

August 20, 2009

Mr. Jeffrey A. Konsella, P.E.
Environmental Engineer II
Division of Environmental Remediation
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

Reference: Ekonol Polyester Resins Site (#V00653-9)
2009 Site wide Groundwater Sampling and Pilot Test Update

Dear Mr. Konsella:

Provided herein are the analytical results from the 2009 site-wide groundwater sampling event at the Ekonol Polyester Resins Site (#V00653-9) (Site). The sampling event was accomplished as part of the voluntary clean up program and included analyses to further monitor the effectiveness of the *in situ* bioremediation pilot test. This round of groundwater sampling was completed in a manner consistent with the methodology described in the New York State Department of Environmental Conservation (NYSDEC) approved Work Plan for the Phase III Investigation (August 2003), the Pilot Test Workplan (August 2007), and NYSDEC Division of Environmental Remediation (DER) draft technical guidance for site investigation and remediation (December 2002).

Sitewide Groundwater Sampling

A total of 41 wells (see figure in Attachment 1) were sampled and analyzed for selected volatile organic compounds (VOCs) by EPA method 8260, light gases (methane, ethane and ethene), select major/minor ions and field analyses. Other specific wells were sampled and analyzed for bromide, total organic carbon, total inorganic carbon and volatile fatty acids. Five of the wells were sampled and analyzed for acetylene, dissolved hydrogen and microbial populations. The analytical parameters list for the June sampling event was expanded with the intent to examine the possible occurrence of abiotic degradation (i.e., degradation by means other than biological) of compounds of concern. The analytical laboratory for this work was Columbia Analytical Laboratories. (CAS). This laboratory is certified to conduct these analyses by the New York State Department of Health (NYDOH) Environmental Laboratory Approval Program (ELAP).

The analytical results from these samples were reviewed for usability with respect to NYSDEC requirements. The data are provided in the data usability report (see Attachment 1). In general, the analytical results from wells outside the pilot test area were within the historical concentration ranges. Notable observations of the site-wide sampling event are as follows:

- Concentrations of cis-1,2-dichloroethene (cis-DCE) and vinyl chloride (VC) in MW-17D and MW-11D have increased in the past year. DCE and VC at MW-17D have increased from 701 to 1,300 and 34 to 600 µg/L (respectively). In MW-11D, cis-DCE and VC have increased from 1,900 to 3,500 and 9.3 to 640 µg/L (respectively). These changes (increases in trichloroethene {TCE} breakdown products) suggest an increase in dechlorination in this area of the deep groundwater.
- Concentrations of TCE, cis-DCE, and VC at MW-4S have decreased as much as three orders of magnitude compared to historical sampling results. This may be the result of degradation of compounds of concern (COCs) in the pilot test.

Pilot Test Update

In June 2008, a pilot test was initiated to evaluate the ability of *in situ* enhanced bioremediation to treat bedrock groundwater. Addition of vegetable oil based substrate, dechlorinating microorganisms, and buffering solution (sodium bicarbonate) were the main components of the treatment. During the June 2009 sampling event, pilot test wells were sampled and analyzed to further understand the effectiveness of the enhanced bioremediation. Analytical data related to the pilot test are provided in Attachment 1.

Updated versions of time series plots presented in the Pilot Test Report (Parsons, April 2009) are presented in Figures 1 through 3. Figures 1 and 2 demonstrate the change in VOCs at the inner treatment wells since the start of the pilot test. Figure 3 represents the percent change in moles of TCE, cis-DCE, and VC at all the pilot test wells. Based the new data, the following observations and conclusions are made regarding the effectiveness of the pilot test remediation:

- Figures 1 and 2 show that the degradation continues to reduce the TCE, and DCE, without production of VC within the inner treatment zone. The figures also indicate that rebound (increase) of TCE and DCE has not occurred.
- The percent change in moles after 12 months at inner treatment wells (Figure 3), was approximately -62 to -97%. This range is similar to the percent change observed after six months, and therefore degradation at the inner treatment wells continues to be effective.
- Percent change in moles after 12 months in wells outside of the treatment has decreased (i.e. become more negative, see Figure 3). This indicates an improvement of groundwater treatment away from the inner treatment area.
- The total organic carbon (TOC) within the pilot test area ranges from 105 to 723 mg/l. It is generally considered that TOC should be above the 20-50 mg/l for sustained bioremediation. Therefore, TOC is not a limiting factor at this time.

- Six of the 13 pilot test wells had pH below 6.0. PH of 6.0 is the approximate lower threshold for *Dehalococcoides* spp. survival. Buffering (similar to the event in November 2008) should increase the pH above 6.0 and improve the survival of microbial cultures, thereby increasing the effectiveness of the remediation.
- Acetylene was detected at 20 and 120 µg/L at wells RMW-4D and PMW-3D (respectively). The presence of acetylene confirms the occurrence of abiotic degradation for DCE and may explain the lower than anticipated concentrations of VC in the pilot test area.

MW-12S Testing

Additional hydraulic characteristics were measured at overburden well MW-12S. Testing included a well fluid replacement test and a slug test. Results of both tests are presented in Attachment 2. The increase in specific conductivity observed at the bottom of the well during the well fluid replacement test indicated that groundwater enters the well near the bottom of the screen. The slug test results indicated low, non-uniform flow to the well, which suggests that groundwater may enter the well along a preferential flow path rather than uniformly over the screened interval of the well.

Anticipated Schedule and Future Activities:

Task	Schedule
Letter Summary of June 2009 Data and Pilot Test Effectiveness	August 21, 2009
Pre-design Activities	August through October 2009
Design and Remedial Action Work Plan Development	October through December 2009
Submit Remedial Action Work Plan to NYSDEC	December 18, 2009 (tentative)
NYSDEC Approval of Remedial Action Work Plan	February 1, 2010
Mobilize to Implement Remedy	March 2010

The following pre-design activities are planned to continue effectiveness of bioremediation in the pilot test area and begin remediation in other areas of the site:

- Collection of a round of performance monitoring samples from the pilot test and other wells. The samples are planned to be collected in October.

Mr. Jeffrey A. Konsella, P.E.
NYSDEC
August 20, 2009
Page 4

- Redevelopment of selected monitoring wells in the area of high TOC, which have become fouled due to microbial growth.
- Completion of a pH buffering event using sodium bicarbonate.
- Continued DNAPL monitoring and extraction with pH monitoring.

If you have any questions regarding this report or the planned future activities, feel free to contact William B. Barber of Atlantic Richfield Company at (216) 271-8038.

Sincerely,



Mark S. Raybuck
Project Manager

Attachments

cc: W. Barber, Atlantic Richfield Co.
S. Fiorenza, BP
M. Forcucci, NYSDOH
T. Ciarlone, Patriot Equities (e-copy only)
J. Sabbatis, Saint-Gobain
G. Brown, RT Environmental Services (e-copy only)

Mr. Jeffrey A. Konsella, P.E.
NYSDEC
August 20, 2009
Page 5

FIGURES

FIGURE 1: COCs VERSES TIME – INNER TREATMENT ZONE WELLS

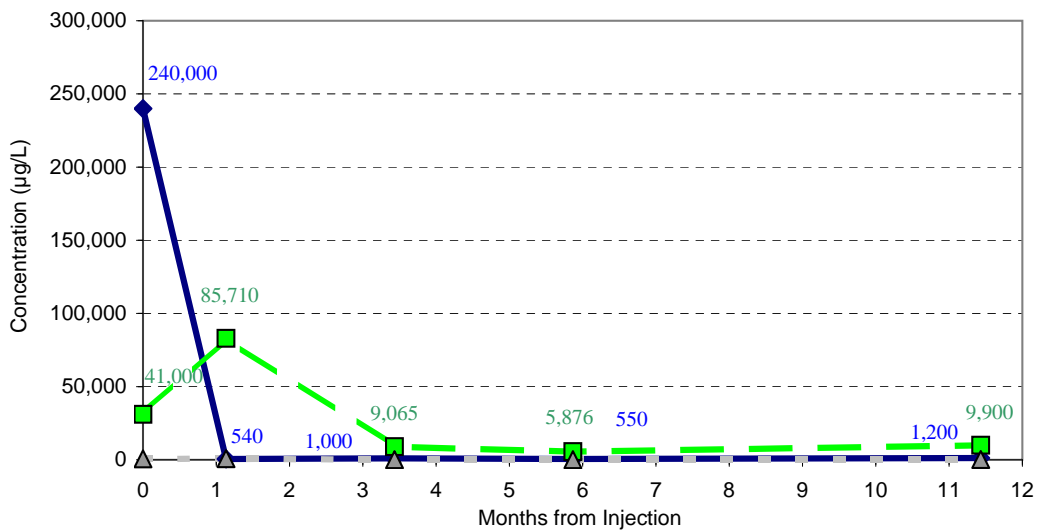
FIGURE 2: PERCENT CHANGE IN MOLES OF TCE CIS-DCE, AND VC AT SIX AND TWELVE MONTHS

