	59.61	666.76
DC-12 C	726.27	59.61	666.66
DC-12 D	725.92	62.65	663.27
DC-13 A	651.62	12.34	639.28
DC-13 B	651.90	16.29	635.61
DC-14 A	666.02	18.69	647.33
DC-14 B	666.11	18.90	647.21
DC-15 A	761.49	52.09	709.40
DC-15 B	761.98	53.48	708.50
DC-16	762.94	54.01	708.93
DC-17 A	739.74	45.09	694.65
DC-17 B	740.20	45.15	695.05
GCM-1	687.74	39.27	648.47
GCM-2	687.45	40.09	647.36
GCM-3	687.08	39.44	647.64

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Table 5E
Groundwater Elevations
5'th Quarterly Event
(December 2011)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	32.80	740.36
LVRR-18-2	773.10	37.50	735.60
LVRR-18-3	773.06	46.75	726.31
LVRR-18-4	773.15	46.60	726.55
LVRR-18-5	773.13	46.98	726.15
LVRR-20-1	737.90	45.61	692.29
LVRR-20-2	737.90	42.13	695.77
LVRR-20-3	737.92	41.53	696.39
LVRR-20-4	737.92	25.82	712.10
LVRR-20-5	737.89	NM	NM
LVRR-21-1	728.54	36.70	691.84
LVRR-21-2	728.53	37.08	691.45
LVRR-21-3	728.58	41.82	686.76
LVRR-21-4	728.62	42.38	686.24
LVRR-26-1	724.78	39.71	685.07
LVRR-26-2	724.80	39.83	684.97
LVRR-26-3	724.75	38.44	686.31
LVRR-26-4	724.80	38.48	686.32
LVRR-26-5	724.82	40.39	684.43
LVRR-27-1	776.13	82.29	693.84
LVRR-27-2	776.13	82.29	693.84
LVRR-27-3	776.23	82.30	693.93
LVRR-27-4	776.12	78.34	697.78
LVRR-27-5	776.07	112.98	663.09
LVRR-28-1	748.16	49.10	699.06
LVRR-28-2	748.17	49.29	698.88
LVRR-28-3	748.19	49.39	698.80
LVRR-28-4	748.19	49.33	698.86
LVRR-28-5	748.23	NM	NM
LVRR-29-1	747.15	73.84	673.31
LVRR-29-2	747.14	74.68	672.46
LVRR-29-3	747.09	34.59	712.50
LVRR-29-4	747.17	37.76	709.41
LVRR-29-5	747.18	77.76	669.42

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	NM	NM
LVRR-30-2	767.68	74.57	693.11
LVRR-30-3	767.70	NM	NM
LVRR-30-4	767.72	74.45	693.27
LVRR-30-5	767.76	74.02	693.74
LVRR-31-1	710.49	37.84	672.65
LVRR-31-2	710.51	57.03	653.48
LVRR-31-3	710.49	48.64	661.85
LVRR-31-4	710.52	60.39	650.13
LVRR-31-5	710.53	47.58	662.95
LVRR-32-1	739.49	50.60	688.89
LVRR-32-2	739.58	50.30	689.28
LVRR-32-3	739.67	63.44	676.23
LVRR-32-4	739.70	79.68	660.02
LVRR-32-5	739.51	50.44	689.07
LVRR-34-1	763.08	50.29	712.79
LVRR-34-2	763.13	52.32	710.81
LVRR-34-3	763.09	79.88	683.21
LVRR-34-4	763.19	67.18	696.01
LVRR-34-5	763.21	49.20	714.01
LVRR-35-1	759.68	39.10	720.58
LVRR-35-2	759.67	39.92	719.75
LVRR-35-3	759.71	39.55	720.16
LVRR-35-4	759.70	40.07	719.63
LVRR-35-5	759.69	90.06	669.63
LVRR-22	638.98	8.29	630.69
LVRR-23	607.46	6.31	601.15
LVRR-24 A	632.83	1.21	631.62
LVRR-24 B	632.85	1.14	631.71
LVRR-24 C	632.86	1.20	631.66
LVRR-25 A	654.85	9.59	645.26
LVRR-25 B	654.80	8.02	646.78
LVRR-25 C	654.57	7.68	646.89

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	64.32	687.76
LVRR-33 B	751.93	74.21	677.72
LVRR-33 C	751.24	73.64	677.60
LVRR-33 D	751.76	72.22	679.54
LVRR-33 E	751.82	72.19	679.63
DC-01 A	761.23	40.51	720.72
DC-01 B	761.54	42.49	719.05
DC-01 C	761.77	42.29	719.48
DC-01 D	763.25	43.45	719.80
DC-02 A	762.74	19.04	743.70
DC-02 B	762.87	48.90	713.97
DC-02 C	762.81	42.77	720.04
DC-02 D	762.60	43.25	719.35
DC-03 A	739.14	30.70	708.44
DC-03 B	738.70	40.85	697.85
DC-03 C	739.48	41.44	698.04
DC-03 D	740.59	33.78	706.81
DC-04 A	768.90	44.75	724.15
DC-04 B	769.28	54.31	714.97
DC-04 C	769.32	49.08	720.24
DC-04 D	769.41	47.05	722.36
DC-05 A	764.75	44.01	720.74
DC-05 B	764.75	44.43	720.32
DC-05 C	764.18	45.57	718.61
DC-05 D	764.35	45.77	718.58
DC-06 A	764.75	22.68	742.07
DC-06 B	738.28	29.60	708.68
DC-06 C	738.76	26.11	712.65
DC-06 D	737.81	19.92	717.89
DC-7R A	767.16	77.24	689.92
DC-7R B	766.97	77.01	689.96
DC-7R C	766.18	75.86	690.32
DC-7R D	766.84	77.09	689.75
DC-07	743.22	48.92	694.30

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-09 A	747.81	70.57	677.24
DC-09 B	747.21	69.88	677.33
DC-09 C	747.88	70.50	677.38
DC-10 A	739.09	52.02	687.07
DC-10 B	739.25	53.22	686.03
DC-10 C	738.44	52.39	686.05
DC-10 D	739.12	52.69	686.43
DC-11 A	752.37	65.18	687.19
DC-11 B	752.21	65.05	687.16
DC-12 A	726.81	43.61	683.20
DC-12 B	726.37	49.15	677.22
DC-12 C	726.27	49.24	677.03
DC-12 D	725.92	53.82	672.10
DC-13 A	651.62	10.39	641.23
DC-13 B	651.90	15.35	636.55
DC-14 A	666.02	17.61	648.41
DC-14 B	666.11	17.76	648.35
DC-15 A	761.49	44.50	716.99
DC-15 B	761.98	39.99	721.99
DC-16	762.94	42.86	720.08
DC-17 A	739.74	27.91	711.83
DC-17 B	740.20	33.60	706.60
GCM-1	687.74	36.95	650.79
GCM-2	687.45	36.41	651.04
GCM-3	687.08	37.80	649.28

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Table 5F
Groundwater Elevations
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	31.15	742.01
LVRR-18-2	773.10	35.64	737.46
LVRR-18-3	773.06	43.40	729.66
LVRR-18-4	773.15	43.61	729.54
LVRR-18-5	773.13	43.52	729.61
LVRR-20-1	737.90	35.25	702.65
LVRR-20-2	737.90	41.02	696.88
LVRR-20-3	737.92	41.06	696.86
LVRR-20-4	737.92	23.26	714.66
LVRR-20-5	737.89	20.84	717.05
LVRR-21-1	728.54	33.02	695.52
LVRR-21-2	728.53	33.22	695.31
LVRR-21-3	728.58	36.58	692.00
LVRR-21-4	728.62	37.72	690.90
LVRR-26-1	724.78	35.35	689.43
LVRR-26-2	724.80	38.39	686.41
LVRR-26-3	724.75	36.40	688.35
LVRR-26-4	724.80	36.79	688.01
LVRR-26-5	724.82	38.48	686.34
LVRR-27-1	776.13	80.26	695.87
LVRR-27-2	776.13	80.39	695.74
LVRR-27-3	776.23	80.40	695.83
LVRR-27-4	776.12	80.32	695.80
LVRR-27-5	776.07	105.25	670.82
LVRR-28-1	748.16	49.03	699.13
LVRR-28-2	748.17	49.02	699.15
LVRR-28-3	748.19	48.19	700.00
LVRR-28-4	748.19	48.94	699.25
LVRR-28-5	748.23	30.92	717.31
LVRR-29-1	747.15	34.23	712.92
LVRR-29-2	747.14	34.42	712.72
LVRR-29-3	747.09	35.12	711.97
LVRR-29-4	747.17	38.14	709.03
LVRR-29-5	747.18	44.94	702.24

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	60.40	707.26
LVRR-30-2	767.68	72.22	695.46
LVRR-30-3	767.70	38.59	729.11
LVRR-30-4	767.72	70.28	697.44
LVRR-30-5	767.76	70.27	697.49
LVRR-31-1	710.49	36.17	674.32
LVRR-31-2	710.51	56.72	653.79
LVRR-31-3	710.49	Dry	NM
LVRR-31-4	710.52	55.58	654.94
LVRR-31-5	710.53	46.21	664.32
LVRR-32-1	739.49	50.60	688.89
LVRR-32-2	739.58	49.05	690.53
LVRR-32-3	739.67	67.71	671.96
LVRR-32-4	739.70	Dry	NM
LVRR-32-5	739.51	49.18	690.33
LVRR-34-1	763.08	49.90	713.18
LVRR-34-2	763.13	55.51	707.62
LVRR-34-3	763.09	72.42	690.67
LVRR-34-4	763.19	55.28	707.91
LVRR-34-5	763.21	46.17	717.04
LVRR-35-1	759.68	36.61	723.07
LVRR-35-2	759.67	37.21	722.46
LVRR-35-3	759.71	36.98	722.73
LVRR-35-4	759.70	37.36	722.34
LVRR-35-5	759.69	88.14	671.55
LVRR-22	638.98	7.82	631.16
LVRR-23	607.46	7.03	600.43
LVRR-24 A	632.83	1.08	631.75
LVRR-24 B	632.85	1.03	631.82
LVRR-24 C	632.86	1.04	631.82
LVRR-25 A	654.85	9.34	645.51
LVRR-25 B	654.80	7.13	647.67
LVRR-25 C	654.57	6.98	647.59

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	63.59	688.49
LVRR-33 B	751.93	67.18	684.75
LVRR-33 C	751.24	66.57	684.67
LVRR-33 D	751.76	65.52	686.24
LVRR-33 E	751.82	65.42	686.40
DC-01 A	761.23	38.22	723.01
DC-01 B	761.54	39.60	721.94
DC-01 C	761.77	38.29	723.48
DC-01 D	763.25	39.25	724.00
DC-02 A	762.74	20.21	742.53
DC-02 B	762.87	47.74	715.13
DC-02 C	762.81	39.14	723.67
DC-02 D	762.60	38.63	723.97
DC-03 A	739.14	31.58	707.56
DC-03 B	738.70	35.74	702.96
DC-03 C	739.48	37.13	702.35
DC-03 D	740.59	27.97	712.62
DC-04 A	768.90	40.00	728.90
DC-04 B	769.28	53.29	715.99
DC-04 C	769.32	45.70	723.62
DC-04 D	769.41	43.53	725.88
DC-05 A	764.75	40.86	723.89
DC-05 B	764.75	40.70	724.05
DC-05 C	764.18	41.33	722.85
DC-05 D	764.35	41.33	723.02
DC-06 A	764.75	21.94	742.81
DC-06 B	738.28	27.26	711.02
DC-06 C	738.76	22.54	716.22
DC-06 D	737.81	16.92	720.89
DC-7R A	767.16	71.71	695.45
DC-7R B	766.97	71.03	695.94
DC-7R C	766.18	69.60	696.58
DC-7R D	766.84	70.18	696.66
DC-07	743.22	43.59	699.63

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-09 A	747.81	62.01	685.80
DC-09 B	747.21	61.52	685.69
DC-09 C	747.88	62.15	685.73
DC-10 A	739.09	48.75	690.34
DC-10 B	739.25	48.16	691.09
DC-10 C	738.44	47.33	691.11
DC-10 D	739.12	47.52	691.60
DC-11 A	752.37	59.99	692.38
DC-11 B	752.21	59.74	692.47
DC-12 A	726.81	38.81	688.00
DC-12 B	726.37	44.42	681.95
DC-12 C	726.27	44.51	681.76
DC-12 D	725.92	49.23	676.69
DC-13 A	651.62	9.05	642.57
DC-13 B	651.90	10.10	641.80
DC-14 A	666.02	16.91	649.11
DC-14 B	666.11	17.04	649.07
DC-15 A	761.49	37.31	724.18
DC-15 B	761.98	38.82	723.16
DC-16	762.94	NM	NM
DC-17 A	739.74	26.27	713.47
DC-17 B	740.20	29.31	710.89
GCM-1	687.74	35.34	652.40
GCM-2	687.45	35.68	651.77
GCM-3	687.08	35.80	651.28

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Unicorn Management Consultants, LLC

Table 5G
Groundwater Elevations
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	37.47	735.69
LVRR-18-2	773.10	42.94	730.16
LVRR-18-3	773.06	54.07	718.99
LVRR-18-4	773.15	53.88	719.27
LVRR-18-5	773.13	53.02	720.11
LVRR-20-1	737.90	Dry	NM
LVRR-20-2	737.90	47.22	690.68
LVRR-20-3	737.92	45.42	692.50
LVRR-20-4	737.92	30.89	707.03
LVRR-20-5	737.89	27.32	710.57
LVRR-21-1	728.54	47.90	680.64
LVRR-21-2	728.53	47.94	680.59
LVRR-21-3	728.58	49.58	679.00
LVRR-21-4	728.62	49.99	678.63
LVRR-26-1	724.78	48.47	676.31
LVRR-26-2	724.80	49.94	674.86
LVRR-26-3	724.75	47.23	677.52
LVRR-26-4	724.80	47.25	677.55
LVRR-26-5	724.82	48.71	676.11
LVRR-27-1	776.13	96.12	680.01
LVRR-27-2	776.13	91.89	684.24
LVRR-27-3	776.23	91.85	684.38
LVRR-27-4	776.12	91.80	684.32
LVRR-27-5	776.07	109.88	666.19
LVRR-28-1	748.16	Dry	NM
LVRR-28-2	748.17	Dry	NM
LVRR-28-3	748.19	59.46	688.73
LVRR-28-4	748.19	59.40	688.79
LVRR-28-5	748.23	NM	NM
LVRR-29-1	747.15	41.94	705.21
LVRR-29-2	747.14	42.00	705.14
LVRR-29-3	747.09	42.93	704.16
LVRR-29-4	747.17	46.17	701.00
LVRR-29-5	747.18	77.75	669.43

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	Dry	NM
LVRR-30-2	767.68	83.90	683.78
LVRR-30-3	767.70	Dry	NM
LVRR-30-4	767.72	83.61	684.11
LVRR-30-5	767.76	83.22	684.54
LVRR-31-1	710.49	45.77	664.72
LVRR-31-2	710.51	61.91	648.60
LVRR-31-3	710.49	81.85	628.64
LVRR-31-4	710.52	57.30	653.22
LVRR-31-5	710.53	51.86	658.67
LVRR-32-1	739.49	61.12	678.37
LVRR-32-2	739.58	58.77	680.81
LVRR-32-3	739.67	71.27	668.40
LVRR-32-4	739.70	Dry	NM
LVRR-32-5	739.51	58.91	680.60
LVRR-34-1	763.08	49.13	713.95
LVRR-34-2	763.13	54.18	708.95
LVRR-34-3	763.09	80.99	682.10
LVRR-34-4	763.19	75.12	688.07
LVRR-34-5	763.21	55.93	707.28
LVRR-35-1	759.68	45.23	714.45
LVRR-35-2	759.67	45.84	713.83
LVRR-35-3	759.71	45.45	714.26
LVRR-35-4	759.70	45.98	713.72
LVRR-35-5	759.69	Dry	NM
LVRR-22	638.98	8.11	630.87
LVRR-23	607.46	7.40	600.06
LVRR-24 A	632.83	0.89	631.94
LVRR-24 B	632.85	0.81	632.04
LVRR-24 C	632.86	0.87	631.99
LVRR-25 A	654.85	9.28	645.57
LVRR-25 B	654.80	7.95	646.85
LVRR-25 C	654.57	7.77	646.80

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	65.24	686.84
LVRR-33 B	751.93	75.97	675.96
LVRR-33 C	751.24	75.35	675.89
LVRR-33 D	751.76	74.28	677.48
LVRR-33 E	751.82	74.22	677.60
DC-01 A	761.23	40.22	721.01
DC-01 B	761.54	42.48	719.06
DC-01 C	761.77	42.82	718.95
DC-01 D	763.25	44.00	719.25
DC-02 A	762.74	18.83	743.91
DC-02 B	762.87	48.86	714.01
DC-02 C	762.81	43.41	719.40
DC-02 D	762.60	43.91	718.69
DC-03 A	739.14	30.80	708.34
DC-03 B	738.70	41.50	697.20
DC-03 C	739.48	41.93	697.55
DC-03 D	740.59	33.79	706.80
DC-04 A	768.90	43.85	725.05
DC-04 B	769.28	54.45	714.83
DC-04 C	769.32	48.73	720.59
DC-04 D	769.41	47.58	721.83
DC-05 A	764.75	42.99	721.76
DC-05 B	764.75	44.59	720.16
DC-05 C	764.18	46.33	717.85
DC-05 D	764.35	46.54	717.81
DC-06 A	764.75	22.74	742.01
DC-06 B	738.28	29.82	708.46
DC-06 C	738.76	26.86	711.90
DC-06 D	737.81	21.81	716.00
DC-7R A	767.16	80.88	686.28
DC-7R B	766.97	80.68	686.29
DC-7R C	766.18	79.18	687.00
DC-7R D	766.84	79.70	687.14
DC-07	743.22	51.18	692.04

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-09 A	747.81	71.88	675.93
DC-09 B	747.21	71.08	676.13
DC-09 C	747.88	71.68	676.20
DC-10 A	739.09	56.35	682.74
DC-10 B	739.25	56.71	682.54
DC-10 C	738.44	55.90	682.54
DC-10 D	739.12	56.18	682.94
DC-11 A	752.37	68.66	683.71
DC-11 B	752.21	68.50	683.71
DC-12 A	726.81	47.38	679.43
DC-12 B	726.37	52.16	674.21
DC-12 C	726.27	52.19	674.08
DC-12 D	725.92	56.09	669.83
DC-13 A	651.62	10.76	640.86
DC-13 B	651.90	14.96	636.94
DC-14 A	666.02	17.77	648.25
DC-14 B	666.11	17.93	648.18
DC-15 A	761.49	39.71	721.78
DC-15 B	761.98	43.53	718.45
DC-16	762.94	41.90	721.04
DC-17 A	739.74	29.74	710.00
DC-17 B	740.20	35.10	705.10
GCM-1	687.74	37.28	650.46
GCM-2	687.45	37.51	649.94
GCM-3	687.08	37.60	649.48

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Table 5H
Groundwater Elevations
September 2012 Storm Event

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	41.51	731.65
LVRR-18-2	773.10	48.32	724.78
LVRR-18-3	773.06	63.21	709.85
LVRR-18-4	773.15	63.07	710.08
LVRR-18-5	773.13	64.58	708.55
LVRR-20-1	737.90	51.63	686.27
LVRR-20-2	737.90	40.45	697.45
LVRR-20-3	737.92	44.82	693.10
LVRR-20-4	737.92	41.46	696.46
LVRR-20-5	737.89	36.69	701.20
LVRR-27-1	776.13	115.07	661.06
LVRR-27-2	776.13	105.50	670.63
LVRR-27-3	776.23	105.34	670.89
LVRR-27-4	776.12	105.79	670.33
LVRR-27-5	776.07	112.79	663.28
DC-01 A	761.23	50.76	710.47
DC-01 B	761.54	54.40	707.14
DC-01 C	761.77	56.44	705.33
DC-01 D	763.25	57.77	705.48
DC-02 A	762.74	20.19	742.55
DC-02 B	762.87	56.97	705.90
DC-02 C	762.81	57.39	705.42
DC-02 D	762.60	57.15	705.45
DC-03 A	739.14	36.35	702.79
DC-03 B	738.70	50.84	687.86
DC-03 C	739.48	52.93	686.55
DC-03 D	740.59	48.38	692.21
DC-06 A	764.75	24.67	740.08
DC-06 B	738.28	38.57	699.71
DC-06 C	738.76	38.61	700.15
DC-06 D	737.81	35.63	702.18
DC-7R A	767.16	Dry	NM
DC-7R B	766.97	96.04	670.93
DC-7R C	766.18	94.60	671.58
DC-7R D	766.84	94.80	672.04

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.
3) The September 2012 storm event sampling was conducted between September 6 and 8, 2012 following a significant storm event that occurred September 4 and 5, 2012.

Unicorn Management Consultants, LLC

Table 5i
Groundwater Elevations
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	42.13	731.03
LVRR-18-2	773.10	50.17	722.93
LVRR-18-3	773.06	77.32	695.74
LVRR-18-4	773.15	73.60	699.55
LVRR-18-5	773.13	Dry	NM
LVRR-20-1	737.90	59.93	677.97
LVRR-20-2	737.90	50.21	687.69
LVRR-20-3	737.92	46.28	691.64
LVRR-20-4	737.92	47.92	690.00
LVRR-20-5	737.89	44.08	693.81
LVRR-21-1	728.54	Dry	NM
LVRR-21-2	728.53	83.56	644.97
LVRR-21-3	728.58	63.58	665.00
LVRR-21-4	728.62	78.21	650.41
LVRR-26-1	724.78	111.29	613.49
LVRR-26-2	724.80	62.31	662.49
LVRR-26-3	724.75	62.05	662.70
LVRR-26-4	724.80	62.06	662.74
LVRR-26-5	724.82	63.27	661.55
LVRR-27-1	776.13	Dry	NM
LVRR-27-2	776.13	Dry	NM
LVRR-27-3	776.23	Dry	NM
LVRR-27-4	776.12	Dry	NM
LVRR-27-5	776.07	Dry	NM
LVRR-28-1	748.16	81.35	666.81
LVRR-28-2	748.17	81.77	666.40
LVRR-28-3	748.19	71.91	676.28
LVRR-28-4	748.19	73.79	674.40
LVRR-28-5	748.23	NM	NM
LVRR-29-1	747.15	52.39	694.76
LVRR-29-2	747.14	53.31	693.83
LVRR-29-3	747.09	NM	NM
LVRR-29-4	747.17	NM	NM
LVRR-29-5	747.18	70.23	676.95

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	Dry	NM
LVRR-30-2	767.68	Dry	NM
LVRR-30-3	767.70	NM	NM
LVRR-30-4	767.72	101.43	666.29
LVRR-30-5	767.76	100.85	666.91
LVRR-31-1	710.49	69.27	641.22
LVRR-31-2	710.51	61.25	649.26
LVRR-31-3	710.49	82.27	628.22
LVRR-31-4	710.52	61.48	649.04
LVRR-31-5	710.53	59.57	650.96
LVRR-32-1	739.49	74.14	665.35
LVRR-32-2	739.58	77.09	662.49
LVRR-32-3	739.67	75.81	663.86
LVRR-32-4	739.70	78.27	661.43
LVRR-32-5	739.51	79.72	659.79
LVRR-34-1	763.12	49.91	713.21
LVRR-34-2	763.13	55.18	707.95
LVRR-34-3	763.09	78.25	684.84
LVRR-34-4	763.19	Dry	NM
LVRR-34-5	763.21	73.28	689.93
LVRR-35-1	763.08	59.22	703.86
LVRR-35-2	763.13	72.42	690.71
LVRR-35-3	763.09	61.86	701.23
LVRR-35-4	763.19	63.22	699.97
LVRR-35-5	763.21	89.38	673.83
LVRR-22	759.68	8.85	750.83
LVRR-23	759.67	8.27	751.40
LVRR-24 A	759.71	1.62	758.09
LVRR-24 B	759.70	1.53	758.17
LVRR-24 C	759.69	1.58	758.11
LVRR-25 A	638.98	9.91	629.07
LVRR-25 B	654.80	10.01	644.79
LVRR-25 C	654.57	9.89	644.68

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	65.46	686.62
LVRR-33 B	751.93	81.20	670.73
LVRR-33 C	751.24	89.63	661.61
LVRR-33 D	751.76	89.45	662.31
LVRR-33 E	751.82	89.38	662.44
LVRR-37A	746.93	27.93	719.00
LVRR-37B	746.90	54.42	692.48
LVRR-37C	746.83	54.39	692.44
LVRR-37D	746.90	74.34	672.56
LVRR-38A	634.89	13.39	621.50
LVRR-38B	634.94	13.44	621.50
LVRR-38C	635.07	13.33	621.74
LVRR-39A	647.16	14.35	632.81
LVRR-39B	646.95	14.09	632.86
LVRR-39C	646.95	14.03	632.92
LVRR-40A	626.49	7.11	619.38
LVRR-40B	627.68	7.25	620.43
LVRR-40C	627.68	5.13	622.55
LVRR-41A	653.16	21.96	631.20
LVRR-41B	653.09	21.88	631.21
LVRR-41C	653.09	21.91	631.18
LVRR-42A	639.41	9.44	629.97
LVRR-42B	639.29	9.1	630.19
LVRR-42C	639.29	9.03	630.26
DC-01 A	761.23	53.59	707.64
DC-01 B	761.54	64.42	697.12
DC-01 C	761.77	65.66	696.11
DC-01 D	763.25	66.84	696.41
DC-02 A	762.74	20.13	742.61
DC-02 B	762.87	64.85	698.02
DC-02 C	762.81	66.39	696.42
DC-02 D	762.60	66.14	696.46

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-03 A	739.14	31.35	707.79
DC-03 B	738.70	53.84	684.86
DC-03 C	739.48	57.30	682.18
DC-03 D	740.59	54.41	686.18
DC-04 A	768.90	45.48	723.42
DC-04 B	769.28	Dry	NM
DC-04 C	769.32	69.94	699.38
DC-04 D	769.41	70.02	699.39
DC-05 A	764.75	56.15	708.60
DC-05 B	764.75	67.88	696.87
DC-05 C	764.18	69.36	694.82
DC-05 D	764.35	70.53	693.82
DC-06 A	764.75	24.74	740.01
DC-06 B	738.28	43.89	694.39
DC-06 C	738.76	45.15	693.61
DC-06 D	737.81	44.68	693.13
DC-7R A	767.16	Dry	NM
DC-7R B	766.97	95.50	671.47
DC-7R C	766.18	99.06	667.12
DC-7R D	766.84	99.28	667.56
DC-07	743.22	68.21	675.01
DC-09 A	747.81	85.35	662.46
DC-09 B	747.21	84.75	662.46
DC-09 C	747.88	85.46	662.42
DC-10 A	739.09	Dry	NM
DC-10 B	739.25	74.32	664.93
DC-10 C	738.44	73.51	664.93
DC-10 D	739.12	73.96	665.16
DC-11 A	752.37	86.73	665.64
DC-11 B	752.21	86.59	665.62
DC-12 A	726.81	61.44	665.37
DC-12 B	726.37	66.73	659.64
DC-12 C	726.27	66.70	659.57
DC-12 D	725.92	68.71	657.21

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-13 A	651.62	14.60	637.02
DC-13 B	651.90	17.33	634.57
DC-14 A	666.02	19.88	646.14
DC-14 B	666.11	20.00	646.11
DC-15 A	761.49	62.44	699.05
DC-15 B	761.98	67.30	694.68
DC-16	762.94	64.61	698.33
DC-17 A	739.74	45.91	693.83
DC-17 B	740.20	55.03	685.17
GCM-1	687.74	41.12	646.62
GCM-2	687.45	41.17	646.28
GCM-3	687.08	41.27	645.81

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Table 5J
Groundwater Elevations
November 2012 Storm Event

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	31.46	741.70
LVRR-18-2	773.10	38.27	734.83
LVRR-18-3	773.06	49.82	723.24
LVRR-18-4	773.15	50.13	723.02
LVRR-18-5	773.13	52.05	721.08
LVRR-20-1	737.90	Dry	NM
LVRR-20-2	737.90	44.25	693.65
LVRR-20-3	737.92	42.01	695.91
LVRR-20-4	737.92	30.71	707.21
LVRR-20-5	737.89	42.96	694.93
LVRR-27-1	776.13	87.12	689.01
LVRR-27-2	776.13	87.35	688.78
LVRR-27-3	776.23	87.34	688.89
LVRR-27-4	776.12	87.37	688.75
LVRR-27-5	776.07	96.10	679.97
DC-01 A	761.23	39.55	721.68
DC-01 B	761.54	42.77	718.77
DC-01 C	761.77	45.55	716.22
DC-01 D	763.25	46.79	716.46
DC-02 A	762.74	18.82	743.92
DC-02 B	762.87	47.97	714.90
DC-02 C	762.81	46.64	716.17
DC-02 D	762.60	46.50	716.10
DC-03 A	739.14	26.44	712.70
DC-03 B	738.70	38.65	700.05
DC-03 C	739.48	39.95	699.53
DC-03 D	740.59	34.52	706.07
DC-06 A	764.75	22.50	742.25
DC-06 B	738.28	29.52	708.76
DC-06 C	738.76	28.10	710.66
DC-06 D	737.81	24.17	713.64
DC-7R A	767.16	Dry	NM
DC-7R B	766.97	77.66	689.31
DC-7R C	766.18	76.20	689.98
DC-7R D	766.84	76.60	690.24

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.
3) The November 2012 storm event sampling was conducted between November 2 and 4, 2012 following a significant storm event that occurred October 29 and 30, 2012.

Unicorn Management Consultants, LLC

Table 5K
Groundwater Elevations
9'th Quarterly Event
(March 2013)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	30.39	742.77
LVRR-18-2	773.10	35.47	737.63
LVRR-18-3	773.06	42.32	730.74
LVRR-18-4	773.15	43.09	730.06
LVRR-18-5	773.13	42.89	730.24
LVRR-20-1	737.90	59.74	678.16
LVRR-20-2	737.90	45.05	692.85
LVRR-20-3	737.92	40.22	697.70
LVRR-20-4	737.92	21.76	716.16
LVRR-20-5	737.89	DRY	NM
LVRR-21-1	728.54	30.50	698.04
LVRR-21-2	728.53	30.40	698.13
LVRR-21-3	728.58	34.80	693.78
LVRR-21-4	728.62	64.60	664.02
LVRR-26-1	724.78	33.65	691.13
LVRR-26-2	724.80	34.20	690.60
LVRR-26-3	724.75	32.90	691.85
LVRR-26-4	724.80	33.00	691.80
LVRR-26-5	724.82	36.25	688.57
LVRR-27-1	776.13	75.00	701.13
LVRR-27-2	776.13	75.40	700.73
LVRR-27-3	776.23	75.45	700.78
LVRR-27-4	776.12	75.45	700.67
LVRR-27-5	776.07	102.80	673.27
LVRR-28-1	748.16	81.55	666.61
LVRR-28-2	748.17	81.86	666.31
LVRR-28-3	748.19	43.02	705.17
LVRR-28-4	748.19	43.18	705.01
LVRR-28-5	748.23	30.96	717.27
LVRR-29-1	747.15	31.93	715.22
LVRR-29-2	747.14	32.64	714.50
LVRR-29-3	747.09	32.95	714.14
LVRR-29-4	747.17	34.64	712.53
LVRR-29-5	747.18	42.11	705.07

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	NM	NM
LVRR-30-2	767.68	84.70	682.98
LVRR-30-3	767.70	NM	NM
LVRR-30-4	767.72	66.80	700.92
LVRR-30-5	767.76	66.10	701.66
LVRR-31-1	710.49	32.23	678.26
LVRR-31-2	710.51	NM	NM
LVRR-31-3	710.49	69.20	641.29
LVRR-31-4	710.52	52.20	658.32
LVRR-31-5	710.53	43.55	666.98
LVRR-32-1	739.49	45.53	693.96
LVRR-32-2	739.58	76.96	662.62
LVRR-32-3	739.67	50.24	689.43
LVRR-32-4	739.70	78.59	661.11
LVRR-32-5	739.51	79.62	659.89
LVRR-34-1	763.08	42.05	721.03
LVRR-34-2	763.13	43.94	719.19
LVRR-34-3	763.09	76.06	687.03
LVRR-34-4	763.19	57.43	705.76
LVRR-34-5	763.21	43.72	719.49
LVRR-35-1	759.68	35.05	724.63
LVRR-35-2	759.67	35.50	724.17
LVRR-35-3	759.71	35.50	724.21
LVRR-35-4	759.70	35.70	724.00
LVRR-35-5	759.69	66.20	693.49
LVRR-22	638.98	7.73	631.25
LVRR-23	607.46	6.78	600.68
LVRR-24 A	632.83	1.12	631.71
LVRR-24 B	632.85	1.05	631.80
LVRR-24 C	632.86	1.10	631.76
LVRR-25 A	654.85	8.92	645.93
LVRR-25 B	654.80	6.76	648.04
LVRR-25 C	654.57	6.59	647.98

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	60.40	691.68
LVRR-33 B	751.93	62.27	689.66
LVRR-33 C	751.24	61.68	689.56
LVRR-33 D	751.76	65.50	686.26
LVRR-33 E	751.82	60.45	691.37
LVRR-37A	746.93	25.18	721.75
LVRR-37B	746.90	52.62	694.28
LVRR-37C	746.83	52.36	694.47
LVRR-37D	746.90	55.28	691.62
LVRR-38A	634.89	13.21	621.68
LVRR-38B	634.94	13.27	621.67
LVRR-38C	635.07	13.04	622.03
LVRR-39A	647.16	12.67	634.49
LVRR-39B	646.95	12.35	634.60
LVRR-39C	646.95	12.32	634.63
LVRR-40A	626.49	7.320	619.17
LVRR-40B	627.68	7.340	620.34
LVRR-40C	627.68	5.75	621.93
LVRR-41A	653.16	20.81	632.35
LVRR-41B	653.09	20.78	632.31
LVRR-41C	653.09	20.82	632.27
LVRR-42A	639.41	9.14	630.27
LVRR-42B	639.29	8.78	630.51
LVRR-42C	639.29	8.56	630.73
DC-01 A	761.23	36.65	724.58
DC-01 B	761.54	37.09	724.45
DC-01 C	761.77	36.40	725.37
DC-01 D	763.25	37.50	725.75
DC-02 A	762.74	20.20	742.54
DC-02 B	762.87	46.50	716.37
DC-02 C	762.81	37.60	725.21
DC-02 D	762.60	36.90	725.70

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-03 A	739.14	28.51	710.63
DC-03 B	738.70	31.57	707.13
DC-03 C	739.48	32.79	706.69
DC-03 D	740.59	25.14	715.45
DC-04 A	768.90	41.74	727.16
DC-04 B	769.28	52.11	717.17
DC-04 C	769.32	44.08	725.24
DC-04 D	769.41	41.43	727.98
DC-05 A	764.75	39.12	725.63
DC-05 B	764.75	39.09	725.66
DC-05 C	764.18	39.57	724.61
DC-05 D	764.35	39.76	724.59
DC-06 A	764.75	22.60	742.15
DC-06 B	738.28	25.15	713.13
DC-06 C	738.76	21.00	717.76
DC-06 D	737.81	15.20	722.61
DC-7R A	767.16	66.10	701.06
DC-7R B	766.97	65.60	701.37
DC-7R C	766.18	64.30	701.88
DC-7R D	766.84	64.90	701.94
DC-07	743.22	36.80	706.42
DC-09 A	747.81	56.60	691.21
DC-09 B	747.21	56.30	690.91
DC-09 C	747.88	57.05	690.83
DC-10 A	739.09	42.40	696.69
DC-10 B	739.25	42.78	696.47
DC-10 C	738.44	42.00	696.44
DC-10 D	739.12	42.2	696.92
DC-11 A	752.37	54.70	697.67
DC-11 B	752.21	54.50	697.71
DC-12 A	726.81	33.60	693.21
DC-12 B	726.37	79.90	646.47
DC-12 C	726.27	39.95	686.32
DC-12 D	725.92	45.05	680.87

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-13 A	651.62	8.11	643.51
DC-13 B	651.90	13.03	638.87
DC-14 A	666.02	16.38	649.64
DC-14 B	666.11	16.51	649.60
DC-15 A	761.49	35.50	725.99
DC-15 B	761.98	37.05	724.93
DC-16	762.94	38.26	724.68
DC-17 A	739.74	24.24	715.50
DC-17 B	740.20	26.43	713.77
GCM-1	687.74	33.08	654.66
GCM-2	687.45	34.59	652.86
GCM-3	687.08	34.18	652.90

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Unicorn Management Consultants, LLC

Table 5L
Groundwater Elevations
10'th Quarterly Event
(May 2013)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	28.60	744.56
LVRR-18-2	773.10	36.14	736.96
LVRR-18-3	773.06	44.37	728.69
LVRR-18-4	773.15	44.11	729.04
LVRR-18-5	773.13	44.27	728.86
LVRR-20-1	737.90	44.31	693.59
LVRR-20-2	737.90	50.15	687.75
LVRR-20-3	737.92	40.03	697.89
LVRR-20-4	737.92	21.78	716.14
LVRR-20-5	737.89	32.01	705.88
LVRR-21-1	728.54	32.95	695.59
LVRR-21-2	728.53	32.84	695.69
LVRR-21-3	728.58	36.63	691.95
LVRR-21-4	728.62	68.47	660.15
LVRR-26-1	724.78	43.30	681.48
LVRR-26-2	724.80	43.19	681.61
LVRR-26-3	724.75	116.45	608.30
LVRR-26-4	724.80	41.89	682.91
LVRR-26-5	724.82	43.39	681.43
LVRR-27-1	776.13	86.41	689.72
LVRR-27-2	776.13	85.53	690.60
LVRR-27-3	776.23	85.36	690.87
LVRR-27-4	776.12	85.27	690.85
LVRR-27-5	776.07	106.81	669.26
LVRR-28-1	748.16	Dry	NM
LVRR-28-2	748.17	Dry	NM
LVRR-28-3	748.19	52.31	695.88
LVRR-28-4	748.19	52.37	695.82
LVRR-28-5	748.23	NM	NM
LVRR-29-1	747.15	33.84	713.31
LVRR-29-2	747.14	34.14	713.00
LVRR-29-3	747.09	34.89	712.20
LVRR-29-4	747.17	37.71	709.46
LVRR-29-5	747.18	49.05	698.13

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	Dry	NM
LVRR-30-2	767.68	93.48	674.20
LVRR-30-3	767.70	Dry	NM
LVRR-30-4	767.72	77.21	690.51
LVRR-30-5	767.76	76.69	691.07
LVRR-31-1	710.49	40.71	669.78
LVRR-31-2	710.51	NM	NM
LVRR-31-3	710.49	80.63	629.86
LVRR-31-4	710.52	55.31	655.21
LVRR-31-5	710.53	48.52	662.01
LVRR-32-1	739.49	69.80	669.69
LVRR-32-2	739.58	53.25	686.33
LVRR-32-3	739.67	65.31	674.36
LVRR-32-4	739.70	78.71	660.99
LVRR-32-5	739.51	79.44	660.07
LVRR-34-1	763.08	45.74	717.34
LVRR-34-2	763.13	49.63	713.50
LVRR-34-3	763.09	77.92	685.17
LVRR-34-4	763.19	68.62	694.57
LVRR-34-5	763.21	48.09	715.12
LVRR-35-1	759.68	37.34	722.34
LVRR-35-2	759.67	37.62	722.05
LVRR-35-3	759.71	37.61	722.10
LVRR-35-4	759.70	37.96	721.74
LVRR-35-5	759.69	89.99	669.70
LVRR-22	638.98	8.24	630.74
LVRR-23	607.46	7.79	599.67
LVRR-24 A	632.83	1.35	631.48
LVRR-24 B	632.85	1.30	631.55
LVRR-24 C	632.86	1.36	631.50
LVRR-25 A	654.85	9.15	645.70
LVRR-25 B	654.80	7.57	647.23
LVRR-25 C	654.57	7.38	647.19

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	65.15	686.93
LVRR-33 B	751.93	70.63	681.30
LVRR-33 C	751.24	70.04	681.20
LVRR-33 D	751.76	68.67	683.09
LVRR-33 E	751.82	68.75	683.07
LVRR-37A	746.93	75.06	671.87
LVRR-37B	746.90	52.61	694.29
LVRR-37C	746.83	52.3	694.53
LVRR-37D	746.90	55.8	691.10
LVRR-38A	634.89	13.16	621.73
LVRR-38B	634.94	15.21	619.73
LVRR-38C	635.07	13.02	622.05
LVRR-39A	647.16	12.66	634.50
LVRR-39B	646.95	12.31	634.64
LVRR-39C	646.95	12.27	634.68
LVRR-40A	626.49	7.38	619.11
LVRR-40B	627.68	7.35	620.33
LVRR-40C	627.68	4.78	622.90
LVRR-41A	653.16	21.04	632.12
LVRR-41B	653.09	20.98	632.11
LVRR-41C	653.09	21.02	632.07
LVRR-42A	639.41	9.43	629.98
LVRR-42B	639.29	9.08	630.21
LVRR-42C	639.29	8.91	630.38
DC-01 A	761.23	38.36	722.87
DC-01 B	761.54	39.58	721.96
DC-01 C	761.77	38.11	723.66
DC-01 D	763.25	39.15	724.10
DC-02 A	762.74	20.17	742.57
DC-02 B	762.87	47.01	715.86
DC-02 C	762.81	39.08	723.73
DC-02 D	762.60	38.47	724.13

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-03 A	739.14	30.72	708.42
DC-03 B	738.70	39.78	698.92
DC-03 C	739.48	41.02	698.46
DC-03 D	740.59	29.66	710.93
DC-04 A	768.90	41.52	727.38
DC-04 B	769.28	52.16	717.12
DC-04 C	769.32	45.48	723.84
DC-04 D	769.41	43.01	726.40
DC-05 A	764.75	40.84	723.91
DC-05 B	764.75	40.97	723.78
DC-05 C	764.18	41.64	722.54
DC-05 D	764.35	41.85	722.50
DC-06 A	764.75	22.18	742.57
DC-06 B	738.28	26.28	712.00
DC-06 C	738.76	22.84	715.92
DC-06 D	737.81	17.04	720.77
DC-7R A	767.16	75.10	692.06
DC-7R B	766.97	75.08	691.89
DC-7R C	766.18	73.62	692.56
DC-7R D	766.84	73.95	692.89
DC-07	743.22	45.99	697.23
DC-09 A	747.81	63.79	684.02
DC-09 B	747.21	62.86	684.35
DC-09 C	747.88	63.46	684.42
DC-10 A	739.09	51.17	687.92
DC-10 B	739.25	51.42	687.83
DC-10 C	738.44	50.68	687.76
DC-10 D	739.12	50.89	688.23
DC-11 A	752.37	63.47	688.90
DC-11 B	752.21	63.25	688.96
DC-12 A	726.81	42.50	684.31
DC-12 B	726.37	47.85	678.52
DC-12 C	726.27	47.89	678.38
DC-12 D	725.92	52.02	673.90

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-13 A	651.62	9.78	641.84
DC-13 B	651.90	14.26	637.64
DC-14 A	666.02	17.31	648.71
DC-14 B	666.11	17.43	648.68
DC-15 A	761.49	37.40	724.09
DC-15 B	761.98	38.80	723.18
DC-16	762.94	39.98	722.96
DC-17 A	739.74	25.36	714.38
DC-17 B	740.20	30.78	709.42
GCM-1	687.74	36.09	651.65
GCM-2	687.45	36.40	651.05
GCM-3	687.08	36.48	650.60

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Table 5M
Groundwater Elevations
11'th Quarterly Event
(August 2013)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-18-1	773.16	30.09	743.07
LVRR-18-2	773.10	34.94	738.16
LVRR-18-3	773.06	47.68	725.38
LVRR-18-4	773.15	47.60	725.55
LVRR-18-5	733.13	48.09	685.04
LVRR-20-1	737.90	46.56	691.34
LVRR-20-2	737.90	45.28	692.62
LVRR-20-3	737.92	42.54	695.38
LVRR-20-4	737.92	27.33	710.59
LVRR-20-5	737.89	NM	NM
LVRR-21-1	728.54	41.55	686.99
LVRR-21-2	728.53	41.45	687.08
LVRR-21-3	728.58	43.62	684.96
LVRR-21-4	728.62	73.40	655.22
LVRR-26-1	724.78	47.32	677.46
LVRR-26-2	724.80	47.00	677.80
LVRR-26-3	724.75	Dry	NM
LVRR-26-4	724.80	45.60	679.20
LVRR-26-5	724.82	47.00	677.82
LVRR-27-1	776.13	89.38	686.75
LVRR-27-2	776.13	89.75	686.38
LVRR-27-3	776.23	Dry	NM
LVRR-27-4	776.12	89.82	686.30
LVRR-27-5	776.07	Dry	NM
LVRR-28-1	748.16	Dry	NM
LVRR-28-2	748.17	Dry	NM
LVRR-28-3	748.19	Dry	NM
LVRR-28-4	748.19	59.06	689.13
LVRR-28-5	748.23	31.00	717.23
LVRR-29-1	747.15	40.82	706.33
LVRR-29-2	747.14	41.27	705.87
LVRR-29-3	747.09	41.86	705.23
LVRR-29-4	747.17	Dry	NM
LVRR-29-5	747.18	54.03	693.15

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-30-1	767.66	NM	NM
LVRR-30-2	767.68	89.82	677.86
LVRR-30-3	767.70	Dry	NM
LVRR-30-4	767.72	81.85	685.87
LVRR-30-5	767.76	NM	NM
LVRR-31-1	710.49	44.71	665.78
LVRR-31-2	710.51	NM	NM
LVRR-31-3	710.49	82.25	628.24
LVRR-31-4	710.52	55.11	655.41
LVRR-31-5	710.53	51.22	659.31
LVRR-32-1	739.49	62.74	676.75
LVRR-32-2	739.58	57.69	681.89
LVRR-32-3	739.67	66.60	673.07
LVRR-32-4	739.70	Dry	NM
LVRR-32-5	739.51	Dry	NM
LVRR-34-1	763.08	52.95	710.13
LVRR-34-2	763.13	57.45	705.68
LVRR-34-3	763.09	82.05	681.04
LVRR-34-4	763.19	77.90	685.29
LVRR-34-5	763.21	77.90	685.31
LVRR-35-1	759.68	40.70	718.98
LVRR-35-2	759.67	40.85	718.82
LVRR-35-3	759.71	40.80	718.91
LVRR-35-4	759.70	41.50	718.20
LVRR-35-5	759.69	Dry	NM
LVRR-22	638.98	8.49	630.49
LVRR-23	607.46	8.00	599.46
LVRR-24 A	632.83	1.50	631.33
LVRR-24 B	632.85	1.53	631.32
LVRR-24 C	632.86	1.44	631.42
LVRR-25 A	654.85	9.28	645.57
LVRR-25 B	654.80	7.86	646.94
LVRR-25 C	654.57	7.73	646.84

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
LVRR-33 A	752.08	65.92	686.16
LVRR-33 B	751.93	74.70	677.23
LVRR-33 C	751.24	74.10	677.14
LVRR-33 D	751.76	72.97	678.79
LVRR-33 E	751.82	72.90	678.92
LVRR-37A	746.93	26.86	720.07
LVRR-37B	746.90	54.30	692.60
LVRR-37C	746.83	54.20	692.63
LVRR-37D	746.90	59.04	687.86
LVRR-38A	634.89	13.24	621.65
LVRR-38B	634.94	13.21	621.73
LVRR-38C	635.07	13.08	621.99
LVRR-39A	647.16	12.57	634.59
LVRR-39B	646.95	12.23	634.72
LVRR-39C	646.95	12.19	634.76
LVRR-40A	626.49	7.41	619.08
LVRR-40B	627.68	7.40	620.28
LVRR-40C	627.68	4.83	622.85
LVRR-41A	653.16	21.09	632.07
LVRR-41B	653.09	21.05	632.04
LVRR-41C	653.09	21.06	632.03
LVRR-42A	639.41	9.52	629.89
LVRR-42B	639.29	9.20	630.09
LVRR-42C	639.29	9.04	630.25
DC-01 A	761.23	41.58	719.65
DC-01 B	761.54	42.73	718.81
DC-01 C	761.77	41.80	719.97
DC-01 D	763.25	42.94	720.31
DC-02 A	762.74	32.85	729.89
DC-02 B	762.87	49.43	713.44
DC-02 C	762.81	42.75	720.06
DC-02 D	762.60	42.08	720.52

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-03 A	739.14	33.92	705.22
DC-03 B	738.70	34.33	704.37
DC-03 C	739.48	45.30	694.18
DC-03 D	740.59	33.67	706.92
DC-04 A	768.90	42.26	726.64
DC-04 B	769.28	54.39	714.89
DC-04 C	769.32	48.32	721.00
DC-04 D	769.41	49.61	719.80
DC-05 A	764.75	43.84	720.91
DC-05 B	764.75	44.35	720.40
DC-05 C	764.18	46.32	717.86
DC-05 D	764.35	45.44	718.91
DC-06 A	764.75	23.60	741.15
DC-06 B	738.28	29.95	708.33
DC-06 C	738.76	26.85	711.91
DC-06 D	737.81	20.75	717.06
DC-7R A	767.16	Dry	NM
DC-7R B	766.97	80.00	686.97
DC-7R C	766.18	78.40	687.78
DC-7R D	766.84	78.88	687.96
DC-07	743.22	53.40	689.82
DC-09 A	747.81	69.52	678.29
DC-09 B	747.21	68.60	678.61
DC-09 C	747.88	69.13	678.75
DC-10 A	739.09	Dry	NM
DC-10 B	739.25	55.96	683.29
DC-10 C	738.44	55.12	683.32
DC-10 D	739.12	55.4	683.72
DC-11 A	752.37	67.86	684.51
DC-11 B	752.21	67.65	684.56
DC-12 A	726.81	46.94	679.87
DC-12 B	726.37	51.66	674.71
DC-12 C	726.27	51.70	674.57
DC-12 D	725.92	55.81	670.11

Well ID	Top of FLUTe Sample Port or PVC Riser Elevation	Depth to Groundwater	Groundwater Elevation
DC-13 A	651.62	14.96	636.66
DC-13 B	651.90	10.52	641.38
DC-14 A	666.02	17.73	648.29
DC-14 B	666.11	17.85	648.26
DC-15 A	761.49	41.15	720.34
DC-15 B	761.98	42.46	719.52
DC-16	762.94	43.22	719.72
DC-17 A	739.74	30.57	709.17
DC-17 B	740.20	34.89	705.31
GCM-1	687.74	37.10	650.64
GCM-2	687.45	37.28	650.17
GCM-3	687.08	37.45	649.63

Notes:
1) Depths to groundwater are in feet.
2) Elevations are in feet below ground surface.

Table 6A
Storm Water Sampling Results
September 2012 Event

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^ (ug/l)**	**DC-01A**	**DC-01B**	**DC-01C**	**DC-01D**	**DC-02A**	**DC-02B**	**DC-02C**	**DC-02D**	**DC-03A**	**DC-03B**	**DC-03C**	**DC-03D**	**DC-06A**	**DC-06B**	**DC-06C**	**DC-06D**	**DC-7RA**	**DC-7RB**
Lab Sample ID		R1205926-023	R1205926-024	R1205926-025	R1205926-026	R1205926-008	R1205926-009	R1205926-027	R1205926-028	R1205926-001	R1205926-002	R1205926-003	R1205926-004	R1205926-030	R1205921-001	R1205921-002	R1205921-003		R1205926-005
Date Sampled		9/6/2012	9/6/2012	9/6/2012	9/6/2012	9/7/2012	9/7/2012	9/6/2012	9/6/2012	9/7/2012	9/7/2012	9/7/2012	9/7/2012	9/7/2012	9/8/2012	9/8/2012	9/8/2012		9/7/2012
VOCs (ug/l)																			
Acetone	50	500 U	25 U	5.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	5.0 U	13 U	5.0 U	5.0 U	10 U	50 U	5.0 U	5.0 U	DRY (no sample collected)	5.0 U
c-DCE	5	56 UJ	**5**	**18**	**2.5**	**1.1**	6 UJ	**6.5**	1 U	1 U	**9.7**	**7.6**	1 U	0.68 UJ	**350**	0.68 UJ	1 U		0.92 UJ
t-DCE	5	100 U	5.0 U	1.9	1.0 U	0.67 UJ	20 U	1.9	1.0 U	1.0 U	2.5 U	0.41 UJ	1.0 U	2.0 U	5.3 UJ	1.0 U	1.0 U		1.0 U
Methylene Chloride	5	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	2.0 U	3.5 UJ	1.0 U	1.0 U		1.0 U
PCE	5	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	2.0 U	10 U	1.0 U	1.0 U		1.0 U
TCE	5	**11000**	**880**	**360**	**9.1**	**94**	**2600**	**2.9**	0.55 UJ	**9.8**	**420**	**230**	1.0 U	**140**	**1500**	**2.3**	1.0 U		**150**
VC	2	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	2.0 U	10 U	1.0 U	1.0 U		1.0 U
Toluene	5	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U	1.0 U	1.0 U		1.0 U
MEK	50	500 U	25 U	5.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	50 U	5.0 U	5.0 U		5.0 U
Chloromethane	NE	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U	1.0 U	1.0 U		1.0 U
Chloroethane	5	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U	1.0 U	1.0 U		1.0 U
Stabilized Field Measurement Parameters																			
pH (std. units)	NE	7.8	7.1	7.27	6.92	6.94	7.52	7.16	7.03	7.06	7.38	7.15	7.14	7.21	7.5	7	6.98	Not collected	7.29
Specific Conductivity (mS/cm)	NE	0.862	0.732	0.685	2.53	0.379	0.52	2.06	2.37	0.567	0.618	0.704	0.991	0.438	0.738	1.82	2.44		0.928
ORP (mg/l)	NE	329	192	68	6	144	141	-30	-47	65	185	-38	-57	176	178	-35	-34		175
DO (mg/l)	NE	8.37	0.63	0	3.85	4	0.2	0	0	1.82	0.98	0.31	0	6.2	2.7	0	0.57		2.15
Turbidity (NTU)	NE	0.6	0.5	0	9.6	0	90.3	4.9	0	10.4	0	0	0	1.4	0	0	0		0
Temperature (°C)	NE	12.63	12.19	12.93	12.96	18.05	22.37	12.04	15.11	11.69	14.09	11.03	10.86	15.01	11.93	12.18	10.57		11.68

Client Sample ID	**NYSDEC SCGS*^ (ug/l)**	**DC-7RC**	**DC-7RD**	**Dup090712A (Dup of DC-7RD)**	**LVRR-18-1**	**LVRR-18-2**	**LVRR-18-3**	**LVRR-18-4**	**LVRR-18-5**	**LVRR-20-1**	**LVRR-20-2**	**LVRR-20-3**	**LVRR-20-4**	**Dup090612A (Dup of LVRR-20-4)**	**LVRR-20-5**	**LVRR-27-1**	**LVRR-27-2**	**LVRR-27-3**	**LVRR-27-4**	**LVRR-27-5**
Lab Sample ID		R1205926-006	R1205926-029	R1205926-007	R1205926-010	R1205926-011	R1205926-012	R1205926-013	R1205926-014		R1205926-015	R1205926-016	R1205926-017	R1205926-018			R1205926-019	R1205926-020	R1205926-021	R1205926-022
Date Sampled		9/7/2012	9/7/2012	9/7/2012	9/6/2012	9/6/2012	9/6/2012	9/6/2012	9/6/2012		9/6/2012	9/6/2012	9/6/2012	9/6/2012			9/6/2012	9/6/2012	9/6/2012	9/6/2012
VOCs (ug/l)																				
Acetone	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.2 UJ	**7.6**	2.2 UJ	DRY (no sample collected)	7.2 UJ	25 U	5.0 U	5.0 U	DRY (no sample collected)	DRY (no sample collected)	5.0 U	2.6 UJ	**14**	**6.3**
c-DCE	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		**13**	**55**	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
t-DCE	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		5.0 U	5.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		5.0 U	5.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
PCE	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		5.0 U	5.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
TCE	5	**1.7**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		**780**	**570**	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
VC	2	1.0 U	0.51 UJ	0.39J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		5.0 U	5.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	1.0 U	1.0 U	1.0 U	0.82 UJ	1.0 U	**1.1**	**14**	**4.6J**		**82**	**66**	1.0 U	1.0 U			0.22 UJ	**1**	**13**	**1.4**
MEK	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.8 UJ	5.0 UJ		25 U	25 U	5.0 U	5.0 U			5.0 U	5.0 U	2.1 UJ	1.7 UJ
Chloromethane	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		5.0 U	5.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	0.22 UJ
Chloroethane	5	1.0 U	0.43 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		5.0 U	5.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Stabilized Field Measurement Parameters																				
pH (std. units)	NE	6.81	7.01	FLUTe style monitoring wells - No low flow field measurement parameter data collected.																
Specific Conductivity (mS/cm)	NE	2.51	2.19																	
ORP (mg/l)	NE	-13	-93																	
DO (mg/l)	NE	0.38	0.34																	
Turbidity (NTU)	NE	0	0																	
Temperature (°C)	NE	10.43	19.31																	

Notes:
1) Only those volatile organic compounds (VOCs) detected are listed. Refer to laboratory reports for a complete list of test analytes.
2) * Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
3) ^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.
4) VOC results are reported in micrograms per liter (ug/l).
5) **Bold** - Indicates the groundwater criteria for that analyte was exceeded.
6) U - Indicates analyte was not detected in concentrations exceeding the laboratory Reporting Limit (RL).
7) J - Indicates an estimated value below the RL but exceeding the laboratory Method Detection Limt (MDL).
8) Samples Dup090612A and Dup090712A are duplicates of samples LVRR-20-4 and DC-7RC, respectively, collected for Quality Assurance and Quality Control (QAQC) purposes.
9) Samples collected from conventional-style monitoring wells were collected following stabilization of field measurement parameters using low flow sampling techniques as described in the text.
10) Samples collected from FLUTe-style monitoring wells were collected using methods described in the text and no field measurement parameter data was collected.

