



April 14, 2006



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Mr. Christopher Saari  
Hydrogeologist  
Northern Region Remediation and Redevelopment  
State of Wisconsin Department of Natural Resources (WDNR)  
Ashland Service Center, 2501 Golf Course Road  
Ashland, Wisconsin 54806

## INITIAL PERCHLORATE GROUNDWATER SAMPLING RESULTS

October 2005 Groundwater Sampling Event  
Former DuPont Barksdale Works Site  
Barksdale, Wisconsin  
(BRRTS #02-04-000156)

Dear Mr. Saari:

Attached to this letter report are the final analytical results from an on-site groundwater sampling event conducted at the Former DuPont Barksdale Works site in October 2005. The purpose of this sampling event was to determine if the perchlorate anion is present in groundwater beneath the site. This sampling was conducted voluntarily by E.I. du Pont de Nemours and Company (DuPont) after historical site documentation was discovered that indicated Chilean sodium nitrate may have been used as a raw material for nitric acid production at the facility. The wells sampled during this event were chosen as representing potential perchlorate sources (nitric acid production lines and off-specification product/waste disposal sites) indicated by historic plant documentation. Figure 1 shows the locations of the wells selected for sampling.

### **Background**

DuPont's research of historical plant documents was the basis for evaluating the perchlorate anion in the groundwater. A letter from the early 1900s between a former DuPont manager and a Chilean chemist provides indication of a possible connection between the Former DuPont Barksdale Works and Chilean sodium nitrate. Chilean sodium nitrate deposits have been found to contain naturally-occurring perchlorate and have been reportedly imported into the United States since at least the late 1800s for wide-spread use as fertilizer, for saltpeter used in gunpowder, and as a feedstock to making nitric acid, explosives, fireworks, and additional end products.

### **Field Sampling Procedures**

Ten groundwater monitoring wells and two potable wells on the Former Barksdale Works were sampled for perchlorate. Samples were collected using low flow sampling techniques with dedicated bladder pump systems. Purge water was passed through a flow cell and field quality parameters were measured with a Horiba U-22 multiparameter water quality monitoring system. A summary of the field quality parameters at sampling time is available in Table 1. During fieldwork it was noted that the dissolved oxygen (DO) sensor probe was not functioning properly; therefore, the reported values may not be representative of actual DO concentrations at the time the samples were collected.

Thirteen groundwater samples were collected, which consisted of a single sample from each of the 12 wells and a single quality assurance/quality control (QA/QC) field duplicate sample. The samples were shipped overnight to Severn Trent Laboratories (STL) in Denver, Colorado where they were analyzed for perchlorate concentrations using USEPA SW-846 method 8321A (liquid chromatography/tandem mass spectrometry). A summary of the analytical results is in Table 2. The laboratory data deliverables were evaluated using DuPont's in-house data review protocol. No significant QC exceptions or analytical problems were noted during the review process. A summary of the QA review and the STL data reports are presented in Appendix A.

## **Results**

The perchlorate anion was detected in seven of the 12 wells sampled at concentrations ranging from 0.033 micrograms per liter ( $\mu\text{g/L}$ ) or parts per billion to 150  $\mu\text{g/L}$  (Table 2). However, perchlorate was not detected in either of the potable wells sampled (Clubhouse and PZ-16). Concentrations of perchlorate were reported as estimated values (J qualified) by the laboratory in samples from monitoring wells PZ-20D, PZ-26D, PZ-26S, and PZ-44S because the results fell between the laboratory method detection limit and practical quantitation (i.e., reporting) limit.

## **Summary and Conclusions**

Results of the October 2005 sampling indicate that the perchlorate anion is present in groundwater beneath the site. However, whether the presence of perchlorate in groundwater is attributable to former plant operations can not be determined from this sampling event. Irrespective of its source, perchlorate was only detected in monitoring wells that are not used as sources of potable water. Hence, there is no exposure to the perchlorate in the site groundwater, and thus no associated health risk.

DuPont will conduct further sampling as part of the planned 2006 investigation activities that will address the potential source of perchlorate detected in groundwater. If you have any questions regarding this letter report, please call either me (502-217-1531) or Mr. Cary Pooler (502-217-1534).

Sincerely,



Bradley S. Nave  
Project Director  
DuPont Corporate Remediation Group

### Enclosures:

Table 1	Summary of Field Measured Water Quality Parameters – October 2005
Table 2	Summary of Results – Perchlorate October 2005 Sampling Event
Figure 1	Initial Perchlorate Sampling Locations – October 2005
Appendix A	Barksdale Works – October 2005 Initial Perchlorate Sampling Event

cc: P. Bretting, C.G. Bretting Mfg., Inc.  
H. Nehls-Lowe, Wisconsin DHFS  
A. Lindsey, Bayfield County Health Dept.  
C. Pooler, J. Hammerberg, - URSD  
Project #7553

## **TABLES**

**Table 1**  
**Summary of Field Measured Water Quality Parameters at Sample Time**  
**INITIAL PERCHLORATE GROUNDWATER SAMPLING RESULTS**  
 October 2005 Groundwater Sampling Event  
 Former DuPont Barksdale Works Site  
 Barksdale, Wisconsin