ATTACHMENTS

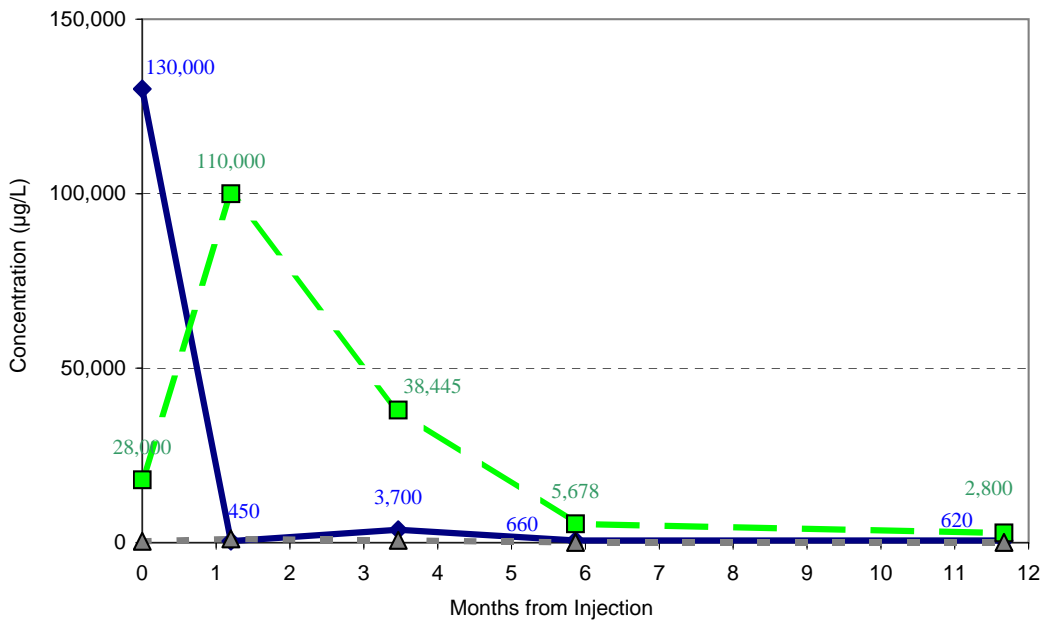
ATTACHMENT 1: ANALYTICAL RESULTS

ATTACHMENT 2: MW-12S TESTING

FIGURES



PMW-3D



RMW-4D



FIGURE 1

EKONOL POLYESTER RESINS FACILITY
WHEATFIELD, NEW YORK

TRENDS OF CHLORINATED ETHENES - INNER
TREATMENT ZONE WELLS

PARSONS

40 La Riviere Dr., Suite 350, Buffalo NY 14222

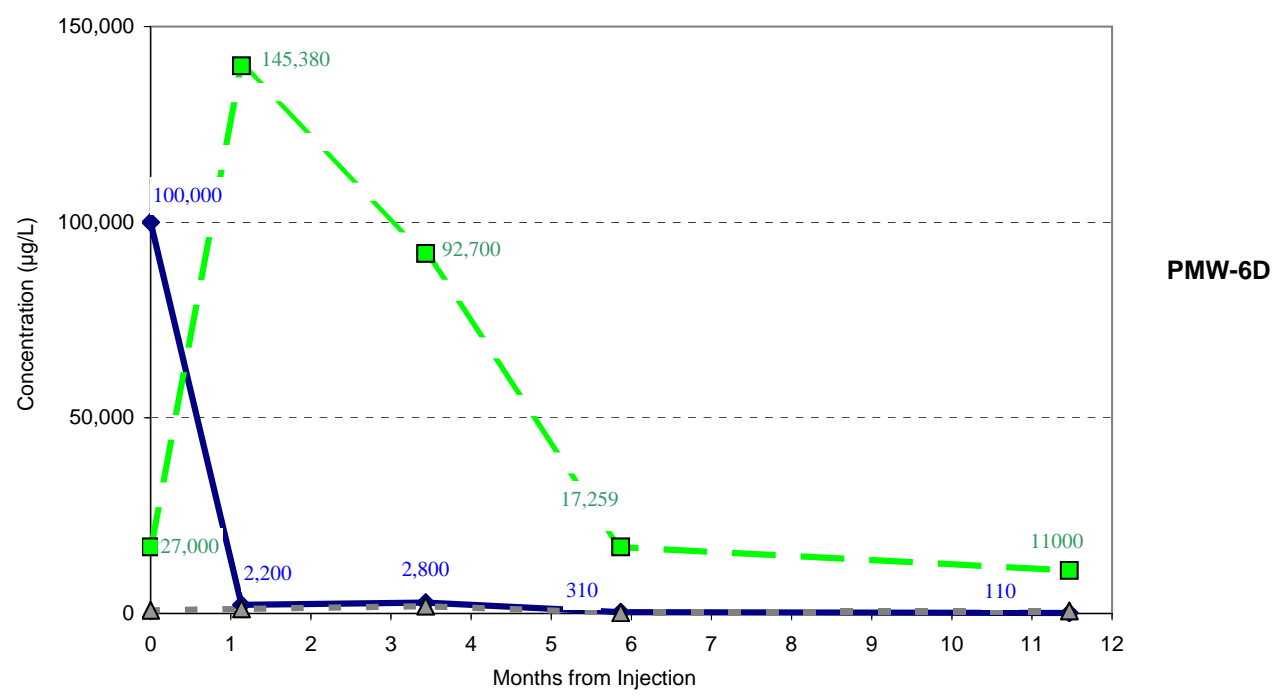
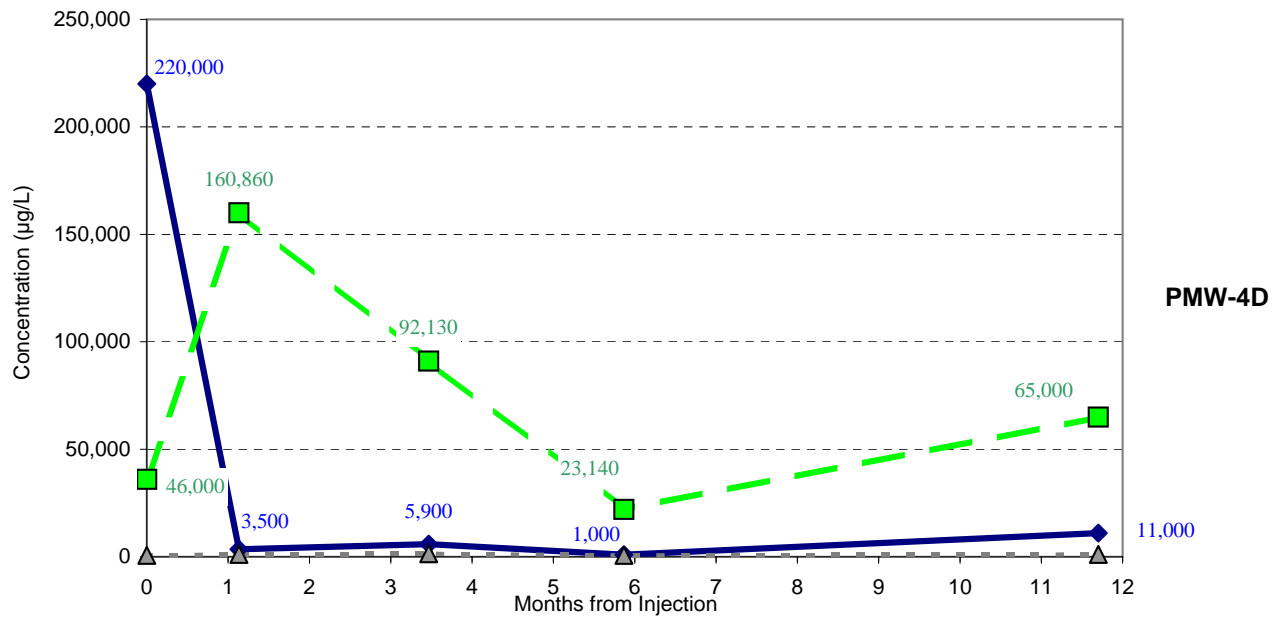


FIGURE 2
 EKONOL POLYESTER RESINS FACILITY
 WHEATFIELD, NEW YORK
 TRENDS OF CHLORINATED ETHENES - INNER
 TREATMENT ZONE WELLS

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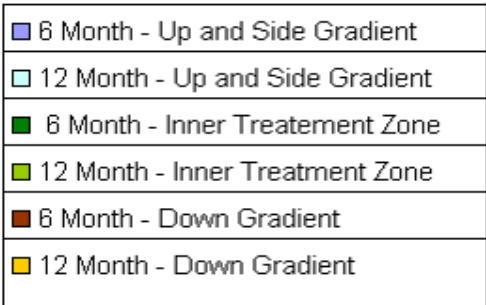
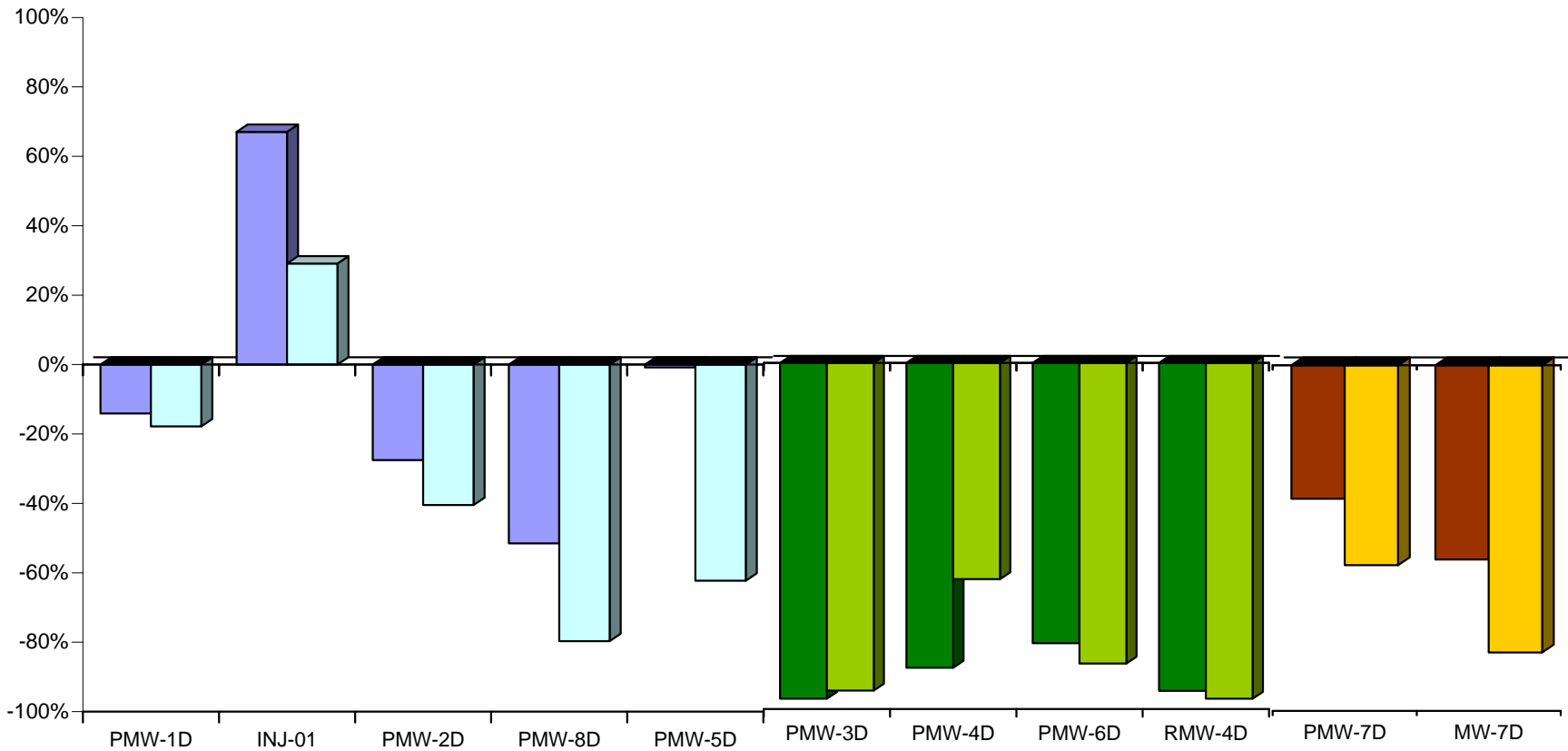
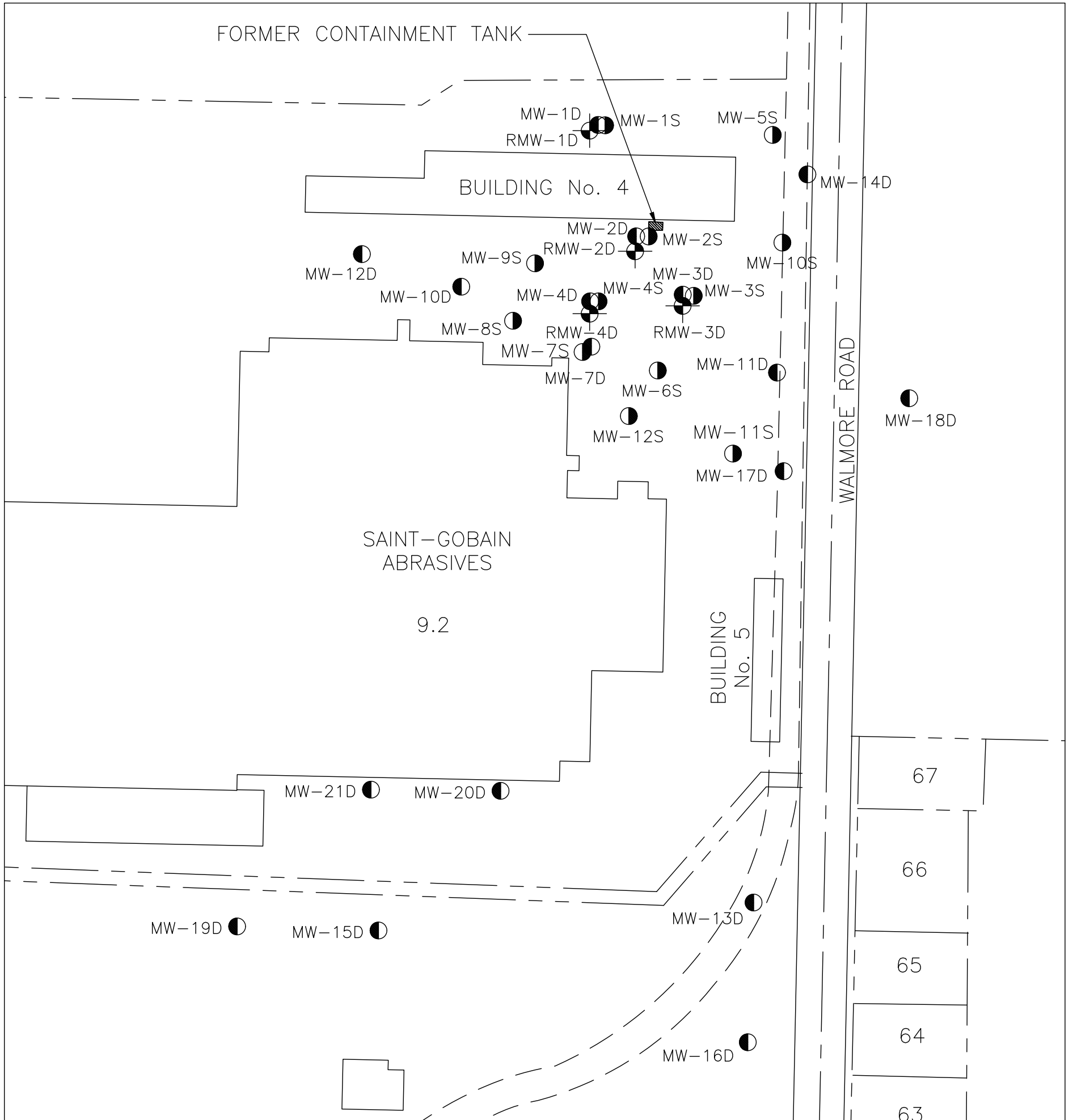


FIGURE 3
 EKONOL POLYESTER RESINS FACILITY
 WHEATFIELD, NEW YORK

PERCENT CHANGE IN THE TOTAL MOLAR CHLORINATED
 ETHENES IN THE PILOT TEST AREA

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ATTACHMENT 1



LEGEND:

- MW-1D BEDROCK MONITORING WELL
- MW-1S OVERBURDEN MONITORING WELL
- ⊕ RMW-1D REPLACEMENT BEDROCK MONITORING WELL
- — — — — PROPERTY LINE
- - - - - RIGHT-OF-WAY

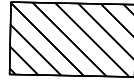
SCALE



SITE PLAN
EKONOL POLYESTER RESINS FACILITY WHEATFIELD, NEW YORK
SITE WIDE WELL LOCATION
PARSONS 180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716-633-7074



BUILDING No. 4



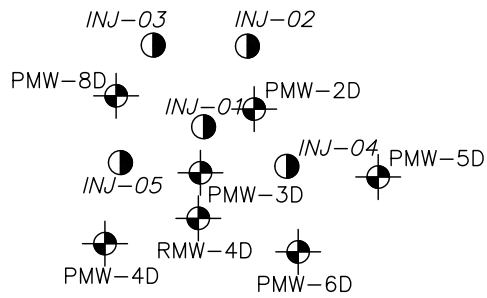
FORMER CONTAINMENT TANK



PMW-1D



RMW-2D



RMW-3D



PMW-7D

PREDOMINANT DIRECTION OF GROUNDWATER FLOW




MW-7D

SAINT-GOBAIN
ABRASIVES
BUILDING



LEGEND:

-  PMW-1D MONITORING WELL
-  INJ-01 INJECTION WELL

PILOT TEST WELL LOCATIONS

EKONOL POLYESTER
RESINS FACILITY
WHEATFIELD, NEW YORK

Pilot Test Injection and
Monitoring Well Locations



40 La Riviere Dr. Suite 350 Buffalo, NY 14202

DATA USABILITY SUMMARY REPORT

EKONOL FACILITY

Prepared For:

Atlantic Richfield Company

4850 East 49th Street
MBC 3-147
Cuyahoga Heights, Ohio 44125

Prepared By:

PARSONS

40 La Riviere Drive, Suite 350
Buffalo, New York 14202
(716) 541-0730

JULY 2009

SECTION 1

DATA USABILITY SUMMARY

Groundwater samples were collected from the Ekonol Facility site in Wheatfield, New York from May 27, 2009 through June 5, 2009. Analytical results from these samples were reviewed by Parsons for usability with respect to the following requirements:

- Work Plan,
- NYSDEC Analytical Services Protocol (ASP), and
- USEPA Region II Standard Operating Procedures (SOPs).

