PROJECT NUMBER 444-010-95

SEMI-ANNUAL GROUND WATER SAMPLING
JAMECO INDUSTRIES, INC.
248 WYANDANCH, AVE
WYANDANCH, NEW YORK

May 20, 1998

Prepared For:

New York State Department
of Environmental Conservation

and

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SEMI-ANNUAL GROUND WATER SAMPLING REPORT
248 WYANDANCH AVENUE
WYANDANCH, NEW YORK

TABLE OF CONTENTS

1.0 Introduction

Goldman Environmental Consultants, Inc. (GEC) of Braintree, Massachusetts has been contracted by Watts Industries, Inc. (Watts) and Jameco Industries, Inc. (Jameco) to conduct Quarterly Ground Water Sampling at the Jameco facility located at 248 Wyandanch, Avenue in Wyandanch, New York. These activities are being conducted in accordance with Jameco's Maintenance Plan that was approved by the New York Department of Environmental Conservation (NYSDEC).

GEC and Jameco's previous consultants, AKRF, INC, conducted the first quarterly sampling in July, 1994. In conjunction with this sampling effort, GEC and AKRF also conducted a limited investigation to determine if there was evidence that a release of metals and/or chlorinated compounds had occurred beneath the site building. This investigation included the installation of three ground water observation wells through the floor of the building. As a result of this investigation dissolved-phase chlorinated compounds were detected in the shallow portions of the overburden aquifer beneath the building. Complete documentation of this investigation is presented in a document entitled Maintenance Plan First Quarterly Report prepared by AKRF and completed in August, 1994.

As a result of the investigations conducted by GEC and AKRF, and after conversations between GEC, Watts, and NYSDEC personnel, the scope of quarterly ground water sampling was amended so as to better characterize ground water conditions across the site. Changes in the scope were limited to adding one of the newly installed monitoring wells (MW-12) to the sampling list and removing two of the wells (MW-4 and MW-6) from the list. This revised sampling plan has been employed for several quarters. In addition, the sampling plan was further revised to reduce the frequency of sampling to semi-annual.

All activities were conducted in accordance with GEC's Standard Operating Procedures and QA/QC Plan, copies of which are attached as Appendix A.

2.0 Ground Water Sampling and Surveying

On April 9, 1998, GEC personnel collected ground water samples from monitoring wells MW-1, MW-2, MW-3, MW-5, MW-7, MW-9 and MW-12. Prior to sample collection the approximate volume of standing water in each well was computed and a volume of water equal to between three and five times the volume of standing water was evacuated from the monitoring well. GEC utilized dedicated or precleaned standard check-valve bailers or pre-cleaned electric submersible pumps. The samples were collected using dedicated plastic bailers or electric peristaltic pumps and were stored on ice in laboratory-issued, preserved, glass and nalgene containers. All samples were shipped overnight to AEN a New York State certified laboratory in Monroe Connecticut under fully documented chain of custody procedures.

Prior to initiation of well evacuation and sampling activities, GEC measured the depth to water in all of the on-site monitoring wells. GEC personnel previously conducted a survey of monitoring wells, using standard "rod and level techniques" to determine the relative elevation of the monitoring wells as part of previous site investigations. Depth to water and ground water elevation for these wells is included in this Sampling Report.

The results of the ground water gauging and well survey were used to determine the relative elevation of ground water at the site and to determine the direction of ground water flow. As a result of these activities, the ground water flow at the site appears to be toward the southeast. Complete results of the gauging and survey are included as Table 1.

3.0 Laboratory Analysis

Ground water samples were submitted for laboratory analysis to determine the concentration of volatile organic compounds (VOCs) (via EPA Method 8260A), hexavalent chromium (via Colorimetric, 307-B Methods) and 13 Priority Pollutant Metals (total). The laboratory results are summarized on Tables 2 and 3 attached, and a complete laboratory report is included as Appendix B. Also included on these tables are the results of the sampling that was conducted during previous rounds. The results of these analyses are also summarized in the paragraphs below.

Volatile Organic Compounds

Results of recent analyses indicate that the concentrations of volatile organic compounds in ground water at the site remain essentially unchanged from previous sampling rounds. Contaminant concentrations in MW-2 are generally consistent with the previous rounds. GEC attributes the slight increase to facility closure activities, which may have mobilized some contaminants, and to seasonal groundwater fluctuations. The concentrations in MW-12 have decreased significantly. GEC attributes this decrease to the operation of the SVE system, which was installed in the vicinity of MW-10, 11 and 12 to reduce contaminant concentrations in the soil gas.. Benzene, previously detected at MW-12, was not detected during this sampling round. It is unclear if benzene reported for this well was the result of laboratory error or possibly sample contamination.

Hexavalent Chrome and Metals

Concentrations of total metals and hexavalent chrome remain essentially unchanged from previous sampling rounds. Concentrations are relatively low across the entire site but are somewhat higher in the immediate vicinity of the plating area (within the building footprint) and downgradient of the former leaching lagoons. Hexavalent chrome detected at very low concentrations in wells downgradient of the former plating area. GEC concludes that these concentrations may be attributed to the closure of the plating area and liberation of contaminants during the closure.

4.0 Conclusions

In accordance with the NYSDEC-approved Maintenance Plan, and on behalf of Jameco and Watts, GEC has completed the most recent round of ground water sampling at the Jameco facility, located at 248 Wyandanch, Avenue in Wyandanch, New York.

The results of the ground water sampling indicate that concentrations of volatile organic compound and metals remain generally unchanged from the previous sampling rounds. GEC will continue to collect ground water samples from designated wells on a regular basis. The next sampling round is tentatively scheduled for October, 1998 presuming the Remedial Investigation has not been initiated in the mean time.

5.0 Warranty

The conclusions contained in this report are based on the information readily available to GEC as of May 20, 1998. GEC provides no warranties on information provided by third parties and contained herein. Data compiled was in accordance with GEC's approved scope of services, and the NYSDEC - approved Maintenance Plan and should not be construed beyond its limitations. Any interpretations or use of this report other than those expressed herein are not warranted. The use, partial use, or duplication of this report without the express written consent of Goldman Environmental Consultants, Inc. is strictly prohibited.

Respectfully submitted,
Goldman Environmental Consultants, Inc.

Prepared By:

Samuel W. Butcher
Vice President, Operations

TABLES

Table 1
GROUNDWATER ELEVATION MEASUREMENTS
Jameco Industries, Inc.
Wyandanch, Ave., Wyandanch, New York
(unit, feet)

Well Number	Screened Interval Depth	Depth to Water	Measuring Point Elevation	Groundwater Elevation
MW-1				
10/4/94	6.43 to 16.43	11.27	101.47	90.20
1/26/95		11.08	101.47	90.39
4/19/95		11.15	101.47	90.32
7/24/95		12.34	101.47	89.13
10/12/95		12.72	101.47	88.75
1/17/96		11.88	101.47	89.59
4/11/96		10.21	101.47	91.26
10/9/96		10.93	101.47	90.54
4/16/97		9.80	101.47	91.67
10/23/97		11.67	101.47	89.80
4/8/98		8.24	101.47	93.23
MW-2				
10/4/94	6.00 to 16.00	11.02	100	88.98
1/26/95		10.79	100	89.21
4/19/95		10.90	100	89.10
7/24/95		11.92	100	88.08
10/12/95		12.16	100	87.84
1/17/96		Buried in snow	NA	NA
4/11/96		Covered	NA	NA
10/9/96		10.72	NA	NA
4/16/97		7.55	100	92.45
10/23/97		11.29	100	88.71
4/8/98		8.39	100	91.61
MW-3				
10/4/94	9.91 to 19.91	14.61	102.57	87.96
1/26/95		14.44	102.57	88.13
4/19/95		14.56	102.57	88.01
7/24/95		15.49	102.57	87.08
10/12/95		15.83	102.57	86.74
1/17/96		15.05	102.57	87.52
4/11/96		13.53	102.57	89.04
10/9/96		14.39	102.57	88.18
4/16/97		12.50	102.57	90.07
10/23/97		15.23	102.57	87.34
4/8/98		11.94	102.57	90.63
MW-4				
10/4/94	10.05 to 20.05	13.85	103.41	89.56
1/26/95		13.60	103.41	89.81
4/19/95		13.73	103.41	89.68
7/24/95		14.63	103.41	88.78
10/12/95		15.07	103.41	88.34
1/17/96		14.11	103.41	89.30
4/11/96		12.61	103.41	90.80
10/9/96		13.55	103.41	89.86
4/16/97		11.60	103.41	91.81
10/23/97		14.31	103.41	89.10
4/8/98		11.07	103.41	92.34
MW-5				
10/4/94	6.27 to 16.27	10.44	99.32	88.88
1/26/95		10.18	99.32	89.14
4/19/95		10.37	99.32	88.95
7/24/95		11.31	99.32	88.01
10/12/95		11.64	99.32	87.68
1/17/96		Buried in snow	NA	NA
4/11/96		9.42	99.32	89.90
10/9/96		10.12	99.32	89.20
4/15/97		8.20	99.32	91.12
10/23/97		10.70	99.32	88.62
4/8/98		8.04	99.32	91.28

Prepared by HB/CW
Reviewed by SB
Revised 5/20/98

Table 1
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Jameco Industries, Inc.
Wyandanch, Ave., Wyandanch, New York
(unit, feet)

Well Number	Screened Interval Depth	Depth to Water	Measuring Point Elevation	Groundwater Elevation
MW-6				
10/4/94	6.00 to 16.00	9.86	Not Found	NA
1/26/95		Not Found	NA	NA
4/19/95		Not Found	NA	NA
7/24/95		Not Found	NA	NA
10/12/95		Not Found	NA	NA
1/17/96		Not Found	NA	NA
4/11/96		Not Found	NA	NA
10/9/96		10	Not Found	NA
4/16/97		Not Found	Not Found	NA
10/23/97		Not Found	Not Found	NA
4/8/98		7.50	Not Found	NA
MW-7				
10/4/94	12.56 to 22.56	9.01	98.76	89.75
1/26/95		8.83	98.76	89.93
4/19/95		8.97	98.76	89.79
7/24/95		9.90	98.76	88.86
10/12/95		10.35	98.76	88.41
1/17/96		8.58	98.76	90.18
4/11/96		7.97	98.76	90.79
10/9/96		8.70	98.76	90.06
4/16/97		6.60	98.76	92.16
10/23/97		9.36	98.76	89.40
4/8/98		6.52	98.76	92.24
MW-8				
10/4/94	10.89 to 20.89	10.70	99.47	88.77
1/26/95		10.43	99.47	89.04
4/19/95		10.60	99.47	88.87
7/24/95		11.42	99.47	88.05
10/12/95		11.89	99.47	87.58
1/17/96		Buried in snow	NA	NA
4/11/96		9.64	99.47	89.83
10/9/96		10.34	99.47	89.13
4/16/97		8.30	99.47	91.17
10/23/97		10.79	99.47	88.68
4/8/98		8.34	99.47	91.13
MW-9				
10/4/94	10.57 to 20.57	8.90	97.80	88.90
1/26/95		8.68	97.80	89.12
4/19/95		8.88	97.80	88.92
7/24/95		9.72	97.80	88.08
10/12/95		9.98	97.80	87.82
1/17/96		9.28	97.80	88.52
4/11/96		7.88	97.80	89.92
10/9/96		8.55	97.80	89.25
4/16/97		6.85	97.80	90.95
10/23/97		9.25	97.80	88.55
4/8/98		6.79	97.80	91.01
MW-10		8.55	97.80	89.25
10/4/94	86.7 to 96.7	11.14	99.97	88.83
1/26/95		10.53	99.97	89.44
4/19/95		10.72	99.97	89.25
7/24/95		11.66	99.97	88.31
10/12/95		12.06	99.97	87.91
1/17/96		11.24	99.97	88.73
4/11/96		9.76	99.97	90.21
10/9/96		10.57	99.97	89.40
4/15/97		8.32	99.97	91.65
10/23/97		11.09	99.97	88.88
4/8/98		8.04	99.97	91.93

