



**INTERIM REPORT FOR THE
OLIN BUFFALO AVENUE PLANT
RCRA FACILITY INVESTIGATION**

VOLUME II: APPENDICES A,B,C,D

Prepared for:
Olin Chemicals
Lower River Road
Charleston, Tennessee 37310
February 1992

Woodward-Clyde

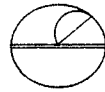


Woodward-Clyde Consultants
3571 Niagara Falls Boulevard
North Tonawanda, New York 14120

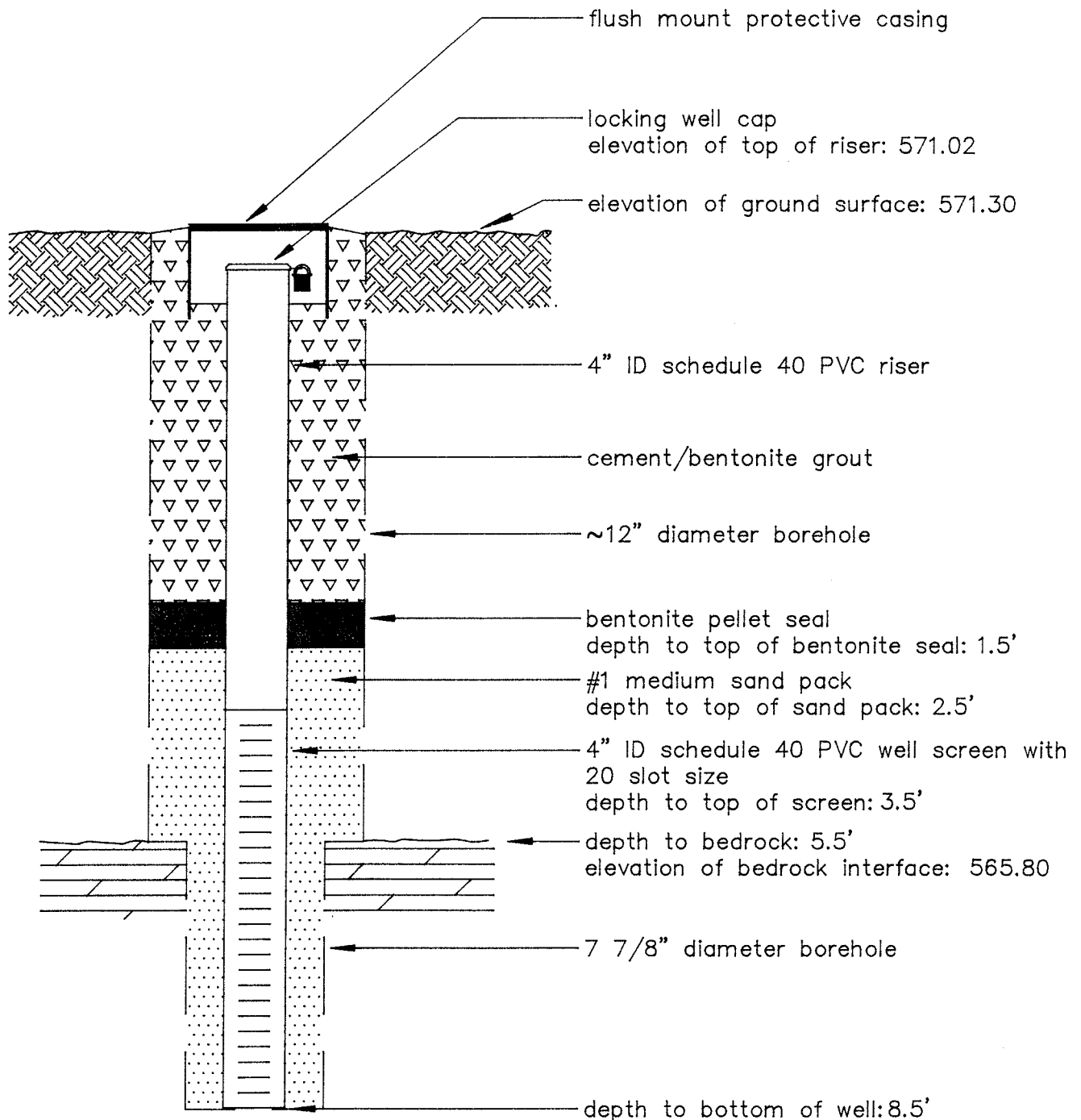
