



41674 CHRISTY STREET • FREMONT, CA 94538-3114 TELEPHONE: (415) 659-0404 • FAX: (415) 651-4677 CONTR. LIC. NO. 464324

April 19, 1988

O.I. Glass Container Division, S.T.S. 3600 Alameda Avenue Oakland, CA 94601

Attn: Mr. Robert Barber

Re: March Quarterly Ground-Water Sampling and Analysis

Owens Illinois Facility, Oakland, California

Exceltech Project No. 1467G

Dear Mr. Barber:

Please find enclosed the March Quarterly Ground-Water Sampling and Analysis report for the above referenced site. This report contains recent data together with past data.

If you have any questions, please call.

Sincerely, EXCELTECH, INC.

Stephen Costello Staff Geologist

SC/CMP/da enclosure

Christopher M. Palmer, C.E.G. 1262 Manager, Geotechnical Services

Christoph M. Dalme

MARCH QUARTERLY GROUND-WATER SAMPLING AND ANALYSIS

FOR

O.I. GLASS CONTAINER DIVISION, S.T.S. 3600 ALAMEDA AVENUE OAKLAND, CALIFORNIA

INTRODUCTION

Exceltech, Inc. has completed the March quarterly sampling program to ascertain the ground-water conditions beneath the O.I. Glass Container facility located in Oakland, California (Figure 1). Ground-water sampling was performed on March 7 through March 9, 1988. The purpose of the quarterly sampling program is to monitor ground-water conditions beneath the above referenced site. This information is used to ascertain water quality as requested by Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. The RWQCB is reviewing the site investigation report submitted February, 1987. The sample program objectives are:

- Plot the ground-water contour surface and inferred flow direction.
- Investigate for the presence of hydrocarbon contamination by; 1) checking floating product thickness and; 2) laboratory analyses for either total volatile hydrocarbons (TVH) and the compounds benzene, toluene and xylenes (BTX), or total extractable hydrocarbons (TEH), or both.
- Ascertain the extent and concentrations of the hydrocarbon plume locations and concentrations.
- Compare current and past data.

Eighteen ground-water monitoring wells (MW-1 through MW-18) and one recovery well (R-1) exist in the project area as shown on Figure 1. Figure 1 also presents the ground-water surface at the site based on data collected on March 7, 1988. The recovery system utilizing one recovery well was taken out of service during remodeling at the plant and is not currently in operation. Prior to sampling each well, ground water elevations were taken and each well was checked for the presence of floating product. All ground water removed from each well was placed in properly labeled drums and left on the site. Analytical results of water samples collected in early March are summarized in Table 1 along with past results. Exceltech's in-house sampling procedures and laboratory procedures are attached in Appendices A and B, respectively. Laboratory reports with chain-of-custody are also attached in Appendix C.

DISCUSSION

Ground-Water Occurrence

Ground-water beneath the site is tidally influenced daily due to its proximity to the Alameda Channel and San Francisco Bay. Past observations of the ground-water surface revealed deflections which vary from 0.1 to 6.0 feet. The range of observed fluctuations is attributed to the changing range of daily tidal fluctuation. A ground-water elevation map for March 7, 1988 is attached (see Figure 1).

Ground-Water Sampling and Analysis

All monitoring wells except MW-1, and MW-2 were sampled on this round. MW-1 was covered by glass and MW-2 was covered by a disposal bin. Wells were sampled for presence of floating product, TVH with BTX, and/or TEH. Wells were preselected for individual analyses given the proximity to the known contaminants (i.e., TVH and TEH in the vicinity of the power and forming building, where gasoline and diesel fuels spilled, TEH near the southwestern corner of the site where No. 2 oil was the contaminant). The results are presented on Table 1. The analytical reports are attached.

Contaminant Plume Movement

Floating oil was observed in MW-9 and MW-3. In the past, no floating product had been observed in MW-9; however, oil has entered the well upon purging. The concentration of dissolved contamination in MW-8 and MW-9 has increased markedly over the last few quarterly monitoring rounds. At the same time, the detected concentrations in MW-5, MW-6, MW-7, and MW-10 have steadily decreased. Trace amounts of hydrocarbons continue to be detected in the upgradient well MW-14 while the sample from MW-4 (also upgradient) had no hydrocarbons detected.