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Wyandanch, Ave., Wyandanch, New York
(unit, feet)

Well Number	Screened Interval Depth	Depth to Water	Measuring Point Elevation	Groundwater Elevation
MW-11				
10/4/94	50.0 to 60.0	10.77	99.95	89.18
1/26/95		10.54	99.95	89.41
4/19/95		10.66	99.95	89.29
7/24/95		11.61	99.95	88.34
10/12/95		12.10	99.95	87.85
1/17/96		11.21	99.95	88.74
4/11/96		9.68	99.95	90.27
10.09/96		10.45	99.95	89.50
4/16/97		8.24	99.95	91.71
10/23/97		11.00	99.95	88.95
4/8/98		8.05	99.95	91.90
MW-12				
10/4/94	5.35 to 15.35	11.79	99.97	88.18
1/26/95		10.51	99.97	89.46
4/19/95		10.66	99.97	89.31
7/24/95		11.66	99.97	88.31
10/12/95		12.08	99.97	87.89
1/17/96		11.20	99.97	88.77
4/11/96		10.10	99.97	89.87
10/9/96		10.47	99.97	89.50
4/16/97		8.24	99.97	91.73
10/23/97		11.05	99.97	88.92
4/8/98		8.04	99.97	91.93
MW-13*				
10/4/94		10.00/10.25	99.67	89.63**
1/26/95		9.85/9.86	99.67	89.82**
4/19/95		10.02/10.01	99.67	89.65**
7/24/95		Destroyed		
4/11/96		Destroyed		
10/9/96				
4/16/97		Destroyed		
10/23/97		Destroyed		
4/8/98		Destroyed		
MW-14				
7/24/95	3-20	Not Gauged	100.07	NA
10/12/95		11.98	100.07	88.09
1/17/96		Not Located	NA	NA
4/11/96		9.51	100.07	
10/9/96		10.26	100.07	89.81
4/16/97		7.55	100.07	92.52
10/23/97		Not Located	NA	NA
4/8/98		Not Gauged	NA	NA
MW-15				
7/24/95	3-20	11.23/12.81	99.98	88.54**
10/12/95		Covered	NA	NA
1/17/96		10.93/11.38	99.98	88.99
4/11/96		9.50	99.98	90.48
10/9/96		10.20	99.98	89.78
4/16/97		8.24	99.98	91.74***
10/23/97		Not Gauged****	99.98	NA
10/29/97		11.08	99.98	88.90***
4/8/98		7.99	99.98	91.99
MW-16				
7/24/95	5-25	11.49	99.97	88.48
10/12/95		Not Gauged	NA	NA
1/17/96		Under equipment	NA	NA
4/11/96		9.62	99.97	90.35
10/9/96		DNF		
4/15/97		8.15	99.97	91.82
10/23/97		10.87	99.97	89.10
4/8/98		8.05	99.97	91.92

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Jameco Industries, Inc.
Wyandanch, Ave., Wyandanch, New York
(unit, feet)

Well Number	Screened Interval Depth	Depth to Water	Measuring Point Elevation	Groundwater Elevation
MW-17				
7/24/95	5-25	Not Accessible	100.03	NA
10/12/95		12.08	100.03	87.95
1/17/96		Under equipment	NA	NA
4/11/96		9.74	100.03	90.29
10/9/96		DNF		
4/16/97		8.46	100.03	91.57
10/23/97		11.16	100.03	88.87
4/8/98		8.23	100.03	91.80
MW-18				
7/24/95	5-25	11.55	99.97	88.42
10/12/95		12.02	99.97	87.95
1/17/96		11.16	99.97	88.81
4/11/96		9.65	99.97	90.32
10/9/96		10.42	99.97	89.55
4/16/97		8.24	99.97	91.73
10/23/97		10.98	99.97	88.99
4/8/98		8.10	99.97	91.87
MW-19				
7/24/95	5-25	11.21/13.35	100.00	88.51**
10/12/95		Not Gauged	NA	NA
1/17/96		11.00/11.35	100.00	88.95
4/11/96		9.54	100.00	90.46
10/9/96		10.27	100.00	89.73
4/16/97	8.18	8.25	100.00	91.75
10/23/97		11.35	101.00	89.65***
4/8/98		8.04	101.00	92.96
MW-20				
7/24/95	5-25	11.47	100.00	88.53
10/12/95		Covered	NA	NA
1/17/96		11.09	100.00	88.91
4/11/96		9.63	100.00	90.37
10/9/96		10.33	100.00	89.67
4/16/97		8.38	100.00	91.62
10/23/97		11.03	100.00	88.97
4/8/98		8.14	100.00	91.86
MW-21				
7/24/95	3-20	11.46	100.02	88.48
10/12/95		11.96	100.02	88.06
1/17/96		11.09	100.02	88.93
4/11/96		9.62	100.02	90.40
10/9/96		10.33	100.02	89.69
4/16/97		8.31	100.02	91.71
10/23/97		10.99	100.02	89.03
4/8/98		8.12	100.02	91.90
MW-22				
7/24/95	3-20	11.48	99.95	88.48
10/12/95		11.98	99.95	87.97
1/17/96		Covered	NA	NA
4/11/96		9.58	99.95	90.37
10/9/96		10.30	99.95	89.65
4/16/97		8.16	99.95	91.79
10/23/97		10.90	99.95	89.05
4/8/98		7.97	99.95	91.98
MW-23				
7/24/95	3-20	11.45	100.10	88.48
10/12/95		11.92	100.10	88.18
1/17/96		11.07	100.10	89.03
4/11/96		9.57	100.10	90.53
10/9/96		10.31	100.10	89.79
4/16/97		8.10	100.10	92.00
10/23/97		10.71	100.10	89.39
4/8/98		8.12	100.10	91.98
MW-24				
10/9/96	6-21	9.99	NA	NA
10/23/97		Not Found	NA	NA

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Wyandanch, Ave., Wyandanch, New York
(unit, feet)

Well Number	Screened Interval Depth	Depth to Water	Measuring Point Elevation	Groundwater Elevation
MW-25				
10/9/96	6-21	9.90	NA	NA
10/23/97		Not Found	NA	NA
MW-26				
10/8/96	6-20	9.98	NA	NA
10/23/97		Under Roll-off	NA	NA

* = Previously referred to as "Mystery Well"
** = Corrected for Petroleum Thickness assuming density of 0.87
Product thickness not measured during the 10/12/95 gauging event.
***= Trace of product noted
****= Evidence of product noted. Gauged on 10/29/97 with oil/water interface probe.
Approximately 0.53 feet of product observed during 10/29/97 gauging event.

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Table 2
Groundwater Analytical Results: Volatile Organic Compounds (VOCs)
Jameco Industries, Inc.
248 Wyandanch Avenue
Wyandanch, New York
(units, parts per billion [ppb])

Sample Identification	Benzene	Chloro-methane	Chloro-form	1,1-dichloro-ethane	cis-1,2-dichloro-ethene	Ethyl Benzene	Methylene Chloride	4-Methyl-2-pentanone	Methyl-t-butyl ether	1,1,2,2-Tetra-chloroethane	Tetrachloro ethene	Toluene	Trans 1,2-DCE	1,1,1-Trichloro ethane	1,1,2-Trichloro ethane	Trichloro ethene	1,2,4-Trimethyl benzene	Vinyl Chloride	Xylenes (total)
MW-1																			
6/91	ND	ND	ND	ND	ND	ND	ND	7.0	NA	ND	ND	ND	ND	11	ND	ND	ND	ND	ND
5/23/94	ND	ND	ND	ND	ND	NA	0.2	NA	NA	ND	ND	ND	ND	30	ND	ND	ND	ND	NA
1/27/95	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	ND	ND	ND	0.6	ND	ND	ND	ND	NA
4/19/95	ND	ND	ND	ND	ND	ND	1.0	NA	NA	0.3	ND	ND	ND	0.6	ND	ND	ND	ND	ND
7/24/95	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	0.7	ND	ND	ND	ND	ND
10/12/95	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1/17/96	ND	ND	ND	ND	ND	ND	7.1	NA	3.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4/11/96	ND	ND	ND	ND	ND	ND	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/10/96	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4/15/97	ND	ND	ND	ND	ND*	ND	ND	ND	NA	ND	ND	ND	ND*	ND	ND	ND	NA	ND	ND
10/29/97	ND	ND	ND	ND	ND*	ND	ND	ND	NA	ND	2JB	ND	ND*	ND	ND	ND	NA	ND	ND
4/9/98	ND	ND	ND	ND	ND*	ND	ND	ND	NA	ND	ND	ND	ND*	0.4J	ND	ND	NA	ND	ND
MW-2																			
6/91	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	1,500	ND	ND	12	ND	5,400	ND	ND	ND
5/23/94	ND	ND	ND	ND	ND	NA	0.3	NA	NA	ND	28	ND	ND	4.0	0.4	1,200	0.2	12	NA
1/27/95	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	26	ND	ND	ND	ND	180	ND	33	NA
4/19/95	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	11	ND	ND	ND	ND	46	ND	6.0	ND
7/24/95	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	0.5	ND	ND	ND	ND	5.0	ND	ND	ND
10/12/95	ND	ND	ND	ND	ND	ND	6.7	ND	NA	ND	ND	ND	ND	ND	ND	21	ND	ND	ND
10/10/96	ND	ND	ND	ND	48	ND	ND	ND	NA	ND	37	ND	ND	ND	ND	7.0	ND	1.0J	ND
4/15/97	ND	ND	ND	ND	470*	ND	ND	ND	NA	ND	93	ND	470*	ND	ND	1,400	NA	13J	ND
10/29/97	ND	ND	ND	ND	2J*	ND	ND	ND	NA	ND	0.8J	ND	2J*	ND	ND	5	NA	ND	ND
4/9/98	ND	ND	ND	ND	99*	ND	ND	ND	NA	ND	53	ND	99*	ND	ND	410	ND	MD	ND
MW-3																			
6/91	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/23/94	ND	ND	ND	ND	ND	NA	0.2	NA	NA	ND	ND	ND	ND	ND	ND	10	ND	ND	NA
1/27/95	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	ND	ND	ND	ND	ND	4.0	ND	ND	NA
4/19/95	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	25	ND	ND	ND	ND	170	ND	ND	ND
7/24/95	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	4.0	ND	ND	ND	ND	12	ND	ND	ND
10/12/95	ND	ND	ND	ND	ND	ND	12	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1/17/96	ND	1.8***	ND	ND	ND	ND	8.1	NA	ND	ND	1.7	ND	ND	ND	ND	5.3	ND	ND	ND
4/11/96	ND	ND	ND	ND	29	ND	1.1	ND	ND	ND	3.9	ND	ND	ND	ND	94	ND	ND	ND
10/10/06	ND	ND	ND	ND	25	ND	ND	ND	NA	ND	9.0	ND	ND	ND	ND	160	ND	ND	ND
4/15/97	ND	ND	ND	ND	1.0J*	ND	ND	ND	NA	ND	1.0J	ND	1.0J*	ND	ND	38	NA	ND	ND
10/29/97	ND	ND	ND	ND	6*	ND	ND	ND	NA	ND	1J	ND	6*	ND	ND	14	NA	ND	ND
4/9/98	ND	ND	ND	ND	0.5J*	ND	ND	ND	NA	ND	0.8J	ND	0.5J*	ND	ND	8	NA	ND	ND
MW-5																			
6/91	ND	ND	ND	ND	ND	2.0	6.0	46	NA	ND	30	14	ND	30	ND	17	ND	ND	5.0
5/23/94	ND	ND	ND	ND	ND	NA	0.3	NA	NA	ND	9.0	0.9	ND	0.2	ND	14	ND	5.0	NA
1/27/95	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	5.0	ND	ND	ND	ND	5.0	ND	0.5	NA
4/19/95	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	4.0	ND	ND	ND	ND	5.0	ND	ND	ND
7/24/95	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	280	ND	ND	ND	ND	9.0	ND	ND	ND
10/12/95	ND	ND	ND	ND	ND	ND	11	ND	NA	ND	11	ND	ND	ND	ND	5.6	ND	ND	ND
4/11/96	ND	ND	ND	ND	81	ND	ND	ND	4.1	ND	ND	ND	ND	ND	ND	2.0	ND	7.5	ND
10/10/96	ND	ND	ND	ND	13	ND	ND	3.0JB	NA	ND	5.0	ND	ND	ND	ND	40	ND	30	ND
4/15/97	ND	ND	ND	ND	90*	ND	ND	ND	NA	ND	32	ND	90*	ND	ND	11	NA	3.0J	ND
10/29/97	ND	ND	2J	ND	21*	ND	ND	ND	NA	ND	40	ND	21*	ND	ND	180	NA	ND	ND
4/9/98	ND	ND	ND	ND	2J*	ND	ND	ND	NA	ND	4J	ND	2J*	ND	ND	0.4J	NA	ND	ND