The analytical laboratory for this project was Columbia Analytical Services, Inc. (CAS). This laboratory is approved to conduct project analyses through the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP).

1.1 LABORATORY DATA PACKAGES

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 34 days on average for the Ekonol samples. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation report.

1.2 SAMPLING AND CHAIN-OF-CUSTODY

The samples were collected, properly preserved, shipped under a COC record, and received at the laboratory within one day of sampling. All samples were received intact and in good condition at CAS.

It was noted that samples were not collected from groundwater location MW-9S because of field sampling error. A review of field logs and supporting documentation indicated that location PMW-1D was inadvertently sampled twice instead of MW-9S based upon well depths and diameters. Since the laboratory logged in and conducted analyses on sample bottles labeled as MW-9S, analytical results for MW-9S were considered rejected and qualified "R" in the validated laboratory data table presented in Attachment A.

1.3 LABORATORY ANALYTICAL METHODS

The groundwater samples collected from the Ekonol site were analyzed for volatile organic compounds (VOCs) including methane, ethane, and ethane; dissolved metals; metabolic acids; bromide; chloride; nitrate; orthophosphate; sulfate; sulfide; acid-soluble sulfide; total organic carbon (TOC); and/or total inorganic carbon (TIC). Summaries of issues concerning these laboratory analyses are presented in Subsections 1.3.1 through 1.3.3. The data qualifications resulting from the data review and statements on the laboratory analytical precision, accuracy,

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representativeness, completeness, and comparability (PARCC) are discussed for each analytical method in Section 2. The laboratory data were reviewed and may be qualified with the following validation flags:

- "U" - not detected at the value given,
- "UJ" - estimated and not detected at the value given,
- "J" - estimated at the value given,
- "N" - presumptive evidence at the value given, and
- "R" - unusable value.

The validated laboratory data were tabulated and are presented in Attachment A.

1.3.1 Volatile Organic Analysis Including Methane, Ethane, and Ethene

The groundwater samples collected from the Ekonol site were analyzed for VOCs using the USEPA SW-846 8260B analytical method. In addition, these groundwater samples were analyzed for methane, ethane, and ethene using the modified USEPA approved RSK-175 analytical method. Certain reported results for these samples were considered estimated based upon sample holding times, matrix spike / matrix spike duplicate recoveries, and field duplicate precision. The reported VOC and methane, ethane, and ethene analytical results were 100% complete (i.e., usable) based upon the groundwater data presented. However, all VOC and methane, ethane, and ethene results were rejected "R" for sample MW-9S based upon field sampling error. The overall analytical data usability was not affected and PARCC requirements were met.

1.3.2 Metals Analysis

Certain groundwater samples collected from the Ekonol site were analyzed for dissolved metals using the USEPA SW-846 6010B analytical method. The reported results for the metals samples did not require qualification resulting from data validation. The reported metals analytical results were 100% complete (i.e., usable) based upon the groundwater data presented. However, all metals results were rejected "R" for sample MW-9S based upon field sampling error. The overall analytical data usability was not affected and PARCC requirements were met.

1.3.3 Other Parameters

The groundwater samples collected from the Ekonol site were analyzed for metabolic acids using a CAS HPLC modified analytical method; bromide, chloride, nitrate, and sulfate using the USEPA 300.0 analytical method; sulfide using the SM 4500-S2-F analytical method; acid-volatile sulfide using the USEPA SW-846 9034 analytical method; orthophosphate using the USEPA 365.1; TOC using the USEPA SW-846 9060 analytical method; and/or TIC using the SM20 5310C analytical method. Holding times, laboratory blanks, matrix spike/matrix spike duplicate, laboratory duplicate precision, laboratory control samples, instrument calibrations, quantitation limits, sample result identification, and field duplicate precision were reviewed for compliance. The reported results for these samples did not require qualification resulting from

data validation. The reported analytical results for these parameters were 100% complete (i.e., usable) based upon the groundwater data presented. However, all results for these parameters were rejected “R” for sample MW-9S based upon field sampling error. The overall analytical data usability was not affected and PARCC requirements were met.

SECTION 2

DATA VALIDATION REPORT

2.1 GROUNDWATER SAMPLES

Data review has been completed for data packages generated by CAS containing groundwater samples collected from the Ekonol Facility site. The specific samples contained in these data packages, the analyses performed, and a usability summary are presented in Table 2.1-1. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory. The validated laboratory data are presented in Attachment A.

Data validation was performed for all samples in accordance with the most current editions of the USEPA Region II SOPs and the NYSDEC ASP for organic and inorganic data review. This data validation and usability report is presented by analysis type.

2.1.1 Volatiles Including Methane, Ethane, and Ethene

The following items were reviewed for compliancy in the volatile analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and trip blank contamination
- Instrument performance
- Initial and continuing calibrations
- Internal standard responses
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of holding times, MS/MSD precision and accuracy, and field duplicate precision.

Holding Times

All holding times for volatile analysis were compliant and within the 14-day requirement for all samples with the exception of the methane, ethane, and ethene samples MW-7D PUMP, MW-7D SNAP, PMW-7D PUMP, PMW-7D SNAP, and RMW-4D SNAP which exceeded the holding time requirement by one day; and the diluted reanalyzed VOC sample PMW-4D DL (6/4/09) which exceeded the holding time requirement by three days. Therefore, the results for these samples were considered estimated, possibly biased low, with positive results qualified “J” and nondetected results qualified “UJ”.

MS/MSD Precision and Accuracy

The MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements for designated project samples were considered acceptable and within QC limits for all spiked compounds with the exception of the high MSD recovery for chloroethane (132%R; QC limit 70-130%R) associated with the parent sample MW-20D; the high MSD recovery for cis-1,2-dichloroethene (132%R; QC limit 70-130%R) associated with the parent sample MW-10D; and the high MSD recovery for chloroethane (131%R; QC limit 70-130%R) and the high MS/MSD recoveries for vinyl chloride (134%R/143%R; QC limit 70-130%R) associated with the parent sample PMW-6D. Since both MS and MSD recoveries for vinyl chloride were outside the QC limit during the spiked analyses of PMW-6D, the positive vinyl chloride result for the parent sample was considered estimated, possibly biased high, and qualified “J”.

Field Duplicate Precision

The precision (relative percent difference; RPD) measurements for project field duplicates were considered acceptable with the exception of the precision result for vinyl chloride (42%RPD) associated with the field duplicate pair PMW-7D and PMW-700D; and the precision result for ethene (112%RPD) associated with the field duplicate pair PMW-6D and PMW-600D. Therefore, the results for these compounds in the associated field duplicate samples were considered estimated and qualified “J”.

Usability

All volatile groundwater sample results including methane, ethane, and ethene were considered usable following data validation with the exception of the all the results for MW-9S based upon field sampling error.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The volatile groundwater presented were 100% (i.e., usable). The validated volatile laboratory data are tabulated and presented in Attachment A.

It was noted that the samples MW-2S, MW-7D PUMP, MW-10S, MW-11S, PMW-4D, TS-INJ-01, TS-INJ-04, and TS-INJ-05 were diluted and reanalyzed due to the exceedance in instrument calibration ranges for cis-1,2-dichloroethene; samples PMW-4D and TS-INJ-05 were diluted and reanalyzed due to the exceedance in instrument calibration ranges for trichloroethene; samples MW-6S and MW-10S were diluted and reanalyzed due to the exceedance in instrument calibration ranges for vinyl chloride; samples MW-2S, MW-4S, MW-6S, MW-7D, MW-10D, MW-100D, MW-11D, MW-12D, MW-12S, PMW-1D, PMW-2D, PMW-3D, PMW-4D, PMW-5D, PMW-7D, PMW-700D, PMW-8D, RMW-2D, RMW-200D, RMW-4D, RMW-4D PUMP, TS-INJ-01, TS-INJ-02, TS-INJ-04, and TS-INJ-05 were diluted and reanalyzed due to the exceedance in instrument calibration ranges for methane; and samples MW-2S, PMW-700D, TS-INJ-01, TS-INJ-02, and TS-INJ-05 were diluted and reanalyzed due to the exceedance in instrument calibration ranges for ethene. Therefore, the diluted result for these compounds was reported for these samples in the validated laboratory data table in Attachment A.

2.1.2 Dissolved Metals

The following items were reviewed for compliancy in the metals analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration, and preparation blank contamination
- Initial and continuing calibration verifications
- Interference check sample recoveries
- Matrix spike recoveries
- Laboratory duplicate precision
- Field duplicate precision
- Laboratory control sample recoveries
- Serial dilutions
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols.

Usability

All metals sample results were considered usable following data validation with the exception of all the results for sample MW-9S based upon field sampling error.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The metals data presented were 100% complete (i.e., usable). The validated groundwater laboratory data are tabulated and presented in Attachment A.

TABLE 2.1-1

**SUMMARY OF SAMPLE ANALYSES AND USABILITY
EKONOL FACILITY – GROUNDWATER**

<u>SAMPLE ID</u>	<u>MATRI X</u>	<u>SAMPLE DATE</u>	<u>VOCs</u>	<u>METHANE, ETHANE, ETHENE</u>	<u>METALS</u>	<u>OTHER</u>	<u>FOOTNOTE</u>
MW-13D	WATER	5/27/09	OK	OK	OK	OK	
MW-15D	WATER	5/27/09	OK	OK	OK	OK	
MW-16D	WATER	5/27/09	OK	OK	OK	OK	
MW-19D	WATER	5/27/09	OK	OK	OK	OK	
MW-20D	WATER	5/27/09	OK	OK	OK	OK	
MW-21D	WATER	5/27/09	OK	OK	OK	OK	
MW-200D	WATER	5/27/09	OK	OK			
MW-1S	WATER	5/28/09	OK	OK	OK	OK	
MW-10S	WATER	5/28/09	OK	OK	OK	OK	
MW-11D	WATER	5/28/09	OK	OK	OK	OK	
MW-11S	WATER	5/28/09	OK	OK	OK	OK	
MW-12D	WATER	5/28/09	OK	OK	OK	OK	
MW-14D	WATER	5/28/09	OK	OK	OK	OK	
MW-17D	WATER	5/28/09	OK	OK	OK	OK	
MW-18D	WATER	5/28/09	OK	OK	OK	OK	
MW-6S	WATER	5/29/09	OK	OK	OK	OK	
MW-8S	WATER	5/29/09	OK	OK	OK	OK	
MW-10D	WATER	5/29/09	OK	OK	OK	OK	
MW-100D	WATER	5/29/09	OK	OK			
MW-12S	WATER	5/29/09	OK	OK	OK	OK	
MW-3S	WATER	6/1/09	OK	OK	OK	OK	
MW-5S	WATER	6/1/09	OK	OK	OK	OK	
MW-7S	WATER	6/1/09	OK	OK	OK	OK	
MW-9S	WATER	6/1/09	NO	NO	NO	NO	1
RMW-2D	WATER	6/1/09	OK	OK	OK	OK	
RMW-200D	WATER	6/1/09	OK	OK		OK	
RMW-3D	WATER	6/1/09	OK	OK	OK	OK	
MW-2S	WATER	6/2/09	OK	OK	OK	OK	
MW-4S	WATER	6/2/09	OK	OK	OK	OK	
MW-7D	WATER	6/2/09	OK	OK	OK	OK	
TRIP BLANK	WATER	6/2/09	OK	OK			

TABLE 2.1-1 (CONTINUED)

**SUMMARY OF SAMPLE ANALYSES AND USABILITY
EKONOL FACILITY – GROUNDWATER**

<u>SAMPLE ID</u>	<u>MATRI X</u>	<u>SAMPLE DATE</u>	<u>VOCs</u>	<u>METHANE, ETHANE, ETHENE</u>	<u>METALS</u>	<u>OTHER</u>	<u>FOOTNOTE</u>
RMW-1D	WATER	6/2/09	OK	OK	OK	OK	
PMW-1D	WATER	6/2/09	OK	OK	OK	OK	
PMW-2D	WATER	6/2/09	OK	OK	OK	OK	
PMW-8D	WATER	6/2/09	OK	OK	OK	OK	
PMW-3D	WATER	6/3/09	OK	OK	OK	OK	
PMW-4D	WATER	6/3/09	OK	OK	OK	OK	
PMW-5D	WATER	6/3/09	OK	OK	OK	OK	
TRIP BLANK	WATER	6/3/09	OK	OK	OK	OK	
RMW-4D	WATER	6/3/09	OK	OK	OK	OK	
TS-INJ-02	WATER	6/3/09	OK	OK	OK	OK	
TS-INJ-04	WATER	6/3/09	OK	OK	OK	OK	
PMW-7D	WATER	6/4/09	OK	OK	OK	OK	
PMW-700D	WATER	6/4/09	OK	OK			
TRIP BLANK	WATER	6/4/09	OK	OK			
PMW-6D	WATER	6/4/09	OK	OK	OK	OK	
PMW-600D	WATER	6/4/09	OK	OK			
PMW-4D	NONAQ	6/4/09	OK				
TS-INJ-01	WATER	6/4/09	OK	OK	OK	OK	
TS-INJ-05	WATER	6/4/09	OK	OK	OK	OK	
MW-7D PUMP	WATER	6/5/09	OK	OK			
MW-7D SNAP	WATER	6/5/09	OK	OK			
PMW-7D PUMP	WATER	6/5/09	OK	OK			
PMW-7D SNAP	WATER	6/5/09	OK	OK			
RMW-4D PUMP	WATER	6/5/09	OK	OK			
RMW-4D SNAP	WATER	6/5/09	OK	OK			
TRIP BLANK	WATER	6/5/09	OK	OK			
TOTAL SAMPLES			57	56	42	43	

NOTES: OK - Sample analysis considered valid and usable.
 NO - Sample analysis considered rejected. See appropriate footnote.