CONCLUSIONS AND RECOMMENDATIONS

- 1. The product recovery system should be reactivated with an additional recovery well installed in the vicinity of MW-2.
- 2. Monitoring of floating product and dissolved constituents should continue on a quarterly basis, as requested by the RWQCB.

Required Action

This report should be forwarded in a timely manner to the following agency:

California Regional Water Quality Control Board San Francisco Bay Region 1111 Jackson Street Oakland, California, 94607 Attn: Mr. Greg Zentner

<u>LIMITATIONS</u>

Exceltech makes no warranty, expressed or implied, except that our services have been performed in accordance with generally accepted, existing, engineering, geological, hydrogeological, health and safety principles and applicable regulations at the time and location of the study.

Exceltech includes in this report chemical analytical data from a state-certified laboratory. The analytical results are performed according to procedures suggested by the U.S. EPA and State of California. Exceltech is not responsible for laboratory errors in procedure or result reporting.

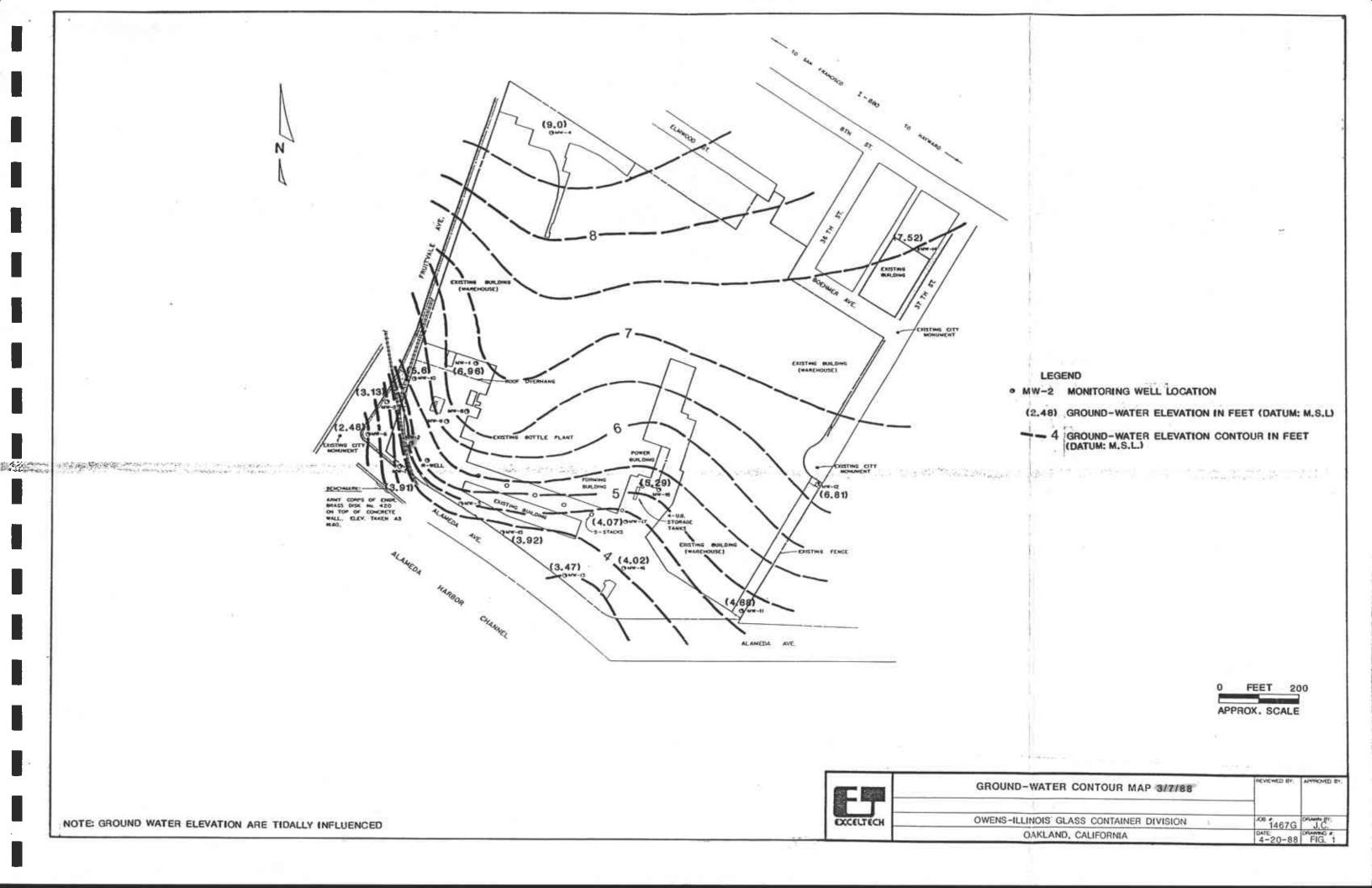


TABLE 1
GROUND-WATER ANALYSES DATA

Owens Illinois; #1467G.

WELL NUMBE		TEH (dqq)	TVH (ppb)	BENZENE (ppb)	TOLUENE (ppb)	XYLENES (ppb)	WELL ELEV.	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft.)	