MEASUREMENT	LOCATION									
	PZ-10-O	PZ-10-D	PZ-20-O	PZ-20-D	PZ-26-O	PZ-26-D	PZ-39-D	PZ-41-O	PZ-44-O	PZ-45-O
Date Collected	10/13/2005	10/14/2005	10/14/2005	10/14/2005	10/14/2005	10/14/2005	10/13/2005	10/14/2005	10/14/2005	10/14/2005
Time Collected	18:20	13:15	11:18	11:50	15:00	14:25	16:50	12:30	10:32	9:43
VOCs (ppm)	NIR	NIR	NIR	NIR	NIR	NIR	NIR	NIR	NIR	NIR
Water Level (ft) Top of Riser	10.24	34.9	31.7	46.91	41.3	39.76	26.41	23.46	23.71	43.58
Water Level at Stabilization (ft) Top of Riser	23.24	36.2	32.11	47.39	42.6	39.93	27.24	31	24.07	46.24
Purge Rate (mL/min)	300	250	225	350	400	300	200	325	250	200
Purge Time (min)	30	20	25	20	20	20	20	20	25	40
pH (SU)	7.4	8.04	7.43	7.73	7.46	7.88	6	7.37	7.22	7.29
Temp (C)	9.3	8.7	9.8	9.7	8.9	9.4	8.8	9.6	10.5	9
Conductivity (mS/cm)	0.87	0.25	149	0.16	0.77	0.2	2.7	1.8	1.2	1.1
Dissolved Oxygen	0.00*	0.00*	4.31*	0.00*	5.27*	4.03*	0.00*	0.00*	4.55*	0.00*
Redox Potential (mV)	-61	59	149	-109	142	100	166	21	138	-140
Turbidity (NTU)	680	110	35	0	150	30	18	150	9	74
Color	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Odor	None	None	None	None	None	None	None	None	None	None
QA/QC		MS/MSD				DUP				
COC Number	50484	50485 50488	50483	50484	50485	50483 50487	50484	50483	50483	50484

\* During fieldwork it was noted that the dissolved oxygen (DO) sensor probe was not functioning properly therefore the reported values may not be representative.

NIR--No Instrument Response  
 PPM--Parts Per Million  
 Ft--Feet  
 ml/min--Milliliters Per Minute

SU--Standard Units  
 C--Degrees Celcius  
 mS/cm--Milli-siemens Per Centimeter  
 mg/L--Milligrams Per Liter or PPM

mV--Millivolts  
 NTU--Nephelometric Turbidity Unit

**Table 2**  
**Summary of Results**  
 INITIAL PERCHLORATE GROUNDWATER SAMPLING RESULTS  
 October 2005 Groundwater Sampling Event  
 Former DuPont Barksdale Works Site  
 Barksdale, Wisconsin

Sample Location	Date	Units	Result
PZ-10D	10/14/05	µg/l	<0.033
PZ-10S	10/13/05	µg/l	<0.033 U
PZ-20D	10/14/05	µg/l	<b>0.063 J</b>
PZ-20S	10/14/05	µg/l	<b>1.4</b>
PZ-26D	10/14/05	µg/l	<b>0.035 J</b>
PZ-26D-duplicate	10/14/05	µg/l	<0.033
PZ-26S	10/14/05	µg/l	<b>0.033 J</b>
PZ-39D	10/13/05	µg/l	<b>150</b>
PZ-41S	10/14/05	µg/l	<b>19</b>
PZ-44S	10/14/05	µg/l	<b>0.055 J</b>
PZ-45S	10/14/05	µg/l	<0.033
CLUBHOUSE-INFLOW <sup>(1)</sup>	11/15/05	µg/l	<0.0022
PZ-16-POT-INFLOW <sup>(1)</sup>	11/15/05	µg/l	<0.0022

Samples analyzed on total basis using EPA protocol SW-846 8321A

(1) = Well is used for potable water supply

µg/l = micrograms per liter or parts per billion

< = Analyte not detected at stated detection limit

U = Analyte not detected at specified reporting limit

J = Estimated value (results fell between the laboratory method detection limit and practical quantitation)

Bold- Analyte detected

## FIGURES



Bjork Road

Nolander Road

Ondossagon Road

State Highway 13

Chequamegon Bay

PZ-45S

PZ-44S

PZ-20D  
PZ-20S

PZ-10D  
PZ-10S

PZ-16-POT  
inflow

PZ-26D  
PZ-26S

PZ-41S

Club House  
inflow

PZ-39D

### Legend



Well Location



Road



Creeks



Chequamegon Bay



CORPORATE REMEDIATION GROUP  
An Alliance between  
DuPont and URS Diamond

325 West Main Street  
Suite 1202  
Louisville, Kentucky 40202



Title:

Initial Perchlorate Sampling Locations - October 2005  
Initial Perchlorate Groundwater Sampling Results  
October 2005 Groundwater Sampling Event  
Former DuPont Barksdale Works Site  
Barksdale, Wisconsin

Created:

KJB

DuPont Project Number:

7553

Date:

04/14/2006

URSD Project Number:

18984071.05001

Revision:

0

Figure Number:

1

File Name:

7553\_perchlorate\_rpt.MXD

**APPENDIX A**  
**Laboratory Reports**



# Memorandum

**DATE:** JANUARY 26, 2006

**TO:** Cary A. Pooler, URS Diamond

**FROM:** Sharon A. Nordstrom

**RE:** **FORMER BARKSDALE WORKS- PERCHLORATES  
SAMPLING 10/05**

Enclosed is the data report for the well samples collected on October 13-14, 2005 for the analyses listed below. The samples were submitted to Severn Trent Laboratories (STL) in Denver, CO for the analyses listed below:

Matrix	Laboratory	Analysis	Analytical Method
Groundwater	STL- Denver	Perchlorates	SW 846 8321A

## Sample Arrival and Receipt

All samples were received at the laboratory within temperature and holding time requirements. No sample breakage was reported upon sample receipt.

## QC Findings and Comments

The STL-Denver data deliverables included both a hard-copy report and an electronic data file. All electronic data was reviewed via the automated DuPont Data Review (DDR) process. No significant QC exceptions were noted during the review process. All QC spikes were recovered within the acceptance windows. No field or equipment blank samples were submitted with the sample set, however the laboratory method blanks analyzed with the samples had no perchlorates detected above the reporting limit. Several samples required dilutions to bring the perchlorate concentration within the calibration range of the instrument. The reporting limit for these samples was adjusted accordingly.