Project Number 90C2030-5

APPENDIX A
MONITORING WELL COMPLETION DRAWINGS

Olin Chemicals
Niagara Plant RFI



WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists



REPORT OF MONITORING WELL OBA-1A

COMPLETION DATE: 6/22/89

INSPECTED BY: Paul F. Mazierski

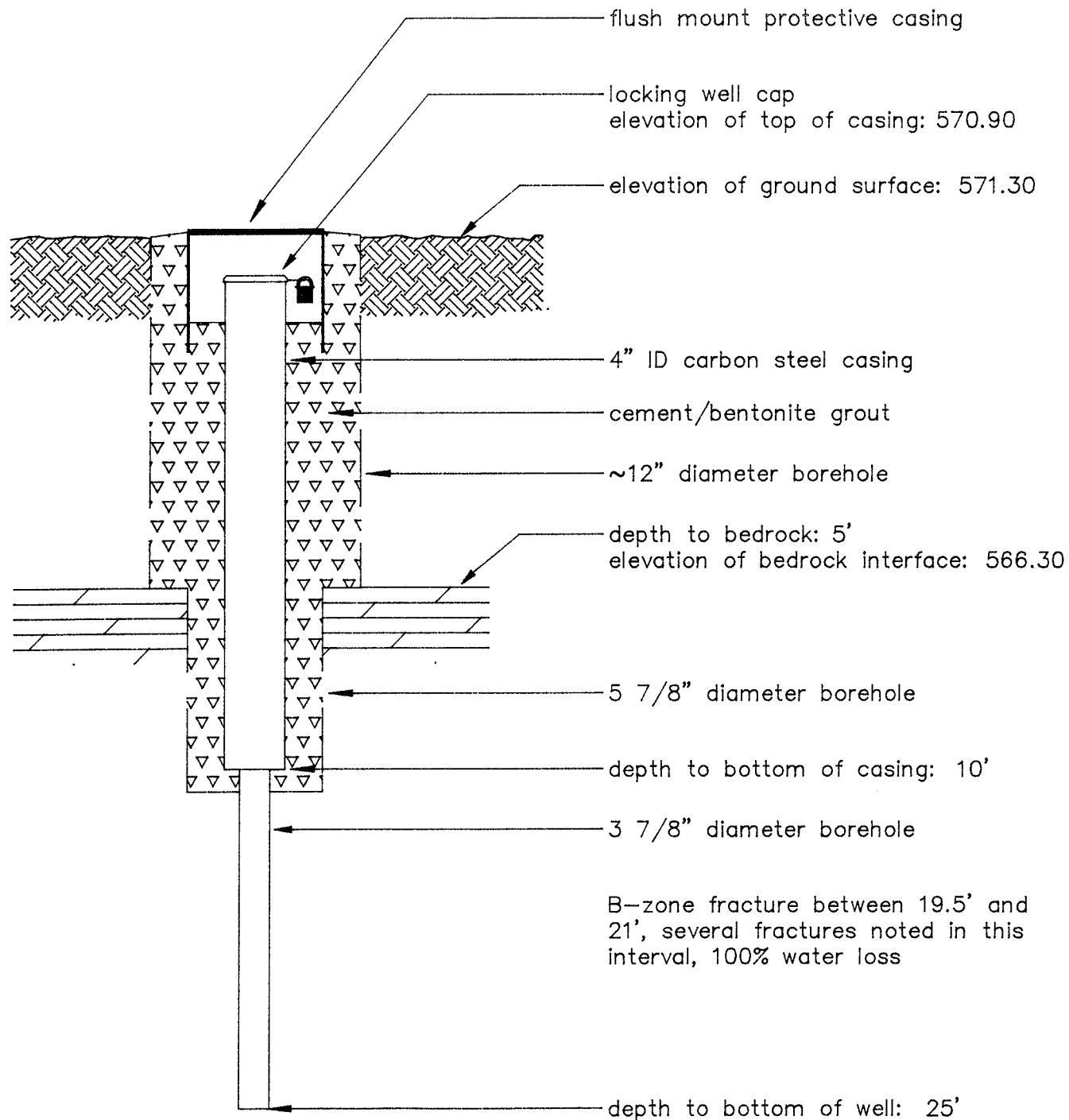
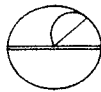
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-1B