FOOTNOTE: 1 - Sample analysis rejected based upon field sampling error.

ATTACHMENT A

VALIDATED LABORATORY DATA

TABLE OF CONTENTS

	<u>PAGE</u>
SECTION 1 DATA USABILITY SUMMARY	1-1
1.1 LABORATORY DATA PACKAGES	1-1
1.2 SAMPLING AND CHAIN-OF-CUSTODY	1-1
1.3 LABORATORY ANALYTICAL METHODS	1-1
1.3.1 Volatile Organic Analysis Including Methane, Ethane, and Ethene	1-2
1.3.2 Metals Analysis	1-2
1.3.3 Other Parameters	1-2
SECTION 2 DATA VALIDATION REPORT.....	2-1
2.1 GROUNDWATER SAMPLES	2-1
2.1.1 Volatiles Including Methane, Ethane, and Ethene	2-1
2.1.2 Dissolved Metals	2-3

LIST OF TABLES

Table 2.1-1 Summary of Sample Analyses and Usability - Groundwater.....	2-5
-------------------------------------------------------------------------	-----

LIST OF ATTACHMENTS

Attachment A Validated Laboratory Data

		Dup of MW-10D								
EkonoI Facility Validated Groundwater Analytical Results Wheatfield, New York SDG: R0902995		Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	MW- 1S R0902995-012 Columbia R0902995 WATER 5/28/2009 7/9/2009	MW- 6S R0902995-021 Columbia R0902995 WATER 5/29/2009 7/9/2009	MW- 8S R0902995-022 Columbia R0902995 WATER 5/29/2009 7/9/2009	MW-10D R0902995-017 Columbia R0902995 WATER 5/29/2009 7/9/2009	MW-100D R0902995-018 Columbia R0902995 WATER 5/29/2009 7/9/2009	MW-10S R0902995-014 Columbia R0902995 WATER 5/28/2009 7/9/2009	MW-11D R0902995-010 Columbia R0902995 WATER 5/28/2009 7/9/2009	MW-11S R0902995-008 Columbia R0902995 WATER 5/28/2009 7/9/2009
CAS NO.	COMPOUND	UNITS:								
	VOLATILES									
71-55-6	1,1,1-Trichloroethane	UG/L	5 U	0.86 J	5 U	0.89 J	0.99 J	5 U	220	65
75-34-3	1,1-Dichloroethane	UG/L	5 U	6.8	5 U	5 U	0.79 J	5 U	48 J	88
75-35-4	1,1-Dichloroethene	UG/L	1.6 J	1 J	5 U	5 U	5 U	4.7 J	19 J	13 J
75-00-3	Chloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U	100 U	25 U
127-18-4	Tetrachloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U	21 J	25 U
79-01-6	Trichloroethene	UG/L	7.1	0.76 J	5 U	5 U	5 U	120	1200	180
75-01-4	Vinyl Chloride	UG/L	16	410	2 U	17	22	240	640	240
156-59-2	cis-1,2-Dichloroethene	UG/L	150	72	5 U	34	38	1900	3500	1700
156-60-5	trans-1,2-Dichloroethene	UG/L	6	3.1 J	5 U	5 U	5 U	37	100 U	59
74-84-0	Ethane	UG/L	1 U	58	1 U	7.4	7.6	2.3	46	1.5
74-85-1	Ethene	UG/L	1 U	7.5	1 U	1 U	1 U	10	13	1 U
74-82-8	Methane	UG/L	29	290	2.7	110	110	46	280	97
	METALS, DISSOLVED									
7429-90-5	Aluminum	UG/L	16.3 U	16.3 U	27.8 J	16.3 U		16.3 U	16.3 U	16.3 U
7440-38-2	Arsenic	UG/L	3.2 U	3.2 U	3.7 J	4.1 J		4 J	3.2 U	3.2 U
7440-70-2	Calcium	UG/L	301000	412000	159000	253000		286000	322000	434000
7439-89-6	Iron	UG/L	1180	51.4 J	8.8 J	1030		2990	61.6 J	238
7439-95-4	Magnesium	UG/L	386000	621000	152000	92100		107000	123000	347000
7439-96-5	Manganese	UG/L	316	809	11	338		164	156	451
7440-09-7	Potassium	UG/L	2980	4620	10100	2900		2340	2580	3500
7782-49-2	Selenium	UG/L	4.8 U	10 U	7.5 J	8.8 J		10.6	9.2 J	4.8 U
7440-23-5	Sodium	UG/L	76800	305000	1490000	107000		84100	88000	147000
	OTHER									
BROMIDE	Bromide	MG/L	0.8 J	1 J						
TIC	Total Inorganic Carbon	MG/L	63.4	140						
TOC	Total Organic Carbon	MG/L	3	6.5						
16887-00-6	Chloride	MG/L	57.7	708	2160	240		124	161	378
14797-55-8	Nitrate Nitrogen	MG/L	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	2.9
ORTHO	Orthophosphate as Phosphate	MG/L	0.021	0.034	0.01 U	0.13		0.01 U	0.027	0.015
14808-79-8	Sulfate	MG/L	2130	2610	850	706		804	1030	1960
SULFIDE	Sulfide	MG/L	1 U	1 U	0.99 U	1.15		0.99 U	3	1 U
127-17-3	Pyruvic Acid	MG/L	0.5 U	0.5 U						
64-19-7	Acetic Acid	MG/L	1 U	1 U						
107-92-6	Butyric Acid	MG/L	2 U	2 U						
50-21-5	Lactic Acid	MG/L	1 U	1 U						
79-09-4	Propionic Acid	MG/L	1 U	1 U						

EkonoI Facility Validated Groundwater Analytical Results Wheatfield, New York SDG: R0902995		Sample ID: Lab Sample Id:	MW-12D R0902995-015	MW-12S R0902995-016	MW-13D R0902995-001	MW-14D R0902995-013	MW-15D R0902995-002	MW-16D R0902995-003	MW-17D R0902995-009	MW-18D R0902995-007
CAS NO.	COMPOUND	UNITS:								
	VOLATILES									
71-55-6	1,1,1-Trichloroethane	UG/L	5 U	200	50 U	5 U	25	25 U	230	5 U
75-34-3	1,1-Dichloroethane	UG/L	5 U	110	42 J	5 U	20 J	11 J	62	5 U
75-35-4	1,1-Dichloroethene	UG/L	5 U	23 J	50 U	5 U	5.6 J	25 U	11 J	5 U
75-00-3	Chloroethane	UG/L	5 U	100 U	50 U	5 U	25 U	25 U	50 U	5 U
127-18-4	Tetrachloroethene	UG/L	5 U	100 U	50 U	5 U	25 U	25 U	50 U	5 U
79-01-6	Trichloroethene	UG/L	5 U	2500	50 U	5 U	25 U	25 U	50 U	5 U
75-01-4	Vinyl Chloride	UG/L	2 U	1300	420	2 U	520	200	600	2 U
156-59-2	cis-1,2-Dichloroethene	UG/L	5 U	3800	1000	5 U	790	560	1300	5 U
156-60-5	trans-1,2-Dichloroethene	UG/L	5 U	26 J	6.2 J	5 U	5.6 J	2.6 J	50 U	5 U
74-84-0	Ethane	UG/L	37	9.2	2.9	37	1 U	7	4.1	2
74-85-1	Ethene	UG/L	1 U	19	15	1 U	7.8	6.3	6	1 U
74-82-8	Methane	UG/L	210	170	44	99	34	38	80	50
	METALS, DISSOLVED									
7429-90-5	Aluminum	UG/L	26.4 J	72.8 J	16.3 U	16.3 U	26.4 J	16.3 U	47.1 J	32.9 J
7440-38-2	Arsenic	UG/L	3.2 U	13.4	3.6 J	3.8 J	3.2 U	5.2 J	3.4 J	3.2 U
7440-70-2	Calcium	UG/L	558000	195000	275000	314000	288000	445000	328000	377000
7439-89-6	Iron	UG/L	28.6 J	253	169	155	291	72.3 J	7.8 J	7.7 U
7439-95-4	Magnesium	UG/L	114000	126000	143000	143000	131000	165000	121000	279000
7439-96-5	Manganese	UG/L	36.9	166	82.3	251	207	103	102	203
7440-09-7	Potassium	UG/L	2950	3290	2580	2990	3160	4720	2360	3020
7782-49-2	Selenium	UG/L	4.8 U	6.4 J	11.3	4.8 U	8.6 J	4.8 U	9.3 J	4.8 U
7440-23-5	Sodium	UG/L	45200	211000	80400	105000	83200	147000	84900	117000
	OTHER									
BROMIDE	Bromide	MG/L								
TIC	Total Inorganic Carbon	MG/L		90.2						
TOC	Total Organic Carbon	MG/L		10.9						
16887-00-6	Chloride	MG/L	96.1	475	134	169	126	237	163	133
14797-55-8	Nitrate Nitrogen	MG/L	0.5 U	0.53	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ORTHO	Orthophosphate as Phosphate	MG/L	0.021	0.051	0.023	0.023	0.036	0.018	0.036	0.042
14808-79-8	Sulfate	MG/L	1460	630	923	1060	960	1080	875	1540
SULFIDE	Sulfide	MG/L	32.8	25.4	1 U	2.5	1 U	1.6	18	2.1
127-17-3	Pyruvic Acid	MG/L		0.5 U						
64-19-7	Acetic Acid	MG/L		1 U						
107-92-6	Butyric Acid	MG/L		2 U						
50-21-5	Lactic Acid	MG/L		1 U						
79-09-4	Propionic Acid	MG/L		1 U						

Dup of MW-20D

EKONOL FACILITY Validated Groundwater Analytical Results Wheatfield, New York SDG: R0902995		Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	MW-19D R0902995-004 Columbia R0902995 WATER 5/27/2009 7/9/2009	MW-20D R0902995-005 Columbia R0902995 WATER 5/27/2009 7/9/2009	MW-200D R0902995-011 Columbia R0902995 WATER 5/27/2009 7/9/2009	MW-21D R0902995-006 Columbia R0902995 WATER 5/27/2009 7/9/2009
CAS NO.	COMPOUND	UNITS:				
	VOLATILES					
71-55-6	1,1,1-Trichloroethane	UG/L	5 U	93 J	92 J	2 J
75-34-3	1,1-Dichloroethane	UG/L	1.7 J	66 J	68 J	2.1 J
75-35-4	1,1-Dichloroethene	UG/L	5 U	22 J	20 J	0.67 J
75-00-3	Chloroethane	UG/L	5 U	100 U	100 U	5 U
127-18-4	Tetrachloroethene	UG/L	5 U	100 U	100 U	5 U
79-01-6	Trichloroethene	UG/L	5 U	26 J	24 J	0.67 J
75-01-4	Vinyl Chloride	UG/L	10	1300	1300	48
156-59-2	cis-1,2-Dichloroethene	UG/L	58	3100	3000	110
156-60-5	trans-1,2-Dichloroethene	UG/L	5 U	12 J	11 J	0.63 J
74-84-0	Ethane	UG/L	1 U	1	1 U	1 U
74-85-1	Ethene	UG/L	1 U	6	5.9	4
74-82-8	Methane	UG/L	23	31	31	40
	METALS, DISSOLVED					
7429-90-5	Aluminum	UG/L	16.3 U	22.7 J		26.7 J
7440-38-2	Arsenic	UG/L	3.2 U	3.3 J		3.2 U
7440-70-2	Calcium	UG/L	497000	185000		337000
7439-89-6	Iron	UG/L	3010	7.7 U		623
7439-95-4	Magnesium	UG/L	747000	75100		161000
7439-96-5	Manganese	UG/L	95.3	130		235
7440-09-7	Potassium	UG/L	4220	2260		3100
7782-49-2	Selenium	UG/L	4.8 U	5 J		4.8 U
7440-23-5	Sodium	UG/L	169000	67900		68300
	OTHER					
BROMIDE	Bromide	MG/L		1 U		1 U
TIC	Total Inorganic Carbon	MG/L				
TOC	Total Organic Carbon	MG/L		2.9		4.8
16887-00-6	Chloride	MG/L	187	104		61
14797-55-8	Nitrate Nitrogen	MG/L	0.5 U	0.5 U		0.5 U
ORTHO	Orthophosphate as Phosphate	MG/L	0.069	0.032		0.05
14808-79-8	Sulfate	MG/L	3710	558		1170
SULFIDE	Sulfide	MG/L	1 U	3.1		1 U
127-17-3	Pyruvic Acid	MG/L		0.5 U		0.5 U
64-19-7	Acetic Acid	MG/L		1 U		1 U
107-92-6	Butyric Acid	MG/L		2 U		2 U
50-21-5	Lactic Acid	MG/L		1 U		1 U
79-09-4	Propionic Acid	MG/L		1 U		1 U