Table 6B
Storm Water Sampling Results
October 2012 Event

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^ (ug/l)	DC-01A	DC-01B	DC-01C	DC-01D	DC-02A	DC-02B	DC-02C	DC-02D	DC-03A	DC-03B	DC-03C	DC-03D	DUP110212 (Dup of DC-03D)	DC-06A	DC-06B	DC-06C	DC-06D	DC-7RA
Lab Sample ID		R1207530-001	R1207530-002	R1207530-003	R1207530-004	R1207529-005	R1207529-006	R1207529-007	R1207529-008	R1207529-001	R1207529-002	R1207529-003	R1207529-004	R1207529-009	R1207530-014	R1207530-015	R1207530-016	R1207530-017	
DATE SAMPLED		11/3/2012	11/3/2012	11/3/2012	11/3/2012	11/2/2012	11/2/2012	11/2/2012	11/2/2012	11/2/2012	11/2/2012	11/2/2012	11/2/2012	11/2/2012	11/4/2012	11/4/2012	11/4/2012	11/4/2012	
VOCs (ug/l)																			
Acetone	50	250 U	130 U	13 U	5 U	5 U	100 U	10 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	13 U	5 U	5 U	
c-DCE	5	23J	13J	**12**	**15**	1 U	11J	4.4	1 U	1 U	12	0.91J	1 U	1 U	1.5	**260**	3.2	1 U	
t-DCE	5	50 U	25 U	1.4J	0.53J	1 U	20 U	0.68J	1 U	1 U	5 U	1 U	1 U	1 U	1 U	4	1 U	1 U	
Methylene Chloride	5	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	
PCE	5	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	
TCE	5	**6700**	**3600**	**390**	**9.4**	**67**	**3500**	**250**	0.71J	**5.3**	**630**	2	1 U	1 U	**85**	**990**	**37**	1 U	
VC	2	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	
Toluene	5	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	DRY (no sample collected)
MEK	50	250 U	130 U	13 U	5 U	5 U	100 U	10 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	13 U	5 U	5 U	
Chloromethane	NE	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	
Chloroethane	5	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	
Benzene	1	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	
Cyclohexane	NE	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	
Methylcyclohexane	NE	50 U	25 U	2.5 U	1 U	1 U	20 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U	
m+p Xylenes	5	100 U	50 U	5 U	2 U	2 U	40 U	4 U	2 U	2 U	10 U	2 U	2 U	2 U	2 U	5 U	2 U	2 U	
Cyanide (mg/l)	0.2	0.167	0.031	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	
Stabilized Field Measurement Parameters																			
pH (std. units)	NE	7.2	7.11	7.33	6.68	7.02	7.26	7.34	7.28	7.27	7.4	7.34	7.18		6.62	6.86	6.95	6.43	
Specific Conductivity (mS/cm)	NE	0.76	0.604	0.638	2.72	0.476	0.709	0.949	2.7	0.664	0.68	0.646	1.19		0.377	0.74	1.52	2.44	
ORP (mg/l)	NE	271	250	160	-33	174	167	110	-4	153	132	-70	11		197	176	117	-57	
DO (mg/l)	NE	8.4	2.53	0	0	10.13	2.89	0.14	0.78	2.37	0.66	0	4.91		7.13	0.67	0.12	0.79	Not collected
Turbidity (NTU)	NE	0	29.2	0	0	3.3	2.7	10.8	40.6	6	2.9	19.8	0.5		0	0	0	0	
Temperature (°C)	NE	11.56	10.27	10.2	9.56	11.25	9.96	9.68	10.27	9.33	9.26	9.44	9.02		10.61	9.76	9.79	9.49	

Client Sample ID	NYSDEC SCGS*^ (ug/l)	DC-7RB	DC-7RC	DC-7RD	LVRR-18-1	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-27-1	DUP110312A (Dup of LVRR-27-1)	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5
Lab Sample ID		R1207530-005	R1207530-006	R1207530-007	R1207530-021	R1207530-022	R1207530-023	R1207530-024	R1207530-025		R1207530-018	R1207530-019	R1207530-020		R1207530-008	R1207530-013	R1207530-009	R1207530-010	R1207530-011	R1207530-012
DATE SAMPLED		11/3/2012	11/3/2012	11/3/2012	11/4/2012	11/4/2012	11/4/2012	11/4/2012	11/4/2012		11/4/2012	11/4/2012	11/4/2012		11/3/2012	11/3/2012	11/3/2012	11/3/2012	11/3/2012	11/3/2012
VOCs (ug/l)																				
Acetone	50	5 U	5 U	5 U	5 U	5 U	5 U	5.9 U	5 U		13 U	25 U	5 U		5 U	5 U	5 U	5 U	5 U	5 U
c-DCE	5	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U		**24**	**35**	1 U		1 U	1 U	1 U	1 U	1 U	1 U
t-DCE	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
PCE	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
TCE	5	**160**	3.5	1 U	1 U	1 U	1 U	1 U	1 U		**800**	**680**	1 U		1 U	1 U	1 U	1 U	1 U	1 U
VC	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	1 U	1 U	1 U	1 U	1 U	**8**	**22**	4.9	DRY (no sample collected)	**20**	**17**	0.52J	DRY (no sample collected)	1.1	1.6	2.3	4.8	3.9	1.4
MEK	50	5 U	5 U	5 U	5 U	5 U	5 U	1 U	1 U		13 U	25 U	5 U		5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
Benzene	1	1 U	1 U	1 U	1 U	1 U	1 U	0.23J	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	NE	1 U	1 U	1 U	1 U	1 U	1 U	0.35J	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
Methylcyclohexane	NE	1 U	1 U	1 U	1 U	1 U	1 U	0.8J	1 U		2.5 U	5 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U
m+p Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	0.34J	2 U		5 U	10 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U
Cyanide (mg/l)	0.2	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U		0.01 U	0.01 U	0.01 U		0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Stabilized Field Measurement Parameters																				
pH (std. units)	NE	7.08	6.75	7.18																
Specific Conductivity (mS/cm)	NE	0.844	1.53	2.99																
ORP (mg/l)	NE	155	-13	-14	FLUTe style monitoring wells - No low flow field measurement parameter data collected.															
DO (mg/l)	NE	2.87	2.31	0																
Turbidity (NTU)	NE	0	0	0																
Temperature (°C)	NE	7.66	6.96	9.06																

Notes:
1) Only those volatile organic compounds (VOCs) detected are listed. Refer to laboratory reports for a complete list of test analytes.
2) * Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
3) ^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.
4) VOC results are reported in micrograms per liter (ug/l). Cyanide results are reported in milligrams per liter (mg/l).
5) **Bold** - Indicates the groundwater criteria for that analyte was exceeded.
6) U - Indicates analyte was not detected in concentrations exceeding the laboratory Reporting Limit (RL).
7) J - Indicates an estimated value below the RL but exceeding the laboratory Method Detection Limt (MDL).
8) Samples DUP110212A and DUP110312A are duplicates of samples DC-03D and LVRR-27-1, respectively, collected for Quality Assurance and Quality Control (QAQC) purposes.
9) Samples collected from conventional-style monitoring wells were collected following stabilization of field measurement parameters using low flow sampling techniques as described in the text.
10) Samples collected from FLUTe-style monitoring wells were collected using methods described in the text and no field measurement parameter data was collected.

Table 7
1'st Quarter Monitored Natural Attenuation Sampling Results
(December 2010/January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID*	Metals (ug/l)			Ferrous Iron	General Chemistry (mg/l)														Dissolved Gasses * (ug/l)						Low-Flow Parameters						Microtoxicity
	Calcium	Manganese	Potassium	(mg/l)	Alkalinity	Ammonia as N	BOD	TOC	COD	Chloride	Hardness	Nitrate as N	N + N	Nitrite as N	Oil & Greese	Phosphorus	Sulfate	Sulfide	Ethane	Ethylene	Methane	CO_2	Propane	Propene	pH	Conductivity (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (Celcius)	ORP (mV)	IC_{20}
LVRR-22	301000	12.5 J	2000 UJ	0.5	187	0.019	<2.0	0.8 J	<5.0	21.1	950	<0.0100	0.0031	<0.010	<4.7	0.0078	688	<0.99	<1.0	<1.0	2.0 J	25	<1.0	<2.0	7.20	1.550	2.3	0.69	8.90	-22	>100
LVRR-23	597000	107	2500	5.0	227	0.436	<2.0	1.9	<5.0	7	1740	<0.0100 UJ	0.0098	<0.010	<4.8	0.0102	1440	0.9 J	2.8	<1.0	40	50	2.8	<2.0	6.75	1.770	0.0	0.02	9.57	-60	>100
LVRR-24 A	147000	<10	2580	0.0	247	<0.010	<2.0	2.2	6.3	36.5 J	510	1.07	1.07	0.004 J	<4.7	0.0156	173	<1.0	<1.0	<1.0	0.72J	42	<1.0	<2.0	7.40	0.613	10.8	0.00	9.68	103	>100
LVRR-24 B	302000	<10	2030	0.0	213	<0.010 UJ	<2.0	1 J	<5.0	24.7 J	898	0.099	0.106	0.007 J	<4.7	<0.012	620	<0.96	<1.0	<1.0	1.5J	30	<1.0	<2.0	7.92	1.560	2.0	1.52	8.91	-29	>100
LVRR-24 C	574000	20.3	2320	0.2	187	0.042	<2.0	1.1	<5.0	25.5	1550	<0.0100	0.0054	0.010 J	<4.7	0.0553	1220	<0.98	<1.0	<1.0	4.7	44	<1.0	<2.0	7.83	2.340	7.5	0.00	9.12	-17	>100
LVRR-25 A	195000	<10	2940	0.0	220	<0.010	<2.0	1.6	<5.0	60.8 J	640	1.2	1.25	0.008 J	<4.8	<0.0060	335	<0.97	<1.0	<1.0	<1.0	15	<1.0	<2.0	7.38	1.350	3.5	0.00	4.48	143	>100
LVRR-25 B	572000	33.8	2250	0.4	199	0.012 J	<2.0	1.7	5.6	61.4 J	1750	<0.0100	0.0027	<0.010	<5.0	<0.012	1200	1.5	<1.0	<1.0	2.2	60	<1.0	<2.0	6.25	2.570	0.8	0.00	8.80	101	>100
LVRR-25 C	572000	30.4	2400	1.0	190	0.028 J	<2.0	1.4	6	57	1620	0.062	0.0615	<0.010	<4.9	<0.012	1280	0.49 J	<1.0	<1.0	3.3	25	<1.0	<2.0	6.92	2.410	0.0	0.77	8.41	21	>100
LVRR-33 A					Well Dry														Well Dry						Well Dry						Well Dry
LVRR-33 B	103000	28.6	8420	0.5	253	<0.010	<2.0	3.6	6.9	22.5	460	1.08	1.1	0.021	<4.7	0.0177	146	2.5 J	1.5	<1.0	5.1	25	0.81 J	<2.0	7.34	0.916	10.3	1.08	7.17	-113	>100
LVRR-33 C	181000	440	<2000	0.5	293	0.073	<2.0	1.6	<5.0	69.1	796	<0.05	0.0066	<0.010	<4.7	0.0283	454	1.9 J	<1.0	<1.0	54	20	<1.0	<2.0	6.72	1.360	44.5	0.00	6.85	-84	>100
LVRR-33 D	262000	11.6	2390	0.0	193	0.121	<2.0	1.5	<5.0	34.5	1140	0.084	0.0836	<0.010	<4.7	0.0304	832	<1.0 UJ	<1.0	<1.0	38	25	<1.0	<2.0	6.56	1.920	10.3	0.00	4.75	56	>100
LVRR-33 E	348000	17.9	<2000	0.3	180	0.181	7.1	1.6	9.9	34.2	1380	<0.05	<0.0020	<0.010	<4.8	0.0224	1030	6.7 J	0.30 J	<1.0	23	39	<1.0	<2.0	6.83	2.400	2.7	0.60	4.71	-259	>100
DC-01 A	116000	<10	2740	0.0	268	<0.010	<2.0	3.4	<5.0	42.8 J	356	1.16	1.16	<0.010	<4.7	0.0117	49.2	<0.99 UJ	<1.0	<1.0	<2.0	20	<1.0	<2.0	7.14	0.710	0.0	6.96	9.29	220	
DC-01 B	114000	<10	<2000	0.0	281	<0.010	<2.0	1.8	<5.0	27.1 J	484	0.415	0.415	<0.010	<4.7	<0.0060	93	<1.0 UJ	<1.0	<1.0	<2.0	25	<1.0	<2.0	7.18	0.721	0.8	1.41	9.10	228	
DC-01 C	121000	<10	<2000	0.0	240	<0.010	<2.0	1.4	<5.0	24 J	444	<0.05	0.0029	<0.010	<5.0	<0.0060	163	<0.99 UJ	<1.0	<1.0	1.7 J	15	<1.0	<2.0	7.24	0.755	0.4	0.27	8.27	38	
DC-01 D	539000	<10	2540	0.3	186	0.115	<2.0	1.1	<5.0	60.3 J	1670	<0.05	0.0021	<0.010	<4.8	<0.0060	1460	<1.0 UJ	<1.0	<1.0	6.2	25	<1.0	<2.0	7.00	2.560	0.0	0.03	9.80	-28	
DC-02 A	102000 J	<10	<2000	0.0	248	<0.010 UJ	<2.0	2.6	<5.0	2.2	300	2.12	2.12	0.004 J	<4.7	0.0417	20.6 J	2.3	<1.0	<1.0	<2.0	40	<1.0	<2.0	6.95	0.537	0.0	5.23	10.01	167	>100
DC-02 B	117000 J	<10	<2000	0.0	280	<0.010 UJ	<2.0	2.7	<5.0	27.7	422	0.54	0.539	0.004 J	<4.8	0.0048	84.3 J	<1.0 UJ	<1.0	<1.0	0.42 J	>100	<1.0	<2.0	6.24	0.803	10.6	2.73	8.45	266	>100
DC-02 C	364000	<10	3480	0.4	175	0.205	<2.0	1.3	<5.0	41.3 J	1320	<0.05	0.0176	<0.010	<4.8	<0.0060	1050	<1.0 UJ	<1.0	<1.0	6.3	20	<1.0	<2.0	6.94	2.170	0.0	0.23	6.91	-17.0	
DC-02 D	482000	<10	2480	0.4	175	0.129	<2.0	1.2	<5.0	58.9 J	1600	0.49	0.49	<0.010	<4.7	0.006	1410	<1.1 UJ	<1.0	<1.0	2.2	20	<1.0	<2.0	7.30	2.390	1.5	3.12	5.79	-42.0	
DC-03 A	91900	<10	<2000	0.0	220	<0.010 UJ	<2.0	2.3	<5.0	4.7	398	0.366	0.366	<0.010	<5.0	0.0149	17	<1.0 UJ	<1.0	<1.0	0.45 J	14	<1.0	<2.0	7.48	0.467	5.7	8.43	7.33	192	
DC-03 B	119000	<10	<2000	0.0	273	<0.010 UJ	<2.0	1.6	<5.0	33.1 J	468	0.631	0.631	<0.010	<4.8	0.0062	92.4	<1.0 UJ	<1.0	<1.0	<2.0	28	<1.0	<2.0	7.51	0.739	4.9	0.05	7.89	186	
DC-03 C	97600	<10	2370	0.0	209	0.137	<2.0	<1.0	<5.0	21.6 J	478	<0.05	<0.0020	<0.010	<4.7	0.0076	184	<1.0 UJ	<1.0	<1.0	<2.0	6	<1.0	<2.0	7.28	0.733	2.9	6.54	5.61	3	
DC-03 D	221000	<10	<2000	0.0	188	0.088	<2.0	1	45.6	23.2 J	904	<0.05	0.0094	<0.010	<4.7	0.0046	681	<1.0 UJ	<1.0	<1.0	7.8	12	<1.0	<2.0	7.13	1.220	0.5	0.31	7.19	105	
DC-04 A	Well Dry																														
DC-04 B	149000	<10	<2000	0.0	277	<0.040 UJ	<2.0	1.9	<5.0	10.6	464	0.022	0.0216	<0.010	<4.7	0.0108	166 J	<1.0 UJ	<1.0	<1.0	<2.0	25	<1.0	<2.0	6.36	0.841	31.6	1.11	8.97	174	>100
DC-04 C	155000 J	<10	2580	0.0	201	0.118	<2.0	1.9	<5.0	21.6	618	<0.0100	0.0027	<0.010	<4.7	0.0159	345 J	<1.0 UJ	<1.0	<1.0	2.5	20	<1.0	<2.0	7.09	1.020	1.1	0.00	8.71	-2	>100
DC-04 D	443000	<10	2290	0.1	196	0.032	<2.0	1.2	<5.0	60.2	1260	<0.05	0.0148	<0.010	<4.7	<0.012	932	<1.0 UJ	<1	<1	2.2	20	<1	<2	7.49	2.090	0.0	0.00	9.19	-95	
DC-05 A	96000 J	<10	<2000	0.0	241	<0.010 UJ	<2.0	2.8	<5.0	19.4	299	0.372	0.372	<0.010	<4.8	0.0081	43.7 J	<1.0 UJ	<1.0	<1.0	<2.0	20	<1.0	<2.0	6.95	0.653	0.0	6.75	10.19	238	>100
DC-05 B	120000	<10	<2000	0.0	261	<0.010	<2.0	1.4	<5.0	34.6 J	542	0.187	0.187	<0.010	<4.8	<0.0060	118	<1.2	<1.0	<1.0	0.79 J	20	<1.0	<2.0	7.30	0.739	0.0	0.91	7.70	133	
DC-05 C	90600	<10	2670	0.0	215	0.131	<2.0	1.2	<5.0	24.7 J	396	<0.05	0.015	<0.010	<4.7	0.0084	143	<1.3	<1.0	<1.0	0.37 J	12	<1.0	<2.0	7.87	0.595	0.0	0.00	8.78	-105	
DC-05 D	197000	<10	<2000	0.2	187	0.085	<2.0	1.1	<5.0	23.7 J	706	<0.05	0.0022	<0.010	<4.7	0.0098	500	<1.4	<1.0	<1.0	<2.0	24	<1.0	<2.0	7.13	1.280	4.5	1.01	7.56	-39	
DC-06 A	78900 J	<10	2310	0.0	193	<0.010 UJ	<2.0	5.1	8.6	18.3	422	2.65	2.65	0.003 J	<4.9	0.0385	14.3 J	2.6 J	<1.0	<1.0	<2.0	20	<1.0	<2.0	6.49	0.482	0.5	10.35	8.99	189	>100
DC-06 B	355000 J	<10	3150	0.0	192	<0.010 UJ	<2.0	2.3	<5.0	49.1	1080	0.55	0.55	0.005 J	<5.0	0.0067	795 J	<1.0 UJ	<1.0	<1.0	0.60 J	25	<1.0	<2.0	6.91	1.270	0.0	0.15	8.06	178	>100
DC-06 C	436000 J	11.6	2940	0.0	180	0.185 J	<2.0	1.4	<5.0	44.2	1380	0.011	0.0108	<0.010	<4.7	0.0099	1050 J	<1.0	<1.0	<1.0	7.0	25	<1.0	<2.0	7.15	2.370	0.0	1.77	7.94	82	>100
DC-06 D	532000	<10	2430	0.4	187	0.066	<2.0	1.1	5.3	59	1520	<0.05	0.0036	<0.010	<4.7	0.0082	1200	<1.0 UJ	<1.0	<1.0	4.8	16	<1.0	<2.0	7.43	2.480	0.0	0.00	7.47	-93	
DC-7R A	109000	<10	2550	0.0	234	<0.010	2	2.2	<5.0	60.1	416	0.957 J	0.957 J	<0.010	<4.6	0.0093	80.4	<1.0	<1.0	<1.0	<2.0	20	<1.0	<2.0	7.21	0.854	3.1	5.48	7.36	199	>100
DC-7R B	170000	<10	2360	0.0	213	<0.010	<2.0	1.8	<5.0	34.1	698	1.59 J	1.59 J	<0.010	<4.9	0.014	297	<1.0	<1.0	<1.0	<2.0	20	<1.0	<2.0	7.11	1.180	0.7	7.94	5.84	179	>100
DC-7R C	531000	13.7	2530	0.1	173	0.068	<2.0	1.2	<5.0	38	1640	0.126 J	0.126 J	<0.010	<4.7	0.0075	1350	<1.0 UJ	<1.0	<1.0	7.3	20	<1.0	<2.0	7.12	2.590	1.0	1.46	6.11	56.0	>100
DC-7R D	546000	11.4	2420	0.4	173	0.112 J	<2.0	1.4	<5.0	38.4	1760	<0.05	0.0033	<0.010	<4.7	0.0068	1490	<1.12	<1.0	<1.0	<2.0	25	<1.0	<2.0	7.05	2.770	0.0	0.08	5.39	-24	
DC-07	107000	<10	<2000	0.0	253	<0.010 UJ	<2.0	1.9	<5.0	39.4	354	0.774	0.774	<0.010	<4.7	0.0138	23.8	<1.13	<1.0	<1.0	2	20	<1.0	<2.0	7.14	0.631	0.4	8.82	6.59	188	
DC-09 A	107000	<10	<2000	0.0	233	<0.010	<2.0	2.3	<5.0	38.6	340	4.07	4.07	<0.010	<4.8	<0.0060	61.2	<1.14	<1.0	<1.0	<2.0	20	<1.0	<2.0	7.27	0.761	2.3	3.38	7.90	135	
DC-09 B	119000	<10	<2000	0.0	213	<0.010	<6.0	<1.0	<5.0	31.2	419	0.348	0.348	<0.010	<4.7	0.0357	157	<1.15	<1.0	<1.0	<2.0	20	<1.0	<2.0	7.26	0.781	0.4	2.28	8.19	79	
DC-09 C	578000	11.7	2910	0.3	179	0.117	<2.0	<1.0	<5.0	17.6	1860	0.069	0.0692	<0.010	<4.8	0.0076	1630	<1.16	<1.0	<1.0	9.4	30	<1.0	<2.0	6.85	3.000	18.6	0.00	9.03	-15	
DC-10 A	103000	<10	<2000	0.0	200	<0.010	<2.0	2.8	<5.0	2.8	213	18.6 J	18.6 J	<0.010	<4.7	0.0132	14.5	<1.17	<1.0	<1.0	<2.0	25	<1.0	<2.0	7.21	0.615	5.5	4.87	6.52	146	
DC-10 B	109000	<10	2670	0.0	200	<0.010	<2.0	1.6	<5.0	40.8	388	2.73 J	2.73 J	<0.010	<4.7	0.0108	110	<1.18	<1.0	<1.0	4.2	35	<1.0	<2.0	7.35	0.915	0.8	1.39	6.35	161	
DC-10 C	174000	10.4	<2000	0.2	181	0.016	<2.0	<1.0	<5.0	32.8	362	<0.05 UJ	0.0033 J	<0.010	<4.8	0.0057	324	<1.19	<1.0	<1.0	0.32 J	20	<1.0	<1.0	7.71	0.862	0.7	0.07	6.50	-57	
DC-10 D	273000	13.6	<2000	0.0	173	<0.010	<2.0	1.1	<5.0	40.2	504	<0.05 UJ	<0.0020 UJ	<0.010	<4.7	<0.0060	586	<1.20	<1.0	<1.0	0.69 J	28	<1.0	<1.0	7.61	1.480	0.0	1.29	7.29	-91	
DC-11 A	187000	<10	3550	NA	226	<0.010	<2.0	2	<5.0	67.4	629	2.73	2.73	<0.010	<4.7	0.0109	272	<1.21	<1.0	<1.0	<2.0	18	<1.0	<2.0	7.21	1.130	0.0	1.97	9.17	164	
DC-11 B	Could not locate																														
DC-12 A	122000	<10	2200	0.0	343	<0.010	<2.0	1.8	<5.0	37.3	464	6.74	6.74	<0.010	<4.7	0.0047 J	27.6	<1.0	<1.0	<1.0	<2.0	25	<1.0	<2.0	6.96	0.851	0.0	8.82	9.63	144	>100
DC-12 B	110000	<10	2420	0.0	221	<0.010	<2.0	1.6	<5.0	38.4	418	2.42 J	2.42 J	<0.010	<5.0	<0.0060	111	<1.0	<1.0	<1.0	<2.0	15	<1.0	<2.0	7.34	0.774	0.6	1.28	8.43	106	>100
DC-12 C	115000	<10	2440	0.0	201	<0.010	<2.0	1.6	<5.0	41.7	440	1.69 J	1.69 J	<0.010	<4.7	<0.0060	147	<1.0	<1.0	<1.0	<2.0	20	<1.0	<2.0	7.33	0.870	0.0	1.02	9.03	164	>100
DC-12 D	120000	18.4	<2000	0.0	199	0.033	<2.0	1.4	<5.0	39.1	456	0.112	0.112	<0.010	<4.7	0.0050 J	173	<0.98	<1.0	<1.0	<2.0	20	<1.0	<2.0	6.73	0.540	0.0	0.83	8.10	123	>100
DC-13 A	104000	<10	<2000	0.0	286	<0.010	<2.0	1.4	<5.0	8.8	482	6.59	6.59	<0.010	<4.8	0.0075	44	<1.0	<1.0	<1.0	<2.0	25	<1.0	<2.0	7.23	0.753	0.3	8.34	9.48	225	>100
DC-13 B	97700	<10	<2000	0.0	273	<0.010	<2.0	1.3	<5.0	12	404	5.15	5.15	<0.010	<4.8	0.0054 J	54.3	<1.0	<1.0	<1.0	<2.0	45	<1.0	<2.0	6.67	0.716	0.3	4.12	10.04	192	>100
DC-14 A	126000	<10	2780	0.0	232	<0.010	<2.0	1.8	<5.0	46.7	470	3.07	3.07	<0.010	<4.7	0.0057	144	3.2	<1.0	<1.0	<2.0	25	<1.0	<2.0	7.17	0.865	0.7	0.56	7.90	85	>100
DC-14 B	122000	<10	2390	0.0	159	<0.010	<2.0	1.5	<5.0	47.2	470	2.53	2.53	<0.010	<4.7	0.0063	162	0.5 J	<1.0	<1.0	<2.0	35	<1.0	<2.0	7.12	0.587	0.0	2.32	8.09	147	>100
DC-15 A	99800	<10	2300	0.0	233	<0.010 UJ	<2.0	3	<5.0	31.2 J	302	0.874	0.874	<0.010	<4.8	0.0193	38.4	<1.0 UJ	<1.0	<1.0	<2.0	25	<1.0	<2.0	7.22	0.627	0.0	6.96	10.45	288	
DC-15 B	481000	<10	2090	0.3	187	0.071 J	<2.0	1.2	<5.0	48.5	1430	<0.05	<0.0020	<0.010	<4.8	<0.0060	1180	<1.0 UJ	<1.0	<1.0	0.80 J	25	<1.0	<2.0	6.95	2.330	26.5	0.00	9.05	-18	
DC-16	96700	12.2	2740	0.0	239	<0.010	217	3.3	7.6	45.4	376	1.8	1.8	<0.010	<4.7	0.0241	33	<1.0 UJ	<1.0	<1.0	<2.0	14	<1.0	<2.0	7.24	0.730	0.0	2.05	9.69	166	
DC-17 A	105000	<10	2780	0.0	243	<0.010	<2.0	2.7	<5.0	42.1	462	2.36	2.36	<0.010	<4.7	0.0204	51.9	<1.0 UJ	<1.0	<1.0	<2.0	16	<1.0	<2.0	7.06	0.729	0.0	5.84	8.51	152	
DC-17 B	460000	<10	2230	0.2	213	0.124 J	<2.0	1.3	<5.0	44.4 J	1370	<0.05	<0.0020	<0.010	<4.8	0.0064	1180	<1.0 UJ	<1.0	<1.0	<2.0	12	<1.0	<2.0	7.01	2.390	0.0	0.60	8.03	18	

Notes:
1) Monitored natural attenuation sampling was conducted during the first quarter ground water samping event
2) Metals results are reported in micrograms per liter (ug/l).
3) * Dissolved gas results are reported in ug/l with the exception of disolved oxygen (DO) and CC_2. Both DO and CO2 results are reported in milligrams per liter (mg/l).
DO results were recorded prior to sampling, following completion of monitoring well purging and low flow parameter stabilization. CO2 results were recorded following low flow parameter stabilization using a field test kit.
4) Ferrous iron and general chemistry results are reported in mg/l. Ferrous iron results were recorded following low flow parameter stabilization using a field test ki
5) Microtoxicity results are reported in 20% Inhibitory Concentration (IC_{20}) values.

Table 8A
Spring/Seep, Surface Water and Sediment Sample Locations

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

LOCATION		LOCATIONS IDENTIFIED DURING THE 2008 SITE RECONNAISSANCE[1]		EPA-APPROVED SAMPLE LOCATIONS[2]		PHASE I SAMPLING EVENTS									SCREENING LEVEL ENVIRONMENTAL RISK ASSESSMENT SAMPLING		
						December 2009- January 2010			January 2012			November 2012					
Longitude	Latitude	Sediment/ Surface Water	Spring/Seep	Sediment/ Surface Water	Spring	Sediment	Spring/Seep	Surface Water	Sediment	Spring/Seep	Surface Water	Sediment	Spring/Seep	Surface Water	Sediment	Spring/Seep	Surface Water
Oatka Creek Drainage																	
#############	42.99768216600	SED - 32	NO	RECON-SED-32	---	LVRRSD-32	---	LVRRSW-32	---	---	---	---	---	---	LVRRSD-32^bc	---	LVRRSW-32^bc
#############	42.99771699960	SED - 33	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---
#############	42.99718301510	SED - 34	NO	RECON-SED-34	---	LVRRSD-34	---	LVRRSW-34	---	---	---	---	---	---	LVRRSD-34^bc	---	LVRRSW-34^abc
#############	42.99701073240	SED - 35	NO	RECON-SED-35	---	NS (frozen/ice bound)	---	---	---	---	---	---	---	---	---	---	---
#############	42.99648418790	SED - 36	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---
#############	42.99708027730	SED - 37	NO	RECON-SED-37	---	LVRRSD-37	---	LVRRSW-37	---	---	---	---	---	---	LVRRSD-37^bc	---	LVRRSW-37^bc
#############	42.99945029620	SED - 38	NO	RECON-SED-38	---	LVRRSD-38	---	LVRRSW-38	---	---	---	---	---	---	LVRRSD-38^bc	---	LVRRSW-38^bc
#############	43.00128996200	SED - 39	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---
#############	43.00140022940	SED - 40	NO	RECON-SED-40	---	LVRRSD-40	---	LVRRSW-40	---	---	---	---	---	---	LVRRSD-40^bc	---	LVRRSW-40^bc
#############	43.00223366240	SED - 41	NO	RECON-SED-41	---	LVRRSD-41	---	LVRRSW-41	---	---	---	---	---	---	LVRRSD-41^abc	---	LVRRSW-41^bc
#############	42.99799073400	SED - 51	NO	RECON-SED-51	---	LVRRSD-51	---	LVRRSW-51	---	---	---	---	---	---	LVRRSD-51^bc	---	LVRRSW-51^bc
#############	43.00166869320	SED - 52	NO	RECON-SED-52	---	LVRRSD-52	---	LVRRSW-52	---	---	---	---	---	---	LVRRSD-52^bc	---	LVRRSW-52^abc
#############	43.00429270310	SED - 53	NO	RECON-SED-53	---	LVRRSD-53	---	LVRRSW-53	---	---	---	---	---	---	LVRRSD-53^bc	---	LVRRSW-53^bc
#############	43.00409489660	SED - 54	NO	RECON-SED-54	---	LVRRSD-54	---	NS (stagnant/frozen)	---	---	---	---	---	---	LVRRSD-54^bc	---	---
#############	42.99899641960	SED - 55	NO	RECON-SED-55	---	LVRRSD-55	---	LVRRSW-55	---	---	LVRRSW-55	---	---	---	LVRRSD-55^bc	---	LVRRSW-55^bc*check
#############	42.99858603090	SED - 48	NO	RECON- SED-48	---	LVRRSD-48	---	LVRRSW-48	---	---	---	---	---	---	LVRRSD-48^bc	---	LVRRSW-48^bc
---	---	---	---	---	---	---	---	---	---	---	OATKA UPS-01	---	---	OATKA UPS-01	---	---	Oatka UPS-01^b
---	---	---	---	---	---	---	---	---	---	---	CONFLUENCE-01	---	---	CONFLUENCE-01	---	---	Confluence-01^b
Mud Creek Drainage																	
#############	42.99259280490	SED - 01	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---
#############	42.99854573990	SED - 06	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---
#############	42.99833942290	SED - 08	NO	RECON-SED-08	---	LVRRSD-08	---	LVRRSW-08	---	---	---	---	---	LVRRSW-08	LVRRSD-08^bc	---	LVRRSW-08^bc
#############	42.99281785600	SED - 02	SPR - 01	RECON-SED-02	RECON-SPR-01	NS (no sediment)	NS (dry)	NS (dry)	---	---	---	---	---	---	---	---	---
#############	42.99332369890	SED - 03	SPR - 02	RECON-SED-03	RECON-SPR-02	LVRRSD-03	LVRRSP-02	NS (spring only)	---	---	---	---	---	---	LVRRSD-03^abc	LVRRSP-02^abc	---
#############	42.99327538490	NO	SPR - 03	---	RECON-SPR-03	---	LVRRSP-03	---	---	---	---	---	---	---	---	LVRRSP-03^bc	---
#############	42.99403580420	NO	SPR - 04	---	RECON-SPR-04	---	LVRRSP-04	---	---	---	---	---	---	---	---	LVRRSP-04^bc	---
#############	42.99804780190	SED - 04	NO	RECON-SED-04	---	LVRRSD-04	---	LVRRSW-04	---	---	---	---	---	---	LVRRSD-04^bc	---	LVRRSW-04^abc
#############	42.99783511620	SED - 05	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---
#############	42.99843511700	SED - 07	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---
#############	42.99812558550	SED - 57	NO	RECON-SED-57	---	LVRRSD-57	---	LVRRSW-57	---	---	---	---	---	---	LVRRSD-57^abc	---	LVRRSW-57^b*check
#############	42.98828296650	SED - 00	NO	RECON-SED-00	---	LVRRSD-00	---	NS (dry)	---	---	---	---	---	---	LVRRSD-00^bc	---	---
#############	42.99122493360	SED - 56	NO	NS	---	LVRRSD-56	---	LVRRSW-56	---	---	---	---	---	---	LVRRSD-56^abc	---	LVRRSW-56^abc
---	---	---	---	---	---	---	---	---	---	MUDCREEK-01	---	---	---	---	---	---	Mudcreek SW-01^b
Gorge Pond																	
#############	43.00048266820	SED - 49	NO	RECON-SED-49	---	LVRRSD-49	---	NS (stagnant/frozen)	---	---	---	---	---	---	LVRRSD-49^bc	---	---
#############	42.99814471000	SED - 50	NO	RECON-SED-50	---	LVRRSD-50	---	LVRRSW-50	---	---	---	---	---	---	LVRRSD-50^bc	---	LVRRSW-50^bc

Table 8A
Spring/Seep, Surface Water and Sediment Sample Locations

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

LOCATION		THE 2008 SITE RECONNAISSANCE[1]		LOCATIONS[2]		December 2009- January 2010			January 2012			November 2012			RISK ASSESSMENT SAMPLING		
Longitude	**Latitude**	**Sediment/ Surface Water**	**Spring/Seep**	**Sediment/ Surface Water**	**Spring**	**Sediment**	**Spring/Seep**	**Surface Water**	**Sediment**	**Spring/Seep**	**Surface Water**	**Sediment**	**Spring/Seep**	**Surface Water**	**Sediment**	**Spring/Seep**	**Surface Water**
Spring Creek Drainage																	
#############	42.99034978160	SED - 09	NO	NS	---	---	---	---	---	---	---	---	---	---	NR	---	---
#############	42.99238133370	SED - 10	SPR - 05	RECON-SED-10	RECON-SPR-05	LVRRSD-10	LVRRSP-05	NS (spring only)	---	---	---	---	---	---	LVRRSD-10^abc	LVRRSP-05^bc	---
#############	42.99242429990	SED - 11	SPR - 06	RECON-SED-11	RECON-SPR-06	LVRRSD-11	LVRRSP-06	NS (spring only)	---	---	---	---	---	---	LVRRSD-11^bc	LVRRSP-06^bc	---
#############	42.98280843370	SED - 12	SPR - 07	RECON-SED-12	RECON-SPR-07	LVRRSD-12	LVRRSP-07 LVRRSPPDB07	NS (spring only)	SPRING-SED-04	SPRING-PDB-02	---	---	---	---	LVRRSD-12^bc	LVRRSP-07^bc LVRRSP-07PDB^bc	---
#############	42.98172081320	SED - 13	SPR - 08	RECON- SED-13	RECON-SPR-08	LVRRSD-13	LVRRSP-08 LVRRSPPDB08	NS (spring only)	SPRING-SED-03	SPRING-PDB-03	---	---	---	---	LVRRSD-13^bc	LVRRSP-08^bc LVRRSP-08PDB^c	---
#############	42.98100421970	SED - 14	SPR - 09	NS	NS	LVRRSD-14	---	LVRRSW-14	---	---	---	---	---	LVRRSW-14	LVRRSD-14^bc	---	LVRRSW-14^bc LVRRSW-
#############	42.98028873370	SED - 15	SPR - 10	NS	NS	---	---	---	---	---	---	---	---	---	NR	---	---
#############	42.98004014490	SED - 16	SPR - 11	NS	NS	---	---	---	---	---	---	---	---	---	NR	---	---
#############	42.97992486670	SED - 17	SPR - 12	RECON-SED-17	RECON-SPR-12	LVRRSD-17	LVRRSP-12 LVRRSPPDB12	NS (spring only)	---	---	---	---	---	---	LVRRSD-17^bc	LVRRSP-12^bc LVRRSP-12PDB^bc	---
#############	42.97921452790	SED - 18	SPR - 13	RECON-SED-18	NS	LVRRSD-18	NS	LVRRSW-18	SPRING-SED-02	---	---	---	---	LVRRSW-18	LVRRSD-18^bc	---	LVRRSW-18^bc
#############	42.97901515720	SED - 19	SPR - 14	RECON-SED-19	RECON-SPR-14	LVRRSD-19	LVRRSP-14 LVRRSPPDB14	NS (spring only)		SPRING-PDB-04	---	---	---	---	LVRRSD-19^bc	LVRRSP-14^bc LVRRSP-14PDB^c	NR
#############	42.97876496700	SED - 20	SPR - 15	RECON-SED-20	NS	LVRRSD-20	NS	LVRRSW-20		---	---	---	---	---	LVRRSD-20^bc	---	LVRRSW-20^abc
#############	42.97868532790	SED - 21	SPR - 16	NS	NS	---	---	---	---	---	---	---	---	---	NR	---	---
#############	42.97818470180	SED - 22	SPR - 17	RECON-SED-22	RECON-SPR-17	LVRRSD-22	LVRRSP-17 LVRRSPPDB17	NS (spring only)	SPRING-SED-01	---	---	---	---	---	LVRRSD-22^bc	LVRRSP-17^bc LVRRSP-17PDB^bc	---
#############	42.97792220320	SED - 23	SPR - 18	RECON-SED-23	RECON-SPR-18	LVRRSD-23	LVRRSP-18 LVRRSPPDB18	NS (spring only)		---	---	---	---	---	LVRRSD-23^bc	LVRRSP-18^bc LVRRSP-18PDB^bc	---
#############	42.97654867410	SED - 24	SPR - 19	RECON-SED-24	RECON-SPR-19	LVRRSD-24	NS (dry)	NS (spring only)	---	---	---	---	---	---	LVRRSD-24^bc	---	---
#############	42.97481149010	SED - 42	SPR - 22	RECON-SED-42	RECON-SPR-22	LVRRSD-42	LVRRSP-22	NS (spring only)	MACKAY-SED-01/02	MACKAY-PDB-01	---	---	---	---	LVRRSD-42^bc	LVRRSP-22^bc	---
#############	42.98633260680	SED - 25	SPR - 20	RECON-SED-25	RECON-SPR-20	LVRRSD-25	NS (dry)	NS (spring only)	SPRING-SED-05	SPRING-PDB-01	---	---	---	---	LVRRSD-25^bc	---	---
#############	42.98585643690	SED - 26	SPR - 21	NS	NS	---	---	---	---	---	---	---	---	---	NR	---	---
#############	42.98493001530	SED - 27	NO	RECON-SED-27	---	NS (no sediment)	---	---	---	---	---	---	---	---	NR	---	---
#############	42.97501153970	SED - 43	SPR - 23	RECON-SED-43	RECON-SPR-23	LVRRSD-43	LVRRSP-23 LVRRSPPDB23	NS (spring only)	---	---	---	---	---	---	LVRRSD-43^abc	LVRRSP-23^bc LVRRSP-23PDB^bc	---
#############	42.97504600240	SED - 44	SPR - 24	NS	NS	---	---	---	---	---	---	---	---	---	NR	---	---
#############	42.97726256100	SED - 45	SPR - 25A/B	RECON-SED-45	RECON-SPR-25 A/B	LVRRSD-45	LVRRSP-25A LVRRSPPDB-25A	NS (spring only)	---	---	---	---	---	---	LVRRSD-45^bc	LVRRSP-25A^bc LVRRSP-	---
#############	42.97750720060	SED - 46	SPR - 26,27,28	NS	NS	---	---	---	---	---	---	---	---	---	NR	---	---
#############	42.98934999070	SED - 47	NO	NS	---	---	---	---	---	---	---	---	---	---	NR	---	---
---	---	---	---	---	---	---	---	---	---	---	SWALE SW-01	---	---	---	---	---	Swale SW-01^b
---	---	---	---	---	---	---	---	---	---	---	MACKAY SW-01	---	---	---	---	---	Mackay SW-01^b
---	---	---	---	---	---	---	---	---	---	---	SPRING UPS SW-01	---	---	---	---	---	Spring UPS SW-01^b
---	---	---	---	---	---	---	---	---	---	---	MACKAY SW-02	---	---	MACKAY SW-02	---	---	Mackay SW-02^b
---	---	---	---	---	---	---	---	---	---	---	MILL ST SW-01	---	---	MILL ST SW-01	---	---	Mill St. SW-01^b
---	---	---	---	---	---	---	---	---	---	---	SPRING CSW-01	---	---	SPRING CSW-01	---	---	Spring CSW-01^b
---	---	---	---	---	---	---	---	---	---	---	---	---	---	SPRING CSW-02	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---	---	---	SPRING CSW-03	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---	---	---	SPRING CSW-04	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---	---	---	SPRING CSW-05	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---	---	---	SPRING CSW-06	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---	---	---	SPRING CSW-07	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---	---	---	SPRING CSW-08	---	---	---
Wetland Area East of Spring Creek																	
#############	42.98889816640	SED - 28	NO	RECON-SED-28	---	LVRRSD-28	---	LVRRSW-28	---	---	---	---	---	---	LVRRSD-28^bc	---	LVRRSW-28^abc
#############	42.98986694070	SED - 29	NO	RECON- SED-29	---	LVRRSD-29	---	NS (stagnant/frozen)	---	---	---	---	---	---	LVRRSD-29^bc	---	---
#############	42.99140222300	SED - 30	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---
#############	42.99360160330	SED - 31	NO	NS	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1) [1] These locations were identified as potential sampling locations during the 2008 Site Reconnaissance but were not neccesssarily proposed for sampling in the EPA-approved 2009 Technical Memorandum and Addendum 2.

2) [2] These sampling locations were approved by the EPA following their review of the 2009 Technical Memorandum and Addendum 2.

3) NO - Indicates a spring/seep was not observed at that location or no sediment was observed at that spring/seep location.

3) NS - Indicates location that was not selected for sampling in the EPA-approved 2009 Technical Memorandum and Addendum 2.

Table 8B
Surface Water Sample Field Measurement Param

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Sample ID	pH	Specific Conductivity	Dissolved Oxygen	Total Dissolved Solids	Oxidation Reduction Potential	Temperature
Surface Water Parameters						
LVRRSW-40	5.7	0.595	1.55	0.37	-83	2.39
LVRRSW-41	6.1	0.171	9.34	0.11	-82	1.90
LVRRSW-53	7.45	0.732	9.28	0.47	75	3.54
LVRRSW-38	8.1	0.356	7.54	0.24	-11	3.45
LVRRSW-52	7.62	0.727	3.03	0.47	93	2.45
LVRRSW-32	7.66	0.879	6.48	0.57	-27	3.24
LVRRSW-34	7.18	0.624	5.80	0.40	8.0	2.29
LVRRSW-37	7.52	0.893	5.33	0.57	88	1.70
LVRRSW-51	7.85	0.772	8.64	0.49	82	2.52
LVRRSW-56	6.15	0.502	0.00	0.32	-61	1.30
LVRRSW-55	7.95	0.706	12.11	0.45	136	1.57
LVRRSW-08	6.97	2.28	0.00	1.5	-117	3.50
LVRRSW-04	7.33	1.83	0.00	1.2	-149	7.38
LVRRSW-57	7.12	0.96	0.00	0.6	-270	1.79
LVRRSW-50	7.78	0.165	4.84	0.11	30	1.16
LVRRSW-28	6.95	1.88	7.57	1.2	12	4.94
LVRRSW-48	2.26	2.34	3.83	1.6	-57	1.07
LVRRSW-20	6.73	1.26	3.02	0.8	223	7.61
LVRRSW-14	7.39	1.13	1.36	0.7	203	8.28
LVRRSW-18	7.18	1.22	1.26	0.8	195	8.36
Spring Water Parameters						
LVRRSP-02	6.98	0.866	5.58	0.56	131	10.10
LVRRSP-03	7.32	0.918	4.40	0.59	131	9.50
LVRRSP-04	7.30	0.967	6.00	0.62	124	10.91
LVRRSP-06	7.27	1.03	0.00	0.70	162	7.28
LVRRSP-05	7.23	1.15	0.00	0.70	29	9.20
LVRRSP-23	6.24	1.44	0.15	0.9	-99	7.86
LVRRSP-24	7.11	1.46	1.27	0.9	24	4.82
LVRRSP-22	7.42	1.45	3.59	0.9	85	7.25
LVRRSP-25A	6.32	1.33	2.19	0.8	210	6.85
LVRRSP-12	6.54	1.18	1.74	0.8	135	5.80
LVRRSP-14	7.72	1.19	0.50	0.5	214	3.54
LVRRSP-17	7.56	1.21	0.23	0.8	193	7.69
LVRRSP-18	7.65	1.22	3.16	0.8	184	6.91
LVRRSP-07	7.76	0.94	3.80	0.6	189	9.33
LVRRSP-08	7.54	0.88	2.45	0.8	171	6.15

Notes:
pH is in standard units
Conductivity is in microSiemens per centimeter (uS/cm)
Dissolved oxygen is in milligrams per liter (mg/l)
Total dissolved solids is in grams per liter (g/l)
Oxidation/reduction potential is in milli volts (mV)
Temperature is in degrees Celsius

Table 8B
Surface Water Sample Field Measurement Param

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Sample ID	pH	Specific Conductivity	Dissolved Oxygen	Total Dissolved Solids	Oxidation Reduction Potential	Temperature
Surface Water Parameters						
LVRRSW-40	5.7	0.595	1.55	0.37	-83	2.39
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LVRRSW-38	8.1	0.356	7.54	0.24	-11	3.45
LVRRSW-52	7.62	0.727	3.03	0.47	93	2.45
LVRRSW-32	7.66	0.879	6.48	0.57	-27	3.24
LVRRSW-34	7.18	0.624	5.80	0.40	8.0	2.29
LVRRSW-37	7.52	0.893	5.33	0.57	88	1.70
LVRRSW-51	7.85	0.772	8.64	0.49	82	2.52
LVRRSW-56	6.15	0.502	0.00	0.32	-61	1.30
LVRRSW-55	7.95	0.706	12.11	0.45	136	1.57
LVRRSW-08	6.97	2.28	0.00	1.5	-117	3.50
LVRRSW-04	7.33	1.83	0.00	1.2	-149	7.38
LVRRSW-57	7.12	0.96	0.00	0.6	-270	1.79
LVRRSW-50	7.78	0.165	4.84	0.11	30	1.16
LVRRSW-28	6.95	1.88	7.57	1.2	12	4.94
LVRRSW-48	2.26	2.34	3.83	1.6	-57	1.07
LVRRSW-20	6.73	1.26	3.02	0.8	223	7.61
LVRRSW-14	7.39	1.13	1.36	0.7	203	8.28
LVRRSW-18	7.18	1.22	1.26	0.8	195	8.36
Spring Water Parameters						
LVRRSP-02	6.98	0.866	5.58	0.56	131	10.10
LVRRSP-03	7.32	0.918	4.40	0.59	131	9.50
LVRRSP-04	7.30	0.967	6.00	0.62	124	10.91
LVRRSP-06	7.27	1.03	0.00	0.70	162	7.28
LVRRSP-05	7.23	1.15	0.00	0.70	29	9.20
LVRRSP-23	6.24	1.44	0.15	0.9	-99	7.86
LVRRSP-24	7.11	1.46	1.27	0.9	24	4.82
LVRRSP-22	7.42	1.45	3.59	0.9	85	7.25
LVRRSP-25A	6.32	1.33	2.19	0.8	210	6.85
LVRRSP-12	6.54	1.18	1.74	0.8	135	5.80
LVRRSP-14	7.72	1.19	0.50	0.5	214	3.54
LVRRSP-17	7.56	1.21	0.23	0.8	193	7.69
LVRRSP-18	7.65	1.22	3.16	0.8	184	6.91
LVRRSP-07	7.76	0.94	3.80	0.6	189	9.33
LVRRSP-08	7.54	0.88	2.45	0.8	171	6.15

Notes:
pH is in standard units
Conductivity is in microSiemens per centimeter (uS/cm)
Dissolved oxygen is in milligrams per liter (mg/l)
Total dissolved solids is in grams per liter (g/l)
Oxidation/reduction potential is in milli volts (mV)
Temperature is in degrees Celsius

Table 9A
Sampling and Disposition of NYSDEC and LVRR Drums

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drum ID	PID Reading (ppm)	Sample ID	Total Lab ID	TCLP Lab ID	Sample Date	Sample Time	Comments	Assoc. Photo	Analyte Name	Total 8260 (ug/Kg) ppb	Total Cyanide (mg/Kg) ppb	Ameanable Cyanide (mg/Kg) ppb	TCLP Vinyl Chloride (ug/L) ppb	Lab Confirmation (Date)	TCLP Sub Contracted Analysis		Disposal			
															Date Sent	Date Received by UMC	Truck Co and Number	Roll-Off #	Manifest Number	Date Shipped
1	0.0	LVRR-DRUM-001	R1200763-009	R1200764-009	2/4/2012	0845	Poly/Dirt, Full.Contains plastic from drilling containment area with cuttings	1409/1562		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
2	0.5	LVRR-DRUM-002	R1200755-005	R1200756-005	3/2/2012	1650	Poly/Dirt, Full.Contains plastic from drilling containment area with cuttings	1410/1556		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
3	3.0	LVRR-DRUM-003	R1200650-001	R1200651-001	1/31/2012	1700		1411		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
4	10.2	LVRR-DRUM-004	R1200650-002	R1200651-002	2/1/2012	0750	Water/Dirt, Full, 98% Dirt	1412		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 1250		007323055 JJK	2/22/2012
5	0.3	LVRR-DRUM-005	R1200650-003	R1200651-003	2/1/2012	0820		1413		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
6	0.3	LVRR-DRUM-006	R1200650-004	R1200651-004	2/1/2012	0840		1414		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
7	0.3	LVRR-DRUM-007	R1200650-005	R1200651-005	2/1/2012	0855		1415		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
8	2.4	LVRR-DRUM-008	R1200650-006	R1200651-006	2/1/2012	0910	Water/Dirt, 25% Full, 95% Dirt	1416		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
9	0.3	LVRR-DRUM-009	R1200650-007	R1200651-007	2/1/2012	0925	Water/Dirt, Full, 95% Dirt.Contains plastic from drilling containment area with cuttings	1417		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
10	0.5	LVRR-DRUM-010	R1200650-008	R1200651-008	2/1/2012	0940	Water/Dirt, 50% Full, 95% Dirt	1418		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
11	0.2	LVRR-DRUM-011	R1200763-014	R1200764-014	2/4/2012	0900	Poly/Dirt, Full. Contains plastic from drilling containment area with cuttings	1556		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
12	0.1	LVRR-DRUM-012	R1200650-009	R1200651-009	2/1/2012	1010	Water/Dirt, Full, 95% Dirt. Contains water and cuttings	1419		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
13	0.2	LVRR-DRUM-013	R1200650-010	R1200651-010	2/1/2012	1030	Poly/Dirt, Full. Contains plastic from drilling containment area with cuttings- Sampled Twice	1420		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323056 JJK	2/27/2012
13	0.2	LVRR-DRUM-013	R1200755-003	R1200756-003	2/3/2012	1655	Poly/Dirt, Full. Contains plastic from drilling containment area with cuttings- Sampled Twice	1553		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012				
14	0.2	LVRR-DRUM-014	R1200650-011	R1200651-011	2/1/2012	1040	Water/Dirt, Full, 95% Dirt. Contains water and cuttings	1421		ND	ND	ND	ND	2/1/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
15	0.4	LVRR-DRUM-015	R1200661-001	R1200662-001	2/1/2012	1110	Water/Dirt, Full, 95% Dirt. Contains water and cuttings	1422		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 1250		007323055 JJK	2/22/2012
16	0.2	LVRR-DRUM-016	R1200661-002	R1200662-002	2/1/2012	1200	Water/Dirt, Full, 95% Dirt	1423		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
17	0.0	LVRR-DRUM-017	R1200661-003	R1200662-003	2/1/2012	1220	Water/Dirt, Full, 95% Dirt	1424		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
18	0.1	LVRR-DRUM-018	R1200661-004	R1200662-004	2/1/2012	1240		1425		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
19	1.9	LVRR-DRUM-019	R1200661-005	R1200662-005	2/1/2012	1300		1426		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
20	0.3	LVRR-DRUM-020	R1200661-006	R1200662-006	2/1/2012	1015		1433		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
21	0.2	LVRR-DRUM-021	R1200661-007	R1200662-007	2/1/2012	1455		1432		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
22	0.2	LVRR-DRUM-022	R1200661-008	R1200662-008	2/1/2012	1440		1431		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
23	0.1	LVRR-DRUM-023	R1200661-009	R1200662-009	2/1/2012	1525		1434		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
24	0.0	LVRR-DRUM-024	R1200763-007	R1200764-007	2/4/2012	0925	Ice/Water/Dirt, 60% Full, 50% Dirt. Frozen	1564		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
25	0.0	LVRR-DRUM-025	R1200763-013	R1200764-013	2/4/2012	0855	Ice/Water/Dirt, Full, 90% DirtFrozen	1563		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
26	0.0	LVRR-DRUM-026	R1200755-001	R1200756-001	2/3/2012	1715	Poly/Dirt, Full. Contains plastic from drilling containment area with cuttings	1554		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
27	0.0	LVRR-DRUM-027	R1200661-010	R1200662-010	2/1/2012	1325		1427		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
28	0.1	LVRR-DRUM-028	R1200661-011	R1200662-011	2/1/2012	1345	Water/Dirt, 50% Full, 90% Dirt	1428		ND	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
29	0.1	LVRR-DRUM-029	R1200661-012	R1200662-012	2/1/2012	1540	Ice/Water/Dirt, Full, 90% Dirt	1429		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 8200		007323055 JJK	2/22/2012
30	0.1	LVRR-DRUM-030	R1200661-013	R1200662-013	2/1/2012	1420	Water/Dirt, Full, 98% dirt	1430		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 8200		007323055 JJK	2/22/2012
31	0.0	LVRR-DRUM-031	R1200661-014	R1200662-014	2/1/2012	1610	Water/Dirt, Full, 95% Dirt	1435		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
32	0.0	LVRR-DRUM-032	R1200661-015	R1200662-015	2/1/2012	1630		1436		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
33	0.5	LVRR-DRUM-033	R1200661-016	R1200662-016	2/1/2012	1705		1437		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
34	2.0	LVRR-DRUM-034	R1200661-012	R1200662-017	2/1/2012	1720	Water/Dirt (ice), Full, 95% Dirt	1438		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
35	0.7	LVRR-DRUM-035	R1200714-015	R1200715-015	2/2/2012	1620		1481		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
36	0.6	LVRR-DRUM-036	R1200714-003	R1200715-003	2/2/2012	1410		1471		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
37	0.0	LVRR-DRUM-037	R1200746-007	R1200747-007	2/3/2012	0815	Water/Dirt, Full, 95% Dirt	1498		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
38	0.0	LVRR-DRUM-038	R1200746-025	R1200747-025	2/3/2012	0935		1510		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
39	0.0	LVRR-DRUM-039	R1200746-013	R1200747-013	2/3/2012	1045		1519		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
40	0.0	LVRR-DRUM-040	R1200755-008	R1200756-008	2/3/2012	1550	Ice/Water/Dirt, 75% Full, 90% DirtContains water and cuttings	1511		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
41	0.2	LVRR-DRUM-041	R1200746-024	R1200747-024	2/3/2012	0945		1512		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
42	0.0	LVRR-DRUM-042	R1200755-010	R1200756-010	2/3/2012	1530	Water/Dirt, Full, 98% DirtContains water and cuttings	1546		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
43	1.1	LVRR-DRUM-043	R1200746-027	R1200747-027	2/3/2012	1150		1529		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
44	0.0	LVRR-DRUM-044	R1200750-004	R1200751-004	2/3/2012	1505	Water/Dirt, Full, 98% Dirt	1543		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
45	0.0	LVRR-DRUM-045	R1200750-001	R1200751-001	2/3/2012	1450	Poly/Dirt, FullContains plastic from drilling containment area with cuttings	1541		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
46		LVRR-DRUM-046					Not Sampled because Drum was full of rocks													
47	0.0	LVRR-DRUM-047	R1200750-007	R1200751-007	2/3/2012	1405		1534		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
48	0.0	LVRR-DRUM-048	R1200750-011	R1200751-011	2/3/2012	1335		1531		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
49	0.0	LVRR-DRUM-049	R1200746-026	R1200747-026	2/3/2012	1150	Water/Dirt, Full, 95% Dirt	1528		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
50	5.7	LVRR-DRUM-050	R1200746-015	R1200747-015	2/3/2012	1110	Water/Dirt, 25% Full, 95% Dirt	1523		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
51	0.0	LVRR-DRUM-051	R1200746-014	R1200747-014	2/3/2012	1110		1522		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
52	0.0	LVRR-DRUM-052	R1200755-007	R1200756-007	2/3/2012	1545	Ice/Water/Dirt, 75% Full, 95% Dirt .	1548		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
53	2.9	LVRR-DRUM-053	R1200746-021	R1200747-021	2/3/2012	1035		1518	cis-1,2-dichloroethene	290	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012				
53	2.9	LVRR-DRUM-053	R1200746-021	R1200747-021	2/3/2012	1035		1518	trichloroethene	240	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
54	-	LVRR-DRUM-054					Does not Exist. Labeled as 52	-												
55	0.0	LVRR-DRUM-055	R1200746-012	R1200747-012	2/3/2012	0850	Ice/Water/Dirt, 75% Full, 80% Dirt. Contains water and cuttings	1504		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
56	0.0	LVRR-DRUM-056	R1200714-025	R1200715-025	2/2/2012	1735		1494		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
57	0.0	LVRR-DRUM-057			2/3/2012	1110	Not enough for Sample	1493									Price Trucking Corp 1250		007323054 JJK	2/22/2012
58	0.0	LVRR-DRUM-058	R1200746-002	R1200747-002	2/3/2012	0905		1506		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
59	0.0	LVRR-DRUM-059	R1200746-011	R1200747-011	2/3/2012	0750		1497		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
60	1.2	LVRR-DRUM-060	R1200714-026	R1200715-026	2/2/2012	1710	Plastic/Dirt, Full	1490		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
61	0.2	LVRR-DRUM-061	R1200714-016	R1200715-016	2/2/2012	1535		1487		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
62	0.0	LVRR-DRUM-062	R1200780-020	R1200781-020	2/6/2012	1500	Water/Poly/Dirt, Full	1550		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
63	0.0	LVRR-DRUM-063	R1200714-008	R1200715-008	2/2/2012	1335		1468		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
64	0.0	LVRR-DRUM-064	R1200714-009	R1200715-009	2/2/2012	1325	Water/Dirt, Full, 95% Dirt. Contains water and cuttings	1467		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp		007323054 JJK	2/22/2012
65	0.5	LVRR-DRUM-065	R1200693-020	R1200695-020	2/2/2012	1055		1459		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
66	0.0	LVRR-DRUM-066	R1200693-018	R1200695-018	2/2/2012	1050	Plastic/ Dirt, Full	1457		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
67	0.0	LVRR-DRUM-067	R1200693-001	R1200695-001	2/2/2012	1035		1456		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
68	0.0	LVRR-DRUM-068	R1200693-002	R1200695-002	2/2/2012	0900		1445		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
69	0.0	LVRR-DRUM-069	R1200693-003	R1200695-003	2/2/2012	0820		1441		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
70	-	LVRR-DRUM-070					Drum Was Empty	No Picture												
71	0.0	LVRR-DRUM-071	R1200755-006	R1200756-006	2/3/2012	1650	Poly/ Dirt, Full. Plastic Liner	1440/1552		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
72	0.0	LVRR-DRUM-072	R1200693-004	R1200695-004	2/2/2012	0830		1442	Trichloroethene	200	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
73	0.0	LVRR-DRUM-073	R1200693-005	R1200695-005	2/2/2012	0840	Water/ Dirt, 75% full, 95% Dirt	1443		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
74	0.0	LVRR-DRUM-074	R1200693-006	R1200695-006	2/2/2012	0850	Water/ Dirt, Full, 95% Dirt	1444		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
75	0.0	LVRR-DRUM-075	R1200693-007	R1200695-007	2/2/2012	1015	Plastic/ Dirt, Full	1454		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
76	0.0	LVRR-DRUM-076	R1200693-019	R1200695-019	2/2/2012	1100		1458		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
77	0.2	LVRR-DRUM-077	R1200693-021	R1200695-021	2/2/2012	1115		1460		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
78	0.0	LVRR-DRUM-078	R1200714-012	R1200715-012	2/2/2012	1130	Pencil sized holes in drum. Water/ Dirt, Full, 95% Dirt	1462		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323056 JJK	2/27/2012
79	0.0	LVRR-DRUM-079	R1200714-011	R1200715-011	2/2/2012	1145	Water/ Dirt, 75% full, 95% Dirt	1464		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012