COMPLETION DATE: 6/23/89

INSPECTED BY: Paul F. Mazierski

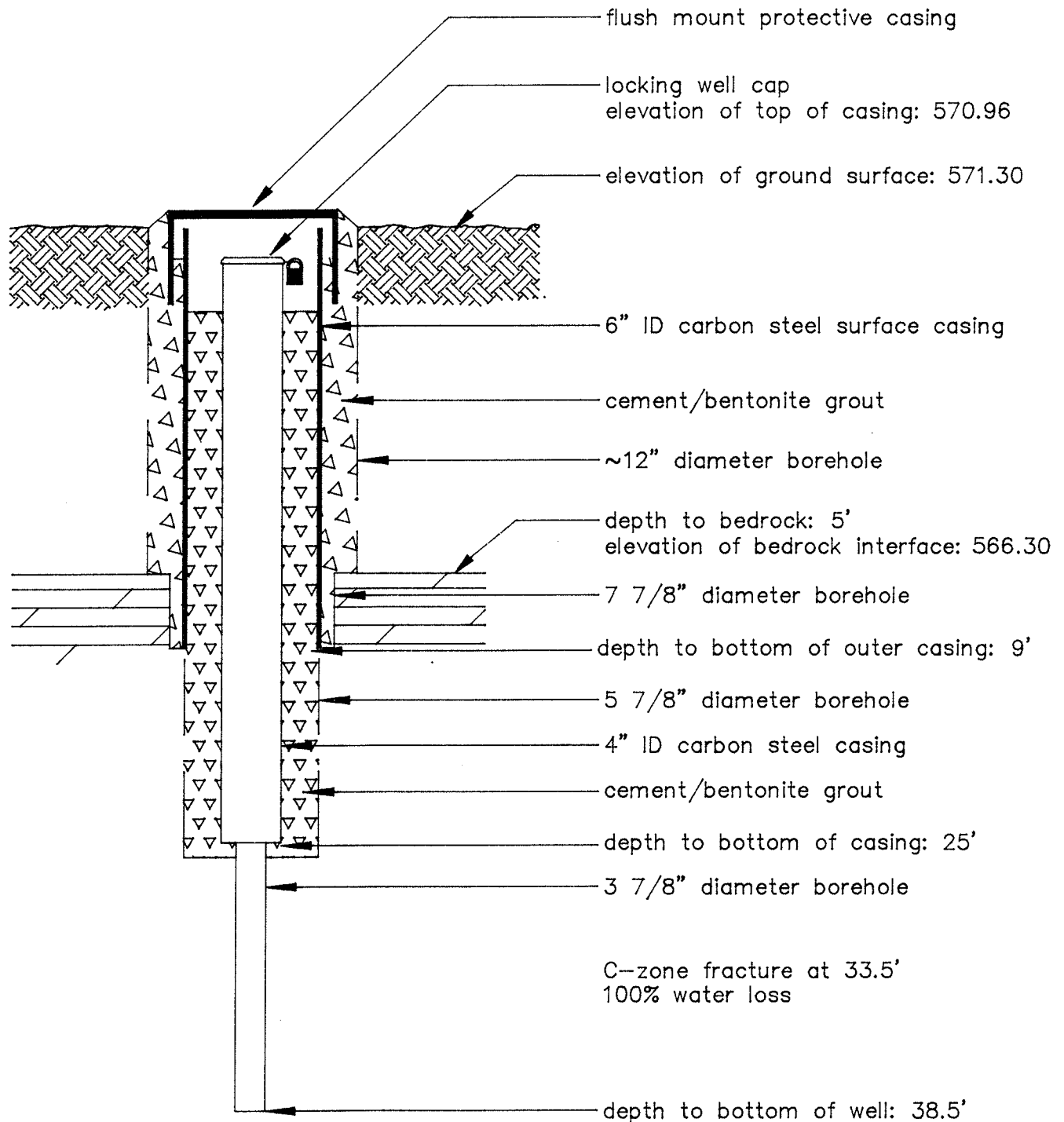
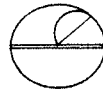
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-1C/CD