EKONOL FACILITY Validated Groundwater Analytical Results Wheatfield, New York SDG: R0903075		Sample ID: Lab Sample ID: Source: SDG: Matrix: Sampled: Validated:	MW- 2S R0903075-009 Columbia R0903075 WATER 6/2/2009 7/10/2009	MW- 3S R0903075-005 Columbia R0903075 WATER 6/1/2009 7/10/2009	MW- 4S R0903075-010 Columbia R0903075 WATER 6/2/2009 7/10/2009	MW- 5S R0903075-001 Columbia R0903075 WATER 6/1/2009 7/10/2009	MW- 7D R0903075-011 Columbia R0903075 WATER 6/2/2009 7/10/2009	MW- 7S R0903075-008 Columbia R0903075 WATER 6/1/2009 7/10/2009	MW- 9S ⁽¹⁾ R0903075-006 Columbia R0903075 WATER 6/1/2009 7/10/2009	PMW-1D R0903075-014 Columbia R0903075 WATER 6/2/2009 7/10/2009
CAS NO.	COMPOUND	UNITS:								
	VOLATILES									
71-55-6	1,1,1-Trichloroethane	UG/L	5000 U	5 U	5 U	5 U	500 U	5 U	R	5000 U
75-34-3	1,1-Dichloroethane	UG/L	5000 U	5 U	0.72 J	5 U	53 J	5 U	R	5000 U
75-35-4	1,1-Dichloroethene	UG/L	660 J	5 U	5 U	5 U	44 J	5 U	R	5000 U
75-00-3	Chloroethane	UG/L	5000 U	5 U	5 U	5 U	500 U	5 U	R	5000 U
127-18-4	Tetrachloroethene	UG/L	5000 U	5 U	5 U	5 U	500 U	5 U	R	5000 U
79-01-6	Trichloroethene	UG/L	31000	2.2 J	1.5 J	5 U	1600	6.9	R	53000
75-01-4	Vinyl Chloride	UG/L	28000	2 U	93	15	1200	2 U	R	3400
156-59-2	cis-1,2-Dichloroethene	UG/L	230000	1.5 J	23	0.85 J	19000	0.75 J	R	97000
156-60-5	trans-1,2-Dichloroethene	UG/L	1700 J	5 U	1.4 J	5 U	68 J	5 U	R	5000 U
74-84-0	Ethane	UG/L	40	1 U	15	1.6	7.8	1 U	R	18
74-85-1	Ethene	UG/L	390	1 U	24	1 U	18	1 U	R	23
74-82-8	Methane	UG/L	210	3.7	200	38	380	5.7	R	190
	METALS, DISSOLVED									
7429-90-5	Aluminum	UG/L	14.9 U	14.9 U	14.9 U	14.9 U	14.9 U	14.9 U	R	17.2 J
7440-38-2	Arsenic	UG/L	4.5 J	3.2 U	3.2 U	5.1 J	3.2 U	3.2 U	R	3.5 J
7440-70-2	Calcium	UG/L	405000	391000	407000	305000	343000	678000	R	356000
7439-89-6	Iron	UG/L	4390	832	671	1160	43 J	122	R	66.1 J
7439-95-4	Magnesium	UG/L	289000	474000	879000	184000	408000	463000	R	266000
7439-96-5	Manganese	UG/L	2090	267	819	235	435	489	R	295
7440-09-7	Potassium	UG/L	2740	5640	4500	2840	4940	3870	R	7310
7782-49-2	Selenium	UG/L	4.8 U	4.8 U	4.8 U	6 J	4.8 U	4.8 U	R	4.8 U
7440-23-5	Sodium	UG/L	371000	468000	232000	147000	393000	164000	R	285000
	OTHER									
BROMIDE	Bromide	MG/L					2.2			1.8
TIC	Total Inorganic Carbon	MG/L	162		179		296			150
TOC	Total Organic Carbon	MG/L	7.5		6.2		124			49.3
16887-00-6	Chloride	MG/L	1070	660	230	349	601	1050	R	531
14797-55-8	Nitrate Nitrogen	MG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	R	0.5 U
ORTHO	Orthophosphate as Phosphate	MG/L	0.038	0.036	0.061	0.014	0.6	0.033	R	0.213
14808-79-8	Sulfate	MG/L	1120	2680	3750	1110	1210	2070	R	1380
SULFIDE	Sulfide	MG/L	0.98 U	1 U	1.7	0.98 U	304	1 U	R	63.9
SULFIDE-AS	Sulfide, Acid-soluble	MG/L								
127-17-3	Pyruvic Acid	MG/L			0.5 U		0.5 U			0.5 U
64-19-7	Acetic Acid	MG/L			1 U		180			47
107-92-6	Butyric Acid	MG/L			2 U		6			7.3
50-21-5	Lactic Acid	MG/L			1 U		1 U			1 U
79-09-4	Propionic Acid	MG/L			1 U		3			6.2

(1) - Samples from this location were not collected based upon field sampling oversight. Analytical results from the laboratory are rejected.

EKONOL FACILITY		Sample ID:	PMW-2D	PMW-3D	PMW-4D	PMW-5D	PMW-7D	Dup of PMW-7D	PMW-8D	RMW-2D
Validated Groundwater Analytical Results		Lab Sample ID:	R0903075-016	R0903075-020	R0903075-022	R0903075-017	R0903075-024	R0903075-025	R0903075-015	R0903075-002
Wheatfield, New York		Source:	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia
SDG: R0903075		SDG:	R0903075	R0903075	R0903075	R0903075	R0903075	R0903075	R0903075	R0903075
		Matrix:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Sampled:	6/2/2009	6/3/2009	6/3/2009	6/3/2009	6/4/2009	6/4/2009	6/2/2009	6/1/2009
		Validated:	7/10/2009	7/10/2009	7/10/2009	7/10/2009	7/10/2009	7/10/2009	7/10/2009	7/10/2009
CAS NO.	COMPOUND	UNITS:								
	VOLATILES									
71-55-6	1,1,1-Trichloroethane	UG/L	2500 U	250 U	1000 U	1000 U	2500 U	1300 U	1000 U	5000 U
75-34-3	1,1-Dichloroethane	UG/L	2500 U	250 U	1000 U	1000 U	2500 U	110 J	1000 U	5000 U
75-35-4	1,1-Dichloroethene	UG/L	2500 U	250 U	1000 U	1000 U	2500 U	120 J	1000 U	5000 U
75-00-3	Chloroethane	UG/L	2500 U	250 U	1000 U	1000 U	2500 U	1300 U	1000 U	5000 U
127-18-4	Tetrachloroethene	UG/L	2500 U	250 U	1000 U	1000 U	2500 U	1300 U	400 J	1600 J
79-01-6	Trichloroethene	UG/L	3600	1200	11000	2100	2600	2400	26000	180000
75-01-4	Vinyl Chloride	UG/L	1400	250	1100	760	6300 J	9600 J	1200	2000 U
156-59-2	cis-1,2-Dichloroethene	UG/L	61000	9900	65000	27000	50000	48000	21000	49000
156-60-5	trans-1,2-Dichloroethene	UG/L	2500 U	29 J	180 J	1000 U	2500 U	170 J	1000 U	5000 U
74-84-0	Ethane	UG/L	14	27	11	29	9.9	11	8	83
74-85-1	Ethene	UG/L	50	34	30	40	120	180	39	12
74-82-8	Methane	UG/L	390	580	150	180	2900	3900	400	390
	METALS, DISSOLVED									
7429-90-5	Aluminum	UG/L	40.5 J	20.2 J	14.9 U	35.4 J	29.5 J		14.9 U	14.9 U
7440-38-2	Arsenic	UG/L	6.9 J	4.1 J	6.9 J	5.3 J	4.8 J		5.5 J	5.5 J
7440-70-2	Calcium	UG/L	227000	393000	485000	328000	265000		431000	405000
7439-89-6	Iron	UG/L	7910	56.2 J	32.2 J	75.1 J	70.3 J		56.7 J	41.6 J
7439-95-4	Magnesium	UG/L	172000	134000	434000	149000	202000		417000	134000
7439-96-5	Manganese	UG/L	735	93.7	233	272	349		346	167
7440-09-7	Potassium	UG/L	11800	22700	4810	8720	66600		10000	4350
7782-49-2	Selenium	UG/L	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U		4.8 U	4.8 U
7440-23-5	Sodium	UG/L	1330000	184000	235000	371000	345000		704000	110000
	OTHER									
BROMIDE	Bromide	MG/L	7.3	1.9	2.5	3.9	3.8		2.5	1.7
TIC	Total Inorganic Carbon	MG/L	61.5	181	213	235	65.4		261	112
TOC	Total Organic Carbon	MG/L	723	240	105	306	483		166	29.7
16887-00-6	Chloride	MG/L	2110	297	262	604	282		1130	249
14797-55-8	Nitrate Nitrogen	MG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U
ORTHO	Orthophosphate as Phosphate	MG/L	0.33	0.173	0.177	0.303	0.256		0.229	0.05
14808-79-8	Sulfate	MG/L	71.8	817	2000	179	42.4		1810	1190
SULFIDE	Sulfide	MG/L		166	173	176	268		191	53.8
SULFIDE-AS	Sulfide, Acid-soluble	MG/L	53.2							
127-17-3	Pyruvic Acid	MG/L	0.5 U	0.5 U	0.5 U	1.3 U	2.5 U		0.5 U	0.5 U
64-19-7	Acetic Acid	MG/L	710	200	160	440	920		160	12
107-92-6	Butyric Acid	MG/L	240	20	5.7	55	76		28	2.4
50-21-5	Lactic Acid	MG/L	2.9	1 U	1 U	2.5 U	5 U		1 U	1 U
79-09-4	Propionic Acid	MG/L	230	31	8.9	97	70		25	3

(1) - Samples from this location were not collected based upon field sampling oversight. Analytical results from the laboratory are rejected.

			Dup of RMW-2D								
Ekono1 Facility Validated Groundwater Analytical Results Wheatfield, New York SDG: R0903075			Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	RMW-200D R0903075-003 Columbia R0903075 WATER 6/1/2009 7/10/2009	RMW-3D R0903075-007 Columbia R0903075 WATER 6/1/2009 7/10/2009	RMW-4D R0903075-018 Columbia R0903075 WATER 6/3/2009 7/10/2009	RWD-1D R0903075-013 Columbia R0903075 WATER 6/2/2009 7/10/2009	TS-INJ-02 R0903075-023 Columbia R0903075 WATER 6/3/2009 7/10/2009	TS-INJ-04 R0903075-021 Columbia R0903075 WATER 6/3/2009 7/10/2009	TRIP BLANK-1 R0903075-012 Columbia R0903075 WATER 6/1/2009 7/10/2009	TRIP BLANK-2 R0903075-019 Columbia R0903075 WATER 6/1/2009 7/10/2009
CAS NO.	COMPOUND	UNITS:									
VOLATILES											
71-55-6	1,1,1-Trichloroethane	UG/L	5000 U	110	12 J	5 U	2500 U	2500 U	5 U	5 U	
75-34-3	1,1-Dichloroethane	UG/L	5000 U	8 J	100 U	5 U	2500 U	2500 U	5 U	5 U	
75-35-4	1,1-Dichloroethene	UG/L	5000 U	3.2 J	100 U	5 U	2500 U	2500 U	5 U	5 U	
75-00-3	Chloroethane	UG/L	5000 U	13 U	100 U	5 U	2500 U	2500 U	5 U	5 U	
127-18-4	Tetrachloroethene	UG/L	1400 J	13 U	9.4 J	5 U	2500 U	2500 U	5 U	5 U	
79-01-6	Trichloroethene	UG/L	160000	3.2 J	620	3.2 J	5300	14000	5 U	5 U	
75-01-4	Vinyl Chloride	UG/L	2000 U	21	95	0.86 J	8400	1900	2 U	2 U	
156-59-2	cis-1,2-Dichloroethene	UG/L	52000	300	2800	7.4	75000	120000	5 U	5 U	
156-60-5	trans-1,2-Dichloroethene	UG/L	5000 U	13 U	12 J	5 U	2500 U	2500 U	5 U	5 U	
74-84-0	Ethane	UG/L	87	1 U	32	15	13	9.7	1 U	1 U	
74-85-1	Ethene	UG/L	10	1.1	7	1 U	630	80	1 U	1 U	
74-82-8	Methane	UG/L	410	12	510	63	4400	220	2 U	2 U	
METALS, DISSOLVED											
7429-90-5	Aluminum	UG/L		21.9 J	20.6 J	18.8 J	31 J	25.1 J			
7440-38-2	Arsenic	UG/L		3.7 J	3.2 U	3.3 J	4.2 J	3.2 J			
7440-70-2	Calcium	UG/L		262000	375000	269000	229000	299000			
7439-89-6	Iron	UG/L		485	72.3 J	660	595	509			
7439-95-4	Magnesium	UG/L		107000	124000	85600	118000	193000			
7439-96-5	Manganese	UG/L		238	142	243	548	712			
7440-09-7	Potassium	UG/L		3030	21400	3150	8970	6520			
7782-49-2	Selenium	UG/L		4.8 U	5.9 J	4.8 U	5 J	4.8 U			
7440-23-5	Sodium	UG/L		113000	205000	97300	629000	515000			
OTHER											
BROMIDE	Bromide	MG/L	1.8		2	1 U	1 U	4.3			
TIC	Total Inorganic Carbon	MG/L		69.6	189	74.6	202	75.6			
TOC	Total Organic Carbon	MG/L	31.1	3.3	160	3.3	297	637			
16887-00-6	Chloride	MG/L		191	319	175	1130	836			
14797-55-8	Nitrate Nitrogen	MG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
ORTHO	Orthophosphate as Phosphate	MG/L		0.023	0.325	0.011	0.3	0.358			
14808-79-8	Sulfate	MG/L		802	572	758	62.7	56.7			
SULFIDE	Sulfide	MG/L		1 U	247	1.69	97.8	158			
SULFIDE-AS	Sulfide, Acid-soluble	MG/L									
127-17-3	Pyruvic Acid	MG/L	0.5 U		0.5 U	0.5 U	1.3 U	5 U			
64-19-7	Acetic Acid	MG/L	12		230	1 U	410	700			
107-92-6	Butyric Acid	MG/L	2 U		14	2 U	68	180			
50-21-5	Lactic Acid	MG/L	1 U		1 U	1 U	2.5	10 U			
79-09-4	Propionic Acid	MG/L	3		29	1 U	84	180			

(1) - Samples from this location were not collected based upon field sampling oversight. Analytical results from the laboratory are rejected.