Positive results between the MDL and PQL were qualified with a J and should be considered estimated values.

Please do not hesitate to contact me if you have any questions regarding this report.

**BARKSDALE WORKS  
PERCHLORATES SAMPLING 10/05**

**January 26, 2006**

*Prepared for*

Cary A. Pooler (URS Diamond-Louisville)

*Prepared by*

URS Diamond  
Laboratory Services – Sharon A. Nordstrom  
Barley Mill Plaza, Building 27  
Wilmington, DE 19805

## DuPont In-House Review (DDR)

The DDR is an automated internal review process used by the ADQM group to determine if the data is usable. The data is run through this automated program where a series of checks are performed on the data. The data is evaluated against hold time criteria, checked for blank contamination, assessed against matrix spike(MS)/matrix spike duplicate (MSD) recoveries, assessed against relative percent differences (RPDs) between these samples, assessed against laboratory control sample(LCS)/control sample duplicate (LCSD) recoveries, assessed against RPDs between these samples, assessed against RPDs between laboratory replicates, and assessed against surrogate spike recoveries. The DDR applies the following data qualifiers to analysis results, as warranted:

Qualifier	Definition
B	Not detected substantially above the level reported in the laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
J	Analyte present. Reported value may not be accurate or precise.
UJ	Not detected. Reporting limit may not be accurate or precise.

## Laboratory Qualifiers

The laboratory may have applied one or more of the following data qualifiers to analysis results, as warranted:

DIL	The concentration is estimated or not reported due to dilution or to the presence of interfering analytes.
NC	The recovery and or RPD were not calculated.
J	Estimated value; result falls between method detection limit (mdl) and practical quantitation limit (pql).
U	Analyte was not detected at the specified reporting limit
B	Analyte concentration is not significantly greater than that detected in an associated method blank.

J	Estimated value; result falls between method detection limit (mdl) and practical quantitation limit (pql).
*	Surrogate recovery is outside stated control limits.
J	Method blank contamination. The associated method blank contains the target analyte at a reportable level.
B	Estimated result. Result is less than reporting limit (RL)
Q	Elevated reporting limit. The reporting limit is elevated because sample dilution was required to bring target compounds within calibration range of the analytical system.
G	Elevated reporting limit. The reporting limit is elevated because sample dilution was required for analysis due to matrix interference.

These lab qualifiers are applied independent of DuPont In-House Data Review (DDR) qualifiers.

Corporate Environmental Database  
DDR Narrative Report

Site: BAR - BARKSDALE WORKS

1/26/2006 15:23:31

Project: PERCHLORATE SAMPLING 10/05

Page 1 of 1

Reporting Limit: MDL

DDR Standards LABSTATS

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The reported result is greater than/equal to the MDL and less than the PQL; it should be considered an estimated value.

Sample ID	Date Sampled	Lab ID	Method Code	Analyte	Result	Units	MDL	PQL	Qual
■BAR-G-PZ-20D	10/14/2005	HMT3R1-AA F5	8321A	PERCHLORATE	0.063	UG/L	0.033	0.20	J
■BAR-G-PZ-26D	10/14/2005	HMT3X1-AA F5	8321A	PERCHLORATE	0.035	UG/L	0.033	0.20	J
■BAR-G-PZ-26S	10/14/2005	HMT381-AA F5	8321A	PERCHLORATE	0.033	UG/L	0.033	0.20	J
BAR-G-PZ-44S	10/14/2005	HMT321-AA F5	8321A	PERCHLORATE	0.055	UG/L	0.033	0.20	J

**Corporate Environmental Database  
Lab Analysis Report  
Summary of Positive Results  
with In-House Qualifier and Review**

**Site:** BAR - BARKSDALE WORKS  
**Project:** PERCHLORATE SAMPLING 10/05  
**Reporting Limit:** MDL

1/27/2006 14:47:29  
Page 1 of 1

Analyte/Parameter	Result	In- Lab Qual	house Qual	Re- view	Unit	MDL	PQL	Method
Sampling Point: PZ-20D Date sampled: Oct 14, 2005	Sampleno: BAR-G-PZ-20D Sample type: Groundwater							
PERCHLORATE	0.063	J	J		UG/L	0.033	0.20	8321A
Sampling Point: PZ-20S Date sampled: Oct 14, 2005	Sampleno: BAR-G-PZ-20S Sample type: Groundwater							
PERCHLORATE	1.4				UG/L	0.033	0.20	8321A
Sampling Point: PZ-26D Date sampled: Oct 14, 2005	Sampleno: BAR-G-PZ-26D Sample type: Groundwater							
PERCHLORATE	0.035	J	J		UG/L	0.033	0.20	8321A
Sampling Point: PZ-26S Date sampled: Oct 14, 2005	Sampleno: BAR-G-PZ-26S Sample type: Groundwater							
PERCHLORATE	0.033	J	J		UG/L	0.033	0.20	8321A
Sampling Point: PZ-39D Date sampled: Oct 13, 2005	Sampleno: BAR-G-PZ-39D Sample type: Groundwater							
PERCHLORATE	150				UG/L	3.3	20	8321A
Sampling Point: PZ-41S Date sampled: Oct 14, 2005	Sampleno: BAR-G-PZ-41S Sample type: Groundwater							
PERCHLORATE	19				UG/L	0.33	2.0	8321A
Sampling Point: PZ-44S Date sampled: Oct 14, 2005	Sampleno: BAR-G-PZ-44S Sample type: Groundwater							
PERCHLORATE	0.055	J	J		UG/L	0.033	0.20	8321A