Notes:

Standard* refers to the groundwater standard for each element for Class GA groundwaters (6NYCRR Parts 700-705)

MDL - Method Detection Limit NA - Not Analyzed ND - Not Detected NS - Not Sampled

MDL - Ranged from 0.20 ppb to 2 ppb depending on analysis and element.

No compounds were detected above detection limits for samples from 6/91 and 5/18/94.

Wells that were not sampled on specific dates were not included in the sample identification column.

Laboratory analyses were conducted via EPA Method 8260 or 542 or equivalent.

Complete laboratory reports for 1/27/95 sampling are included in GEC's Quarterly Monitoring Report.

Information on this table is summarized from previous investigations.

Acetone, dichlorodifluoromethane, 2-butanone and 2-hexanone were detected in several samples. These results were not tabulated as they are considered laboratory contaminants and not representative of site conditions.

* Reported as total 1,2-dichloroethene

** No guidance value exists

*** detected below quantitation limit

J - Compound was analyzed for and determined to be present in the sample. The concentration listed is an estimated value.

B - Analyte is found in the blanks as well as the sample.

Vinyl Acetate was detected in MW-2 with a result of 3J

Prepared by HB/CW
Reviewed by SB
Revised 5/20/98

Table 2
Groundwater Analytical Results: Volatile Organic Compounds (VOCs)
Jameco Industries, Inc.
248 Wyandanch Avenue
Wyandanch, New York
(units, parts per billion [ppb])

Sample Identification	Benzene	Chloro-methane	Chloro-form	1,1-dichloro-ethane	cis-1,2-dichloro-ethene	Ethyl Benzene	Methylene Chloride	4-Methyl-2-pentanone	Methyl-t-butyl ether	1,1,2,2-Tetra-chloroethane	Tetrachloro ethene	Toluene	Trans 1,2-DCE	1,1,1-Trichloro ethane	1,1,2-Trichloro ethane	Trichloro ethene	1,2,4-Trimethyl benzene	Vinyl Chloride	Xylenes (total)
MW-7																			
6/91	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/23/94	ND	ND	ND	ND	ND	NA	0.3	NA	NA	ND	30	ND	ND	ND	ND	4.0	ND	ND	NA
1/27/95	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	39	ND	ND	ND	ND	3.0	ND	ND	NA
4/19/95	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	15	ND	ND	ND	ND	0.6	ND	ND	ND
7/24/95	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	13	ND	ND	ND	ND	0.8	ND	ND	ND
10/12/95	ND	ND	ND	ND	ND	ND	12	ND	NA	ND	51	ND	ND	ND	ND	9.7	ND	ND	ND
1/17/96	ND	ND	ND	ND	2.9	ND	7.6	NA	1.3	ND	17	ND	ND	ND	ND	1.3	ND	ND	ND
4/11/96	ND	ND	ND	ND	ND	ND	2.3	ND	1.2	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND
10/10/96	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	2.0J	ND	ND	ND	ND	160	ND	ND	ND
4/15/97	ND	ND	ND	ND	21*	ND	ND	ND	NA	ND	51	ND	21*	ND	ND	6.0	NA	ND	ND
10/29/97	ND	ND	ND	ND	38*	ND	ND	ND	NA	ND	44	ND	38*	ND	ND	9	NA	ND	ND
4/9/98	0.2J	ND	ND	ND	2J*	ND	ND	ND	NA	ND	0.7J	ND	2J*	ND	ND	ND	NA	ND	ND
MW-9																			
6/91	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/23/94	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	2	ND	ND	ND	ND	0.3	ND	ND	NA
1/27/95	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
4/19/95	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7/24/95	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/12/95	ND	ND	ND	ND	ND	ND	11	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1/17/96	ND	ND	58	ND	ND	ND	8.8	NA	3.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4/11/96	ND	ND	ND	ND	ND	ND	ND	ND	3.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/10/96	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4/15/97	ND	ND	ND	ND	2.0J*	ND	ND	ND	NA	ND	ND	ND	2.0J*	ND	ND	ND	NA	ND	ND
10/29/97	ND	ND	ND	ND	ND*	ND	ND	ND	NA	ND	ND	ND	ND*	ND	ND	ND	NA	ND	ND
4/9/98	ND	ND	ND	ND	ND*	ND	ND	ND	NA	ND	ND	ND	ND*	ND	ND	ND	NA	ND	ND
MW-12																			
6/91	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
5/23/94	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
1/27/95	ND	ND	ND	ND	ND	NA	370	NA	NA	ND	120	ND	ND	ND	ND	3,300	ND	ND	NA
4/19/95	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	400	ND	ND	ND	ND	1,500	ND	58	ND
7/24/95	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	100	ND	ND	ND	ND	1,800	ND	54	ND
10/12/95	ND	ND	ND	ND	ND	ND	11	ND	NA	ND	75	ND	ND	6.7	ND	1,700	ND	17	ND
1/17/96	ND	ND	13	ND	ND	ND	8.0	NA	ND	ND	75	ND	18	5.3	ND	1,400	ND	ND	ND
4/11/96	ND	ND	5.0	8.9	1,400	ND	14	1.2	ND	ND	220	ND	23	15	1.5	4,200	ND	94	ND
10/10/96	ND	ND	ND	ND	1,800	ND	30J	ND	NA	ND	190	ND	ND	ND	ND	1,900	ND	66J	ND
4/15/97	680	ND	ND	ND	580*	ND	25J	ND	NA	ND	360	120	580*	ND	ND	3,400	NA	ND	ND
10/29/97	ND	ND	76J	ND	400*	ND	ND	ND	NA	ND	120	ND	400*	ND	ND	3,000	NA	ND	ND
4/9/98	ND	ND	3J	ND	48*	ND	ND	ND	NA	ND	55	ND	48*	ND	ND	380	NA	ND	ND

Notes:

Standard* refers to the groundwater standard for each element for Class GA groundwaters (6NYCRR Parts 700-705)
MDL - Method Detection Limit NA - Not Analyzed ND - Not Detected NS - Not Sampled
MDL - Ranged from 0.20 ppb to 2 ppb depending on analysis and element.
No compounds were detected above detection limits for samples from 6/91 and 5/18/94.
Wells that were not sampled on specific dates were not included in the sample identification column.
Laboratory analyses were conducted via EPA Method 8260 or 542 or equivalent.
Complete laboratory reports for 1/27/95 sampling are included in GEC's Quarterly Monitoring Report.
Information on this table is summarized from previous investigations.
Acetone, dichlorodifluoromethane, 2-butanone and 2-hexanone were detected in several samples. These results were not tabulated as they are considered laboratory contaminants and not representative of site conditions.
* Reported as total 1,2-dichloroethene
** No guidance value exists
*** detected below quantitation limit
J - Compound was analyzed for and determined to be present in the sample. The concentration listed is an estimated value.
B - Analyte is found in the blanks as well as the sample.
Vinyl Acetate was detected in MW-2 with a result of 3J

Prepared by HB/CW
Reviewed by SB
Revised 5/20/98

Table 3
Groundwater Analytical Results: Total Metals

Jameco Industries, Inc.
248 Wyandanch Avenue
Wyandanch, New York
(units, parts per million [ppm], mg/L)