Ekono1 Facility Validated Groundwater Analytical Results Wheatfield, New York SDG: R0903075		Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	TRIP BLANK-3 R0903075-026 Columbia R0903075 WATER 6/3/2009 7/10/2009
CAS NO.	COMPOUND	UNITS:	
	VOLATILES		
71-55-6	1,1,1-Trichloroethane	UG/L	5 U
75-34-3	1,1-Dichloroethane	UG/L	5 U
75-35-4	1,1-Dichloroethene	UG/L	5 U
75-00-3	Chloroethane	UG/L	5 U
127-18-4	Tetrachloroethene	UG/L	5 U
79-01-6	Trichloroethene	UG/L	5 U
75-01-4	Vinyl Chloride	UG/L	2 U
156-59-2	cis-1,2-Dichloroethene	UG/L	5 U
156-60-5	trans-1,2-Dichloroethene	UG/L	5 U
74-84-0	Ethane	UG/L	
74-85-1	Ethene	UG/L	
74-82-8	Methane	UG/L	
	METALS, DISSOLVED		
7429-90-5	Aluminum	UG/L	
7440-38-2	Arsenic	UG/L	
7440-70-2	Calcium	UG/L	
7439-89-6	Iron	UG/L	
7439-95-4	Magnesium	UG/L	
7439-96-5	Manganese	UG/L	
7440-09-7	Potassium	UG/L	
7782-49-2	Selenium	UG/L	
7440-23-5	Sodium	UG/L	
	OTHER		
BROMIDE	Bromide	MG/L	
TIC	Total Inorganic Carbon	MG/L	
TOC	Total Organic Carbon	MG/L	
16887-00-6	Chloride	MG/L	
14797-55-8	Nitrate Nitrogen	MG/L	
ORTHO	Orthophosphate as Phosphate	MG/L	
14808-79-8	Sulfate	MG/L	
SULFIDE	Sulfide	MG/L	
SULFIDE-AS	Sulfide, Acid-soluble	MG/L	
127-17-3	Pyruvic Acid	MG/L	
64-19-7	Acetic Acid	MG/L	
107-92-6	Butyric Acid	MG/L	
50-21-5	Lactic Acid	MG/L	
79-09-4	Propionic Acid	MG/L	

(1) - Samples from this location were not collected based upon field sampling oversight. Analytical results from the laboratory are rejected.

Dup of PMW-6D

EkonoI Facility Validated Groundwater Analytical Results Wheatfield, New York SDG: R0903171		Sample ID: Lab Sample Id:	MW-7D PUMP R0903171-015	MW-7D SNAP R0903171-016	PMW-600D R0903171-005	PMW-6D R0903171-003	PMW-7D PUMP R0903171-013	PMW-7D SNAP R0903171-014	RMW-4D PUMP R0903171-011	RMW-4D SNAP R0903171-012
		Source:	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia
		SDG:	R0903171	R0903171	R0903171	R0903171	R0903171	R0903171	R0903171	R0903171
		Matrix:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Sampled:	6/5/2009	6/5/2009	6/4/2009	6/4/2009	6/5/2009	6/5/2009	6/4/2009	6/5/2009
		Validated:	7/10/2009	7/10/2009	7/10/2009	7/10/2009	7/10/2009	7/10/2009	7/10/2009	7/10/2009
CAS NO.	COMPOUND	UNITS:								
	VOLATILES									
71-55-6	1,1,1-Trichloroethane	UG/L	42 J	1300 U	43 J	34 J	2500 U	2500 U	250 U	250 U
75-34-3	1,1-Dichloroethane	UG/L	75 J	60 J	500 U	500 U	180 J	130 J	250 U	250 U
75-35-4	1,1-Dichloroethene	UG/L	37 J	1300 U	500 U	500 U	2500 U	2500 U	250 U	250 U
75-00-3	Chloroethane	UG/L	500 U	1300 U	500 U	500 U	2500 U	2500 U	250 U	250 U
127-18-4	Tetrachloroethene	UG/L	53 J	1300 U	500 U	500 U	2500 U	2500 U	250 U	250 U
79-01-6	Trichloroethene	UG/L	2200	1800	140 J	110 J	3500	3600	1300	1200
75-01-4	Vinyl Chloride	UG/L	1200	680	390	650 J	6600	3000	110	82 J
156-59-2	cis-1,2-Dichloroethene	UG/L	26000	21000	11000	11000	86000	73000	4900	5200
156-60-5	trans-1,2-Dichloroethene	UG/L	79 J	65 J	43 J	53 J	220 J	190 J	16 J	16 J
74-84-0	Ethane	UG/L	5.6 J	6.9 J	12	8.9	10 UJ	10 UJ	27	31 J
74-85-1	Ethene	UG/L	10 J	15 J	15 J	53 J	30 J	29 J	19 J	9.7 J
74-82-8	Methane	UG/L	200 J	220 J	15	23	640 J	590 J	270	240 J
	METALS, DISSOLVED									
7429-90-5	Aluminum	UG/L				31.9 J				
7440-38-2	Arsenic	UG/L				8.1 J				
7440-70-2	Calcium	UG/L				124000				
7439-89-6	Iron	UG/L				61.9 J				
7439-95-4	Magnesium	UG/L				22600				
7439-96-5	Manganese	UG/L				162				
7440-09-7	Potassium	UG/L				37400				
7782-49-2	Selenium	UG/L				7 J				
7440-23-5	Sodium	UG/L				419000				
	OTHER									
BROMIDE	Bromide	MG/L				1 U				
TIC	Total Inorganic Carbon	MG/L				37.6				
TOC	Total Organic Carbon	MG/L				199				
16887-00-6	Chloride	MG/L				671				
14797-55-8	Nitrate Nitrogen	MG/L				0.5 U				
ORTHO	Orthophosphate as Phosphate	MG/L				0.278				
14808-79-8	Sulfate	MG/L				12.9				
SULFIDE	Sulfide	MG/L				40.5				
SULFIDE-AS	Sulfide, Acid-soluble	MG/L								
127-17-3	Pyruvic Acid	MG/L				0.5 U				
64-19-7	Acetic Acid	MG/L				320				
107-92-6	Butyric Acid	MG/L				21				
50-21-5	Lactic Acid	MG/L				1 U				
79-09-4	Propionic Acid	MG/L				2.8				

EKONOL FACILITY Validated Groundwater Analytical Results Wheatfield, New York SDG: R0903171		Sample ID: Lab Sample Id:	TS-INJ-01 R0903171-008	TS-INJ-05 R0903171-001	TRIP BLANK R0903171-017
		Source:	Columbia	Columbia	Columbia
		SDG:	R0903171	R0903171	R0903171
		Matrix:	WATER	WATER	WATER
		Sampled:	6/4/2009	6/4/2009	6/4/2009
		Validated:	7/10/2009	7/10/2009	7/10/2009
CAS NO.	COMPOUND	UNITS:			
	VOLATILES				
71-55-6	1,1,1-Trichloroethane	UG/L	1300 U	2500 U	5 U
75-34-3	1,1-Dichloroethane	UG/L	110 J	2500 U	5 U
75-35-4	1,1-Dichloroethene	UG/L	260 J	280 J	5 U
75-00-3	Chloroethane	UG/L	1300 U	2500 U	5 U
127-18-4	Tetrachloroethene	UG/L	130 J	1100 J	5 U
79-01-6	Trichloroethene	UG/L	17000	300000	5 U
75-01-4	Vinyl Chloride	UG/L	3600	2000	2 U
156-59-2	cis-1,2-Dichloroethene	UG/L	110000	110000	5 U
156-60-5	trans-1,2-Dichloroethene	UG/L	330 J	340 J	5 U
74-84-0	Ethane	UG/L	9.2	55	1 U
74-85-1	Ethene	UG/L	140	740	1 UJ
74-82-8	Methane	UG/L	250	130	2 U
	METALS, DISSOLVED				
7429-90-5	Aluminum	UG/L	19.3 J	14.9 U	
7440-38-2	Arsenic	UG/L	3.2 U	3.2 U	
7440-70-2	Calcium	UG/L	306000	338000	
7439-89-6	Iron	UG/L	376	3310	
7439-95-4	Magnesium	UG/L	211000	261000	
7439-96-5	Manganese	UG/L	698	866	
7440-09-7	Potassium	UG/L	6510	7240	
7782-49-2	Selenium	UG/L	5.4 J	4.8 U	
7440-23-5	Sodium	UG/L	439000	410000	
	OTHER				
BROMIDE	Bromide	MG/L	3.3	3.1	
TIC	Total Inorganic Carbon	MG/L	388	339	
TOC	Total Organic Carbon	MG/L	515	639	
16887-00-6	Chloride	MG/L	739	658	
14797-55-8	Nitrate Nitrogen	MG/L	0.5 U	0.5 U	
ORTHO	Orthophosphate as Phosphate	MG/L	0.397	0.145	
14808-79-8	Sulfate	MG/L	311	718	
SULFIDE	Sulfide	MG/L	102		
SULFIDE-AS	Sulfide, Acid-soluble	MG/L		81.4	
127-17-3	Pyruvic Acid	MG/L	2.5 U	5 U	
64-19-7	Acetic Acid	MG/L	570	480	
107-92-6	Butyric Acid	MG/L	130	160	
50-21-5	Lactic Acid	MG/L	5 U	10 U	
79-09-4	Propionic Acid	MG/L	140	150	

Ekono1 Facility Validated Non-Aqueous Analytical Results Wheatfield, New York SDG: R0903171		Sample ID: Lab Sample Id Source: SDG: Matrix: Sampled: Validated:	PMW-4D R0903171-018 Columbia R0903171 NONAQ LIQUID 6/4/2009 7/10/2009
CAS NO.	COMPOUND	UNITS:	
	VOLATILES		
71-55-6	1,1,1-Trichloroethane	UG/KG	3000
75-34-3	1,1-Dichloroethane	UG/KG	260 J
75-35-4	1,1-Dichloroethene	UG/KG	580 J
75-00-3	Chloroethane	UG/KG	2500 U
127-18-4	Tetrachloroethene	UG/KG	8200
79-01-6	Trichloroethene	UG/KG	230000 J
75-01-4	Vinyl Chloride	UG/KG	2400 J
156-59-2	cis-1,2-Dichloroethene	UG/KG	270000 J
156-60-5	trans-1,2-Dichloroethene	UG/KG	1600 J



2340 Stock Creek Blvd.
Rockford TN 37853-3044
Phone: (865) 573-8188
Fax: (865) 573-8133
Email: info@microbe.com

Client: George Hermance
Parsons Engineering Science
40 Lariviere Drive
Suite 350
Buffalo, NY 14202

Phone: 716.541.0730

Fax: 716.541.0760

Identifier: 007GF

Date Rec: 06/03/2009

Report Date: 06/10/2009

Client Project #: 445144.02000

Client Project Name: BP-Ekonol

Purchase Order #:

Analysis Requested: CENSUS

Comments:

Reviewed By:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Client: Parsons Engineering Science
Project: BP-Ekonol

MI Project Number: 007GF
Date Received: 06/03/2009

Sample Information

Client Sample ID:	MW-2S	MW-4S	RMW-4D	PMW-5D	TS-INJ-04
Sample Date:	06/02/2009	06/02/2009	06/03/2009	06/03/2009	06/03/2009
Units:	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst:	ab	ab	ab	ab	ab