**Corporate Environmental Database  
Lab Analysis QAQC Report**

**Site: BARKSDALE WORKS**  
**Project: PERCHLORATE SAMPLING 10/05**

1/27/2006  
Page 1 of 1

**Batch Identifier 158548**      **METHOD 8321A 21-OCT-05 5294138 LCMS1**

Method Number: 8321A      Prep Method: METHOD      Pre-prep:  
Batch Start Date: 10/21/2005      Instrument: LCMS1      Batch Number:

Analyte/Parameter	Result	Unit	MDL	PQL	RPR	RPR Limits		RPD	
						Min	Max	RPD	Max
Sample Type LCS	Lab Sample ID: HM9JR1-AC LCS			Lab: QES-DEN					
PERCHLORATE	1.06	UG/L	0.033	NS	106	78	118		
Sample Type MB	Lab Sample ID: HM9JR1-AA MB			Lab: QES-DEN					
PERCHLORATE	< 0.033	UG/L	0.033	0.20					
Sample Type MS	Lab Sample ID: HMT361-AC MS			Lab: QES-DEN					
PERCHLORATE	1.15	UG/L	0.033	NS	115	65	138		
Sample Type MSD	Lab Sample ID: HMT361-AD MSD			Lab: QES-DEN					
PERCHLORATE	1.16	UG/L	0.033	NS	116	65	138	1.2	29

The following field samples are included in this batch:

Sampleno	Datesmpl	Lab Id	Lab
BAR-G-PZ-10D	10/14/2005	HMT361-AA FS	QES-DEN
BAR-G-PZ-10S	10/13/2005	HMT3N1-AA FS	QES-DEN
BAR-G-PZ-20D	10/14/2005	HMT3R1-AA FS	QES-DEN
BAR-G-PZ-20S	10/14/2005	HMT3V1-AA FS	QES-DEN
BAR-G-PZ-26D	10/14/2005	HMT3X1-AA FS	QES-DEN
BAR-G-PZ-26D-DUP	10/14/2005	HMT331-AA FS	QES-DEN
BAR-G-PZ-26S	10/14/2005	HMT381-AA FS	QES-DEN
BAR-G-PZ-39D	10/13/2005	HMT3L1-AA FS	QES-DEN
BAR-G-PZ-41S	10/14/2005	HMT301-AA FS	QES-DEN
BAR-G-PZ-44S	10/14/2005	HMT321-AA FS	QES-DEN
BAR-G-PZ-45S	10/14/2005	HMT3H1-AA FS	QES-DEN

**Batch Identifier 159715**      **METHOD 8321A 16-NOV-05 5320330 LCMS1**

Method Number: 8321A      Prep Method: METHOD      Pre-prep:  
Batch Start Date: 11/16/2005      Instrument: LCMS1      Batch Number:

Analyte/Parameter	Result	Unit	MDL	PQL	RPR	RPR Limits		RPD	
						Min	Max	RPD	Max
Sample Type LCS	Lab Sample ID: HQAAP1-AC LCS			Lab: QES-DEN					
PERCHLORATE	0.0925	UG/L	0.0022	NS	92	70	140		
Sample Type MB	Lab Sample ID: HQAAP1-AA MB			Lab: QES-DEN					
PERCHLORATE	< 0.0022	UG/L	0.0022	0.010					
Sample Type MS	Lab Sample ID: HP97R1-AC MS			Lab: QES-DEN					
PERCHLORATE	0.0908	UG/L	0.0022	NS	91	59	140		
Sample Type MSD	Lab Sample ID: HP97R1-AD MSD			Lab: QES-DEN					
PERCHLORATE	0.0907	UG/L	0.0022	NS	91	59	140	0.13	20

The following field samples are included in this batch:

Sampleno	Datesmpl	Lab Id	Lab
BAR-G-CLUBHOUSE-INFLOW	11/15/2005	HP98E1-AA FS	QES-DEN
BAR-G-PZ-16-POT-INFLOW	11/15/2005	HP97R1-AA FS	QES-DEN



**STL**

**STL Denver**  
4955 Yarrow Street  
Arvada, CO 80002

Tel: 303 736 0100 Fax: 303 431 7171  
www.stl-inc.com

**ANALYTICAL REPORT**

E. I. DuPont Project:  
**Barksdale Site**  
**Perchlorate Sampling 10/05**  
7035-507553-772000  
LBIO-65332

Release No. STL17175

Lot #: D5J150185

Attn: ADQM  
URS-Diamond  
Barley Mill Plaza, Building 27  
Lancaster Pike & Route 141  
Wilmington, DE 19805

Severn Trent Laboratories, Inc./STL Denver

Gail DeRuzzo  
Project Manager

October 28, 2005

# Table Of Contents

## Standard Deliverables with Supporting Documentation

### Report Contents

### Number of Pages

#### Standard Deliverables

*(The Cover Letter and the Report Cover page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.)*

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Methods Summary
- Method/Analyst Summary
- Lot Sample Summary
- Analytical Results
- QC Data Association Summary
- Chain-of-Custody

#### Supporting Documentation

*(Note: A one-page "Description of Supporting Documentation" is provided at the beginning of this section.)*

Check below when supporting documentation is present.

- Volatile GC/MS
- Semivolatile GC/MS
- Volatile GC
- Semivolatile GC
- LC/MS or HPLC
- Metals
- General Chemistry
- Subcontracted Data

## **Case Narrative**

### **D5J150185**

The following report contains the analytical results for eleven solid samples received at STL Denver on October 15, 2005, according to documented sample acceptance procedures.

Dilution factors and footnotes have been provided on each datasheet to assist in the interpretation of the results.

STL Denver utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated. A summary of QC data for these analyses is included at the rear of the report.