INDINIDI	EN SAMPLED	{bbn)	(ppu)	(bbn)	(bbo)	(ppu)	111.	WATER (II)	ILICKAE22 (II.)	
MW-	1 4/9/87	NA	BDL	BDL	BDL.	8DL	16.02	8.98	0.005	
	9/16/87	NOT SAMPLED								
	12/1/87	NOT SAMPLED								
	3/7/88	NOT SAMPLED	•••		*			***.	•••	
MŴ-	2 4/9/87	NOT SAMPLED			•••		17.11	***	3.85	
	9/16/87	NOT SAMPLED			• • •					
	12/1/87	NOT SAMPLED	• • •					20.19	8.49	
	3/7/88	NOT SAMPLED	•••			•••	3/11/92	13,1	13 inch s i	1154
MW-	3 4/9/87	NA	370	BDL	BDL	BDL	15.66	10.53		
	9/16/87							11.44	0.04	
	12/1/87	NOT SAMPLED						12.73	0.25	\
	3/9/88	190,000	NA	·NA	NA	NA		15.22	0.71	
MW-	4 4/9/87	NA	BDL	BDL	BDL	BDL	18.05	8.73		
	9/16/87	66	1.3	BDL	BDL	BDL		10.53		
	12/1/87	100	BDL	BDL	BDL,	8.9		9.08		
	3/7/88	BDL.	BDL	BDL	BDL	BDL		9.05		
MW-	5 4/9/87	NA	54	BDL	BDL	BDL	16.19	12.02	*	
	9/16/87	96,000	NA	NA	NA	NA		11.77		
	12/1/87	2,000	NA	· NA	NA	NA		11.37	Film	
	3/9/88	BDL	NA	, NA	NA	NA		13.06		
MW-	6 4/9/87	NOT SAMPLED		***			17.48	13.28	0.59	
	9/16/87	400,000	NA	N A	NA	NA		13.40	Film	
	12/1/87	30,000	NA	NA	NA	· NA		13.04	Film	
	3/9/88	9,800	NA	NA	NA	NA		15.00		
MW-	7 4/9/87	NOT SAMPLED			• • •		15.76	12.13	Film	
	9/16/87	790,000	NA	NA	NA	NA		12.29	Film	
	12/1/87	5,300	NA	NA	NA	NA		11.24	Film	
	3/9/88	BDL	NA	NA	NA	NA		11.85	•••	

TABLE 1 (Cont.) GROUND-WATER ANALYSES DATA

Owens illinois; #1467G.