Table 9A
Sampling and Disposition of NYSDEC and LVRR Drums

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Drum ID	PID Reading (ppm)	Sample ID	Total Lab ID	TCLP Lab ID	Sample Date	Sample Time	Comments	Assoc. Photo	Analyte Name	Total 8260 (ug/Kg) ppb	Total Cyanide (mg/Kg) ppb	Ameanable Cyanide (mg/Kg) ppb	TCLP Vinyl Chloride (ug/L) ppb	Lab Confirmation (Date)	TCLP Sub Contracted Analysis		Disposal			
															Date Sent	Date Received by UMC	Truck Co and Number	Roll-Off #	Manifest Number	Date Shipped
80	0.0	LVRR-DRUM-080	R1200714-006	R1200715-006	2/2/2012	1400		1470		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
81	0.0	LVRR-DRUM-081	R1200714-007	R1200715-007	2/2/2012	1325	Water/ Dirt, Full, 97% Dirt	1466		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
82	0.0	LVRR-DRUM-082	R1200714-005	R1200715-005	2/2/2012	1420	Contains water and cuttings	1472		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
83	6.6	LVRR-DRUM-083	R1200763-001	R1200764-001	2/4/2012	0800	Frozen Water/ Dirt, Full, 95% Dirt	1478		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
84	1.9	LVRR-DRUM-084	R1200714-017	R1200715-017	2/2/2012	1450		1477		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
85	0.6	LVRR-DRUM-085	R1200714-004	R1200715-004	2/2/2012	1345		1469		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
86	0.0	LVRR-DRUM-086	R1200755-002	R1200756-002	2/3/2012	1700	Ice/ Water/ Dirt, Full, 90% Dirt	1557		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
87	0.1	LVRR-DRUM-087	R1200714-019	R1200715-019	2/2/2012	1555	Poly & Dirt, Full	1483		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
88	1.0	LVRR-DRUM-088	R1200714-027	R1200715-027	2/2/2012	1655	50%Ice/50% Dirt Frozen, 50% Full	1489		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
89	0.1	LVRR-DRUM-089	R1200714-021	R1200715-021	2/2/2012	1515	Ice over top of Dirt, Full, 95 % Dirt	1480		ND	0.19	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
90	0.3	LVRR-DRUM-090	R1200714-024	R1200715-024	2/2/2012	1515	Ice/Water/Dirt, Full, 95% Dirt	1479		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
91	5.3	LVRR-DRUM-091	R1200714-018	R1200715-018	2/2/2012	1555		1485		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
92	-	LVRR-DRUM-092					Drum Does not Exist, Sampled as 149	-												
93	0.0	LVRR-DRUM-093	R1200714-029	R1200715-029	2/2/2012	1725		1492		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
94	0.0	LVRR-DRUM-094	R1200746-008	R1200747-008	2/3/2012	0750	Water/ Dirt, Full 95% Dirt. Contains Water and cuttings	1496		ND	ND	ND	ND	2/3/2012	2/3/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
95	1.1	LVRR-DRUM-095	R1200714-013	R1200715-013	2/2/2012	1655	Water/Dirt, 75% Full, 95% Dirt	1488		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
96	0.4	LVRR-DRUM-096	R1200714-014	R1200715-014	2/2/2012	1620		1487		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
97	2.3	LVRR-DRUM-097	R1200714-028	R1200715-028	2/2/2012	1707		1491		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
98	0.0	LVRR-DRUM-098	R1200746-010	R1200747-010	2/3/2012	0815	Water/Dirt, 75% Full, 95% Dirt	1499		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
99	2.9	LVRR-DRUM-099	R1200746-023	R1200747-023	2/3/2012	0945		1513		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
100	0.0	LVRR-DRUM-100	R1200746-018	R1200747-018	2/3/2012	1030	Pencil sized holes in drum. Water,Dirt, 50% Full, 95% Dirt	1517		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
101	0.0	LVRR-DRUM-101	R1200750-012	R1200751-012	2/3/2012	1330		1530		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
102	0.0	LVRR-DRUM-102	R1200750-008	R1200751-008	2/3/2012	1410		1535		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
103	0.0	LVRR-DRUM-103	R1200750-005	R1200751-005	2/3/2012	1455	Ice Water/Dirt, 50% Full, 75% Dirt	1542		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
104	0.0	LVRR-DRUM-104	R1200755-011	R1200756-011	2/3/2012	1520	Water/Dirt, Fll, 98% Dirt	1545		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
105	-	LVRR-DRUM-105					Drum Does not Exist, Sampled as 123	-												
106	0.0	LVRR-DRUM-106	R1200750-013	R1200751-013	2/3/2012	1415	Ice/Water/Dirt, 75% Full, 80% Dirt	1536		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
107	0.0	LVRR-DRUM-107	R1200746-028	R1200747-028	2/3/2012	1140	Water/ Dirt, Full , 95% Dirt	1527		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
108	0.0	LVRR-DRUM-108	R1200746-029	R1200747-029	2/3/2012	1140		1526		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
109	0.0	LVRR-DRUM-109	R1200746-017	R1200747-017	2/3/2012	1055		1521		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
110	0.0	LVRR-DRUM-110	R1200746-022	R1200747-022	2/3/2012	0955		1514		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
111	0.0	LVRR-DRUM-111	R1200746-003	R1200747-003	2/3/2012	0905		1507		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
112	1.1	LVRR-DRUM-112	R1200714-030	R1200715-030	2/2/2012	1735		1495		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
113	0.0	LVRR-DRUM-113	R1200746-006	R1200747-006	2/3/2012	0830	Ice/Water/Dirt, 75% Full, 90% Dirt	1502		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
114	0.0	LVRR-DRUM-114	R1200746-001	R1200747-001	2/3/2012	0920		1509		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
115	0.0	LVRR-DRUM-115	R1200746-005	R1200747-005	2/3/2012	845	Water/Dirt, 75% Full, 98% Dirt	1503		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
116	0.5	LVRR-DRUM-116	R1200746-004	R1200747-004	2/3/2012	0920		1508		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
117	0.0	LVRR-DRUM-117	R1200746-016	R1200747-016	2/3/2012	1055	Water/Dirt, 50% Full, 95% Dirt	1520		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
118	0.0	LVRR-DRUM-118	R1200746-031	R1200747-031	2/3/2012	1125	Water/Dirt, Full, 95% Dirt	1524		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
119	0.0	LVRR-DRUM-119	R1200750-006	R1200751-006	2/3/2012	1450	Water/Dirt, Full, 95% Dirt	1540	Methylcyclohexane	170	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
119	0.0	LVRR-DRUM-119	R120714-020	R1200715-020	2/2/2012	1510		1478	Methylcyclohexane	150	ND	ND	ND	2/2/2012			Price Trucking Corp 8200		007323056 JJK	2/27/2012
120	0.0	LVRR-DRUM-120	R1200750-002	R1200751-002	2/3/2012	1425		1538		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
121	0.2	LVRR-DRUM-121	R1200750-003	R1200751-003	2/3/2012	1440		1539		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
122	0.0	LVRR-DRUM-122	R1200755-009	R1200756-009	2/3/2012	1540	Water/Dirt, Full, 98% Dirt	1547		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
123	0.0	LVRR-DRUM-123	R1200755-012	R1200756-012	2/3/2012	1505	Rock/Water, 25% Full, 95% Rock	1544		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
124	0.0	LVRR-DRUM-124	R1200746-030	R1200747-030	2/3/2012	1125	Water/Dirt, Full, 95% Dirt	1525		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
125	0.0	LVRR-DRUM-125	R1200750-009	R1200751-009	2/3/2012	1350	Water/Dirt, Full, 95% Dirt. Contains water and cuttings	1532		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
126	0.0	LVRR-DRUM-126	R1200693-009	R1200695-009	2/2/2012	1005	Poly/Dirt, Full	1452		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
127	0.1	LVRR-DRUM-127	R1200693-008	R1200695-008	2/2/2012	1010	Water/Dirt, 75% Full, 95% Dirt	1453		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
128	0.0	LVRR-DRUM-128	R1200693-022	R1200695-022	2/2/2012	1130	Plastic/Dirt, Full	1463		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
129	0.0	LVRR-DRUM-129	R1200714-023	R1200715-023	2/2/2012	1440	Water/ Dirt, Full, 95% Dirt. Contains water and cuttings	1475		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
130	0.0	LVRR-DRUM-130	R1200693-017	R1200695-017	2/2/2012	1120	Water/Dirt, Full, 95% Dirt	1461		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
131	1.9	LVRR-DRUM-131	R1200714-010	R1200715-010	2/2/2012	1150		1465		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
132	0.0	LVRR-DRUM-132	R1200714-001	R1200715-001	2/2/2012	1425	Water/Dirt, 75% Full, 95% Dirt	1474		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
133	0.1	LVRR-DRUM-133	R1200714-022	R1200715-022	2/2/2012	1540		1482		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
134	-	LVRR-DRUM-134	R1200757-001	NA	2/3/2012	1640	Water - HCL Preserved Sample	No Picture	Acetone	2.3 J	NA	NA	NA	2/3/2012			Price Trucking Corp 8200		007323056 JJK	2/27/2012
134	-	LVRR-DRUM-134	R1200757-001	NA	2/3/2012	1640	Water - HCL Preserved Sample	No Picture	Carbon Disulfide	0.56 J	NA	NA	NA	2/3/2012						
134	-	LVRR-DRUM-134	R1200757-001	NA	2/3/2012	1640	Water - HCL Preserved Sample	No Picture	Ethylbenzene	0.27 J	NA	NA	NA	2/3/2012						
134	-	LVRR-DRUM-134	R1200757-001	NA	2/3/2012	1640	Water - HCL Preserved Sample	No Picture	Toluene	0.60 J	NA	NA	NA	2/3/2012						
134	-	LVRR-DRUM-134	R1200757-001	NA	2/3/2012	1640	Water - HCL Preserved Sample	No Picture	Total Xylenes	1.99 J	NA	NA	NA	2/3/2012						
135	0.0	LVRR-DRUM-135	R1200693-010	R1200695-010	2/2/2012	1020	. Water/Dirt, Full 95% Dirt.Contains water and cuttings	1455		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
136	0.0	LVRR-DRUM-136	R1200763-010	R1200764-010	2/4/2012	0830	Ice/Water/Dirt, Full, 90% Dirt	1560		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
137	3.7	LVRR-DRUM-137	R1200693-011	R1200695-011	2/2/2012	0945	Poly/Dirt, Full.Contains plastic from drilling containment area with cuttings	1450		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
138	0.3	LVRR-DRUM-138	R1200693-012	R1200695-012	2/2/2012	0945		1451		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
139	0.0	LVRR-DRUM-139	R1200693-013	R1200695-013	2/2/2012	0930		1448		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
140	0.0	LVRR-DRUM-140	R1200763-004	R1200764-004	2/4/2012	0940		1565		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
141	3.2	LVRR-DRUM-141	R1200693-014	R1200695-014	2/2/2012	0925		1449		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
142	0.0	LVRR-DRUM-142	R1200693-015	R1200695-015	2/2/2012	0920		1447		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 8200		007323054 JJK	2/22/2012
143	0.0	LVRR-DRUM-143	R1200693-016	R1200695-016	2/2/2012	1000	Poly/Dirt, Full.Contains plastic from drilling containment area with cuttings	1446		ND	ND	ND	ND	2/2/2012	2/2/2012		Price Trucking Corp 1250		007323054 JJK	2/22/2012
144	0.9	LVRR-DRUM-144	R1200714-002	R1200715-002	2/2/2012	1445	Water/Dirt, Full, 95% Dirt. Contains water and cuttings	1473		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
145	0.0	LVRR-DRUM-145	R1200746-009	R1200747-009	2/3/2012	0820	Water/Dirt, Full, 98% Dirt	1500		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 1250		007323054 JJK	2/22/2012
146	0.0	LVRR-DRUM-146	R1200746-020	R1200747-020	2/3/2012	1000	Ice/Water/Dirt, 75% Full, 95% Dirt .Contains water and cuttings	1515		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
147	1.9	LVRR-DRUM-147	R1200746-019	R1200747-019	2/3/2012	1030		1516		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
148	0.0	LVRR-DRUM-148	R1200750-010	R1200751-010	2/3/2012	1355		1533		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323055 JJK	2/22/2012
149	0.0	LVRR-DRUM-149	R1200755-004	R1200756-004	2/3/2012	1715	Water/Dirt, 50% Full, 95% Dirt	1551		ND	ND	ND	ND	2/3/2012	2/3/2012	2/3/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
150	0.0	LVRR-DRUM-150	R1200763-011	R1200764-011	2/4/2012	0830	Ice/Water/Dirt, Full, 95% Dirt	1561		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
151	0.0	LVRR-DRUM-151	R1200780-025	NA	2/6/2012	1430	Water Drum	No Picture	Acetone	3.3 J	NA	NA	NA	2/6/2012			Price Trucking Corp 8200		007323056 JJK	2/27/2012
151	0.0	LVRR-DRUM-151	R1200780-025	NA	2/6/2012	1430	Water Drum	No Picture	Ethylbenzene	0.25 J	NA	NA	NA	2/6/2012						
151	0.0	LVRR-DRUM-151	R1200780-025	NA	2/6/2012	1430	Water Drum	No Picture	Methylcyclohexane	0.32 J	NA	NA	NA	2/6/2012						
151	0.0	LVRR-DRUM-151	R1200780-025	NA	2/6/2012	1430	Water Drum	No Picture	Toluene	2.8	NA	NA	NA	2/6/2012						

Table 9A
Sampling and Disposition of NYSDEC and LVRR Drums

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drum ID	PID Reading (ppm)	Sample ID	Total Lab ID	TCLP Lab ID	Sample Date	Sample Time	Comments	Assoc. Photo	Analyte Name	Total 8260 (ug/Kg) ppb	Total Cyanide (mg/Kg) ppb	Ameanable Cyanide (mg/Kg) ppb	TCLP Vinyl Chloride (ug/L) ppb	Lab Confirmation (Date)	TCLP Sub Contracted Analysis		Disposal			
															Date Sent	Date Received by UMC	Truck Co and Number	Roll-Off #	Manifest Number	Date Shipped
151	0.0	LVRR-DRUM-151	R1200780-025	NA	2/6/2012	1430	Water Drum	No Picture	Trichloroethene	0.33 J	NA	NA	NA	2/6/2012						
151	0.0	LVRR-DRUM-151	R1200780-025	NA	2/6/2012	1430	Water Drum	No Picture	Total Xylenes	1.57 J	NA	NA	NA	2/6/2012						
152	0.0	LVRR-DRUM-152	R1200780-026	NA	2/6/2012	1435	Water Drum	No Picture	Acetone	6.8	NA	NA	NA	2/6/2012			Price Trucking Corp 1250		007323054 JJK	2/22/2012
152	0.0	LVRR-DRUM-152	R1200780-026	NA	2/6/2012	1435	Water Drum	No Picture	2-Butanone (MEK)	1.3 J	NA	NA	NA	2/6/2012						
152	0.0	LVRR-DRUM-152	R1200780-026	NA	2/6/2012	1435	Water Drum	No Picture	Toluene	0.55 J	NA	NA	NA	2/6/2012						
152	0.0	LVRR-DRUM-152	R1200780-026	NA	2/6/2012	1435	Water Drum	No Picture	Total Xylenes	0.33 J	NA	NA	NA	2/6/2012						
153	0.0	LVRR-DRUM-153	R1200780-027	NA	2/6/2012	1440	Water Drum	No Picture	Acetone	6.0	NA	NA	NA	2/6/2012			Price Trucking Corp 8200		007323055 JJK	2/22/2012
153	0.0	LVRR-DRUM-153	R1200780-027	NA	2/6/2012	1440	Water Drum	No Picture	2-Butanone (MEK)	1.2 J	NA	NA	NA	2/6/2012						
153	0.0	LVRR-DRUM-153	R1200780-027	NA	2/6/2012	1440	Water Drum	No Picture	Methylcyclohexane	0.20 J	NA	NA	NA	2/6/2012						
154	0.0	LVRR-DRUM-154	R1200780-028	NA	2/6/2012	1445	Water Drum	No Picture	Acetone	4.3 J	NA	NA	NA	2/6/2012			Price Trucking Corp 8200		007323056 JJK	2/27/2012
154	0.0	LVRR-DRUM-154	R1200780-028	NA	2/6/2012	1445	Water Drum	No Picture	2-Butanone (MEK)	0.77 J	NA	NA	NA	2/6/2012						
154	0.0	LVRR-DRUM-154	R1200780-028	NA	2/6/2012	1445	Water Drum	No Picture	Methylcyclohexane	0.38 J	NA	NA	NA	2/6/2012						
154	0.0	LVRR-DRUM-154	R1200780-028	NA	2/6/2012	1445	Water Drum	No Picture	Toluene	0.51 J	NA	NA	NA	2/6/2012						
154	0.0	LVRR-DRUM-154	R1200780-028	NA	2/6/2012	1445	Water Drum	No Picture	Trichloroethene	0.50 J	NA	NA	NA	2/6/2012						
154	0.0	LVRR-DRUM-154	R1200780-028	NA	2/6/2012	1445	Water Drum	No Picture	Total Xylenes	0.37 J	NA	NA	NA	2/6/2012						
NYSDEC-001		NYSDEC-DRUM-1	R1200780-017	R1200781-017	2/6/2012	1305		1638		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-002	0.0	NYSDEC-DRUM-2	R1200763-012	R1200764-012	2/4/2012	1000		1567		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-003	0.0	NYSDEC-DRUM-3	R1200765-008	R1200766-008	2/4/2012	1055		1574		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-004	0.0	NYSDEC-DRUM-4	R1200765-009	R1200766-009	2/4/2012	1110		1577		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-005	0.0	NYSDEC-DRUM-5	R1200765-006	R1200766-006	2/4/2012	1335		1580		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-006	0.0	NYSDEC-DRUM-6	R1200780-013	R1200781-013	2/6/2012	1330	Pin sized holes in drum	1653		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-007	0.0	NYSDEC-DRUM-7	R1200765-021	R1200766-021	2/5/2012	0815	Compromised	1600		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-008	0.0	NYSDEC-DRUM-8	R1200765-024	R1200766-024	2/5/2012	0845	Compromised	1602		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-009	0.0	NYSDEC-DRUM-9	R1200765-022	R1200766-022	2/5/2012	0815		1599		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-010	0.0	NYSDEC-DRUM-10	R1200765-018	R1200766-018	2/4/2012	1610	Compromised	1592		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-011	0.0	NYSDEC-DRUM-11	R1200765-012	R1200766-012	2/4/2012	1640	Compromised	1594		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-012	0.0	NYSDEC-DRUM-12	R1200780-016	R1200781-016	2/6/2012	1135		1649		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-013	0.0	NYSDEC-DRUM-13	R1200780-014	R1200781-014	2/6/2012	1320	Pin sized holes in drum	1652		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-014	0.0	NYSDEC-DRUM-14	R1200765-023	R1200766-023	2/5/2012	0840	Compromised	1661		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-015	0.0	NYSDEC-DRUM-15	R1200765-002	R1200766-002	2/4/2012	1410	Compromised	1583		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-016	0.0	NYSDEC-DRUM-16	R1200765-001	R1200766-001	2/4/2012	1435	Compromised	1585		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-017	0.0	NYSDEC-DRUM-17	R1200765-016	R1200766-016	2/4/2012	1610		1590		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-018	0.0	NYSDEC-DRUM-18	R1200765-007	R1200766-007	2/4/2012	1335		1579		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-019	0.0	NYSDEC-DRUM-19	R1200763-003	R1200764-003	2/4/2012	1025	Compromised	1570		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-020	0.0	NYSDEC-DRUM-20	R1200763-008	R1200764-008	2/4/2012	1015		1568		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-021	0.0	NYSDEC-DRUM-21	R1200763-006	R1200764-006	2/4/2012	0955		1566		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-022	0.0	NYSDEC-DRUM-22	R1200780-019	R1200781-019	2/6/2012	1305	Compromised	1572		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-023	0.0	NYSDEC-DRUM-23	R1200780-018	R1200781-018	2/6/2012	1315		1578		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-024	0.0	NYSDEC-DRUM-24	R1200765-004	R1200766-004	2/4/2012	1425		1584		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-025	0.0	NYSDEC-DRUM-25	R1200765-015	R1200766-015	2/4/2012	1440	Compromised	1587		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-026	0.0	NYSDEC-DRUM-26	R1200780-002	R1200781-002	2/6/2012	1100	Compromised	1646		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-027	0.0	NYSDEC-DRUM-27	R1200765-026	R1200766-026	2/5/2012	0905		1604		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-028	0.0	NYSDEC-DRUM-28	R1200770-002	R1200772-002	2/5/2012	0950		1605		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-029	0.0	NYSDEC-DRUM-29	R1200780-015	R1200781-015	2/6/2012	1120		1648		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-030	0.0	NYSDEC-DRUM-30	R1200765-013	R1200766-013	2/4/2012	1700	Compromised	1596		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-031	0.0	NYSDEC-DRUM-31	R1200765-014	R1200766-014	2/4/2012	1650	Compromised	1595		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-032	0.0	NYSDEC-DRUM-32	R1200765-011	R1200766-011	2/4/2012	1630		1593		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-033	0.0	NYSDEC-DRUM-33	R1200765-019	R1200766-019	2/4/2012	1615	Compromised	1591		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-034	0.0	NYSDEC-DRUM-34	R1200765-010	R1200766-010	2/4/2012	1505	Compromised	1589		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-035	0.0	NYSDEC-DRUM-35	R1200765-017	R1200766-017	2/4/2012	1450	Compromised	1588		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-036	0.0	NYSDEC-DRUM-36	R1200765-003	R1200766-003	2/4/2012	1410	Compromised	1582		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-037	0.0	NYSDEC-DRUM-37	R1200765-005	R1200766-005	2/4/2012	1355	Compromised	1581		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-038	0.0	NYSDEC-DRUM-38	R1200765-027	NA	2/4/2012	1055	Water Drum	1575	Acetone	3.5 J	NA	NA	NA	2/5/2012			Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-039	0.0	NYSDEC-DRUM-39	R1200764-005	R1200765-005	2/4/2012	1045		1573		ND	ND	ND	ND	2/4/2012	2/4/2012	2/4/2012	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-040	0.0	NYSDEC-DRUM-40	R1200763-002	R1200764-002	2/4/2012	1035	Water Drum	1571		ND	ND	ND	ND	2/4/2012	2/4/1942	2/4/1942	Price Trucking Corp	2024	007323052 JJK	2/24/2012
NYSDEC-041	0.0	NYSDEC-DRUM-41	R1200780-004	R1200781-004	2/6/2012	1045		1644		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-042	0.0	NYSDEC-DRUM-42	R1200780-009	R1200781-009	2/6/2012	1030		1642		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-043	0.0	NYSDEC-DRUM-43	R1200765-020	R1200766-020	2/4/2012	1705	Compromised	1597		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-044	-						Drum 44 Does Not Exist	-												
NYSDEC-045	0.0	NYSDEC-DRUM-45	R1200770-005	R1200772-005	2/5/2012	1010		1607		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-046	0.0	NYSDEC-DRUM-46	R1200780-021	R1200781-021	2/6/2012	1410		1657		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-047	0.0	NYSDEC-DRUM-47	R1200765-025	R1200766-025	2/5/2012	0905		1603		ND	ND	ND	ND	2/5/2012	2/5/2012	2/14/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-048	0.0	NYSDEC-DRUM-48	R1200770-004	R1200772-004	2/5/2012	0950		1606		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-049	0.0	NYSDEC-DRUM-49	R1200780-001	R1200781-001	2/6/2012	1110		1647		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-050	0.0	NYSDEC-DRUM-50	R1200780-024	R1200781-024	2/6/2012	1415	Pin sized holes in drum	1658		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-051	0.0	NYSDEC-DRUM-51	R1200770-006	R1200772-006	2/5/2012	1035		1609		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-052	0.0	NYSDEC-DRUM-52	R1200780-007	R1200781-007	2/6/2012	1010		1641		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-053	0.0	NYSDEC-DRUM-53	R1200780-003	R1200781-003	2/6/2012	1045		1645		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-054	0.0	NYSDEC-DRUM-54	R1200780-008	R1200781-008	2/6/2012	1010		1640		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-055	0.0	NYSDEC-DRUM-55	R1200780-006	R1200781-006	2/6/2012	0940		1639		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-056	0.2	NYSDEC-DRUM-56	R1200770-001	R1200772-001	2/5/2012	1100		1611	Trichloroethene	560	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-057	0.0	NYSDEC-DRUM-57	R1200780-023	R1200781-023	2/6/2012	1400	Compromised	1656		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-058	0.0	NYSDEC-DRUM-58	R1200780-012	R1200781-012	2/6/2012	1340		1654		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-059	0.0	NYSDEC-DRUM-59	R1200770-007	R1200772-007	2/5/2012	1015		1608		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-060	0.0	NYSDEC-DRUM-60	R1200770-003	R1200772-003	2/5/2012	1045		1610		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-061	0.0	NYSDEC-DRUM-61	R1200770-011	R1200772-011	2/5/2012	1110		1612		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-062	0.0	NYSDEC-DRUM-62	R1200770-013	R1200772-013	2/5/2012	1135	Compromised	1614		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-063	0.0	NYSDEC-DRUM-63	R1200770-012	R1200772-012	2/5/2012	1120	Compromised	1613	Trichloroethene	650	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-064	0.0	NYSDEC-DRUM-64	R1200770-025	R1200772-025	2/6/2012	0905		1637		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-065	0.0	NYSDEC-DRUM-65	R1200780-010	R1200781-010	2/6/2012	1035		1643		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012

Table 9A
Sampling and Disposition of NYSDEC and LVRR Drums

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Drum ID	PID Reading (ppm)	Sample ID	Total Lab ID	TCLP Lab ID	Sample Date	Sample Time	Comments	Assoc. Photo	Analyte Name	Total 8260 (ug/Kg) ppb	Total Cyanide (mg/Kg) ppb	Ameanable Cyanide (mg/Kg) ppb	TCLP Vinyl Chloride (ug/L) ppb	Lab Confirmation (Date)	TCLP Sub Contracted Analysis		Disposal			
															Date Sent	Date Received by UMC	Truck Co and Number	Roll-Off #	Manifest Number	Date Shipped
NYSDEC-066	0.0	NYSDEC-DRUM-66	R1200770-009	R1200772-009	2/5/2012	1345	Compromised	1618		ND	0.35	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-067	0.0	NYSDEC-DRUM-67	R1200770-022	R1200772-022	2/5/2012	1355		1620	Trichloroethene	1100	0.81	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp 8200		007323056 JJK	2/27/2012
NYSDEC-068	0.0	NYSDEC-DRUM-68	R1200770-021	R1200772-021	2/5/2012	1420	Compromised	1622	Trichloroethene	240	0.116	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-069	0.0	NYSDEC-DRUM-69	R1200770-018	R1200772-018	2/5/2012	1445	Compromised	1628		ND	2.04	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-070	0.0	NYSDEC-DRUM-70	R1200780-011	R1200781-011	2/6/2012	1345		1629	Trichloroethene	310	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-071	0.0	NYSDEC-DRUM-71	R1200771-031	R1200772-031	2/6/2012	0755		1630	Trichloroethene	350	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-072	0.0	NYSDEC-DRUM-72	R1200771-016	R1200772-016	2/5/2012	1525	Compromised	1625	Trichloroethene	160	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-073	0.0	NYSDEC-DRUM-73	R1200780-005	R1200781-005	2/6/2012	0925		1638		ND	ND	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-074	0.0	NYSDEC-DRUM-74	R1200770-017	R1200772-017	2/5/2012	1510	Compromised	1624		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-075	0.0	NYSDEC-DRUM-75	R1200770-019	R1200772-019	2/5/2012	1445	Compromised	1626		ND	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2026	007323053 JJK	2/27/2012
NYSDEC-076	0.0	NYSDEC-DRUM-76	R1200770-030	R1200772-030	2/6/2012	0745	Compromised	1627	Trichloroethene	1700	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2026	007323053 JJK	2/27/2012
NYSDEC-077	0.0	NYSDEC-DRUM-77	R1200770-020	R1200772-020	2/5/2012	1430		1623	Trichloroethene	220	ND	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2026	007323053 JJK	2/27/2012
NYSDEC-078	0.0	NYSDEC-DRUM-78	R1200770-028	R1200772-028	2/6/2012	0820		1632		ND	0.36	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-079	0.0	NYSDEC-DRUM-79	R1200770-029	R1200772-029	2/6/2012	0805	Compromised	1631	Trichloroethene	180	0.26	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-080	0.0	NYSDEC-DRUM-80	R1200770-023	R1200772-023	2/5/2012	1410	Compromised	1621		ND	0.14	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2026	007323053 JJK	2/27/2012
NYSDEC-081	0.0	NYSDEC-DRUM-81	R1200780-022	R1200781-022	2/6/2012	1355		1655	Trichloroethene	4300	0.61	ND	ND	2/6/2012	2/6/2012	2/7/2012	Price Trucking Corp	2026	007323053 JJK	2/27/2012
NYSDEC-082	0.0	NYSDEC-DRUM-82	R1200770-027	R1200772-027	2/6/2012	0840	Compromised	1633	Trichloroethene	220	0.43	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-083	0.0	NYSDEC-DRUM-83	R1200770-008	R1200772-008	2/5/2012	1345		1619		ND	0.739	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2026	007323053 JJK	2/27/2012
NYSDEC-084	0.0	NYSDEC-DRUM-84	R1200770-024	R1200772-024	2/6/2012	0900		1636	Trichloroethene	600	0.77	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-085	0.0	NYSDEC-DRUM-85	R1200770-015	R1200772-015	2/5/2012	1325	Compromised	1617		ND	0.15	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-086	0.0	NYSDEC-DRUM-86	R1200770-010	R1200772-010	2/5/2012	1325	Compromised	1616	Trichloroethene	190	0.476	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-087	0.0	NYSDEC-DRUM-87	R1200770-014	R1200772-014	2/5/2012	1140	Compromised	1615		ND	0.115	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012
NYSDEC-088	0.0	NYSDEC-DRUM-88	R1200770-026	R1200772-026	2/6/2012	0840		1635	Trichloroethene	500	1.02	ND	ND	2/6/2012	2/6/2012	2/10/2012	Price Trucking Corp	2028	007323051 JJK	2/24/2012

Notes:

<2.0: Not detected at indicated detection level.

ND: Not Detected - detection limit unavailable.

J: Estimated value

BDL: Below Detection Limit

B: Compound was also detected in blank.

PQL: Practical Quantitation Limit.

NA: Not Analyzed for this parameter.

NS: No Standard.

 - : Information not available.

Bolded values are above standards

As new information is submitted, please save a file as Rev. 1, Rev. 2, Rev. 3……ect

Table 9B
Summary of Liquid Waste Analytical Results

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Sample Date	**6/10/2010**	**6/29/2010**	**8/5/2010**	**8/18/2010**	**8/26/2010**	**10/7/2010**	**10/22/2010**	**4/11/2012**		**Water Quality Stardard**
								Purge 1	**Purge 2**	
TCE	0.57J	0.6J	0.21J	1.1	0.41J	4.3	<1	<10	7.5J	5
c-DCE	<1	0.34J	<1	<1	<1	<1	<1	<10	<1	5
t-DCE	<1	<1	<1	<1	<1	<1	<1	<10	<1	5
VC	<1	<1	<1	<1	<1	<1	<1	<10	<1	2
Chloroform	<1	1.1	<1	0.28J	0.25J	<1	21	<10	<1	7
Acetone	11	3.8J	<5	<5	<5	<5	2.4J	<50	13J	NE
Toluene	41.4	0.25J	<1	<1	0.31J	<1	0.23J	<1	2.9J	5
Benzene	0.52J	<1	<1	<1	<1	<1	<1	<1	<1	1
MEK	1.1J	<1	<1	<1	<1	<1	<1	<1	<1	50
Cyclohexane	1	<1	<1	<1	<1	<1	<1	<1	<1	NE
Methylcyclohexane	1.3	<1	<1	<1	0.31J	<1	0.93J	<1	<1	NE
Bromodichloromethane	<1	<1	3.1	<1	<1	<1	7.2	<1	<1	NE
Dibromochloromethane	<1	<1	0.46J	<1	<1	<1	2.8	<1	<1	5
Bromoform	<1	<1	<1	<1	<1	<1	0.33J	<1	<1	NE
Chloromethane	<1	<1	<1	<1	<1	<1	0.52J	<1	<1	NE

Notes:
All concentrations are in micrograms per liter (ug/l)
J - Estimated concentration below laboratory reporting limit
NE - Criteria not established

Table 10
Generalized Stratigraphic Column

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Lehigh Valley Railroad Derailment Superfund Site
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Age	Formation	Member	Significant Features
DEVONIAN	Onondaga	Seneca	**Tioga Bentonite**
		Moorehouse	
		Nedrow	
		Clarence	
		Edgecliff	
	Bois Blanc	NA	**Walbridge Disconformity**
SILURIAN	Akron	NA	
	Bertie	Williamsville	
		Scajaquada	
		Falkirk	
	Camillus	NA	Gypsiferous/Rubbleized at Base
	Syracuse	NA	

Notes:

NA = Member Designation Not Applicable

Table 11
FLUTe Profiling Hydrogeologic Data

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Monitoring Well	Onondaga Fm.		Bois Blanc Fm.		Akron Fm.		Bertie Fm.		Camillus Fm.		Syracuse Fm.	
	K	T	K	T	K	T	K	T	K	T	K	T
LVRR-18	NU	NU	NU	NU	NP	NP	0.0015	0.005	0.1	2.25	NU	NU
LVRR-20	NU	NU	NU	NU	NP	NP	0.004	0.1	0.008	0.2	NU	NU
LVRR-21	NU	NU	NU	NU	NU	NU	NU	NU	0.04	1.25	0.03	0.8
LVRR-26	0.12	4	NP	NP	0.09	3	0.3	8	0.05	2	NU	NU
LVRR-27	NU	NU	NU	NU	NP	NP	E	20	E	90	NU	NU
LVRR-28	NU	NU	NU	NU	NP	NP	E	NU	E	3	NU	NU
LVRR-29	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
LVRR-30	NU	NU	NU	NU	NP	NP	0.09	4	0.1	3	NU	NU
LVRR-31	E	50	NU	NU	NU	NU	E	10	E	1	NU	NU
LVRR-32	NU	NU	NU	NU	NU	NU	0.2	7	0.05	4	NU	NU
LVRR-33	NU	NU	NU	NU	NU	NU	NU	NU	0.02	0.5	NU	NU
LVRR-34	0.0015	0.1	0.001	0.02	NP	NP	0.001	0.02	0.005	0.15	NU	NU
LVRR-35	NU	NU	NU	NU	NP	NP	0.03	1	0.3	11	NU	NU

Notes:

K - Hydraulic Conductivity in centimeters per second (cm/s)

T - Transmissivity in cubic centimeters per second (cm^2/s)

NU - Indicates FLUTe profiling data was not usable

NP - Indicates formation is not present in the boring

E - Indicates test exceeded equipment calibration

Table 12
Borehole Geophysical Flow Meter Findings

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
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	Upgradient Wells		Source Area Well	Neid Road Well	Church Road Wells				Mid Plume Wells				
Depth	**LVRR-18**	**LVRR-34**	**LVRR-35**	**LVRR-20**	**LVRR-27**	**LVRR-28**	**LVRR-29**	**LVRR-30**	**LVRR-21**	**LVRR-26**	**LVRR-31**	**LVRR-32**	**LVRR-33**
5													
10													
15													
20													
25													
30													
35				No flow									
40													
45				No flow									
50			Up							Down			
55	Down			Up									
60	Down	Down		Up		Slightly up	No flow		Up	No flow	Down	No flow	
65			Up			Up			Up				
70	Down	Down					No flow		Up	No flow	Down		
75		Down	Down	Up		Up						No flow	
80							Up			Up	Up		No flow
85	Down		Down	Up		Up			No flow			Down	
90		Down		Up			Up			Up			No flow
95	Down		Down		Down	Up		Slightly up	Up		Up	Down	No flow
100	Down	Down		Up	Down		Up	Slightly up		Up	Up	Down	
105						Up							
110	Down	Down	Down	Up	Down	Up	Up		No flow	Up	Up	Down	No flow
115								Up					
120		Down		Up	Slightly up	Up	Up		No flow		Up	No flow	
125	Down			Up			Up	Up		Down			No flow
130		Down				Up	No flow				Up	No flow	
135		Down	Down		Slightly up	Up		Up		Down	Up		Down
140	Down		Down				No flow				Up	No flow	
145					Slightly up			Up		Down			
150	Down		Down			Up						Up	Down
155	Up				Slightly up	Up				Down			
160								Up					Down
165	Up				Slightly up								Up
170										Down			
175					Slightly up			Up					
180													
185					Slightly up					No flow			
190													
195					Slightly up								
200													
205					Slightly up								
210													
215					Slightly up								

Table 13A
Stream Sediment Analytical Results
VOCs

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Lehigh Valley Railroad Derailment Superfund Site
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Unicorn Management Consultants, LLC

Drainage Area	↓ Oatka Creek Drainage ↓											NYSDEC Sediment Calculation Criteria (ug/gOC)				
Sample ID	LVRRSD-32	LVRRSD-34	LVRRSD-37	LVRRSD-38	LVRRSD-40	LVRRSD-41	LVRRSD-51	DUPLICATE-SD (LVRRSD-51)	LVRRSD-52	LVRRSD-53	LVRRSD-54	Site-Specific SCG^	Human Health Bioaccumulation	Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation
Date Sampled	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009					
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment					
Dillution Factor	1.49	1.52	1.44	1.34	1.36	1.64	0.98	0.98	1.05	1.13	1.06					
Total Organic Carbon (g/Kg)	167 J	272 J	747	121	49.3 J	74.7 J	24.9	20.2	34.5	35.7	38.5	NE	NE	NE	NE	NE
Total Solids	20.8	17.8	55.3	30.7	34.2	49.6	67.3	69.4	63.8	54.9	58.5	NE	NE	NE	NE	NE
Volatile Organic Compounds																
Acetone	41 J	150 J	52 J	23 J	86 J	250 J	3.6 J	8.6 J	7.3 J	27 J	20 J	NE	NE	NE	NE	NE
2-Butanone (MEK)	8.1 J	21 J	8.2 J	44 UJ	10 J	21 J	15 U	14 U	16 U	2.7 J	18 U	NE	NE	NE	NE	NE
Carbon Disulfide	72 UJ	85 UJ	26 U	44 UJ	40 UJ	33 UJ	15 UJ	14 U	16 U	1.5 J	18 U	NE	NE	NE	NE	NE
cis-1,2-Dichloroethene	36 UJ	43 UJ	13 U	22 UJ	20 UJ	17 UJ	7.3 U	7.1 U	8.2 U	10 U	9.1 U	NE	NE	NE	NE	NE
Ethylbenzene	36 UJ	43 UJ	13 U	22 UJ	20 UJ	17 UJ	7.3 U	7.1 U	8.2 U	10 U	9.1 U	NE	NE	212	24	NE
Isopropylbenzene	36 UJ	43 UJ	13 U	22 UJ	20 UJ	17 UJ	7.3 U	7.1 U	8.2 U	10 U	9.1 U	NE	NE	105	12	NE
Styrene	36 UJ	43 UJ	13 U	22 UJ	20 UJ	17 UJ	7.3 U	7.1 U	8.2 U	10 U	9.1 U	NE	NE	NE	NE	NE
Toluene	36 UJ	6.1 J	1.6 J	22 UJ	2.1 J	4.4 J	0.79 J	0.88 J	8.2 U	0.86 J	1.5 J	NE	NE	235	49	NE
Trichloroethene	36 UJ	43 UJ	13 U	22 UJ	20 UJ	17 UJ	7.3 U	7.1 U	8.2 U	10 U	9.1 U	46	2.0	NE	NE	NE
o-Xylene	36 UJ	43 UJ	13 U	22 UJ	20 UJ	17 UJ	7.3 U	7.1 U	8.2 U	10 U	9.1 U	NE	NE	833	92	NE
m,p-Xylenes	37 UJ	44 UJ	14 U	23 UJ	21 UJ	18 UJ	8.3 U	8.1 U	9.2 U	11 U	10.1 U	NE	NE	833	92	NE
Total Xylenes	73 UJ	87 UJ	27 U	45 UJ	41 UJ	35 UJ	15.6 U	15.2 U	17.4 U	21 U	19.2 U	NE	NE	833	92	NE

Drainage Area	↓ Oatka Creek Drainage ↓		↓ Mud Creek Drainage ↓							↓ Gorge Pond Drainage ↓		NYSDEC Sediment Calculation Criteria (ug/gOC)				
Sample ID	LVRRSD-55	LVRRSD-48	LVRRSD-08	LVRRSD-03	LVRRSD-04	LVRRSD-57	LVRRSD-00	LVRRSD-56	DUPLICATE-SD (LRRSD-56)	LVRRSD-49	LVRRSD-50	Site-Specific SCG^	Human Health Bioaccumulation	Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation
Date Sampled	12/16/2009	12/18/2009	12/16/2009	12/16/2009	12/16/2009	12/16/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009					
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment					
Dillution Factor	1.05	1.14	1.48	0.8	1.37	1.16	0.91	1.08	1.06	1.23	0.85					
Total Organic Carbon (g/Kg)	50.9 J	53.1 J	65.1 J	17.8	77.8 J	167	42.2	13	17.5	84.7 J	7.5	NE	NE	NE	NE	NE
Total Solids	49.6	49	24	83.8	34.6	53.9	82.9	62	60.7	46.2	69	NE	NE	NE	NE	NE
Volatile Organic Compounds																
Acetone	15 J	25 J	190 J	19 U	78 J	87 J	5.7 J	4.5 J	4.4 J	53 UJ	25 U	NE	NE	NE	NE	NE
2-Butanone (MEK)	4.0 J	5.0 J	27 J	9.5 U	9.4 J	17 J	11 U	17 U	17 U	27 UJ	12 U	NE	NE	NE	NE	NE
Carbon Disulfide	21 UJ	23 UJ	62 UJ	9.5 U	40 UJ	3.2 J	11 U	17 UJ	17 U	27 UJ	12 U	NE	NE	NE	NE	NE
cis-1,2-Dichloroethene	11 UJ	12 UJ	31 UJ	0.8 J	20 UJ	11 U	5.5 U	0.98 J	0.87 J	13 UJ	6.2 U	NE	NE	NE	NE	NE
Ethylbenzene	11 UJ	12 UJ	31 UJ	4.8 U	20 UJ	2.3 J	5.5 U	8.7 U	8.7 U	13 UJ	6.2 U	NE	NE	212	24	NE
Isopropylbenzene	11 UJ	2.9 J	31 UJ	4.8 U	20 UJ	2.3 J	5.5 U	8.7 U	8.7 U	13 UJ	6.2 U	NE	NE	105	12	NE
Styrene	11 UJ	12 UJ	31 UJ	4.8 U	20 UJ	1.5 J	5.5 U	8.7 UJ	8.7 U	13 UJ	6.2 U	NE	NE	NE	NE	NE
Toluene	11 UJ	12 UJ	31 UJ	0.51 J	1.3 J	1.5 J	0.61 J	8.7 U	8.7 U	13 UJ	6.2 U	NE	NE	235	49	NE
Trichloroethene	11 UJ	12 UJ	31 UJ	48	20 UJ	11 U	5.5 U	3.7 J	2.6 J	13 UJ	6.2 U	46	2.0	NE	NE	NE
o-Xylene	11 UJ	19 J	31 UJ	4.8 U	20 UJ	2.3 J	5.5 U	8.7 U	8.7 U	13 UJ	6.2 U	NE	NE	833	92	NE
m,p-Xylenes	11 UJ	13 J	31 UJ	4.8 U	20 UJ	2.3 J	5.5 U	8.7 U	8.7 U	13 UJ	6.2 U	NE	NE	833	92	NE
Total Xylenes	22 UJ	32 J	62 UJ	9.6 U	40 UJ	4.6 J	11 U	17.4 U	17.4 U	26 UJ	12.4 U	NE	NE	833	92	NE

Total Organic Carbon concentrations are in milligrams per kilogram (g/kg).
All concentrations are in micrograms per kilogram (ug/kg).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
^ -Pursuant to the USEPA memo dated May 15, 2002, the New York State Department of Environmental Conservation Standards Criteria Guidance for TCE of 46 ug/l is the applicable site-specific groundwater standard for the analyte.

Sediment Criteria from NYSDEC Technical Guidance for Screening Contaminated Sediments
- Exceeds Human Health Bioaccumulation
- Exceeds Benthic Aquatic Life Acute Tocicity
- Exceeds Benthic Aquatic Life Chronic Tocicity
- Exceeds Wildlife Bioaccumulation

Unicorn Management Consultants, LLC

Table 13A
Stream Sediment Analytical Results
VOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Spring Creek Drainage ↓											NYSDEC Sediment Calculation Criteria (ug/gOC)				
Sample ID	LVRRSD-10	LVRRSD-11	LVRRSD-12	LVRRSD-13	LVRRSD-14	LVRRSD-17	LVRRSD-18	LVRRSD-19	LVRRSD-20	LVRRSD-22	LVRRSD-23	Site-Specific SCG^	Human Health Bioaccumulation	Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation
Date Sampled	12/17/2009	12/17/2009	12/17/2009	12/17/2009	12/18/2009	12/17/2009	12/18/2009	12/17/2009	12/18/2009	12/17/2009	12/17/2009					
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment					
Dillution Factor	1.73	1.34	0.98	1.07	1.04	1.32	0.98	0.85	1.36	0.82	0.92					
Total Organic Carbon (g/Kg)	113 J	91.7 J	13.9	13.2	61.1	30.9 J	17.2	5.9	43.9 J	3.6	10.6	NE	NE	NE	NE	NE
Total Solids	32.2	38.6	88.5	67.9	69.8	39	81.8	82.4	47.1	85.6	81.8	NE	NE	NE	NE	NE
Volatile Organic Compounds																
Acetone	390 J	130 J	22 UJ	34 J	7.7 J	68 UJ	2.9 J	21 UJ	10 J	19 U	22 U	NE	NE	NE	NE	NE
2-Butanone (MEK)	95 J	40 J	11 U	5.6 J	15 U	34 UJ	12 U	10 U	29 UJ	9.6 U	11 U	NE	NE	NE	NE	NE
Carbon Disulfide	4.6 J	2.6 J	11 U	3.1 J	15 U	34 UJ	12 U	10 U	29 UJ	9.6 U	11 U	NE	NE	NE	NE	NE
cis-1,2-Dichloroethene	27 UJ	17 UJ	5.5 U	1.0 J	7.4 U	17.0 UJ	6.0 U	5.2 U	14 UJ	4.8 U	5.6 U	NE	NE	NE	NE	NE
Ethylbenzene	27 UJ	17 UJ	5.5 U	7.9 U	7.4 U	17.0 UJ	6.0 U	5.2 U	14 UJ	4.8 U	5.6 U	NE	NE	212	24	NE
Isopropylbenzene	27 UJ	17 UJ	5.5 U	7.9 U	7.4 U	17.0 UJ	6.0 U	5.2 U	14 UJ	4.8 U	5.6 U	NE	NE	105	12	NE
Styrene	27 UJ	17 UJ	5.5 U	7.9 U	7.4 U	17.0 UJ	6.0 U	5.2 U	14 UJ	4.8 U	5.6 U	NE	NE	NE	NE	NE
Toluene	27 UJ	17 UJ	5.5 U	1.1 J	7.4 U	17.0 UJ	6.0 U	5.2 U	14 UJ	4.8 U	5.6 U	NE	NE	235	49	NE
Trichloroethene	27 UJ	17 UJ	1.4 J	7.9 U	2.0 J	9.7 J	0.78 J	0.48 J	4.4 J	4.8 U	0.78 J	46	2.0	NE	NE	NE
o-Xylene	27 UJ	17 UJ	5.5 U	7.9 U	7.4 U	17.0 UJ	6.0 U	5.2 U	14 UJ	4.8 U	5.6 U	NE	NE	833	92	NE
m,p-Xylenes	27 UJ	17 UJ	5.5 U	7.9 U	7.4 U	17.0 UJ	6.0 U	5.2 U	14 UJ	4.8 U	5.6 U	NE	NE	833	92	NE
Total Xylenes	54 UJ	34 UJ	11 U	15.8 U	14.8 U	34 UJ	12 U	10.4 U	28 UJ	9.6 U	11.2 U	NE	NE	833	92	NE

Drainage Area	↓ Spring Creek Drainage ↓											NYSDEC Sediment Calculation Criteria (ug/gOC)				
Sample ID	LVRRSD-24	LVRRSD-42	LVRRSD-25	LVRRSD-43	LVRRSD-45	MACKAY-SED-01	MACKAY-SED-02	SPRING-SED-01	SPRING-SED-02	SPRING-SED-03	SPRING-SED-04	Site-Specific SCG^	Human Health Bioaccumulation	Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation
Date Sampled	12/16/2009	12/16/2009	12/17/2009	12/16/2009	12/17/2009	1/25/2012	1/25/2012	1/25/2012	1/25/2012	1/25/2012	1/25/2012					
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment					
Dillution Factor	1.39	0.86	0.87	1.29	0.95	1.38	1.3	1.48	1.24	0.94	1.15					
Total Organic Carbon (g/Kg)	203 J	9.9	7.1	43.9 J	28.3	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE	NE
Total Solids	46.2	74.4	79.1	34.9	73	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE	NE
Volatile Organic Compounds																
Acetone	9.1 J	5.8 J	22 UJ	130 J	26 UJ	29	6.5 U	8.5	2.6 J	26	1.6 J	NE	NE	NE	NE	NE
2-Butanone (MEK)	30 UJ	12 U	11 U	32 J	13 U	5.6 J	6.5 U	7.4 U	6.2 U	8.5	5.8 U	NE	NE	NE	NE	NE
Carbon Disulfide	30 UJ	12 U	11 U	7.6 J	13 U	1.4 U	1.3 U	1.5 U	1.2 U	1.5	1.2 U	NE	NE	NE	NE	NE
cis-1,2-Dichloroethene	15 UJ	5.8 U	5.5 U	18 UJ	6.5 U	1.4 U	1.3 U	1.5 U	1.2 U	0.94 U	1.2 U	NE	NE	NE	NE	NE
Ethylbenzene	15 UJ	5.8 U	5.5 U	18 UJ	6.5 U	1.4 U	1.3 U	1.5 U	1.2 U	0.94 U	1.2 U	NE	NE	212	24	NE
Isopropylbenzene	15 UJ	5.8 U	5.5 U	18 UJ	6.5 U	1.4 U	1.3 U	1.5 U	1.2 U	0.94 U	1.2 U	NE	NE	105	12	NE
Styrene	15 UJ	5.8 U	5.5 U	18 UJ	6.5 U	1.4 U	1.3 U	1.5 U	1.2 U	0.94 U	1.2 U	NE	NE	NE	NE	NE
Toluene	15 UJ	5.8 U	5.5 U	18 UJ	6.5 U	1.4 U	1.3 U	1.5 U	1.2 U	0.94 U	1.2 U	NE	NE	235	49	NE
Trichloroethene	15 UJ	5.8 U	5.5 U	18 UJ	0.61 J	1.4 U	1.3 U	1.5 U	1.2 U	0.94 U	1.2 U	46	2.0	NE	NE	NE
o-Xylene	15 UJ	5.8 U	5.5 U	18 UJ	6.5 U	1.4 U	1.3 U	1.5 U	1.2 U	0.94 U	1.2 U	NE	NE	833	92	NE
m,p-Xylenes	15 UJ	5.8 U	5.5 U	18 UJ	6.5 U	2.8 U	1.3 U	3.0 U	2.5 U	1.9 U	2.3 U	NE	NE	833	92	NE
Total Xylenes	30 UJ	11.6 U	11 U	36 UJ	13 U	4.2 U	2.6 U	4.5 U	3.7 U	2.8 U	3.5 U	NE	NE	833	92	NE

Total Organic Carbon concentrations are in milligrams per kilogram (g/kg).
All concentrations are in micrograms per kilogram (ug/kg).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
^ -Pursuant to the USEPA memo dated May 15, 2002, the New York State Department of Environmental Conservation Standards Criteria Guidance for TCE of 46 ug/l is the applicable site-specific groundwater standard for the analyte.

Sediment Criteria from NYSDEC Technical Guidance for Screening Contaminated Sediments
Exceeds Human Health Bioaccumulation
Exceeds Benthic Aquatic Life Acute Tocicity
Exceeds Benthic Aquatic Life Chronic Tocicity
Exceeds Wildlife Bioaccumulation

Table 13A
Stream Sediment Analytical Results
VOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Spring Creek Drainage ↓				↓ Wetland East of Spring Creek Drainage ↓																
Sample ID	SPRING-SED-05				FD091218B		LVRRSD-28		DUPLICATE-SD (LVRRSD-28)		LVRRSD-29						NYSDEC Sediment Calculation Criteria (ug/gOC)				
Date Sampled / Matrix / Dilution Factor	1/25/2012 Sediment 1.59				12/18/2009 Sediment 1.28		12/18/2009 Sediment 1.52		12/18/2009 Sediment 1.45		12/18/2009 Sediment 1.57						Site-Specific SCG^	Human Health Bioaccumulation	Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation
Total Organic Carbon (g/Kg)	NA				66.6	J	208	J	199	J	261	J					NE	NE	NE	NE	NE
Total Solids	NA				40.5		27.8		28.8		31.2						NE	NE	NE	NE	NE
Volatile Organic Compounds																					
Acetone	8	UJ			8.9	J	11	J	14	J	44	J					NE	NE	NE	NE	NE
2-Butanone (MEK)	8	UJ			32	UJ	55	UJ	50	UJ	50	UJ					NE	NE	NE	NE	NE
Carbon Disulfide	1.6	UJ			32	UJ	55	UJ	50	UJ	50	UJ					NE	NE	NE	NE	NE
cis-1,2-Dichloroethene	1.6	UJ			16	UJ	27	UJ	25	UJ	25	UJ					NE	NE	NE	NE	NE
Ethylbenzene	1.6	UJ			16	UJ	27	UJ	25	UJ	25	UJ					NE	NE	212	24	NE
Isopropylbenzene	1.6	UJ			16	UJ	27	UJ	25	UJ	25	UJ					NE	NE	105	12	NE
Styrene	1.6	UJ			16	UJ	27	UJ	25	UJ	25	UJ					NE	NE	NE	NE	NE
Toluene	1.6	UJ			16	UJ	27	UJ	25	UJ	25	UJ					NE	NE	235	49	NE
Trichloroethene	2.8	J			3.8	J	27	UJ	25	UJ	25	UJ					46	2.0	NE	NE	NE
o-Xylene	1.6	UJ			16	UJ	27	UJ	25	UJ	25	UJ					NE	NE	833	92	NE
m,p-Xylenes	3.2	UJ			16	UJ	27	UJ	25	UJ	25	UJ					NE	NE	833	92	NE
Total Xylenes	4.8	UJ			32	UJ	54	UJ	50	UJ	50	UJ					NE	NE	833	92	NE

Total Organic Carbon concentrations are in milligrams per kilogram (g/kg).
All concentrations are in micrograms per kilogram (ug/kg).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
^ -Pursuant to the USEPA memo dated May 15, 2002, the New York State Department of Environmental Conservation Standards Criteria Guidance for TCE of 46 ug/l is the applicable site-specific groundwater standard for the analyte.