COMPLETION DATE: 6/27/89

INSPECTED BY: Paul F. Mazierski

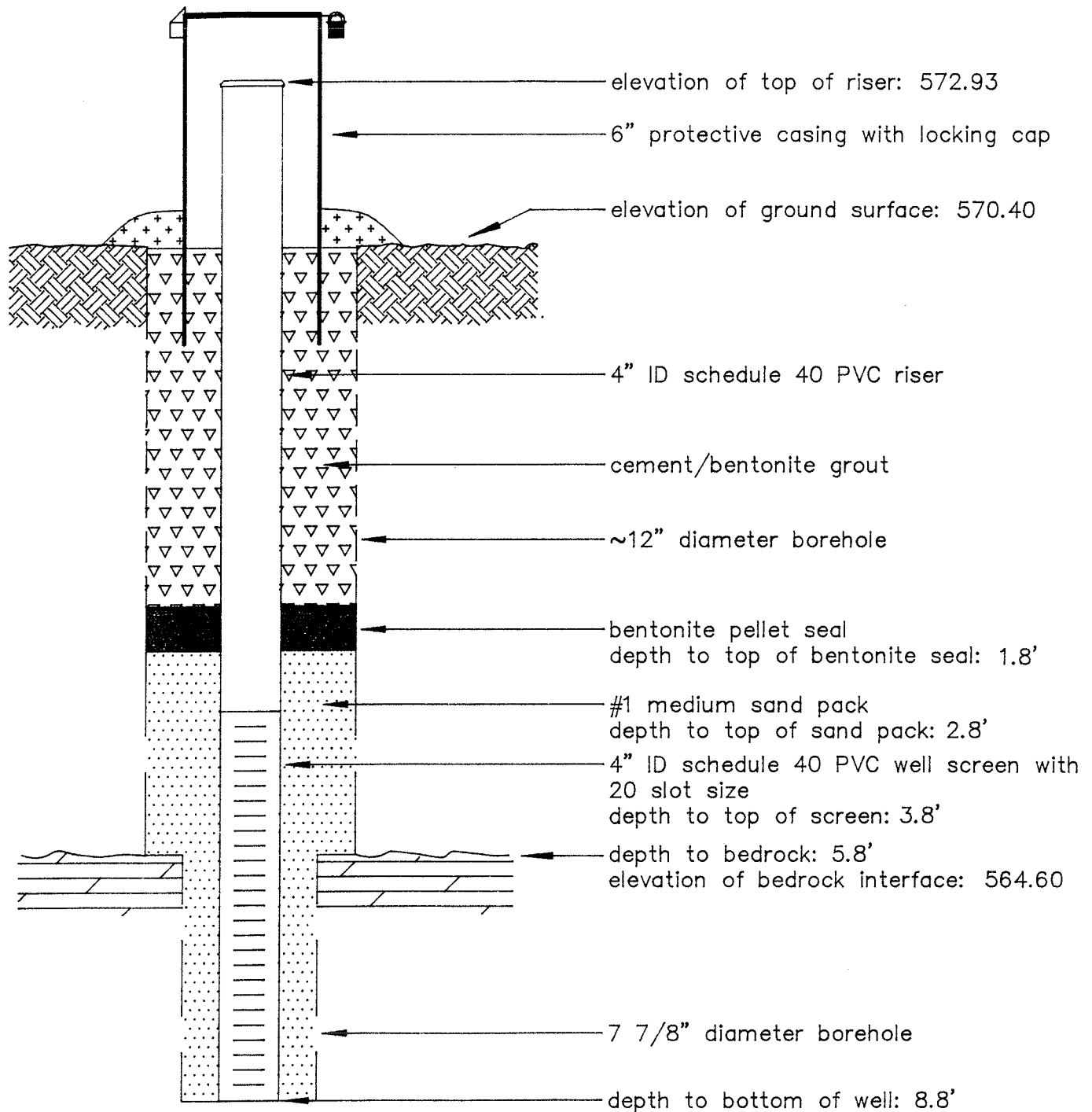
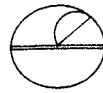
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-2A

COMPLETION DATE: 8/22/89

INSPECTED BY: Paul F. Mazierski

DRAWN BY: PFM

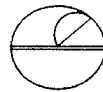
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PROJECT NUMBER: 88C2346-2