WELL	DATE	TEH	TVH	BENZENE	TOLUENE	XYLENES	WELL ELEV.	DEPTH TO	PRODUCT
NUMBER	SAMPLED	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ft.)	WATER (ft)	THICKNESS (ft.)
MW-8	4/9/87	NA	73	BDL	BDL	BDL	16.57	10.35	Film
	9/16/87		• • •			• • •		10.71	• • •
	12/1/87	630	NA	NA	NA	NA		9.89	
•	3/8/88	2,600	NA	NA	NA	NA		9.61	•••
MW-9	4/9/87	NOT SAMPLED			***			•••	***
	9/16/87	1,300	ΝA	NA	NA	NA			
	12/1/87	18,000	NA	NA	NA	NA		6.83	
	3/9/88	47,000	NA	NA	NA	NA		6.44	0.06
MW-10	4/9/87	NA	300	BDL.	BDL	BDL	15.96	10.29	Film
	9/16/87	3,800	NA	NA	NA	NA		11.19	Film
	12/1/87	590	NA	NA	NA	NA		10.08	Film
	3/8/88	BDL	NA	NA	NA	NA		10.36	
MW-11	4/9/87	NA	BDL	BDL	BDL	BDL	13.99	9.02	• • •
	9/16/87	NA	BDL	BDL	BDL	BDL		9.96	
	12/1/87	NA	BDL	0.8	BDL	10		9.44	
	3/7/88	BDL	BDL	BDL	BDL	BDL.		9.31	
MW-12	4/9/87	NA	BDL.	BDL	BDL	BDL	13.83	6.83	4.6
	9/16/87	NA	BDL	BDL	BDL	BDL		7.80	
	12/1/87	NA	BDL.	BDL	BDL	13		7.59	
	3/7/88	BDL	BDL	BDL	BDL	BDL		7.02	• • •
MW-13	4/9/87	NA	BOL	BDL	BDL	BDL.	13.98	10.79	
141 44 - 1.2	9/16/87	NA NA	BDL	BDL	BDL	BDL	10.00	10.98	
	12/1/87	NA NA	BDL	1.6	BDL	12		10.33	•••
			7.7	BDL.	BDL	BDL		10.51	
	3/8/88	BDL	7.7	DUL	₽DC.	DUL		10.51	
MW-14	4/9/87	NA	BDL	BDL	BDL	BDL	14.78	7.17	
	9/16/87	56	1.7	BDL	BDL	BDL.		8.78	
	12/1/87	66	BDL	1.2	4	10		8.26	
	3/7/88	BDL	20	BDL	BDL	BDL		7.26	•••

TABLE 1 (Cont.)
GROUND-WATER ANALYSES DATA

Owens Illinois; #1467G.

WELL NUMBER	DATE SAMPLED	TEH (ppb)	TVH (ppb)	BENZENE (ppb)	TOLUENE (ppb)	XYLENES (ppb)	WELL ELEV. (ft.)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (It.)
MW-15	4/9/87	NA	BDL	BDL	BDL	BDL	15.16	11.88	
	9/16/87	BDL	8.4	BDL	BDL	BDL.		11.77	
	12/1/87	NA NA	BDL	3.3	0.84	14		11.25	•••
	3/8/88	BDL.	90	0.8	BDL	BDL		11.24	• • •
MW-16	4/9/87	NA	BDL	BDL	BDL	BOL	13.48	9.47	•••
	9/16/87	64	BDL	BDL	BDL	BDL		10.07	• • •
	12/1/87	150	120	1	0.37	9.1		9.23	***
	3/8/88	BDL.	10	0.5	BDL	BOL		9.46	•••
MW-17	4/9/87	NA	BDL	BDL	BDL	BDL	14.17	9.95	0.005
	9/16/87	680	44	BDL	BDL	0.55		10.59	Film
	12/1/87	1,300	540	7.8	2.4	28		9.87	Film
	3/8/88	3,800	4,300	83	BOL	46		10.10	
MW-18	4/9/87	NA	BDL	BDL	BDL	BDL	14.89	9.91	
	9/16/87	480	BDL.	BDL	BDL	BDL		10.37	
	12/1/87	18	8DL	BDL	BDL	6.6		10.19	
	3/7/88	BDL	BDL	BDL	BDL	BÖL		9.60	