Sediment Criteria from NYSDEC Technical Guidance for Screening Contaminated Sediments
- (red) Exceeds Human Health Bioaccumulation
- (orange) Exceeds Benthic Aquatic Life Acute Tocicity
- (blue) Exceeds Benthic Aquatic Life Chronic Tocicity
- (yellow) Exceeds Wildlife Bioaccumulation

Table 13B
Stream Sediment Analytical Results
Cyanide

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Oatka Creek Drainage ↓												
Sample ID	LVRRSD-32	LVRRSD-34	LVRRSD-37	LVRRSD-38	LVRRSD-40	LVRRSD-41	LVRRSD-51	DUPLICATE-SD (LVRRSD-51)	LVRRSD-52	LVRRSD-53	LVRRSD-54	LVRRSD-55	LVRRSD-48
Date Sampled	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/16/2009	12/18/2009
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Dillution Factor	1	1	1	1	1	1	1	1	1	1	1	1	1
Cyanide	4.3 UJ	4.1 UJ	1.7 U	3.2 UJ	2.1 UJ	1.5 UJ	1.0 U	1.4 U	1.5 U	1.8 U	1.3 U	1.9 UJ	1.6 UJ

Drainage Area	↓ Mud Creek Drainage ↓							↓ Gorge Pond Drainage ↓		↓ Spring Creek Drainage ↓			
Sample ID	LVRRSD-08	LVRRSD-03	LVRRSD-04	LVRRSD-57	LVRRSD-00	LVRRSD-56	DUPLICATE-SD (LVRRSD-56)	LVRRSD-49	LVRRSD-50	LVRRSD-10	LVRRSD-11	LVRRSD-12	LVRRSD-13
Date Sampled	12/16/2009	12/16/2009	12/16/2009	12/16/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Dillution Factor	1	1	1	1	1	1	1	1	1	1	1	1	1
Cyanide	4 UJ	0.99 U	2.8 UJ	1.7 U	0.99 U	1.5 U	1.3 U	1.7 UJ	1.2 U	2.5 UJ	2.6 UJ	1.0 U	1.1 U

Drainage Area	↓ Spring Creek Drainage ↓											
Sample ID	LVRRSD-14	LVRRSD-17	LVRRSD-18	LVRRSD-19	LVRRSD-20	FD091218B (LVRRSD-20)	LVRRSD-22	LVRRSD-23	LVRRSD-24	LVRRSD-25	LVRRSD-42	LVRRSD-43
Date Sampled	12/18/2009	12/17/2009	12/18/2009	12/17/2009	12/18/2009	12/18/2009	12/17/2009	12/17/2009	12/16/2009	12/17/2009	12/16/2009	12/16/2009
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Dillution Factor	1	1	1	1	1	1	1	1	1	1	1	1
Cyanide	1.2 U	2.2 UJ	1.0 U	0.96 U	1.8 UJ	2.0 U	0.86 U	1.1 U	2.0 UJ	1.0 U	1.2 U	2.7 UJ

Drainage Area	↓ Gorge Pond Drainage ↓			
Sample ID	LVRRSD-45	LVRRSD-28	DUPLICATE SD (LVRRSD-28)	LVRRSD-29
Date Sampled	12/17/2009	12/18/2009	12/18/2009	12/18/2009
Matrix	Sediment	Sediment	Sediment	Sediment
Dillution Factor	1	1	1	1
Cyanide	1.3 U	3.5 UJ	3.2 UJ	3.1 UJ

All concentrations are in micrograms per kilogram (mg/kg).
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Table 13C
Stream Sediment Analytical Results
SVOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	**↓ Mud Creek Drainage ↓**								**↓ Oatka Creek ↓**		**↓ Wetland E. of Spring Creek ↓**							
Sample ID	**LVRRSD-03**		**LVRRSD-04**		**LVRRSD-08**		**LVRRSD-57**		**LVRRSD-55**		**LVRRSD-28**		**DUPLICATE-SD (LVRRSD-28)**		**NYSDEC Sediment Calculation Criteria (ug/gOC)**			
Date Sampled	**12/16/2009**		**12/16/2009**		**12/16/2009**		**12/16/2009**		**12/16/2009**		**12/18/2009**		**12/18/2009**		**Human Health Bioaccumulation**	**Benthic Aquatic Life Acute Toxicity**	**Benthic Aquatic Life Chronic Toxicity**	**Wildlife Bioaccumulation**
Matrix	**Sediment**		**Sediment**		**Sediment**		**Sediment**		**Sediment**		**Sediment**		**Sediment**					
Total Organic Carbon (g/kg)	**17.8**		**77.8**		**65.1**		**167**		**50.9**		**208**		**19.9**					
Dillution Factor	**1**		**1**		**1**		**1**		**1**		**1**		**1**					
ACENAPHTHENE	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	140	NE
ACENAPHTHYLENE	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	NE	NE
ANTHRACENE	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	986	107	NE
BENZ(A)ANTHRACENE	390	U	950	UJ	1400	UJ	610	U	180	J	1200	UJ	1100	UJ	NE	94	12	NE
BENZO(A)PYRENE	390	U	950	UJ	1400	UJ	610	U	150	J	1200	UJ	1100	UJ	1.3	NE	NE	NE
BENZO(B)FLUORANTHENE	390	U	950	UJ	1400	UJ	610	U	170	J	1200	UJ	1100	UJ	NE	NE	NE	NE
BENZO(G,H,I)PERYLENE	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	NE	NE
BENZO(K)FLUORANTHENE	390	U	950	UJ	1400	UJ	610	U	130	J	1200	UJ	1100	UJ	NE	NE	NE	NE
BENZYL ALCOHOL	390	U	950	UJ	1400	UJ	610	U	89	J	1200	UJ	1100	UJ	NE	NE	NE	NE
BIS(2-ETHYLHEXYL) PHTHALATE	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	NE	NE
CHRYSENE	390	U	950	UJ	1400	UJ	610	U	170	J	1200	UJ	1100	UJ	NE	NE	NE	NE
DIBENZ(A,H)ANTHRACENE	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	NE	NE
DIBENZOFURAN	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	NE	NE
FLUORANTHENE	390	U	950	UJ	1400	UJ	610	U	330	J	1200	UJ	1100	UJ	NE	NE	1020	NE
FLUORENE	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	NE	NE
INDENO(1,2,3-CD)PYRENE	390	U	950	UJ	1400	UJ	610	U	91	J	1200	UJ	1100	UJ	NE	NE	NE	NE
NAPHTHALENE	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	NE	NE
PHENANTHRENE	390	U	950	UJ	1400	UJ	610	U	120	J	1200	UJ	1100	UJ	NE	NE	120	NE
PHENOL	390	U	950	UJ	1400	UJ	610	U	670	UJ	1200	UJ	1100	UJ	NE	NE	0.5	NE
PYRENE	390	U	950	UJ	1400	UJ	610	U	280	J	1200	UJ	1100	UJ	NE	8775	961	NE

Total Organic Carbon concentrations are in milligrams per kilogram (g/kg)
All concentrations are in micrograms per kilogram (ug/kg).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Sediment Criteria from NYSDEC Technical Guidance for Screening Contaminated Sediments
Exceeds Human Health Bioaccumulation
Exceeds Benthic Aquatic Life Acute Tocicity
Exceeds Benthic Aquatic Life Chronic Tocicity
Exceeds Wildlife Bioaccumulation

Table 13D
Stream Sediment Analytical Results
Metals

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek Drainage ↓								↓ Oatka Creek ↓		↓ Wetland E. of Spring Creek ↓				NYSDEC Sediment Criteria	
Sample ID	LVRRSD-03		LVRRSD-04		LVRRSD-08		LVRRSD-57		LVRRSD-55		LVRRSD-28		DUPLICATE-SD (LVRRSD-28)		Lowest Effect Level (ppm)	Sever Effect Level (ppm)
Date Sampled	12/16/2009		12/16/2009		12/16/2009		12/16/2009		12/16/2009		12/18/2009		12/18/2009			
Matrix	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment			
Dilution Factor	1		1		1		1		1		1		1			
Silver	0.031	U	2.8	UJ	4.1	UJ	1.8	U	2.0	UJ	3.6	UJ	3.5	UJ	1000	2200
Alumimum	1700		3430	J	4140	J	4920		10700	J	2200	J	1960	J	NE	NE
Arsenic	2.1		2.4	J	2.7	J	0.742	J	5.6	J	4.5	J	5.5	J	6000	33000
Barium	15.8		62.7	J	31.7	J	37.6		126	J	39.7	J	35.0	J	NE	NE
Beryllium	0.164	J	0.204	J	0.253	J	0.269	J	0.639	J	1.8	UJ	1.7	UJ	NE	NE
Calcium	142000		39100	J	41200	J	51400		35100	J	202000	J	177000	J	NE	NE
Cadmium	0.267	J	0.272	J	0.410	J	0.144	J	0.606	J	1.8	UJ	1.7	UJ	600	9000
Cobalt	1.9	J	2.8	J	3.9	J	3.6	J	8.6	J	18.0	UJ	17.4	UJ	NE	NE
Chromium	3.5		6.0	J	7.5	J	7.6		16.9	J	5.7	J	4.8	J	26000	110000
Copper	4.9		11.4	J	12.0	J	7.9		26.4	J	21.5	J	17.9	J	16	110
Iron	4590		10100	J	11300	J	8370		21800	J	4470	J	3970	J	2%	4%
Magnesium	16300		17900	J	11700	J	27300		13700	J	1870	J	1540	J	NE	NE
Manganese	369		729	J	661	J	158		903	J	158	J	129	J	460	1100
Mercury	0.027	J	0.063	J	0.106	J	0.027	J	0.078	J	0.150	J	0.110	UJ	0.15	1.3
Nickel	7.2		6.5	J	10.2	J	9.6		27.1	J	26.5	J	24.7	J	16	50
Potassium	453		1150	J	643	J	669		1800	J	719	UJ	694	UJ	NE	NE
Lead	9.1	J	20.9	J	22.0	J	11.0	J	21.7	J	19.1	J	15.4	J	31	110
Antimony	0.477	U	1.1	UJ	1.6	UJ	0.728	U	0.806	UJ	3.6	U	3.5	UJ	2.0	25
Selenium	0.206	U	1.9	J	1.4	J	0.768	J	0.928	J	4.2	J	5.8	J	NE	NE
Sodium	600	U	1400	UJ	2100	UJ	1800	U	1000	UJ	360	UJ	347	UJ	NE	NE
Thallium	3.2		0.997	UJ	0.726	UJ	0.320	U	0.71	UJ	5.4	J	4.8	J	NE	NE
Vanadium	5.1	J	8.8	J	12.2	J	11.6		20.1	J	18.0	UJ	17.4	UJ	NE	NE
Zinc	34.5		50.3	J	54.0	J	40.3		141	J	38.9	J	31.7	J	120	270

All concentrations are in micrograms per kilogram (mg/kg).
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accurtatly and precisely measure the analyte in the sample.

Exceeds Lowest Level Effect
Exceeds Sever Effect

Table 13E
Stream Sediment Analytical Results
Pesticides

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek Drainage ↓								↓ Oatka Creek ↓		↓ Wetland E. of Spring Creek ↓							
Sample ID	LVRRSD-03		LVRRSD-04		LVRRSD-08		LVRRSD-57		LVRRSD-55		LVRRSD-28		DUPLICATE-SD (LVRRSD-28)		NYSDEC Sediment Calculation Criteria (ug/gOC)			
Date Sampled	12/16/2009		12/16/09		12/16/09		12/16/09		12/16/09		12/18/09		12/18/09		Human Health Bioaccumulation	Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation
Matrix	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment					
Total Organic Carbon (g/kg)	17.8		77.8		65.1		167		50.9		208		199					
Dilution Factor	5		1		1		1		5		1		1					
4,4'-DDD	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	0.01	1,100	1.0	1.0
4,4'-DDE	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	0.01	1,100	1.0	1.0
4,4'-DDT	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	0.01	1,100	1.0	1.0
ALDRIN	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	0.1	NE	NE	0.77
DIELDRIN	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	0.1	NE	9.0	NE
ENDOSULFAN I	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	NE	0.78	0.03	NE
ENDOSULFAN II	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	NE	0.78	0.03	NE
ENDOSULFAN SULFATE	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	NE	NE	NE	NE
ENDRIN	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	0.8	NE	4.0	0.8
ENDRIN ALDEHYDE	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	NE	NE	NE	NE
ENDRIN KETONE	20	U	9.5	UJ	14	UJ	6.1	UJ	33	UJ	12	UJ	11	UJ	NE	NE	NE	NE
HEPTACHLOR	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	0.0008	13	0.1	0.03
HEPTACHLOR EPOXIDE	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	0.0008	13	0.1	0.03
METHOXYCHLOR	100	U	49	UJ	71	UJ	32	UJ	170	UJ	61	UJ	59	UJ	NE	NE	0.6	NE
TOXAPHENE	200	U	95	UJ	140	UJ	61	UJ	330	UJ	120	UJ	110	UJ	NE	NE	NE	NE
ALPHA-BHC	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	NE	NE	NE	NE
ALPHA-CHLORDANE	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	NE	NE	NE	NE
BETA-BHC	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	NE	NE	NE	NE
DELTA-BHC	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	NE	NE	NE	NE
GAMMA-BHC (LINDANE)	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	NE	NE	NE	NE
GAMMA-CHLORDANE	10	U	4.9	UJ	7.1	UJ	3.2	UJ	17	UJ	6.1	UJ	5.9	UJ	NE	NE	NE	NE

Total Organic Carbon concentrations are in milligrams per kilogram (g/kg).
All concentrations are in micrograms per kilogram (ug/kg).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
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Sediment Criteria from NYSDEC Technical Guidance for Screening Contaminated Sediments
Exceeds Human Health Bioaccumulation
Exceeds Benthic Aquatic Life Acute Tocicity
Exceeds Benthic Aquatic Life Chronic Tocicity
Exceeds Wildlife Bioaccumulation

Table 13F
Stream Sediment Analytical Results
PCBs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Drainage Area	↓ Mud Creek Drainage ↓								↓ Oatka Creek ↓		↓ Wetland E. of Spring Creek ↓				NYSDEC Sediment Calculation Criteria (ug/gOC)			
Sample ID	LVRRSD-03		LVRRSD-04		LVRRSD-08		LVRRSD-57		LVRRSD-55		LVRRSD-28		DUPLICATE-SD (LVRRSD-28)					
Date Sampled	12/16/2009		12/16/09		12/16/09		12/16/09		12/16/09		12/18/09		12/18/09		Human Health Bioaccumulation	Benthic Aquatic Life Acute Toxicity	Benthic Aquatic Life Chronic Toxicity	Wildlife Bioaccumulation
Matrix	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment					
Total Organic Carbon (g/kg)	17.8		77.8		65.1		167		50.9		208		199					
Dillution Factor	1		1		1		1		1		1		1					
Aroclor-1016	39	U	95	UJ	140	UJ	61	U	67	UJ	120	UJ	290	UJ	0.0008	2,760.8	19.3	1.4
Aroclor-1221	80	U	190	UJ	280	UJ	120	U	140	UJ	240	UJ	580	UJ	0.0008	2,760.8	19.3	1.4
Aroclor-1232	39	U	95	UJ	140	UJ	61	U	67	UJ	120	UJ	290	UJ	0.0008	2,760.8	19.3	1.4
Aroclor-1242	39	U	95	UJ	140	UJ	61	U	67	UJ	120	UJ	290	UJ	0.0008	2,760.8	19.3	1.4
Aroclor-1248	39	U	95	UJ	140	UJ	61	U	67	UJ	120	UJ	290	UJ	0.0008	2,760.8	19.3	1.4
Aroclor-1254	39	U	95	UJ	140	UJ	61	U	67	UJ	120	UJ	290	UJ	0.0008	2,760.8	19.3	1.4
Aroclor-1260	39	U	95	UJ	140	UJ	61	U	67	UJ	120	UJ	290	UJ	0.0008	2,760.8	19.3	1.4
Total Aroclor	80	U	190	UJ	280	UJ	120	U	140	UJ	240	UJ	580	UJ	0.0008	2,760.8	19.3	1.4

Total Organic Carbon concentrations are in milligrams per kilogram (g/kg)
All concentrations are in micrograms per kilogram (ug/kg).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Sediment Criteria from NYSDEC Technical Guidance for Screening Contaminated Sediments
Exceeds Human Health Bioaccumulation
Exceeds Benthic Aquatic Life Acute Tocicity
Exceeds Benthic Aquatic Life Chronic Tocicity
Exceeds Wildlife Bioaccumulation

Unicorn Management Consultants, LLC

Table 14A
Spring/Seep Sampling Results
VOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek Drainage ↓					↓ Spring Creek Drainage ↓												
Sample ID Date Sampled Matrix Dilution Factor	LVRRSP-02 12/16/2009 Water 1/5	LVRRSP-03 12/16/2009 Water 1	LVRRSP-04 12/16/2009 Water 1	LVRRSP-05 12/17/2009 Water 1	MUDCREEK-01 1/18/2012 Water 1	LVRRSP-06 12/17/2009 Water 1	LVRRSP-07 12/17/2009 Water 1	LVRRSP07PDB 1/12/2010 Water 1	LVRRSP-08 12/17/2009 Water 1	LVRRSP08PDB 1/12/2010 Water 1	LVRRSP-12 12/17/2009 Water 1	LVRRSP12PDB 1/12/2010 Water 1	LVRRSP-14 12/17/2009 Water 1	LVRRSP14PDB 1/12/2010 Water 1	LVRRSP-17 12/17/2009 Water 1	Site-Specific SCG^	NYS Ambient Groundwater Quality Standard	NYS Groundwater Guidance Value
ACETONE	5.0 U	5.0 U	1.9 J	5.0 UJ	5.0 U	5.0 UJ	2.8 J	5.0 U	2.8 J	5.0 U	2.0 J	5.0 U	1.7 J	5.0 U	5.0 UJ	NE	NE	50
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	1	NE
2-BUTANONE (MEK)	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NE	NE	50
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	60	NE
CHLOROFORM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
1,1-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
1,2-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.6	NE
1,1-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
CIS-1,2-DICHLOROETHENE	***14***	2.6	**2.4**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
TRANS-1,2-DICHLOROETHENE	0.53 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
ETHYLBENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
2-HEXANONE	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NE	50	NE
METHYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U			
METHYLENE CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
TRICHLOROETHENE	***390***	***110***	***110***	1.0 U	**56**	1.0 U	**4.3**	***5.1***	**9.8** J	1.0 U	**0.66** J	0.65 J	1.0 U	1.0 U	1.0 U	5	5	NE
VINYL CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	2	NE
O-XYLENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
M,P-XYLENES	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	5	NE

Drainage Area	↓ Spring Creek Drainage ↓																	
Sample ID Date Sampled Matrix Dilution Factor	LVRRSP17PDB 1/12/2010 Water 1	LVRRSP-18 12/17/2009 Water 1	LVRRSP18PDB 1/12/2010 Water 1	LVRRSP-22 12/16/2009 Water 1	LVRRSP-23 12/16/2009 Water 1	LVRRSP23PDB 1/12/2010 Water 1	FD100112 (LVRRSP23PDB) 1/12/2010 Water 1	LVRRSP-25A 12/17/2009 Water 1	LVRRSP25APDB 1/12/2010 Water 1	SPRING-PDB-01 1/26/2012 Water 1	SPRING-PDB-02 1/26/2012 Water 1	SPRING-PDB-03 1/26/2012 Water 1	SPRING-PDB-04 1/26/2012 Water 1	MACKAY-PDB-01 1/26/2012 Water 1	BB100112 1/12/2010 Water 1	Site-Specific SCG^	NYS Ambient Groundwater Quality Standard	NYS Groundwater Guidance Value
ACETONE	5.0 U	5.0 UJ	5.0 U	5.0 U	2.2 J	5.0 U	5.0 U	5.0 UJ	5.0 U	**1.9** J	**1.9** J	2.6 J	3.1 J	2.2 J	3.2 J	NE	NE	50
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.22 J	1.0 U	NE	1	NE
2-BUTANONE (MEK)	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NE	NE	50
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	60	NE
CHLOROFORM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.47 J			
1,1-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
1,2-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.6	NE
1,1-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
CIS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
TRANS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
ETHYLBENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
2-HEXANONE	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	NE	50	NE
METHYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.88 J	0.47 J	2.000 J	2.0 U			
METHYLENE CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.5**	NE	5	NE
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.55 J	1.0 U	NE	5	NE
TRICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	2.2	1.0	1.0 U	1.0 U	5	5	NE
VINYL CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	2	NE
O-XYLENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE
M,P-XYLENES	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.23 J	2.0 U	NE	5	NE

All concentrations are in milligrams per liter (ug/l)
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
^ -Pursuant to the USEPA memo dated May 15, 2002, the New York State Department of Environmental Conservation Standards Criteria Guidance for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

(Red) Exceeds NYS Ambient Groundwater Standard
(Yellow) Exceeds NYS Groundwater Guidance Value

Table 14B
Spring/Seep Sampling Results
Cyanide

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek Drainage ↓			↓ Spring Creek Drainage ↓				
Sample ID	LVRRSP-02	LVRRSP-03	LVRRSP-04	LVRRSP-05	LVRRSP-06	LVRRSP-07	LVRRSP-08	NYS Ambient
Date Sampled	12/16/2009	12/16/2009	12/16/2009	12/17/2009	12/17/2009	12/17/2009	12/17/2009	Groundwater
Matrix	Water	Water	Water	Water	Water	Water	Water	Quality
Dillution Factor	1	1	1	1	1	1	1	Standard
Cyanide	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.2

Drainage Area	↓ Spring Creek Drainage ↓							
Sample ID	LVRRSP-12	LVRRSP-14	LVRRSP-17	LVRRSP-18	LVRRSP-22	LVRRSP-23	LVRRSP-25A	NYS Ambient
Date Sampled	12/17/2009	12/17/2009	12/17/2009	12/17/2009	12/16/2009	12/16/2009	12/17/2009	Groundwater
Matrix	Water	Water	Water	Water	Water	Water	Water	Quality
Dillution Factor	1	1	1	1	1	1	1	Standard
Cyanide	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.2

All concentrations are in milligrams per liter (mg/l)

Exceeds NYS Ambient Groundwater Standard

U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.

J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Table 14C
Spring/Seep Sampling Results
SVOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek Drainage ↓							
Sample ID	LVRRSP-02		LVRRSP-03		LVRRSP-04		NYS Ambient Groundwater Quality Standard	NYS Groundwater Guidance Value
Date Sampled	12/16/2009		12/16/2009		12/16/2009			
Matrix	Water		Water		Water			
Dilution Factor	1		1		1			
ACENAPHTHENE	9.4	U	9.4	U	9.7	U	NE	20
ACENAPHTHYLENE	9.4	U	9.4	U	9.7	U	NE	NE
ANTHRACENE	9.4	U	9.4	U	9.7	U	NE	50
BENZ(A)ANTHRACENE	9.4	U	9.4	U	9.7	U	NE	0.002
BENZO(A)PYRENE	9.4	U	9.4	U	9.7	U	NE	NE
BENZO(B)FLUORANTHENE	9.4	U	9.4	U	9.7	U	NE	0.002
BENZO(G,H,I)PERYLENE	9.4	U	9.4	U	9.7	U	NE	0.002
BENZO(K)FLUORANTHENE	9.4	U	9.4	U	9.7	U	ND	NE
BIS(2-ETHYLHEXYL) PHTHALATE	9.4	U	9.4	U	9.7	U	5	NE
CHRYSENE	9.4	U	9.4	U	9.7	U	NE	0.002
DIBENZ(A,H)ANTHRACENE	9.4	U	9.4	U	9.7	U	NE	NE
DIBENZOFURAN	9.4	U	9.4	U	9.7	U	NE	NE
FLUORANTHENE	9.4	U	9.4	U	9.7	U	NE	50
FLUORENE	9.4	U	9.4	U	9.7	U	NE	50
INDENO(1,2,3-CD)PYRENE	9.4	U	9.4	U	9.7	U	NE	0.002
NAPHTHALENE	9.4	U	9.4	U	9.7	U	NE	10
PHENANTHRENE	9.4	U	9.4	U	9.7	U	NE	50
PHENOL	9.4	U	9.4	U	9.7	U	NE	1
PYRENE	9.4	U	9.4	U	9.7	U	NE	50

All concentrations are in milligrams per liter (ug/l)
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Exceeds NYS Ambient Groundwater Standard
Exceeds NYS Groundwater Guidance Value

Table 14D
Spring/Seep Sampling Results
Metals

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	Mud Creek Drainage						NYS Ambient Groundwater Quality Standard	NYS Groundwater Guidance Value
Sample ID	LVRRSP-02		LVRRSP-03		LVRRSP-04			
Date Sampled	12/16/2009		12/16/2009		12/16/2009			
Matrix	Water		Water		Water			
Dilution Factor	1		1		1			
ALUMINUM	14.9	U	79.7	J	**1090**		100	NE
ANTIMONY	3.9	U	3.9	U	3.9	U	3	NE
ARSENIC	3.2	U	3.2	U	3.2	U	25	NE
BARIUM	48.7		47.6		58.5		1000	NE
BERYLLIUM	0.119	U	0.119	U	0.119	U	3	NE
CADMIUM	0.119	U	0.119	U	0.119	U	5	NE
CALCIUM	122000		141000		153000		NE	NE
CHROMIUM	10.0	U	10.0	U	10.00	U	50	NE
COBALT	0.363	U	0.363	U	0.363	U	NE	NE
COPPER	2.2	J	1.9	J	4.1	J	200	NE
IRON	44.6	J	148		**1420**		500	NE
LEAD	0.886	U	0.886	U	1.3	J	25	NE
MAGNESIUM	17700		21800		25200		NE	35000
MANGANESE	0.247	U	15.0	U	72.2		500	NE
MERCURY	0.019	U	0.019	U	0.019	U	0.7	NE
NICKEL	1.1	U	1.1	U	2.2	J	100	NE
POTASSIUM	1770	J	1420	U	1830	J	NE	NE
SELENIUM	4.8	U	4.8	U	4.8	U	10	NE
SILVER	0.829	U	0.829	U	0.829	U	50	NE
SODIUM	**35600**		16900		15900		20000	NE
THALLIUM	2.5	U	2.5	U	2.5	U	NE	0.5
VANADIUM	0.247	U	50.0	U	50.0	U	NE	NE
ZINC	5.8	J	16.5	J	21.2		NE	2000

All concentrations are in micrograms per liter (ug/l)
NE - Not established
U - Not detected
J - Estimated concentration
Concentrations in bold exceed Groundwater Standard or Guidance Value

Table 14E
Spring/Seep Sampling Results
Pesticides

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek Drainage ↓						
Sample ID	LVRRSP-02		LVRRSP-03		LVRRSP-04		NYS Ambient
Date Sampled	12/16/2009		12/16/2009		12/16/2009		Groundwater
Matrix	Water		Water		Water		Quality
Dilution Factor	1		1		1		Standard
4,4'-DDD	0.094	U	0.10	U	0.099	U	0.3
4,4'-DDE	0.094	U	0.10	U	0.099	U	0.2
4,4'-DDT	0.094	U	0.10	U	0.099	U	0.2
ALDRIN	0.047	U	0.050	U	0.050	U	ND
DIELDRIN	0.094	U	0.10	U	0.099	U	0.004
ENDOSULFAN I	0.047	U	0.050	U	0.050	U	NE
ENDOSULFAN II	0.094	U	0.10	U	0.099	U	NE
ENDOSULFAN SULFATE	0.094	U	0.10	U	0.099	U	NE
ENDRIN	0.094	U	0.10	U	0.099	U	ND
ENDRIN ALDEHYDE	0.094	U	0.10	U	0.099	U	5
ENDRIN KETONE	0.094	U	0.10	U	0.099	U	5
HEPTACHLOR	0.047	U	0.050	U	0.050	U	0.04
HEPTACHLOR EPOXIDE	0.047	U	0.050	U	0.050	U	0.03
METHOXYCHLOR	0.47	U	0.50	U	0.50	U	35
TOXAPHENE	0.94	U	1.0	U	0.99	U	0.06
ALPHA-BHC	0.047	U	0.050	U	0.050	U	NE
ALPHA-CHLORDANE	0.047	U	0.050	U	0.050	U	0.5
BETA-BHC	0.047	U	0.050	U	0.050	U	NE
DELTA-BHC	0.047	U	0.050	U	0.050	U	NE
GAMMA-BHC (LINDANE)	0.047	U	0.050	U	0.050	U	NE
GAMMA-CHLORDANE	0.047	U	0.050	U	0.050	U	0.5

All concentrations are in micrograms per Liter (ug/L).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
Exceeds NYS Ambient Groundwater Standard

Table 14F
Spring/Seep Sampling Results
PCBs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ **Mud Creek Drainage** ↓						
Sample ID	**LVRRSP-02**		**LVRRSP-03**		**LVRRSP-04**		**NYS Ambient**
Date Sampled	**12/16/2009**		**12/16/2009**		**12/16/2009**		**Groundwater**
Matrix	**Water**		**Water**		**Water**		**Quality**
Dillution Factor	**1**		**1**		**1**		**Standard**
Aroclor-1016	0.94	U	1.0	U	0.99	U	NE
Aroclor-1221	1.9	U	2.0	U	2.0	U	NE
Aroclor-1232	0.94	U	1.0	U	0.99	U	NE
Aroclor-1242	0.94	U	1.0	U	0.99	U	NE
Aroclor-1248	0.94	U	1.0	U	0.99	U	NE
Aroclor-1254	0.94	U	1.0	U	0.99	U	NE
Aroclor-1260	0.94	U	1.0	U	0.99	U	NE
Total Aroclor	1.9	U	2.0	U	2.0	U	0.09

All concentrations are in micrograms per Liter (ug/L).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Exceeds NYS Ambient Groundwater Standard

Table 15A
Surface Water Sample Results
VOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Oatka Creek ↓																
Sample ID	**LVRRSW-32**	**LVRRSW-34**	**LVRRSW-37**	**LVRRSW-38**	**LVRRSW-40**	**LVRRSW-41**	**LVRRSW-48**	**LVRRSW-51**	**Duplicate SW (LVRRSW-51)**	**LVRRSW-52**	**LVRRSW-53**	**Site-Specific SCG^**	**NYS Ambient Surface Water Quality Standard Drinking**	**NYS Ambient Surface Water Quality Standard Fish Consumption**	**NYS Ambient Surface Water Quality Standard Aquatic (Chronic)**	**NYS Ambient Surface Water Quality Standard Aquatic (Acute)**	**NYS Ambient Surface Water Quality Standard Aesthetic**
Date Sampled	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/18/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009						
Matrix	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water						
Dillution Factor	1	1	1	1	1	1	1	1	1	1	1						
ACETONE	**5.3**	**9.6**	3.8 J	4.0 J	4.7 J	**7.5**	5.0 U	1.6 J	2.4 J	**8.2**	2.3 J	NE	50*	NE	NE	NE	NE
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	1	10	210*	760*	NE
2-BUTANONE (MEK)	5.0 U	1.0 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.1 J	5.0 U	NE	50*	NE	NE	NE	NE
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	60*	NE	NE	NE	NE
CHLOROFORM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,1-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
1,2-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.6	NE	NE	NE	NE
1,1-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.07*	NE	NE	NE	NE
CIS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
TRANS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
ETHYLBENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	17	150	NE
2-HEXANONE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	50*	NE	NE	NE	NE
METHYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
METHYLENE CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	200	NE	NE	NE
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.7*	1*	NE	NE	NE
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U	1.3	1.0 U	1.0 U	1.0 U	1.0 U	0.55 J	1.0 U	NE	5	6000	100*	480*	NE
TRICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	11	5	40	NE	NE	NE
VINYL CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.3*	NE	NE	NE	NE
O-XYLENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	65*	590*	NE
M,P-XYLENES	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	5	NE	65*	590*	NE

Drainage Area	↓ Oatka Creek ↓						↓ Mud Creek Drainage ↓										
Sample ID	**LVRRSW-55**	**LVRR SW-55**	**OATKA UPS-01**	**CONFLUENCE-01**	**OATKA UPS-01**	**CONFLUENCE-01**	**LVRRSW-04**	**LVRRSW-08**	**LVRRSW-56**	**DUPLICATE-SW (LVRRSW-56)**	**LVRRSW-57**	**Site-Specific SCG^**	**NYS Ambient Surface Water Quality Standard**	**NYS Ambient Surface Water Quality Standard Fish Consumption**	**NYS Ambient Surface Water Quality Standard Aquatic (Chronic)**	**NYS Ambient Surface Water Quality Standard Aquatic (Acute)**	**NYS Ambient Surface Water Quality Standard Aesthetic**
Date Sampled	12/16/2009	11/28/2012	1/18/2012	1/18/2012	11/27/2012	11/27/2012	12/16/2009	12/16/2009	12/17/2009	12/17/2009	12/16/2009						
Matrix	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water						
Dillution Factor	1	1	1	1	1	1	1	1	1	1	1						
ACETONE	1.6 J	2.1 J	5.0 U	5.0 U	1.7 J	2.3 J	2.6 J	3.0 J	4.7 J	**3.8** J	**8.7**	NE	50*	NE	NE	NE	NE
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	1	10	210*	760*	NE
2-BUTANONE (MEK)	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 J	5.0 U	NE	50*	NE	NE	NE	NE
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.5**	1.0 U	0.60 J	0.53 J	0.91 J	NE	60*	NE	NE	NE	NE
CHLOROFORM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,1-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
1,2-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.6	NE	NE	NE	NE
1,1-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.07*	NE	NE	NE	NE
CIS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
TRANS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
ETHYLBENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	17	150	NE
2-HEXANONE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U	NE	50*	NE	NE	NE	NE
METHYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
METHYLENE CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	200	NE	NE	NE
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.7*	1*	NE	NE	NE
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	6000	100*	480*	NE
TRICHLOROETHENE	1.0 U	1.1	0.38 J	0.44 J	1.0 U	0.44 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	11	5	40	NE	NE	NE
VINYL CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.3*	NE	NE	NE	NE
O-XYLENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	65*	590*	NE
M,P-XYLENES	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	5	NE	65*	590*	NE

All concentrations are in milligrams per liter (ug/l)
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
^ -Pursuant to the USEPA memo dated May 15, 2002, the New York State Department of Environmental Conservation Standards Criteria Guidance for TCE of 11 ug/l is the applicable site-specific groundwater standard for the analyte.

Exceeds NYS Ambient Surface Water Quality Standard
Exceeds NYS Ambient Surface Water Quality Standard Fish Consumption
Exceeds both NYS Ambient Surface Water Quality Standard and Aquatic (Chronic)
* - Guidance Value

Table 15A
Surface Water Sample Results
VOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek ↓	↓ Gorge Pond ↓	↓ Spring Creek Drainage ↓														
Sample ID / Date Sampled / Matrix / Dillution Factor	**LVRR SW-08 / 11/28/2012 / Water / 1**	**LVRRSW-50 / 12/17/2009 / Water / 1**	**LVRRSW-14 / 12/18/2009 / Water / 1**	**LVRRSW-18 / 12/18/2009 / Water / 1**	**LVRRSW-20 / 12/18/2009 / Water / 1**	**SWALE SW-01 / 1/18/2012 / Water / 1**	**MACKAY SW-01 / 1/17/2012 / Water / 1**	**SPRING UPS SW-01 / 1/19/2012 / Water / 1**	**MACKAY SW-02 / 1/19/2012 / Water / 1**	**MILL ST SW-01 / 1/17/2012 / Water / 1**	**SPRING CSW-01 / 1/18/2012 / Water / 1**	**Site-Specific SCG^**	**NYS Ambient Surface Water Quality Standard Drinking**	**NYS Ambient Surface Water Quality Standard Fish Consumption**	**NYS Ambient Surface Water Quality Standard Aquatic (Chronic)**	**NYS Ambient Surface Water Quality Standard Aquatic (Acute)**	**NYS Ambient Surface Water Quality Standard Aesthetic**
ACETONE	2.3 J	**5.2** J	5.0 U	2.0 J	2.9 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NE	50*	NE	NE	NE	NE
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	1	10	210*	760*	NE
2-BUTANONE (MEK)	1.0 U	5.0 U	5.0 U	5.0 U	1.5 J	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	NE	50*	NE	NE	NE	NE
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	60*	NE	NE	NE	NE
CHLOROFORM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,1-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
1,2-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.6	NE	NE	NE	NE
1,1-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.07*	NE	NE	NE	NE
CIS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
TRANS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
ETHYLBENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	17	150	NE
2-HEXANONE	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	50*	NE	NE	NE	NE
METHYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
METHYLENE CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	200	NE	NE	NE
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.7*	1*	NE	NE	NE
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	6000	100*	480*	NE
TRICHLOROETHENE	4.8	1.0 U	**1.6**	1.0 U	1.0 U	1.1	1.0 U	1.2	1.0 U	1.0 U	0.82 J	11	5	40	NE	NE	NE
VINYL CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.3*	NE	NE	NE	NE
O-XYLENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	65*	590*	NE
M,P-XYLENES	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	5	NE	65*	590*	NE

Drainage Area	↓ Spring Creek Drainage ↓																
Sample ID / Date Sampled / Matrix / Dillution Factor	**DUP 011712 (MILL ST SW-01) / 1/17/2012 / Water / 1**	**LVRR SW-14 / 11/28/2012 / Water / 1**	**LVRR SW-18 / 11/28/2012 / Water / 1**	**MACKAY SW-02 / 11/27/2012 / Water / 1**	**MILL ST SW-01 / 11/27/2012 / Water / 1**	**SPRING CSW-01 / 11/28/2012 / Water / 1**	**SPRING CSW-02 / 11/28/2012 / Water / 1**	**SPRING CSW-03 / 11/28/2012 / Water / 1**	**SPRING CSW-04 / 11/28/2012 / Water / 1**	**SPRING CSW-05 / 11/28/2012 / Water / 1**	**SPRING CSW-06 / 11/28/2012 / Water / 1**	**Site-Specific SCG^**	**NYS Ambient Surface Water Quality Standard**	**NYS Ambient Surface Water Quality Standard Fish Consumption**	**NYS Ambient Surface Water Quality Standard Aquatic (Chronic)**	**NYS Ambient Surface Water Quality Standard Aquatic (Acute)**	**NYS Ambient Surface Water Quality Standard Aesthetic**
ACETONE	5.0 U	5.0 U	1.6 J	5.0 U	1.3 J	1.8 J	1.5 J	2.4 J	1.7 J	2.3 J	2.0 J	NE	50*	NE	NE	NE	NE
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	1	10	210*	760*	NE
2-BUTANONE (MEK)	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	50*	NE	NE	NE	NE
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	60*	NE	NE	NE	NE
CHLOROFORM	1.0 U	1.0 U	1.0 U	0.46 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,1-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
1,2-DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.6	NE	NE	NE	NE
1,1-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.07*	NE	NE	NE	NE
CIS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
TRANS-1,2-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	NE	NE	NE
ETHYLBENZENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	17	150	NE
2-HEXANONE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	50*	NE	NE	NE	NE
METHYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
METHYLENE CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	200	NE	NE	NE
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.7*	1*	NE	NE	NE
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	6000	100*	480*	NE
TRICHLOROETHENE	1.0 U	0.65 J	1.0 U	1.0 U	1.0 U	0.89 J	0.90 J	2.0	0.66 J	0.88 J	0.87 J	11	5	40	NE	NE	NE
VINYL CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	0.3*	NE	NE	NE	NE
O-XYLENE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	5	NE	65*	590*	NE
M,P-XYLENES	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	5	NE	65*	590*	NE

All concentrations are in milligrams per liter (ug/l)
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
^ -Pursuant to the USEPA memo dated May 15, 2002, the New York State Department of Environmental Conservation Standards Criteria Guidance for TCE of 11 ug/l is the applicable site-specific groundwater standard for the analyte.

Exceeds NYS Ambient Surface Water Quality Standard
Exceeds NYS Ambient Surface Water Quality Standard Fish Consumption
Exceeds both NYS Ambient Surface Water Quality Standard and Aquatic (Chronic)
* - Guidance Value

Unicorn Management Consultants, LLC

Table 15A
Surface Water Sample Results
VOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Spring Creek Drainage ↓				↓ Wetlands E. of Spring Creek ↓										
Sample ID	SPRING CSW-07		SPRING CSW-08		LVRRSW-28		DUPLICATE-SW		Site-Specific SCG^	NYS Ambient Surface Water Quality Standard Drinking	NYS Ambient Surface Water Quality Standard Fish Consumption	NYS Ambient Surface Water Quality Standard Aquatic (Chronic)	NYS Ambient Surface Water Quality Standard Aquatic (Acute)	NYS Ambient Surface Water Quality Standard Aesthetic
Date Sampled	11/28/2012		11/28/2012		12/18/2009		12/18/2009							
Matrix	Water		Water		Water		Water							
Dillution Factor	1	Q	1	Q	1	Q	1	Q						
ACETONE	1.4	J	1.5	J	5.0	U	2.1	J	NE	50*	NE	NE	NE	NE
BENZENE	1.0	U	1.0	U	1.0	U	1.0	U	NE	1	10	210*	760*	NE
2-BUTANONE (MEK)	1.0	U	1.0	U	5.0	U	5.0	U	NE	50*	NE	NE	NE	NE
CARBON DISULFIDE	1.0	U	1.0	U	1.0	U	1.0	U	NE	60*	NE	NE	NE	NE
CHLOROFORM	1.0	U	1.0	U	1.0	U	1.0	U						
1,1-DICHLOROETHANE	1.0	U	1.0	U	1.0	U	1.0	U	NE	5	NE	NE	NE	NE
1,2-DICHLOROETHANE	1.0	U	1.0	U	1.0	U	1.0	U	NE	0.6	NE	NE	NE	NE
1,1-DICHLOROETHENE	1.0	U	1.0	U	1.0	U	1.0	U	NE	0.07*	NE	NE	NE	NE
CIS-1,2-DICHLOROETHENE	1.0	U	1.0	U	1.0	U	1.0	U	NE	5	NE	NE	NE	NE
TRANS-1,2-DICHLOROETHENE	1.0	U	1.0	U	1.0	U	1.0	U	NE	5	NE	NE	NE	NE
ETHYLBENZENE	1.0	U	1.0	U	1.0	U	1.0	U	NE	5	NE	17	150	NE
2-HEXANONE	1.0	U	1.0	U	5.0	U	5.0	U	NE	50*	NE	NE	NE	NE
METHYL ACETATE	2.0	U	2.0	U	2.0	U	2.0	U						
METHYLENE CHLORIDE	1.0	U	1.0	U	1.0	U	1.0	U	NE	5	200	NE	NE	NE
TETRACHLOROETHENE	1.0	U	1.0	U	***5.0***		***5.6***		NE	0.7*	1*	NE	NE	NE
TOLUENE	1.0	U	1.0	U	1.0	U	1.0	U	NE	5	6000	100*	480*	NE
TRICHLOROETHENE	1.0	U	1.6		1.0	U	0.72	J	11	5	40	NE	NE	NE
VINYL CHLORIDE	1.0	U	1.0	U	1.0	U	1.0	U	NE	0.3*	NE	NE	NE	NE
O-XYLENE	1.0	U	1.0	U	1.0	U	1.0	U	NE	5	NE	65*	590*	NE
M,P-XYLENES	2.0	U	2.0	U	2.0	U	2.0	U	NE	5	NE	65*	590*	NE

All concentrations are in milligrams per liter (ug/l)
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
^ -Pursuant to the USEPA memo dated May 15, 2002, the New York State Department of Environmental Conservation Standards Criteria Guidance for TCE of 11 ug/l is the applicable site-specific groundwater standard for the analyte.

Exceeds NYS Ambient Surface Water Quality Standard
Exceeds NYS Ambient Surface Water Quality Standard Fish Consumption
Exceeds both NYS Ambient Surface Water Quality Standard and Aquatic (Chronic)
* - Guidance Value

Table 15B
Surface Water Sample Results
Cyanide

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Oatka Creek Drainage ↓												
Sample ID	LVRRSW-32	LVRRSW-34	LVRRSW-37	LVRRSW-38	LVRRSW-40	LVRRSW-41	LVRRSW-51	DUPLICATE-SW (LVRRSW-51)	NYS Ambient Surface Water Quality Standard Drinking	NYS Ambient Surface Water Quality Standard Fish Consumption	NYS Ambient Surface Water Quality Standard Aquatic (Chronic)	NYS Ambient Surface Water Quality Standard Aquatic (Acute)	NYS Ambient Surface Water Quality Standard Aesthetic
Date Sampled	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009	12/15/2009					
Matrix	Water	Water	Water	Water	Water	Water	Water	Water					
Dillution Factor	1	1	1	1	1	1	1	1					
Cyanide	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	200	9000	5.2	22	NE

Drainage Area	↓ Oatka Creek Drainage ↓				↓ Mud Creek Drainage ↓								
Sample ID	LVRRSW-48	LVRRSW-52	LVRRSW-53	LVRRSW-55	LVRRSW-08	LVRRSW-04	LVRRSW-57	LVRRSW-56	NYS Ambient Surface Water Quality Standard Drinking	NYS Ambient Surface Water Quality Standard Fish Consumption	NYS Ambient Surface Water Quality Standard Aquatic (Chronic)	NYS Ambient Surface Water Quality Standard Aquatic (Acute)	NYS Ambient Surface Water Quality Standard Aesthetic
Date Sampled	12/18/2009	12/15/2009	12/15/2009	12/16/2009	12/16/2009	12/16/2009	12/16/2009	12/16/2009					
Matrix	Water	Water	Water	Water	Water	Water	Water	Water					
Dillution Factor	1	1	1	1	1	1	1	1					
Cyanide	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.011	200	9000	5.2	22	NE

Drainage Area	↓ Mud Creek ↓	↓Gorge Pond↓	↓ Spring Creek Drainage ↓				↓ Wetland E. of Spring Creek ↓						
Sample ID	DUPLICATE-SW (LVRRSW-56)	LVRRSW-50	LVRRSW-14	LVRRSW-18	LVRRSW-20	FD091218A (LVRRSW-20)	LVRRSW-28	DUPLICATE-SW (LVRRSW-28)	NYS Ambient Surface Water Quality Standard Drinking	NYS Ambient Surface Water Quality Standard Fish Consumption	NYS Ambient Surface Water Quality Standard Aquatic (Chronic)	NYS Ambient Surface Water Quality Standard Aquatic (Acute)	NYS Ambient Surface Water Quality Standard Aesthetic
Date Sampled	12/16/2009	12/17/2009	12/18/2009	12/18/2009	12/18/2009	12/18/2009	12/18/2009	12/18/2009					
Matrix	Water	Water	Water	Water	Water	Water	Water	Water					
Dillution Factor	1	1	1	1	1	1	1	1					
Cyanide	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	200	9000	5.2	22	NE

All concentrations are in micrograms per Liter (mg/L).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Exceeds NYS Ambient Surface Water Quality Standard
Exceeds NYS Ambient Surface Water Quality Standard Fish Consumption
Exceeds both NYS Ambient Surface Water Quality Standard and Aquatic (Chronic)

Table 15C
Surface Water Sampe Results
SVOCs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Oatka Creek ↓		↓ Mud Creek ↓						↓ Wetland E. of Spring Creek ↓								
Sample ID Date Sampled Matrix Dillution Factor	LVRRSW-55 12/16/2009 Water 1		LVRRSW-08 12/16/2009 Water 7		LVRRSW-04 12/16/2009 Water 1		LVRRSW-57 12/16/2009 Water 2		LVRRSW-28 12/18/2009 Water 1		DUPLICATE-SW (LVRRSW) 12/18/2009 Water 1		NYS Ambient Surface Water Quality Standard Drinking	NYS Ambient Surface Water Quality Standard Fish Consumption	NYS Ambient Surface Water Quality Standard Aquatic (Chronic)	NYS Ambient Surface Water Quality Standard Aquatic (Acute)	NYS Ambient Surface Water Quality Standard Aesthetic
ACENAPHTHENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	NE	NE	5.3*	48*	20
ACENAPHTHYLENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	NE	NE	NE	NE	NE
ANTHRACENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	50*	NE	3.8*	35*	NE
BENZ(A)ANTHRACENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	0.002*	NE	0.03*	0.23*	NE
BENZO(A)PYRENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	0.002*	0.0012*	NE	NE	NE
BENZO(B)FLUORANTHENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	0.002*	NE	NE	NE	NE
BENZO(G,H,I)PERYLENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	NE	NE	NE	NE	NE
BENZO(K)FLUORANTHENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	0.002*	NE	NE	NE	NE
BIS(2-ETHYLHEXYL) PHTHALATE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	5	NE	0.6*	NE	NE
CHRYSENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	0.002*	NE	NE	NE	NE
DIBENZ(A,H)ANTHRACENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	NE	NE	NE	NE	NE
DIBENZOFURAN	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	NE	NE	NE	NE	NE
FLUORANTHENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	50*	NE	NE	NE	NE
FLUORENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	50*	NE	0.54*	4.8*	NE
INDENO(1,2,3-CD)PYRENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	0.002*	NE	NE	NE	NE
NAPHTHALENE	9.4	U	72	U	11	U	19	U	9.9	UJ	9.4	UJ	NE	NE	13*	110*	10
PHENANTHRENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	50*	NE	5*	45*	NE
PHENOL	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	NE	NE	NE	NE	1
PYRENE	9.4	U	72	U	11	U	19	U	9.9	U	9.4	U	50*	NE	4.6*	42*	NE

All concentrations are in milligrams per liter (ug/l)
* - Guidance Value
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Exceeds NYS Ambient Surface Water Quality Standard
Exceeds NYS Ambient Surface Water Quality Standard Fish Consumption
Exceeds both NYS Ambient Surface Water Quality Standard and Aquatic (Chronic)

Table 15D
Surface Water Sampe Results
Metals

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓Oatka Creek↓		↓ Mud Creek Drainage ↓						↓ Wetland E. of Spring Creek Creek Drainage ↓								
Sample ID Date Sampled Matrix Dilution Factor	LVRRSW-55 12/16/2009 Water 1		LVRRSW-08 12/16/2009 Water 1		LVRRSW-04 12/16/2009 Water 1		LVRRSW-57 12/16/2009 Water 1		LVRRSW-28 12/18/2009 Water 1		DUPLICATE-SW (LVRRSW-28) 12/18/2009 Water 1		NYS Ambient Surface Water Quality Standard Drinking	NYS Ambient Surface Water Quality Standard Fish Consumption	NYS Ambient Surface Water Quality Standard Aquatic (Chronic)	NYS Ambient Surface Water Quality Standard Aquatic (Acute)	NYS Ambient Surface Water Quality Standard Aesthetic
ALUMINUM	331		24100		4440		14200		549	J	227	J	100	NE	NE	NE	NE
ANTIMONY	3.9	U	3.9	U	3.9	U	3.9	U	3.9	U	3.9	U	3	NE	NE	NE	NE
ARSENIC	3.2		9.0	J	9.0	J	3.2	U	6.4	J	8.1	J	50	NE	150*	340*	NE
BARIUM	44.0		127		134		565		25.5	J	21.8	J	1000	NE	NE	NE	NE
BERYLLIUM	0.119	U	1.0	J	0.260	J	0.514	J	0.12	U	0.12	U	3*	NE	See Note 1	NE	NE
CADMIUM	0.119	U	5.0	U	5.0	U	5.0	U	0.12	U	0.12	U	5	NE	See Note 2	See Note 3	NE
CALCIUM	72400		535000		413000		271000		289000		267000		NE	NE	NE	NE	NE
CHROMIUM	10.0	U	31.7		11.2		18.7		3.3	J	2.1	J	50	NE	See Note 4	See Note 5	NE
COBALT	0.363	U	8.1	J	6.4	J	4.6	J	50.0	U	50.0	U	NE	NE	5*	NE	NE
COPPER	3.8	J	45.6		13.9	J	30.1		5.6	J	5.8	J	200	NE	See Note 6	See Note 7	NE
IRON	519		22600		36700		14200		705	J	355	J	NE	NE	300	NE	300
LEAD	0.886	U	82.1		9.9		19.9		2.6	J	1.0	J	50	NE	See Note 8	See Note 9	NE
MAGNESIUM	14500		85400		52200		40000		38600		38800		NE	NE	35000	NE	NE
MANGANESE	28.4		237		12300		261		15.0	U	15.0	U	NE	NE	NE	NE	300
MERCURY	0.019	U	0.077	J	0.30	J	0.053	J	0.02	U	0.02	U	0.7	0.0007	0.77	1.4	NE
NICKEL	1.1	U	33.7	J	11.1	J	20.0	J	4.7	J	2.0	J	100	NE	See Note 10	See Note 11	NE
POTASSIUM	3700		7500		3380		6590		3410		3360		NE	NE	NE	NE	NE
SELENIUM	4.8	U	4.8	U	6.2	J	7.6	J	4.8	U	4.8	U	10	NE	4.6	NE	NE
SILVER	0.829	U	0.829	U	1.3	J	0.829	U	0.90	J	0.83	U	50	NE	0.1	NE	NE
SODIUM	36500		22100		19400		9410		69800		70800		NE	NE	NE	NE	NE
THALLIUM	2.5	U	10.2		24.8	U	2.5	U	2.5	U	2.5	U	0.5*	NE	8	NE	NE
VANADIUM	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	NE	NE	14	NE	NE
ZINC	4.7	J	285		83		195		60.0	U	60.0	U	2000*	NE	See Note 12	See Note 13	5000

All concentrations are in micrograms per liter (mg/l)
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit.
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Note 1 - 11 ug/l below hardness for 75 ppm, 1100 ug/l for hardness above 75 ppm
Note 2 - 0.85 exp(0.7652(ln hardness in ppm)-2.715)
Note 3 - 0.85 exp(1.128(ln hardness in ppm)-3.6867)
Note 4 - 0.86 exp(0.819(ln hardness in ppm)+0.6848)
Note 5 - 0.316 exp(0.819(ln hardness in ppm)+3.7256)
Note 6 - 0.96 exp(0.8545(ln(hardness in ppm)-1.702
Note 7 - 0.96 exp(0.9400(ln(hardness in ppm)-1.7
Note 8 - {1.46203-(ln(hardness)(0.145712))} exp(1.273(ln(hardness))-4.297)
Note 9 - {1.46203-(ln(hardness)(0.145712))} exp(1.273(ln(hardness))-1.052)
Note 10 - 0.997 exp(0.846(ln(hardness))+0.0584)
Note 11 - 0.998 exp(0.846(ln(hardness))+2.255)
Note 12 - exp(0.85(ln(hardness in ppm))+0.5)
Note 13 - 0.978 exp(0.8473(ln(hardness in ppm))+0.884)

* - Guidance Value
Exceeds NYS Ambient Surface Water Quality Standard
Exceeds NYS Ambient Surface Water Quality Standard Fish Consumption
Exceeds both NYS Ambient Surface Water Quality Standard and Aquatic (Chronic)
Exceeds NYS Ambient Surface Water Quality Standard Aquatic (Chronic)

Table 15E
Surface Water Sample Results
Pesticides

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek Drainage ↓						↓ Oatka Creek ↓		↓ Wetland E. of Spring Creek ↓								
Sample ID Date Sampled Matrix Dillution Factor	LVRRSW-08 12/16/2009 Water 1		LVRRSW-04 12/16/2009 Water 1		LVRRSW-57 12/16/2009 Water 1		LVRRSW-55 12/16/2009 Water 1		LVRRSW-28 12/18/2009 Water 5		DUPLICATE-SW (LVRRSW-28) 12/18/2009 Water 5		NYS Ambient Surface Water Quality Standard Drinking	NYS Ambient Surface Water Quality Standard Fish Consumption	NYS Ambient Surface Water Quality Standard Aquatic (Chronic)	NYS Ambient Surface Water Quality Standard Aquatic (Acute)	NYS Ambient Surface Water Quality Standard Aesthetic
4,4'-DDD	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	0.3	0.00008	NE	NE	NE
4,4'-DDE	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	0.2	0.000007	NE	NE	NE
4,4'-DDT	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	0.2	0.00001	NE	NE	NE
ALDRIN	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	0.002*	0.001	NE	NE	NE
DIELDRIN	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	0.004	0.000006	0.056	0.24	NE
ENDOSULFAN I	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	NE	NE	0.009	NE	NE
ENDOSULFAN II	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	NE	NE	0.009	NE	NE
ENDOSULFAN SULFATE	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	NE	NE	NE	NE	NE
ENDRIN	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	0.2	0.002	0.036	0.086	NE
ENDRIN ALDEHYDE	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	5*	NE	NE	NE	NE
ENDRIN KETONE	0.94	U	1.0	U	1.0	U	0.096	U	0.5	U	0.5	U	5*	NE	NE	NE	NE
HEPTACHLOR	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	0.04	0.0002	NE	NE	NE
HEPTACHLOR EPOXIDE	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	0.04	0.00003	NE	NE	NE
METHOXYCHLOR	4.7	U	5.1	U	4.9	U	0.48	U	2.5	U	2.5	U	35	NE	0.03	NE	NE
TOXAPHENE	9.4	U	10	U	9.7	U	0.96	U	4.9	U	4.9	U	0.06	0.000006	0.005	NE	NE
ALPHA-BHC	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	NE	NE	NE	NE	NE
ALPHA-CHLORDANE	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	0.05	0.00002	NE	NE	NE
BETA-BHC	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	NE	NE	NE	NE	NE
DELTA-BHC	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	NE	NE	NE	NE	NE
GAMMA-BHC (LINDANE)	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	NE	NE	NE	NE	NE
GAMMA-CHLORDANE	0.47	U	0.51	U	0.49	U	0.048	U	0.25	U	0.25	U	0.05	0.00002	NE	NE	NE

All concentrations are in micrograms per Liter (ug/L).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.
* - Guidance Value

Exceeds NYS Ambient Surface Water Quality Standard
Exceeds NYS Ambient Surface Water Quality Standard Fish Consumption
Exceeds both NYS Ambient Surface Water Quality Standard and Aquatic (Chronic)

Table 15F
Surface Water Sample Results
PCBs

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Drainage Area	↓ Mud Creek Drainage ↓								↓ Wetland E. of Spring Creek ↓					
Sample ID	LVRRSW-04		LVRRSW-08		LVRRSW-55		LVRRSW-57		LVRRSW-28		Duplicate SW (LVRRSW-28)		NYS Ambient Groundwater Quality Standard	NYS Ambient Surface Water Quality Standard Fish Consumption
Date Sampled	12/16/2009		12/16/2009		12/16/2009		12/16/2009		12/18/2009		12/18/2009			
Matrix	Water		Water		Water		Water		Water		Water			
Dillution Factor	5		5		1		5		1		1			
Aroclor-1016	5.1	U	4.7	U	0.96	U	4.9	U	0.98	U	0.98	U	NE	NE
Aroclor-1221	10	U	9.4	U	1.9	U	9.7	U	2.0	U	2.0	U	NE	NE
Aroclor-1232	5.1	U	4.7	U	0.96	U	4.9	U	0.98	U	0.98	U	NE	NE
Aroclor-1242	5.1	U	4.7	U	0.96	U	4.9	U	0.98	U	0.98	U	NE	NE
Aroclor-1248	5.1	U	4.7	U	0.96	U	4.9	U	0.98	U	0.98	U	NE	NE
Aroclor-1254	5.1	U	4.7	U	0.96	U	4.9	U	0.98	U	0.98	U	NE	NE
Aroclor-1260	5.1	U	4.7	U	0.96	U	4.9	U	0.98	U	0.98	U	NE	NE
Total Aroclor	10	U	9.4	U	1.9	U	9.7	U	2.0	U	2.0	U	0.09	0.000001

All concentrations are in micrograms per Liter (ug/L).
NA - Not analyzed.
NE - Criteria not established.
U - The analyte was analyzed for but not detected above the reported Sample quantitation limit
J - The analyte was positivly identified; the associated numerical value is the approxiate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may not represent the actual limit of quantitation, necessary to accuratly and precisely measure the analyte in the sample.