Sample Identification	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
MW-1														
5/23/95	32.0	0.019	ND	ND	0.029	0.020	0.026	0.035	ND	ND	ND	ND	ND	0.173
1/27/95	ND	0.042	ND	0.007	0.065	ND	0.084	0.056	0.000	0.042	ND	0.010	ND	0.250
4/19/95	ND	0.035	ND	0.006	0.040	NA	0.054	0.044	ND	ND	ND	ND	ND	0.160
7/24/95	ND	0.048	ND	0.008	0.052	ND	0.071	0.044	0.000	ND	ND	ND	ND	0.180
10/27/95	NA	0.083	NA	ND	0.075	ND	NA	0.057	ND	NA	ND	ND	NA	NA
1/17/96	ND	0.129	0.006	ND	0.124	ND	0.141	0.086	ND	0.105	0.006	ND	ND	0.353
4/11/96	ND	0.051	ND	ND	0.053	ND	0.063	0.042	ND	0.043	ND	ND	ND	0.182
10/10/96	0.006	0.025	0.003	0.003	0.037	ND	0.044	0.034	0.000	0.026	0.004	0.001	0.006	0.149
4/15/97	ND	0.039	0.002B	ND	0.043	ND	0.052E	0.034	ND	0.035B	ND	ND	ND	0.301
10/29/97	ND	0.0052B	ND	ND	0.0046B	ND	0.0064B	ND	ND	0.0051B	ND	ND	ND	0.0316
4/9/98	0.004U	0.0383	0.0016B	0.001UN	0.0367	ND	0.0443	0.0296N	0.0002U	0.0343B	0.0051	0.001U	0.003U	0.110E
MW-2														
5/23/95	0.038	0.007	ND	ND	8.88	0.240	3.16	0.087	ND	4.49	ND	ND	ND	0.747
1/27/95	ND	0.030	ND	0.014	4.00	ND	3.80	0.079	0.000	5.70	ND	0.010	ND	0.700
4/19/95	ND	0.060	ND	0.021	4.90	NA	3.50	0.110	0.000	4.30	ND	ND	ND	0.690
7/24/95	ND	0.054	ND	0.019	3.90	ND	4.10	0.100	0.001	3.60	ND	ND	ND	0.670
10/27/95	NA	0.086	NA	ND	4.09	ND	NA	0.108	0.004	NA	ND	0.014	NA	NA
10/10/96	0.006	0.068	0.004	0.016	3.01	ND	3.34	0.082	0.000	2.53	0.014	0.001	0.011	0.553
4/15/97	0.004B	0.007B	ND	0.002B	0.482	ND	0.830E	0.020	NR	10.2	ND	ND	ND	0.394
10/29/97	ND	0.053	0.0037B	ND	0.059	ND	0.0837	0.0582	ND	0.0538	0.0059	ND	ND	0.215
4/9/98	0.004U	0.0116	0.001U	0.001UN	0.51	0.026	0.684	0.0174N	0.0002U	4.56	0.002U	0.001U	0.003U	0.208E
MW-3														
5/23/95	ND	ND	ND	ND	0.119	0.020	0.597	ND	ND	1.75	ND	ND	ND	0.109
1/27/95	ND	ND	ND	ND	0.320	ND	4.50	ND	ND	3.50	ND	0.011	ND	0.680
4/19/95	ND	ND	ND	ND	0.200	NA	2.80	ND	ND	2.00	ND	ND	ND	0.370
7/24/95	ND	ND	ND	ND	0.061	ND	6.60	ND	0.000	4.20	ND	ND	ND	0.890
10/27/95	NA	ND	NA	ND	0.201	ND	NA	0.041	ND	NA	ND	ND	NA	NA
1/17/96	ND	ND	ND	ND	0.226	ND	4.63	0.027	ND	2.64	ND	ND	ND	0.469
4/11/96	ND	0.010	ND	ND	0.490	ND	3.03	0.043	ND	3.35	ND	ND	ND	0.430
10/10/96	0.006	0.006	0.001	0.001	0.183	ND	1.60	0.033	0.000	1.67	0.004	0.001	0.010	0.340
4/15/97	0.006B	0.006B	ND	0.001B	0.188	ND	0.436E	0.019	ND	0.402	ND	ND	ND	0.112
10/29/97	ND	0.0298	0.0021B	ND	1.440	ND	2.170	0.0484	ND	3.530	ND	ND	ND	0.294
4/9/98	0.004U	0.002U	0.001U	0.001UN	0.0838	ND	0.472	0.0083N	0.002U	0.686	0.002U	0.001U	0.003U	0.258E
MW-5														
5/23/95	0.040	0.029	ND	ND	0.117	0.020	0.639	0.022	ND	0.373	ND	ND	ND	0.582
1/27/95	ND	0.046	ND	0.007	0.100	ND	0.730	0.020	ND	0.230	ND	0.013	ND	0.480
4/19/95	ND	0.049	ND	0.008	0.130	NA	0.920	0.038	ND	0.270	ND	ND	ND	0.420
7/24/95	ND	0.048	ND	0.007	0.100	ND	0.750	0.018	0.000	0.190	ND	ND	ND	0.360
10/27/95	NA	0.087	NA	ND	0.221	ND	NA	0.038	ND	NA	ND	ND	NA	NA
4/11/96	ND	0.099	ND	ND	0.222	ND	1.33	0.041	0.000	0.469	0.005	ND	ND	0.888
10/10/96	0.006	0.075	0.003	0.009	0.220	ND	1.160	0.038	0.000	0.475	0.012	0.001	0.015	0.598
4/15/97	0.003B	0.033	ND	ND	0.052	ND	0.308E	0.012	ND	0.191	0.003BN	ND	ND	0.382
10/29/97	ND	ND	ND	ND	0.0467	ND	0.142	0.0056	ND	0.265	ND	ND	ND	0.168
4/9/98	0.0051B	0.0027B	0.001U	0.0023BN	0.004B	ND	0.0111B	0.003BN	0.002U	0.031B	0.002U	0.001U	0.003U	0.148E
Standard	**0.003****	**0.025**	**0.003**	**0.010**	**0.050**	**0.050**	**0.200**	**0.025**	**0.002**	**No Stnd.**	**0.010**	**0.050**	**0.004****	**0.300**

Notes:

Samples were analyzed via the following SW-846

Standard* refers to the groundwater standard for each element for Class GA groundwaters (6NYCRR Parts 700-705).

**Refers to a Guidance value where no Standard exists.

Barium was detected during 10/12/95 sampling period between 43.5 and 870 ppm.

MDL= Method Detection Limit (Method Detection Limit ranges from 0.00020 ppm to 0.2 ppm depending on analysis and element.

ND= Not Detected

NA= Not Analyzed

NS= Not Sampled

NR= Not Required

B= Indicates analyte result between IDL and contract required detection limit.

E= Reported value is estimated because of the presence of interference.

N= Spiked sample recovery not within control limits

*= Duplicated analysis not within control limit.

Prepared by HB/CW
Reviewed by SB
Revised 5/20/98

Table 3
Groundwater Analytical Results: Total Metals
Jameco Industries, Inc.
248 Wyandanch Avenue
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(units, parts per million [ppm], mg/L)

Sample Identification	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
MW-7														
5/23/95	ND	0.005	ND	ND	ND	0.010	ND	0.006	ND	0.025	ND	ND	ND	0.026
1/27/95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	ND
4/19/95	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
7/24/95	ND	ND	ND	0.005	ND	ND	0.013	ND	ND	ND	ND	ND	ND	0.035
10/27/95	NA	0.015	NA	ND	0.021	ND	NA	0.011	ND	NA	ND	ND	NA	NA
1/17/96	ND	0.010	ND	ND	ND	ND	0.020	0.007	ND	ND	0.007	ND	ND	0.033
4/11/96	ND	ND	ND	ND	ND	ND	0.020	0.009	ND	ND	ND	ND	ND	0.033
10/10/96	0.006	0.006	0.001	0.001	0.012	ND	0.013	0.005	0.000	0.007	0.004	0.001	0.010	0.022
4/15/97	0.004B	0.013	ND	ND	0.011	ND	0.066E	0.012	ND	0.009B	ND	ND	ND	0.049
10/29/97	ND	0.0724	0.0013B	ND	0.124	ND	0.670	0.0222	ND	0.250	ND	ND	ND	0.401
4/9/98	0.004U	0.002U	0.001U	0.0543N	0.0022B	0.025	0.0113	0.0235N	0.002U	0.104B	0.002U	0.001U	0.003U	0.0613E
MW-9														
5/23/95	ND	ND	ND	ND	ND	0.010	ND	0.005	ND	ND	ND	ND	ND	0.034
1/27/95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	0.024
4/19/95	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	0.025
7/24/95	ND	0.013	ND	ND	0.017	ND	0.019	0.010	ND	ND	ND	ND	ND	0.100
10/27/95	NA	0.013	NA	ND	0.021	ND	NA	0.013	ND	NA	ND	ND	NA	NA
1/17/96	ND	0.013	ND	ND	0.024	ND	0.028	0.014	ND	0.016	ND	ND	ND	0.108
4/11/96	ND	0.012	ND	ND	ND	ND	0.022	0.013	ND	0.016	ND	ND	ND	0.162
10/10/96	0.006	0.006	0.001	0.001	0.008	ND	0.010	0.004	0.002	0.004	0.004	0.001	0.015	101
4/15/97	ND	ND	ND	0.004B	0.003BE	ND	ND	ND	ND	ND	ND	ND	ND	0.165
10/29/97	ND	0.0112	ND	ND	0.0142	ND	0.0149B	0.0062	ND	0.0113B	ND	ND	ND	0.181
4/9/98	0.004U	0.0039B	0.001U	0.002BN	0.108	ND	0.0166B	0.0068N	0.002U	0.0089B	0.002U	0.001U	0.003U	0.0897E
MW-12														
5/23/95	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/27/95	0.180	0.110	0.019	0.082	18.0	ND	21.0	0.310	0.001	21.0	0.006	ND	ND	5.60
4/19/95	ND	0.100	0.015	0.059	14.0	NA	25.0	0.230	0.001	22.0	ND	ND	ND	4.70
7/24/95	0.160	0.073	0.011	0.050	10.0	ND	13.0	0.160	0.001	16.0	ND	ND	ND	3.00
10/27/95	NA	0.047	NA	0.017	5.87	ND	NA	0.090	0.005	NA	ND	ND	NA	NA
1/17/96	ND	0.042	ND	ND	ND	ND	ND	0.076	0.000	9.74	ND	ND	ND	4.26
4/11/96	ND	0.025	ND	ND	2.55	0.022	6.73	0.046	0.000	38.8	ND	ND	ND	5.00
10/10/96	0.006	0.015	0.003	0.008	2.07	ND	7.26	0.036	0.000	37.2	0.004	0.001	0.012	2.68
4/15/97	0.003B	0.006B	ND	0.002B	0.739	ND	4.06E	0.011	ND	18.6	ND	ND	ND	1.72
10/29/97	ND	0.0054B	ND	ND	0.621	ND	2.160	0.0102	ND	8.340	ND	ND	ND	0.703
4/9/98	0.0074B	0.0052B	0.001U	0.001UN	0.758	0.034	3.52	0.0143N	0.002U	2.1	0.0025B	0.001U	0.003U	0.563E
Standard	**0.003****	**0.025**	**0.003**	**0.010**	**0.050**	**0.050**	**0.200**	**0.025**	**0.002**	**No Stnd.**	**0.010**	**0.050**	**0.004****	**0.300**

Notes:

Samples were analyzed via the following SW-846.

Standard * refers to the groundwater standard for each element for Class GA groundwaters (6NYCRR Parts 700-705).