Dechlorinating Bacteria

Dehalococcoides spp.	DHC	4.02E+05	5.70E+03	4.20E+00	5.04E+01	1.25E+03
Dehalobacter spp.	DHB	6.19E+03	8.02E+03	2.92E+03	7.61E+03	3.18E+03

Functional Genes

tceA Reductase	TCE	5.25E+01	2.11E+01	4.00E-01	1.21E+01	3.70E+02
bvcA Reductase	BVC	2.87E+05	6.17E+01	1.71E+01	9.99E+01	2.01E+03
Vinyl Chloride Reductase	VCR	3.12E+02	2.25E+03	6.40E+00	1.42E+02	1.73E+03

Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
 < = Result not detected

Client: Parsons Engineering Science
Project: BP-Ekonol

MI Project Number: 007GF
Date Received: 06/03/2009

Sample Information

Client Sample ID:	PMW-4D	TS-INJ-02	PMW-7D	PMW-6D	TS-INJ-05
Sample Date:	06/03/2009	06/03/2009	06/04/2009	06/04/2009	06/04/2009
Units:	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst:	ab	ab	ab	ab	ab

Dechlorinating Bacteria

		PMW-4D	TS-INJ-02	PMW-7D	PMW-6D	TS-INJ-05
Dehalococcoides spp.	DHC	4.10E+01	3.86E+04	7.75E+02	9.65E+03	3.00E+03
Dehalobacter spp.	DHB	3.68E+03	5.60E+03	2.60E+03	2.49E+03	1.63E+04

Functional Genes

		PMW-4D	TS-INJ-02	PMW-7D	PMW-6D	TS-INJ-05
tceA Reductase	TCE	4.50E+00	1.28E+03	4.43E+01	8.60E+00	3.08E+02
bvcA Reductase	BVC	1.33E+02	8.31E+04	1.85E+03	1.96E+04	5.48E+03
Vinyl Chloride Reductase	VCR	5.19E+01	2.27E+04	2.28E+02	5.38E+03	2.43E+03

Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
 < = Result not detected

Client: Parsons Engineering Science
Project: BP-Ekonol**MI Project Number:** 007GF
Date Received: 06/03/2009**Sample Information**

Client Sample ID:	TS-INJ-01
Sample Date:	06/04/2009
Units:	cells/mL
Analyst:	ab

Dechlorinating Bacteria

Dehalococcoides spp.	DHC	1.30E+02
Dehalobacter spp.	DHB	1.67E+03

Functional Genes

tceA Reductase	TCE	1.88E+01
bvcA Reductase	BVC	2.45E+02
Vinyl Chloride Reductase	VCR	1.20E+02

Legend:NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected



Client Name: Parsons
Contact: George Hermance
Address: 40 La Riviere Drive
Suite 350
Buffalo, NY 14202

Page: Page 1 of 2
Lab Proj #: P0906079
Report Date: 06/19/09
Client Proj Name: Ekonol 443970
Client Proj #: 445144.02000

Laboratory Results

Total pages in data package: 3

Lab Sample #
P0906079-01

Client Sample ID
PMW-7D

Microseeps test results meet all the requirements of the NELAC standards or provide reasons and/or justification if they do not

Approved By: Debbie Hallo Date: 6-22-09

Project Manager: Debbie Hallo

The analytical results reported here are reliable and usable to the precision expressed in this report. As required by some regulating authorities, a full discussion of the uncertainty in our analytical results can be obtained at our web site or through customer service. Unless otherwise specified, all results are reported on a wet weight basis.

*As a valued client we would appreciate your comments on our service
Please call customer service at (412)826-5245 or email customerservice@microseeps.com.*

Case Narrative:

Client Name: Parsons
 Contact: George Hermance
 Address: 40 La Riviere Drive
 Suite 350
 Buffalo, NY 14202

Page: Page 2 of 2
 Lab Proj #: P0906079
 Report Date: 06/19/09
 Client Proj Name: Ekonol 443970
 Client Proj #: 445144.02000

<u>Sample Description</u>	<u>Matrix</u>	<u>Lab Sample #</u>	<u>Sampled Date/Time</u>	<u>Received</u>		
PMW-7D	Vapor	P0906079-01	04 Jun. 09 15:00	05 Jun. 09 12:24		
<u>Analyte(s)</u>	<u>Result</u>	<u>PQL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date</u>	<u>By</u>
<u>RiskAnalysis</u>						
N Acetylene	<1.000	1.000	ug/L	AM20GAX	6/17/09	sl
N Ethane	5.400	0.010	ug/L	AM20GAX	6/17/09	sl
N Ethene	70.000	0.010	ug/L	AM20GAX	6/17/09	sl
N Hydrogen	3.000	0.600	nM	AM20GAX	6/17/09	sl
N Methane	1100.000	0.015	ug/L	AM20GAX	6/17/09	sl



Lab Name: Marzo Seeps

Lab Address: 220 WASHINGTON RENT WAY PORTSOUTH, PA 15258

Lab PM: _____

Lab Phone: _____

Lab Shipping Acct: _____

Lab Bottle Order No: _____

Other Info: _____

BP/ARC EBM: BILL GAEBER

EBM Phone: 216-271-8038

EBM Email: WILLIAM.BAAR@BP.COM

BP/ARC Facility Address: 6600 WILMARE ROAD

City, State, ZIP Code: WHEATFIELD, NY

Lead Regulatory Agency: NYSOBC

California Global ID No.: _____

Enfos Proposal No: _____

Accounting Mode: Provision OOC-BU OOC-RM

Stage: _____ Activity: _____

Matrix

No. Containers / Preservative

Requested Analyses

Report Type & QC Level

Standard Full Data Package

Contractor

Consultant/Contractor: PARSONS

Consultant/Contractor Project No: 445144

Address: 40 LAKEVIEW DR, STE 300 BUFFALO, NY 14202

Consultant/Contractor Pnt: GEORGE HEINWALDE

Phone: 716-541-0730

Email EDD To: GEORGE.HEINWALDE@PARSONS.COM

Invoice To: BP/ARC

Notes: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	TRISOLIUM PHOSPHATE	LIGHT GASES	DISSOLVED HYDROGEN	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time	Comments
	PMU-7D	6/4/09	1500		X	X	2	X					X	X	X	Shirley S. ...	6/4/09	1600	[Signature]	6/5	1600	

Sampler's Name: ETHAN SHAPIRO

Sampler's Company: PARSONS

Shipment Method: Fed Ex Ship Date: 6/4/09

Shipment Tracking No: _____

Special Instructions: NOTE - WATER WAS OBSERVED ~ WHICH IMPROVED THE VOLUME OF GAS IN THE BOTTLE CALL THE SUPERVISOR OF QUESTIONS 716-523-8293

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No Temp Blank: Yes / No Cooler Temp on Receipt: °F/C Trip Blank: Yes / No MS/MSD Sample Submitted: Yes / No



Client Name: Parsons
Contact: George Hermance
Address: 40 La Riviere Drive
Suite 350
Buffalo, NY 14202

Page: Page 1 of 4
Lab Proj #: P0906050
Report Date: 06/18/09
Client Proj Name: Ekonol 443970
Client Proj #: 445144.02000

Laboratory Results

Total pages in data package: 5

<u>Lab Sample #</u>	<u>Client Sample ID</u>
P0906050-01	RMW-4D
P0906050-02	PMW-3D
P0906050-03	PMW-4D

Microseeps test results meet all the requirements of the NELAC standards or provide reasons and/or justification if they do not.

Approved By: Debbie Hallo **Date:** 6-18-09

Project Manager: Debbie Hallo

The analytical results reported here are reliable and usable to the precision expressed in this report. As required by some regulating authorities, a full discussion of the uncertainty in our analytical results can be obtained at our web site or through customer service. Unless otherwise specified, all results are reported on a wet weight basis.

*As a valued client we would appreciate your comments on our service.
Please call customer service at (412)826-5245 or email customerservice@microseeps.com.*

Case Narrative:

Client Name: Parsons
 Contact: George Hermance
 Address: 40 La Riviere Drive
 Suite 350
 Buffalo, NY 14202

Page: Page 2 of 4
 Lab Proj #: P0906050
 Report Date: 06/18/09
 Client Proj Name: Ekonol 443970
 Client Proj #: 445144.02000

<u>Sample Description</u>	<u>Matrix</u>	<u>Lab Sample #</u>	<u>Sampled Date/Time</u>	<u>Received</u>		
RMW-4D	Vapor	P0906050-01	03 Jun. 09 12:00	04 Jun. 09 10:09		
<u>Analyte(s)</u>	<u>Result</u>	<u>PQL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date</u>	<u>By</u>
<u>RiskAnalysis</u>						
N Acetylene	20.000	1.000	ug/L	AM20GAX	6/16/09	sl
N Ethane	21.000	0.010	ug/L	AM20GAX	6/16/09	sl
N Ethene	7.400	0.010	ug/L	AM20GAX	6/16/09	sl
N Hydrogen	5.700	0.600	nM	AM20GAX	6/16/09	sl
N Methane	330.000	0.015	ug/L	AM20GAX	6/16/09	sl



Client Name: Parsons
 Contact: George Hermance
 Address: 40 La Riviere Drive
 Suite 350
 Buffalo, NY 14202

Page: Page 3 of 4
 Lab Proj #: P0906050
 Report Date: 06/18/09
 Client Proj Name: Ekonol 443970
 Client Proj #: 445144.02000

<u>Sample Description</u>	<u>Matrix</u>	<u>Lab Sample #</u>	<u>Sampled Date/Time</u>	<u>Received</u>		
PMW-3D	Vapor	P0906050-02	03 Jun. 09 14:55	04 Jun. 09 10:09		
<u>Analyte(s)</u>	<u>Result</u>	<u>PQL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date</u>	<u>By</u>
<u>RiskAnalysis</u>						
N Acetylene	120.000	1.000	ug/L	AM20GAX	6/16/09	sl
N Ethane	16.000	0.010	ug/L	AM20GAX	6/16/09	sl
N Ethene	33.000	0.010	ug/L	AM20GAX	6/16/09	sl
N Hydrogen	11.000	0.600	nM	AM20GAX	6/16/09	sl
N Methane	280.000	0.015	ug/L	AM20GAX	6/16/09	sl



Client Name: Parsons
 Contact: George Hermance
 Address: 40 La Riviere Drive
 Suite 350
 Buffalo, NY 14202

Page: Page 4 of 4
 Lab Proj #: P0906050
 Report Date: 06/18/09
 Client Proj Name: Ekonol 443970
 Client Proj #: 445144.02000

<u>Sample Description</u>	<u>Matrix</u>	<u>Lab Sample #</u>	<u>Sampled Date/Time</u>	<u>Received</u>		
PMW-4D	Vapor	P0906050-03	03 Jun. 09 17:30	04 Jun. 09 10:09		
<u>Analyte(s)</u>	<u>Result</u>	<u>PQL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date</u>	<u>By</u>
<u>RiskAnalysis</u>						
N Acetylene	<1.000	1.000	ug/L	AM20GAX	6/16/09	sl
N Ethane	4.100	0.010	ug/L	AM20GAX	6/16/09	sl
N Ethene	14.000	0.010	ug/L	AM20GAX	6/16/09	sl
N Hydrogen	1.800	0.600	nM	AM20GAX	6/16/09	sl
N Methane	47.000	0.015	ug/L	AM20GAX	6/16/09	sl

BP/ARC Project Name: EKOVO
BP/ARC Facility No: _____

Req Due Date (mm/dd/yy): _____
Lab Work Order Number: _____

Standard TAT _____ Rush TAT: Yes No

Lab Name: Micosseps

BP/ARC Facility Address: 6600 Baltimore Rd.

Consultant/Contractor: Parsons

Lab Address: 220 William Pitt Way Pittsburgh, PA 15238

City, State, ZIP Code: Whetfield, NY

Consultant/Contractor Project No: 445144

Lab PM: _____

Lead Regulatory Agency: NYSDEC

Address: 410 La Riviere Dr. Suite 350 Buffalo, NY

Lab Phone: (412) 826-5245

California Global ID No.: _____

Consultant/Contractor PM: Mark Ray buck

Lab Shipping Account: _____

Entos Proposal No.: _____

Phone: 716 541 0730 or 716 523-8293

Lab Bottle Order No: _____

Accounting Mode: Provision _____ OOC-BU _____ OOC-RM _____

Email EDD To: George Herunnie @Parson.com

Other Info: _____

Stage: _____ Activity: _____

Invoice To: _____ BP/ARC _____ Contractor

BP/ARC EBM: Pill Barber

Matrix: _____

Requested Analyses: _____

Report Type & QC Level: Standard
Full Data Package _____

EBM Phone: _____

EBM Email: William.Barber @BP.com

Lab No.	Sample Description	Date	Time
	<u>PMW-30</u>	<u>6/3/09</u>	<u>1200</u>
	<u>PMW-4D</u>	<u>6/3/09</u>	<u>1455</u>
	<u>PMW-4D</u>	<u>6/3/09</u>	<u>1730</u>

Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Trisodium phosphate	Light gases	Dissolved Hydrogen
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>2</u>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>2</u>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>2</u>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Relinquished By / Affiliation: _____ Date: 6/3/09 Time: 1745
Accepted By / Affiliation: _____ Date: 6/16/09 Time: _____

Sampler's Name: James Schuetz / E. Hank Skarpire

Sampler's Company: Parsons

Ship Date: 6/3/09

Shipment Method: Fed Ex

Shipment Tracking No: _____

Special Instructions: Note: Water was "degassing" which increased the volume of gas in the bottle. Call Jim Schuetz w/question 716 523 8293

THIS LINE - LAB USE ONLY: Custody Seals in Place: Yes / No _____ Temp Blank: Yes / No _____ Cooler Temp on Receipt: _____ °F/C _____ Trip Blank: Yes / No _____ MS/MSD Sample Submitted: Yes / No _____



Client Name: Parsons
Contact: George Hermance
Address: 40 La Riviere Drive
Suite 350
Buffalo, NY 14202

Page: Page 1 of 2
Lab Proj #: P0906040
Report Date: 06/15/09
Client Proj Name: Ekonol 443970
Client Proj #: 445144.02000

Laboratory Results

Total pages in data package: 3

Lab Sample # Client Sample ID
P0906040-01 RMW-1D

Microseeps test results meet all the requirements of the NELAC standards or provide reasons and/or justification if they do not.