Exceeds NYS Ambient Groundwater Standard
Exceeds NYS Ambient Surface Water Quality Standard Fish Consumption

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	NYSDEC SCGS*^(ug/l)	LVRR-18-1	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-6 (Dup of LVRR-18-4)	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2	LVRR-21-3
Lab Sample ID		R1100310	R1100310	R1100399	R1100310	R1100310	R1100310		R1006949	R1006949	R1006949	R1006949		R1100310	R1100310
DATE SAMPLED		1/16/2011	1/16/2011	1/20/2011	1/16/2011	1/16/2011	1/16/2011		12/13/2010	12/13/2010	12/13/2010	12/13/2010		1/16/2011	1/16/2011
Acetone	50	20 U	20 U	**70**	20 U	20 U	**32**	Not Sampled - no water produced from port	25 U	25 U	5.0 U	4.8 J	Not sampled - no water produced from port	20 U	20 U
Benzene	1	5.0 U	5.0 U	0.31 J	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
Bromomethane	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 UJ	1.0 UJ	1.0 U		5.0 U	5.0 U
MEK	50	10 U	10 U	3.9 J	10 U	10 U	2.5J		25 U	25 U	5.0 U	5.0 U		10 U	10 U
Carbon disulfide	120	10 U	10 U	1.0 U	10 U	10 U	10 U		5.0 U	5.0 U	1.0 U	1.0 U		10 U	10 U
Carbon Tetrachloride	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
Chloroform	7	5.0 U	5.0 U	**1.0**	5.0 U	5.0 U	0.63 J		3.0 J	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
Chloroethane	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
Chloromethane	NS	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
Cyclohexane	NS	10 U	10 U	1.0 U	10 U	10 U	10 U		5.0 U	5.0 U	1.0 U	1.0 U		10 U	10 U
Dichlorodifluoromethane	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
1,1-Dichloroethene	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
c-DCE	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		**34**	**21**	1.0 U	1.0 U		5.0 U	5.0 U
t-DCE	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
Ethylbenzene	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
2-Hexanone	50	10 U	10 U	1.1 J	10 U	10 U	0.65 J		25 U	25 U	5.0 U	5.0 U		10 U	10 U
Methylcyclohexane	NS	10 U	10 U	1.0 U	10 U	10 U	10 U		5.0 U	5.0 U	1.0 U	1.0 U		10 U	10 U
Methylene Chloride	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
MIBK	NS	10 U	10 U	**11**	10 U	10 U	**13**		25 U	25 U	5.0 U	0.62 J		10 U	10 U
PCE	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
Toluene	5	5.0 U	5.0 U	**140**	**6.8**	**6.9**	**140**		5.0 U	4.0 J	**5.7**	0.88 J		5.0 U	5.0 U
1,2,4-Trichlorobenzene	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
TCE	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		**1600**	**900**	0.63 J	0.65 J		5.0 U	5.0 U
VC	2	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
o-Xylene	5	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		5.0 U	5.0 U
m,p-Xylenes	5	5.0 U	5.0 U	2.0 U	5.0 U	5.0 U	5.0 U		10 U	10 U	2.0 U	2.0 U		5.0 U	5.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	**NYSDEC SCGS*^(ug/l)**	LVRR-21-4	LVRR-21-5	LVRR-22	LVRR-23	Dup-120810 (Dup of LVRR-23)	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-2	LVRR-26-3
Lab Sample ID		R1100310	R1100310	R1006815	R1006847	R1006847	R1006769	R1006769	R1006815	R1006769	R1006769	R1006769	R1100310	R1100310	R1100310
DATE SAMPLED		1/16/2011	1/16/2011	12/6/2010	12/8/2010	12/8/2010	12/6/2010	12/6/2010	12/6/2010	12/6/2010	12/6/2010	12/6/2010	1/16/2011	1/16/2011	1/16/2011
Acetone	50	20 U	20 U	5.0 U	7.6 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	20 U	20 U	20 U
Benzene	1	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
Bromomethane	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
MEK	50	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U
Carbon disulfide	120	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	10 U
Carbon Tetrachloride	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
Chloroform	7	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	0.24 J
Chloroethane	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	NS	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	NS	10 U	10 U	1.0 U	**7.6**	**9.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	10 U
Dichlorodifluoromethane	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethene	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
c-DCE	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
t-DCE	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
Ethylbenzene	5	5.0 U	5.0 U	1.0 U	**1.7**	**1.9**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	50	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U
Isopropylbenzene	5	5.0 U	5.0 U	1.0 U	0.69 J	0.72 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	NS	10 U	10 U	1.0 U	**14**	**16**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	10 U
Methylene Chloride	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
MIBK	NS	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U
PCE	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
Toluene	5	5.0 U	5.0 U	1.0 U	0.40 J	0.53 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
TCE	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	**13**	**7.1**	0.50 J	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
VC	2	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
o-Xylene	5	5.0 U	5.0 U	1.0 U	**1.1**	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
m,p-Xylenes	5	5.0 U	5.0 U	2.0 U	**3.1**	**3.3**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

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The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

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U-value exceeds criteria

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* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	NYSDEC SCGS*^(ug/l)	LVRR-26-4	LVRR-26-5	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3	LVRR-28-4	LVRR-28-5	LVRR-29-1	LVRR-29-2
Lab Sample ID		R1100310	R1100310	R1006949	R1006949	R1006949	R1006949	R1006949	R1006950	R1006950	R1006949	R1006949	R1006949	R1100310	R1100310
DATE SAMPLED		1/16/2011	1/16/2011	12/13/2010	12/13/2010	12/13/2010	12/13/2010	12/13/2010	12/11/2010	12/11/2010	12/13/2010	12/13/2010	12/13/2010	1/16/2011	1/16/2011
Acetone	50	20 U	20 U	5.0 U	5.0 U	5.0 U	8.7 J	4.8 J	5.0 U	12 J	10 J	2.1 J	4.8 J	20 U	20 U
Benzene	1	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
Bromomethane	5	5.0 U	5.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
MEK	50	10 U	10 U	5.0 U	5.0 U	5.0 U	1.4 J	1.6 J	1.0 U	5.0 U	1.2 J	5.0 U	5.0 U	10 U	10 U
Carbon disulfide	120	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Carbon Tetrachloride	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
Chloroform	7	5.0 U	5.0 U	1.0 U	0.58 J	1.0 U	1.0 U	1.0 U	1.0 U	0.49 J	0.45 J	1.0 U	1.0 U	5.0 U	5.0 U
Chloroethane	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
Chloromethane	NS	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
Cyclohexane	NS	10 U	10 U	0.34 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Dichlorodifluoromethane	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
1,1-Dichloroethene	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
c-DCE	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.6**	**3.8**	**4.2**	1.0 U	1.0 U	5.0 U	5.0 U
t-DCE	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.32 J	0.35 J	0.52 J	1.0 U	1.0 U	5.0 U	5.0 U
Ethylbenzene	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
2-Hexanone	50	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U
Methylcyclohexane	NS	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Methylene Chloride	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
MIBK	NS	10 U	10 U	5.0 U	5.0 U	5.0 U	1.5 J	0.81 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U
PCE	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
Toluene	5	5.0 U	5.0 U	1.0 U	**1.6**	0.38 J	**6.6**	0.51 J	1.0 U	**2.6**	**2.4**	**1.4**	**1.3**	5.0 U	5.0 U
1,2,4-Trichlorobenzene	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
TCE	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**43**	**50**	**62**	1.0 U	1.0 U	5.0 U	1.2 J
VC	2	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
o-Xylene	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
m,p-Xylenes	5	5.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	5.0 U

NOTES:

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ND: Not Detected - detection limit unavailable.
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Unicorn Management Consultants, LLC

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	NYSDEC SCGS*^(ug/l)	LVRR-29-3	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	LVRR-30-3	LVRR-30-4	LVRR-30-5	LVRR-31-1	LVRR-31-2	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1
Lab Sample ID		R1100310	R1100310	R1100310	R1006949	R1006949	R1006949	R1006949	R1006949	R1006901	R1006901	R1006901	R1006901	R1006901	R1006950
DATE SAMPLED		1/16/2011	1/16/2011	1/16/2011	12/13/2010	12/13/2010	12/13/2010	12/13/2010	12/13/2010	12/9/2010	12/9/2010	12/9/2010	12/9/2010	12/9/2010	12/11/2010
Acetone	50	20 U	20 U	20 U	5.0 U	5.0 U	1.9 J	18 J	5.0 U	5.0 U	4.3 J	4.0 J	5.2 J	5.0 U	4.1 J
Benzene	1	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MEK	50	10 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide	120	10 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	7	5.0 U	5.0 U	5.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	0.40 J	0.60 J	0.29 J	**1.4**	1.0 U	0.46 J
Chloroethane	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	NS	10 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 J	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
c-DCE	5	0.34 J	0.22 J	0.44 J	**13**	**12**	**14**	**5.3**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.49 J
t-DCE	5	5.0 U	5.0 U	5.0 U	0.71 J	0.69 J	0.75 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	50	10 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	NS	10 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.2 J	0.20 J	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MIBK	NS	10 U	10 U	10 U	5.0 U	5.0 U	5.0 U	0.70 J	5.0 U	5.0 U	5.0 U	0.45 J	5.0 U	5.0 U	5.0 U
PCE	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U
Toluene	5	5.0 U	5.0 U	5.0 U	1.0 U	0.42 J	0.63 J	**4.5**	1.0 U	1.0 U	**2.3**	**9.9**	**52**	1.0 U	**4.4**
1,2,4-Trichlorobenzene	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TCE	5	0.92 J	1.8 J	**6.3**	**440**	**440**	**440**	**140**	1.0 U	**8.0**	**6.9**	**6.5**	**1.9**	1.0 U	**73**
VC	2	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	5.0 U	5.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
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Unicorn Management Consultants, LLC

Table 16A
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1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	**NYSDEC SCGS*^(ug/l)**	LVRR-32-2	LVRR-32-3	LVRR-32-4	LVRR-32-5	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	LVRR-34-2 Diluted	LVRR-34-3	LVRR-34-4	LVRR-34-5
Lab Sample ID		R1006950	R1006950		R1006950		R1006946	R1006946	R1006946	R1006946	R1100310	R1100310	R1100310	R1100310	R1100310
DATE SAMPLED		12/11/2010	12/11/2010		12/11/2010		12/13/2010	12/13/2010	12/13/2010	12/13/2010	1/16/2011	1/16/2011	1/16/2011	1/16/2011	1/16/2011
Acetone	50	4.5 J	18 J		7.1 J		2.9 J	5.0 U	5.0 U	5.0 U	20 U	200 U	20 U	20 U	20 U
Benzene	1	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
Bromomethane	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 UJ	5.0 U	50 U	5.0 U	5.0 U	5.0 U
MEK	50	5.0 U	5.0 U		5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	10 U	17 J	10 U	1.5 J	10 U
Carbon disulfide	120	1.0 U	1.0 U		1.0 U		0.4 J	1.0 U	1.0 U	1.0 U	10 U	100 U	10 U	10 U	10 U
Carbon Tetrachloride	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
Chloroform	7	1.0 U	**1.2**		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	3.1 J	5.0 U	0.33 J	5.0 U
Chloroethane	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
Chloromethane	NS	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
Cyclohexane	NS	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	10 U	100 U	10 U	10 U	10 U
Dichlorodifluoromethane	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
c-DCE	5	0.55 J	1.0 U	Port Dry	1.0 U	Well Dry	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	**6.5**	5.0 U
t-DCE	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
Ethylbenzene	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
2-Hexanone	50	5.0 U	5.0 U		5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	10 U	100 U	10 U	10 U	10 U
Methylcyclohexane	NS	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	10 U	100 U	10 U	10 U	10 U
Methylene Chloride	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
MIBK	NS	0.43 J	**12**		5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	10 U	**100**	10 U	8.5 J	10 U
PCE	5	5.0 U	5.0 U		5.0 U		5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
Toluene	5	**19**	**95**		**3.2**		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	**820**	5.0 U	**74**	5.0 U
1,2,4-Trichlorobenzene	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
TCE	5	**95**	**50**		0.37 J		**64**	**1.4**	1.0 U	1.0 U	0.4J	50 U	4.3 J	**5.4**	5.0 U
VC	2	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
o-Xylene	5	1.0 U	1.0 U		1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U
m,p-Xylenes	5	2.0 U	2.0 U		2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	NYSDEC SCGS*^(ug/l)	LVRR-35-1	LVRR-35-2	LVRR-35-6 (Dup of LVRR-35-2)	LVRR-35-3	LVRR-35-4	LVRR-35-5	DC-01 A	DC-01 B Diluted	DC-01 C Diluted	DC-01 D	DC-02 A	DC-02 B Diluted	DC-02 C	DC-02 D
Lab Sample ID		R1006950	R1006950	R1006950	R1006950	R1006950	R1006950	R1100399	R1100399	R1100399	R1100399	R1006901	R1006901	R1100399	R1100399
DATE SAMPLED		12/14/2010	12/14/2010	12/14/2010	12/14/2010	12/14/2010	12/14/2010	1/20/2011	1/20/2011	1/20/2011	1/20/2011	12/9/2010	12/9/2010	1/21/2011	1/20/2011
Acetone	50	100 U	130 U	130 U	25 U	1.9 J	5.0 U	5.0 U	25 U	10 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U
Benzene	1	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Bromomethane	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
MEK	50	100 U	130 U	130 U	25 U	5.0 U	5.0 U	5.0 U	25 U	10 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U
Carbon disulfide	120	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Carbon Tetrachloride	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Chloroform	7	20 U	25 U	25 U	5.0 U	0.54 J	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Chloroethane	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Chloromethane	NS	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Cyclohexane	NS	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Dichlorodifluoromethane	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
1,1-Dichloroethene	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	**1.1**	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
c-DCE	5	13 J	14 J	16 J	1.9 J	**1.2**	**1.5**	**34**	2.2 J	**11**	**2.0**	1.0 U	20 J	0.67 J	1.0 U
t-DCE	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	**2.0**	5.0 U	0.78 J	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Ethylbenzene	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
2-Hexanone	50	100 U	130 U	130 U	25 U	5.0 U	5.0 U	5.0 U	25 U	10 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U
Methylcyclohexane	NS	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Methylene Chloride	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
MIBK	NS	100 U	130 U	130 U	25 U	5.0 U	5.0 U	5.0 U	25 U	10 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U
PCE	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
Toluene	5	20 U	25 U	25 U	5.0 U	**5.0**	0.56 J	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
TCE	5	**2400**	**4500**	**4500**	**710**	**200**	**200**	**12000**	570 J	**230**	**8.6**	**82**	**4100**	**12**	0.31 J
VC	2	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
o-Xylene	5	20 U	25 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U
m,p-Xylenes	5	40 U	50 U	50 U	10 U	2.0 U	2.0 U	2.0 U	10 U	4.0 U	2.0 U	2.0 U	50 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	**NYSDEC SCGS*^(ug/l)**	DC-03 A	DC-03 B Diluted	DC-03 C	DC-03 D	DC-04 A	DC-04 B	DC-04 C	DC-04 D	DC-05 A Diluted	DC-05 B Diluted	DC-05 C	Dup-11911 (Dup of DC-05C)	DC-05 D	DC-06 A
Lab Sample ID		R1100362	R1100362	R1100399	R1100399		R1006901	R1006901	R1100755	R1006901	R1100399	R1100399	R1100399	R1100399	R1006901
DATE SAMPLED		1/19/2011	1/19/2011	1/19/2011	1/20/2011		12/9/2010	12/9/2010	2/9/2011	12/9/2010	1/19/2011	1/19/2011	1/19/2011	1/20/2011	12/9/2010
Acetone	50	5.0 U	25 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	130 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	1	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MEK	50	5.0 U	25 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	130 U	10.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide	120	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	7	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	6.8 J	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	NS	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
c-DCE	5	1.0 U	**20**	1.0 U	1.0 U	Well Dry	1.0 U	1.0 U	1.0 U	17 J	**6.4**	1.0 U	1.0 U	0.45 J	0.8 J
t-DCE	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	50	5.0 U	25 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	130 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	NS	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MIBK	NS	5.0 U	25 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	130 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U
PCE	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TCE	5	**15**	**510**	0.33J	1.0 U		1.0 U	1.0 U	1.0 U	**3600**	**310**	1.0 U	1.0 U	0.42 J	**74**
VC	2	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	5.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	25 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	10 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	50 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	**NYSDEC SCGS*^(ug/l)**	DC-06 B Diluted	DC-06 C	DC-06 D	Dup-020911 (Dup of DC-06D)	DC-7R A	DC-7R B	DC-7R C	DC-7R D	DC-07	DC-09 A	DC-09 B	DC-09 C	DC-10 A	DC-10 B
Lab Sample ID		R1006901	R1006901	R1100755	R1100755	R1006847	R1006847	R1006847	R1100362	R1100362	R1100322	R1100322	R1100322	R1100306	R1100306
DATE SAMPLED		12/9/2010	12/9/2010	2/9/2011	2/9/2011	12/7/2010	12/7/2010	12/8/2010	1/19/2011	1/19/2011	1/17/2011	1/18/2011	1/18/2011	1/17/2011	1/17/2011
Acetone	50	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.9 J	5.0 U
Benzene	1	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MEK	50	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide	120	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	7	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	NS	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
c-DCE	5	**72**	0.32 J	1.0 U	1.0 U	1.0 U	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
t-DCE	5	1.3 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	50	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	NS	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MIBK	NS	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PCE	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TCE	5	**570**	**3.5**	1.0 U	1.0 U	**38**	**190**	**6.2**	1.0 U	1.0 U	**3.2**	0.41 J	1.0 U	0.31 J	**19**
VC	2	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	**NYSDEC SCGS*^(ug/l)**	Dup-11711 (Dup of DC-10B)	DC-10 C	DC-10 D	DC-11 A	DC-11 B	DC-12 A	DC-12 B	DC-12 C	DC-12 D	DC-13 A	DC-13 B	DC-14 A	DC-14 B	DC-15 A Diluted
Lab Sample ID		R1100306	R1100306	R1100306	R1100322		R1006815	R1006847	R1006847	R1006815	R1006815	R1006815	R1006815	R1006815	R1100362
DATE SAMPLED		1/17/2011	1/17/2011	1/17/2011	1/18/2011		12/7/2010	12/8/2010	12/8/2010	12/7/2010	12/7/2010	12/7/2010	12/7/2010	12/7/2010	1/18/2011
Acetone	50	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U
Benzene	1	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Bromomethane	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
MEK	50	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U
Carbon disulfide	120	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Carbon Tetrachloride	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Chloroform	7	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Chloroethane	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Cyclohexane	NS	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Dichlorodifluoromethane	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
c-DCE	5	1.0 U	1.0 U	1.0 U	1.0 U	Could not locate	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	11 J
t-DCE	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
2-Hexanone	50	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U
Methylcyclohexane	NS	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Methylene Chloride	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
MIBK	NS	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U
PCE	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
Toluene	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
1,2,4-Trichlorobenzene	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
TCE	5	**18**	1.0 U	1.0 U	1.0 U		0.39 J	**25**	**17**	**7.1**	**7.1**	**9.5**	**5.5**	**5.0**	**4600**
VC	2	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	50 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16A
Groundwater Water Sampling Results
1'st Quarterly Event
(December 2010 January 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	**NYSDEC SCGS*^(ug/l)**	DC-15 B	DC-16 Diluted	DC-17 A Diluted	DC-17 B
Lab Sample ID		R1100362	R1100362	R1100322	R1100362
DATE SAMPLED		1/18/2011	1/18/2011	1/18/2011	1/18/2011
Acetone	50	5.0 U	25 U	25 U	5.0 U
Benzene	1	1.0 U	5.0 U	5.0 U	1.0 U
Bromomethane	5	1.0 U	5.0 U	5.0 U	1.0 U
MEK	50	5.0 U	25 U	25 U	5.0 U
Carbon disulfide	120	1.0 U	5.0 U	5.0 U	1.0 U
Carbon Tetrachloride	5	1.0 U	5.0 U	5.0 U	1.0 U
Chloroform	7	1.0 U	5.0 U	5.0 U	1.0 U
Chloroethane	5	1.0 U	5.0 U	5.0 U	1.0 U
Chloromethane	NS	1.0 U	5.0 U	5.0 U	1.0 U
Cyclohexane	NS	1.0 U	5.0 U	5.0 U	1.0 U
Dichlorodifluoromethane	5	1.0 U	5.0 U	5.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	5.0 U	5.0 U	1.0 U
c-DCE	5	1.0 U	2.8 J	2.9 J	1.0 U
t-DCE	5	1.0 U	5.0 U	5.0 U	1.0 U
Ethylbenzene	5	1.0 U	5.0 U	5.0 U	1.0 U
2-Hexanone	50	5.0 U	25 U	25 U	5.0 U
Methylcyclohexane	NS	1.0 U	5.0 U	5.0 U	1.0 U
Methylene Chloride	5	1.0 U	5.0 U	5.0 U	1.0 U
MIBK	NS	5.0 U	25 U	25 U	5.0 U
PCE	5	1.0 U	5.0 U	5.0 U	1.0 U
Toluene	5	1.0 U	5.0 U	5.0 U	1.0 U
1,2,4-Trichlorobenzene	5	1.0 U	5.0 U	5.0 U	1.0 U
TCE	5	**5.9**	**670**	**650**	**1.2**
VC	2	1.0 U	5.0 U	5.0 U	1.0 U
o-Xylene	5	1.0 U	5.0 U	5.0 U	1.0 U
m,p-Xylenes	5	2.0 U	10 U	10 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operat Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

Bolded - Detected above laboratory reporting limit

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

Unicorn Management Consultants, LLC

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-18-1	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2	LVRR-21-3	LVRR-21-4	LVRR-21-5
Lab Sample ID		R1101349	R1101349	R1101349	R1101349	R1101349	N/A	R1101423	R1101423	R1101423	R1101423	N/A	R1101423	R1101423	R1101423	N/A
DATE SAMPLED		3/14/2011	3/14/2011	3/14/2011	3/14/2011	3/14/2011	N/A	3/16/2011	3/16/2011	3/16/2011	3/16/2011	N/A	3/16/2011	3/16/2011	3/16/2011	N/A
Acetone (ug/L)	50	5.0 U	5.0 U	41 J	5.6 UJ	9.1 J		25 U	17 J	5.0 U	2.1 J		5.0 U	**5.4**	R	
Benzene (ug/L)	1	1.0 U	1.0 U	0.38 J	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 UJ	10 UJ	1.0 UJ	1.0 UJ		1.0 U	1.0 UJ	1.0 UJ	
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	3.3 J	5.0 U	5.0 U		25 U	50 U	5.0 U	5.0 U		5.0 U	5.0 U	R	
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 UJ	10 UJ	1.0 U	1.0 UJ		1.0 U	1.0 UJ	1.0 UJ	
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	R	
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		10 U	20 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		45	13	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	DRY	1.5 J	10 U	1.0 U	1.0 U	DRY	1.0 U	1.0 U	1.0 U	DRY
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		25 U	50 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		10 U	20 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	0.30 J	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	4.4 J	0.72 J	1.8 J		4.6 J	12 J	5.0 U	1.3 J		5.0 U	2.9 J	R	
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
Toluene (ug/L)	5	8.5	27	230†	77J	40		210	620	0.62 J	20		1.0 U	44	R	
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	0.32 J		1.0 U	1.0 U	1.0 U	
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		870	290	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		5.0 U	10 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		10 U	20 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	

NOTES:

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ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
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J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-22	LVRR-23	DUP-031711A (Dup of LVRR-23)	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-2	LVRR-26-3	LVRR-26-4	LVRR-26-5	LVRR-27-1
Lab Sample ID		R1101383	R1101424	R1101424	R1101383	R1101383	R1101383	R1101383	R1101383	R1101383	R1101349	R1101349	R1101349	R1101349	R1101349	R1101349
DATE SAMPLED		3/15/2011	3/17/2011	3/17/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/14/2011	03/14/11	3/14/2011	03/14/11	3/14/2011	3/15/2011
Acetone (ug/L)	50	**9.3**	11 J	11 J	**8.0**	**6.7**	**9.6**	**8.8**	**7.4**	**9.5**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	4.3 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	0.63 J	0.58 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.0**
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	**2.3**	**2.6**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.74 J
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.4**	0.51 J	**1.4**	**9.7**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	**13**	**3.1**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3	LVRR-28-4	LVRR-28-5	LVRR-28-6 (Dup of LVRR-28-5)	LVRR-29-1	LVRR-29-2	LVRR-29-3	LVRR-29-4	LVRR-29-5
Lab Sample ID		R1101349	R1101349	R1101349	R1101349	R1101452	R1101452	R1101452	R1101452	R1101452	R1101452	R1101452	R1101452	R1101452	R1101452	R1101452
DATE SAMPLED		03/15/11	3/15/2011	03/15/11	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011
Acetone (ug/L)	50	**6.9**	**5.6**	**5.7**	4.6 J	5.0 U	8.4 J	**6.3**	2.5 J	2.8 J	3.0 J	5.0 U	5.0 U	5.0 U	5.0 U	4.8 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	0.45 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	**2.9**	3.5 J	**4.9**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.37 J	1.0 U	0.40 J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	0.33 J	2.0 U	0.53 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	0.50 J	0.54 J	0.84 J	0.48 J	5.0 U	10 UJ	0.39 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**20**	**34**	**21**	**17**	**2.7**	**17J**	**9.0**	**13**	**6.7**	**5.5**	1.0 U	1.0 U	1.0 U	0.31 J	**3.5**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	**48**	**56J**	**77**	0.51 J	1.0 U	1.0 U	1.0 U	**1.0**	**1.0**	**1.6**	**4.9**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
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E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

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Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-30-1	LVRR-30-2	LVRR-30-3	LVRR-30-4 14:30	LVRR-30-4 14:35	LVRR-30-5	LVRR-31-1	LVRR-31-2	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1	LVRR-32-6 (Dup of LVRR-32-1)	LVRR-32-2	LVRR-32-3
Lab Sample ID		R1101349	R1101349	R1101349	R1101349	R1101349	N/A	R1101349	R1101349	R1101349	R1101349	R1101349	R1101349	R1101349	R1101349	R1101349
DATE SAMPLED		3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	N/A	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/14/2011	3/14/2011	3/14/2011	3/14/2011
Acetone (ug/L)	50	13 U	4.9 J	13 U	**5.7**	5.0 U		5.0 U	5.0 U	5.0 U	**17**	5.0 U	5.0 U	5.0 U	6.6 UJ	18 J
Benzene (ug/L)	1	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	13 U	13 U	13 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.1 J	2.7 J
Carbon disulfide (ug/L)	120	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.46 J
Chloromethane (ug/L)	NS	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	5.0 U	5.0 U	5.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	2.5 UJ	2.5 UJ	2.5 UJ	1.0 UJ	1.0 UJ		1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	12	11	13	5.9	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.38 J	0.35 J	0.38 J	0.35 J
trans-1,2,-Dichloroethene (ug/L)	5	0.75J	0.75 J	0.75 J	0.32 J	1.0 U	DRY	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	13 U	13 U	13 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	5.0 U	5.0 U	5.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	13 U	13 U	13 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.1 J	0.35 J	5.0 U	5.0 U	0.76 J	3.9 J
1,1,2,2-Tetrachlorethane (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	2.5 U	2.5 U	15	5.8	0.44 J		1.0 U	13	**3.5**	93	22	7.0	6	41	410†
1,2,4-Trichlorobenzene (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	460	500	470	140	1.0 U		7.0	6.3	7.6	**2.1**	1.0 U	80	75	75	44
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	2.5 U	2.5 U	2.5 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	5.0 U	5.0 U	5.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-32-4	LVRR-32-5	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	LVRR-34-2	LVRR-34-6 (Dup of LVRR-34-2)	LVRR-34-3	LVRR-34-4	LVRR-34-5	LVRR-35-1	LVRR-35-2
Lab Sample ID		N/A	R1101349	R1101383	R1101383	R1101383	R1101383	R1101383	R1101423	R1101423	R1101423	R1101423	R1101423	R1101423	R1101423	R1101423
DATE SAMPLED		N/A	3/14/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/15/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011
Acetone (ug/L)	50		6.8 UJ	**7.9**	**8.7**	**6.8**	**10**	**8.2**	5.0 U	50 U	3.2 J	5.0 U	5.0 U	5.0 U	100 U	130 U
Benzene (ug/L)	1		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Bromomethane (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
2-Butanone (MEK) (ug/L)	50		5.0 U	5.0 U	5.0 U	1.9 J	5.0 U	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	100 U	130 U
Carbon disulfide (ug/L)	120		1.0 U	0.73 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Carbon Tetrachloride (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Chlorobenzene (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Chloroform (ug/L)	7		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Chloromethane (ug/L)	NS		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U	50 U
Cyclohexane (ug/L)	NS		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Dichlorodifluoromethane (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
1,1-Dichloroethene (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
cis-1,2-Dichloroethene (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	**5.9**	1.0 U	**14J**	**32**
trans-1,2,-Dichloroethene (ug/L)	5	DRY	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Ethylbenzene (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
2-Hexanone (ug/L)	50		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	100 U	130 U
Methyl Acetate (ug/L)	NS		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U	50 U
Methylcyclohexane (ug/L)	NS		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Methylene Chloride (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	0.61 J	5.0 U	5.0 U	5.0 U	100 U	130 U
1,1,2,2-Tetrachlorethane (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Tetrachloroethene (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Toluene (ug/L)	5		**37**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**7.6**	**8.7J**	**14**	**1.9**	**9.0**	**6.2**	20 U	25 U
1,2,4-Trichlorobenzene (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Trichloroethene (ug/L)	5		1.0 U	1.0 U	**70**	**3.2**	1.0 U	1.0 U	0.44J	10 U	0.60 J	**4.0**	**6.5**	1.0 U	**4500†**	**3700**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
Vinyl Chloride (ug/L)	2		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	25 U
m,p-Xylenes (ug/L)	5		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U	50 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-35-3	LVRR-35-4	LVRR-35-5	DC-01A	DC-01B	DC-01C	DC-01D	DC-02A	DC-02B	DUP-031611-A (Dup of DC-02B)	DC-02C	DC-02D	DC-03A	DC-03B	DC-03C
Lab Sample ID		R1101423	R1101423	R1101423	R1101424	R1101424	R1101424	R1101424	R1101422	R1101422	R1101422	R1101422	R1101422	R1101424	R1101424	R1101424
DATE SAMPLED		3/16/2011	3/16/2011	3/16/2011	3/17/2011	3/17/2011	3/17/2011	3/17/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/17/2011	3/17/2011	3/17/2011
Acetone (ug/L)	50	**140**	3.9 J	5.0 U	500 U	9.2 J	7.0 J	**6.3**	**8.9**	100 UJ	50 U	**6.6**	**10**	**7.8**	9.5 J	**5.7**
Benzene (ug/L)	1	**1.6 J**	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Bromomethane (ug/L)	5	5.0 U	1.0 UJ	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	25 U	5.0 U	5.0 U	500 U	25 U	1.2 J	5.0 U	5.0 U	100 U	50 U	1.7 J	1.7 J	1.2 J	25 U	5.0 U
Carbon disulfide (ug/L)	120	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	**3.9**	1.0 U	20 U	10 UJ	1.0 U	1.0 U	1.0 U	3.7 J	0.80 J
Carbon Tetrachloride (ug/L)	5	5.0 U	1.0 UJ	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Chlorobenzene (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Chloroform (ug/L)	7	2.2 J	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Chloromethane (ug/L)	NS	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	10 U	2.0 U	2.0 U	200 U	10 U	2.0 U	2.0 U	2.0 U	40 U	20 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U
Cyclohexane (ug/L)	NS	25 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 UJ	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	**6.4**	**19**	**5.3**	100 U	2.3 J	**4.6**	0.34 J	**11**	**11 J**	**9.9 J**	0.44 J	1.0 U	1.0 U	**10**	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	**1.2**	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Ethylbenzene (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
2-Hexanone (ug/L)	50	3.1 J	5.0 U	5.0 U	500 U	25 U	5.0 UJ	5.0 U	5.0 U	100 U	50 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U
Methyl Acetate (ug/L)	NS	10 U	2.0 U	2.0 U	200 U	10 U	2.0 U	2.0 U	2.0 U	40 U	20 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U
Methylcyclohexane (ug/L)	NS	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Methylene Chloride (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	18 J	0.42 J	5.0 U	500 U	25 U	5.0 UJ	5.0 U	5.0 U	100 U	50 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Tetrachloroethene (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Toluene (ug/L)	5	**900**	**40**	**8**	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Trichloroethene (ug/L)	5	**220**	**130**	**60**	**12000**	**750**	**24**	**6.8**	**100**	**2300**	**2100**[†]	**9.1**	0.31 J	1.0 U	**690**	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Vinyl Chloride (ug/L)	2	5.0 U	1.0 U	1.0 U	100 U	5.0 U	1.0 U	1.0 U	1.0 U	20 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
m,p-Xylenes (ug/L)	5	10 U	2.0 U	2.0 U	200 U	10 U	2.0 U	2.0 U	2.0 U	40 U	20 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

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E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

[†] Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-03D	DC-04A	DC-04B	DC-04C	DC-04D	DC-05A	DC-05B	DC-05C	DC-05D	DC-06A	DC-06B	DC-06C	DC-06D	DC-07	DC-07RA
Lab Sample ID		R1101424	R1101424	R1101424	R1101424	R1101424	R1101422	R1101422	R1101422	R1101422	R1101424	R1101424	R1101424	R1101424	R1101424	R1101422
DATE SAMPLED		3/17/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/17/2011	3/17/2011	3/17/2011	3/17/2011	3/17/2011	3/16/2011
Acetone (ug/L)	50	**8.8**	**6.9**	**7.7**	**6.7**	**6.6**	9.0 J	25 U	**8.2**	**7.8**	**7.0**	8.5J	**7.1**	**7.5**	**8.2**	11J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	1.4 J	1.1 J	1.3 J	1.2 J	1.1 J	2.3 J	25 UJ	1.7 J	1.7 J	1.2 J	1.5 J	1.1 J	1.3 J	1.1 J	1.9 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.2**	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**5.4**	**45**	0.51 J	1.0 U	**1.9**	**7.5**	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	25 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	25 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**360**	**710**	1.0 U	0.39 J	**690**†	**150**	**3.3**	1.0 U	1.0 U	**1.5**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DUP-031611-B (Dup of DC-07RA)	DC-07RB	DC-07RC	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A	DC-10B	DC-10C	DC-10D	DC-11A	DC-11B	DC-11C	DC-12A
Lab Sample ID		R1101422	R1101422	R1101422	R1101422	R1101422	R1101422	R1101422	R1101422	R1101422	R1101422	R1101422	R1101424	R1101454	N/A	R1101383
DATE SAMPLED		3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/17/2011	3/17/2011	N/A	3/15/2011
Acetone (ug/L)	50	**10**	**8.5**	**9.0**	8.2 J	**6.0**	**7.7**	**7.1**	**10**	**7.8**	**12**	**11**	4.9J	7.9J		**7.5**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
2-Butanone (MEK) (ug/L)	50	2.0 J	5.0 U	1.7 J	1.2 J	1.6 J	1.5 J	1.6 J	5.0 U	5.0 U	5.0 U	2.0 J	5.0 U	5.0 U		5.0 U
Carbon disulfide (ug/L)	120	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	0.43 J	**1.4**		1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	0.83 J	0.65 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	DRY	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ		5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ		5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Trichloroethene (ug/L)	5	**1.7**	**150**	**54**	1.0 U	**6.5**	1.0 U	1.0 U	1.0 U	**16**	1.0 U	1.0 U	1.0 U	1.0 U		0.46J
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-12B	DC-12C	DC-12D	DC-13A	DC-13B	DC-14A	DC-14B	DC-15A	DC-15B	DC-16	DC-16C (Dup of DC-16)	DC-17A	DC-17B
Lab Sample ID		R1101383	R1101383	R1101383	R1101422	R1101422	R1101383	R1101383	R1101422	R1101422	R1101424	R1101424	R1101424	R1101424
		3/15/2011	3/15/2011	3/15/2011	3/16/2011	3/16/2011	3/15/2011	3/15/2011	3/16/2011	3/16/2011	3/16/2011	3/16/2011	3/17/2011	3/17/2011
Acetone (ug/L)	50	**9.0**	**8.9**	**6.3**	**7.8**	**5.9**	**9.5**	**9.9**	130 U	**7.2**	25 U	25 U	11 J	**6.2**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	1.9 J	1.8 J	1.9 J	5.0 U	130 U	1.3 J	25 U	25 U	25 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	25 UJ	1.0 UJ	5.0 U	5.0 U	5.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	50 U	2.0 U	10 U	10 U	10 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	25 UJ	1.0 UJ	5.0 U	5.0 U	5.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	**7.5**	**7.8**	**5.2**	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U	5.0 U	25 U	25 U	25 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	50 U	2.0 U	10 U	10 U	10 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U	5.0 U	25 U	25 U	25 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Trichloroethene (ug/L)	5	**18**	**12**	**1.4**	**4.9**	**7.8**	**6.3**	**5.4**	**3100**	**1.6**	**3300†**	**3200†**	**540**	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	50 U	2.0 U	10 U	10 U	10 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

(red) Exceeds Criteria

(orange) U-value exceeds criteria

(blue) J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16B
Groundwater Water Sampling Results
2'nd Quarterly Event
(March 2011)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1101454	R1101454	R1101454
DATE SAMPLED		3/17/2011	3/17/2011	3/17/2011
Acetone (ug/L)	50	7.9 J	7.4 J	6.8 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	1.2 J	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 UJ	5.0 UJ	5.0 UJ
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 UJ	5 UJ	5 UJ
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**35**	**27**	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U

NOTES:
All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit
* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Amb Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.
R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
Bolded - Detected above laboratory reporting limit
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.
† Result was taken from the more diluted analysis.

Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-18-1	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2	LVRR-21-3	LVRR-21-4
Lab Sample ID		R1103684	R1103684	R1103684	R1103684	R1103684	R1103679	R1103684	R1103684	R1103684	R1103684	R1103685	R1103685	R1103685	R1103685
DATE SAMPLED		6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/30/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011
VOC'S															
Acetone (ug/L)	50	5.0 U	5.0 U	**16**	5.0 U	**13**	**27**	**26**	13 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	4.8 J
Benzene (ug/L)	1	1.0 U	1.0 U	0.33 J	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-B Utanone (MEK) (ug/L)	50	5.0 U	5.0 U	4.1 J	0.53 J	1.0 J	3.7 J	25 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon dis Ulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	0.23 J	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	10 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 J	5.0 U	2.5 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.9 J	**33**	**15**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.3 J	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	10 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.8 J	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	1.5 J	5.0 U	2.0 J	11 J	2.8 J	2.4 J	5.0 U	1.0 J	5.0 U	5.0 U	5.0 U	1.3 J
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**2.5**	**5.6**	**120**	**40**	**89**	**570**	**230**	**260**	**21**	**13**	1.0 U	1.0 U	**5.2**	**38**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**15**	**780**	**270**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	10 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-22	LVRR-23	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-6 (Dup of LVRR-26-1)	LVRR-26-2	LVRR-26-3	LVRR-26-4	LVRR-26-5
Lab Sample ID		R1103651	R1103660	R1103651	R1103651	R1103651	R1103651	R1103651	R1103651	R1103684	R1103684	R1103684	R1103684	R1103684	R1103684
DATE SAMPLED		6/28/2011	6/29/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011
VOC'S															
Acetone (ug/L)	50	**5.1**	**6.3**	**6.3**	**5.1**	**6.1**	4.1 J	4.4 J	4.9 J	5.0 U	5.0 U	**34**	5.0 U	5.0 U	**5.7**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 J	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.28 J	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	0.36 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	0.59 J	1.0 U	0.59 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.3 J	5.0 U	5.0 U	0.5 J
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**8.5**	**6.9**	**400**†	**10**	**24**	**90**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	**14**	**3.5**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.20 J	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3	LVRR-28-4	LVRR-28-5	LVRR-28-6 (Dup of LVRR-26-5)	LVRR-29-1	LVRR-29-2	LVRR-29-3
Lab Sample ID		R1103679	R1103679	R1103679	R1103679	R1103679	R1103679	R1103679	R1103679	R1103679	R1103679	R1103679	R1103685	R1103685	R1103685
DATE SAMPLED		6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/29/2011	6/29/2011	6/29/2011
VOC'S															
Acetone (ug/L)	50	**5.2**	**9.5**	**5.7**	5.0 U	5.0 U	5.0 U	**22**	**8.9**	**9.5**	**8.9**	**9.3**	5.0 U	5.0 U	5.0 U
Benzene (ug/L)	1	0.32 J	0.33 J	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	2.0 J	3.0 J	1.3 J	1.2 J	1.4 J	0.72 J	4.1 J	1.8 J	1.4 J	1.6 J	1.7 J	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	0.22 J	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	0.73 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.0**	**9.2**	**13**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.29 J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.9 J	0.99 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	0.58 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.46 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	0.41 J	0.93 J	0.49 J	0.47 J	5.0 U	5.0 U	1.3 J	0.33 J	0.61 J	0.62 J	0.67 J	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**5.5**	**29**	**42**	**7.5**	**12**	**9.6**	**39 J**	**7.2**	**25 J**	**20**	**24**	0.27 J	0.25 J	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**21**	**71**	**110**	1.0 U	1.0 U	1.0 U	1.0 U	0.5 J	0.5 J
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	0.28 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	R	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	LVRR-30-3	LVRR-30-4	LVRR-30-5	LVRR-31-1	LVRR-31-6 (Dup of LVRR-31-1)	LVRR-31-2	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1
Lab Sample ID		R1103685	R1103679		R1103679	R1103679	R1103679	R1103679	R1103685	R1103685	R1103685	R1103685	R1103685	R1103685	R1103684
DATE SAMPLED		6/29/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/28/2011
VOC'S															
Acetone (ug/L)	50	5.0 U	**160**	Dry	13 U	13 U	5.0 U	5.0 U	5.0 U	1.1 J	**110**	**11**	**26**	4.8 J	**5.4**
Benzene (ug/L)	1	1.0 U	0.41 J	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	**13**	Dry	13 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U	5.4 J	0.78 J	1.3 J	5.0 U	1.0 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	0.96 J	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	Dry	5.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	R	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 UJ	R	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	0.3 J	0.25 J	Dry	**9.6**	**11**	**6.1**	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	0.26 J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	Dry	0.78 J	0.7 J	0.37 J	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	R	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	2.8 J	Dry	13 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U	R	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	Dry	5.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	R	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	**22**	Dry	13 U	13 U	1.0 U	1.0 U	5.0 U	5.0 U	20 J	2.2 J	4.2 J	0.84 J	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	0.31 J	**280 J**†	Dry	1.7 J	**19**	**1.7**	0.58 J	1.0 U	1.0 U	**640 J**	**120**	**170**	**76 J**	**19**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**1.7**	**2.9**	Dry	**440**	**430**	**140**	1.0 U	**9.1**	**8.5**	**5.5**	**6.6**	**1.3**	1.0 U	**49**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	Dry	2.5 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	R	Dry	5.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	R	2.0 U	0.42 J	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-32-2	LVRR-32-3	LVRR-32-4	LVRR-32-5	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	LVRR-34-2	LVRR-34-3	LVRR-34-4
Lab Sample ID		R1103684	R1103684	R1103651	R1103684	R1103651	R1103651	R1103651	R1103651	R1103651	R1103685	R1103685	R1103685	R1103685
DATE SAMPLED		6/28/2011	6/28/2011	6/30/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011
VOC'S														
Acetone (ug/L)	50	**16**	**35**	**230**	5.0 U	**5.0**	**5.2**	4.3 J	4.0 J	4.8 J	**93**	**46**	**53**	**52**
Benzene (ug/L)	1	1.0 U	0.65 J	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	2.5 U	10 U	0.42 J
Bromomethane (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5U	10 U	1.0 U
2-Butanone (MEK) (ug/L)	50	3.1 J	6.8 J	**51 J**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	13 U	50 U	3.5 J
Carbon disulfide (ug/L)	120	1.0 U	2.5 U	20 U	1.0 U	0.27 J	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	0.25 J
Chloroform (ug/L)	7	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	0.50 J
Chloromethane (ug/L)	NS	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	0.45 J
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	5.0 U	40 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	5.0 U	20 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	2.5 U	10 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	10 U	2.5 U	10 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	0.32 J	0.5 J	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	**5.1**
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	2.5 U	10 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	13 U	100 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	13 U	50 U	0.63 J
Methyl Acetate (ug/L)	NS	2.0 U	5.0 U	R	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	5.0 U	20 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	2.5 U	10 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	1.8 J	7.9 J	**190**	0.29 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	12 J	5.7 J	6.2 J	**7.5**
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	2.5 U	R	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
Toluene (ug/L)	5	**94**	**330**	**2400**	**36**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**560 J**	**250**	**290**	**240†**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
Trichloroethene (ug/L)	5	**48**	**29**	5.0 J	1.0 U	1.0 U	**72**	**40**	1.0 U	1.0 U	10 U	1.9 J	10 U	**5.2**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	2.5 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	2.5 U	10 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	5.0 U	40 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	R	5.0 U	20 U	0.26 J

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-34-5	LVRR-35-1	LVRR-35-2	LVRR-35-3	LVRR-35-4	LVRR-35-5	DC-01A	DC-01E (Dup of DC-01A)	DC-01B	DC-01C	DC-01D	DC-02A	DC-02B	DC-02C
Lab Sample ID		R1103685	R1103679	R1103679	R1103679	R1103679	R1103679	R1103680	R1103680	R1103680	R1103680	R1103680	R1103680	R1103680	R1103680
DATE SAMPLED		6/29/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011
VOC'S															
Acetone (ug/L)	50	**76**	50 U	130 U	**20**	**57**	**5.8**	1000 U	1000 U	3.8 J	2.8 J	3.4 J	5.2 J	200 U	6.1 J
Benzene (ug/L)	1	R	10 U	25 U	0.67 J	**1.5**	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Bromomethane (ug/L)	5	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
2-Butanone (MEK) (ug/L)	50	50 U	50 U	130 U	4.1 J	4.1 J	0.61 J	500 U	500 U	10 U	10 U	10 U	10 U	100 U	10 U
Carbon disulfide (ug/L)	120	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	500 U	10 U	10 U	0.59 J	10 U	100 U	10 U
Carbon Tetrachloride (ug/L)	5	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Chlorobenzene (ug/L)	5	10 U	10 U	25 U	1.0 U	0.26 J	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Chloroform (ug/L)	7	10 U	10 U	25 U	0.24 J	0.56 J	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Chloromethane (ug/L)	NS	10 U	10 U	25 U	1.0 U	0.59 J	1.0 U	500 U	500 U	10 U	10 U	10 U	10 U	100 U	10 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	20 U	20 U	50 U	2.0 U	2.0 U	2.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Cyclohexane (ug/L)	NS	R	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Dichlorodifluoromethane (ug/L)	5	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
1,1-Dichloroethene (ug/L)	5	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
cis-1,2-Dichloroethene (ug/L)	5	10 U	**12**	**160**	**40**	**34**	**4.9**	**19 J**	**13 J**	0.57 J	**12**	0.31 J	5.0 U	**5.9 J**	0.73 J
trans-1,2,-Dichloroethene (ug/L)	5	10 U	10 U	25 U	0.34 J	0.42 J	1.0 U	250 U	250 U	5.0 U	1.1 J	5.0 U	5.0 U	50 U	0.21 J
Ethylbenzene (ug/L)	5	R	10 U	25 U	1.0 U	0.25 J	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
2-Hexanone (ug/L)	50	50 U	50 U	130 U	5.0 U	1.3 J	5.0 U	500 U	500 U	10 U	10 U	10 U	10 U	100 U	10 U
Methyl Acetate (ug/L)	NS	20 U	20 U	50 U	2.0 U	2.0 U	2.0 U	500 U	500 U	10 U	10 U	10 U	10 U	100 U	10 U
Methylcyclohexane (ug/L)	NS	R	10 U	25 U	1.0 U	1.0 U	1.0 U	500 U	500 U	10 U	10 U	10 U	10 U	100 U	10 U
Methylene Chloride (ug/L)	5	2.2 J	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	12 J	50 U	130 U	1.4 J	4.0 J	0.59 J	500 U	500 U	10 U	10 U	10 U	10 U	100 U	10 U
1,1,2,2-Tetrachlorethane (ug/L)	5	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Tetrachloroethene (ug/L)	5	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Toluene (ug/L)	5	**810 J**	**21**	**47**	**200**	**170†**	**93**	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
1,2,4-Trichlorobenzene (ug/L)	5	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Trichloroethene (ug/L)	5	10 U	**1300**	**2600**	**120**	**61**	**39**	**6300**	**5900**	**97**	**180**	**7.1**	**62**	**1700**	**8.8**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
Vinyl Chloride (ug/L)	2	10 U	10 U	25 U	1.0 U	1.0 U	1.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U
m,p-Xylenes (ug/L)	5	R	20 U	50 U	0.26 J	0.33 J	2.0 U	250 U	250 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-02D	DC-03A	DC-03E (Dup of DC-03A)	DC-03B	DC-03C	DC-03D	DC-04A	DC-04B	DC-04C	DC-04D	DC-05A	DC-05E (Dup of DC-05A)	DC-05B	DC-05C
Lab Sample ID		R1103680	R1103680	R1103680	R1103680	R1103680	R1103680	R1103660	R1103660	R1103660	R1103660	R1103660	R1103660	R1103660	R1103660
DATE SAMPLED		6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/30/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011
VOC'S															
Acetone (ug/L)	50	5.7 J	5.2 J	6.6 J	7.7 J	5.1 J	6.1 J	**9.8**	**6.4**	**8.1**	**7.6**	21 J	19 J	**7.5**	**6.5**
Benzene (ug/L)	1	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	10 UJ	10 UJ	1.0 UJ	1.0 UJ
2-Butanone (MEK) (ug/L)	50	10 U	10 U	10 U	50 U	10 U	10 U	3.2 J	1.0 U	3.0 J	2.9 J	50 U	50 U	1.8 J	2.0 J
Carbon disulfide (ug/L)	120	10 U	2.8 J	**11**	50 U	10 U	5.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	10 UJ	10 UJ	1.0 UJ	1.0 UJ
Carbon Tetrachloride (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Chloroform (ug/L)	7	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ	20 UJ	20 UJ	2.0 UJ	2.0 UJ
Cyclohexane (ug/L)	NS	10 U	10 U	10 U	50 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	5.0 U	5.0 U	5.0 U	**9.4 J**	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.4 J	2.6 J	**4.8**	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	5.0 U	5.0 U	5.0 U	1.2 J	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	10 U	10 U	10 U	50 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	50 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	10 U	10 U	10 U	50 U	10 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	20 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	10 U	10 U	10 U	50 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	10 U	10 U	10 U	50 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	10 UJ	10 UJ	1.0 UJ	1.0 UJ
Tetrachloroethene (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Toluene (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	0.27 J	**25**	**25**	**620**	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1800**	**1800**	**72**	0.24 J
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	10 UJ	10 UJ	1.0 UJ	1.0 UJ
Vinyl Chloride (ug/L)	2	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	0.49 J	1.0 U
m,p-Xylenes (ug/L)	5	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	20 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

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Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-05D	DC-06A	DC-06B	DC-06C	DC-06D	DC-07	DC-07RA	DC-07RB	DC-07RC	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A
Lab Sample ID		R1103660	R1103660	R1103660	R1103660	R1103660	R1103680	R1103684	R1103684	R1103684	R1103684	R1103651	R1103651	R1103651	R1103651
DATE SAMPLED		6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/29/2011	6/30/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011
VOC'S															
Acetone (ug/L)	50	**7.3**	11 J	**6.6**	**6.8**	**7.1**	4.1 J	5.0 U	5.0 U	5.0 U	5.0 U	4.4 J	4.2 J	**5.2**	**5.4**
Benzene (ug/L)	1	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	1.0 U	25 U	2.8 J	5.0 U	5.0 U	10 U	0.61 J	0.72 J	0.68 J	0.67 J	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 UJ	5.0 U	1.0 U	1.0 U	1.0 U	4.6 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 UJ	10 UJ	2.0 UJ	2.0 UJ	2.0 UJ	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1-Dichloroethene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	**7.8**	0.21 J	1.0 U	1.0 U	5.0 U	1.0 U	0.49 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	25 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	10 U	2.0 U	2.0 U	2.0 U	10 U	0.29 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	25 U	1.0 U	1.0 U	1.0 U	10 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 UJ	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	0.44 J	**510**	**3.0**	1.0 U	1.0 U	5.0 U	**26**	**120**	0.92 J	1.0 U	**11**	0.25 J	1.0 U	**1.6**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 UJ	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	10 U	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-10B	DC-10C	DC-10D	DC-11A	DC-11B	DC-12A	DC-12E (Dup of DC-12E)	DC-12B	DC-12C	DC-12D	DC-13A	DC-13B	DC-14A	DC-14B
Lab Sample ID		R1103651	R1103651	R1103651	R1103651	R1103651	R1103651	R1103651	R1103651	R1103651	R1103651	R1103660	R1103660	R1103651	R1103651
DATE SAMPLED		6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/29/2011	6/29/2011	6/28/2011	6/28/2011
VOC'S															
Acetone (ug/L)	50	4.5 J	4.3 J	4.1 J	4.3 J	**5.4**	4.7 J	4.1 J	4.9 J	4.1 J	4.2 J	**7.3**	**9.6**	**7.8**	4.6 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.85 J	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U J	1.0 U J	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**23**	1.0 U	1.0 U	1.0 U	1.0 U	0.47 J	0.54 J	**26**	**14**	**1.4**	**4.9**	**7.0**	0.45 J	**6.9**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16C
Groundwater Water Sampling Results
3'rd Quarterly Event
(June 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-15A	DC-15B	DC-16	DC-17A	DC-17B	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1103660	R1103660	R1103660	R1103680	R1103680	R1103660	R1103660	R1103660
DATE SAMPLED		6/29/2011	6/29/2011	6/29/2011	6/30/2011	6/30/2011	6/29/2011	6/29/2011	6/29/2011
VOC'S									
Acetone (ug/L)	50	19 J	**5.6**	19 J	5.2 J	4.5 J	**6.9**	**6.0**	**7.3**
Benzene (ug/L)	1	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	10 U	1.0 U	10 U J	13 U	5.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	50 U	1.9 J	50 U	25 U	10 U	5.0 U	5.0 U	1.9 J
Carbon disulfide (ug/L)	120	10 U	1.0 U	10 U J	25 U	10 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	2.5 J	1.0 U	10 U	13U	5.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	10 U	1.0 U	10 U	13U	5.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	20 UJ	2.0 UJ	20 UJ	13 U	5.0 U	2.0 UJ	2.0 UJ	2.0 UJ
Cyclohexane (ug/L)	NS	10 U	1.0 U	10 U	25 U	10 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	10 U	1.0 U	3.0 J	3.0 J	5.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	50 U	5.0 U	50 U	25 U	10 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	20 U	2.0 U	20 U	25 U	10 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	10 U	1.0 U	10 U	25 U	10 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	50 U	5.0 U	50 U	25 U	10 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	10 U	1.0 U	10 UJ	13 U	5.0 U	1.0 UJ	1.0 UJ	1.0 UJ
Tetrachloroethene (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**930**	**1.7**	**1600**	**440**	5.0 U	**22**	**17**	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	10 U	1.0 U	10 U J	13 U	5.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	10 U	1.0 U	10 U	13 U	5.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	20 U	2.0 U	20 U	13 U	5.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-18-1	LVRR-18-2	LVRR-18-6 (Dup of LVRR-18-2)	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2
Lab Sample ID		R1105274	R1105274	R1105274	R1105274	R1105274	R1105274	R1105241	R1105241	R1105241	R1105241			R1105241
DATE SAMPLED		9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011
VOC'S														
Acetone (ug/L)	50	5.0 U	5.0 U	5.0 U	4.8 J	**7.3**	4.1 J	**190**	**80**	**170**	**9.1**			5.0 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 UJ	5.0 U	0.65 J	1.0 U			1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	1.0 J	0.92 J	11 J	5.6 J	11 J	1.1 J			5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.4 J	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	0.78 J	1.0 U			1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	10 U	5.0 U	2.0 U			2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.2 J	**8.5**	**3.4**	1.0 U			1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U	DRY	DRY	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 UJ	5.0 U	0.63 J	1.0 U			1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	4.4 J	5.0 U			5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	10 U	5.0 U	2.0 U			2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	0.63 J	0.81 J	0.78 J	22 J	8.3 J	**25**	1.5 J			5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Toluene (ug/L)	5	0.68 J	3.7 J	0.51 J	**29**	**73**	**54**	**1300†**	**660**	**700†**	**170**			1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**61**	**410**	**67**	0.3 J			1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	2.5 U	1.0 U			1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 UJ	10 U	0.68 J	2.0 U			2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-21-3	LVRR-21-4	LVRR-22	LVRR-23	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-2	LVRR-26-6 (Dup of LVRR-26-2)
Lab Sample ID		R1105241	R1105241	R1105215	R1105240	R1105215	R1105215	R1105215	R1105215	R1105215	R1105215	R1105216	R1105216	R1105216
DATE SAMPLED		9/21/2011	9/21/2011	9/20/2011	9/21/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011
VOC'S														
Acetone (ug/L)	50	**7.5**	**7.2**	**6.4**	4.9 J	**5.8**	**7.0**	**7.1**	**6.9**	**7.8**	**7.0**	5.0 U	5.0 U	5.0 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 UJ
2-Butanone (MEK) (ug/L)	50	0.71 J	0.69 J	0.8 J	5.0 U	0.83 J	5.0 U	1.1 J	0.82 J	0.87 J	1.0 J	5.0 U	1.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	4.6 J	1.0 U	0.41 J	1.0 UJ	1.0 UJ	0.52 J	**2.1**	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	2.3 J	2.0 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**50**	**48**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**13**	**50**	**48**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	**13**	**5.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-26-3	LVRR-26-4	LVRR-26-5	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3	LVRR-28-4	LVRR-28-5
Lab Sample ID		R1105216	R1105216	R1105216		R1105216	R1105216	R1105216	R1105216			R1105241	R1105241	R1105241
DATE SAMPLED		9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011
VOC'S														
Acetone (ug/L)	50	5.0 U	5.0 U	5.0 U		**13**	**13**	5.0 U	5.0 U			**54**	**6.7**	1.9 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U		0.34 J	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ		1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ			1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U		2.2 J	1.8 J	0.62 J	1.0 J			**5.7**	0.83 J	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			0.23 J	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			**2.6**	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	DRY	1.0 U	1.0 U	1.0 U	1.0 U	DRY	DRY	0.21 J	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U			0.81 J	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U		0.66 J	1.0 J	0.33 J	5.0 U			3.0 J	0.45 J	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**8.7**	**22**	**3.8**		**19**	**30**	**17**	**5.8**			**15**	**6.6**	**2.6**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			**22**	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-28-6 (Dup of LVRR 28-5)	LVRR-29-1	LVRR-29-2	LVRR-29-3	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	LVRR-30-3	LVRR-30-4	LVRR-30-5	LVRR-31-1	LVRR-31-2
Lab Sample ID		R1105241	R1105241	R1105241	R1105241	R1105241			R1105216	R1105216	R1105216	R1105216	R1105216	R1105216
DATE SAMPLED		9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/21/2011	9/21/2011
VOC'S														
Acetone (ug/L)	50	2.0 J	1.4 J	1.9 J	1.6 J	5.0 U			5.0 U	7.2 U	5.0 U	5.0 U	5.0 U	**120**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U			5.0 U	0.85 J	5.0 U	5.0 U	5.0 U	**6.3**
Carbon disulfide (ug/L)	120	1.2 J	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	0.37 J	1.0 U	0.59 J	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.27 J
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	0.29 J			**12**	**14**	**3.4**	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	DRY	DRY	0.62 J	0.7 J	0.21 J	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U			0.3 J	0.69 J	5.0 U	5.0 U	5.0 U	**22**
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**2.3**	1.0 U	0.43 J	0.96 J	0.25 J			**5.6**	**32**	**3.6**	0.93 J	1.0 U	**630**[†]
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	0.84 J	0.42 J	**2.9**			**450**[†]	**440**[†]	**79**	1.0 U	**8.3**	**4.6**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.25 J