TEH = Total Extractable Hydrocarbons

TVH = Total Volatile Hydrocarbons as Gasoline

ppb = parts per billion

BDL = Below Detection Limit

NA = Not Analyzed

Current Department of Health Services Action Levels

Benzene 0.7 ppb

Toluene 100 ppb

Xylenes 620 ppb

Note: Subject to change as reviewed by Department of Health Services

Note: For detection limits, refer to laboratory reports

APPENDIX A SAMPLE PROTOCOL

APPENDIX A

Sampling of monitoring wells is performed by Exceltech technicians. Field sampling procedures are as follows:

- 1. Measurement of liquid surface elevation and depth of monitoring well.
- 2. Field check for presence of floating product.
- 3. If measurement of floating product is <1/4 inch, a ground water sample is taken.
- 4. Prior to sampling a minimum of four well casings volumes of water is removed.
- 5. During purging, water is monitored for temperature, pH, and specific conductance.
- 6. Samples for analysis are placed in EPA-approved containers.
- 7. Samples are immediately put in a chilled cooler for transportation to a state-certified analytical laboratory.
- 8. Appropriate documentation accompanies the sample at all times.

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Sample Protocol
Latest Revision: March 7, 1988

SAMPLING PROCEDURES

Equipment Cleaning - All water samples are placed in precleaned laboratory supplied glassware. Sample bottles and caps remain sealed until actual usage at the site. Before use at the site, all equipment which comes in contact with the well or ground water is thoroughly cleaned with trisodium phosphate and rinsed with deionized or distilled water. This procedure is followed between each well sampled, and wells are sampled in approximate order of increasing contamination. A pump blank is collected prior to all sampling. Pump blanks are analyzed periodically to ensure proper cleaning.

<u>Water Level Measurements</u> - Prior to checking for floating product, purging of the well, and sampling, the depth to water is measured in each well using a sealed sounding tape or a scaled electric sounder. Water levels are recorded in the field log book to the nearest 0.01 foot.

<u>Floating Product Thickness</u> - A field check for floating product is made with a clear acrylic or teflon bailer. Thickness of floating product is measured to the nearest 1/32 of an inch. Any observed film as-well-as odor and color of the water is recorded. If a teflon cord is used, the cord is cleaned. If a nylon or cotton cord is used, a new cord is used in each well.

Water Sampling Procedures

Immediately prior to sampling of the ground water, four well-casing volumes of water are removed. Water is removed by either bailer or submersible nitrogen-driven bladder pump. During the purging operation, purged water is monitored for temperature, pH and specific conductance. After the wells are purged and the temperature, pH, and specific conductance of the water stabilize, a water sample is collected. Samples for volatile organic and gasoline analyses are placed in EPA-approved 40-ml containers with teflon-septa caps. Sample bottles are completely filled with water with no observed air bubbles present

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Sample Protocol
Latest Revision: March 7, 1988

within the bottle. Samples for acid, base and neutral organics, pesticides and heavy metals analysis are placed in appropriate laboratory prepared containers. Water sample containers are labeled with the appropriate sample number, location, project name and number, time, and date of collection. All samples are placed in an iced cooler and transported to a state-certified analytical laboratory.

In cases where very oily contaminants are encountered teflon bailers may be substituted with stainless steel bailers. This will be done to minimize cross contamination.

Chain-of-custody forms are logged and signed and accompany the samples to the laboratory. One travel blank accompanies the samples and is held by the lab for possible analysis.

All sample containers issued by the laboratory are properly prepared by the laboratory for the requested analysis.