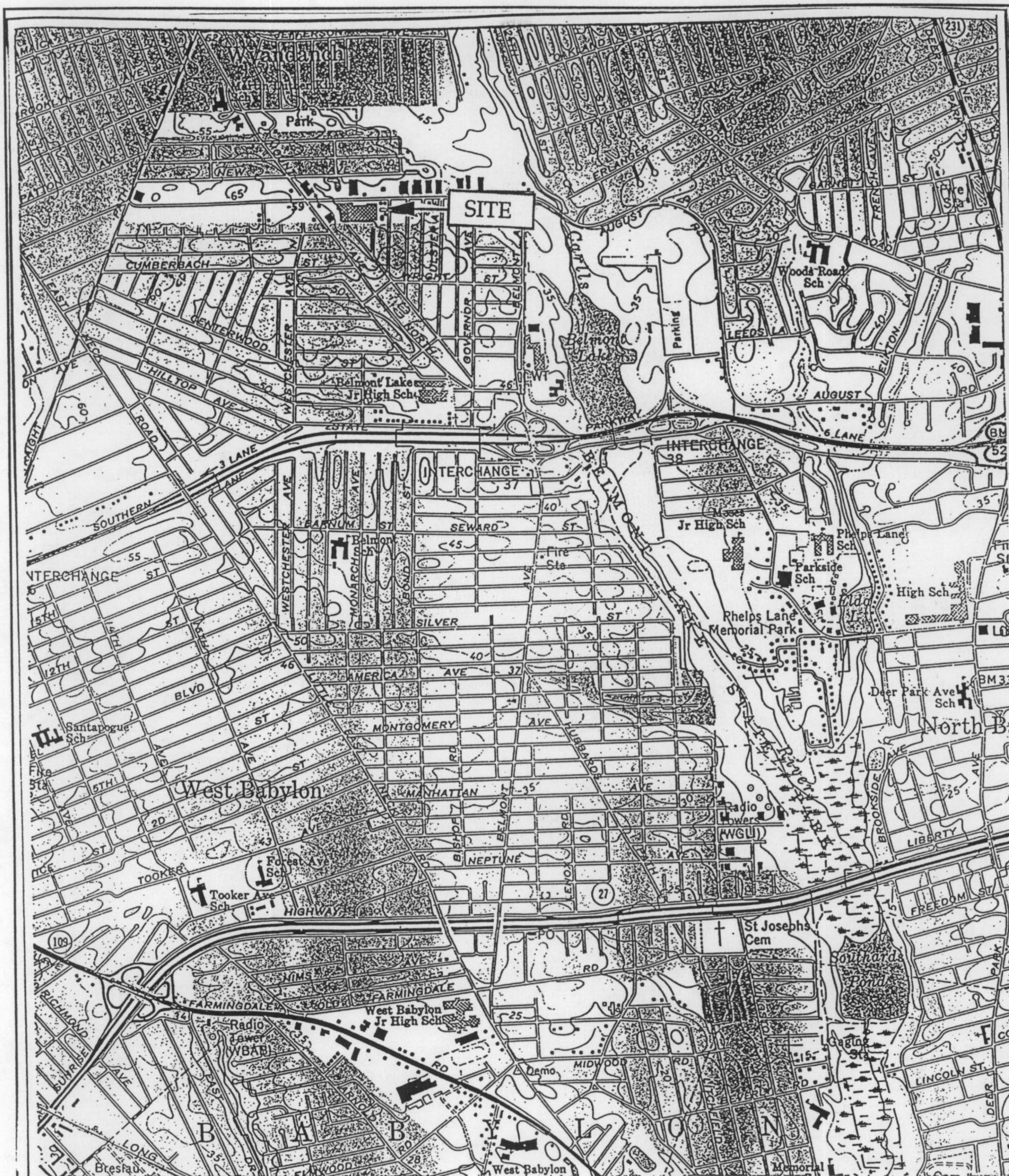
** Refers to a Guidance value where no Standard exists.

Barium was detected during 10/12/95 sampling period between 43.5 and 870 ppm.

MDL= Method Detection Limit (Method Detection Limit ranges from 0.00020 ppm to 0.2 ppm depending on analysis and element.)
ND= Not Detected
NA= Not Analyzed
NS= Not Sampled
NR= Not Required
B= Indicates analyte result between IDL and contract required detection limit .
E= Reported value is estimated because of the presence of interference.
N= Spiked sample recovery not within control limits.
*= Duplicate analysis not within control limit.

Prepared by HB/CW
Reviewed by SB
Revised 5/20/98

FIGURES

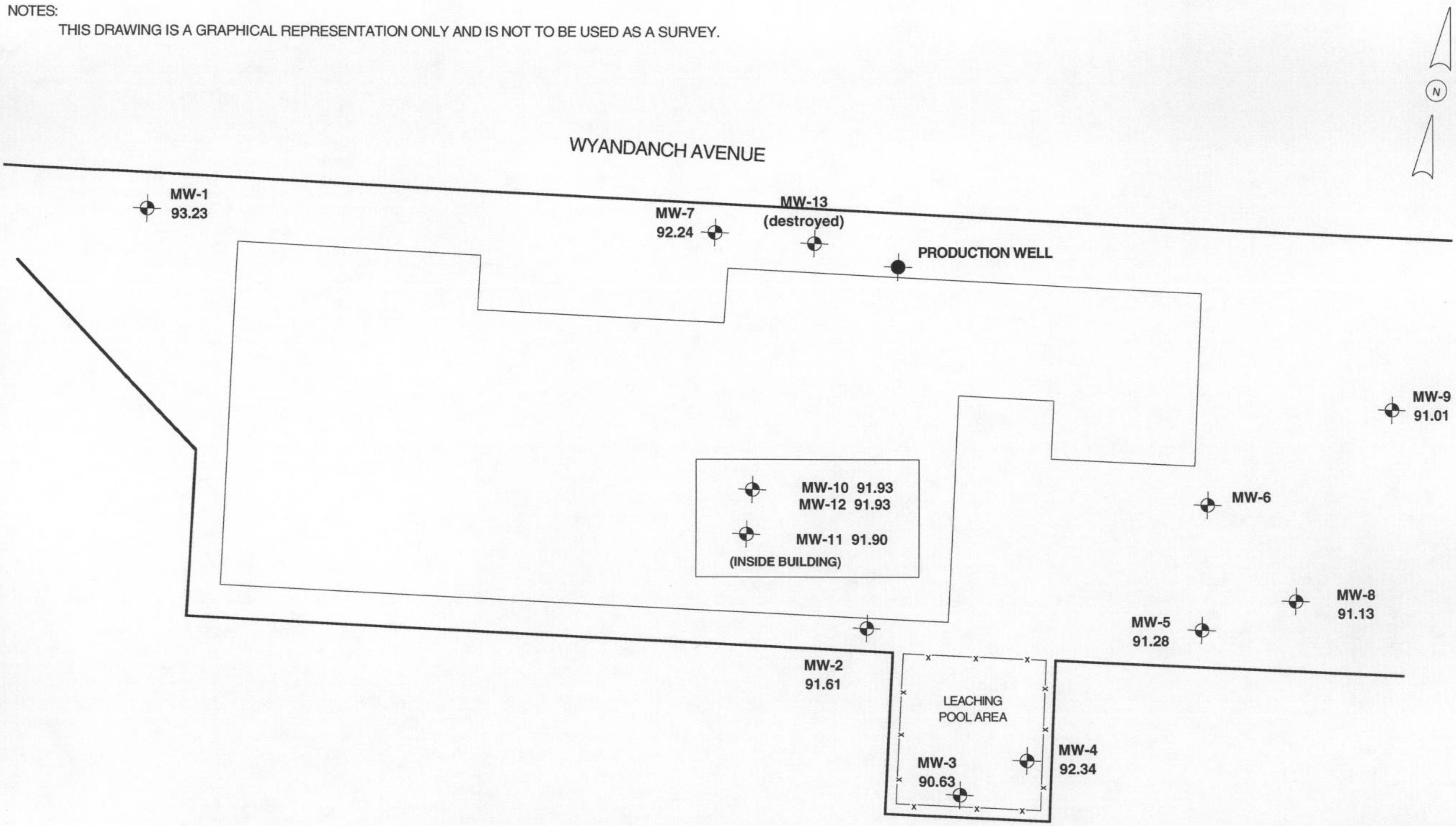


USGS 7.5' Series Topographic

Bay Shore West
New York Quadrangle

GEC Goldman Environmental Consultants, Inc 60 Brooks Drive Braintree, MA 02184 (617) 356-9140	**SITE LOCUS MAP** 248 WYANDANCH AVENUE WYANDANCH, NEW YORK Project No. 444-010-95	**FIGURE 1** SCALE 1 : 25 000 N

NOTES:
THIS DRAWING IS A GRAPHICAL REPRESENTATION ONLY AND IS NOT TO BE USED AS A SURVEY.



GROUND WATER ELEVATION PLAN

JAMECO INDUSTRIES
248 WYANDANCH AVENUE
WYANDANCH, NEW YORK

JOB NUMBER: 444-006-94	SCALE: 1" = 100' ±
DATE: 12/4/97	DRAWN BY: JRD
	CHECKED BY: SWB

GEC Goldman Environmental Consultants, Inc.
15 Pacella Park Drive
Randolph, MA 02368
(617) 961-1200 or (800) 446-2014

2
FIGURE

APPENDIX A

STANDARD OPERATING PROCEDURES

Standard Operating Procedure
Decontamination Procedures for Field Equipment

All field equipment (bailers, well sounder, gloves, etc.) must be decontaminated before each use, between samples and before it is returned to the equipment room. Decontamination procedures vary for the type of analyses to be performed. The following basic procedures should always be used to decontaminate equipment regardless of the type of analysis:

1) Scrub equipment with soapy water (Liquinox, Alconox, trisodiumphosphate or equivalent).

2) Rinse with tap water, if available.

3) Rinse with deionized water from green spray bottle.

For Metals, perform the following additional procedures:

4) Rinse with 10% nitric acid (HNO_3).

5) Final rinse with deionized water.

For base/neutral/acid extractables, PCB's and pesticides perform the following, additional procedures:

4) Rinse with acetone and let dry.

5) Rinse with hexane and let dry.

6) Final rinse with deionized water.

For Volatile Organics and all other analyses, perform the following additional procedures:

4) Rinse with methanol.

5) Final rinse with deionized water

<u>NOTE</u>: When sampling for more than one of the above types of analyses, use the protocol for volatile organics last.
Solvent use should be gauged carefully so that a minimal amount of solvent is left after use. Allow any remaining solvent to evaporate.

Standard Operating Procedure
Field Sampling Protocols
Quality Assurance/Quality Control

The purpose of the GEC QA/QC program is to generate analytical data that is of known and defensible quality. These procedures apply to all projects in which sampling is involved. QA/QC from one project is not transferable to another.

Decontamination

1) Decontamination should be performed on all reusable field sampling equipment and protective gear. Sampling equipment should be decontaminated before the collection of a sample and after sampling has been completed. Protective gear should be decontaminated after the collection of a sample.

2) It is necessary to use the following decontamination solutions in the field:

- Non-phosphate detergent plus tap water wash.
- Distilled/ deionized water rinse.
- 10% Nitric Acid rinse.*
- Methanol rinse, when sampling volatiles only.
- Acetone then hexane rinse.**
- Distilled/ deionized water rinse. **

* Only if sample is to be analyzed for metals.
** Only if sample is to be analyzed for semi-volatile organics, PCBs or pesticides.

3) Sample bottles and sampling equipment should not be stored near gasoline, solvents, or other potential sources of contamination. If unavoidable bottles and equipment should be sealed in containers or plastic.

4) Heavy equipment, including hand tools, should be cleaned by steam cleaning or manual scrubbing prior and subsequent to use in hazardous waste investigations.