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

[†] Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1	LVRR-32-2	LVRR-32-3	LVRR-32-4	LVRR-32-5	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E
Lab Sample ID		R1105241	R1105241	R1105241	R1105274	R1105274	R1105274	R1105274	R1105274	R1105215	R1105215	R1105215	R1105215	R1105215
DATE SAMPLED		9/21/2011	9/21/2011	9/21/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011
VOC'S														
Acetone (ug/L)	50	**8.2**	**34**	3.9 J	**10**	**34**	**82**	**350**	**6.7**	**9.0**	**7.7**	**6.5**	**5.5**	**5.9**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	0.23 J	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	1.3 J	5.0 U	1.7 J	**5.5**	**14**	**58**	1.1 J	1.3 J	1.3 J	0.78 J	0.81 J	0.73 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	0.61 J	1.0 U	**1.2**	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	0.55 J	3.7 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	0.29 J	0.3 J	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	0.45 J	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.88 J	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	1.1 J	4.0 J	0.72 J	1.1 J	4.6 J	**20**	130 J	2.0 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**48**	**37**	**32**	**68**	**160†**	**380**	1900 J	**150**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**6.4**	0.41 J	1.0 U	**47**	43 J	**25**	10 U	0.33 J	1.0 U	**17**	**12**	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	0.32 J	5.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-34-1	LVRR-34-2	LVRR-34-3	LVRR-34-4	LVRR-34-5	LVRR-35-1	LVRR-35-2	LVRR-35-3	LVRR-35-4	LVRR-35-5	DC-01A	DC-01B	DC-01C
Lab Sample ID		R1105274	R1105274			R1105274	R1105274	R1105274	R1105274	R1105274		R1105274	R1105274	R1105274
DATE SAMPLED		9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011	9/22/2011
VOC'S														
Acetone (ug/L)	50	3.7 J	3.1 J			1.6 J	13 J	**62 J**	2.3 J	**8.2**		6.7 J	**7.8**	**10**
Benzene (ug/L)	1	1.0 U	1.0 U			1.0 U	10 U	25 U	0.26 J	1.0 U		1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U			5.0 U	50 U	130 U	5.0 U	5.0 U		5.0 U	5.0 U	1.4 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	0.22 J		1.0 U	1.0 U	0.21 J
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U			1.0 U	4.7 J	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U			2.0 U	20 U	50 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		0.53 J	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U			1.0 U	**42**	**430**	**35**	**38**		**31**	0.57 J	**9.0**
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	DRY	DRY	1.0 U	10 U	25 U	0.21 J	1.0 U	DRY	**3.7**	1.0 U	**1.0**
Ethylbenzene (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U			5.0 U	50 U	130 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U			2.0 U	20 U	50 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U			1.0 U	3.3 J	9.3 J	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	0.58 J	0.34 J			5.0 U	50 U	130 U	5.0 U	1.2 J		5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**13**	**9.3**			**3.7**	**44**	**45**	**32**	**91**		1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**1.2**	**1.7**			1.0 U	**1800**	**3500**	**150**	**33**		**6900†**	**120**	**150**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U			1.0 U	10 U	25 U	1.0 U	1.0 U		**1.1**	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U			2.0 U	20 U	50 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-01D	DC-02A	DUP092111PDB3 (Dup of DC-02A)	DC-02B	DC-02C	DC-02D	DC-03A	DUP092111PDB1 (Dup of DC-03A)	DC-03B	DC-03C	DC-03D	DC-04A	DC-04B
Lab Sample ID		R1105274	R1105242	R1105242	R1105242	R1105242	R1105242	R1105240	R1105240	R1105240	R1105240	R1105240	R1105240	R1105240
DATE SAMPLED		9/22/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011
VOC'S														
Acetone (ug/L)	50	**7.7**	18 J	**6.6**	13 J	**6.7**	**6.1**	6.1 J	15 J	11 J	**7.0**	**7.3**	**7.2**	**6.8**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	**4.1**	0.3 J
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	1.2 J	2.4 J	0.93 J	50 U	1.3 J	0.84 J	5.0 U	5.0 U	13 U	5.0 U	5.0 U	1.3 J	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	0.31 J	**2.8**	**2.8**	**9.6**	**2.4**	1.0 U	1.0 U	1.0 U	**9.0**	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	**3.1**	**3.2**	10 U	0.73 J	1.0 U	1.0 U	1.0 U	0.53 J	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**8.1**	**170**	**170**	**1200**	**7.8**	0.42 J	**8.2**	**8.5**	**450**	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-04C	DC-04D	DC-05A	DC-05B	DC-05C	DC-05D	DC-06A	DUP092111PDB2 (Dup of DC-06A)	DC-06B	DC-06C	DC-06D	DC-07	DC-07RA
Lab Sample ID		R1105242	R1105242	R1105242	R1105242	R1105242	R1105242	R1105240	R1105240	R1105240	R1105240	R1105240	R1105240	
DATE SAMPLED		9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011	9/21/2011
VOC'S														
Acetone (ug/L)	50	**5.9**	**6.4**	13 J	**7.2**	**5.9**	**6.0**	10 J	5.6 J	**14**	**26**	**5.8**	**5.9**	
Benzene (ug/L)	1	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Bromomethane (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
2-Butanone (MEK) (ug/L)	50	5.0 U	1.1 J	50 U	5.0 U	0.95 J	0.84 J	25 U	13 U	5.0 U	2.4 J	5.0 U	0.87 J	
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.1	
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Chloroform (ug/L)	7	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Chloromethane (ug/L)	NS	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	10 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	**1.1**	1.0 U	1.0 U	1.0 U	
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	**29**	**12**	0.25 J	1.0 U	2.8 J	**2.8**	**240†**	0.23 J	1.0 U	1.0 U	
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	**5.7**	1.0 U	1.0 U	1.0 U	DRY
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
2-Hexanone (ug/L)	50	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	25 U	13 U	5.0 U	5.0 U	5.0 U	1.0 U	
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	10 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	25 U	13 U	5.0 U	5.0 U	5.0 U	1.0 U	
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Toluene (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Trichloroethene (ug/L)	5	1.0 U	1.0 U	**2400†**	**90**	0.59 J	0.48 J	**500**	**500**	**1000†**	**2.9**	1.0 U	1.0 U	
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	10 U	0.27 J	1.0 U	1.0 U	5.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	10 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-07RB	DC-07RC	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A	DC-10B	DC-10C	DC-10D	DC-11A	DC-11B	DC-12A
Lab Sample ID		R1105240	R1105240	R1105240	R1105215	R1105215	R1105215		R1105215	R1105215	R1105215	R1105215	R1105215	R1105215
DATE SAMPLED		9/21/2011	9/21/2011	9/21/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011
VOC'S														
Acetone (ug/L)	50	**7.0**	**25**	**6.2**	**6.9**	**15**	**6.2**		**8.0**	**13**	**5.3**	**9.8**	**7.1**	**6.6**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	1.1 J	2.0 J	0.94 J		1.4 J	2.1 J	5.0 U	1.6 J	1.1 J	0.85 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	0.59 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	DRY	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**110**	**1.2**	1.0 U	**5.5**	0.24 J	1.0 U		**21**	1.0 U	1.0 U	1.0 U	1.0 U	0.91 J
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

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U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DUP092011PDB1 (Dup of DC-12A)	DC-12B	DC-12C	DC-12D	DC-13A	DC-13B	DC-14A	DC-14B	DC-15A	DC-15B	DC-16	DC-17A	DC-17B
Lab Sample ID		R1105215	R1105215	R1105215	R1105215	R1105215	R1105215	R1105215	R1105215	R1105274	R1105274	R1105274	R1105240	R1105240
DATE SAMPLED		9/21/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/20/2011	9/22/2011	9/22/2011	9/22/2011	9/21/2011	9/21/2011
VOC'S														
Acetone (ug/L)	50	**6.9**	**6.6**	**8.3**	**5.3**	4.8 J	**17**	**7.6**	**7.7**	26 J	**7.4**	18 J	9.9 J	**6.0**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	1.2 J	0.79 J	1.0 J	5.0 U	0.75 J	1.9 J	0.91 J	1.3 J	50 U	5.0 U	50 U	25 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 UJ	**3.1**	0.62 J	2.2 J	1.0 UJ	1.0 UJ	1.0 UJ	10 U	1.0 U	10 U	5.0 U	0.3 J
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U	10 U	5.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	20 U	10 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**44**	0.23 J	**33**	**44**	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	**6.6 J**	2.8 J	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	1.0 U	50 U	25 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	20 U	10 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.2 J	1.0 U	3.2 J	5.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	50.0 U	25 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	25 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
Trichloroethene (ug/L)	5	0.83 J	**24**	**13**	**1.1**	**9.1**	**8.2**	0.95 J	**5.3**	**11000†**	**2.5**	**2800†**	**920**	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	5.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	20 U	10 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16D
Groundwater Water Sampling Results
4'th Quarterly Event
(September 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1105240	R1105240	R1105240
DATE SAMPLED		9/21/2011	9/21/2011	9/21/2011
VOC'S				
Acetone (ug/L)	50	**15**	**5.5**	**6.3**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	0.91 J	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**49**	**19**	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & O Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

Bolded - Detected above laboratory reporting limit

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

Unicorn Management Consultants, LLC

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-18-1	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2	LVRR-21-3	LVRR-21-4	LVRR-22
Lab Sample ID		R1106970	R1106970	R1106970	R1106970	R1106970	R1107070	R1107070	R1107070	R1107070		R1107070	R1107070	R1107070	R1107070	R1106969
DATE SAMPLED		12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/11/2011
VOC'S																
Acetone (ug/L)	50	0.98 J	5.0 U	3.6 J	1.9 J	2.0 J	**54**	50 U	11 J	1.3 J		5.0 U	5.0 U	5.0 U	1.2 J	1.4 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	1.1 J	5.0 U	5.0 U	25 U	50 U	13 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	0.51 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	20 U	5.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.6 J	**30**	**23**	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U	DRY	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	50 U	13 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	20 U	5.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	1.1 J	5.0 U	1.6 J	5.8 J	50 U	1.3 J	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	0.41 J	1.0 U	**6.2**	**24**	**9.9**	**470**	**100**	**220**	**5.5**		**2.5**	1.0 U	**6.0**	**11**	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**23**	**1000**	**440**	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	10 U	2.5 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	20 U	5.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-23	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-2	LVRR-26-3	LVRR-26-4	LVRR-26-5	LVRR-26-6 (Dup of LVRR-26-5)	LVRR-27-1	LVRR-27-2
Lab Sample ID		R1106969	R1106969	R1106969	R1106969	R1106969	R1106969	R1106969	R1106970	R1106970	R1106970	R1106970	R1106970	R1106970	R1106970	R1106970
DATE SAMPLED		12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011
VOC'S																
Acetone (ug/L)	50	1.9 J	1.7 J	1.7 J	1.8 J	1.5 J	2.0 J	2.1 J	5.0 U	**7.7**	5.0 U	1.6 J	17 J	1.4 J	2.0 J	5.0 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	0.23 J	1.0 U	**1.5**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**20**	**200†**	**5.5**	**53**	170 J†	9.0 J	**1.9**	**1.6**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	**14**	**5.4**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3	LVRR-28-4	LVRR-28-5	DUP121411 (Dup of LVRR-28-5)	LVRR-29-1	LVRR-29-2	LVRR-29-3	LVRR-29-4	LVRR-29-5	LVRR-30-1
Lab Sample ID		R1106970	R1106970	R1106970	R1107070	R1107070	R1107070	R1107070	R1107070	R1107070	R1107070	R1107070	R1107070	R1107070	R1107069	R1107070
DATE SAMPLED		12/12/2011	12/12/2011	12/12/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/13/2011	12/13/2011	12/13/2011	12/13/2011	12/15/2011	12/13/2011
VOC'S																
Acetone (ug/L)	50	1.4 J	1.8 J	1.8 J	4.1 J	3.8 J	3.4 J	1.4 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	270 J	2.7 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.68 J	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
2-Butanone (MEK) (ug/L)	50	0.76 J	0.86 J	1.1 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	33 J	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.58 J	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 UJ	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	**8.1**	**10**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.36 J	0.32 J	2.0 UJ	**12**
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	0.62 J	0.86 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	0.67 J
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	4.2 J	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 UJ	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	0.33 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	29 J	0.29 J
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Toluene (ug/L)	5	**6.6**	**6.1**	**1.3**	**2.0**	**6.6**	**3.7**	1.0 U	0.52 J	0.51 J	1.0 U	1.0 U	1.0 U	1.0 U	250J	**2.5**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	0.28 J	**67**	**87**	1.0 U	1.0 U	1.0 U	1.0 U	0.50 J	0.41 J	**4.0**	2.0 UJ	**290†**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 UJ	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Unicorn Management Consultants, LLC

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-30-2	LVRR-30-3	LVRR-30-4	LVRR-30-5	LVRR-31-1	DUP121511 (Dup of LVRR-31-1)	LVRR-31-2	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1	LVRR-32-2	LVRR-32-3	LVRR-32-4	LVRR-32-5
Lab Sample ID		R1107070	R1107069	R1107070	R1107070	R1107069	R1107069	R1107069	R1107069	R1107069	R1107069	R1106970	R1106970	R1106970	R1107069	R1106970
DATE SAMPLED		12/13/2011	12/15/2011	12/13/2011	12/13/2011	12/15/2011	12/15/2011	12/15/2011	12/15/2011	12/15/2011	12/15/2011	12/12/2011	12/12/2011	12/12/2011	12/15/2011	12/12/2011
VOC'S																
Acetone (ug/L)	50	13 U	380 J	4.7 J	1.0 J	5.0 U	5.0 U	**67**	**15**	**20**	5.0 U	**11**	4.4 J	**11**	**82**	1.3 J
Benzene (ug/L)	1	2.5 U	1.1 J	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.47 J	1.2 J	1.0 U
Bromomethane (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	13 U	72 J	5.0 U	5.0 U	5.0 U	5.0 U	5.4 J	1.5 J	5.0 U	5.0 U	0.71 J	5.0 U	4.1 J	19 J	5.0 U
Carbon disulfide (ug/L)	120	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Chlorobenzene (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Chloroform (ug/L)	7	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Chloromethane (ug/L)	NS	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	5.0 U	10.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10.0 U	2.0 U
Cyclohexane (ug/L)	NS	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	**11**	1.7 J	**1.1**	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	0.31 J	0.67 J	0.51 J	5.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	0.70 J	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Ethylbenzene (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
2-Hexanone (ug/L)	50	13 U	5.2 J	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U
Methyl Acetate (ug/L)	NS	5.0 U	10 UJ	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U
Methylcyclohexane (ug/L)	NS	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Methylene Chloride (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.24 J	5.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	13 U	53 J	5.0 U	5.0 U	5.0 U	5.0 U	11 J	2.3 J	2.1 J	5.0 U	5.0 U	0.41 J	**5.3**	**29**	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Tetrachloroethene (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Toluene (ug/L)	5	2.5 U	830 J	0.32 J	0.44 J	1.0 U	1.0 U	400 J	**100**	**39**	**4.1**	**15**	**33**	120 J†	**1600†**	**20**
1,2,4-Trichlorobenzene (ug/L)	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Trichloroethene (ug/L)	5	**410**	22 J	**23**	1.0 U	**9.0**	**9.2**	**6.2**	**6.4**	0.27 J	1.0 U	**49**	**85**	**36**	**7.0**	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L	5	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
Vinyl Chloride (ug/L)	2	2.5 U	5.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U
m,p-Xylenes (ug/L)	5	5.0 U	10 UJ	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.23 J	10 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	LVRR-34-2	LVRR-34-3	LVRR-34-4	LVRR-34-5	LVRR-35-1	LVRR-35-2	LVRR-35-3	LVRR-35-4	LVRR-35-5
Lab Sample ID		R1106970	R1106970	R1106970	R1106970	R1106970	R1107070	R1107070	R1107070	R1107070	R1107070	R1107069	R1107069	R1107069	R1107069	
DATE SAMPLED		12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/14/2011	12/15/2011	12/15/2011	12/15/2011	12/15/2011	12/15/2011
VOC'S																
Acetone (ug/L)	50	2.5 J	2.0 J	5.0 U	1.7 J	2.0 J	5.0 U	5.0 U	**17**	**71**	1.4 J	50 U	50 U	1.7 J	1.4 J	
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.9**	1.0 U	10 U	10 U	1.0 U	1.0 U	
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.1 J	4.5 J	5.0 U	50 U	50 U	5.0 U	5.0 U	
Carbon disulfide (ug/L)	120	0.77 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	20 U	2.0 U	2.0 U	
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	0.30 J	0.21 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.0**	1.0 U	**11**	**180**	**30**	**28**	
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	0.25 J	1.0 U	DRY
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.69 J	5.0 U	50 U	50 U	5.0 U	5.0 U	
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	20 U	2.0 U	2.0 U	
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.6 J	**10.0**	5.0 U	50 U	50 U	5.0 U	5.0 U	
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.26 J	**110**	270 J	**1.1**	3.6 J	8.0 J	**13**	**8.9**	
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Trichloroethene (ug/L)	5	1.0 U	**74**	**31**	1.0 U	1.0 U	0.73 J	**1.7**	**1.3**	**3.7**	1.0 U	**1200**	**4200**†	**370**†	**43**	
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	20 U	2.0 U	2.0 U	

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-01A	DC-01B	DC-01C	DC-01D	DC-02A	DUP121111PDB3 (Dup of DC-02A)	DC-02B	DC-02C	DC-02D	DC-03A	DUP121211PDB1 (Dup of DC-03A)	DC-03B	DC-03C	DC-03D	DC-04A
Lab Sample ID		R1106971	R1106971	R1106971	R1106971	R1106969	R1106969	R1106969	R1106969	R1106969	R1106970	R1106970	R1106970	R1106970	R1106970	R1106969
DATE SAMPLED		12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/12/2011	12/11/2011
VOC'S																
Acetone (ug/L)	50	250 U	2.3 J	1.7 J	2.3 J	2.7 J	1.7 J	50 U	2.4 J	2.4 J	2.5 J	1.8 J	13 U	1.6 J	2.5 J	3.2 J
Benzene (ug/L)	1	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	250 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	100 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	50 U	1.0 U	0.30 J	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	23 J	**1.3**	**10**	0.39 J	**3.7**	**4.4**	**14**	**1.4**	1.0 U	1.0 U	1.0 U	**9.1**	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	50 U	1.0 U	**1.1**	1.0 U	**3.3**	**3.2**	10 U	0.36 J	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	250 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	100 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	250 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 UJ
Toluene (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**6000**	**280†**	**250†**	**7.2**	**110**	**120**	**3700†**	**10**	1.0 U	**1.4**	**1.4**	**440†**	1.0 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L	5	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 UJ
Vinyl Chloride (ug/L)	2	50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	100 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-04B	DC-04C	DC-04D	DC-05A	DC-05B	DC-05C	DC-05D	DC-06A	DUP121111PDB2 (Dup of DC-06A)	DC-06B	DC-06C	DC-06D	DC-07	DC-07RA	DC-07RB
Lab Sample ID		R1106969	R1106969	R1106969	R1106969	R1106969	R1106969	R1106969	R1106971	R1106971	R1106971	R1106971	R1106971	R1106971	R1106971	R1106971
DATE SAMPLED		12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011
VOC'S																
Acetone (ug/L)	50	1.4 J	2.2 J	3.2 J	100 U	2.1 J	2.5 J	2.5 J	2.3 J	2.2 J	1.6 J	1.5 J	2.0 J	1.8 J	2.1 J	2.0 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U J	1.0 U J	1.0 U J
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	100 U	5.0 U	0.95 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.59 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U J	1.0 U J	1.0 U J
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	40 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.29 J	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	**30**	**10**	1.0 U	1.0 U	**1.6**	**1.7**	0.28 J	**100**	1.0 U	1.0 U	0.25 J	0.83 J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	40 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	20 U J	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	**3700**	**110**	0.28 J	0.49 J	**160**	**150**	**2.8**	**560**[†]	1.0 U	1.0 U	**51**	**140**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L	5	1.0 UJ	1.0 UJ	1.0 UJ	20 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	40 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
[†] Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-07RC	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A	DC-10B	DC-10C	DC-10D	DC-11A	DC-11B	DC-12A	DUP121111PDB1 (Dup of DC-12A)	DC-12B	DC-12C
Lab Sample ID		R1106971	R1106971	R1106971	R1106971	R1106971	R1106971	R1106971	R1106971	R1106971	R1106971	R1106971	R1106969	R1106969	R1106969	R1106969
DATE SAMPLED		12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011
VOC'S																
Acetone (ug/L)	50	1.9 J	2.3 J	2.5 J	2.3 J	1.7 J	3.6 J	1.8 J	1.7 J	2.3 J	1.8 J	2.0 J	5.0 U	5.0 U	1.5 J	1.3 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	0.74 J	5.0 U	5.0 U	0.60 J	5.0 U	5.0 U	0.66 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**1.3**	1.0 U	**7.9**	1.0 U	1.0 U	0.33 J	**17**	1.0 U	1.0 U	1.0 U	1.0 U	0.28 J	0.26 J	**22**	**12**
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Table 16E
Groundwater Water Sampling Results
5'th Quarterly Event
(December 2011)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-12D	DC-13A	DC-13B	DC-14A	DC-14B	DC-15A	DC-15B	DC-16	DC-17A	DC-17B	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1106969	R1106969	R1106969	R1106969	R1106969	R1106971	R1106971	R1106971	R1106970	R1106970	R1106969	R1106969	R1106969
DATE SAMPLED		12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/11/2011	12/12/2011	12/12/2011	12/11/2011	12/11/2011	12/11/2011
VOC'S														
Acetone (ug/L)	50	1.9 J	5.0 U	2.1 J	1.8 J	1.6 J	130 U	2.7 J	50 U	2.7 J	1.2 J	1.6 J	2.6 J	1.7 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U	0.56 J	50 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 UJ	1.0 U	10 UJ	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 UJ	1.0 U	10 UJ	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	6.0 J	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (ug/L)	0.04	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	50 U	2.0 U	20 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	13 J	1.0 U	5.3 J	**2.6**	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U	5.0 U	50 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate (ug/L)	NS	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	50 U	2.0 U	20 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U	5.0 U	50 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachlorethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 J	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**1.3**	**8.9**	**10**	1.0 U	**5.2**	**3300**	**1.3**	**1500**	**460**	0.52 J	**52**	**18**	1.0 U
1,1,2-Trichloro-1,2,2-Trifluoroethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 UJ	1.0 U	10 UJ	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	10 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes (ug/L)	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	8.8 J	2.0 U	20 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte

Unicorn Management Consultants, LLC

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-18-1	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	Dup021612 (Dup of LVRR-20-3)	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2
Lab Sample ID		R1201089	R1201089	R1201089	R1201089	R1201089	R1201089	R1201089	R1201089	R1201089	R1201089	R1201089	R1201173	R1201173
DATE SAMPLED		2/16/2012	2/16/2012	2/16/2012	2/16/2012	2/16/2012	2/16/2012	2/16/2012	2/16/2012	2/16/2012	2/16/2012	2/16/2012	2/21/2012	2/21/2012
VOC'S														
Acetone (ug/L)	50	5 U	5 U	3.9J	2.3J	5 U	**89**	22J	**8.4**	6.2J	5 U		2.0J	5 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1UJ	1UJ
2-Butanone (MEK) (ug/L)	50	5 U	5 U	0.86J	5 U	5 U	9.1J	25 U	5 U	13 U	5 U		5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1UJ		1UJ	1UJ
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	**9.4**	**25**	**37**	**35**	1 U	Dry	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	0.49J	0.5J	1 U		1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	13 U	5 U		5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1UJ	1UJ
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	0.81J	5 U	5 U	11J	3.5J	1.4J	0.8J	0.42J		0.43J	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
Toluene (ug/L)	5	0.25J	0.28J	0.89J	**4.5**	**5.9**	**1300†**	**120**	160J†	76J	**1.4**		**1.4**	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	**42**	**490**	**270†**	**420**	1 U		1 U	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	2.5 U	1 U		1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	10 U	10 U	2 U	5 U	2 U		2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-21-3	LVRR-21-4	LVRR-22	LVRR-23	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-2	LVRR-26-3
Lab Sample ID		R1201173	R1201173	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201089	R1201089	R1201089
DATE SAMPLED		2/21/2012	2/21/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/16/2012	2/16/2012	2/16/2012
VOC'S														
Acetone (ug/L)	50	5 U	**25**	1.8J	1.6J	1.5J	1.6J	1.2J	1.4J	1.2J	1.5J	5 U	**7.7**	5 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1UJ	1UJ	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	2.0J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1UJ	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	**5.0**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.51J	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	**1.7**	**180†**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**6.6**	**110**	**12**
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	**13**	**3.9**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-26-4	LVRR-26-5	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3	LVRR-28-4	LVRR-28-5	LVRR-29-1
Lab Sample ID		R1201089	R1201089	R1201173	R1201173	R1201173	R1201173	R1201173	R1201173	R1201173	R1201173	R1201173	R1201173	R1201089
DATE SAMPLED		2/16/2012	2/16/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/16/2012
VOC'S														
Acetone (ug/L)	50	**5.3**	4.9J	5 U	5 U	1.4J	1.6J	2.0J	2.0J	2.9J	3.7J	5 U	1.0J	5 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1UJ	1UJ	1UJ	1UJ	1UJ	1UJ	1UJ	1UJ	1UJ	1UJ	1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	0.63J	1.1J	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1UJ	1UJ	1UJ	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**5.3**	**7.2**	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.58J	0.71J	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1UJ	1UJ	1UJ	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	0.35J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	**67**	**53**	0.29J	0.23J	**3.4**	**4.5**	0.63J	0.31J	**1.8**	**1.7**	0.32J	0.38J	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.27J	**36**	**63**	1 U	1 U	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-29-2	LVRR-29-3	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	Dup022112B (Dup of LVRR-30-2)	LVRR-30-3	LVRR-30-4	LVRR-30-5	LVRR-31-1	LVRR-31-2	LVRR-31-3
Lab Sample ID		R1201089	R1201089	R1201089	R1201173	R1201173	R1201173	R1201173		R1201173	R1201173	R1201173	R1201173	
DATE SAMPLED		2/16/2012	2/16/2012	2/16/2012	2/20/2012	2/21/2012	2/21/2012	2/21/2012		2/21/2012	2/21/2012	2/21/2012	2/21/2012	
VOC'S														
Acetone (ug/L)	50	5 U	5 U	5 U	300J	5UJ	13 U	5 U		5 U	5 U	5 U	**250**	
Benzene (ug/L)	1	1 U	1 U	1 U	0.48J	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
Bromomethane (ug/L)	5	1 U	1 U	1 U	2UJ	1 U	2.5UJ	1UJ		1UJ	1UJ	1 U	5 U	
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	**30**	5 U	13 U	5 U		5 U	5 U	5 U	11J	
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	0.66J	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
Chloroform (ug/L)	7	1 U	1 U	1 U	0.52J	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
Chloroethane	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
Chloromethane	NS	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	2UJ	1 U	2.5UJ	1 U		1 U	1 U	1 U	5 U	
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
1,1-Dichloroethene	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
cis-1,2-Dichloroethene (ug/L)	5	1 U	0.29J	0.28J	2UJ	**12**	**13**	**15**	Dry	**4.5**	1 U	1 U	5 U	Dry
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	2UJ	0.74J	0.73J	0.83J		0.31J	1 U	1 U	5 U	
Ethylbenzene	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
2-Hexanone (ug/L)	50	5 U	5 U	5 U	3.8J	5UJ	13 U	5 U		5 U	5 U	5 U	25 U	
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	2UJ	1 U	2.5UJ	1 U		1 U	1 U	1 U	5 U	
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	24J	5 U	13 U	5 U		5 U	5 U	5 U	**28**	
Tetrachloroethene	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
Toluene (ug/L)	5	1 U	1 U	1 U	420J†	2.2	2.5 U	1 U		0.41J	1 U	1 U	**1100**	
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
Trichloroethene (ug/L)	5	0.47J	0.32J	**3.4**	2UJ	**300†**	**360**	**410†**		**100**	1 U	**4.4**	2.9J	
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
o-Xylene	5	1 U	1 U	1 U	2UJ	1 U	2.5 U	1 U		1 U	1 U	1 U	5 U	
m,p-Xylenes	5	2 U	2 U	2 U	4UJ	2 U	5 U	2 U		2 U	2 U	2 U	10 U	

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-31-4	LVRR-31-5	Dup022112A (Dup of LVRR-31-5)	LVRR-32-1	LVRR-32-2	LVRR-32-3	LVRR-32-4	LVRR-32-5	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E
Lab Sample ID		R1201173	R1201173	R1201173	R1201173	R1201173	R1201173	R1201198	R1201173	R1201199	R1201199	R1201199	R1201199	R1201199
DATE SAMPLED		2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/22/2012	2/21/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
VOC'S														
Acetone (ug/L)	50	**34**	5 U	5 U	5 U	3.7J	**8.4**	**220**	1.8J	1.9J	1.2J	1.8J	2.8J	1.1J
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	0.44J	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U	1UJ	1 U	10 U	1 U	1UJ	1UJ	1UJ	1 U	1UJ
2-Butanone (MEK) (ug/L)	50	1.2J	5 U	5 U	5 U	5 U	2.5J	34J	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**2.8**	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	0.48J	0.42J	0.51J	10 U	1 U	1 U	0.38J	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	3.4J	5 U	5 U	5 U	0.35J	4.4J	33J	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	**76**	4.3J	1.2J	0.62J	**27**	**210 J†**	**1400**	**17**	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	0.6J	1 U	1 U	**80**	**73**	**28**	5.0J	1 U	1 U	**78**	**49**	1 U	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	0.32J	20 U	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-34-1	LVRR-34-2	LVRR-34-3	LVRR-34-4	LVRR-34-5	LVRR-35-1	LVRR-35-2	LVRR-35-3	LVRR-35-4	LVRR-35-5	DC-01A	DC-01B	DC-01C
Lab Sample ID		R1201198	R1201198	R1201198	R1201198	R1201198	R1201198	R1201198	R1201198	R1201198	R1201198	R1201198	R1201198	R1201198
DATE SAMPLED		2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
VOC'S														
Acetone (ug/L)	50	5 U	1.3J	170J	77J	5 U	50 U	130 U	5 U	2.7J		130 U	2.2J	2.7J
Benzene (ug/L)	1	1 U	1 U	0.3J	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	10J	5.3J	5 U	50 U	130 U	5 U	5 U		130 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	0.23J	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Chloroethane	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Chloromethane	NS	1 U	1 U	1.3J	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	0.25J	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	0.49J
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1UJ	**2.6**	1 U	9.3J	**87**	**14**	**18**		6.5J	**1.0**	**11**
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	**1.2**
Ethylbenzene	5	1 U	1 U	0.23J	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	2.3J	0.85J	5 U	50 U	130 U	5 U	5 U		130 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	18J	9.4J	5 U	50 U	130 U	5 U	5 U		130 U	5 U	5 U
Tetrachloroethene	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Toluene (ug/L)	5	1 U	**2.9**	**450†**	52J†	0.57J	10 U	25 U	**1.8**	**4.4**		25 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
Trichloroethene (ug/L)	5	**1.0**	**1.9**	0.69J	**3.1**	1 U	**1600**	**3100**	**150**	**40**		**3300**	**240†**	**290†**
Vinyl Chloride (ug/L)	2	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
o-Xylene	5	1 U	1 U	1UJ	1 U	1 U	10 U	25 U	1 U	1 U		25 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	0.43J	2 U	2 U	20 U	50 U	2 U	2 U		50 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-01D	DC-02A	DC-02B	DC-02C	DC-02D	DC-03A	DC-03B	DC-03C	DC-03D	DC-04A	DC-04B	DC-04C	DC-04D
Lab Sample ID		R1201198	R1201198	R1201198	R1201198	R1201198	R1201228	R1201228	R1201228	R1201228	R1201198	R1201199	R1201199	R1201199
DATE SAMPLED		2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
VOC'S														
Acetone (ug/L)	50	2.2J	3.0J	100 U	2.8J	2.0J	2.3J	4.1J	2.9J	1.6J	1.9J	1.3J	1.5J	1.7J
Benzene (ug/L)	1	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1UJ	1UJ	1UJ
2-Butanone (MEK) (ug/L)	50	5 U	0.73J	100 U	0.59J	5 U	5 U	13 U	0.79J	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	5.2J	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	0.7J	1 U	8.4J	0.97J	1 U	1 U	**9.5**	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	20 U	0.3J	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	100 U	5 U	5 U	5 U	13 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	100 U	5 U	5 U	5 U	13 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	**8.0**	**32**	**2400**	**9.5**	0.37J	**4.5**	**440†**	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	20 U	1 U	1 U	1 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	40 U	2 U	2 U	2 U	5 U	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-05A	Dup022212A (Dup of DC-05A)	DC-05B	DC-05C	DC-05D	DC-06A	DC-06B	DC-06C	DC-06D	DC-07	DC-07RA	DC-07RB	DC-07RC
Lab Sample ID		R1201199	R1201199	R1201199	R1201199	R1201199	R1201199	R1201199	R1201199	R1201199	R1201228	R1201228	R1201228	R1201228
DATE SAMPLED		2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012
VOC'S														
Acetone (ug/L)	50	100 U	50 U	2.0J	1.6J	2.1J	1.2J	2.3J	1.3J	1.7J	1.7J	1.6J	2.7J	2.1J
Benzene (ug/L)	1	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	20UJ	10 U	1UJ	1UJ	1UJ	1UJ	1 U	1UJ	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK) (ug/L)	50	100 U	50 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	20 U	10 U	1 U	1 U	0.41J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	20 U	10 U	1 U	1 U	1 U	1UJ	1 U	1UJ	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	20 U	10 U	1 U	1 U	0.27J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	12J	9.4J	**7.6**	1 U	1 U	0.42J	**11**	0.32J	1 U	1 U	1 U	**1.1**	1 U
trans-1,2,-Dichloroethene (ug/L)	5	20 U	10 U	0.23J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	100 U	50 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	100 U	50 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	**2700**	**1900†**	**110**	1 U	0.35J	**100**	**130**	**3.2**	1 U	1 U	**53**	**190**	0.54J
Vinyl Chloride (ug/L)	2	20 U	10 U	0.51J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	20 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	40 U	20 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A	Dup022312A (Dup of DC-10A)	DC-10B	DC-10C	DC-10D	DC-11A	DC-11B	DC-12A	Dup022212B (Dup of DC-12A)
Lab Sample ID		R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1201199	R1201199
DATE SAMPLED		2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/22/2012	2/22/2012
VOC'S														
Acetone (ug/L)	50	2.0J	1.3J	1.6J	1.5J	1.4J	1.5J	2.0J	1.8J	1.2J	2.0J	1.9J	1.7J	1.7J
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	1 U	**7.0**	0.25J	1 U	1 U	1 U	**17**	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-12B	DC-12C	DC-12D	DC-13A	DC-13B	DC-14A	DC-14B	DC-15A	Dup022312B (Dup of DC-15A)	DC-15B	DC-16	DC-17A	DC-17B
Lab Sample ID		R1201199	R1201199	R1201199	R1201228	R1201228	R1201228	R1201228	R1201228	R1201228	R1106971-025	R1201198	R1201228	R1106970-007
DATE SAMPLED		2/22/2012	2/22/2012	2/22/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	2/23/2012	12/11/2011	2/22/2012	2/23/2012	12/12/2011
VOC'S														
Acetone (ug/L)	50	1.9J	1.6J	1.8J	1.7J	1.4J	1.3J	2.0J	100 U	100 U	1.4J	50 U	4.6J	2.5J
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Bromomethane (ug/L)	5	1UJ	1UJ	1UJ	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	100 U	100 U	5 U	50 U	13 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.8J	10J	1 U	6.7J	**2.5**	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	100 U	100 U	5 U	50 U	13 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	5 U	5 U	5 U	5 U	100 U	100 U	5 U	50 U	13 U	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Toluene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
Trichloroethene (ug/L)	5	**23**	**12**	**1.1**	**6.8**	**7.6**	**4.1**	**5.4**	**1800**	**2500**	**1.0**	**2100†**	**540†**	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20 U	20 U	1 U	10 U	2.5 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	40 U	40 U	2 U	20 U	5 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16F
Groundwater Water Sampling Results
6'th Quarterly Event
(February 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1201199	R1201199	R1201199
DATE SAMPLED		2/22/2012	2/22/2012	2/22/2012
VOC'S				
Acetone (ug/L)	50	0.99J	1.2J	1.9J
Benzene (ug/L)	1	1 U	1 U	1 U
Bromomethane (ug/L)	5	1UJ	1UJ	1UJ
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U
Tetrachloroethene	5	1 U	1 U	1 U
Toluene (ug/L)	5	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U
Trichloroethene (ug/L)	5	**33**	1 U	**18**
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-18-1	Dup062612A (Dup of LVRR-18-1)	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1
Lab Sample ID		R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063		R1204157
DATE SAMPLED		6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012		6/28/2012
VOC'S													
Acetone (ug/L)	50	5.0 U	5.0 U	5.0 U	1.8 J	1.0 J	**5.2**	**120**	13 J	**16**	5.0 U	PORT DRY	1.4 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	5.0 U	2.5 U	1.0 U		1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	6.9 J	25 U	13 U	5.0 U		5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.8**	**17**	**25 U**	1.0 U		1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	5.0 U	2.5 U	1.0 U		1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	25 U	13 U	5.0 U		5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	8.0 J	25 U	1.7 J	5.0 U		5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Toluene (ug/L)	5	0.35 J	0.46 J	0.45 J	1.0 U	**3.6**	**13**	**490 J†**	**110**	**62**	0.61 J		**1.1**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**8.7**	**760**	**260**	1.0 U		1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	5.0 U	2.5 U	1.0 U		1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	5.0 U	2.5 U	1.0 U		1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	R	10 U	5.0 U	2.0 U		2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-21-2	LVRR-21-3	LVRR-21-4	LVRR-22	LVRR-23-2	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1
Lab Sample ID		R1204157	R1204157	R1204157	R1204063	R1204109	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204109
DATE SAMPLED		6/28/2012	6/28/2012	6/28/2012	6/26/2012	6/27/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/27/2012
VOC'S													
Acetone (ug/L)	50	5.0 U	5.0 U	2.7 J	2.6 J	3.1 J	3.1 J	2.7 J	2.8 J	3.6 J	2.5 J	2.9 J	5.0 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 UJ	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	0.56 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	0.41 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	**3.9**	**16**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**5.1**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**10**	**4.8**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-26-2	Dup062712A (Dup of LVRR-26-2)	LVRR-26-3	LVRR-26-4	LVRR-26-5	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2
Lab Sample ID		R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109		
DATE SAMPLED		6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012		
VOC'S													
Acetone (ug/L)	50	**14**	15 J	5.0 U	3.1 J	5.0 U	5.0 U	5.0 U	5.0 U	**27**	**6.1**	PORT DRY	PORT DRY
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
2-Butanone (MEK) (ug/L)	50	1.1 J	1.0 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**5.6**	2.0 J		
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.25 J		
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.26 J		
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	0.55 J	0.47 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.9 J	5.0 U		
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Toluene (ug/L)	5	**100**	**100**	**4.5**	**56**	**5.8**	0.35 J	0.25 J	**2.0**	**13**	0.95 J		
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-28-3	LVRR-28-4	LVRR-28-5	LVRR-29-1	LVRR-29-2	LVRR-29-3	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	LVRR-30-3	LVRR-30-4
Lab Sample ID		R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204157	R1204157	R1204157	R1204157
DATE SAMPLED		6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/28/2012	6/28/2012	6/28/2012	6/28/2012
VOC'S													
Acetone (ug/L)	50	**9.9**	5.0 U	1.7 J	5.0 U	5.0 U	1.1 J	5.0 U	**21**	**120**	**110**	380 J	10 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	R	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
2-Butanone (MEK) (ug/L)	50	1.1 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.6 J	**15**	**13**	43 J	1.7 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	0.58 J	2.0 UJ	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	**19**	1.0 U	1.0 U	1.0 U	1.0 U	0.22 J	0.3 J	0.34 J	**5.8**	**8.6**	0.86 J	**2.3**
trans-1,2,-Dichloroethene (ug/L)	5	**1.3**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	R	1.0 U
2-Hexanone (ug/L)	50	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	13 U	3.5 J	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
Methylene Chloride (ug/L)	5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 J	9.7 J	8.8 J	28 J	1.2 J
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
Toluene (ug/L)	5	**6.8**	**3.9**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**6.8**	**120**	**140**	120 J	6.8 J
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
Trichloroethene (ug/L)	5	**120**	1.0 U	1.0 U	1.0 U	0.34 J	1.0 U	**3.1**	**3.7**	**180**	**240**	22 J	**41**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	2.0 UJ	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.5 U	R	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	5.0 U	R	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	Dup062812A (Dup of LVRR-30-4)	LVRR-30-5	LVRR-31-1	LVRR-31-2	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1	LVRR-32-2	LVRR-32-3	LVRR-32-4	LVRR-32-5
Lab Sample ID		R1204157	R1204157	R1204157	R1204157		R1204157	R1204157	R1204063	R1204063	R1204063	R1204109	R1204063
DATE SAMPLED		6/28/2012	6/28/2012	6/28/2012	6/28/2012		6/28/2012	6/28/2012	6/26/2012	6/26/2012	6/26/2012	6/27/2012	6/26/2012
VOC'S													
Acetone (ug/L)	50	4.4 J	**21**	5.0 U	**170**	PORT DRY	**16**	3.3 J	**21**	3.9 J	**16**	260 J	3.0 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	0.51 J	R	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
2-Butanone (MEK) (ug/L)	50	1.0 J	3.4 J	5.0 U	8.1 J		0.97 J	5.0 U	2.1 J	0.63 J	4.0 J	42 J	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	**4.8**	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Chlorobenzene (ug.L)	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	0.21 J	1.0 U	1.0 U	10 UJ	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	**3.0**	1.0 U	0.21 J	1.0 U		1.0 U	1.0 U	0.3 J	0.5 J	0.48 J	10 UJ	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	0.21 J	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	0.29 J		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	2.8 J		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 UJ	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	0.84 J	2.7 J	5.0 U	**18**		2.8 J	5.0 U	1.8 J	5.0 U	**5.5**	33 J	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Toluene (ug/L)	5	3.8 J	**13**	1.0 U	**560†**		**15**	**11**	**100**	**7.1**	**180†**	1200 J	**21**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
Trichloroethene (ug/L)	5	**67**	0.52 J	**8.8**	**4.2**		0.66 J	1.0 U	**62**	**65**	**25**	4.2 J	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 UJ	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	0.39 J		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	R	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	LVRR-34-2	LVRR-34-3	LVRR-34-4	LVRR-34-5	LVRR-35-1	LVRR-35-2
Lab Sample ID		R1204063	R1204063	R1204063	R1204063	R1204063	R1204157	R1204157	R1204157	R1204157	R1204157	R1204157	R1204157
DATE SAMPLED		6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/28/2012	6/28/2012	6/28/2012	6/28/2012	6/28/2012	6/28/2012	6/28/2012
VOC'S													
Acetone (ug/L)	50	3.6 J	3.3 J	2.9 J	2.4 J	2.2 J	1.6 J	5.0 U	4.1 J	**11**	5.0 U	50 U	50 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
2-Butanone (MEK) (ug/L)	50	5.0 U	0.86 J	0.75 J	0.63 J	0.67 J	5.0 U	5.0 U	5.0 UJ	1.6 J	5.0 U	50 U	50 UJ
Carbon disulfide (ug/L)	120	0.21 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.27 J	1.0 U	0.24 J	10 U	10 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	0.39 J	0.21 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**5.1**	1.0 U	**13**	**97**
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Ethylbenzene	5	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
2-Hexanone (ug/L)	50	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	50 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Methylene Chloride (ug/L)	5	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.4 J	5.0 U	50 U	50 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.35 J	**7.2**	**94**	1.0 U	10 U	10 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Trichloroethene (ug/L)	5	1.0 U	**88**	**68**	1.0 U	1.0 U	0.56 J	**1.1**	0.75 J	**4.9**	1.0 U	**2300†**	**3300†**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	20 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-35-3	LVRR-35-4	LVRR-35-5	DC-01A	DC-01B	DC-01C	DC-01D	DC-02A	DC-02B	DC-02C	DC-02D	DC-03A
Lab Sample ID		R1204157	R1204157	R1204157	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204157
DATE SAMPLED		6/28/2012	6/28/2012	6/28/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/28/2012
VOC'S													
Acetone (ug/L)	50	5.0 U	1.2 J	390 J	130 U	**6.2**	3.9 J	3.7 J	3.7 J	100 U	3.9 J	4.1 J	**5.5**
Benzene (ug/L)	1	1.0 U	1.0 U	R	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	250 U	130 U	1.2 J	10.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	1.3 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	5.0 J	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	**23**	**38**	42 J	**37**	0.74 J	**12**	0.41 J	1.0 U	15 J	**1.4**	1.0 U	0.22 J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	50 U	25 U	1.0 U	1.2 J	1.0 U	1.0 U	20 U	0.54 J	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	R	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	<250	<130	5.0 U	10.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	20 J	130 U	5.0 U	10.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**1.6**	**2.7**	1400 J	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**130**	**26**	140 J	**12000†**	**180**	**230**	**9.5**	**48**	**3400**	**9.3**	0.32 J	**16**
Vinyl Chloride (ug/L)	2	**1.9**	1.0 U	50 U	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	R	25 U	1.0 U	2.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	R	50 U	2.0 U	4.0 U	2.0 U	2.0 U	40 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
(red) Exceeds Criteria
(orange) U-value exceeds criteria
(blue) J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	Dup062812B (Dup of DC-03A)	DC-03B	DC-03C	DC-03D	DC-04A	DC-04B	DC-04C	DC-04D	DC-05A	DC-05B	DC-05C	DC-05D
Lab Sample ID		R1204157	R1204157	R1204157	R1204157	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109	R1204109
DATE SAMPLED		6/28/2012	6/28/2012	6/28/2012	6/28/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012
VOC'S													
Acetone (ug/L)	50	**5.1**	13 J	4.8 J	3.7 J	3.8 J	4.2 J	**7.1**	4.4 J	100 U	3.0 J	4.1 J	3.1 J
Benzene (ug/L)	1	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	1.0 J	25 U	5.0 U	1.0 J	5.0 U	5.0 U	1.2 J	0.93 J	100 U	0.82 J	0.7 J	1.0 J
Carbon disulfide (ug/L)	120	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	0.23 J	**9.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	19 J	**7.5**	0.27 J	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**15**	**540**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**5100†**	**74**	0.68 J	0.51 J
Vinyl Chloride (ug/L)	2	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Unicorn Management Consultants, LLC

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-06A	Dup062612C (Dup of DC-06A)	DC-06B	DC-06C	DC-06D	DC-07	DC-07RA	DC-07RB	DC-07RC	DC-07RD	DC-09A	DC-09B
Lab Sample ID		R1204063	R1204063	R1204063	R1204063	R1204063	R1204109	R1204109	R1204109	R1204109	R1204109	R1204157	R1204157
DATE SAMPLED		6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/28/2012	6/28/2012
VOC'S													
Acetone (ug/L)	50	4.2 J	3.3 J	3.4 J	4.4 J	3.7 J	4.0 J	3.2 J	3.5 J	2.5 J	2.7 J	3.7 J	4.0 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	0.88 J	0.84 J	0.66 J	0.98 J	0.76 J	0.65 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.93 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	R	0.54 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	0.67 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	0.87 J	0.79 J	**160**	0.42 J	1.0 U	1.0 U	1.0 U	0.64 J	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	**3.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**140**	**140**	**1100†**	**2.9**	1.0 U	1.0 U	**54**	**140**	**1.7**	1.0 U	**5.3**	0.28 J
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-09C	DC-10A	Dup062712B (Dup of DC-10A)	DC-10B	DC-10C	DC-10D	DC-11A	DC-11B	DC-12A	Dup062612B (Dup of DC-12A)	DC-12B	DC-12C
Lab Sample ID		R1204157	R1204109	R1204109	R1204109	R1204109	R1204109	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063
DATE SAMPLED		6/28/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/27/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012
VOC'S													
Acetone (ug/L)	50	3.5 J	3.8 J	5.2	3.4 J	2.6 J	2.7 J	2.5 J	3.4 J	2.7 J	3.0 J	2.6 J	3.3 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	0.76 J	0.73 J	1.1 J	5.0 U	5.0 U	0.68 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	0.39 J	0.46 J	**20**	1.0 U	1.0 U	1.0 U	1.0 U	0.46 J	0.31 J	**19**	**12**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16G
Groundwater Water Sampling Results
7'th Quarterly Event
(June 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-12D	DC-13A	DC-13B	DC-14A	DC-14B	DC-15A	DC-15B	DC-16	DC-17A	DC-17B	GCM-1	GCM-2	GCM-3
Lab Sample ID		R1204063	R1204157	R1204157	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204063	R1204109	R1204109	R1204109
DATE SAMPLED		6/26/2012	6/28/2012	6/28/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/26/2012	6/27/2012	6/27/2012	6/27/2012
VOC'S														
Acetone (ug/L)	50	2.9 J	4.3 J	3.9 J	3.3 J	2.7 J	<50	4.9 J	25 U	50 U	3.1 J	3.7 J	4.6 J	2.6 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	0.55 J	5.0 U	5.0 U	0.71 J	<50	0.98 J	25 U	50 U	5.0 U	0.66 J	0.76 J	0.56 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U	5.0 U	7.0 J	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**10**	0.3 J	4.4 J	**11**	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	<50	5.0 U	25 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	<50	5.0 U	25 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**1.1**	**9.1**	**9.0**	0.31 J	**5.2**	**3900†**	**1.2**	**750**	**1500**	1.0 U	**50**	**20**	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	<10	1.0 U	5.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	<20	2.0 U	10 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-18-1	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2
Lab Sample ID		R1207279	R1207279		R1207279	R1207279		R1207279	R1207279	R1207279			
DATE SAMPLED		10/24/2012	10/24/2012		10/24/2012	10/24/2012		10/24/2012	10/24/2012	10/24/2012			
VOC'S													
Acetone (ug/L)	50	5 U	5 U		5.2 U	5.9 U		25 U	13 U	5 U			
Benzene (ug/L)	1	1 U	1 U		0.27J	1 U		5 U	2.5 U	1 U			
Bromomethane (ug/L)	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
2-Butanone (MEK) (ug/L)	50	5 U	5 U		5 U	1.3J		25 U	13 U	5 U			
Carbon disulfide (ug/L)	120	1 U	1 U		0.32J	1 U		5 U	2.5 U	1 U			
Carbon Tetrachloride (ug/L)	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
Chloroform (ug/L)	7	1 U	1 U		1 U	1 U		1.3J	2.5 U	1 U			
Chloromethane	NS	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
Cyclohexane (ug/L)	NS	1 U	1 U		0.48J	1 U		5 U	2.5 U	1 U			
Dichlorodifluoromethane (ug/L)	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
1,1-Dichloroethene	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U		1 U	1 U		**13**	**59**	**1.6**			
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	DRY	1 U	1 U	DRY	5 U	1.0J	1 U	DRY	DRY	DRY
Ethylbenzene	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
2-Hexanone (ug/L)	50	5 U	5 U		5 U	5 U		25 U	13 U	5 U			
Methylcyclohexane (ug/L)	NS	1 U	1 U		0.79J	1 U		5 U	2.5 U	1 U			
Methylene Chloride (ug/L)	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U		5 U	0.69J		25 U	13 U	5 U			
Tetrachloroethene	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
Toluene (ug/L)	5	1 U	1 U		**12**	**5.3**		**29**	**31**	**1.6**			
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
Trichloroethene (ug/L)	5	1 U	1 U		1 U	1 U		**730**	**530†**	**2.4**			
Vinyl Chloride (ug/L)	2	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
o-Xylene	5	1 U	1 U		1 U	1 U		5 U	2.5 U	1 U			
m,p-Xylenes	5	2 U	2 U		0.57J	2 U		10 U	5 U	2 U			