- Total Volatile Hydrocarbons and/or benzene, toluene and xylenes 2 40-milliliter bottles
- · Total Lead 1 500-milliliter bottle
- Ethylene Dibromide 1 500-milliliter bottle
- Metals 1 500-milliliter bottle
- Pesticides/Herbicides 2 2-liter bottles
- · Acid Base Neutral Organics 2 1-liter bottles
- Halogenated Volatile Organics 2 40-milliliter bottles
- Aromatic Volatile Organics 2 40-milliliter bottles (preserved)
- Total Phenolics 1 1-liter bottle (preserved)

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Sample Protocol
Latest Revision: March 7, 1988

APPENDIX B LABORATORY PROCEDURES

APPENDIX B

Selection of the Laboratory

The laboratories selected to perform the analytical work are certified by the California State Department of Health Services as being qualified to perform the selected analyses. The selected laboratories are reviewed by Exceltech, Inc. to ensure that an adequate quality control program is in place and certified by the State of California.

Chain-of-Custody Control

The following procedures are used during sampling and analytical activities to provide chain-of-custody control during transfer of samples from collection through delivery to the laboratories. Record keeping activities used to achieve chain-of-custody control are:

- Contact made by sampling organization with facility supervisor and laboratory prior to sampling to alert them of dates of sampling and sample delivery.
- Well location map with well identification number prominently displayed.
- · Field log book for documenting sampling activities in the field.
- · Labels for identifying individual samples.
- Chain-of-custody record for documenting transfer and possession of samples.
- Laboratory analysis request sheet for documenting analyses to be performed.

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Sample Containers

Sample containers vary with each type of analytical parameter. Selected container types and materials are non-reactive with the sample and the particular analytical parameter being tested. Appropriate containers for volatile organics are glass bottles of at least 40 milliliters in size fitted with teflon-faced silicon septa. Sample containers are properly cleaned and sterilized by the certified laboratory according to the EPA protocol for the individual analysis.

Sample Preservation and Shipment

Various preservatives are used by the certified laboratory to retard changes in samples. Sample shipment from Exceltech to laboratories performing the selected analyses routinely occurs within 24 hours of sample collection.

Analytical Procedures

The analysis of ground water samples is conducted in accordance with accepted quantitative analytical procedures. The following four publications are considered the primary references for ground water sample analysis, and the contracts with the laboratories analyzing the samples stipulate that the methods set out in these publications be used. Please note that procedures used are periodically updated by federal and state agencies, and the certified laboratories amend analysis as required by the update.

- Standard Methods for the Examination of Water and Wastewater. 16th
 Ed., American Public Health Association, et al., 1985.
- Methods for Chemical Analysis of Water and Wastes, U.S. EPA, 600/4-79-020, March 1979.

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Latest Revision: April 5, 1988

- Test Methods for Evaluation of Solid Waste: Physical/Chemical Methods.
 U.S. EPA SW-846, 1982.
- <u>Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater</u>, EPA, 600/4-82-057, 1982.
- Practical Guide for Ground water Sampling. EPA, 600/2-85/104, September 1985.

Analytical Methods

The analytical methods used by the selected laboratories are those required by the type of analysis (fuels, metals, etc.). These methods are those currently approved by the State Regional Water Quality Control Board.

EXCELTECH, INC.
Laboratory Procedures
Latest Revision: April 5, 1988

APPENDIX C CHEMICAL ANALYTICAL DATA

DATE:

3/30/88

LOG NO.:

5758

DATE SAMPLED:

3/7/88, 3/8/88, & 3/9/88

DATE RECEIVED:

3/10/88

CUSTOMER: Exceltech Inc.

REQUESTER: Steve Costello

PROJECT:

No. 1467G, Owens-Illinois

			Sample Ty	pe: Wate	er		
		M	W-3	ħ	1W-4	M	1W−5
Method and Constituents	<u>Units</u>	Concen- tration	Detection <u>Limit</u>	Concen- tration	Detection Limit	Concen- tration	Detection Limit
Modified EPA Method 8015:							
Volatile Hydrocarbons	ug/l			< 6	6		
Extractable Hydrocarbons	ug/l	190,000	60 <	400	400	< 60	60
Modified EPA Method 8020:							
Benzene	ug/l			< 0.1	0.1		
Toluene	ug/l			< 0.1	0.1		
Xylenes	ug/l			< 0.1	0.1		
		M	IW-6	1	1W-7		1W-8
Modified EPA Method 8015:							
Extractable Hydrocarbons	ug/l	9,800	400 <	(400	400	2,600	400