The results included in this report have been reviewed for compliance with the Laboratory Quality Manual. All results have been found to meet all requirements of NELAC and any exceptions are noted below. STL Denver's State of Wisconsin certification number is 999615430.

This report shall not be reproduced except in full, without the written approval of the laboratory.

#### **SUPPLEMENTAL QC INFORMATION**

##### **Sample Arrival and Receipt**

The samples presented in this report were received at a temperature of 2.9°C. All sample containers were received in an acceptable condition.

The one water sample listed on the chain of custody was transferred to a different lot for reporting.

##### **Perchlorate – Method 8321A**

Samples BAR-S-PZ-39D and BAR-S-PZ-41S were analyzed at dilutions to obtain the target analyte within the calibration range of the instrument. The reporting limits were adjusted accordingly.

There were no anomalies noted.

## EXECUTIVE SUMMARY - Detection Highlights

D5J150185

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
BAR-G-PZ-39D 10/13/05 16:50 002				
Perchlorate	150	20	ug/L	SW846 8321A
BAR-G-PZ-20D 10/14/05 11:50 004				
Perchlorate	0.063 J	0.20	ug/L	SW846 8321A
BAR-G-PZ-20S 10/14/05 11:18 005				
Perchlorate	1.4	0.20	ug/L	SW846 8321A
BAR-G-PZ-26D 10/14/05 14:25 006				
Perchlorate	0.035 J	0.20	ug/L	SW846 8321A
BAR-G-PZ-41S 10/14/05 12:30 007				
Perchlorate	19	2.0	ug/L	SW846 8321A
BAR-G-PZ-44S 10/14/05 10:32 008				
Perchlorate	0.055 J	0.20	ug/L	SW846 8321A
BAR-G-PZ-26S 10/14/05 15:00 011				
Perchlorate	0.033 J	0.20	ug/L	SW846 8321A

# METHODS SUMMARY

D5J150185

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
LCMS by 8321A	SW846 8321A	SW846 8321A

## References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.



# METHOD / ANALYST SUMMARY

D5J150185

<u>ANALYTICAL METHOD</u>	<u>ANALYST</u>	<u>ANALYST ID</u>
SW846 8321A	Steve Cowling	008738

## References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

D5J150185

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
HMT3H	001	BAR-G-PZ-45S	10/14/05	09:43
HMT3L	002	BAR-G-PZ-39D	10/13/05	16:50
HMT3N	003	BAR-G-PZ-10S	10/13/05	18:20
HMT3R	004	BAR-G-PZ-20D	10/14/05	11:50
HMT3V	005	BAR-G-PZ-20S	10/14/05	11:18
HMT3X	006	BAR-G-PZ-26D	10/14/05	14:25
HMT30	007	BAR-G-PZ-41S	10/14/05	12:30
HMT32	008	BAR-G-PZ-44S	10/14/05	10:32
HMT33	009	BAR-G-PZ-26D-DUP	10/14/05	14:25
HMT36	010	BAR-G-PZ-10D	10/14/05	13:15
HMT38	011	BAR-G-PZ-26S	10/14/05	15:00

## NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-45S

HPLC

Lot-Sample #....: D5J150185-001 Work Order #....: HMT3H1AA Matrix.....: WATER  
Date Sampled....: 10/14/05 09:43 Date Received...: 10/15/05  
Prep Date.....: 10/21/05 Analysis Date...: 10/21/05  
Prep Batch #....: 5294138 Analysis Time...: 13:01  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	ND	0.20	ug/L	0.033

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-39D

HPLC

Lot-Sample #....: D5J150185-002    Work Order #....: HMT3L1AA    Matrix.....: WATER  
Date Sampled...: 10/13/05 16:50    Date Received...: 10/15/05  
Prep Date.....: 10/21/05    Analysis Date...: 10/22/05  
Prep Batch #....: 5294138    Analysis Time...: 07:14  
Dilution Factor: 100  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	150	20	ug/L	3.3

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-10S

HPLC

Lot-Sample #...: D5J150185-003 Work Order #...: HMT3N1AA Matrix.....: WATER  
Date Sampled...: 10/13/05 18:20 Date Received...: 10/15/05  
Prep Date.....: 10/21/05 Analysis Date...: 10/22/05  
Prep Batch #...: 5294138 Analysis Time...: 07:30  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	ND	0.20	ug/L	0.033

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-20D

HPLC

Lot-Sample #...: D5J150185-004 Work Order #...: HMT3R1AA Matrix.....: WATER  
Date Sampled...: 10/14/05 11:50 Date Received...: 10/15/05  
Prep Date.....: 10/21/05 Analysis Date...: 10/21/05  
Prep Batch #...: 5294138 Analysis Time...: 13:49  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	0.063 J	0.20	ug/L	0.033

NOTE(S) :

J Estimated result. Result is less than RL.

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-20S

HPLC

Lot-Sample #...: D5J150185-005 Work Order #...: HMT3V1AA Matrix.....: WATER  
Date Sampled...: 10/14/05 11:18 Date Received...: 10/15/05  
Prep Date.....: 10/21/05 Analysis Date...: 10/21/05  
Prep Batch #...: 5294138 Analysis Time...: 14:05  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	1.4	0.20	ug/L	0.033

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-26D

HPLC

Lot-Sample #...: D5J150185-006 Work Order #...: HMT3X1AA Matrix.....: WATER  
Date Sampled...: 10/14/05 14:25 Date Received...: 10/15/05  
Prep Date.....: 10/21/05 Analysis Date...: 10/21/05  
Prep Batch #...: 5294138 Analysis Time...: 14:21  
Dilution Factor: 1

Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	0.035 J	0.20	ug/L	0.033

NOTE(S) :

J Estimated result. Result is less than RL.