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-21-3	LVRR-21-4	LVRR-22	LVRR-23	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-2
Lab Sample ID		R1207309	R1207309	R1207248	R1207248	R1207248	R1207248	R1207248	R12072949	R12072949	R12072949		R1207279
DATE SAMPLED		10/25/2012	10/25/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/22/2012	10/22/2012	10/22/2012		10/24/2012
VOC'S													
Acetone (ug/L)	50	5 U	**23**	5 U	5 U	5 U	5 U	5 U	2.7J	2.4J	2.6J		5 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Bromomethane (ug/L)	5	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	DRY	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
2-Hexanone (ug/L)	50	5 U	5 U	5UJ	5UJ	5UJ	5UJ	5UJ	5 U	5 U	5 U		5 U
Methylcyclohexane (ug/L)	NS	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	3.0J	5UJ	5UJ	5UJ	5UJ	5UJ	5 U	5 U	5 U		5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Toluene (ug/L)	5	**6.5**	**110**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		**7.5**
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	**14**	**3.8**	1 U	1 U	1 U	1 U		1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-26-3	LVRR-26-4	Dup102412A (Dup of LVRR-26-4)	LVRR-26-5	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3
Lab Sample ID		R1207279	R1207279	R1207279	R1207279								R1207279
DATE SAMPLED		10/24/2012	10/24/2012	10/24/2012	10/24/2012								10/24/2012
VOC'S													
Acetone (ug/L)	50	5 U	5 U	5 U	5 U	DRY	DRY	DRY	DRY	DRY	DRY	DRY	7.2 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U								1 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U								1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U								1.1J
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U								1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U								1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U								1 U
Chloromethane	NS	1 U	1 U	1 U	1 U								1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U								1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U								1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U								1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U								**2.5**
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U								1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U								1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U								5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U								1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U								1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	5 U								5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U								1 U
Toluene (ug/L)	5	**2.0**	**4.0**	**3.0**	**1.2**								**9.9**
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U								1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U								**24**
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U								1 U
o-Xylene	5	1 U	1 U	1 U	1 U								1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U								2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-28-4	LVRR-28-5	LVRR-29-1	LVRR-29-2	LVRR-29-3	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	LVRR-30-3	LVRR-30-4	LVRR-30-5
Lab Sample ID		R1207279	R1207279	R1207309	R1207309	R1207309	R1207309	R1207309				R1207309	R1207309
DATE SAMPLED		10/24/2012	10/24/2012	10/25/2012	10/25/2012	10/25/2012	10/25/2012	10/25/2012				10/25/2012	10/25/2012
VOC'S													
Acetone (ug/L)	50	5 U	5 U	5UJ	5UJ	5UJ	5UJ	14J	DRY	DRY	DRY	**6.7**	**8.4**
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1UJ	1UJ	1UJ	1UJ	1UJ				1UJ	1UJ
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	1.6J				5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	0.55J				**2.2**	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U				5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1UJ	1UJ	1UJ	1UJ	1UJ				1UJ	1UJ
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	5 U	5 U	5 U	0.84J				0.91J	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Toluene (ug/L)	5	**2.1**	1 U	1 U	1 U	1 U	1 U	**10**				**1.6**	0.56J
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	0.26J	**1.6**	**3.6**				**52**	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U				2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-31-1	LVRR-31-2	Dup102512A (Dup of LVRR-31-2)	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1	LVRR-32-2	LVRR-32-3	LVRR-32-4	LVRR-32-5	LVRR-33 A
Lab Sample ID			R1207309	R1207309		R1207309	R1207309	R1207309		R1207309	R1207309		R12072949
DATE SAMPLED			10/25/2012	10/25/2012		10/25/2012	10/25/2012	10/25/2012		10/25/2012	10/25/2012		10/23/2012
VOC'S													
Acetone (ug/L)	50		210J	43J		**17**	5 U	**50**		**55**	260J		**6.9**
Benzene (ug/L)	1		5 U	1 U		1 U	1 U	0.22J		0.64J	R		1 U
Bromomethane (ug/L)	5		5UJ	1UJ		1UJ	1UJ	1UJ		1UJ	10UJ		1 U
2-Butanone (MEK) (ug/L)	50		10J	2.4J		5 U	5 U	**8.4**		**13**	48J		5 U
Carbon disulfide (ug/L)	120		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		**1.6**
Carbon Tetrachloride (ug/L)	5		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
Chloroform (ug/L)	7		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
Chloromethane	NS		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
Cyclohexane (ug/L)	NS		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
Dichlorodifluoromethane (ug/L)	5		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
1,1-Dichloroethene	5		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
cis-1,2-Dichloroethene (ug/L)	5		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
trans-1,2,-Dichloroethene (ug/L)	5	DRY	5 U	1 U	DRY	1 U	1 U	1 U	DRY	2 U	10UJ	DRY	1 U
Ethylbenzene	5		5 U	1 U		1 U	1 U	1 U		2 U	R		1 U
2-Hexanone (ug/L)	50		25 U	5 U		5 U	5 U	5 U		10 U	50UJ		5 U
Methylcyclohexane (ug/L)	NS		5UJ	1UJ		1UJ	1UJ	1UJ		2UJ	10UJ		1 U
Methylene Chloride (ug/L)	5		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS		20J	3.8J		2.2J	5 U	**9**		**14**	41J		5 U
Tetrachloroethene	5		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
Toluene (ug/L)	5		590J	110J		**6.6**	**3.6**	**330†**		**310**	1500J		1 U
1,2,4-Trichlorobenzene (ug/L)	5		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
Trichloroethene (ug/L)	5		3.0J	5.6J		0.58J	1 U	**13**		**14**	3.4J		1 U
Vinyl Chloride (ug/L)	2		5 U	1 U		1 U	1 U	1 U		2 U	10UJ		1 U
o-Xylene	5		5 U	1 U		1 U	1 U	1 U		2 U	R		1 U
m,p-Xylenes	5		10 U	2 U		2 U	2 U	2 U		4 U	R		2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	LVRR-34-2	Dup102512B (Dup of LVRR-34-2)	LVRR-34-3	LVRR-34-4	LVRR-34-5	LVRR-35-1	LVRR-35-2
Lab Sample ID		R12072949	R12072949	R12072949	R12072949	R1207309	R1207309	R1207309	R1207309		R1207309	R1207279	R1207279
DATE SAMPLED		10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/25/2012	10/25/2012	10/25/2012	10/25/2012		10/25/2012	10/24/2012	10/24/2012
VOC'S													
Acetone (ug/L)	50	5.0J	**5.5**	3.9J	**5.8**	5UJ	5UJ	5UJ	5UJ		5UJ	50 U	250 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U	1UJ	1UJ	1UJ	1UJ		1UJ	10 U	50 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		5 U	50 U	250 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	**24**	**63**
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	DRY	1 U	10 U	50 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		5 U	50 U	250 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1UJ	1UJ	1UJ	1UJ		1UJ	10 U	50 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		5 U	50 U	250 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
Toluene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1.8**		1 U	10 U	50 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
Trichloroethene (ug/L)	5	**11**	**52**	1 U	1 U	**1.6**	**1.4**	**1.7**	**1.5**		1 U	**5200†**	**8300†**
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	10 U	50 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	20 U	100 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-35-3	LVRR-35-4	LVRR-35-5	LVRR-37A	Dup102412C (Dup of LVRR-37A)	LVRR-37B	LVRR-37C	LVRR-37D	LVRR-38A	Dup102412B (Dup of LVRR-38A)	LVRR-38B	LVRR-38C
Lab Sample ID		R1207279	R1207279	R1207309	R1207279	R1207279	R1207279	R1207279	R1207279	R1207278	R1207278	R1207278	R1207278
DATE SAMPLED		10/24/2012	10/24/2012	10/25/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012
VOC'S													
Acetone (ug/L)	50	5 U	5 U	270J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene (ug/L)	1	1 U	1 U	R	1 U	1 U	**1.3**	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	130UJ	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	25UJ	0.34J	0.4J	**1.7**	1 U	0.36J	1 U	1 U	1 U	0.29J
Carbon Tetrachloride (ug/L)	5	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	25UJ	1 U	1 U	**1.6**	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	**72**	**43**	56J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	**2.0**	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	R	1 U	1 U	0.63J	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	130UJ	5 U	5 U	5 U	5 U	5 U	5UJ	5 U	5UJ	5UJ
Methylcyclohexane (ug/L)	NS	1 U	1 U	25UJ	1 U	1 U	0.66J	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	130UJ	5 U	5 U	5 U	5 U	5 U	5UJ	5 U	5UJ	5UJ
Tetrachloroethene	5	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	**2.0**	**7.2**	860J	1 U	1 U	**3.1**	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	**4000†**	**10**	180J	1 U	1 U	**5.3**	**11**	0.29J	1 U	1 U	1 U	0.27J
Vinyl Chloride (ug/L)	2	**1.1**	**1.2**	25UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	R	1 U	1 U	**1.1**	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	R	2 U	2 U	**2.7**	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-39A	LVRR-39B	LVRR-39C	LVRR-40A	LVRR-40B	LVRR-40C	LVRR-41A	LVRR-41B	LVRR-41C	LVRR-42A	LVRR-42B	LVRR-42C
Lab Sample ID		R1207278	R1207278	R1207278	R1207278	R1207278	R1207278	R1207278	R1207278	R1207278	R1207278	R1207278	R1207278
DATE SAMPLED		10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012	10/24/2012
VOC'S													
Acetone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	0.29J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	0.42J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5UJ	5UJ	5UJ	5UJ	5UJ	5UJ	5UJ	5UJ	5UJ	5 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5UJ	5UJ	5UJ	5UJ	5UJ	5UJ	5UJ	5UJ	5UJ	5 U	5 U	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-01A	DC-01B	DC-01C	DC-01D	DC-02A	DC-02B	DC-02C	DC-02D	DC-03A	DC-03B	DC-03C	DC-03D
Lab Sample ID		R12072949	R12072949	R12072949	R12072949	R1207248	R1207248	R1207248	R1207248	R1207309	R1207309	R1207309	R1207309
DATE SAMPLED		10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/25/2012	10/25/2012	10/25/2012	10/25/2012
VOC'S													
Acetone (ug/L)	50	500 U	**5.5**	4.0J	3.1J	5 U	50 U	25 U	5 U	2.4J	25 U	2.4J	2.9J
Benzene (ug/L)	1	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
Bromomethane (ug/L)	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1UJ	5UJ	1UJ	1UJ
2-Butanone (MEK) (ug/L)	50	500 U	5 U	10 U	5 U	5 U	50 U	25 U	5 U	5 U	25 U	5 U	5 U
Carbon disulfide (ug/L)	120	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
Chloroform (ug/L)	7	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
Chloromethane	NS	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
Cyclohexane (ug/L)	NS	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
1,1-Dichloroethene	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	37J	**30**	**35**	0.39J	0.7J	**18**	3.9J	1 U	1 U	**11**	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	100 U	**1.2**	1.2J	1 U	0.56J	10 U	5 U	1 U	1 U	5 U	1 U	1 U
Ethylbenzene	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
2-Hexanone (ug/L)	50	500 U	5 U	10 U	5 U	5 U	50 U	25 U	5 U	5 U	25 U	5 U	5 U
Methylcyclohexane (ug/L)	NS	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1UJ	5UJ	1UJ	1UJ
Methylene Chloride (ug/L)	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	500 U	5 U	10 U	5 U	5 U	50 U	25 U	5 U	5 U	25 U	5 U	5 U
Tetrachloroethene	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
Toluene (ug/L)	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5UJ	1 U	1 U
Trichloroethene (ug/L)	5	**11000**	**5200†**	**420†**	**7.7**	**88**	**1200**	**380**	0.42J	**7.6**	**740**	1 U	1 U
Vinyl Chloride (ug/L)	2	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
o-Xylene	5	100 U	1 U	2 U	1 U	1 U	10 U	5 U	1 U	1 U	5 U	1 U	1 U
m,p-Xylenes	5	200 U	2 U	4 U	2 U	2 U	20 U	10 U	2 U	2 U	5 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-04A	DC-04B	DC-04C	DC-04D	DC-05A	DC-05B	DC-05C	DC-05D	DC-06A	Dup102312A (Dup of DC-06A)	DC-06B	DC-06C
Lab Sample ID		R12072949	R12072949	R12072949	R12072949	R12072949	R12072949	R12072949	R12072949	R12072949	R12072949	R12072949	R12072949
DATE SAMPLED		10/22/2012	10/22/2012	10/22/2012	10/22/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012
VOC'S													
Acetone (ug/L)	50	3.0J	3.5J	**10**	4.9J	100 U	2.9J	3.1J	2.5J	2.4J	2.5J	13 U	2.7J
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	13 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	**22**	**90**	0.43J	1 U	1 U	1 U	**130**	**35**
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	20 U	**1.3**	1 U	1 U	1 U	1 U	1.8J	0.62J
Ethylbenzene	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	13 U	5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	13 U	5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Toluene (ug/L)	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	**2300**	**2600†**	0.81J	0.47J	**60**	**61**	**460**	**290†**
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	20 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	40 U	2 U	2 U	2 U	2 U	2 U	5 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-06D	DC-07	Dup102312B (Dup of DC-07)	DC-07RA	DC-07RB	DC-07RC	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A	DC-10B
Lab Sample ID		R12072949	R12072949	R12072949	R12072949	R12072949	R12072949	R12072949	R1207278	R1207278	R1207278	R1207248	R1207248
DATE SAMPLED		10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/24/2012	10/24/2012	10/24/2012	10/23/2012	10/23/2012
VOC'S													
Acetone (ug/L)	50	1.9J	1.6J	2.5J	2.7J	2.4J	1.8J	2.2J	6.1 U	5.7 U	5 U		5 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	0.84J	1 U	1 U	1 U	1 U	1 U		1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	DRY	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5UJ	5UJ	5UJ		5 U
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5UJ	5UJ	5UJ		5 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Toluene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	**4.4**	**150**	0.93J	1 U	**1.5**	0.39J	1 U		**13**
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-10C	DC-10D	DC-11A	DC-11B	DC-12A	Dup102312C (Dup of DC-12A)	DC-12B	DC-12C	DC-12D	DC-13A	DC-13B	DC-14A
Lab Sample ID		R1207248	R1207248	R1207248	R1207248	R1207248	R1207248	R1207248	R1207248	R1207248	R1207248	R1207248	R1207278
DATE SAMPLED		10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/24/2012
VOC'S													
Acetone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene (ug/L)	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5 U	5 U	5 U	5 U	5 U	5 U	5UJ	5UJ	5 U	5UJ	5UJ	5UJ
Methylcyclohexane (ug/L)	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5 U	5 U	5 U	5 U	5 U	5 U	5UJ	5UJ	5 U	5UJ	5UJ	5UJ
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	1 U	1 U	1 U	1 U	0.76J	0.95J	**23**	**13**	**1.3**	**9.9**	**10**	**2.9**
Vinyl Chloride (ug/L)	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16H
Groundwater Water Sampling Results
8'th Quarterly Event
(October 2012)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-14B	DC-15A	DC-15B	DC-16	DC-17A	DC-17B	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1207278	R12072949	R12072949	R12072949	R1207309	R1207309	R1207248	R1207248	R1207248
DATE SAMPLED		10/24/2012	10/23/2012	10/23/2012	10/23/2012	10/25/2012	10/25/2012	10/23/2012	10/23/2012	10/23/2012
VOC'S										
Acetone (ug/L)	50	5 U	100 U	2.5J	25 U	25 U	2.4J	5 U	5 U	5 U
Benzene (ug/L)	1	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
Bromomethane (ug/L)	5	1 U	20 U	1 U	5 U	5 UJ	1UJ	1 U	1 U	1 U
2-Butanone (MEK) (ug/L)	50	5 U	100 U	5 U	25 U	25 U	5 U	5 U	5 U	5 U
Carbon disulfide (ug/L)	120	1 U	20 U	1 U	5 U	2.4J	1 U	1 U	1 U	1 U
Carbon Tetrachloride (ug/L)	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
Chloroform (ug/L)	7	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
Chloromethane	NS	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
Cyclohexane (ug/L)	NS	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (ug/L)	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene (ug/L)	5	1 U	**33**	1 U	**19**	**19**	**3.7**	1 U	1 U	1 U
trans-1,2,-Dichloroethene (ug/L)	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
2-Hexanone (ug/L)	50	5UJ	100 U	5 U	25 U	25 U	5 U	5UJ	5UJ	5UJ
Methylcyclohexane (ug/L)	NS	1 U	20 U	1 U	5 U	5 U	1UJ	1 U	1 U	1 U
Methylene Chloride (ug/L)	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5UJ	100 U	5 U	25 U	25 U	5 U	5UJ	5UJ	5UJ
Tetrachloroethene	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
Toluene (ug/L)	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene (ug/L)	5	1 U	20 U	1 U	5 U	5UJ	1 U	1 U	1 U	1 U
Trichloroethene (ug/L)	5	**4.2**	**11000†**	**1.9**	**1800†**	**570**	**15**	**54**	**19**	1 U
Vinyl Chloride (ug/L)	2	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	20 U	1 U	5 U	5 U	1 U	1 U	1 U	1 U
m,p-Xylenes	5	2 U	40 U	2 U	10 U	10 U	2 U	2 U	2 U	2 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-18-1	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2
Lab Sample ID		R1302013	R1302013	R1302013	R1302013	R1302013		R1302013	R1302013	R1302013		R1302089	R1302089
DATE SAMPLED		3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013		3/27/2013	3/27/2013	3/27/2013		3/28/2012	3/28/2012
VOC'S													
Acetone (ug/L)	50	5U	5U	5U	5U	1.4J		25U	25U	5U		1.9J	5U
Benzene (ug/L)	1	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Bromomethane (ug/L)	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
2-Butanone (MEK) (ug/L)	50	5U	5U	5U	5U	5U		25U	25U	5U		5U	5U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Chloroform (ug/L)	7	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Chloroethane	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Chloromethane	NS	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
1,1-Dichloroethene	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
cis-1,2-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	**DRY**	36	58J	1U	**DRY**	1U	1U
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Ethylbenzene	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	5U		25U	25U	5U		5U	5U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	5U	5U	5U	5U		25U	25U	5U		5U	5U
Tetrachloroethene	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Toluene (ug/L)	5	0.21J	0.22J	1U	0.47J	0.45J		17	21J	1U		0.82J	1U
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
Trichloroethene (ug/L)	5	1U	1U	1U	1U	1U		630†	200J†	1U		1U	1U
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
o-Xylene	5	1U	1U	1U	1U	1U		5U	5U	1U		1U	1U
m,p-Xylenes	5	2U	2U	2U	2U	2U		10U	10U	2U		2U	2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-21-3	LVRR-21-4	LVRR-22	LVRR-23	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-2
Lab Sample ID		R1302089	R1302089	R1301974	R1301973	R1301975	R1301975	R1301975	R1301974	R1301974	R1301974	R1302012	R1302012
DATE SAMPLED		3/28/2012	3/28/2012	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/27/2013	3/27/2013
VOC'S													
Acetone (ug/L)	50	5U	**32**	1.5J	2.0J	2.2J	1.6J	2.0J	1.4J	1.8J	1.4J	2.1J	**5.8**
Benzene (ug/L)	1	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Bromomethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
2-Butanone (MEK) (ug/L)	50	5U	1.2J	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloroform (ug/L)	7	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloroethane	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloromethane	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Ethylbenzene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	1.9J	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Toluene (ug/L)	5	0.21J	**50J†**	1U	1U	1U	1U	1U	1U	1U	1U	**6.4**	**12 J**
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Trichloroethene (ug/L)	5	1U	1U	1U	1U	**15**	**7.0**	1U	1U	1U	1U	1U	1U
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
o-Xylene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
m,p-Xylenes	5	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	Dup032713C (Dup of LVRR-26-2)	LVRR-26-3	LVRR-26-4	LVRR-26-5	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3
Lab Sample ID		R1302012	R1302012	R1302012	R1302012	R1302012	R1302012	R1302012	R1302012	R1302012			R1302089
DATE SAMPLED		3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013			3/28/2012
VOC'S													
Acetone (ug/L)	50	3.5J	5U	5U	1.5J	3.8J	3.3J	3.9J	2.1J	1.4J			5U
Benzene (ug/L)	1	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Bromomethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
2-Butanone (MEK) (ug/L)	50	5U	5U	5U	5U	5U	5U	1J	5U	5U			5U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Chloroform (ug/L)	7	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Chloroethane	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Chloromethane	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
1,1-Dichloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
cis-1,2-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	**DRY**	**DRY**	**5.9**
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			0.4J
Ethylbenzene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U			5U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	5U	5U	5U	5U	5U	5U	5U	5U			5U
Tetrachloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Toluene (ug/L)	5	**27J**	**2.5**	**8.3**	**7.4**	1U	1U	0.83J	1U	0.57J			**1.3**
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
Trichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			**46**
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
o-Xylene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U			1U
m,p-Xylenes	5	2U	2U	2U	2U	2U	2U	2U	2U	2U			2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-28-4	LVRR-28-5	LVRR-29-1	LVRR-29-2	LVRR-29-3	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	LVRR-30-3	LVRR-30-4	LVRR-30-5
Lab Sample ID		R1302089	R1302089	R1302089	R1302089	R1302089	R1302089	R1302089	R1302012	R1302012		R1302012	R1302012
DATE SAMPLED		3/28/2012	3/28/2012	3/28/2012	3/28/2012	3/28/2012	3/28/2012	3/28/2012	3/27/2013	3/27/2013		3/27/2013	3/27/2013
VOC'S													
Acetone (ug/L)	50	5U	5U	5U	5U	5U	5U	**6.1**	6.0J	**14**		3.2J	5U
Benzene (ug/L)	1	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Bromomethane (ug/L)	5	1U	1U	1UJ	1UJ	1UJ	1UJ	1U	2U	2.5U		1U	1U
2-Butanone (MEK) (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	10U	13U		5U	5U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Chloroform (ug/L)	7	1U	1U	1U	1U	1U	1U	1U	0.54J	2.5U		1U	1U
Chloroethane	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Chloromethane	NS	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
1,1-Dichloroethene	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
cis-1,2-Dichloroethene (ug/L)	5	1U	1U	1U	1U	0.35J	0.37J	**1.5**	11	12	DRY	5.6	1U
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Ethylbenzene	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	10U	13U		5U	5U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	5U	5U	5U	5U	5U	5U	10U	13U		5U	5U
Tetrachloroethene	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Toluene (ug/L)	5	1U	1U	1U	1U	1U	1U	5.6	**2.9**	12J		8.0	1U
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
Trichloroethene (ug/L)	5	1U	1U	1U	0.26J	1U	**4.6**	6.5	340	360J		120	1U
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
o-Xylene	5	1U	1U	1U	1U	1U	1U	1U	2U	2.5U		1U	1U
m,p-Xylenes	5	2U	2U	2U	2U	2U	2U	2U	4U	5U		2U	2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-31-1	LVRR-31-2	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1	LVRR-32-2	LVRR-32-3	Dup062713D (Dup of LVRR-32-3)	LVRR-32-4	LVRR-32-5	LVRR-33 A
Lab Sample ID		R1302012		R1302012	R1302012	R1302012	R1302013	R1302013	R1302013	R1302013			R1301972
DATE SAMPLED		3/27/2013		3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013			3/26/2013
VOC'S													
Acetone (ug/L)	50	5U	DRY	500J†	1.6J	5U	**5.5**	**15**	5.6J	6.1J	DRY	DRY	2.4J
Benzene (ug/L)	1	1U		R	1U	1U	1U	1U	1U	2U			1U
Bromomethane (ug/L)	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
2-Butanone (MEK) (ug/L)	50	5U		28J	5U	5U	5U	1.4J	5U	10U			5U
Carbon disulfide (ug/L)	120	1U		0.58J	1U	1U	1U	1U	1U	2U			0.81J
Carbon Tetrachloride (ug/L)	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Chloroform (ug/L)	7	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Chloroethane	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Chloromethane	NS	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Cyclohexane (ug/L)	NS	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Dichlorodifluoromethane (ug/L)	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
1,1-Dichloroethene	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
cis-1,2-Dichloroethene (ug/L)	5	1U		1UJ	1U	1U	1U	0.36J	1U	2U			1U
trans-1,2,-Dichloroethene (ug/L)	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Ethylbenzene	5	1U		0.22J	1U	1U	1U	1U	1U	2U			1U
2-Hexanone (ug/L)	50	5U		3.3J	5U	5U	5U	5U	5U	10U			5U
Methylcyclohexane (ug/L)	NS	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Methylene Chloride (ug/L)	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U		37J	0.98J	5U	5U	5U	5U	1.6J			5U
Tetrachloroethene	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Toluene (ug/L)	5	1U		280J†	1U	1U	**2.5**	**33**	**230E**	**220**			1U
1,2,4-Trichlorobenzene (ug/L)	5	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
Trichloroethene (ug/L)	5	**7.0**		0.27J	0.33J	1U	**43**	**59**	19J	**19**			1U
Vinyl Chloride (ug/L)	2	1U		1UJ	1U	1U	1U	1U	1U	2U			1U
o-Xylene	5	1U		R	1U	1U	1U	1U	1U	2U			1U
m,p-Xylenes	5	2U		R	2U	2U	2U	2U	2U	4U			2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (yellow)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	LVRR-34-2	LVRR-34-3	LVRR-34-4	LVRR-34-5	LVRR-35-1	LVRR-35-2	LVRR-35-3
Lab Sample ID		R1301972	R1301972	R1301972	R1301972	R1302089	R1302089	R1302089	R1302089	R1302089	R1302089	R1302089	R1302089
DATE SAMPLED		3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/28/2012	3/28/2012	3/28/2012	3/28/2012	3/28/2012	3/28/2013	3/28/2013	3/28/2013
VOC'S													
Acetone (ug/L)	50	1.5J	5U	2.4J	2.4J	5U	5U	5U	3.8J	5U	20U	100U	10U
Benzene (ug/L)	1	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Bromomethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4UJ	20UJ	2UJ
2-Butanone (MEK) (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	20U	100U	10U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Chloroform (ug/L)	7	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Chloroethane	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Chloromethane	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
1,1-Dichloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
cis-1,2-Dichloroethene (ug/L)	5	0.36J	0.33J	1U	1U	1U	1U	1U	**3.9**	1U	**5.8**	**24**	**32**
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Ethylbenzene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	20U	100U	10U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	5U	5U	5U	5U	5U	5U	5U	5U	20U	100U	10U
Tetrachloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Toluene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	**29**	1U	4U	20U	0.82J
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
Trichloroethene (ug/L)	5	**83**	**79**	1U	1U	0.32J	0.64J	**1.0**	**5.3**	1U	**1200†**	**3200†**	**380**
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
o-Xylene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	4U	20U	2U
m,p-Xylenes	5	2U	2U	2U	2U	2U	2U	2U	2U	2U	8U	40U	4U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-35-4	LVRR-35-5	LVRR-37A	LVRR-37B	LVRR-37C	Dup032613A (Dup of LVRR-37-C)	LVRR-37D	LVRR-38A	LVRR-38B	LVRR-38C	LVRR-39A	LVRR-39B
Lab Sample ID		R1302089		R1301973	R1301973	R1301973	R1301973	R1301973	R1301973	R1301973	R1301973	R1301973	R1301973
DATE SAMPLED		3/28/2013		3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013
VOC'S													
Acetone (ug/L)	50	5U		2.1J	3.0J	1.7J	2.6J	1.8J	2.0J	2.1J	1.4J	1.5J	5U
Benzene (ug/L)	1	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Bromomethane (ug/L)	5	1UJ		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
2-Butanone (MEK) (ug/L)	50	5U		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Carbon disulfide (ug/L)	120	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Carbon Tetrachloride (ug/L)	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloroform (ug/L)	7	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloroethane	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloromethane	NS	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Cyclohexane (ug/L)	NS	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane (ug/L)	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene (ug/L)	5	**35**	**DRY**	1U	1U	0.65J	0.64J	1U	1U	1U	1U	1U	1U
trans-1,2,-Dichloroethene (ug/L)	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Ethylbenzene	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
2-Hexanone (ug/L)	50	5U		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Methylcyclohexane (ug/L)	NS	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Methylene Chloride (ug/L)	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Toluene (ug/L)	5	**1.0**		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene (ug/L)	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Trichloroethene (ug/L)	5	**15**		1U	**17**	**91**	**91**	0.4J	1U	1U	1U	1U	1U
Vinyl Chloride (ug/L)	2	**3.4**		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
o-Xylene	5	1U		1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
m,p-Xylenes	5	2U		2U	2U	2U	2U	2U	2U	2U	2U	2U	2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
(red) Exceeds Criteria
(yellow) U-value exceeds criteria
(blue) J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-39C	LVRR-40A	LVRR-40B	LVRR-40C	LVRR-41A	LVRR-41B	LVRR-41C	LVRR-42A	Dup032713B (Dup of LVRR-42A)	LVRR-42B	LVRR-42C	DC-01A
Lab Sample ID		R1301973	R1301973	R1301973	R1301973	R1301973	R1301973	R1301973	R1302013	R1302013	R1302013	R1302013	R1301975
DATE SAMPLED		3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/26/2013
VOC'S													
Acetone (ug/L)	50	2.1J	5U	2.0J	2.1J	2.0J	2.0J	1.8J	1.3J	1.6J	1.8J	2.3J	250U
Benzene (ug/L)	1	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Bromomethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
2-Butanone (MEK) (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	250U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Chloroform (ug/L)	7	1U	0.38J	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Chloroethane	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Chloromethane	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
1,1-Dichloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
cis-1,2-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	17J
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Ethylbenzene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	250U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	250U
Tetrachloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Toluene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
Trichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	4800
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
o-Xylene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	50U
m,p-Xylenes	5	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	100U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-01B	DC-01C	DC-01D	DC-02A	DC-02B	DC-02C	DC-02D	DC-03A	Dup032713A (Dup of DC-03A)	DC-03B	DC-03C	DC-03D
Lab Sample ID		R1301975	R1301975	R1301975	R1301975	R1301975	R1301975	R1301975	R1302013	R1302013	R1302013	R1302013	R1302012
DATE SAMPLED		3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013	3/27/2013
VOC'S													
Acetone (ug/L)	50	25U	13U	2.3J	1.6J	50U	2.2J	1.9J	1.9J	2.3J	25U	1.7J	5U
Benzene (ug/L)	1	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Bromomethane (ug/L)	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
2-Butanone (MEK) (ug/L)	50	25U	13U	5U	5U	50U	5U	5U	5U	5U	25U	5U	5U
Carbon disulfide (ug/L)	120	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Carbon Tetrachloride (ug/L)	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Chloroform (ug/L)	7	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Chloroethane	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Chloromethane	NS	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Cyclohexane (ug/L)	NS	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Dichlorodifluoromethane (ug/L)	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
1,1-Dichloroethene	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
cis-1,2-Dichloroethene (ug/L)	5	1.5J	**11**	0.39J	1U	**13**	0.79J	1U	1U	1U	**11**	1U	1U
trans-1,2,-Dichloroethene (ug/L)	5	5U	1.2J	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Ethylbenzene	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
2-Hexanone (ug/L)	50	25U	13U	5U	5U	50U	5U	5U	5U	5U	25U	5U	5U
Methylcyclohexane (ug/L)	NS	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Methylene Chloride (ug/L)	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	25U	13U	5U	5U	50U	5U	5U	5U	5U	25U	5U	5U
Tetrachloroethene	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Toluene (ug/L)	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
1,2,4-Trichlorobenzene (ug/L)	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
Trichloroethene (ug/L)	5	**440**	**340**	**6.0**	**53**	**3600†**	**15**	0.35J	1U	1U	**830**	1U	1U
Vinyl Chloride (ug/L)	2	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
o-Xylene	5	5U	2.5U	1U	1U	10U	1U	1U	1U	1U	5U	1U	1U
m,p-Xylenes	5	10U	5U	2U	2U	20U	2U	2U	2U	2U	10U	2U	2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Unicorn Management Consultants, LLC

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-04A	DC-04B	DC-04C	DC-04D	DC-05A	DC-05B	DC-05C	DC-05D	DC-06A	DC-06B	DC-06C	DC-06D
Lab Sample ID		R1301974	R1301974	R1301974	R1301974	R1301974	R1301974	R1301974	R1301974	R1301975	R1301975	R1301975	R1301975
DATE SAMPLED		3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013
VOC'S													
Acetone (ug/L)	50	1.6J	5U	1.3J	1.7J	100U	50U	1.5J	1.7J	2.4J	2.1J	2.1J	2.2J
Benzene (ug/L)	1	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Bromomethane (ug/L)	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
2-Butanone (MEK) (ug/L)	50	5U	5U	5U	5U	100U	50U	5U	5U	5U	5U	5U	5U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Chloroform (ug/L)	7	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Chloroethane	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Chloromethane	NS	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene (ug/L)	5	1U	1U	1U	1U	**25**	**60**	1U	1U	**10**	**19**	0.35J	1U
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	20U	10U	1U	1U	0.43J	1U	1U	1U
Ethylbenzene	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	100U	50U	5U	5U	5U	5U	5U	5U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	5U	5U	5U	100U	50U	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Toluene (ug/L)	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
Trichloroethene (ug/L)	5	1U	1U	1U	1U	**3800†**	**1700**	1U	0.39J	**120**	**200†**	**3.9**	1U
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
o-Xylene	5	1U	1U	1U	1U	20U	10U	1U	1U	1U	1U	1U	1U
m,p-Xylenes	5	2U	2U	2U	2U	40U	20U	2U	2U	2U	2U	2U	2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-07	Dup032613B (Dup of DC-07)	DC-07RA	DC-07RB	DC-07RC	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A	DC-10B	DC-10C
Lab Sample ID		R1301972	R1301975	R1301972	R1301972	R1301972	R1301972	R1301972	R1301972	R1301972	R1301972	R1301972	R1301972
DATE SAMPLED		3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013
VOC'S													
Acetone (ug/L)	50	1.5J	1.8J	2.9J	1.6J	2.6J	2.3J	1.3J	2.6J	2.5J	2.2J	2.0J	2.1J
Benzene (ug/L)	1	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Bromomethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
2-Butanone (MEK) (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloroform (ug/L)	7	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloroethane	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloromethane	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene (ug/L)	5	1U	1U	1U	**1.0**	1U	1U	1U	1U	1U	1U	1U	1U
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Ethylbenzene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Toluene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Trichloroethene (ug/L)	5	1U	1U	**42**	**170**	**1.1**	1U	**6.4**	0.3J	1U	0.29J	**18**	1U
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
o-Xylene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
m,p-Xylenes	5	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-10D	DC-11A	DC-11B	DC-12A	Dup032613C (Dup of DC-12A)	DC-12B	DC-12C	DC-12D	DC-13A	DC-13B	DC-14A	DC-14B
Lab Sample ID		R1301972	R1301972	R1301972	R1301972	R1301975	R1301972	R1301975	R1301975	R1301974	R1301974	R1301974	R1301974
DATE SAMPLED		3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013	3/26/2013
VOC'S													
Acetone (ug/L)	50	1.7J	1.7J	1.7J	1.8J	1.7J	2.0J	2.1J	2.1J	1.5J	1.4J	1.3J	5U
Benzene (ug/L)	1	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Bromomethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
2-Butanone (MEK) (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Carbon disulfide (ug/L)	120	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Carbon Tetrachloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloroform (ug/L)	7	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloroethane	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Chloromethane	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Cyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
trans-1,2,-Dichloroethene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Ethylbenzene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
2-Hexanone (ug/L)	50	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Methylcyclohexane (ug/L)	NS	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Methylene Chloride (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Toluene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene (ug/L)	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Trichloroethene (ug/L)	5	1U	1U	1U	0.35J	0.32J	**23**	**11**	**1.2**	**8.4**	**11**	**6.1**	**5.6**
Vinyl Chloride (ug/L)	2	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
o-Xylene	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
m,p-Xylenes	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16I
Groundwater Water Sampling Results
9'th Quarterly Event
(March 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-15A	DC-15B	DC-16	DC-17A	DC-17B	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1301975	R1301975	R1301975	R1302013	R1302013	R1301973	R1301973	R1301975
DATE SAMPLED		3/26/2013	3/26/2013	3/26/2013	3/27/2013	3/27/2013	3/26/2013	3/26/2013	3/26/2013
VOC'S									
Acetone (ug/L)	50	50U	3.0J	50U	1.8J	10U	1.4J	1.8J	5U
Benzene (ug/L)	1	10U	1U	10U	1U	2U	1U	1U	1U
Bromomethane (ug/L)	5	10U	1U	10U	1U	2U	1U	1U	1U
2-Butanone (MEK) (ug/L)	50	10U	5U	50U	5U	10U	5U	5U	5U
Carbon disulfide (ug/L)	120	10U	1U	10U	1U	2U	1U	1U	1U
Carbon Tetrachloride (ug/L)	5	10U	1U	10U	1U	2U	1U	1U	1U
Chloroform (ug/L)	7	10U	1U	2.5J	1U	2U	1U	1U	1U
Chloroethane	5	10U	1U	10U	1U	2U	1U	1U	1U
Chloromethane	NS	10U	1U	10U	1U	2U	1U	1U	1U
Cyclohexane (ug/L)	NS	10U	1U	10U	1U	2U	1U	1U	1U
Dichlorodifluoromethane (ug/L)	5	10U	1U	10U	1U	2U	1U	1U	1U
1,1-Dichloroethene	5	10U	1U	10U	1U	2U	1U	1U	1U
cis-1,2-Dichloroethene (ug/L)	5	5.8J	1U	6.2J	1U	2.0J	1U	1U	1U
trans-1,2,-Dichloroethene (ug/L)	5	10U	1U	10U	1U	2U	1U	1U	1U
Ethylbenzene	5	10U	1U	10U	1U	2U	1U	1U	1U
2-Hexanone (ug/L)	50	50U	5U	50U	5U	10U	5U	5U	5U
Methylcyclohexane (ug/L)	NS	10U	1U	10U	1U	2U	1U	1U	1U
Methylene Chloride (ug/L)	5	10U	1U	10U	1U	2U	1U	1U	1U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	50U	5U	50U	5U	10U	5U	5U	5U
Tetrachloroethene	5	10U	1U	10U	1U	2U	1U	1U	1U
Toluene (ug/L)	5	10U	1U	10U	1U	2U	1U	1U	1U
1,2,4-Trichlorobenzene (ug/L)	5	10U	1U	10U	1U	2U	1U	1U	1U
Trichloroethene (ug/L)	5	**1500**	**1.9**	**1200**	1U	**270**	**43**	**18**	1U
Vinyl Chloride (ug/L)	2	10U	1U	10U	1U	2U	1U	1U	1U
o-Xylene	5	10U	1U	10U	1U	2U	1U	1U	1U
m,p-Xylenes	5	20U	2U	20U	2U	4U	2U	2U	2U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-18-1	LVRR-18-2	DUP052213B (Dup of LVRR-18-2)	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1	LVRR-21-2	LVRR-21-3
Lab Sample ID		R1303630	R1303630	R1303630	R1303630	R1303630	R1303630	R1303630	R1303630	R1303630	R1303630		R1303630	R1303630	R1303630
DATE SAMPLED		5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013		5/22/2013	5/22/2013	5/22/2013
VOC'S															
Acetone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	4.3 J	8.7 J	7.5 J	1.5 J		5.0 U	5.0 U	5.0 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U		1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	0.29 J	5.0 UJ	5.0 UJ	5.0 UJ		1.0 UJ	1.0 UJ	1.0 UJ
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	5.0 U		5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	0.26 J	1.0 U	1.0 U	5.0 U	5.0 U	0.25 J		1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.29 J	1.6 J	1.3 J	1.0 U		1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	0.42 J	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**28**	**29**	**100**	1.0 U		1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.0**	5.0 U	5.0 U	1.0 U	**DRY**	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	5.0 U		5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	0.28 J	0.6 J	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	5.0 U		5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	0.21 J	0.85 J	1.0 U	**43**	**70**	**33**	1.0 U		1.0 U	1.0 U	0.36 J
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**59**	**550**	**640**	1.0 U		1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U		1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	0.39 J	2.0 U	2.0 U	10 U	10 U	2.0 U		2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-21-4	LVRR-22	LVRR-23	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C	LVRR-26-1	LVRR-26-2	LVRR-26-3	LVRR-26-4	LVRR-26-5
Lab Sample ID		R1303630	R1303582	R1303584	R1303582	R1303582	R1303582	R1303582	R1303582	R1303582	R1303631	R1303631	R1303631	R1303631	R1303631
DATE SAMPLED		5/22/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013
VOC'S															
Acetone (ug/L)	50	**62**	1.7 J	3.2 J	2.0 J	2.6 J	1.8 J	2.0 J	2.1 J	2.4 J	5.0 U	4.6 J	1.5 J	1.7 J	5.0 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	**5.2**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	**5.5**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**380**†	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.8**	**37**	**2.6**	**8.5**	**3.3**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	**15**	**5.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DUP052213D (Dup of LVRR-26-5)	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1	LVRR-28-2	LVRR-28-3	LVRR-28-4	LVRR-28-5	LVRR-29-1	LVRR-29-2	LVRR-29-3
Lab Sample ID		R1303631	R1303662	R1303662	R1303662	R1303662	R1303662			R1303662	R1303662	R1303662	R1303631	R1303631	R1303631
DATE SAMPLED		5/22/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013			5/23/2013	5/23/2013	5/23/2013	5/22/2013	5/22/2013	5/22/2013
VOC'S															
Acetone (ug/L)	50	5.0 U	2.7 J	3.0 J	3.0 J	5.0 U	4.4 J			5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ			1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.4 J			5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			**4.2**	1.0 U	1.0 U	1.0 U	1.0 U	0.41J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**DRY**	**DRY**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**5.5**	1.0 U	1.0 U	1.0 U	0.27 J	0.35 J			0.24 J	1.0 U	1.0 U	1.0 U	1.0 U	0.28 J
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			**30**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	LVRR-30-3	LVRR-30-4	LVRR-30-5	LVRR-31-1	LVRR-31-2	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1	LVRR-32-2
Lab Sample ID		R1303631	R1303631	R1303662	R1303662		R1303662	R1303662	R1303631	R1303631	R1303631	R1303631	R1303631	R1303662	R1303630
DATE SAMPLED		5/22/2013	5/22/2013	5/23/2013	5/23/2013		5/23/2013	5/23/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/23/2013	5/22/2013
VOC'S															
Acetone (ug/L)	50	5.0 U	**11**	**60**	11 J		5.0 U	3.9J	5.0 U			2.2 J	5.0 U	**9.1**	**8.5**
Benzene (ug/L)	1	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	1.0 UJ	2.0 UJ	2.5 UJ		1.0 UJ	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 UJ
2-Butanone (MEK) (ug/L)	50	5.0 U	1.7 J	8.7 J	13 U		5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	0.58 J	**2.5**	**9.8**	**15**		**6.0**	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	2.0 U	2.5 U	**DRY**	1.0 U	1.0 U	1.0 U	**DRY**	**DRY**	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	10.0 U	13 U		5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	0.42 J
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	2.8 J	13 U		5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	1.0 U
Tetrachloroethene	5	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	5.0 U
Toluene (ug/L)	5	1.0 U	**5.3**	**34**	**6.6**		**2.0**	0.34 J	1.0 U			0.55 J	1.0 U	**2.2**	**5.1**
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**5.7**	**3.7**	**230**	**350**		**98**	1.0 U	**3.9**			0.76 J	1.0 U	**32**	**25**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	2.0 U	2.5 U		1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	4.0 U	5.0 U		2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
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R: Rejected by data validator
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Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-32-3	LVRR-32-4	LVRR-32-5	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	DUP052313A (Dup of LVRR-34-1)	LVRR-34-2	LVRR-34-3	LVRR-34-4	LVRR-34-5
Lab Sample ID		R1303630	R1303662		R1303662	R1303662	R1303662	R1303662	R1303662	R1303662	R1303662	R1303662	R1303662	R1303662	R1303662
DATE SAMPLED		5/22/2013	5/23/2013		5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013
VOC'S															
Acetone (ug/L)	50	**10**	**34**		3.4 J	2.7 J	2.5 J	3.5 J	3.8 J	5.0 U	5.0 U	5.0 U	5.0 U	2.8J	5.0 U
Benzene (ug/L)	1	0.44 J	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	2.0 U		1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U
2-Butanone (MEK) (ug/L)	50	3.9 J	5.8 J		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	0.3 J	2.0 U		**1.0**	0.22 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	0.64 J		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	0.55 J	2.0 U		1.0 U	0.3 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.7**	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	2.0 U	**DRY**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	10 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	4.6 J	4.7 J		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	**170**	**300**		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.22 J	**15**	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**18**	**2.6**		1.0 U	**76**	**43**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.76 J	**3.1**	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	2.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	4.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-35-1	LVRR-35-2	LVRR-35-3	LVRR-35-4	LVRR-35-5	LVRR-37A	DUP052113C (Dup of LVRR-37A)	LVRR-37B	LVRR-37C	LVRR-37D	LVRR-38A	LVRR-38B	LVRR-38C	LVRR-39A
Lab Sample ID		R1303662	R1303662	R1303662	R1303662	R1303662	R1303586	R1303586	R1303586	R1303586	R1303586	R1303582	R1303582	R1303582	R1303582
DATE SAMPLED		5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/23/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013
VOC'S															
Acetone (ug/L)	50	30 J	28 J	5.0 U	5.0 U	300 J	4.9 J	4.7 J	**6.0**	3.6 J	4.9 J	2.5 J	2.3 J	2.1 J	2.1 J
Benzene (ug/L)	1	10 U	20 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
2-Butanone (MEK) (ug/L)	50	50 U	100 U	5.0 U	5.0 U	31 J	5.0 U	5.0 U	1.1 J	5.0 U	1.1 J	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	0.22 J	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	4.2 J	8.2 J	1.0 U	1.0 U	4.5 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	6.8 J	16 J	27	30	27 J	1.0 U	1.0 U	1.0 U	0.35 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	10 U	20 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	50 U	100 U	5.0 U	5.0 U	50 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	3.9 J	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	50 U	100 U	5.0 U	5.0 U	22 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	10 U	20 U	0.52 J	0.65 J	520 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	10 U	20 U	1.0 U	1.0 U	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1300	2300	190	9.3	70 J	1.0 U	1.0 U	13	45	0.31 J	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	10 U	20 U	0.49 J	3.3	10 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	10 U	20 U	1.0 U	1.0 U	R	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	20 U	40 U	2.0 U	2.0 U	R	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-39B	LVRR-39C	LVRR-40A	LVRR-40B	LVRR-40C	LVRR-41A	LVRR-41B	LVRR-41C	LVRR-42A	DUP052213C (Dup of LVRR-42A)	LVRR-42B	LVRR-42C	DC-01A	DC-01B
Lab Sample ID		R1303582	R1303582	R1303582	R1303582	R1303582	R1303582	R1303582	R1303582	R1303631	R1303631	R1303631	R1303631	R1303585	R1303585
DATE SAMPLED		5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/21/2013	5/21/2013
VOC'S															
Acetone (ug/L)	50	1.5 J	2.0 J	1.7 J	1.9 J	1.9 J	1.9 J	1.7 J	2.1 J	2.1 J	1.9 J	1.6 J	5.0 U	130 U	13 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	25 U
Bromomethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	25 UJ	25 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U	13 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Chloroform (ug/L)	7	1.0 U	1.0 U	0.31 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	7.8 J	0.98 J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U	13 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 UJ	2.5 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	130 U	13 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3100**	**340**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	25 U	2.5 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	50 U	5.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
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Exceeds Criteria
U-value exceeds criteria
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Unicorn Management Consultants, LLC

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-01C	DC-01D	DC-02A	DC-02B	DC-02C	DC-02D	DC-03A	DUP052213A (Dup of DC-03A)	DC-03B	DC-03C	DC-03D	DC-04A	DC-04B	DC-04C
Lab Sample ID		R1303585	R1303585	R1303585	R1303585	R1303585	R1303585	R1303630	R1303631	R1303630	R1303630	R1303630	R1303586	R1303586	R1303586
DATE SAMPLED		5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/22/2013	5/21/2013	5/21/2013	5/21/2013
VOC'S															
Acetone (ug/L)	50	2.7 J	2.5 J	2.0 J	130 U	2.2 J	2.4 J	3.5 J	1.4 J	7.4 J	4.0 J	3.3 J	3.9 J	**5.6**	3.3 J
Benzene (ug/L)	1	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	2.0 U	1.0 UJ	1.0 U	25 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	5.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
2-Butanone (MEK) (ug/L)	50	10 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	5.0 U	1.2J	5.0 U
Carbon disulfide (ug/L)	120	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	**5.1**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	**11**	1.0 U	1.0 U	11 J	0.67 J	1.0 U	1.0 U	1.0 U	**12**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.1 J	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	10 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	10 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**200**	**7.6**	**50**	**4300**	**13**	0.3 J	**2.6**	**2.7**	**660**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	2.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	4.0 U	2.0 U	2.0 U	50 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-04D	DC-05A	DC-05B	DC-05C	DC-05D	DC-06A	DC-06B	DC-06C	DC-06D	DC-07	DUP052113B (Dup of DC-07)	DC-07RA	DC-07RB	DC-07RC
Lab Sample ID		R1303586	R1303585	R1303585	R1303585	R1303585	R1303585	R1303585	R1303585	R1303585	R1303584	R1303584	R1303584	R1303584	R1303584
DATE SAMPLED		5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013
VOC'S															
Acetone (ug/L)	50	3.5 J	130 U	25 U	2.7 J	2.3 J	3.8 J	3.5 J	2.0 J	3.5 J	1.9 J	2.5 J	2.3 J	2.8 J	2.7 J
Benzene (ug/L)	1	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	25 UJ	5.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	**1.0**	1.0 UJ	1.0 UJ
2-Butanone (MEK) (ug/L)	50	5.0 U	130 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	12 J	**26**	1.0 U	1.0 U	**11**	**10**	0.31 J	1.0 U	1.0 U	1.0 U	1.0 U	0.86 J	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	0.39 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	130 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	130 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	**3600**	**860†**	1.0 U	0.37J	**150**	**120**	**3.7**	1.0 U	1.0 U	1.0 U	**5.2**	**140**	0.85 J
Vinyl Chloride (ug/L)	2	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	25 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	50 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A	DC-10B	DC-10C	DC-10D	DC-11A	DC-11B	DC-12A	DUP052113A (Dup of DC-12A)	DC-12B	DC-12C
Lab Sample ID		R1303584	R1303584	R1303584	R1303585	R1303584	R1303584	R1303584	R1303584	R1303584	R1303584	R1303584	R1303584	R1303584	R1303584
DATE SAMPLED		5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013
VOC'S															
Acetone (ug/L)	50	2.6 J	2.7 J	3.4 J	2.2 J	2.9 J	2.8 J	3.0 J	2.2 J	2.6 J	3.2 J	2.3 J	2.6 J	2.1 J	3.5 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	**3.9**	0.34 J	1.0 U	0.31 J	**19**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**23**	**12**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
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The values listed in Table IC represent laboratory detections only.

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Exceeds Criteria
U-value exceeds criteria
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* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

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Table 16J
Groundwater Water Sampling Results
10'th Quarterly Event
(May 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-12D	DC-13A	DC-13B	DC-14A	DC-14B	DC-15A	DC-15B	DC-16	DC-17A	DC-17B	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1303584	R1303582	R1303582	R1303585	R1303585	R1303585	R1303585	R1303585	R1303630	R1303630	R1303582	R1303584	R1303584
DATE SAMPLED		5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/22/2013	5/22/2013	5/21/2013	5/21/2013	5/21/2013
VOC'S														
Acetone (ug/L)	50	3.5 J	1.9 J	2.2 J	1.8 J	2.0 J	50 U	3.0 J	50 U	1.8 J	3.2 J	2.1 J	2.9 J	**6.1**
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	10 UJ	1.0 UJ	10 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	1.5 J
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	0.23 J	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.5 J	1.0 U	5.2 J	**2.3**	**3.1**	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**1.2**	**8.5**	**9.6**	**6.1**	**5.7**	**1800**	**2.3**	**1500**	**310**†	**10**	**32**	**17**	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria (red)

U-value exceeds criteria (orange)

J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-18-1	Dup080713A (Dup of LVRR-18-1)	LVRR-18-2	LVRR-18-3	LVRR-18-4	LVRR-18-5	LVRR-20-1	LVRR-20-2	LVRR-20-3	LVRR-20-4	LVRR-20-5	LVRR-21-1
Lab Sample ID		R1305741	R1305741	R1305741	R1305741	R1305741	R1305741	R1305741	R1305741	R1305741	R1305741	R1305741	R1305782
DATE SAMPLED		8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/8/2013
VOC'S													
Acetone (ug/L)	50	5.0 U	5.0 UJ	5.0 U	5.0 U	4.6J	1.8J	4.0J	5.4J	3.0J	5.0 U		5.0 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	10 U	5.0 U		5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 UJ		1.0 UJ
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 UJ		1.0 UJ
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**21**	**26**	**42**	1.0 U		1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.74J	2.5 U	0.66J	1.0 U	DRY	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	10 U	5.0 U		5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	0.5J	1.0 U	1.0 U	2.5 U	2.0 U	1.0 UJ		1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 UJ
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	10 U	5.0 U		5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	**1.1**	**4.2**	0.95J	**24**	**78**	**22**	1.0 U		1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**12**	**680†**	**720†**	1.0 U		1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.0 U	1.0 U		1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	4.0 U	2.0 U		2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-21-2	Dup080813A (Dup of LVRR-21-2)	LVRR-21-3	LVRR-21-4	LVRR-22	LVRR-23	LVRR-24 A	LVRR-24 B	LVRR-24 C	LVRR-25 A	LVRR-25 B	LVRR-25 C
Lab Sample ID		R1305782	R1305782	R1305782	R1305782	R1305739	R1305738	R1305736	R1305736	R1305736	R1305739	R1305739	R1305739
DATE SAMPLED		8/8/2013	8/8/2013	8/8/2013	8/15/2013	8/6/2013	8/6/2013	8/7/2013	8/7/2013	8/7/2013	8/6/2013	8/6/2013	8/6/2013
VOC'S													
Acetone (ug/L)	50	5.0 U	5.0 U	5.0 U	**21**	2.8J	3.0J	2.2J	2.2J	1.8J	2.4J	2.8J	2.8J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 UJ	1.0 UJ	1.0 UJ	2.5 UJ	1.0 U	0.92J	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1UJ	1.0 U	2.5 U	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1UJ	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	2.3J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	0.62J	**200**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	**13**	**3.9**	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-26-1	LVRR-26-2	Dup080613C (Dup of LVRR-26-2)	LVRR-26-3	LVRR-26-4	LVRR-26-5	LVRR-27-1	LVRR-27-2	LVRR-27-3	LVRR-27-4	LVRR-27-5	LVRR-28-1
Lab Sample ID		R1305736	R1305736	R1305737		R1305736	R1305736	R1305741	R1305741		R1305741		
DATE SAMPLED		8/7/2013	8/7/2013	8/6/2013		8/7/2013	8/7/2013	8/7/2013	8/7/2013		8/7/2013		
VOC'S													
Acetone (ug/L)	50	**24**	**6.0**	4.4J		5.0 U	1.5J	3.2J	1.4J		2.6J		
Benzene (ug/L)	1	0.37J	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
2-Butanone (MEK) (ug/L)	50	3.6J	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U		5.0 U		
Carbon disulfide (ug/L)	120	1.0 UJ	1.0 UJ	1.0 U		1.0 UJ	1.0 UJ	1.0 U	1.0 U		1.0 U		
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Chlorobenzene (ug/L)	5	0.42 J	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Chloromethane	NS	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Dichlorodifluoromethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ		1.0 UJ	1.0 UJ	1.0 U	1.0 U		1.0 U		
1,1-Dichloroethene	5	1.0 UJ	1.0 UJ	1.0 U		1.0 UJ	1.0 UJ	1.0 U	1.0 U		1.0 U		
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	DRY	1.0 U	1.0 U	1.0 U	1.0 U	DRY	1.0 U	DRY	DRY
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Ethylbenzene	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U		5.0 U		
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	2.2J	1.0 U	5.0 U		5.0 U	5.0 U	1.0 U	1.0 U		1.0 U		
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Toluene (ug/L)	5	**69**	**36**	**30**		**9.6**	**7.2**	1.0 U	1.0 U		**1.3**		
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Trichloroethene (ug/L)	5	0.42J	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
o-Xylene	5	0.22J	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U		
m,p-Xylenes	5	0.36J	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U		2.0 U		

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	LVRR-28-2	LVRR-28-3	LVRR-28-4	LVRR-28-5	LVRR-29-1	LVRR-29-2	LVRR-29-3	LVRR-29-4	LVRR-29-5	LVRR-30-1	LVRR-30-2	LVRR-30-3
Lab Sample ID			R1305782	R1305782	R1305782	R1305782	R1305782	R1305782	R1305782		R1305782	R1305782	
DATE SAMPLED			8/8/2013	8/8/2013	8/8/2013	8/8/2013	8/8/2013	8/8/2013	8/8/2013		8/8/2013	8/8/2013	
VOC'S													
Acetone (ug/L)	50		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	4.9 J		**20**	4.6 J	
Benzene (ug/L)	1		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
Bromomethane (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
2-Butanone (MEK) (ug/L)	50		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		2.4 J	10 U	
Carbon disulfide (ug/L)	120		1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ		1.0 UJ	2.0 U	
Carbon Tetrachloride (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
Chloroform (ug/L)	7		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
Chloromethane	NS		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
Cyclohexane (ug/L)	NS		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
Dichlorodifluoromethane (ug/L)	5		1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
1,1-Dichloroethene	5		1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
cis-1,2-Dichloroethene (ug/L)	5		**14**	1.0 U	1.0 U	1.0 U	1.0 U	0.34 J	**7.2**		**1.3**	**14**	
trans-1,2,-Dichloroethene (ug/L)	5	DRY	0.91 J	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	DRY	1.0 U	2.0 U	DRY
Ethylbenzene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
2-Hexanone (ug/L)	50		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	10 U	
Methylcyclohexane (ug/L)	NS		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
Methylene Chloride (ug/L)	5		1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
4-Methyl-2-pentanone (MIBK) (ug/L)	NS		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		0.88 J	10 U	
Tetrachloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
Toluene (ug/L)	5		0.38 J	1.0 U	1.0 U	1.0 U	1.0 U	0.26 J	**13**		**1.9**	**6.6**	
1,2,4-Trichlorobenzene (ug/L)	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
Trichloroethene (ug/L)	5		**78**	1.0 U	1.0 U	1.0 U	1.0 U	0.25 J	**5.2**		**52**	**360**	
Vinyl Chloride (ug/L)	2		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
o-Xylene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	2.0 U	
m,p-Xylenes	5		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U	4.0 U	

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-30-4	LVRR-30-5	LVRR-31-1	LVRR-31-2	LVRR-31-3	LVRR-31-4	LVRR-31-5	LVRR-32-1	LVRR-32-2	LVRR-32-3	LVRR-32-4	LVRR-32-5
Lab Sample ID		R1305782	R1305782	R1305782			R1305782	R1305782	R1305736	R1305736	R1305736		
DATE SAMPLED		8/8/2013	8/8/2013	8/8/2013			8/8/2013	8/8/2013	8/7/2013	8/7/2013	8/7/2013		
VOC'S													
Acetone (ug/L)	50	5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	2.6 J	1.5 J	**5.1**		
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	0.41 J		
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	5.0 U	1.9 J		
Carbon disulfide (ug/L)	120	1.0 UJ	1.0 UJ	1.0 U			1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ		
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Chloromethane	NS	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Dichlorodifluoromethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ			1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ		
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 UJ			1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ		
cis-1,2-Dichloroethene (ug/L)	5	**4.4**	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 UJ	DRY	DRY	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	DRY	DRY
Ethylbenzene	5	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Methylene Chloride (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ			1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U		
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U			5.0 U	5.0 U	5.0 U	5.0 U	2.8 J		
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Toluene (ug/L)	5	0.40 J	1.0 U	1.0 U			0.80 J	1.0 U	**1.5**	**2.5**	**150**		
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
Trichloroethene (ug/L)	5	**97**	1.0 U	**7.9**			0.91 J	1.0 U	**24**	**40**	**20**		
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
o-Xylene	5	1.0 U	1.0 U	1.0 U			1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U			2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

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E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Unicorn Management Consultants, LLC

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-33 A	LVRR-33 B	LVRR-33 C	LVRR-33 D	LVRR-33 E	LVRR-34-1	LVRR-34-2	LVRR-34-3	LVRR-34-4	LVRR-34-5	LVRR-35-1	LVRR-35-2
Lab Sample ID		R1305738	R1305738	R1305738	R1305738	R1305737	R1305782	R1305782	R1305782		R1305782	R1305782	R1305782
DATE SAMPLED		8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/8/2013	8/8/2013	8/8/2013		8/8/2013	8/8/2013	8/8/2013
VOC'S													
Acetone (ug/L)	50	3.4 J	2.5 J	2.7 J	3.0 J	2.9 J	5.0 U	5.0 U	3.7 J		5.0 U	100 U	25 U
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	100 U	25 U
Carbon disulfide (ug/L)	120	0.39 J	1.0 U	0.31 J	0.84 J	1.0 U	1.0 UJ	1.0 UJ	1.0 U		1.0 U	20 UJ	5.0 UJ
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	1.4J
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		1.0 UJ	20 U	5.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		1.0 UJ	20 U	5.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	0.36 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	**32**
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	DRY	1.0 UJ	20 U	5.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	100 U	25 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ		1.0 UJ	20 U	5.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U	100 U	25 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**9.8**		1.0 U	20 U	5.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
Trichloroethene (ug/L)	5	0.41 J	**73**	**45**	1.0 U	1.0 U	0.96 J	0.70 J	0.76 J		1.0 U	**2100**	**2600†**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	20 U	5.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		2.0 U	40 U	10 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

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Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-35-3	LVRR-35-4	LVRR-35-5	LVRR-37A	LVRR-37B	LVRR-37C	LVRR-37D	LVRR-38A	LVRR-38B	LVRR-38C	LVRR-39A	LVRR-39B
Lab Sample ID		R1305782	R1305782		R1305737	R1305737	R1305737	R1305737	R1305738	R1305738	R1305738	R1305738	R1305738
DATE SAMPLED		8/8/2013	8/8/2013		8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013
VOC'S													
Acetone (ug/L)	50	5.0 U	5.0 U		1.9 J	1.8 J	1.7 J	2.0 J	2.6 J	3.1 J	3.1 J	3.4 J	3.1 J
Benzene (ug/L)	1	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.88 J	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U		1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	**23**	**35**		1.0 U	0.59 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	DRY	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	0.33 J	0.82 J		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**150**	**7.9**		1.0 U	**20**	**34**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	0.96 J	**7.3**		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	LVRR-39C	LVRR-40A	LVRR-40B	LVRR-40C	LVRR-41A	LVRR-41B	LVRR-41C	LVRR-42A	LVRR-42B	LVRR-42C	DC-01A	DC-01B
Lab Sample ID		R1305738	R1305738	R1305739	R1305739	R1305738	R1305738	R1305738	R1305782	R1305782	R1305782	R1305736	R1305736
DATE SAMPLED		8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/8/2013	8/8/2013	8/8/2013	8/6/2013	8/6/2013
VOC'S													
Acetone (ug/L)	50	2.9 J	3.2 J	2.1 J	2.2 J	2.3 J	2.4 J	2.3 J	1.7 J	2.7 J	2.5 J	13 UJ	13 UJ
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	13 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 UJ	2.5 UJ
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	2.5 UJ	2.5 UJ
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	2.5 U	2.5 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.6**	2.0 J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	2.5 U	2.5 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	13 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	13 U	13 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1700†**	**270**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	2.5 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	5.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)

ND: Not Detected - detection limit unavailable.