DATE: LOG NO.:

3/30/88 5758

DATE SAMPLED: 3/7/88, 3/8/88, & 3/9/88 DATE RECEIVED: 3/10/88

PAGE:

Two

			San	ple Type:	_Water		
		M	W-9	M	W-10	M	W-11
Method and Constituent	<u>Units</u>	Concen- tration	Detection Limit	Concen- tration	Detection Limit	Concen- tration	Detection Limit
Modified EPA Method 8015:							
Volatile Hydrocarbons	ug/1					< 6	⁻ 6
Extractable Hydrocarbons	ug/1	47,000	60	< 60	60	< 60	60
Modified EPA Method 8020:							
Benzene	ug/1					< 0.1	0.1
Toluene	ug/1					< 0.1	0.1
Xylenes	ug/1					< 0.1	0.1
		M	W-12		IW-13		W-14
Modified EPA Method 8015:		·		-			
Volatile Hydrocarbons	ug/l	< 6	6	7.7	6	20	6
Extractable Hydrocarbons	ug/l	< 60	60	< 60	60	< 60	60
Modified EPA Method 8020:							
Benzene	ug/1	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
Toluene	ug/1	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
Xylenes	ug/1	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
			IW-15		W-16		1W-17
Modified EPA Method 8015:							
Volatile Hydrocarbons	ug/1	90	6	10	6.	4,300	. 6
Extractable Hydrocarbons	ug/l	< 60	60	< 60	60	3,800	60
Modified EPA Method 8020:					·		
Benzene	ug/1	0.8	0.1	0.5	0.1	83	0.1
Toluene	ug/1	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
Xylenes	ug/1	< 0.1	0.1	< 0.1	0.1	46	0.1

DATE:

LOG NO.:

3/30/88 5758.

DATE SAMPLED:

3/7/88, 3/8/88, & 3/9/88 3/10/88

DATE RECEIVED: PAGE:

Three

	Sample Type: Water						
		MW-18					
Method and Constituent	<u>Units</u>	Concen- tration	Detection Limit				
Modified EPA Method 8015:							
Volatile Hydrocarbons	ug/l	< 6	6				
Extractable Hydrocarbons	ug/l	< 60	60				
Modified EPA Method 8020:							
Benzene	ug/1	< 0.1	0.1				
Toluene	ug/1	< 0.1	0.1				
Xvlenes	ua/1	< 0.1	0.1				

Hugh R. McLean

Supervisory Chemist

HRM:vls

CHAIN OF CUSTODY RECORD

TRACE ANALYSIS TEST REQUESTED PROJECT NO PROJECT NAME NORMAL OWENS - ILLINOIS 14676 87 SAMPLERS: (Signature) TURNAROUND Britt Van Thorder LEMARKS . DEIVE GIAL DATE NO TIME 12:437 AMBER LITER(1) *PRESERVED YOA(2) 3/7/88 MW-II 1:35 P MW-12 3/7/88 2:30P 3 MM-14 3:248 MW-18 13/7/88 4:11P ti 11 3 MW-15 3/8/88 9:32A 11 3 ч 10:23A Caution: All may have X × MW-16 3/8/88 11:14A high readings × 12:21P AMATE LITTER MW-8 3/8/88 1:27P ANSFIL LITER (1) MW-17 2:33 PRESERVED VOA(2) 3 X 3/9/88 9:26A AUBER LITER MW-6 10:21A $\overline{ imes}$ 3/9/88 11:19A 11 12:317 MW-9 MW-3 3/9/88 LELINQUISHED BY DATE RECEIVED BY: RELINQUISHED BY: DATE RECEIVED BY RELINQUISHED BY DATE TIME RECEIVED BY RELINQUISHED BY: DATE RECEIVED BY LABORATORY 1:309 Downer Town Chi 3/10/88 But Von Thaden REMARKS REPORT TO STEVE COSTELLO FREMONT, CA 94538 (415) 659-0404 DISTRIBUTION

FORM DATED 1-28-87