E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-41S

HPLC

Lot-Sample #....: D5J150185-007    Work Order #....: HMT301AA    Matrix.....: WATER  
Date Sampled....: 10/14/05 12:30    Date Received...: 10/15/05  
Prep Date.....: 10/21/05    Analysis Date...: 10/22/05  
Prep Batch #....: 5294138    Analysis Time...: 07:46  
Dilution Factor: 10  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	19	2.0	ug/L	0.33

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-44S

HPLC

Lot-Sample #....: D5J150185-008    Work Order #....: HMT321AA    Matrix.....: WATER  
Date Sampled...: 10/14/05 10:32    Date Received...: 10/15/05  
Prep Date.....: 10/21/05    Analysis Date...: 10/22/05  
Prep Batch #....: 5294138    Analysis Time...: 08:02  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	0.055 J	0.20	ug/L	0.033

**NOTE(S):**

J Estimated result. Result is less than RL.

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-26D-DUP

HPLC

Lot-Sample #...: D5J150185-009 Work Order #...: HMT331AA Matrix.....: WATER  
Date Sampled...: 10/14/05 14:25 Date Received...: 10/15/05  
Prep Date.....: 10/21/05 Analysis Date...: 10/21/05  
Prep Batch #...: 5294138 Analysis Time...: 15:26  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	ND	0.20	ug/L	0.033

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-10D

HPLC

Lot-Sample #...: D5J150185-010    Work Order #...: HMT361AA    Matrix.....: WATER  
Date Sampled...: 10/14/05 13:15    Date Received...: 10/15/05  
Prep Date.....: 10/21/05    Analysis Date...: 10/21/05  
Prep Batch #...: 5294138    Analysis Time...: 15:42  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	ND	0.20	ug/L	0.033

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-26S

HPLC

Lot-Sample #....: D5J150185-011    Work Order #....: HMT381AA    Matrix.....: WATER  
Date Sampled....: 10/14/05 15:00    Date Received...: 10/15/05  
Prep Date.....: 10/21/05    Analysis Date...: 10/21/05  
Prep Batch #....: 5294138    Analysis Time...: 16:30  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	0.033 J	0.20	ug/L	0.033

**NOTE(S) :**

J Estimated result. Result is less than RL.

# QC DATA ASSOCIATION SUMMARY

D5J150185

Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	WATER	SW846 8321A		5294138	5294083
002	WATER	SW846 8321A		5294138	5294083
003	WATER	SW846 8321A		5294138	5294083
004	WATER	SW846 8321A		5294138	5294083
005	WATER	SW846 8321A		5294138	5294083
006	WATER	SW846 8321A		5294138	5294083
007	WATER	SW846 8321A		5294138	5294083
008	WATER	SW846 8321A		5294138	5294083
009	WATER	SW846 8321A		5294138	5294083
010	WATER	SW846 8321A		5294138	5294083
011	WATER	SW846 8321A		5294138	5294083

METHOD BLANK REPORT

HPLC

Client Lot #...: D5J150185      Work Order #...: HM9JR1AA      Matrix.....: WATER  
MB Lot-Sample #: R5J210000-138      Prep Date.....: 10/21/05      Analysis Time...: 12:29  
Analysis Date...: 10/21/05      Prep Batch #...: 5294138  
Dilution Factor: 1

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Perchlorate	ND	0.20	ug/L	SW846 8321A

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

HPLC

Client Lot #...: D5J150185      Work Order #...: HM9JR1AC      Matrix.....: WATER  
LCS Lot-Sample#: R5J210000-138  
Prep Date.....: 10/21/05      Analysis Date...: 10/21/05  
Prep Batch #...: 5294138      Analysis Time...: 12:45  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT</u>	<u>RECOVERY</u>	<u>METHOD</u>
Perchlorate	106	(78 - 118)	SW846 8321A

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



LABORATORY CONTROL SAMPLE DATA REPORT

HPLC

Client Lot #...: D5J150185      Work Order #...: HM9JR1AC      Matrix.....: WATER  
LCS Lot-Sample#: R5J210000-138  
Prep Date.....: 10/21/05      Analysis Date...: 10/21/05  
Prep Batch #...: 5294138      Analysis Time...: 12:45  
Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>METHOD</u>
Perchlorate	1.00	1.06	ug/L	106	SW846 8321A

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.  
Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

HPLC

Client Lot #....: D5J150185      Work Order #....: HMT361AC-MS      Matrix.....: WATER  
MS Lot-Sample #: D5J150185-010      HMT361AD-MSD  
Date Sampled...: 10/14/05 13:15      Date Received...: 10/15/05  
Prep Date.....: 10/21/05      Analysis Date...: 10/21/05  
Prep Batch #....: 5294138      Analysis Time...: 15:58  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Perchlorate	115	(65 - 138)			SW846 8321A
	116	(65 - 138)	1.2	(0-29)	SW846 8321A

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

HPLC

Client Lot #...: D5J150185      Work Order #...: HMT361AC-MS      Matrix.....: WATER  
 MS Lot-Sample #: D5J150185-010      HMT361AD-MSD  
 Date Sampled...: 10/14/05 13:15      Date Received...: 10/15/05  
 Prep Date.....: 10/21/05      Analysis Date...: 10/21/05  
 Prep Batch #...: 5294138      Analysis Time...: 15:58  
 Dilution Factor: 1

PARAMETER	SAMPLE	SPIKE	MEASRD	UNITS	PERCNT		METHOD
	AMOUNT	AMT	AMOUNT		RECVRY	RPD	
Perchlorate	ND	1.00	1.15	ug/L	115		SW846 8321A
	ND	1.00	1.16	ug/L	116	1.2	SW846 8321A

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters







# Chain of Custody Record

CHAIN OF CUSTODY NUMBER

SEVERN  
TRENT

STL

Severn Trent Laboratories, Inc.