Approved By: Debbie Hallo **Date:** 6-15-09

Project Manager: Debbie Hallo

The analytical results reported here are reliable and usable to the precision expressed in this report. As required by some regulating authorities, a full discussion of the uncertainty in our analytical results can be obtained at our web site or through customer service. Unless otherwise specified, all results are reported on a wet weight basis.

*As a valued client we would appreciate your comments on our service.
Please call customer service at (412)826-5245 or email customerservice@microseeps.com.*

Case Narrative:

Client Name: Parsons
 Contact: George Hermance
 Address: 40 La Riviere Drive
 Suite 350
 Buffalo, NY 14202

Page: Page 2 of 2
 Lab Proj #: P0906040
 Report Date: 06/15/09
 Client Proj Name: Ekonol 443970
 Client Proj #: 445144.02000

<u>Sample Description</u>	<u>Matrix</u>	<u>Lab Sample #</u>	<u>Sampled Date/Time</u>	<u>Received</u>		
RMW-1D	Vapor	P0906040-01	02 Jun. 09 13:45	03 Jun. 09 11:26		
<u>Analyte(s)</u>	<u>Result</u>	<u>PQL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date</u>	<u>By</u>
<u>RiskAnalysis</u>						
N Acetylene	<1.000	1.000	ug/L	AM20GAX	6/13/09	mm
N Ethane	8.100	0.010	ug/L	AM20GAX	6/13/09	mm
N Ethene	0.014	0.010	ug/L	AM20GAX	6/13/09	mm
N Hydrogen	3.700	0.600	nM	AM20GAX	6/13/09	mm
N Methane	40.000	0.015	ug/L	AM20GAX	6/13/09	mm



Lab Name: Microsites
 Lab Address: 220 William P.H Way Pittsboro PA 15238
 Lab PM: Diane
 Lab Phone: (412) 826-5245
 Lab Shipping Acct: _____
 Lab Bottle Order No: _____
 Other Info: _____

BP/ARC Project Name: ER001
 BP/ARC Facility No: _____

Req Due Date (mm/dd/yy): Standard
 Rush TAT: Yes _____ No _____

BP/ARC Facility Address: 6000 Waterford Rd
 City, State, ZIP Code: Wheatfield, NY
 Lead Regulatory Agency: NY SDEC
 California Global ID No.: _____
 Enfos Proposal No: _____
 Accounting Mode: Provision _____ OOC-BU _____ OOC-RM _____
 Stage: _____ Activity: _____

Consultant/Contractor: Parsons
 Consultant/Contractor Project No: 443970
 Address: 40 La Riviere Dr. Suite 350 Buffalo NY
 Consultant/Contractor PM: Mark Raybuck
 Phone: 716 541 0730 or 716 523 8293
 Email EDD To: George.Hernandez@Parsons.com
 Invoice To: BP/ARC _____ Contractor X

BP/ARC EBM: Bill Barber
 EBM Phone: 216 271 8038
 EBM Email: william.barber@bp.com

Lab No.	Sample Description	Date	Time	Matrix						Total Number of Containers	No. Containers / Preservative						Requested Analyses			Report Type & QC Level					
				Soil / Solid	Water / Liquid	Air / Vapor	Unpreserved	H ₂ SO ₄	HNO ₃		HCl	Methanol	Light Gases	Dissolved Hydrogen	Standard _____	Full Data Package _____	Comments								
	<u>RMW-1D</u>	<u>6/2/09</u>	<u>1345</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>240 ml/min</u>	<u>Number</u>	<u>15 minutes</u>

Sampler's Name: James W Schutz
 Sampler's Company: Parsons
 Shipment Method: Fed Ex Ship Date: 6/2/09
 Shipment Tracking No: _____

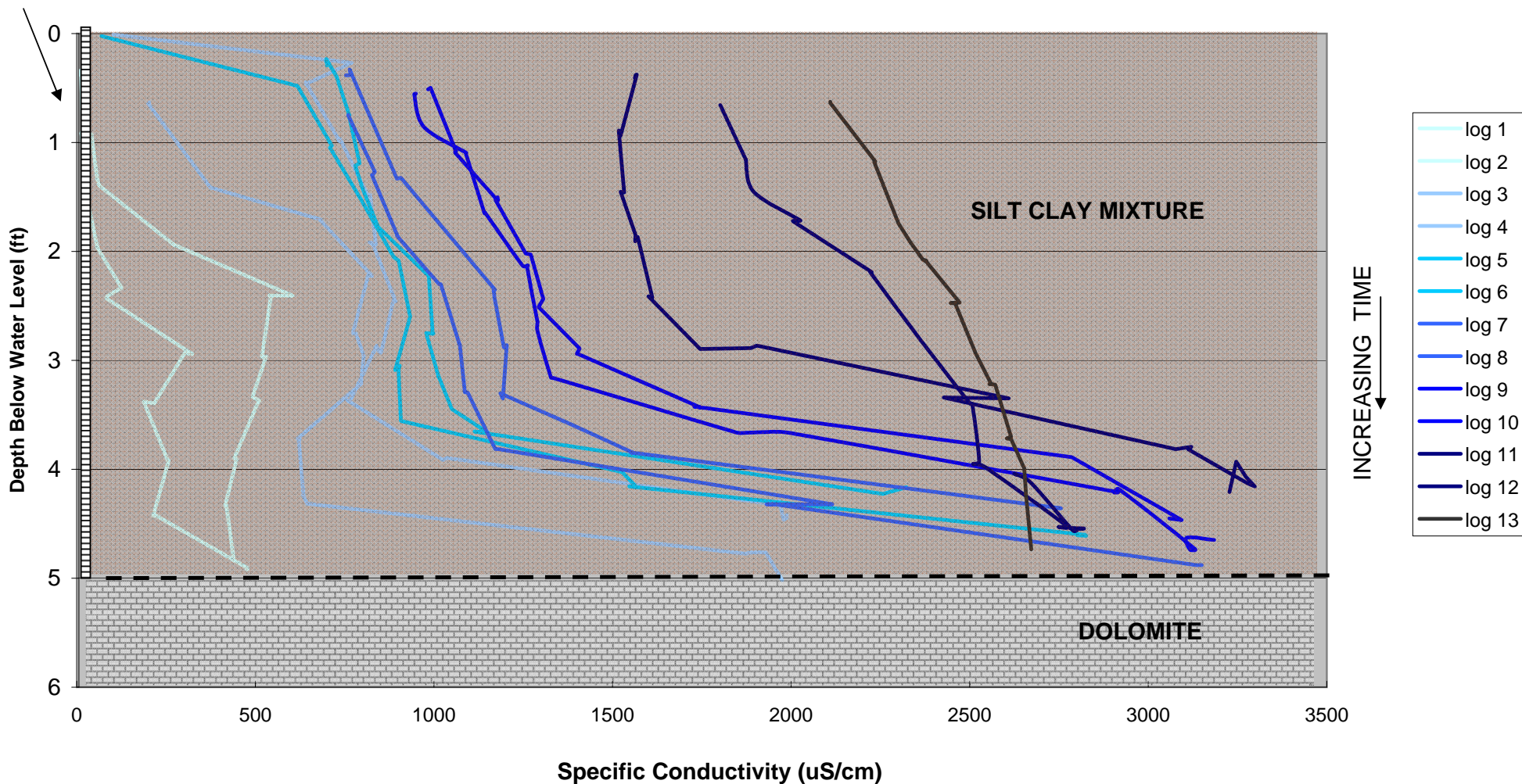
Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals in Place: Yes / No _____
 Temp Blank: Yes / No _____
 Cooler Temp on Receipt: _____ °F/C _____
 Trip Blank: Yes / No _____
 MS/MSD Sample Submitted: Yes / No _____
 BP/ARC LAMP COC Rev. 6 01/01/2009

ATTACHMENT 2

MW-12S WELL FLUID REPLACEMENT TEST - PLOT OF SPECIFIC CONDUCTIVITY PROFILES

MW-12S Well
Screen



Client: **Parsons**
 Project: **Ekonomol**
 Project No.: **445144**
 Well No.: **MW-12S**
 Test Date: **May 4, 2009**

Formation Tested: **Alluvial deposits**
 Rising (R) or Falling (F) Head Test: **Rising**

Logger Data File:

Hydraulic conductivity* **8.E-04 cm/sec**
2.E-03 ft/min

Note: due to low well yield and heterogeneous flow the estimated values should be considered qualitative.

2 ft/day

Casing stickup **-0.20 feet**
 Static water level (from top of casing) **7.83 feet**
 Depth to bottom of screen (from ground level) **12.95 feet**
 Boring diameter **7.63 inches**
 Casing diameter **2.00 inches**
 Screen diameter **2.00 inches**

Set R_w equal to Boring Diameter (Default) Set R_w equal to Casing Diameter

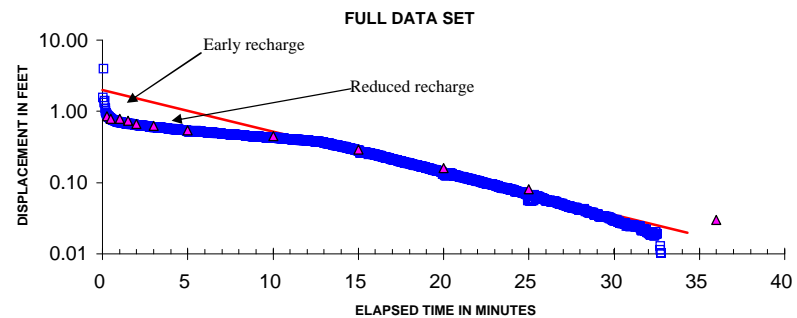
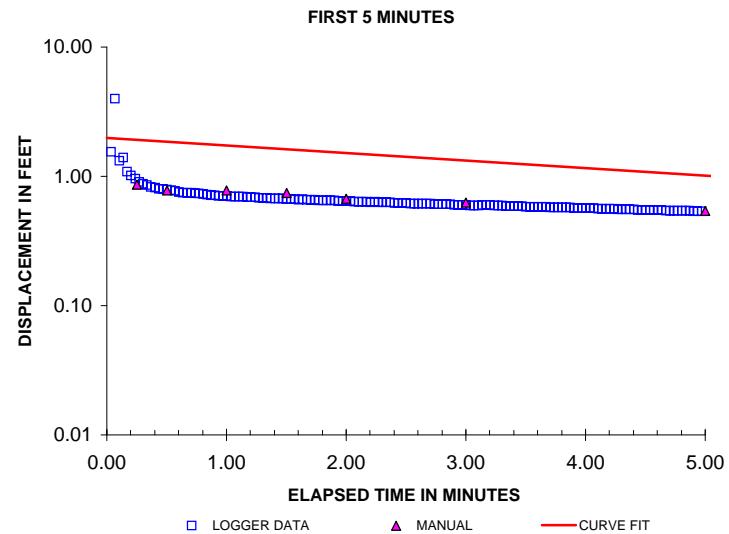
Screen length **5.00 feet**
 Depth to "impermeable boundary" **13.00 feet**
 Porosity of filter pack **0.30**
 Slug diameter (optional) **1.60 inches**
 Slug length (optional) **3.06 feet**
 Theoretical ΔH at time zero (Y₀) **1.96 feet**
 Actual ΔH at time zero (Y₀) **1.974 feet**
 Time **34.30 min**

Bouwer-Rice Parameters

feet	cm	cm
8.03	244.75	SW
4.92	149.96	H
7.95	242.32	T _s
0.083	2.54	R _w
0.187	5.71	R _c
0.167	5.08	D _S
4.92	149.96	L
4.9713	151.53	D
1.974385619	60.18	Y ₀
0.019743856	0.60	Y _t
	2058.10	t (seconds)
	0.30	n
		59.04 L/R _w
		0.99 H/D
		3.20 A
		0.48 B
		2.80 C
		-0.49 Ln[(D-H)/R _w]
		-0.49 Ln[(D-H)/R _w]
		3.13 equation (4) ⁽¹⁾
		3.15 equation (5) ⁽¹⁾
		3.15 Ln(Re/Rw)
		7.7E-04 equation (3) ⁽¹⁾

REFERENCES:

- (1) Bouwer, Herman. 1989. "The Bouwer and Rice Slug Test - An Update". Ground Water vol. 27, no. 3, May-June 1989.
- (2) Bouwer, H. and R.C. Rice. 1976. A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells". Water Resources Research. vol 12, no. 3, June 1976.



PARSONS

EKONOMOL SITE

**BOUWER-RICE SLUG TEST ANALYSIS
 WELL MW-12S**