Measures or Quality Control/Quality Assurance

1) Trip Blanks

- Trip blanks are used in order to detect additional sources of contamination that might affect analytical results. The following are potential sources of additional contamination:

  a. Sample containers,
  b. Contamination during shipment to and from the site,
  c. Ambient air contact with analytical instrumentation at the laboratory during analysis, or
  d. Laboratory reagent used in analytical procedures.

- One trip blank is required for every set of samples sent to the lab regardless of job size. Generally, the trip blank should be for VOCs. If, however, VOCs are not a parameter of the sampling round, consult the laboratory as to which parameter should have an associated trip blank.

- Trip blanks are to be kept with containers used in the sampling round at all times. More specifically, they should accompany the site specific sampling containers from the time the containers leave the laboratory until they are returned for analysis.

- Obtain containers and trip blanks prepared specifically for each job from the laboratory. Return unused containers to the laboratory upon completion of a project.

2) Field Blanks

- Field blanks are used to indicate potential contamination contracted from ambient air or from sampling equipment. It also serves as a QA/QC for decontamination procedures.

- Collect one set of field blanks for every 20 samples per project. It is not necessary to take a field blank for jobs in which less than 10 samples are collected.

- Procedure

  a. Collect two sets of sample containers to cover all sampling parameters. One set will be full of analyte free water (obtain extra analyte free water to fill two VOA vials). The other set is empty.
  b. Go to the most contaminated area and run the water from the full containers, through the decontaminated sampling equipment and into the associated empty containers.
  c. Send to the lab for analysis.

- Use containers and field blanks prepared specifically for job.

3) Duplicate Samples

- Duplicate samples are collected in order to serve as a laboratory check. Therefore, it is important that the lab does not know which samples are to serve for this purpose.

- Frequency

  a. Obtain one (1) duplicate sample for every 10 samples of each matrix. If less than ten samples are collected of a given matrix, a duplicate must be collected anyway.
  b. If a total of less than 10 samples are collected, collect one (1) duplicate of the majority medium.
  c. If a total of less than five (5) samples are collected, it is not necessary to collect a duplicate sample.

* Note that the frequency as outlined here pertains to the number of samples collected per project, not per location of a given project.

- Procedures

The idea behind the duplicate sample is to collect two samples as close to identical as possible.

a. For water

Alternately fill containers for the same parameter with equal amounts of liquid per bailer. Fill duplicate VOC vials from the same bailer of liquid.

b. For soil

- VOC samples must be taken from the discreet sampling locations.
- For all other samples, mix the applicable soil in a decontaminated stainless steel or polyethylene bowl or tray. Then fill sample containers with the soil mix.
- When confronted with the option of collecting a water sample or a soil sample, choose the water sample.

- Labeling for the laboratory

  a. Label the containers normally and give the duplicate samples different reference numbers.
  b. Indicate the quantity of duplicates in the "special instructions" or "remarks" portion of the chain of custody and laboratory services sheet, however, do not indicate the reference numbers of the duplicates.
  c. Upon receipt of analytical results, contact the laboratory and convey all data pertaining to the duplicates for their QA/QC.

4) Background samples

- Background samples are taken only if it is required for comparison of site conditions to the surrounding environment. This is to be dictated by client needs on a site to site basis.

5) Performance Evaluation Samples

- The project manger should consider the use of the following performance evaluation samples on a periodic basis. Typically, these will be reserved for larger jobs:

  a. Laboratory performance evaluation samples

  - Collect duplicate samples and send to two different laboratories for comparison. Avoid using soil samples for this procedure.
  - Send a sample of known quantity and quality to the laboratory in order to determine laboratory performance. Such samples can be prepared by any laboratory.

  b. Gas chromatograph (GC) performance evaluation samples

  - Acquire a sample of known quantity and quality from a laboratory. Analyze the sample with the gas chromatograph in order to determine the integrity of GC results.

Field Sampling QA/QC

1) When sampling a well, collect VOA samples first and Oil & Grease samples last.

2) Start sampling at the presumed least contaminated areas, proceeding to the more contaminated areas.

3) Preservatives

- Consult the laboratory in order to determine which sampling parameters require preservatives. The laboratory will provide sampling containers specific for each job.
- It is necessary to fill the sample container when using preserved bottles; preservative is added with this assumption
- If samples are not collected correctly, they will not pass GEC QA/QC.

4) A chain-of-custody must accompany each set of samples from the job site to the laboratory. Be sure to identify the presence of trip blanks on the chain-of-custody sheets.

5) If possible, use the numbering system outlined on the attached sheet for identifying samples.

Ordering Sample Containers

1) Pre-plan sampling strategy to determine the sample parameters, the number of sample points including QA/QC samples, and the matrix of the given sample points.

2) Call laboratory and tell them:

- Sample parameters,
- Number of samples to be collected,
- The number of container sets needed for trip blanks, field blanks, and duplicates, and
- The matrix of each sample to be collected.

3) Sample containers should be ordered specifically for each job. Any sample containers unused at the end of the job should be sent back to the laboratory.

Conclusions

1) Pre-planning is crucial.

2) Keep open communication with the laboratory on all matters.

3) If you make a mistake in sampling collection, accept it, and retake the necessary samples.

Standard Operating Procedure
Observation Well Sampling
Using a Bucket-Type Bailer

This protocol is designed to ensure that proper techniques are used, safety is considered and quality assurance maintained during the performance of observation well sampling. A GEC representative is assigned to oversee and/or perform all observation well sampling for the project. The duties of the representative are to ensure that the scope of work is followed.

Sampling of groundwater observation wells is the primary means by which the chemical characteristics of groundwater can be determined. Therefore, it is imperative that care be taken in the development and subsequent sampling of observation wells. Water standing in the well prior to sampling may be stagnant and may not be representative of true groundwater quality in the aquifer in question

Procedures for performance of groundwater observation well evacuation and sampling are outlined in the following paragraphs:

Well Evacuation:

1) Prior to initiating any work the Health and Safety Plan, developed for the specific site activities, should be reviewed by all field personnel. The indicated measures on the Plan should be enacted prior to initiation of the sampling activities. Any concerns not addressed in the Plan are to be brought immediately to the attention of the Health and Safety Officer. Personnel participating in the sampling will dress with protective equipment appropriate for the anticipated conditions.

2) Decontaminate all equipment to be used in the performance of the activities in accordance with the protocol for decontamination. Decontamination should at least be performed by alternately rinsing all equipment with methanol and distilled water and vigorously scrubbing the equipment with a clean brush.

3) To the extent that contamination may be known at a given site, observation wells should be sampled in an order from "least contaminated" to "most contaminated".

4) Screen the well headspace with a photoionization detector (PID) or other appropriate instrumentation to confirm that concentrations of potential contaminants are within acceptable limits.

5) Test the well for accumulation of non-aqueous phase product (NAPL) using a pre-cleaned interface probe or transparent disposable bailer. If present, collect a sample of the NAPL and place in an appropriate sample container. This sample should be kept away from other samples.

6) Measure and record the depth to NAPL(if present), depth to water, and total depth of the wells. If NAPL is present, sampling for dissolved-phase contaminants should generally not be performed. In addition, if sampling is to be performed, appropriate measures should be taken to assure that any water removed from a contaminated well is disposed appropriately.

7) Calculate the volume of saturated well casing and the volume of water which will be removed to assure sufficient well evacuation. Evacuate well water into a clean, small (< 0.5 gallons), bucket or similar vessel in which precleaned and calibrated conductivity and pH probes have been placed. Attach a precleaned bailer to cable or line for lowering the bailer into the well. Lower the bailer slowly into the well until it contacts the water surface. Allow the bailer to sink and fill with a minimum of surface disturbance. Raise the bailer to the surface . Do not allow the bailer line to

contact the ground. Drain the bailer into the bucket.

8) Purging should continue until between three and five well volumes have been evacuated and pH, temperature, and specific conductivity values do not vary appreciably or until evacuated water is of construct and minimal turbidity.

9) Record final pH, conductivity and temperature values if appropriate.

<u>Well Sampling</u>:

1) Sampling of observation wells will be conducted only with clean, decontaminated Teflon, or stainless steel sampling bailers or with clean disposable bailers. Disposable bailers shall not be re-used for any purpose. In addition, disposable gloves are worn for each individual well sampling, and line used to support the bailer is to be discarded between wells.

2) Samples at any given well will be collected in order of decreasing order of sensitivity to volatilization (i.e. VOC, total organic carbon, semi-volatile organics (BNA), ammonia, PCBs, pesticides, oil and grease, phenols, cyanide, sulfate and chloride, nitrate and ammonia, metals and radionuclides).

3) Lower the bailer slowly until it contacts the water surface. Allow the bailer to sink to a point such that the bailer becomes filled with water, but not to the point where the string comes in contact with the water. <u>Note</u>: Under specific sampling conditions this sample collection procedure may vary. Under these conditions specific notation is required regarding any modifications or amendments made to the Protocol.

4) Slowly raise the bailer to the surface and remove the bailer from the well. Care should be taken to ensure that the string and bailer do not come in contact with the ground or other potential contaminant sources.

5) Carefully and slowly transfer the contents of the bailer into appropriately preserved, pre-labeled containers. Check that the sample containers seal properly and that the cap is sealed tightly. Record applicable information in the field logbook and complete all chain-of-custody documents.

6) Discard string, and discard or decontaminate the bailer appropriately.

Standard Operating Procedure
Sample Preservation and Chain of Custody

This protocol is designed to ensure that proper techniques are employed in the preservation and chain-of custody of samples collected for laboratory analyses or for screening. This Protocol is intended to be consistent with Massachusetts Publication #WSC-310-91 (Standard References for Monitoring Wells), and 40 CFR 136 (Guidelines Establishing Test Procedures for the Analysis of Pollutants).

The results of screening and/or laboratory analysis of solid, liquid or gaseous media constitute the basis of evaluation of the majority of the disposal sites under investigation. It is therefore imperative that the preservation of the samples be appropriate to the media being analyzed as well as the analysis which is being performed. In addition, the integrity of the sample is dependent upon the premise that a clear chain of responsibility for the sample integrity has been maintained. Without this "Chain-of-Custody", the integrity of the laboratory results may inevitably come into question.

The preservation and Chain-of-Custody (COC) protocols outlined in the following paragraphs are not intended to be all inclusive, and this protocol is written with the understanding that the sampling of certain media or analyses may require specific sample preservation. This protocol is, however, intended to cover the majority of the media and analyses performed as well as the COC procedures employed at the majority of waste disposal sites.

A COC program must be followed during sampling and handling activities from the field through laboratory operations. This program is designed to assure that each sample is accounted for at all times. Field data sheets, COC records, and sample labels must also be completed by the appropriate sampling and laboratory personnel for each sample. The objective of the sample custody identification and control system is to assure, to the extent practical, that:

- all samples are uniquely identified;
- the correct samples are analyzed for the correct parameters and are traceable through their records;
- important sample characteristics are preserved;
- samples are protected from damage or loss;
- any processing of samples (e.g., filtration, preservation) is documented; and
- client confidentially is maintained.

A sample is considered under a COC if it meets all of the following criteria:

- the sample is in your custody,
- the sample is in your view, after being in your possession,
- the sample is in your possession and then you locked it up to prevent tampering, and
- the sample is in a designated, secured area.