2.9cc  
28.1438

STL4149 (1202)



Client E.I. Dupont de Nemours and Co		Project Manager Gary Pender		Date 10/13/2005	Page <u>3</u> of <u>8</u>
Address ADAM Services - DuPont 178		Telephone Number (Area Code)/Fax Number (000) / (000)		Lab Location 911 Denver	
City Washington	State DC	Zip Code 20005	Site Contact NANCIE HODLEY	Analysis	
Project Number/Name B&K		Carrier/Waybill Number			
Contract/Purchase Order/Quote Number CONTRACT / PURCHASE ORDER # : 7035-507516-772000/LB10-63332					

Sample I.D. Number and Description	Date	Time	Sample Type	Containers			Preservative	Condition on Receipt/Comments
				Volume	Type	No.		
BAR G PZ-10D	10/14/05	1315	WATER	40ml	VIAL	2	None	
BAR G PZ-26S	10/14/05	1500	WATER	40ml	VIAL	2	None	
<del>BAR G</del>			<del>WATER</del>	<del>40ml</del>	<del>VIAL</del>	<del>2</del>	<del>None</del>	
<del>BAR G</del>			<del>WATER</del>	<del>40ml</del>	<del>VIAL</del>	<del>2</del>	<del>None</del>	
BAR-W-SS105-T001	10/14/05	1600	Water	1000 mL	Amber	2	None	not sampled - <del>W</del> not sampled - <del>W</del>

EXP 3216

Special Instructions: Perchlorates

Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		(A fee may be assessed if samples are retained longer than 3 months)	
Turn Around Time Required <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush <input type="checkbox"/> Other _____		QC Level <input type="checkbox"/> I. <input type="checkbox"/> II. <input type="checkbox"/> III.		Project Specific Requirements (Specify)	
1. Relinquished By <i>[Signature]</i>		Date 10/14/05	Time 0815	1. Received By <i>[Signature]</i>	
2. Relinquished By <i>[Signature]</i>		Date 10/14/05	Time 1600	2. Received By <i>[Signature]</i>	
3. Relinquished By		Date	Time	3. Received By	

Comments





**SEVERN  
TRENT**

**STL**

**STL Denver**  
4955 Yarrow Street  
Arvada, CO 80002

Tel: 303 736 0100 Fax: 303 431 7171  
www.stl-inc.com

**ANALYTICAL REPORT**

E. I. DuPont Project:  
**Barksdale Site**  
**Perchlorate Sampling 10/05**  
7035-507553-772000  
LBIO-65332

Release No. STL17175

Lot #: D5K160186

Attn: ADQM  
URS-Diamond  
Barley Mill Plaza, Building 27  
Lancaster Pike & Route 141  
Wilmington, DE 19805

Severn Trent Laboratories, Inc./STL Denver



Gail DeRuzzo  
Project Manager

November 17, 2005

# Table Of Contents

## Standard Deliverables with Supporting Documentation

### Report Contents

### Number of Pages

#### Standard Deliverables

*(The Cover Letter and the Report Cover page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.)*

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Methods Summary
- Method/Analyst Summary
- Lot Sample Summary
- Analytical Results
- QC Data Association Summary
- Chain-of-Custody

#### Supporting Documentation

*(Note: A one-page "Description of Supporting Documentation" is provided at the beginning of this section.)*

Check below when supporting documentation is present.

- Volatile GC/MS
- Semivolatile GC/MS
- Volatile GC
- Semivolatile GC
- LC/MS or HPLC
- Metals
- General Chemistry
- Subcontracted Data

## Case Narrative

### D5K160186

The following report contains the analytical results for two water samples received at STL Denver on November 16, 2005, according to documented sample acceptance procedures.

Dilution factors and footnotes have been provided on each datasheet to assist in the interpretation of the results.

STL Denver utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated. A summary of QC data for these analyses is included at the rear of the report.

The results included in this report have been reviewed for compliance with the Laboratory Quality Manual. All results have been found to meet all requirements of NELAC and any exceptions are noted below. STL Denver's State of Wisconsin certification number is 999615430.

This report shall not be reproduced except in full, without the written approval of the laboratory.

#### **SUPPLEMENTAL QC INFORMATION**

##### **Sample Arrival and Receipt**

The samples presented in this report were received at a temperature of 1.3°C. All sample containers were received in an acceptable condition.

Samples BAR-G-PZ-16-POT-EFFLUENT and BAR-G-CLUBHOUSE-EFFLUENT were canceled by the client after sample receipt.

##### **Perchlorate – Method 8321A – IC/MS/MS**

There were no anomalies noted.

# EXECUTIVE SUMMARY - Detection Highlights

D5K160186

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL</u> <u>METHOD</u>
NO DETECTABLE PARAMETERS				

# METHODS SUMMARY

D5K160186

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
8321A Perchlorate ICMSMS	SW846 8321A	SW846 8321A

## References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

## METHOD / ANALYST SUMMARY

D5K160186

<u>ANALYTICAL METHOD</u>	<u>ANALYST</u>	<u>ANALYST ID</u>
SW846 8321A	Steve Cowling	008738

### References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

DSK160186

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
HP97R	001	BAR-G-PZ-16-POT-INFLOW	11/15/05	08:40
HP98E	003	BAR-G-CLUBHOUSE-INFLOW	11/15/05	08:20

**NOTE(S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-PZ-16-POT-INFLOW

HPLC

Lot-Sample #....: D5K160186-001 Work Order #....: HP97R1AA Matrix.....: WATER  
Date Sampled....: 11/15/05 08:40 Date Received...: 11/16/05  
Prep Date.....: 11/16/05 Analysis Date...: 11/16/05  
Prep Batch #....: 5320330 Analysis Time...: 12:39  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	ND	0.010	ug/L	0.0022