J: Estimated value

B: Compound was also detected in blank.

U: Under reporting limit

R: Rejected by data validator

NA: Not Analyzed for this parameter.

NS: No Standard.

E: Concentration has exceeded the calibration range for that specific analysis

The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit

† Result was taken from the more diluted analysis.

Exceeds Criteria

U-value exceeds criteria

J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-01C	DC-01D	DC-02A	Dup080613D (Dup of DC-02A)	DC-02B	DC-02C	DC-02D	DC-03A	Dup080713B (Dup of DC-03A)	DC-03B	DC-03C	DC-03D
Lab Sample ID		R1305736	R1305736	R1305739	R1305741	R1305739	R1305739	R1305741	R1305736	R1305736	R1305736	R1305736	R1305736
DATE SAMPLED		8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013	8/7/2013
VOC'S													
Acetone (ug/L)	50	10 UJ	2.0 J	2.2 J	3.4 J	130 U	2.4 J	2.4 J	39 J	**34**	**59**	**33**	**47**
Benzene (ug/L)	1	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	10 UJ	5.0 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U	2.1 J	2.3 J	25 U	2.0 J	2.6 J
Carbon disulfide (ug/L)	120	2.0 UJ	1.0 UJ	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	5.0 UJ	1.0 UJ	1.0 UJ
Carbon Tetrachloride (ug/L)	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Chloromethane	NS	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	2.0 UJ	1.0 UJ	1.0 UJ	1.0 U	25 UJ	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	5.0 UJ	1.0 UJ	1.0 UJ
1,1-Dichloroethene	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 UJ	1.0 U	1.0 UJ
cis-1,2-Dichloroethene (ug/L)	5	9.9	0.31 J	0.74 J	0.59 J	9.5 J	0.91 J	1.0 U	1.0 U	1.0 U	11	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	0.94 J	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Ethylbenzene	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	10 U	5.0 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	10 U	5.0 U	5.0 U	5.0 U	130 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U
Tetrachloroethene	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	190	7.3	86	87	2700	9.1	0.26 J	8.7	8.7	790	1.0 U	1.0 U
Vinyl Chloride (ug/L)	2	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
o-Xylene	5	2.0 U	1.0 U	1.0 U	1.0 U	25 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U
m,p-Xylenes	5	4.0 U	2.0 U	2.0 U	2.0 U	50 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-04A	DC-04B	DC-04C	DC-04D	DC-05A	DC-05B	DC-05C	DC-05D	DC-06A	Dup080713C (Dup of DC-06A)	DC-06B	DC-06C
Lab Sample ID		R1305737	R1305737	R1305736	R1305736	R1305741	R1305741	R1305741	R1305741	R1305737	R1305736	R1305737	R1305737
DATE SAMPLED		8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/7/2013	8/6/2013	8/6/2013
VOC'S													
Acetone (ug/L)	50	**54**	**62**	**32**	**40**	25 U	3.5 J	3.0 J	3.0 J	2.3 J	1.6 J	2.2 J	2.3 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	3.5 J	2.4 J	2.5 J	2.3 J	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 UJ	1.0 UJ	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	5.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	**8.2**	**5.0**	1.0 U	1.0 U	**5.1**	**4.8**	**7.1**	0.33 J
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	25.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	**790**	**110**	0.28 J	0.35 J	**440†**	**420†**	**92**	**3.2**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria (red)
U-value exceeds criteria (orange)
J-value exceeds criteria (blue)

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	NYSDEC SCGS*^(ug/l)	DC-06D	DC-07	Dup080613B (Dup of DC-07)	DC-07RA	DC-07RB	DC-07RC	DC-07RD	DC-09A	DC-09B	DC-09C	DC-10A	DC-10B
Lab Sample ID		R1305737	R1305737	R1305737	R1305737	R1305737	R1305737	R1305737	R1305738	R1305738	R1305738	R1305737	R1305737
DATE SAMPLED		8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013
VOC'S													
Acetone (ug/L)	50	1.8 J	**44**	**40**	**50**	**61**	**47**	**40**	2.5 J	3.0 J	3.1 J	2.4 J	2.1 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	2.5 J	2.5 J	3.1 J	3.8 J	2.2 J	2.4 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	0.36 J	0.26 J	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	0.49 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	**12**	**140**	**1.1**	1.0 U	**3.6**	0.28 J	1.0 U	0.34 J	**20**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Client Sample ID	SCG** (ug/L)	DC-10C	DC-10D	DC-11A	DC-11B	DC-12A	Dup080613A (Dup of DC-12A)	DC-12B	DC-12C	DC-12D	DC-13A	DC-13B	DC-14A
Lab Sample ID		R1305737	R1305737	R1305739	R1305739	R1305739	R1305739	R1305739	R1305739	R1305739	R1305739	R1305739	R1305739
DATE SAMPLED		8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/6/2013
VOC'S													
Acetone (ug/L)	50	2.9 J	3.5 J	1.5 J	1.7 J	5.0 U	5.0 U	2.0 J	1.6 J	2.3 J	1.6 J	1.7 J	2.0 J
Benzene (ug/L)	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U
1,1-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**26**	**12**	**1.3**	**6.6**	**7.9**	**6.0**
Vinyl Chloride (ug/L)	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit

R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.

Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 16K
Groundwater Water Sampling Results
11'th Quarterly Event
(August 2012)

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Unicorn Management Consultants, LLC

Client Sample ID	**NYSDEC SCGS*^(ug/l)**	DC-14B	DC-15A	DC-15B	DC-16	DC-17A	DC-17B	GCM-1	GCM-2	GCM-03
Lab Sample ID		R1305739	R1305741	R1305741	R1305741	R1305736	R1305736	R1305738	R1305738	R1305738
DATE SAMPLED		8/6/2013	8/6/2013	8/6/2013	8/6/2013	8/7/2013	8/7/2013	8/6/2013	8/6/2013	8/6/2013
VOC'S										
Acetone (ug/L)	50	1.8 J	50 U	3.6 J	14 J	39 J	**36**	2.9 J	3.1 J	3.8 J
Benzene (ug/L)	1	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (ug/L)	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK) (ug/L)	50	5.0 U	50 U	5.0 U	50 U	10 U	1.8 J	5.0 U	5.0 U	5.0 U
Carbon disulfide (ug/L)	120	1.0 U	10 U	1.0 UJ	3.6 J	2.0 UJ	1.0 UJ	**2.0**	0.36 J	1.0 U
Carbon Tetrachloride (ug/L)	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (ug/L)	7	1.0 U	10 U	1.0 U	10 U	0.56 J	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	NS	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane (ug/L)	NS	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (ug/L)	5	1.0 U	10 U	1.0 UJ	10 U	2.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene (ug/L)	5	1.0 U	5.2 J	1.0 U	5.0 J	**3.7**	**1.2**	1.0 U	1.0 U	1.0 U
trans-1,2,-Dichloroethene (ug/L)	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone (ug/L)	50	5.0 U	50 U	5.0 U	50 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane (ug/L)	NS	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride (ug/L)	5	1.0 U	10 U	1.0 UJ	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-pentanone (MIBK) (ug/L)	NS	5.0 U	50 U	5.0 U	50 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene (ug/L)	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene (ug/L)	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (ug/L)	5	**5.9**	**2000**	**1.7**	**1700**	**720†**	**3.9**	**21**	**18**	1.0 U
Vinyl Chloride (ug/L)	2	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylenes	5	2.0 U	20 U	2.0 U	20 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U

NOTES:

All Concentrations are in micrograms per liter (ug/l)
ND: Not Detected - detection limit unavailable.
J: Estimated value
B: Compound was also detected in blank.
U: Under reporting limit
R: Rejected by data validator
NA: Not Analyzed for this parameter.
NS: No Standard.
E: Concentration has exceeded the calibration range for that specific analysis
The values listed in Table IC represent laboratory detections only.
Bolded - Detected above laboratory reporting limit
† Result was taken from the more diluted analysis.
Exceeds Criteria
U-value exceeds criteria
J-value exceeds criteria

* Results are compared to the New York State Department of Environmental Conservation (NYSDEC) Standards Criteria Guidance (SCG), Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

^Pursuant to the USEPA memo dated May 15, 2002, the NYSDEC SCG for TCE of 5 ug/l is the applicable site-specific groundwater standard for the analyte.

Table 17
Historical TCE Concentrations

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Nov '93	Jan '94	April '94	Jul '94	Oct '94	Jan '95	April '95	Site Recon Invest (Aug-Sep 08)	1'st Qtr. (Dec '10)	2'nd Qtr. (March '11)	3'rd Qtr. (June '11)	4'th Qtr. (Sept '11)	5'th Qtr. (Dec '11)	6'th Qtr. (Feb '12)	7'th Qtr. (June '12)	Storm Event (Sept '12)	8'th Qtr. (Oct '12)	Storm Event (Oct '12)	9'th Qtr. (March '13)	10'th Qtr. (May '13)	11'th Qtr. (Aug '13)
LVRR-18-1									ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVRR-18-2									ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVRR-18-3									ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND
LVRR-18-4									ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVRR-18-5									ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVRR-20-1											15	61	23	42	8.7					59	12
LVRR-20-2									1600	870	780	410	1000	490	760	780	730	800	630	550	680
LVRR-20-3									900	290	270	67	440	420	260	570	530	680	200	640	720
LVRR-20-4									0.63	ND	ND	0.3	ND	ND	ND	ND	2.4	ND	ND	ND	ND
LVRR-20-5									0.65	ND	ND					ND					
LVRR-21-1											ND	ND	ND	ND	ND				ND	ND	ND
LVRR-21-2									ND	ND	ND	ND	ND	ND	ND				ND	ND	ND
LVRR-21-3									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-21-4									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-22									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-23									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-24 A									13	13	14	13	14	13	10		14		15	15	13
LVRR-24 B									7.1	3.1	3.5	5.2	5.4	3.9	4.8		3.8		7.0	5.2	3.9
LVRR-24 C									0.5	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-25 A									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-25 B									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-25 C									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-26-1									ND	ND	ND	ND	ND	ND	ND				ND	ND	0.42
LVRR-26-2									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-26-3									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	
LVRR-26-4									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-26-5									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-27-1									ND	ND	ND		ND	ND	ND			ND	ND	ND	ND
LVRR-27-2									ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND
LVRR-27-3									ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	
LVRR-27-4									ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND
LVRR-27-5									ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	
LVRR-28-1									43	48	21		0.28	0.27							
LVRR-28-2									50	56	71		67	36							
LVRR-28-3									62	77	110	22	87	63	120		24		46	30	78
LVRR-28-4									ND	0.51	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-28-5									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-29-1									ND	ND	ND	ND	ND	0.47	1.0		ND		ND	ND	ND
LVRR-29-2									1.2	1.0	0.5	0.84	0.5	0.32	0.34		ND		0.26	ND	ND
LVRR-29-3									0.92	1.0	0.5	0.42	0.41		ND		0.26		ND	ND	0.25
LVRR-29-4									1.8	1.6	1.7	2.9	4.0	3.4	3.1		1.6		4.6	5.7	5.2
LVRR-29-5									6.3	4.9	2.9		2.0	2.0	3.7		3.6		6.5	3.7	
LVRR-30-1									440	460			290	300	180				340	230	52
LVRR-30-2									440	500	440	450	410	410	240				360	350	360
LVRR-30-3									440	470	430	440	22		22						
LVRR-30-4									140	140	140	79	23	100	67		52		120	98	97
LVRR-30-5									ND	ND	ND	ND	ND	ND	0.52		ND		ND	ND	ND
LVRR-31-1									8	7	9.1	8.3	9.2	4.4	8.8				7.0	3.9	7.9
LVRR-31-2									6.9	6.3	5.5	4.6	6.2	2.9	4.2		5.6				
LVRR-31-3									6.5	7.6	6.6	6.4	6.4						0.27		
LVRR-31-4									1.9	2.1	1.3	0.41	0.27	0.6	0.66		0.58		0.33	0.76	0.91
LVRR-31-5									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-32-1									73	80	49	47	49	80	62		13		43	32	24
LVRR-32-2									95	75	48	43	85	73	65				59	25	40
LVRR-32-3									50	44	29	25	36	28	25		14		19	18	20
LVRR-32-4											5.0	ND	7.0	5	4.2		3.4			2.6	
LVRR-32-5									0.37	ND	ND	0.33	ND	ND	ND						
LVRR-33 A										ND	ND	ND	ND	ND	ND		ND		ND	ND	0.41
LVRR-33 B									64	70	72	17	74	78	88		11		83	76	73
LVRR-33 C									1.4	3.2	40	12	31	49	68		52		79	43	45

Table 17
Historical TCE Concentrations

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Nov '93	Jan '94	April '94	Jul '94	Oct '94	Jan '95	April '95	Site Recon Invest (Aug-Sep 08)	1'st Qtr. (Dec '10)	2'nd Qtr. (March '11)	3'rd Qtr. (June '11)	4'th Qtr. (Sept '11)	5'th Qtr. (Dec '11)	6'th Qtr. (Feb '12)	7'th Qtr. (June '12)	Storm Event (Sept '12)	8'th Qtr. (Oct '12)	Storm Event (Oct '12)	9'th Qtr. (March '13)	10'th Qtr. (May '13)	11'th Qtr. (Aug '13)
LVRR-33 D									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-33 E									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-34-1									0.4	0.44	ND	1.2	0.73	1.0	0.56		1.6		0.32	ND	0.96
LVRR-34-2									ND	0.60	1.9	1.7	1.7	1.9	1.1		1.7		0.64	ND	0.70
LVRR-34-3									4.3	4.0	ND		1.3	0.69	0.75		1.5		1.0	7.6	7.6
LVRR-34-4									5.4	6.5	5.2		3.7	3.1	4.9				5.3	3.1	
LVRR-34-5									ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
LVRR-35-1									2400	4500	1300	1800	1200	1600	2300		5200		1200	1300	2100
LVRR-35-2									4500	3700	2600	3500	4200	3100	3300		8300		3200	2300	2600
LVRR-35-3									710	220	120	150	370	150	130		4000		380	190	150
LVRR-35-4									200	130	61	33	43	40	26		10		15	9.3	7.9
LVRR-35-5									200	60	39				140		180			70	
LVRR-37A																	ND		ND	ND	ND
LVRR-37B																	5.3		17	13	20
LVRR-37C																	11		91	45	34
LVRR-37D																	0.29		0.4	0.31	ND
LVRR-38A																	ND		ND	ND	ND
LVRR-38B																	ND		ND	ND	ND
LVRR-38C																	0.27	ND	ND	ND	ND
LVRR-39A																	ND		ND	ND	ND
LVRR-39B																	ND		ND	ND	ND
LVRR-39C																	ND		ND	ND	ND
LVRR-40A																	ND		ND	ND	ND
LVRR-40B																	ND		ND	ND	ND
LVRR-40C																	ND		ND	ND	ND
LVRR-41A																	ND		ND	ND	ND
LVRR-41B																	ND		ND	ND	ND
LVRR-41C																	ND		ND	ND	ND
LVRR-42A																	ND		ND	ND	ND
LVRR-42B																	ND		ND	ND	ND
LVRR-42C																	ND		ND	ND	ND
DC-01A	16,000	1,100	58,000	2,000		9,600	6,300	2,400	12000	12000	6300	6900	6000	3300	12000	11000	11000	6700	4800	3100	1700
DC-01B	380	370	76	280	440	140	99	500	570	750	97	120	280	240	180	880	5200	3600	440	340	270
DC-01C	38,000	520	95	88	120	82	60	100	230	24	180	150	250	290	230	360	420	390	340	200	190
DC-01D	9,400	1,300	780	560	480	260	240	13	8.6	6.8	7.1	8.1	7.2	8.0	9.5	9.1	7.7	9.4	6.0	7.6	7.3
DC-02A	800	380	550	2500	930	1000	580	51	82	100	62	170	120	32	48	94	88	67	53	50	87
DC-02B	120	210	3,100	890	730	1300	1600	4800	4100	2300	1700	1200	3700	2400	3400	2600	1200	3500	3600	4300	2700
DC-02C	22	9.8	190	ND	4.2	6.7	2.9	26	12	9.1	8.8	7.8	10	9.5	9.3	2.9	380	350	15	13	9.1
DC-02D	590	140	1,800	940	14	60	5.7	0.78	0.31	0.31	0.27	0.42	ND	0.37	3.2	0.55	0.42	0.71	0.35	0.3	0.26
DC-03A	6.6	2.4	1.8	8,600	1.9	0.9	23	3.1	15	ND	25	8.5	1.4	4.5	16	9.8	7.6	5.3	ND	2.7	8.7
DC-03B	990	720	490	700	750	970	760	630	510	690	620	450	440	440	540	420	740	630	830	660	790
DC-03C	2.1	40	120	8.8	87	31	46	270	0.33	ND	ND	ND	ND	ND	ND	230	ND	2	ND	ND	ND
DC-03D	13	2.9	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DC-04A	ND	ND	ND	ND				ND		ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-04B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-04C	17	6.7	ND	ND	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-04D	18	ND	ND	ND	ND	0.6	ND	ND		ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-05A	7,300	1,600	20,000	1,300	15,000	36,000	47,000	2,300	3600	360	1800	2400	3700	2700	5100		2300		3800	3600	790
DC-05B	770	360	120	270	2,200	250	440	170	310	710	72	90	110	110	74		2600		1700	860	110
DC-05C	470	350	20	9.5	15	8.1	13	1.6	ND	ND	0.24	0.59	0.28	ND	0.68		0.81		ND	ND	0.28
DC-05D	580	81	18	25	11	17	19	1.7	0.42	0.39	0.44	0.48	0.49	0.35	0.51		0.47		0.39	0.37	0.35
DC-06A		240	980	510	380	220	330	150	74	690	510	500	160	100	140	140	61	85	120	150	440
DC-06B	1,100	2,100	480	1,600	1,900	1,400	240	1,500	570	150	3	1000	2.8	130	1100	1500	460	990	200	120	92
DC-06C	ND	3.6	320	22	ND	11	25	4.8	3.5	3.3	ND	2.9	560	3.2	2.9	2.3	290	37	3.9	3.7	3.2
DC-06D	26	ND	4.3	ND	ND	ND	NS	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DC-07	ND		ND	10			ND	0.3	38	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-07RA		140	8.1	130		85	56	51	190	1.7	26		51	53	54		4.4		42	5.2	12
DC-07RB	440	350	360	490	560	250	620	140	7.2	150	120	110	140	190	140	150	150	160	170	140	140
DC-07RC	130	33	130	27	12	76	11	28	1	54	0.92	1.2	1.3	0.54	1.7	1.7	0.93	3.5	1.1	0.85	1.1
DC-07RD	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 17
Historical TCE Concentrations

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index Number CERCLA-02-2006-2006

Well ID	Nov '93	Jan '94	April '94	Jul '94	Oct '94	Jan '95	April '95	Site Recon Invest (Aug-Sep 08)	1'st Qtr. (Dec '10)	2'nd Qtr. (March '11)	3'rd Qtr. (June '11)	4'th Qtr. (Sept '11)	5'th Qtr. (Dec '11)	6'th Qtr. (Feb '12)	7'th Qtr. (June '12)	Storm Event (Sept '12)	8'th Qtr. (Oct '12)	Storm Event (Oct '12)	9'th Qtr. (March '13)	10'th Qtr. (May '13)	11'th Qtr. (Aug '13)
DC-08A	ND	1.8	ND	ND	-	-	-	**Not allowed access to property**													
DC-08B					-	-	-														
DC-08C	5.2	13	58	33	-	-	-														
DC-08D	ND	ND	ND	ND	-	-	-														
DC-09A	1.1	16	20	16	-	-	-	14	3.2	**6.5**	11	5.5	7.9	7.0	5.3		1.5		6.4	3.9	3.6
DC-09B	ND	ND	ND	ND	-	-	-	ND	0.41	ND	0.25	0.24	ND	0.25	0.28		0.39		0.3	0.34	0.28
DC-09C	2.2	2.1	5.9	ND	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-10A		ND	3.4		-	-	-		0.31	ND	1.6		0.33	ND	0.46				0.29	0.31	0.34
DC-10B	43	38	51	39	-	-	-	21	19	16	23	21	17	17	20		13		18	19	20
DC-10C	20	3.9	2.2	6	-	-	-	2.5	ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-10D	3.2	0.7	ND	10	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-11A	ND	ND	ND	10	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-11B	16	1.9	1.1	10	-	-	-	ND		ND	ND	ND	ND	ND	ND		ND		ND	ND	ND
DC-12A	ND	ND	1.9	10	-	-	-	0.51	0.39	0.46	0.54	0.91	0.28	ND	0.46		0.95		0.35	ND	ND
DC-12B	27	37	51	46	-	-	-	27	25	18	26	24	22	23	19		23		23	23	26
DC-12C	80	20	19	19	-	-	-	13	17	12	14	13	12	12	12		13		11	12	12
DC-12D	4.4	2.8	2.1	1.2	-	-	-	0.87	6.2	1.4	1.4	1.1	1.3	1.1	1.1		1.3		1.2	1.2	1.3
DC-13A	18	26	12	19	-	-	-	9.4	7.1	4.9	4.9	9.1	8.9	6.8	9.1		9.9		8.4	8.5	6.6
DC-13B	23	10	15	22	-	-	-	8.5	9.5	7.8	7	8.2	10	7.6	9.0		10		11	9.6	7.9
DC-14A	6.4	8.6	8.1	14	-	-	-	3.5	5.5	6.3	0.45	0.95	ND	4.1	0.31		2.9		6.1	6.1	6.0
DC-14B	13	8.9	10	9.6	-	-	-	5.1	ND	5.4	6.9	5.3	5.2	5.4	5.2		4.2		5.6	5.7	5.9
DC-15A	13,000	8,900	41,000	6,700	9,800	6,700	3,000	12,000	4600	3100	930	11000	3300	2500	3900		11000		1500	1800	2000
DC-15B	140	93	47	13	18	19	210	15	5.9	1.6	1.7	2.5	1.3	1.0	1.2		1.9		1.9	2.3	1.7
DC-16	6,800	1,200	8,500	410	600	3,600	4,500	6,500	670	3300	1600	2800	1500	2100	750		1800		1200	1500	1700
DC-17A	1,400	1,600	620	1,200	1,500	1,900	820	720	650	540	440	920	460	540	1500		570		270	310	720
DC-17B	370	110	ND	480	140	42	1200	ND	1.2	ND	ND	ND	0.52	ND	ND		15		ND	10	3.9
GCM-1								50		35	22	49	52	33	50		54		43	32	21
GCM-2								16		27	17	19	18	18	20		19		18	17	18
GCM-3								ND		ND	ND	ND	ND	ND	ND		ND		ND	ND	ND

Notes:
3) Concentrations are in micrograms per liter (ug/l).
2) ND indicates not detected in concentrations exceeding laboratory reporting limits.
3) Blank space indicates a sample was not collected at the sampling location during that sampling event.
4) If a duplicate sample was collected at a given location for a given event, the higher of the two reported concentrations is listed.

Table 18
TCE Concentrations Reported in Historically Collected Site Groundwater Samples

Remedial Investigation Report OU-2
Lehigh Valley Railroad Derailment Superfund Site
Index CERCLA-02-2006-2006

Well ID	Nov '93	Jan '94	April '94	Jul '94	Oct '94	Jan '95	April '95	Site Recon Invest (Aug-Sep '08)	1'st Qtr. (Dec '10)	2'nd Qtr. (March '11)	3'rd Qtr. (June '11)	4'th Qtr. (Sept '11)	5'th Qtr. (Dec '11)	6'th Qtr. (Feb '12)	7'th Qtr. (June '12)	Storm Event (Sept '12)	8'th Qtr. (Oct '12)	Storm Event (Oct '12)	9'th Qtr. (March '13)	10'th Qtr. (May '13)	11'th Qtr. (Aug '13)	Mean Concentrtion all Events
	Upgradient Wells																					
DC-04A (Onondaga)	1.0	1.0	1.0	1.0				1.0		1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
DC-04B (Bertie)	ND	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
DC-04C (Camillus)	**17**	**6.7**	1.0	1.0	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	2.1
DC-04D (Camillus)	**18**	1.0	1.0	1.0	1.0	0.6	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.9
LVRR-18-1 (Onondaga)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LVRR-18-2 (Onondaga)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LVRR-18-3 (Bertie)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0
LVRR-18-4 (Bertie)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LVRR-18-5 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Spill Area Wells																					
DC-01A (Onondaga)	**16,000**	**1,100**	**58,000**	**2,000**		**9,600**	**6,300**	**2,400**	**12000**	**12000**	**6300**	**6900**	**6000**	**3300**	**12000**	**11000**	**11000**	**6700**	**4800**	**3100**	**1700**	9610.0
DC-01B (Bertie)	**380**	**370**	**76**	**280**	**440**	**140**	**99**	**500**	**570**	**750**	**97**	**120**	**280**	**240**	**180**	**880**	**5200**	**3600**	**440**	**340**	**270**	726.3
DC-01C (Camillus)	**38,000**	**520**	**95**	**88**	**120**	**82**	**60**	**100**	**230**	**24**	**180**	**150**	**250**	**290**	**230**	**360**	**420**	**390**	**340**	**200**	**190**	2015.2
DC-01D (Camillus)	**9,400**	**1,300**	**780**	**560**	**480**	**260**	**240**	**13**	**8.6**	**6.8**	**7.1**	**8.1**	**7.2**	**8.0**	**9.5**	**9.1**	**7.7**	**9.4**	**6.0**	**7.6**	**7.3**	625.5
DC-02A (Onondaga)	**800**	**380**	**550**	**2500**	**930**	**1000**	**580**	**51**	**82**	**100**	**62**	**170**	**120**	**32**	**48**	**94**	**88**	**67**	**53**	**50**	**87**	373.5
DC-02B (Bertie)	**120**	**210**	**3,100**	**890**	**730**	**1300**	**1600**	**4800**	**4100**	**2300**	**1700**	**1200**	**3700**	**2400**	**3400**	**2600**	**1200**	**3500**	**3600**	**4300**	**2700**	2354.8
DC-02C (Camillus)	**22**	**9.8**	**190**	**ND**	4.2	**6.7**	2.9	**26**	**12**	**9.1**	**8.8**	**7.8**	**10**	**9.5**	**9.3**	2.9	**380**	**350**	**15**	**13**	**9.1**	54.9
DC-02D (Camillus)	**590**	**140**	**1,800**	**940**	**14**	**60**	**5.7**	0.78	0.31	0.31	0.27	0.42	ND	0.37	3.2	0.55	0.42	0.71	0.35	0.3	0.26	177.9
DC-15A (Onondaga)	**13,000**	**8,900**	**41,000**	**6,700**	**9,800**	**6,700**	**3,000**	**12,000**	**4600**	**3100**	**930**	**11000**	**3300**	**2500**	**3900**		**11000**		**1500**	**1800**	**2000**	7722.6
DC-15B (Syracuse)	**140**	**93**	**47**	**13**	**18**	**19**	**210**	**15**	**5.9**	1.6	1.7	2.5	1.3	1.0	1.2		1.9		1.9	2.3	1.7	30.4
DC-16 (Onondaga)	**6,800**	**1,200**	**8,500**	**410**	**600**	**3,600**	**4,500**	**6,500**	**670**	**3300**	**1600**	**2800**	**1500**	**2100**	**750**		**1800**		**1200**	**1500**	**1700**	2685.8
DC-05A (Onondaga)	**7,300**	**1,600**	**20,000**	**1,300**	**15,000**	**36,000**	**47,000**	**2,300**	**3600**	**360**	**1800**	**2400**	**3700**	**2700**	**5100**		**2300**		**3800**	**3600**	**790**	8455.3
DC-05B (Bertie)	**770**	**360**	**120**	**270**	**2,200**	**250**	**440**	**170**	**310**	**710**	**72**	**90**	**110**	**110**	**74**		**2600**		**1700**	**860**	**110**	596.1
DC-05C (Camillus)	**470**	**350**	**20**	**9.5**	**15**	**8.1**	**13**	1.6	1.0	1.0	0.24	0.59	0.28	1.0	0.68		0.81		1.0	1.0	0.28	47.1
DC-05D (Camillus)	**580**	**81**	**18**	**25**	**11**	**17**	**19**	1.7	0.42	0.39	0.44	0.48	0.49	0.35	0.51		0.47		0.39	0.37	0.35	39.9
LVRR-35-1 (Onondaga)									**2400**	**4500**	**1300**	**1800**	**1200**	**1600**	**2300**		**5200**		**1200**	**1300**	**2100**	2263.6
LVRR-35-2 (Bertie)									**4500**	**3700**	**2600**	**3500**	**4200**	**3100**	**3300**		**8300**		**3200**	**2300**	**2600**	3754.5
LVRR-35-3 (Bertie)									**710**	**220**	**120**	**150**	**370**	**150**	**130**		**4000**		**380**	**190**	**150**	597.3
LVRR-35-4 (Camillus)									**200**	**130**	**61**	**33**	**43**	**40**	**26**		**10**		**15**	**9.3**	**7.9**	52.3
LVRR-35-5 (Camillus)									**200**	**60**	**39**				**140**		**180**			**70**		114.8

Table 18
TCE Concentrations Reported in Historically Collected Site Groundwater Samples

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Well ID	Nov '93	Jan '94	April '94	Jul '94	Oct '94	Jan '95	April '95	Site Recon Invest (Aug-Sep '08)	1'st Qtr. (Dec '10)	2'nd Qtr. (March '11)	3'rd Qtr. (June '11)	4'th Qtr. (Sept '11)	5'th Qtr. (Dec '11)	6'th Qtr. (Feb '12)	7'th Qtr. (June '12)	Storm Event (Sept '12)	8'th Qtr. (Oct '12)	Storm Event (Oct '12)	9'th Qtr. (March '13)	10'th Qtr. (May '13)	11'th Qtr. (Aug '13)	Mean Concentrtion all Events
	Wells Immediately Downgradient of the Spill Area																					
DC-06A (Onondaga)		240	980	510	380	220	330	150	74	690	510	500	160	100	140	140	61	85	120	150	440	299.0
DC-06B (Bertie)	1,100	2,100	480	1,600	1,900	1,400	240	1,500	570	150	3	1000	2.8	130	1100	1500	460	990	200	120	92	792.3
DC-06C (Camillus)	1.0	3.6	320	22	1.0	11	25	4.8	3.5	3.3	1.0	2.9	560	3.2	2.9	2.3	290	37	3.9	3.7	3.2	62.2
DC-06D (Camillus)	26	1.0	4.3	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.4
LVRR-20-1 (Onondaga)											15	61	23	42	8.7					59	12	31.5
LVRR-20-2 (Bertie)									1600	870	780	410	1000	490	760	780	730	800	630	550	680	775.4
LVRR-20-3 (Bertie)									900	290	270	67	440	420	260	570	530	680	200	640	720	460.5
LVRR-20-4 (Camillus)									0.63	1.0	1.0	0.3	1.0	1.0	1.0	1.0	2.4	1.0	1.0	1.0	1.0	1.0
LVRR-20-5 (Camillus)									0.65	1.0	1.0					1.0						0.9
DC-03A (Onondaga)	6.6	2.4	1.8	8,600	1.9	0.9	23	3.1	15	1.0	25	8.5	1.4	4.5	16	9.8	7.6	5.3	1.0	2.7	8.7	437.2
DC-03B (Bertie)	990	720	490	700	750	970	760	630	510	690	620	450	440	440	540	420	740	630	830	660	790	657.0
DC-03C (Camillus)	2.1	40	120	8.8	87	31	46	270	0.33	1.0	1.0	1.0	1.0	1.0	1.0	230	1.0	2	1.0	1.0	1.0	28.9
DC-03D (Camillus)	13	2.9	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.7
DC-17A (Bertie)	1,400	1,600	620	1,200	1,500	1,900	820	720	650	540	440	920	460	540	1500		570		270	310	720	877.9
DC-17B (Syracuse)	370	110	1.0	480	140	42	1200	1.0	1.2	1.0	1.0	1.0	0.52	1.0	1.0		15		1.0	10	3.9	125.3
LVRR-34-1 (Onondaga)									0.4	0.44	1.0	1.2	0.73	1.0	0.56		1.6		0.32	ND	0.96	0.8
LVRR-34-2 (Onondaga)									1.0	0.60	1.9	1.7	1.7	1.9	1.1		1.7		0.64	ND	0.70	1.3
LVRR-34-3 (Bertie)									4.3	4.0	1.0		1.3	0.69	0.75		1.5		1.0	7.6	7.6	3.0
LVRR-34-4 (Bertie)									5.4	6.5	5.2		3.7	3.1	4.9				5.3	3.1		4.7
LVRR-34-5 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-37A (Onondaga)																	1.0		1.0	1.0	1.0	1.0
LVRR-37B (Bertie)																	5.3		17	13	20	13.8
LVRR-37C (Camillus)																	11		91	45	34	45.3
LVRR-37D (Camillus)																	0.29		0.4	0.31	1.0	0.5
	Church Road Wells																					
DC-07RA (Onondaga)		140	8.1	130		85	56	51	190	1.7	26		51	53	54		4.4		42	5.2	12	56.8
DC-07RB (Bertie)	440	350	360	490	560	250	620	140	7.2	150	120	110	140	190	140	150	150	160	170	140	140	237.0
DC-07RC (Camillus)	130	33	130	27	12	76	11	28	1	54	0.92	1.2	1.3	0.54	1.7	1.7	0.93	3.5	1.1	0.85	1.1	24.6
DC-07RD (Camillus)	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
DC-07 (Onondaga)	1.0		1.0	10			1.0	0.3	38	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	3.8
LVRR-27-1 (Onondaga)									1.0	1.0	1.0		1.0	1.0	1.0			1.0	1.0	1.0	1.0	1.0
LVRR-27-2 (Onondaga)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0
LVRR-27-3 (Bertie)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0		1.0
LVRR-27-4 (Bertie)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0
LVRR-27-5 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0		1.0
LVRR-28-1 (Bertie)									43	48	21		0.28	0.27								22.5
LVRR-28-2 (Bertie)									50	56	71		67	36								56.0
LVRR-28-3 (Bertie)									62	77	110	22	87	63	120		24		46	30	78	65.4
LVRR-28-4 (Camillus)									1.0	0.51	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-28-5 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-29-1 (Bertie)									1.0	1.0	1.0	1.0	1.0	0.47	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-29-2 (Bertie)									1.2	1.0	0.5	0.84	0.5	0.32	0.34		1.0		0.26	1.0	1.0	0.7
LVRR-29-3 (Bertie)									0.92	1.0	0.5	0.42	0.41		1.0		0.26		1.0	1.0	0.25	0.7
LVRR-29-4 (Camillus)									1.8	1.6	1.7	2.9	4.0	3.4	3.1		1.6		4.6	5.7	5.2	3.2
LVRR-29-5 (Camillus)									6.3	4.9	2.9		2.0	2.0	3.7		3.6		6.5	3.7		4.0
LVRR-30-1 (Bertie)									440	460			290	300	180				340	230	52	286.5
LVRR-30-2 (Bertie)									440	500	440	450	410	410	240				360	350	360	396.0
LVRR-30-3 (Bertie)									440	470	430	440	22		22							304.0
LVRR-30-4 (Camillus)									140	140	140	79	23	100	67		52		120	98	97	96.0
LVRR-30-5 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	0.52		1.0		1.0	1.0	1.0	1.0

Table 18
TCE Concentrations Reported in Historically Collected Site Groundwater Samples

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Well ID	Nov '93	Jan '94	April '94	Jul '94	Oct '94	Jan '95	April '95	Site Recon Invest (Aug-Sep '08)	1'st Qtr. (Dec '10)	2'nd Qtr. (March '11)	3'rd Qtr. (June '11)	4'th Qtr. (Sept '11)	5'th Qtr. (Dec '11)	6'th Qtr. (Feb '12)	7'th Qtr. (June '12)	Storm Event (Sept '12)	8'th Qtr. (Oct '12)	Storm Event (Oct '12)	9'th Qtr. (March '13)	10'th Qtr. (May '13)	11'th Qtr. (Aug '13)	Mean Concentrtion all Events
	Lime Rock Road Wells																					
LVRR-21-1 (Bertie)											1.0	1.0	1.0	1.0	1.0				1.0	1.0	1.0	1.0
LVRR-21-2 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0				1.0	1.0	1.0	1.0
LVRR-21-3 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-21-4 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
DC-09A (Bertie)	1.1	16	20	16				14	3.2	6.5	11	5.5	7.9	7.0	5.3		1.5		6.4	3.9	3.6	8.1
DC-09B (Camillus)	1.0	1.0	1.0	1.0				1.0	0.41	1.0	0.25	0.24	ND	0.25	0.28		0.39		0.3	0.34	0.28	0.6
DC-09C (Syracuse)	2.2	2.1	5.9	1.0				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.5
DC-10A (Onondaga)		1.0	3.4						0.31	1.0	1.6		0.33	1.0	0.46				0.29	0.31	0.34	0.9
DC-10B (Bertie)	43	38	51	39				21	19	16	23	21	17	17	20		13		18	19	20	24.7
DC-10C (Camillus)	20	3.9	2.2	6				2.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	2.9
DC-10D (Camillus)	3.2	0.7	1.0	10				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.7
DC-11A (Onondaga)	1.0	1.0	1.0	10				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.6
DC-11B (Camillus)	16	1.9	1.1	10				1.0		1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	2.7
DC-12A (Onondaga)	1.0	1.0	1.9	10				0.51	0.39	0.46	0.54	0.91	0.28	ND	0.46		0.95		0.35	1.0	1.0	1.4
DC-12B (Bertie)	27	37	51	46				27	25	18	26	24	22	23	19		23		23	23	26	27.5
DC-12C (Camillus)	80	20	19	19				13	17	12	14	13	12	12	12		13		11	12	12	18.2
DC-12D (Camillus)	4.4	2.8	2.1	1.2				0.87	6.2	1.4	1.4	1.1	1.3	1.1	1.1		1.3		1.2	1.2	1.30	1.9
LVRR-26-1 (Onondaga)									1.0	1.0	1.0	1.0	1.0	1.0	1.0				1.0	1.0	0.42	0.9
LVRR-26-2 (Onondaga)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-26-3 (Bertie)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0		1.0
LVRR-26-4 (Bertie)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-26-5 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-32-1 (Bertie)									73	80	49	47	49	80	62		13		43	32	24	50.2
LVRR-32-2 (Bertie)									95	75	48	43	85	73	65				59	25	40	60.8
LVRR-32-3 (Camillus)									50	44	29	25	36	28	25		14		19	18	20	28.0
LVRR-32-4 (Camillus)											5.0	1.0	7.0	5	4.2		3.4			2.6		4.0
LVRR-32-5 (Camillus)									0.37	1.0	1.0	0.33	1.0	1.0	1.0							0.8
LVRR-33 A (Onondaga)										1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	0.41	0.9
LVRR-33 B (Onondaga)									64	70	72	17	74	78	88		11		83	76	73	64.2
LVRR-33 C (Bertie)									1.4	3.2	40	12	31	49	68		52		79	43	45	38.5
LVRR-33 D (Bertie)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-33 E (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-31-1 (Bertie)									8	7	9.1	8.3	9.2	4.4	8.8				7.0	3.9	7.9	7.4
LVRR-31-2 (Bertie)									6.9	6.3	5.5	4.6	6.2	2.9	4.2		5.6					5.3
LVRR-31-3 (Bertie)									6.5	7.6	6.6	6.4	6.4						0.27			5.6
LVRR-31-4 (Bertie)									1.9	2.1	1.3	0.41	0.27	0.6	0.66		0.58		0.33	0.76	0.91	0.9
LVRR-31-5 (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0

Table 18
TCE Concentrations Reported in Historically Collected Site Groundwater Samples

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Well ID	Nov '93	Jan '94	April '94	Jul '94	Oct '94	Jan '95	April '95	Site Recon Invest (Aug-Sep '08)	1'st Qtr. (Dec '10)	2'nd Qtr. (March '11)	3'rd Qtr. (June '11)	4'th Qtr. (Sept '11)	5'th Qtr. (Dec '11)	6'th Qtr. (Feb '12)	7'th Qtr. (June '12)	Storm Event (Sept '12)	8'th Qtr. (Oct '12)	Storm Event (Oct '12)	9'th Qtr. (March '13)	10'th Qtr. (May '13)	11'th Qtr. (Aug '13)	Mean Concentrtion all Events
	Spring Street Wells																					
LVRR-22 (Syracuse)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-23 (Syracuse)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
DC-13A (Camillus)	**18**	**26**	**12**	**19**				**9.4**	**7.1**	4.9	4.9	**9.1**	**8.9**	**6.8**	**9.1**		**9.9**		**8.4**	**8.5**	**6.6**	10.5
DC-13B (Syracuse)	**23**	**10**	**15**	**22**				**8.5**	**9.5**	**7.8**	**7**	**8.2**	**10**	**7.6**	**9.0**		**10**		**11**	**9.6**	**7.9**	11.0
DC-14A (Bertie)	**6.4**	**8.6**	**8.1**	**14**				3.5	**5.5**	**6.3**	0.45	0.95	ND	4.1	0.31		2.9		**6.1**	**6.1**	**6.0**	5.3
DC-14B (Camillus)	**13**	**8.9**	**10**	**9.6**				**5.1**	1.0	**5.4**	**6.9**	**5.3**	**5.2**	**5.4**	**5.2**		4.2		**5.6**	**5.7**	**5.9**	6.4
GCM-1 (Bertie)								**50**		**35**	**22**	**49**	**52**	**33**	**50**		**54**		**43**	**32**	**21**	40.1
GCM-2 (Camillus)								**16**		**27**	**17**	**19**	**18**	**18**	**20**		**19**		**18**	**17**	**18**	18.8
GCM-3 (Camillus)								1.0		1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
	Spring Creek Wells																					
LVRR-24 A (Camillus)									**13**	**13**	**14**	**13**	**14**	**13**	**10**		**14**		**15**	**15**	**13**	13.4
LVRR-24 B (Camillus)									**7.1**	3.1	3.5	**5.2**	**5.4**	3.9	4.8		3.8		**7.0**	**5.2**	3.9	4.8
LVRR-24 C (Camillus)									0.5	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-25 A (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-25 B (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
LVRR-25 C (Camillus)									1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0
	Wells East of Spring Creek																					
LVRR-38A (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-38B (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-38C (Camillus)																	0.27	1.0	1.0	1.0	1.0	0.9
LVRR-39A (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-39B (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-39C (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-40A (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-40B (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-40C (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-41A (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-41B (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-41C (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-42A (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-42B (Camillus)																	1.0		1.0	1.0	1.0	1.0
LVRR-42C (Camillus)																	1.0		1.0	1.0	1.0	1.0

Notes:

1) Results are in micrograms per liter (µg/l).

2) Refer to Tables 16A through 16K for a complete list of detected analyts.

3) A blank space indicates a groundwater sample was not collected during that sampling event.

4) For the purpose of assessing mean concentrations, a concentration of 1.0 µg/l was conservatively assumed for those analyses that did not detect TCE at concentrations exceeding laboratory reporting limits.

17 — Indicates the Site specific New York State, Standards, Criteria, and Guidance for TCE of 5 µg/l is exceeded.

Table 19
Soil Gas Survey
Groundwater Sample Results

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Soil Boring	Groundwater Criteria	SG-01	SG-02	SG-03
SDG		R1205154	R1205154	R1205154
Sample Date		8/7/2012	8/7/2012	8/7/2012
Acetone	50	5.3U	5.0U	6.2UJ
Benzene	1	**1.3**	0.87J	1J
2-Butanone	50	1.2J	<5	3.0J
Chloromethane	NE	0.25J	<1	<1R
Cyclohexane	NE	1.7	1.1	0.9J
Ethylbenzene	5	0.24J	0.31J	0.32J
Methylcyclohexane	NE	1.9	1.6	0.98J
Toluene	5	2.3	2.2	2.2J
o-Xylene	5	0.52J	0.51J	0.52J
m,p-Xylenes	5	1.0J	1.4J	1.2J

All concentrations are in micrograms per liter (ug/l)
<1 - Not detected at the indicated reporting limit
NE - Criteria not established
U - Not detected above the reported quantitation limit
J - Estimated concentration below reporting limit
UJ - Not detected above quantitation limit but quantitation limit is approximate and may not be actual limit
R - Rejected result
Bold - Concentration exceeds criteria
SDG - Laboratory Sample Data Group

Table 19
Soil Gas Survey
Soil Gas Sample Results

Remedial Investigation Report OU-2
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Sample ID	SG01S	SG01D	SG01D (Dilution)	SG02D	SG03S	SG03D	SG04S	SG05S	SG05D	SG06S	SG07S	SG08S	SG08D	SG09S	SG09D	DUPSG081412	SG-10S	SG-11S	SG-11D	SG-12S	SG-12D
Lab Report Number	R1205335-001	R1205335-002	R1205335-002	R1205335-003	R1205335-004	R1205335-005	R1205335-006	R1205335-007	R1205335-008	R1205335-009	R1205335-010	R1205335-011	R1205335-012	R1205335-013	R1205335-014	R1205335-015	R1205335-016	R1205335-017	R1205335-018	R1205335-019	R1205335-019
Sample Date	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/14/2012	8/15/2012	8/15/2012	8/15/2012	8/15/2012	8/15/2012
Unit	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
Analytes																					
Dichlorodifluoromethane	2.5J	3.5J		1.7J	2.8J	2.4J	3.2J	2.2J	2.9J	2.6J	1.7J	1.8J	1.7J	1.4J	2.1J	1.8J	2.9J	0.31J	2.9J	2.8J	2.8J
1,2-Dichloro-1,1,2,2-tetrafluoroethane	0.13J	ND		ND	0.13J	ND	ND	0.15J	ND	0.18J	0.12J	0.14J	0.13J	0.12J	0.14J	0.14J	0.14J	ND	0.15J	0.15J	0.16J
1,3 Butadiene	0.095J	2.0		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	1.3J	1.5J		1.9J	1.5J	1.3J	3.2J	1.4J	1.8J	1.5J	1.3J	1.3J	1.5J	1.1J	1.3J	1.3J	1.4J	0.84J	1.4J	1.4J	1.5J
Methylene Chloride	0.23J	ND		ND	0.093J	0.37J	ND	0.25J	ND	0.13J	0.12J	0.1J	0.2J	0.19J	0.11J	0.097J	0.17J	0.053J	0.095J	0.19J	0.18J
n-Hexane	0.64J	240		70	0.84J	5.6	45	4.1	66	7.3	0.32J	0.48J	3.7J	0.7J	1.6J	1.1J	1.6J	0.69J	2.2J	0.73J	1.3J
Chloroform	0.48J	ND		6.3	2J	8.9	6.3	18	8.3	1.6J	0.77J	8.8	1.0	57	1.4J	1.3J	3.5	7.8	0.41J	14	0.33J
Cyclohexane	0.77J	250		130	1.1J	9.9	110	10	54	9.3	0.34J	1.6J	3.2	0.88J	2.4J	1.8J	12	0.56J	11	1.8J	1.9J
Carbon Tetrachloride	0.33	0.2J		ND	ND	ND	0.74	0.14J	ND	ND	0.13J	0.13J	ND	0.1J	ND	ND	0.098J	ND	ND	ND	ND
Benzene	0.55J	6.4		3.7	0.3J	6.6	11	1.1	3.9	2.6	0.11J	0.51J	2.7	0.15J	0.64J	1.2J	0.44J	0.16J	0.86J	0.3J	0.56J
n-Heptane	0.45J	20		9.9	0.49J	3.9J	5.1J	0.92	17	3.4J	0.14J	0.15J	0.86J	0.18J	0.3J	0.25J	0.44J	0.39J	0.45J	0.31J	0.4J
Trichloroethene	0.28	2.2		5.1	ND	ND	2.1	3.6	1.5	4.5	0.55	0.26	1.1	0.56	1.1	0.99	2.1	0.47	2.6	0.80	1.1
Toluene	0.92J	18	Do Not Use	16	0.52J	25	23	6.5	13	32	10	0.5J	5.9	0.3J	1.5	1.60	0.47	0.4J	1.5	0.29J	0.49J
Tetrachloroethene	0.46	1.3		3.6	0.54	0.92	2.7	4.4	2.6	4.8	1.1	0.65	20	1.7	5.6	5.4	2.1	1.8	2.8	1.30	1.4
Ethylbenzene	0.16J	6.5		5.6	0.096J	5.9J	3.9J	5.6	3.5J	11	0.17J	0.11J	1.5J	0.063J	0.42J	0.69J	0.12J	0.15J	0.4J	ND	0.075J
m,p-Xylenes	0.49J	16		17	0.36J	21	13	20	13	45	0.49J	0.2J	5.4J	0.15J	1.7J	2.7J	0.35J	0.35J	1.6J	0.089J	0.28J
o-Xylene	0.21J	4.5		7.6	0.27J	10	5.9	14	5.8	18	0.31J	0.17J	3.4	0.13J	1.2J	1.3J	0.18J	0.25J	0.82J	0.056J	0.13J
4-Ethyltoluene	0.05J	1.3J		0.96J	0.065J	1.5J	1.1J	1.5J	0.91J	3.1	ND	ND	0.2J	0.03J	0.087J	0.097J	0.038J	0.093J	0.06J	ND	ND
1,3,5-Trimethylbenzene	0.071J	3.2J		1.8J	0.15J	4.1J	1.7J	23	2.1J	6.1J	0.053J	ND	1J	0.039J	0.56J	0.57J	0.08J	0.036J	0.3J	ND	0.072J
Isopropanol	5.4J	ND		7.1J	8.7J	14J	16J	3.9J	8.6J	7.4J	5.8J	7.3J	1.5J	0.68J	3.5J	3.7J	3.1J	13	5.3J	2.7J	8.8
Chloroethane	ND	0.36J		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	0.66J		0.31J	0.35J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.22J	ND	ND	ND	0.12J
1,1,1-Trichloroethane	ND	0.15J		ND	0.15J	ND	5.8	ND	0.74J	0.24J	ND	0.25J	2.6	0.36J	1.3J	1.3J	0.8J	2.9	6.6	2.9	4.0
1,1-Dichloroethane	ND	ND		ND	ND	0.12J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND		ND	ND	ND	0.62J	0.39J	ND	ND	ND	0.14J	ND	0.37J	0.51U	ND	0.18J	0.14J	ND	ND	ND
Bromoform	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21J	0.18J	ND	ND	ND	ND	ND	ND	ND

Notes:

1) Results are in micrograms per cubic meter (µg/m^3).

2) ND Indicates analyte was not detected in concentrations exceeding laboratory detection limits.

3) J Indicates analyte was detected at an estimated concentration exceeding the laboratory detection limit but below the laboratory reporting limit.

Table 20
Monitored Natural Attenuation Parameter Scoring

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Well ID	Ferrous Iron	General Chemistry						Dissolved Gasses			Low-Flow Parameters					VOCs		MNA Score	Evidence for MNA
		Alkalinity	Chloride	Nitrate	Sulfate	Sulfide	TOC	Ethane	Ethylene	Methane	Do	CO_2	Temp (Celcius)	ORP (mV)	pH	Total BTEX	Total DCE		
LVRR-22	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	4	Inadequate Evidence
LVRR-23	3	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	0	10	Limited Evidence
LVRR-24 A	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	Inadequate Evidence
LVRR-24 B	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	4	Inadequate Evidence
LVRR-24 C	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	0	7	Limited Evidence
LVRR-25 A	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	Inadequate Evidence
LVRR-25 B	0	0	0	2	0	3	0	0	0	0	0	1	0	0	0	0	0	6	Limited Evidence
LVRR-25 C	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	4	Inadequate Evidence
LVRR-33 A	Well Dry																		
LVRR-33 B	0	0	0	0	0	3	0	0	0	0	0	1	0	2	0	0	0	6	Limited Evidence
LVRR-33 C	0	0	0	2	0	3	0	0	0	0	3	1	0	1	0	0	0	10	Limited Evidence
LVRR-33 D	0	0	0	2	0	0	0	0	0	0	3	1	0	0	0	0	0	6	Limited Evidence
LVRR-33 E	0	0	0	2	0	3	0	0	0	0	0	1	0	2	0	0	0	8	Limited Evidence
DC-01 A	0	0	0	0	0	0	0	0	0	0	-3	1	0	0	0	0	2	0	Inadequate Evidence
DC-01 B	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	2	5	Inadequate Evidence
DC-01 C	0	0	0	2	0	0	0	0	0	0	3	0	0	1	0	0	2	8	Limited Evidence
DC-01 D	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	2	9	Limited Evidence
DC-02 A	0	0	0	0	0	3	0	0	0	0	-3	1	0	0	0	0	0	1	Inadequate Evidence
DC-02 B	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	2	5	Inadequate Evidence
DC-02 C	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	2	9	Limited Evidence
DC-02 D	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	4	Inadequate Evidence
DC-03 A	0	0	0	2	2	0	0	0	0	0	-3	0	0	0	0	0	0	1	Inadequate Evidence
DC-03 B	0	0	0	2	0	0	0	0	0	0	3	1	0	0	0	0	2	8	Limited Evidence
DC-03 C	0	0	0	2	0	0	0	0	0	0	-3	0	0	1	0	0	0	0	Inadequate Evidence
DC-03 D	0	0	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0	5	Inadequate Evidence
DC-04 A	Well Dry																		
DC-04 B	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	3	Inadequate Evidence
DC-04 C	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	0	7	Limited Evidence
DC-04 D	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	0	7	Limited Evidence
DC-05 A	0	0	0	2	0	0	0	0	0	0	-3	1	0	0	0	0	2	2	Inadequate Evidence
DC-05 B	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	2	5	Inadequate Evidence
DC-05 C	0	0	0	2	0	0	0	0	0	0	3	0	0	2	0	0	0	7	Limited Evidence
DC-05 D	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	2	6	Limited Evidence
DC-06 A	0	0	0	0	0	3	0	0	0	0	-3	1	0	0	0	0	2	3	Inadequate Evidence
DC-06 B	0	0	0	2	0	0	0	0	0	0	3	1	0	0	0	0	2	8	Limited Evidence
DC-06 C	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	2	5	Inadequate Evidence
DC-06 D	0	0	0	2	0	0	0	0	0	0	3	0	0	1	0	0	0	6	Limited Evidence
DC-7R A	0	0	0	2	0	0	0	0	0	0	-3	1	0	0	0	0	0	0	Inadequate Evidence
DC-7R B	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	3	Inadequate Evidence
DC-7R C	0	0	0	2	0	0	0	0	0	0	3	1	0	0	0	0	0	6	Limited Evidence
DC-7R D	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	0	7	Limited Evidence
DC-07	0	0	0	2	0	0	0	0	0	0	-3	1	0	0	0	0	0	0	Inadequate Evidence
DC-09 A	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	Inadequate Evidence
DC-09 B	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	3	Inadequate Evidence
DC-09 C	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	0	7	Limited Evidence
DC-10 A	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	3	Inadequate Evidence
DC-10 B	0	0	0	0	0	0	0	0	0	0	-3	1	0	0	0	0	0	-2	Inadequate Evidence
DC-10 C	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	0	7	Limited Evidence
DC-10 D	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	4	Inadequate Evidence
DC-11 A	NA	NA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Inadequate Evidence
DC-11 B	Well Not Found																		
DC-12 A	0	0	0	0	0	0	0	0	0	0	-3	1	0	0	0	0	0	-2	Inadequate Evidence
DC-12 B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Inadequate Evidence
DC-12 C	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	Inadequate Evidence
DC-12 D	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	3	Inadequate Evidence
DC-13 A	0	0	0	0	0	0	0	0	0	0	-3	1	0	0	0	0	0	-2	Inadequate Evidence
DC-13 B	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	Inadequate Evidence
DC-14 A	0	0	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	4	Inadequate Evidence
DC-14 B	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	Inadequate Evidence
DC-15 A	0	0	0	2	0	0	0	0	0	0	-3	1	0	0	0	0	2	2	Inadequate Evidence
DC-15 B	0	0	0	2	0	0	0	0	0	0	3	1	0	1	0	0	0	7	Limited Evidence
DC-16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	Inadequate Evidence
DC-17 A	0	0	0	0	0	0	0	0	0	0	-3	0	0	0	0	0	2	-1	Inadequate Evidence
DC-17 B	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3	Inadequate Evidence

Notes:

1) The ferrous iron analysis was conducted during low flow purging following stabilization using a field test kit with results expressed in milligrams per liter (mg/l).

2) General chemistry results are in mg/l.

3) Dissolved gas results are expressed in micrograms per liter (ug/l) with the exception of dissolved oxygen and carbon dioxide. Dissolved oxygen results are expressed in mg/l, recorded during low flow purging following stabilization. The carbon dioxide analysis was conducted using a field test kit with results expressed in mg/l.

4) Volatile organic compound (VOC) results are expressed in ug/l.