The following paragraphs outline GEC's preservation and COC protocol.

1) Prior to initiating any work, the Health and Safety Plan developed for the specific site activities should be reviewed by all field personnel. The indicated measures on the Plan should be enacted prior to initiation of any sampling activities. Any concerns not addressed in the Plan are to be brought immediately to the attention of the Health and Safety Officer. Personnel participating in the excavations will dress with protective equipment appropriate for the anticipated conditions.

2) Sample integrity is assured by use of containers appropriate to both the matrix to be sampled and the analytes of interest. Sample containers must be prepared in the laboratory in a manner consistent with USEPA protocols. Unless the proper sample bottle preparation and sample preservation measures are taken in the field, sample composition can be altered by contamination, degradation, biological transformation, chemical interaction, and other factors during the time between sample collection and analysis. Prior to sampling GEC personnel will ensure that the sample containers obtained from either a laboratory or a commercial supplier have been prepared in accordance with DEP and EPA protocols. Sample containers are to be used once and discarded. Under no circumstance should a soil, water or gaseous media which has been collected for analysis be placed in a previously used sample container unless that container has been recleaned and preserved by a certified laboratory.

As part of the COC protocol, sample containers should have prepared labels for each sample. The label should include sample identification, date and time of collection, sample parameters to be analyzed, any preservatives used, and the name of the sample collector.

Upon collection of the sample(s), documentation of chain of custody (i.e. COC form) should be initiated and should include at least the following:

- date and time of sampling;
- sampling locations;
- sample bottle identification;
- and specific sample acquisition measures.

The COC and sample description requires:

- a unique identification of each sample;
- the name(s), address(es) and telephone number(s) of the sampler(s) and the person(s) shipping the samples and all subsequent transfers of custody;
- the type and method of analyses requested;
- the date and time of sample collection and transfer of custody; and the name(s) of those responsible for receiving the samples at the laboratory.

3) In some cases, field filtration of samples may be required. Information regarding the method of filtration should be determined in advance and communicated to the laboratory. Filtering of any sample collected for organic analysis should be avoided. Decanting of a liquid media is a preferred method for the removal of particulate matter. When field filtering is required, an appropriate filter medium must be selected to avoid potential sample contamination during the filtering process.

4) Sample holding times are specified for the initiation of chemical analyses, usually beginning at the time of sample collection but occasionally beginning at the time of sample receipt at the laboratory. This determination must be made prior to sampling to allow proper logistical planning for sample shipments. Holding times also vary with the regulatory basis under sampling take place in order to properly schedule work.

5) Sample containers are most often packed in plastic, insulated "coolers" for shipment. Bottles are to be packed tightly so that only minimal motion of the sample containers is possible. Materials which are considered to be highly hazardous may require special handling and packing for shipment. Ice, or a similar heat transfer fluid, should be placed over the top of the sample containers and should be placed within a water tight plastic bag to assure that the samples are kept as dry as possible. In addition, all applicable paper work should also be enclosed within a second water-tight bag and included in the cooler.

The sample cooler should then be taped shut.

6) Upon receipt of the samples at the laboratory, any laboratory identification numbers should also be included on the COC form. Finally, those responsible for receipt of the samples should be indicated on the COC form as well as the date and time of the sample drop-off.

Standard Operating Procedure
Observation Well Development

Subsequent to well installation, and prior to sampling or surveying, an observation well must be thoroughly developed. Well development is critical to the success and integrity of later sampling activities and to the life span of the well. Primarily, two techniques are appropriate for the needs of site investigation and groundwater monitoring. Both methods involve reversals, or surges, in flow to prevent clogging of the filter pack which is common where flow is continuous in one direction. Either a decontaminated pump or bailer or both may be used to surge the well and to remove water which may have been in contact with the drilling apparatus. If a pump is used, a source of clean water is necessary to pump down the well. Water should be alternately pumped out of and into the well until water removed is essentially clear, or of constant minimal turbidity. If the well is to be developed with a bailer the following steps will be performed.

1) Gauge the depth to water/product and the depth to the bottom of the well

2) Based on these measurements calculate the volume of water equal to one well volume.

3) Using a precleaned bailer and clean string, repeatedly plunge the filled bailer up and down within the well and periodically remove the water from the well. Water removed from the well should be discarded in a manner consistent with environmentally sound practices.

4) Periodically (approximately once every five bails) dispense the contents of the bailer into a clean one-liter glass container. Using the electronic TLC probe, determine the temperature and conductivity of the water being removed from the well. Once the temperature and conductivity have been determined discard the contents of the jar appropriately.

5) Steps 3 and 4 should be repeated until the following three conditions have been met: 1) three well volumes of water have been removed from the well; 2) temperature and conductivity levels do not vary more than approximately 10% between measurements, and 3) groundwater being removed from the well has a consistent minimal turbity.

APPENDIX B

LABORATORY ANALYTICAL REPORTS

American Environmental Network
200 Monroe Turnpike • Monroe, CT 06468 • (203) 261-4458 • Fax (203) 268-5346

May 15, 1998

Mr. Sam Butcher
GOLDMAN ENVIRONMENTAL
60 Brooks Drive
Braintree, MA 02184

Dear Mr. Butcher :

Please find enclosed the analytical results of 13 sample(s) received at our laboratory on April 9, 1998. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

IEA Report #7098-0672A	Purchase Order #444-010-95
Project ID: JAMECO INDUSTRIES	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Cheryl A. Cascella for

Jeffrey C. Curran
Laboratory Manager

JCC

7098-0672A

GOLDMAN ENVIRONMENTAL

Case Narrative

Metals - ICAP metals were determined using a JA61E trace ICAP; mercury was determined by the cold vapor technique utilizing the Thermo Jarrell Ash Model QS-1 E mercury analyzer using guidance provided in SW846 according to the following Methods: ICAP-3010/6010; mercury-7470.

Two "N" flags resulted from spike analysis of sample MW-7 for cadmium and lead. Since the post-digestion spike recoveries were within the control limits, a matrix interference was not suspected.

One "E" flag resulted from serial dilution analysis of sample MW-7 for zinc. There is no apparent reason for this flag.

No other problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

IEC's are electronically employed by the JA61E trace ICAP. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for all samples analyzed in this SDG. No analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Hexavalent Chromium	7196	1

References:

1. Test Methods for the Evaluation of Solid Waste, SW846, 3rd edition, 1986.

Volatile Organics - Volatile organics were determined by purge and trap GC/MS using guidance provided in Method 8260A. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5972A GC/MS/DS.

The "L" flag on the form 6A's designate that linear regression was used for quantitation for that compound, due to the %RSD being 15% or greater. The form 1A's reflect the true concentration calculated with linear regression. The quant reports may not agree with form 1A's, due to software limitations. All results for compounds with "L" flags should be taken from either tabulated results or form 1A's.

Sample Calculation:

Sample ID - MW-3
Compound - Trichloroethene

$$\frac{(553614)(250)(1)}{(8554041)(.405)(5)} = 7.99 = 8 \text{ UG/L.}$$

Samples MW-2 and MW-12 were analyzed at 1:5 and 1:2 dilutions, respectively, due to high target compound concentrations.

No problems were encountered.

Aqueous

TABLE VO-1.0
7098-0672A
GOLDMAN ENVIRONMENTAL
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	Method Blank VBLKDT VBLKDT 1.00	MW-9 980672A-01 VBLKDT 1.00	MW-3 980672A-02 VBLKDT 1.00	Quant. Limits with no Dilution
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	U	.5J	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	8	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	.8J	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received Date Extracted Date Analyzed	 N/A 04/10/98	04/09/98 N/A 04/11/98	04/09/98 N/A 04/10/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE VO-1.1
7098-0672A
GOLDMAN ENVIRONMENTAL
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	MW-1 980672A-03 VBLKDT 1.00	MW-5 980672A-04 VBLKDT 1.00	MW-2 980672A-05 VBLKDT 5.00	Quant. Limits with no Dilution
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	3J	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	2J	99	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	.4J	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	.4J	410	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	4J	53	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received Date Extracted Date Analyzed	04/09/98 N/A 04/10/98	04/09/98 N/A 04/10/98	04/09/98 N/A 04/10/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE VO-1.2
7098-0672A
GOLDMAN ENVIRONMENTAL
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	MW-7 980672A-07 VBLKDT 1.00	MW-7 MS 980672A-07MS VBLKDT 1.00	MW-7 MSD 980672A-07 MSD VBLKDT 1.00	Quant. Limits with no Dilution
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	48X	48X	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	2J	2J	2J	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	43X	43X	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	.2J	45X	45X	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	.7J	.8J	.9J	5.0
Toluene	U	44X	44X	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	45X	45X	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received Date Extracted Date Analyzed	04/09/98 N/A 04/10/98	04/09/98 N/A 04/10/98	04/09/98 N/A 04/10/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE VO-1.3
7098-0672A
GOLDMAN ENVIRONMENTAL
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	TB 040998 980672A-08 VBLKDT 1.00			Quant. Limits with no Dilution
Chloromethane	U			10
Bromomethane	U			10
Vinyl Chloride	U			10
Chloroethane	U			10
Methylene Chloride	U			5.0
Acetone	U			10
Carbon Disulfide	U			5.0
Vinyl Acetate	U			10
1,1-Dichloroethene	U			5.0
1,1-Dichloroethane	U			5.0
1,2-Dichloroethene (total)	U			5.0
Chloroform	U			5.0
1,2-Dichloroethane	U			5.0
2-Butanone	U			10
1,1,1-Trichloroethane	U			5.0
Carbon Tetrachloride	U			5.0
Bromodichloromethane	U			5.0
1,2-Dichloropropane	U			5.0
cis-1,3-Dichloropropene	U			5.0
Trichloroethene	U			5.0
Dibromochloromethane	U			5.0
1,1,2-Trichloroethane	U			5.0
Benzene	U			5.0
trans-1,3-Dichloropropene	U			5.0
Bromoform	U			5.0
4-Methyl-2-Pentanone	U			10
2-Hexanone	U			10
Tetrachloroethene	U			5.0
Toluene	U			5.0
1,1,2,2-Tetrachloroethane	U			5.0
Chlorobenzene	U			5.0
Ethylbenzene	U			5.0
Styrene	U			5.0
Xylene (total)	U			5.0
Date Received Date Extracted Date Analyzed	04/09/98 N/A 04/10/98			

See Appendix for qualifier definitions

Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE VO-1.4
7098-0672A
GOLDMAN ENVIRONMENTAL
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	Method Blank VBLKEX VBLKEX 1.00	MW-12 980672A-06 VBLKEX 2.00		Quant. Limits with no Dilution
Chloromethane	U	U		10
Bromomethane	U	U		10
Vinyl Chloride	U	U		10
Chloroethane	U	U		10
Methylene Chloride	U	U		5.0
Acetone	U	U		10
Carbon Disulfide	U	U		5.0
Vinyl Acetate	U	U		10
1,1-Dichloroethene	U	U		5.0
1,1-Dichloroethane	U	U		5.0
1,2-Dichloroethene (total)	U	48		5.0
Chloroform	U	3J		5.0
1,2-Dichloroethane	U	U		5.0
2-Butanone	U	U		10
1,1,1-Trichloroethane	U	U		5.0
Carbon Tetrachloride	U	U		5.0
Bromodichloromethane	U	U		5.0
1,2-Dichloropropane	U	U		5.0
cis-1,3-Dichloropropene	U	U		5.0
Trichloroethene	U	380		5.0
Dibromochloromethane	U	U		5.0
1,1,2-Trichloroethane	U	U		5.0
Benzene	U	U		5.0
trans-1,3-Dichloropropene	U	U		5.0
Bromoform	U	U		5.0
4-Methyl-2-Pentanone	U	U		10
2-Hexanone	U	U		10
Tetrachloroethene	U	55		5.0
Toluene	U	U		5.0
1,1,2,2-Tetrachloroethane	U	U		5.0
Chlorobenzene	U	U		5.0
Ethylbenzene	U	U		5.0
Styrene	U	U		5.0
Xylene (total)	U	U		5.0
Date Received Date Extracted Date Analyzed	 N/A 04/14/98	04/09/98 N/A 04/14/98		

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE VO-2.0
7098-0672A
GOLDMAN ENVIRONMENTAL
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Related Method Blank: VBLKDT

Lab Sample Id: VBLKDT   Client Sample Id: Method Blank

CAS#	Compound	RT	Estimated Conc., ug/L
	NONE DETECTED		

Lab Sample Id: 980672A-01   Client Sample Id: MW-9

CAS#	Compound	RT	Estimated Conc., ug/L
1634-04-4	PROPANE, 2-METHOXY-2-METHYL-	13.61	7JN

Lab Sample Id: 980672A-02   Client Sample Id: MW-3

CAS#	Compound	RT	Estimated Conc., ug/L
556-67-2	CYCLOTETRASILOXANE, OCTAMETH	20.96	10JN

Lab Sample Id: 980672A-03   Client Sample Id: MW-1

CAS#	Compound	RT	Estimated Conc., ug/L
556-67-2	CYCLOTETRASILOXANE, OCTAMETH	20.98	9JN
121-43-7	BORIC ACID, TRIMETHYL ESTER	11.56	5JN

Lab Sample Id: 980672A-04   Client Sample Id: MW-5

CAS#	Compound	RT	Estimated Conc., ug/L
1634-04-4	PROPANE, 2-METHOXY-2-METHYL-	13.60	66JN

See Appendix for qualifier definitions

Aqueous

TABLE VO-2.1
7098-0672A
GOLDMAN ENVIRONMENTAL
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Related Method Blank: VBLKDT

Lab Sample Id: 980672A-05 Client Sample Id: MW-2

CAS#	Compound	RT	Estimated Conc., ug/L
	NONE DETECTED		

Lab Sample Id: 980672A-07 Client Sample Id: MW-7

CAS#	Compound	RT	Estimated Conc., ug/L
556-67-2	CYCLOTETRASILOXANE, OCTAMETH	20.94	6JN
121-43-7	BORIC ACID, TRIMETHYL ESTER	11.57	5JN

Lab Sample Id: 980672A-08 Client Sample Id: TB 040998

CAS#	Compound	RT	Estimated Conc., ug/L
121-43-7	BORIC ACID, TRIMETHYL ESTER	11.51	5JN

See Appendix for qualifier definitions

Aqueous

TABLE VO-2.2
7098-0672A
GOLDMAN ENVIRONMENTAL
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Related Method Blank: VBLKEX

Lab Sample Id: VBLKEX   Client Sample Id: Method Blank

CAS#	Compound	RT	Estimated Conc., ug/L
	NONE DETECTED		

Lab Sample Id: 980672A-06   Client Sample Id: MW-12

CAS#	Compound	RT	Estimated Conc., ug/L
	NONE DETECTED		

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.0
7098-0672A
GOLDMAN ENVIRONMENTAL
PRIORITY POLLUTANT METALS

All values are ug/L.

Client Sample I.D.	MW-9	MW-3	MW-1	MW-5
Lab Sample I.D.	980672A-01	980672A-02	980672A-03	980672A-04
Antimony	4.0U	4.0U	4.0U	5.1B
Arsenic	3.9B	2.0U	38.3	2.7B
Beryllium	1.0U	1.0U	1.6B	1.0U
Cadmium	2.0BN	1.0UN	1.0UN	2.3BN
Chromium	10.8	83.8	36.7	4.0B
Copper	16.6B	472.	44.3	11.1B
Lead	6.8N	8.3N	29.6N	3.0BN
Mercury	0.20U	0.20U	0.20U	0.20U
Nickel	8.9B	686.	34.3B	31.0B
Selenium	2.0U	2.0U	5.1	2.0U
Silver	1.0U	1.0U	1.0U	1.0U
Thallium	3.0U	3.0U	3.0U	3.0U
Zinc	89.7E	258.E	110.E	148.E

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.1
7098-0672A
GOLDMAN ENVIRONMENTAL
PRIORITY POLLUTANT METALS

All values are ug/L.

Client Sample I.D.	MW-2	MW-12	MW-7	MW-7 D
Lab Sample I.D.	980672A-05	980672A-06	980672A-07	980672A-07D
Antimony	4.0U	7.4B	4.0U	4.0U
Arsenic	11.6	5.2B	2.0U	2.0U
Beryllium	1.0U	1.0U	1.0U	1.0U
Cadmium	1.0UN	1.0UN	54.3N	55.0
Chromium	510.	758.	2.2B	2.1B
Copper	684.	3520	11.3B	11.0B
Lead	17.4N	14.3N	23.5N	24.4
Mercury	0.20U	0.20U	0.20U	0.20U
Nickel	4560	2100	10.4B	10.4B
Selenium	2.0U	2.5B	2.0U	2.0U
Silver	1.0U	1.0U	1.0U	1.0U
Thallium	3.0U	3.0U	3.0U	3.0U
Zinc	208.E	563.E	61.3E	61.5

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.2
7098-0672A
GOLDMAN ENVIRONMENTAL
PRIORITY POLLUTANT METALS

All values are ug/L.

Client Sample I.D. Lab Sample I.D.	MW-7 S 980672A-07S			
Antimony	524.			
Arsenic	43.2			
Beryllium	55.3			
Cadmium	15.8N			
Chromium	200.			
Copper	258.			
Lead	28.5N			
Mercury	1.0			
Nickel	500.			
Selenium	10.5			
Silver	53.4			
Thallium	42.6			
Zinc	540.			

See Appendix for qualifier definitions

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-9

Lab Name: IEA　　Contract: ________

Lab Code: IEA　　Case No.: 0672A　　SAS No. : ______　　SDG No.: A0672

Matrix: (soil/water) WATER　　Lab Sample ID: 0672001

% Solids: ______　　Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.010	U		

Comments: ______

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-3

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 0672A SAS No. : ______ SDG No.: A0672

Matrix: (soil/water) WATER Lab Sample ID: 0672002

% Solids: ______ Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.010	U		

Comments: ______

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-1

Lab Name: IEA Contract: ________

Lab Code: IEA Case No.: 0672A SAS No. : ______ SDG No.: A0672

Matrix: (soil/water) WATER Lab Sample ID: 0672003

% Solids: ______ Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.010	U		

Comments: ____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-5

_ ' Name: IEA   Contract: ________

_ b Code: IEA   Case No.: 0672A   SAS No. : ______   SDG No.: A0672

Matrix: (soil/water) WATER   Lab Sample ID: 0672004

% Solids: ______   Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.010	U		

Comments: ________

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-2

L-·· Name: IEA Contract: ______

ab Code: IEA Case No.: 0672A SAS No. : ______ SDG No.: A0672

Matrix: (soil/water) WATER Lab Sample ID: 0672005

Solids: ______ Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.026			

C mments: ______

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-12

L Name: IEA Contract: ____________

ab Code: IEA Case No.: 0672A SAS No. : ________ SDG No.: A0672

Matrix: (soil/water) WATER Lab Sample ID: 0672006

Solids: ______ Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.034			

omments: ____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-7

L Name: IEA   Contract: ____

L b Code: IEA   Case No.: 0672A   SAS No. : ____   SDG No.: A0672

Matrix: (soil/water) WATER   Lab Sample ID: 0672007

% Solids: ____   Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.025			

C mments:

1

SAMPLE NO.

WET CHEM ANALYSIS DATA SHEET

MW-7

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 0672A SAS No. : SDG No.: A0672

Matrix: (soil/water) WATER Lab Sample ID: 0672007D

% Solids: Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.026			

Comments:

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-7

Name: IEA Contract: ________

Lab Code: IEA Case No.: 0672A SAS No. : ________ SDG No.: A0672

Matrix: (soil/water) WATER Lab Sample ID: 0672007S

Solids: ______ Date Received: 04/09/98

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
CR-HEX	0.54			

Comments:

FORM I - WC

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(1) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

INORGANICS APPENDIX

C - Concentration qualifiers

U - Indicates analyte was not detected at method reporting limit.

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

NC - Not Calculated as per protocols

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the AEN-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

AEN-Connecticut
Certification Summary (as of September 1997)

State	Responsible Agency	Certification*	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Maine	Department of Human Services	Wastewater	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	2528
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater Hazardous Waste	388
North Dakota	Department of Health and Consolidated Laboratories	Non-Potable/Potable Hazardous Waste	R-138
Oklahoma	Department of Environmental Quality	General Water Quality/ Sludge Testing	9614
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/ Hazardous Waste	C231
West Virginia	Division of Environmental Protection	Wastewater/ Hazardous Waste	263
Wisconsin	Department of Natural Resources	Wastewater/ Hazarous Waste	998355710

7098-0672A
GOLDMAN ENVIRONMENTAL
SAMPLE SUMMARY

CLIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
MW-9	980672A-01	WATER	04/09/98	04/09/98
MW-3	980672A-02	WATER	04/09/98	04/09/98
MW-1	980672A-03	WATER	04/09/98	04/09/98
MW-5	980672A-04	WATER	04/09/98	04/09/98
MW-2	980672A-05	WATER	04/09/98	04/09/98
MW-12	980672A-06	WATER	04/09/98	04/09/98
MW-7	980672A-07	WATER	04/09/98	04/09/98
MW-7	980672A-07D	WATER	04/09/98	04/09/98
MW-7	980672A-07MS	WATER	04/09/98	04/09/98
MW-7	980672A-07MSB	WATER	04/09/98	04/09/98
MW-7	980672A-07MSD	WATER	04/09/98	04/09/98
MW-7	980672A-07S	WATER	04/09/98	04/09/98
TB 040998	980672A-08	WATER	04/09/98	04/09/98

IEA-CT ANALYTICAL SUMMARY

Client ID: MW-1, MW-12, MW-2, MW-3, MW-5, MW-7, MW-9, TB 040998
Job Number: 7098-0672A

Date: 5/15/98

Qty	Matrix	Analysis	Description
9	WATER	CR6-NSW846	Hexavalent Chromium
9	WATER	MET-NSW846-PP	Pri Pol Metals
2	WATER	VOA-N8260A-TCL	TCL Volatile Organic
1	WATER	VOA-N8260A-TCL-10	TCL Volatile Organic
8	WATER	VOA-N8260A-TCL-10	TCL Volatile Organic