E.I. Dupont De Nemours and Co

Client Sample ID: BAR-G-CLUBHOUSE-INFLOW

HPLC

Lot-Sample #...: D5K160186-003 Work Order #...: HP98E1AA Matrix.....: WATER  
Date Sampled...: 11/15/05 08:20 Date Received...: 11/16/05  
Prep Date.....: 11/16/05 Analysis Date...: 11/16/05  
Prep Batch #...: 5320330 Analysis Time...: 13:47  
Dilution Factor: 1  
Method.....: SW846 8321A

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perchlorate	ND	0.010	ug/L	0.0022

# QC DATA ASSOCIATION SUMMARY

D5K160186

Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	WATER	SW846 8321A		5320330	5320186
003	WATER	SW846 8321A		5320330	5320186

METHOD BLANK REPORT

HPLC

Client Lot #....: D5K160186  
MB Lot-Sample #: R5K160000-330

Work Order #....: HQAAP1AA

Matrix.....: WATER

Analysis Date...: 11/16/05  
Dilution Factor: 1

Prep Date.....: 11/16/05  
Prep Batch #....: 5320330

Analysis Time...: 11:54

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Perchlorate	ND	0.010	ug/L	SW846 8321A

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

HPLC

Client Lot #...: D5K160186      Work Order #...: HQAAP1AC      Matrix.....: WATER  
LCS Lot-Sample#: R5K160000-330  
Prep Date.....: 11/16/05      Analysis Date...: 11/16/05  
Prep Batch #...: 5320330      Analysis Time...: 12:16  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>	<u>METHOD</u>
Perchlorate	92	(70 - 140)	SW846 8321A

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.  
Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

HPLC

Client Lot #....: D5K160186      Work Order #....: HQAAP1AC      Matrix.....: WATER  
LCS Lot-Sample#: R5K160000-330  
Prep Date.....: 11/16/05      Analysis Date...: 11/16/05  
Prep Batch #....: 5320330      Analysis Time...: 12:16  
Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>METHOD</u>
Perchlorate	0.100	0.0925	ug/L	92	SW846 8321A

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

HPLC

Client Lot #...: D5K160186      Work Order #...: HP97R1AC-MS      Matrix.....: WATER  
MS Lot-Sample #: D5K160186-001      HP97R1AD-MSD  
Date Sampled...: 11/15/05 08:40      Date Received...: 11/16/05  
Prep Date.....: 11/16/05      Analysis Date...: 11/16/05  
Prep Batch #...: 5320330      Analysis Time...: 13:02  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>	<u>RPD</u>	<u>RPD</u> <u>LIMITS</u>	<u>METHOD</u>
Perchlorate	91	(59 - 140)			SW846 8321A
	91	(59 - 140)	0.13	(0-20)	SW846 8321A

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

HPLC

Client Lot #...: D5K160186      Work Order #...: HP97R1AC-MS      Matrix.....: WATER  
 MS Lot-Sample #: D5K160186-001      HP97R1AD-MSD  
 Date Sampled...: 11/15/05 08:40      Date Received...: 11/16/05  
 Prep Date.....: 11/16/05      Analysis Date...: 11/16/05  
 Prep Batch #...: 5320330      Analysis Time...: 13:02  
 Dilution Factor: 1

PARAMETER	SAMPLE	SPIKE	MEASRD	UNITS	PERCNT		METHOD
	AMOUNT	AMT	AMOUNT		RECVRY	RPD	
Perchlorate	ND	0.100	0.0908	ug/L	91		SW846 8321A
	ND	0.100	0.0907	ug/L	91	0.13	SW846 8321A

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

**Chain of Custody Record**

9.3  
RB  
11/16/05 IRI

**SEVERN TRENT STL**  
Severn Trent Laboratories, Inc.

STL Denver  
4955 Yarrow Street  
Arvada, CO 80002

STL-4124 (0901)

Client <b>E.I. DuPont</b>		Project Manager <b>Cary Pooler</b>		Date <b>11/15/05</b>	Chain of Custody Number <b>329930</b>
Address <b>72315 Hwy 13</b>		Telephone Number (Area Code)/Fax Number		Lab Number <b>Denver</b>	Page <b>1</b> of <b>1</b>

City <b>Ashland</b>	State <b>WI</b>	Zip Code <b>54806</b>	Site Contact <b>Marcus Dudley</b>	Lab Contact <b>G DeLuizzo</b>	Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt
Project Name and Location (State) <b>Barksdale Perchlorate</b>			Carrier/Waybill Number			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix					Containers & Preservatives						Perchlorate
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc2	NaOH	
BAR-G-PZ-16-POT-INFLOW	11/15/05	0840		X				X						X
BAR-G-PZ-16-POT-EFFLUENT	↓	0840		X				X						X
BAR-G-CLUBHOUSE-INFLOW	↓	0820		X				X						X
BAR-G-CLUBHOUSE-EFFLUENT	↓	0820		X				X						X

Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown	Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	(A fee may be assessed if samples are retained longer than 1 month)
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Turn Around Time Required  
 24 Hours  48 Hours  7 Days  14 Days  21 Days  Other **see P.O.**

1. Relinquished By <i>[Signature]</i>	Date <b>11/10/05</b>	Time <b>1300</b>	1. Received By <i>[Signature]</i>	Date <b>11/14/05</b>	Time <b>1200</b>
2. Relinquished By <i>[Signature]</i>	Date <b>11/15/05</b>	Time <b>1000</b>	2. Received By <i>[Signature]</i>	Date <b>11/16/05</b>	Time <b>0900</b>
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments