

Dare County
Closed East Lake Landfill
Facility Permit No. 28-02
Semi-Annual Sampling Report
(August 2011 Sampling Event)

Dare County

Report

December 2011



CDM

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

- Instructions:**
- Prepare one form for each individually monitored unit.
 - Please type or print legibly.
 - Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
 - Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
 - Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
 - Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):
 Consultant - Camp Dresser & McKee

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:
 Name: Mathew F. Colone Phone: 919-787-5620
 E-mail: colonemf@cdm.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Dare County Closed East Lake Landfill	U.S. Highway 64 East Lake, NC 27953	28-02	.0500	August 15, 2011

Environmental Status: (Check all that apply)
 Initial/Background Monitoring Detection Monitoring Assessment Monitoring Corrective Action

Type of data submitted: (Check all that apply)
 Groundwater monitoring data from monitoring wells Methane gas monitoring data
 Groundwater monitoring data from private water supply wells Corrective action data (specify) _____
 Leachate monitoring data Other(specify) _____
 Surface water monitoring data

Notification attached?
 No. No groundwater or surface water standards were exceeded.
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

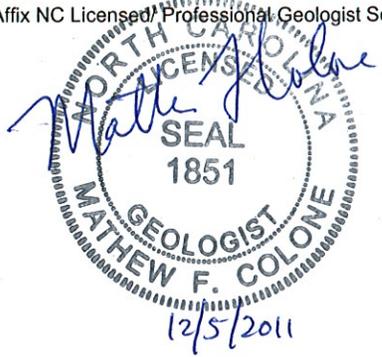
Mathew F. Colone Consultant (919) 787-5620

Facility Representative Name (Print) Title (Area Code) Telephone Number

Signature Date Affix NC Licensed Professional Geologist Seal

5400 Glenwood Ave, Suite 300, Raleigh, NC 27612
 Facility Representative Address

F-0412
 NC PE Firm License Number (if applicable effective May 1, 2009)





5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
tel: 919 787-5620
fax: 919 781-5730

December 5, 2011

Ms. Jaclynne Drummond
North Carolina Department of Environment and Natural Resources
Division of Waste Management
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Subject: August 2011 Semi-Annual Monitoring Sampling Report
Closed East Lake Landfill, Dare County
Facility Permit No. 28-02

Dear Ms. Drummond:

CDM, on behalf of Dare County, is submitting one copy of the August 2011 semi-annual sampling event report. This letter report presents the results of the most recent semi-annual sampling event that was completed at the Closed East Lake Landfill and constitutes the second semi-annual sampling event for 2011. The groundwater monitoring network consists of 10 wells (Well #1s, Well #1d, Well #2s, Well #2d, Well #3s, Well #3d, Well #4s, Well #4d, Well #5s, and Well #5d) and one surface water sampling location (downstream). Sampling results for all wells and the surface water sampling location are discussed below.

Field Activities

Groundwater and surface water samples from the Closed East Lake Landfill were collected on August 15, 2011 by Environment One, Inc. Sampling locations are shown on the site map (**Figure 1**). Prior to sampling each well was measured in the field for pH, conductivity, temperature, and total suspended solids. The water quality parameters at the time of sampling are presented in **Table 1**.

Sampling Results

Environment One, Inc. in Greenville, North Carolina analyzed groundwater samples for the North Carolina Appendix I volatile organic compounds (VOC's), metals, and select inorganics. In accordance with Solid Waste Section guidelines the analytical results were reported to the laboratory specific method detection limit (MDL) and are quantifiable at or below Solid Waste Section Limits (SWSLs). All monitoring wells and the surface water location for the Closed East Lake Landfill had detections of analytes above the MDL with a majority of the detections below SWSLs. These detections were qualified as estimated or "J" flags.





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The following list indicates the analytes detected above the MDL at each sampling location. No "J" flag detections are provided. Underlined analytes exceeded the North Carolina 2L Standard (2L), Groundwater Protection Standard, or the North Carolina Surface Water Standards for Class C Waters (2B). A complete summary of all detected and estimated concentrations for the August 2011 and previous sampling events are presented on **Table 2**. The historical data is not continuous as only data for select years was available. A copy of the laboratory report is provided in **Appendix A**.

Well #1s

Inorganics: Chloride
Metals: Arsenic
Volatile Organic Compounds: None Detected

Well #1d

Inorganics: Chloride
Metals: Nickel, Zinc
Volatile Organic Compounds: None Detected

Well #2s

Inorganics: Chloride
Metals: Barium, Zinc
Volatile Organic Compounds: Benzene, Chlorobenzen, 1,4-Dichlorobenze

Well #2d

Inorganics: Chloride
Metals: Chromium, Copper, Nickel, Zinc
Volatile Organic Compounds: None Detected

Well #3s

Inorganics: Chloride
Metals: Barium, Selenium, Zinc
Volatile Organic Compounds: None Detected

Well #3d

Inorganics: Chloride, Sulfate
Metals: Copper, Zinc
Volatile Organic Compounds: None Detected



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Well #4s

Inorganics: Chloride
Metals: Zinc
Volatile Organic Compounds: None Detected

Well #4d

Inorganics: Chloride
Metals: Zinc
Volatile Organic Compounds: None Detected

Well #5s

Inorganics: Chloride
Metals: Arsenic, Barium, Zinc
Volatile Organic Compounds: None Detected

Well #5d

Inorganics: Chloride
Metals: Zinc
Volatile Organic Compounds: None Detected

Downstream

Inorganics: Chloride, Sulfate
Metals: Selenium
Volatile Organic Compounds: None Detected

“J” flags were not included in the previous list, but several locations had “J” flag detections that exceeded the standards. The “J” flag constituents above the standards along with their locations are listed below.

Cobalt: Well #2s, Well #2d, Well #3s, Well #4s, Well #5d
Copper: Downstream
Vanadium: Well #1s, Well #1d, Well #2s, Well #2d, Well #3s, Well #3d, Well #4s, Well #4d,
Well #5s, Well #5d



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CDM will monitor future analytical results to determine if any trend appears and Dare County will continue with the semi-annual groundwater monitoring program.

If you have any questions or require further explanation, do not hesitate to call me at (919) 787-5620.

Very truly yours,

A handwritten signature in blue ink that reads 'Mathew F. Colone'.

Mathew F. Colone, P.G.
Camp Dresser & McKee

cc: Edward Mann, Dare County

Table 1
Water Quality Field Parameters
August 2011 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well I.D.	Water Quality Parameters			
		pH	Conductivity (uS/cm)	Temperature (deg.C)	TSS (mg/L)
28-02	Well #1s	6.70	1,381	19	38
28-02	Well #1d	7.10	957	19	NA
28-02	Well #2s	6.40	1,300	22	51
28-02	Well #2d	6.70	1,407	21	NA
28-02	Well #3s	6.10	3,058	24	11
28-02	Well #3d	6.90	926	20	NA
28-02	Well #4s	6.80	1,125	22	141
28-02	Well #4d	6.90	857	20	NA
28-02	Well #5s	6.40	1,524	21	58
28-02	Well #5d	7.10	766	21	NA
Surface Water Sampling Locations					
28-02	Downstream	6.40	6,040	29	NA

Notes:

1. mg/L - milligrams per liter
2. uS - Microsiemens
3. TSS - Total Suspended Solids
4. NA - not analyzed

Table 2a
Detected Groundwater Constituents - Metals, Volatile Organic Compounds, and Inorganics
August 2011 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitor Well ID	Sample Date	Metals																	Volatile Organic Compounds							Inorganics					
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride (mg/L)	Sulfate (mg/L)		
North Carolina 2L Standard			1*	10	700	4*	2	10	1*	1,000	NS	15	NS	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	1	1	1	600	NS	250	
Solid Waste Section Limit			6	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	1	5	5	250	
28-02	Well #1s	15-Feb-90			104					13	8,150		486	0.4						23										510	55	
28-02	Well #1s	2-Feb-95		75							55,350		1,119																189	275		
28-02	Well #1s	12-Jan-96		65										137														17	606			
28-02	Well #1s	20-Aug-01		46																								9.5	261.4			
28-02	Well #1s	12-Sep-02		43																								8	93.5			
28-02	Well #1s	26-Mar-03		41																								6	213			
28-02	Well #1s	2-Sep-04		46																								17	188			
28-02	Well #1s	19-Feb-07		25																												
28-02	Well #1s	20-Aug-07		73																												
28-02	Well #1s	25-Feb-08		28																												
28-02	Well #1s	15-Aug-11		43	66.7J		0.18J	0.22J	0.76J	1.7J				6.4J	1.5J		0.03J	2.8J	8.7J											130	96.9J	
28-02	Well #1d	2-Feb-95									1,864		1,961																78	14		
28-02	Well #1d	12-Jan-96																											85	85		
28-02	Well #1d	20-Aug-01						78						325															67	5.3		
28-02	Well #1d	12-Sep-02																											126			
28-02	Well #1d	26-Mar-03					2																						94			
28-02	Well #1d	2-Sep-04																											85			
28-02	Well #1d	19-Feb-07																														
28-02	Well #1d	20-Aug-07																														
28-02	Well #1d	25-Feb-08																														
28-02	Well #1d	15-Aug-11		0.41J	2.7J		0.50J		0.41J	9.2J				71	0.33J				1.4J	284									97	11.2J		
28-02	Well #2s	15-Feb-90			305						47,300		10,400																65	150		
28-02	Well #2s	2-Feb-95		15				22			80,900		623																59	35		
28-02	Well #2s	12-Jan-96		18	574			21						291									47						43			
28-02	Well #2s	20-Aug-01																					56						27	6.5		
28-02	Well #2s	12-Sep-02		14																			41.4		7.1				19	351.7		
28-02	Well #2s	26-Mar-03																					32.6						25	178.0		
28-02	Well #2s	2-Sep-04																					44		5.1				22			
28-02	Well #2s	19-Feb-07																					13									
28-02	Well #2s	20-Aug-07			126																		46		4.5							
28-02	Well #2s	25-Feb-08			153																		22		3.2							
28-02	Well #2s	15-Aug-11		9J	114		0.16J	0.90J	2.3J	8.8J		1.4J		22.1J	0.81J		0.03J	4.1J	38				2.5							323.4		
																							2.6									
																							17.4									
																							1.2									
																							17.4									
28-02	Well #2d	2-Feb-95									4,886		881																461	50		
28-02	Well #2d	12-Jan-96																											446	39.9		
28-02	Well #2d	20-Aug-01																											410	37.9		
28-02	Well #2d	12-Sep-02						18																					520	37.3		
28-02	Well #2d	26-Mar-03																											410	37.2		
28-02	Well #2d	2-Sep-04																											385	37.2		
28-02	Well #2d	19-Feb-07																														
28-02	Well #2d	20-Aug-07																														
28-02	Well #2d	25-Feb-08																														
28-02	Well #2d	15-Aug-11		0.85J	10.5J		0.07J	10	3.0J	15		3.8J		82	2.2J	0.27J			1.7J	485									430	35.4J		

Table 2a
Detected Groundwater Constituents - Metals, Volatile Organic Compounds, and Inorganics
August 2011 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitor Well ID	Sample Date	Metals																	Volatile Organic Compounds							Inorganics				
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride (mg/L)	Sulfate (mg/L)	
North Carolina 2L Standard			1*	10	700	4*	2	10	1*	1,000	NS	15	NS	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	6	5	600	NS	250	
Solid Waste Section Limit			6	10	100	1	1	10		10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	1	5	250	
28-02	Well #3s	15-Feb-90			42																									30	50
28-02	Well #3s	2-Feb-95		17						2,470		354																	91	380	
28-02	Well #3s	11-Jan-96								20,150		391																	248	250	
28-02	Well #3s	20-Aug-01																											340	84.7	
28-02	Well #3s	12-Sep-02																											242	262.7	
28-02	Well #3s	26-Mar-03																											180	283.5	
28-02	Well #3s	2-Sep-04																											82	72.0	
28-02	Well #3s	19-Feb-07																													
28-02	Well #3s	20-Aug-07																													
28-02	Well #3s	25-Feb-08			151																										
28-02	Well #3s	15-Aug-11		5.2J	370			0.61J	1.2J	6.0J		0.67J		2.3J	12	0.41J		2.3J	150										1,619	75.4J	
28-02	Well #3d	2-Feb-95								2,009		396																	185	60	
28-02	Well #3d	11-Jan-96																											171	56	
28-02	Well #3d	20-Aug-01																											52	7.6	
28-02	Well #3d	12-Sep-02																											5	8.1	
28-02	Well #3d	26-Mar-03																											83	39.2	
28-02	Well #3d	2-Sep-04																											128	51.3	
28-02	Well #3d	19-Feb-07																													
28-02	Well #3d	20-Aug-07																													
28-02	Well #3d	25-Feb-08																													
28-02	Well #3d	15-Aug-11		0.82J	21.5J	0.09J	0.07J		0.13J	30		6.5J		0.50J	0.82J	0.07J		2.2J	183										99	35.1J	
28-02	Well #4s	15-Feb-90		13	286					29,400		486	0.4							10									83	20	
28-02	Well #4s	2-Feb-95								5,855		422																	124	140	
28-02	Well #4s	11-Jan-96																											760	32	
28-02	Well #4s	20-Aug-01																		125									160	6.4	
28-02	Well #4s	12-Sep-02																		58									50		
28-02	Well #4s	26-Mar-03																											144	5.1	
28-02	Well #4s	2-Sep-04						12												74									128		
28-02	Well #4s	19-Feb-07																													
28-02	Well #4s	20-Aug-07																		50											
28-02	Well #4s	25-Feb-08																		21											
28-02	Well #4s	15-Aug-11		3.0J	86.5J	0.12J	0.09J	5.2J	3.7J	5.3J		3.0J		6.7J	1.1J	0.15J	0.03J	6.5J	87										120	12.1J	
28-02	Well #4d	2-Feb-95								1,543		253																	50	5	
28-02	Well #4d	11-Jan-96																											92	8	
28-02	Well #4d	20-Aug-01																											110	8.7	
28-02	Well #4d	12-Sep-02																												122	
28-02	Well #4d	26-Mar-03																												154	
28-02	Well #4d	2-Sep-04																												86	
28-02	Well #4d	19-Feb-07																													
28-02	Well #4d	20-Aug-07																		13											
28-02	Well #4d	25-Feb-08																													
28-02	Well #4d	15-Aug-11		0.38J	3.7J				0.11J	6.3J		2.0J		0.49J	0.28J			1.7J	16										73	20.8J	

Table 2a
Detected Groundwater Constituents - Metals, Volatile Organic Compounds, and Inorganics
August 2011 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitor Well ID	Sample Date	Metals																	Volatile Organic Compounds							Inorganics				
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride (mg/L)	Sulfate (mg/L)	
North Carolina 2L Standard			1*	10	700	4*	2	10	1*	1,000	NS	15	NS	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	1	5	600	NS	250	
Solid Waste Section Limit			6	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	5	5	250	
28-02	Well #5s	15-Feb-90			419																									720	50
28-02	Well #5s	2-Feb-95		14																									351	290	
28-02	Well #5s	11-Jan-96		10																								378	250		
28-02	Well #5s	20-Aug-01																										140	46.9		
28-02	Well #5s	12-Sep-02																										128	47.6		
28-02	Well #5s	26-Mar-03																										114	35.6		
28-02	Well #5s	2-Sep-04																										95			
28-02	Well #5s	19-Feb-07																													
28-02	Well #5s	20-Aug-07			199																								18		
28-02	Well #5s	25-Feb-08			159																								12		
28-02	Well #5s	15-Aug-11		12	206	0.10J	0.15J	1.2J	1.7J	6.0J		1.4J			3.2J	1.9J	0.04J	0.10J	5.7J										73		
28-02	Well #5d	2-Feb-95																											65	8	
28-02	Well #5d	11-Jan-96																											75	11	
28-02	Well #5d	20-Aug-01																											70	7.3	
28-02	Well #5d	12-Sep-02																											62	5.9	
28-02	Well #5d	26-Mar-03																											56		
28-02	Well #5d	2-Sep-04																											56		
28-02	Well #5d	19-Feb-07																													
28-02	Well #5d	20-Aug-07																												10	
28-02	Well #5d	25-Feb-08																													
28-02	Well #5d	15-Aug-11		0.44J	3.5J		0.32J			0.15J	8.9J				27.5J	0.26J	0.08J	0.04J	1.6J	1,715									56	17.6J	
28-02	Well #6s	12-Jan-96						50	24						97					72	109								52		
28-02	Well #6d	12-Jan-96	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		490	62.5	
28-02	Well #7s	12-Jan-96		12				22							84														35	294	
28-02	Well #7d	12-Jan-96		19	752	3		30	15						73														706	245	

Notes:

Metal and Volatile Organic Compound units are in micrograms per liter (parts per billion).

Inorganic units are in milligrams per liter (parts per million).

*-Groundwater Protection Standard

NS - No Standard

-- Not Analyzed

Blank cells indicate analyte was not detected

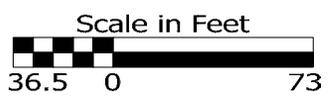
Concentration exceeds NC 2L Groundwater Standards

J - Indicates the analytical result is an estimated concentration between the method detection limit and the Solid Waste Section Reporting Limit (SWSL)

**Table 2b
Detected Surface Water Constituents - Metals, Volatile Organic Compounds, and Inorganics
August 2011 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill**

Facility Permit Number	Sampling Location	Sample Date	Metals																	Volatile Organic Compounds						Inorganics			
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride (mg/L)	Sulfate (mg/L)
North Carolina 2BL Standard			10*	10*	1,000	6.5	2	50	NS	7**	1,000**	25	200	0.012	88	5	0.06**	NS	NS	50**	NS	51	488	NS	488	NS	11	230**	250
Solid Waste Section Limit			10	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	3	1	1	1	1	5	250
28-02	Downstream	15-Feb-90			241						39	460	354							41								290	76
28-02	Downstream	2-Feb-95									1,327		92															2,059	350
28-02	Downstream	12-Jan-96																										451	204
28-02	Downstream	20-Aug-01						178							834													1,400	193.6
28-02	Downstream	12-Sep-02																										1,320	37.6
28-02	Downstream	26-Mar-03																										425	61.7
28-02	Downstream	2-Sep-04																										186	14
28-02	Downstream	19-Feb-07																											
28-02	Downstream	20-Aug-07																											
28-02	Downstream	25-Feb-08																											
28-02	Downstream	15-Aug-11		5.6J	37.7J				0.26J	8.1J		0.05J			0.04J					0.86J	4.4J							2,749	345

Notes:
Metal and Volatile Organic Compound units are in micrograms per liter (parts per billion).
Inorganic units are in milligrams per liter (parts per million).
Standards obtained from section 15A NCAC 02B .0211 Fresh Surface Water Quality Standards for Class C Waters
- Concentrations exceeds NC2B Standards for Class C Waters
- Blank cells indicate analyte was not detected
NS = No Standard
* - Human Health Standard
** - Action Level Standard
J - Indicates the analytical result is an estimated concentration between the Method Detection Limit and the Solid Waste Section Reporting Limit.



- LEGEND**
- Groundwater Monitoring Well (Location Approximated)
 - . . - Parcel Boundary

Figure 1: Site Map
 August 2011 Semi-Annual Sampling Event
 Closed East Lake Landfill
 East Lake, North Carolina

Appendix A

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6016

DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO ,NC 27954

DATE COLLECTED: 08/15/11
DATE REPORTED : 08/22/11

REVIEWED BY: 

PARAMETERS	MDL	Downstream		Well #1	Well #1	Well #2	Well #2	Analysis		Method Code
		SWSL		Shallow	Deep	Shallow	Deep	Date	Analyst	
PH (field measurement), Units			6.4	6.7	7.1	6.4	6.7	08/15/11	RJH	SM4500HB
Total Suspended Residue, mg/l	1.0	1.0		38		51		08/15/11	MEL	SM2540D
Chloride, mg/l	5.0	5.0	2749	130	97	114	430	08/16/11	HLB	SM4500-CLB
Sulfate, mg/l	5.0	250.0	345	96.9 J	11.2 J	14.0 J	35.4 J	08/18/11	TRB	SM426C
Antimony, ug/l	0.14	6.0	---	---	---	---	---	08/17/11	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	5.6 J	43	0.41 J	9 J	0.85 J	08/17/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	37.7 J	66.7 J	2.7 J	114	10.5 J	08/17/11	LFJ	EPA200.8
Beryllium, ug/l	0.02	1.0	---	---	---	---	---	08/17/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	---	0.18 J	0.50 J	0.16 J	0.07 J	08/17/11	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	0.26 J	0.76 J	0.41 J	2.3 J	3.0 J	08/17/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	8.1 J	1.7 J	9.2 J	8.8 J	15	08/17/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	---	0.22 J	---	0.90 J	10	08/17/11	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	0.05 J	0.18 J	0.08 J	1.4 J	3.8 J	08/17/11	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	0.04 J	6.4 J	71	22.1 J	82	08/17/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	18	1.5 J	0.33 J	0.81 J	2.2 J	08/17/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	---	---	---	---	0.27 J	08/17/11	LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	---	0.03 J	---	0.03 J	---	08/17/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	0.86 J	2.8 J	1.4 J	4.1 J	1.7 J	08/17/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	4.4 J	8.7 J	284	38	485	08/17/11	LFJ	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	6040	1381	957	1300	1407	08/15/11	RJH	SM2510B
Temperature, °C			29	19	19	22	21	08/15/11	RJH	SM2550B

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6016

DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO ,NC 27954

DATE COLLECTED: 08/15/11
DATE REPORTED : 08/22/11

REVIEWED BY: 

PARAMETERS	MDL	SWSL	Well #3	Well #3	Well #4	Well #4	Well #5	Analysis Date	Analyst	Method Code	
			Shallow	Deep	Shallow	Deep	Shallow				
PH (field measurement), Units			6.1	6.9	6.8	6.9	6.4	08/15/11	RJH	SM4500HB	
Total Suspended Residue, mg/l	1.0	1.0	11		141		58	08/15/11	MEL	SM2540D	
Chloride, mg/l	5.0	5.0	1619	99	120	73	73	08/16/11	HLB	SM4500-CLB	
Sulfate, mg/l	5.0	250.0	75.4 J	35.1	12.1 J	20.8 J	---	U 08/18/11	TRB	SM426C	
Antimony, ug/l	0.14	6.0	---	U	---	U	---	U 08/17/11	LFJ	EPA200.8	
Arsenic, ug/l	0.10	10.0	5.2 J	0.82 J	3.0 J	0.38 J	12	08/17/11	LFJ	EPA200.8	
Barium, ug/l	0.02	100.0	370	21.5 J	86.5 J	3.7 J	206	08/17/11	LFJ	EPA200.8	
Beryllium, ug/l	0.02	1.0	---	U	0.09 J	0.12 J	---	U 08/17/11	LFJ	EPA200.8	
Cadmium, ug/l	0.02	1.0	---	U	0.07 J	0.09 J	---	U 08/17/11	LFJ	EPA200.8	
Cobalt, ug/l	0.03	10.0	1.2 J	0.13 J	3.7 J	0.11 J	1.7 J	08/17/11	LFJ	EPA200.8	
Copper, ug/l	0.02	10.0	6.0 J	30	5.3 J	6.3 J	6.0 J	08/17/11	LFJ	EPA200.8	
Total Chromium, ug/l	0.04	10.0	0.61 J	---	U 5.2 J	---	U 1.2 J	08/17/11	LFJ	EPA200.8	
Lead, ug/l	0.02	10.0	0.67 J	6.5 J	3.0 J	2.0 J	1.4 J	08/17/11	LFJ	EPA200.8	
Nickel, ug/l	0.04	50.0	2.3 J	0.50 J	6.7 J	0.49 J	3.2 J	08/17/11	LFJ	EPA200.8	
Selenium, ug/l	0.20	10.0	12	0.82 J	1.1 J	0.28 J	1.9 J	08/17/11	LFJ	EPA200.8	
Silver, ug/l	0.02	10.0	0.41 J	0.07 J	0.15 J	---	U 0.04 J	08/17/11	LFJ	EPA200.8	
Thallium, ug/l	0.02	5.5	---	U	---	U 0.03 J	---	U 0.10 J	08/17/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	2.3 J	2.2 J	6.5 J	1.7 J	5.7 J	08/17/11	LFJ	EPA200.8	
Zinc, ug/l	0.24	10.0	150	183	87	16	20	08/17/11	LFJ	EPA200.8	
Conductivity (at 25c), uMhoe	1.0	1.0	3058	926	1125	857	1524	08/15/11	RJH	SM2510B	
Temperature, °C			24	20	22	20	21	08/15/11	RJH	SM2550B	

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6016

DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO ,NC 27954

DATE COLLECTED: 08/15/11
DATE REPORTED : 08/22/11

REVIEWED BY: 

PARAMETERS	MDL	Well #5		Analysis		Method
		SWSL	Deep	Date	Analyst	Code
PH (field measurement), Units			7.1	08/15/11	RJH	SM4500HB
Chloride, mg/l	5.0	5.0	56	08/16/11	HLB	SM4500-CLB
Sulfate, mg/l	5.0	250.0	17.6 J	08/18/11	TRB	SM426C
Antimony, ug/l	0.14	6.0	--- U	08/17/11	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	0.44 J	08/17/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	3.5 J	08/17/11	LFJ	EPA200.8
Beryllium, ug/l	0.02	1.0	--- U	08/17/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	0.32 J	08/17/11	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	0.15 J	08/17/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	8.9 J	08/17/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	--- U	08/17/11	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	2.8 J	08/17/11	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	27.5 J	08/17/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	0.26 J	08/17/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	0.08 J	08/17/11	LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	0.04 J	08/17/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	1.6 J	08/17/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	1715	08/17/11	LFJ	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	766	08/15/11	RJH	SM2510B
Temperature, °C			21	08/15/11	RJH	SM2550B

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO, NC 27954

CLIENT ID: 6016

ANALYST: MAO
DATE COLLECTED: 08/15/11
DATE ANALYZED: 08/17/11
DATE REPORTED: 08/22/11

Page: 1

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Downstream	Well #1 Shallow	Well #1 Deep	Well #2 Shallow	Well #2 Deep
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U	1.20	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U	17.40	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	--- U	1.80	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

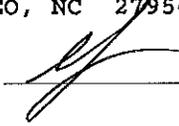
Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO, NC 27954

CLIENT ID: 6016
ANALYST: MAO
DATE COLLECTED: 08/15/11 Page: 2
DATE ANALYZED: 08/17/11
DATE REPORTED: 08/22/11

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Well #3 Shallow	Well #3 Deep	Well #4 Shallow	Well #4 Deep	Well #5 Shallow
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylene	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

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MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
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CLIENT ID: 6016

ANALYST: MAO
DATE COLLECTED: 08/15/11
DATE ANALYZED: 08/17/11
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Page: 3

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Well #5
			Deep
1. Chloromethane	0.77	1.0	--- U
2. Vinyl Chloride	0.63	1.0	--- U
3. Bromomethane	0.67	10.0	--- U
4. Chloroethane	0.48	10.0	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U
7. Acetone	9.06	100.0	--- U
8. Iodomethane	0.26	10.0	--- U
9. Carbon Disulfide	0.23	100.0	--- U
10. Methylene Chloride	0.64	1.0	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U
13. Vinyl Acetate	0.20	50.0	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U
15. 2-Butanone	2.21	100.0	--- U
16. Bromochloromethane	0.27	3.0	--- U
17. Chloroform	0.25	5.0	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U
20. Benzene	0.24	1.0	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U
22. Trichloroethene	0.23	1.0	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U
24. Bromodichloromethane	0.21	1.0	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U
27. Toluene	0.23	1.0	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U
30. Tetrachloroethene	0.17	1.0	--- U
31. 2-Hexanone	1.57	50.0	--- U
32. Dibromochloromethane	0.24	3.0	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U
34. Chlorobenzene	0.30	3.0	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U
36. Ethylbenzene	0.21	1.0	--- U
37. Xylenes	0.68	5.0	--- U
38. Dibromomethane	0.28	10.0	--- U
39. Styrene	0.19	1.0	--- U
40. Bromoform	0.20	3.0	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U
42. 1,2,3-Trichloropropene	0.43	1.0	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U
46. Acrylonitrile	2.72	200.0	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