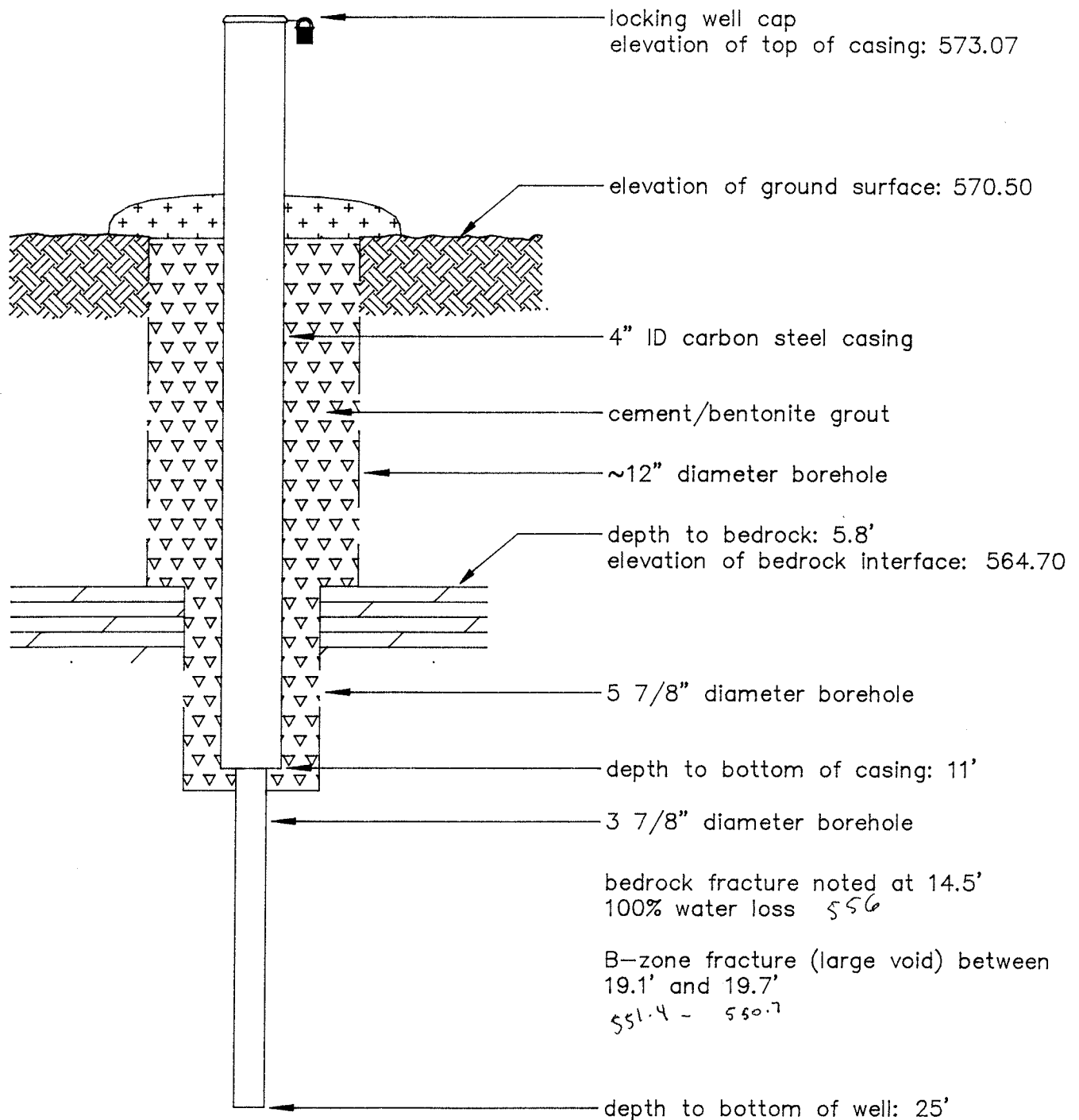
DATE: 4/23/90

FIGURE NO:

Olin Chemicals
Niagara Plant RFI



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Consulting Engineers, Geologists and Environmental Scientists



REPORT OF MONITORING WELL OBA-2B

COMPLETION DATE: 8/24/89

INSPECTED BY: Paul F. Mazierski

DRAWN BY: PFM

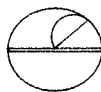
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PROJECT NUMBER: 88C2346-2

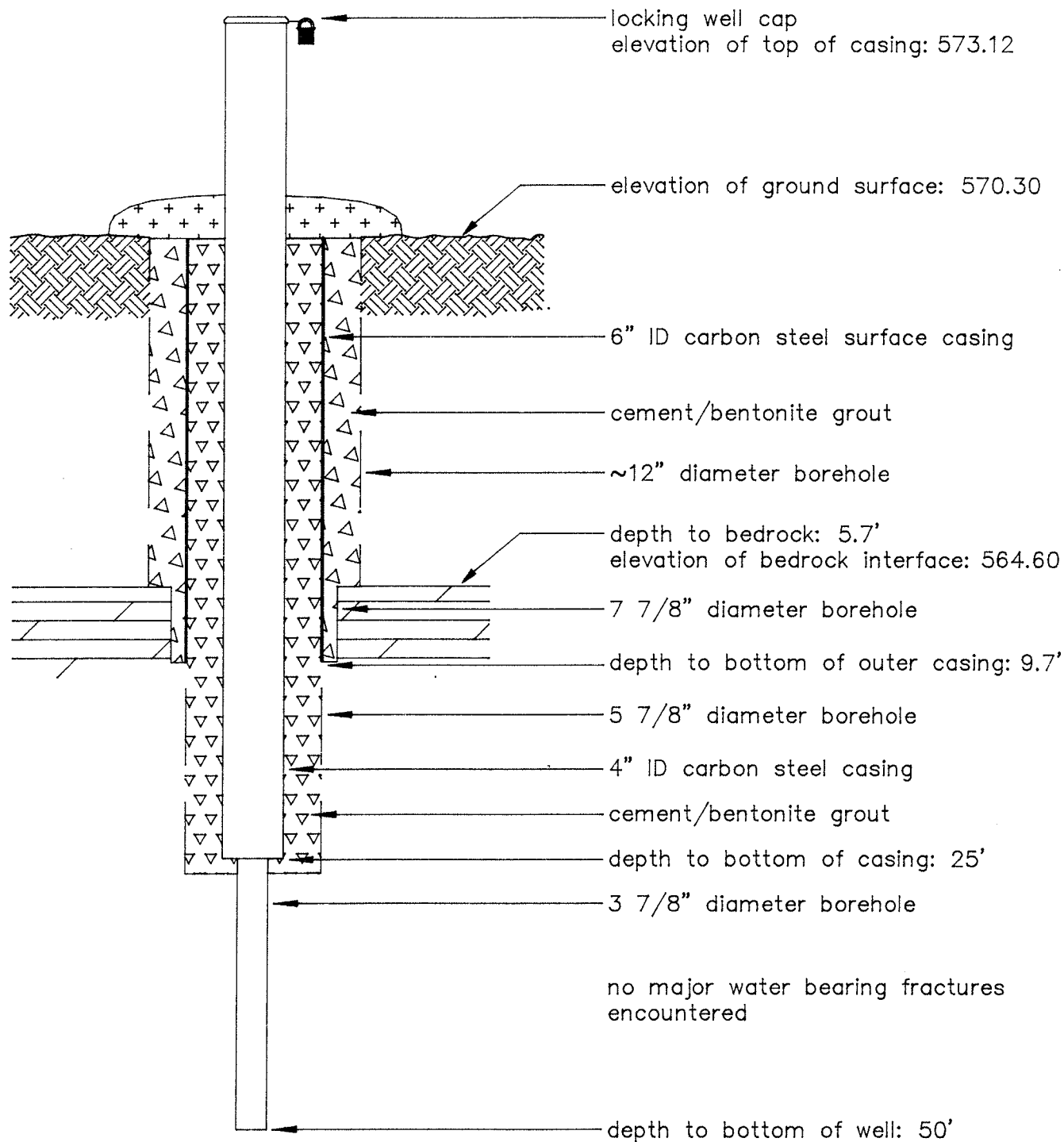
DATE: 4/23/90

FIGURE NO:

Olin Chemicals
Niagara Plant RFI



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Consulting Engineers, Geologists and Environmental Scientists



REPORT OF MONITORING WELL OBA-2C/CD

COMPLETION DATE: 8/30/89

INSPECTED BY: Paul F. Mazierski

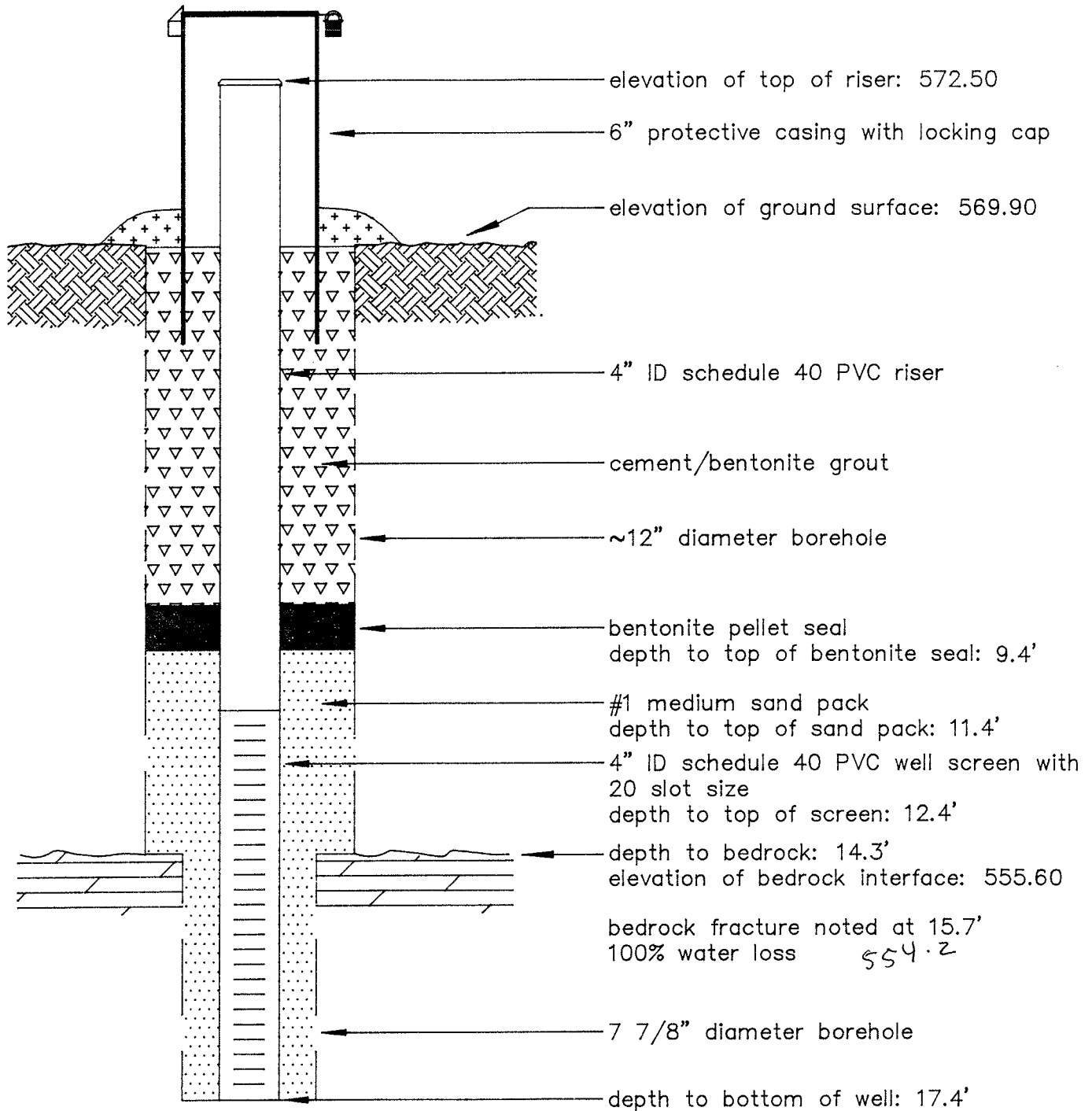
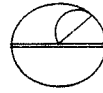
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-3A

COMPLETION DATE: 6/30/89

INSPECTED BY: Paul F. Mazierski

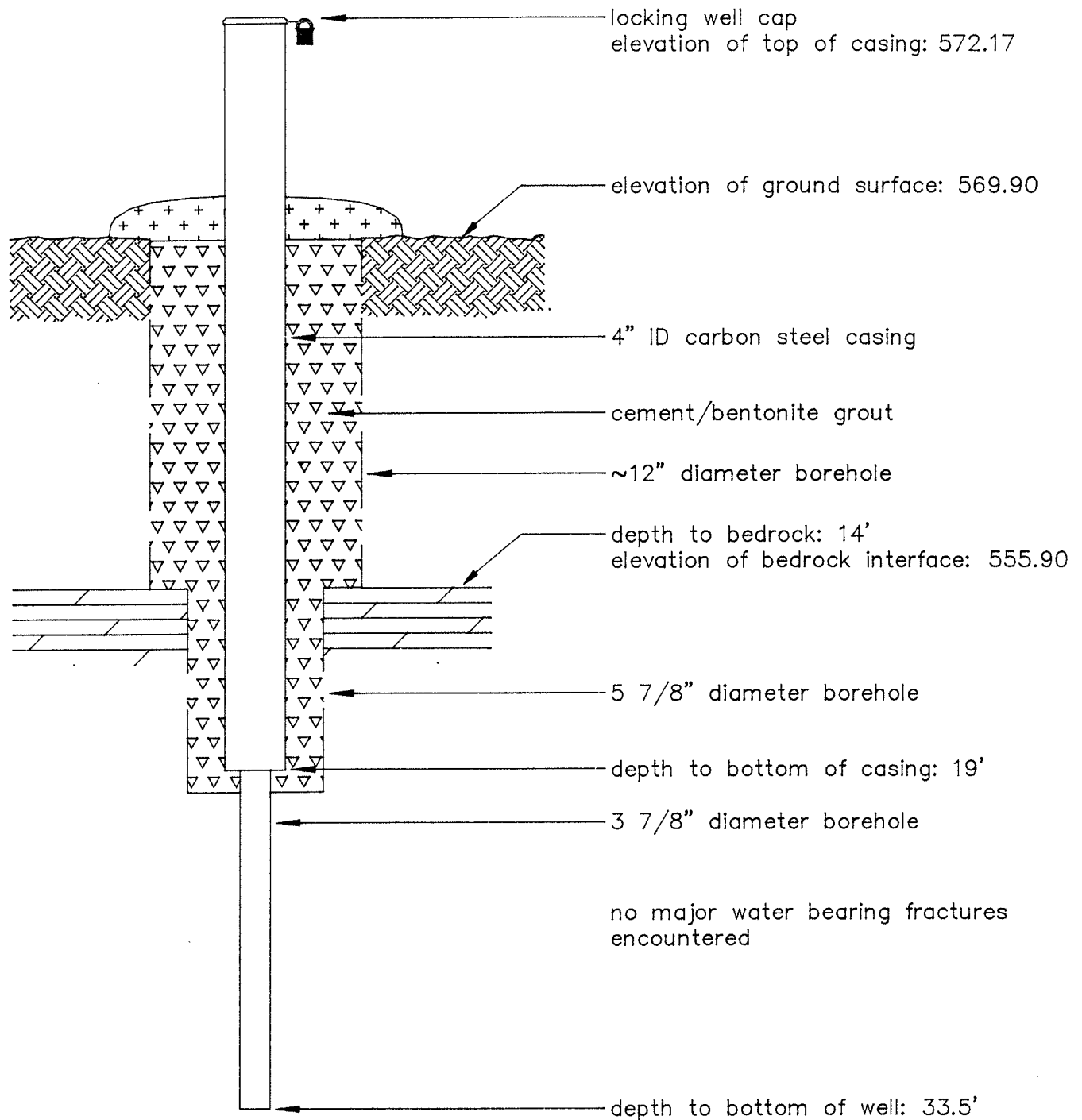
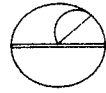
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-3B

COMPLETION DATE: 7/7/89

INSPECTED BY: Paul F. Mazierski

DRAWN BY: PFM

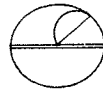
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PROJECT NUMBER: 88C2346-2

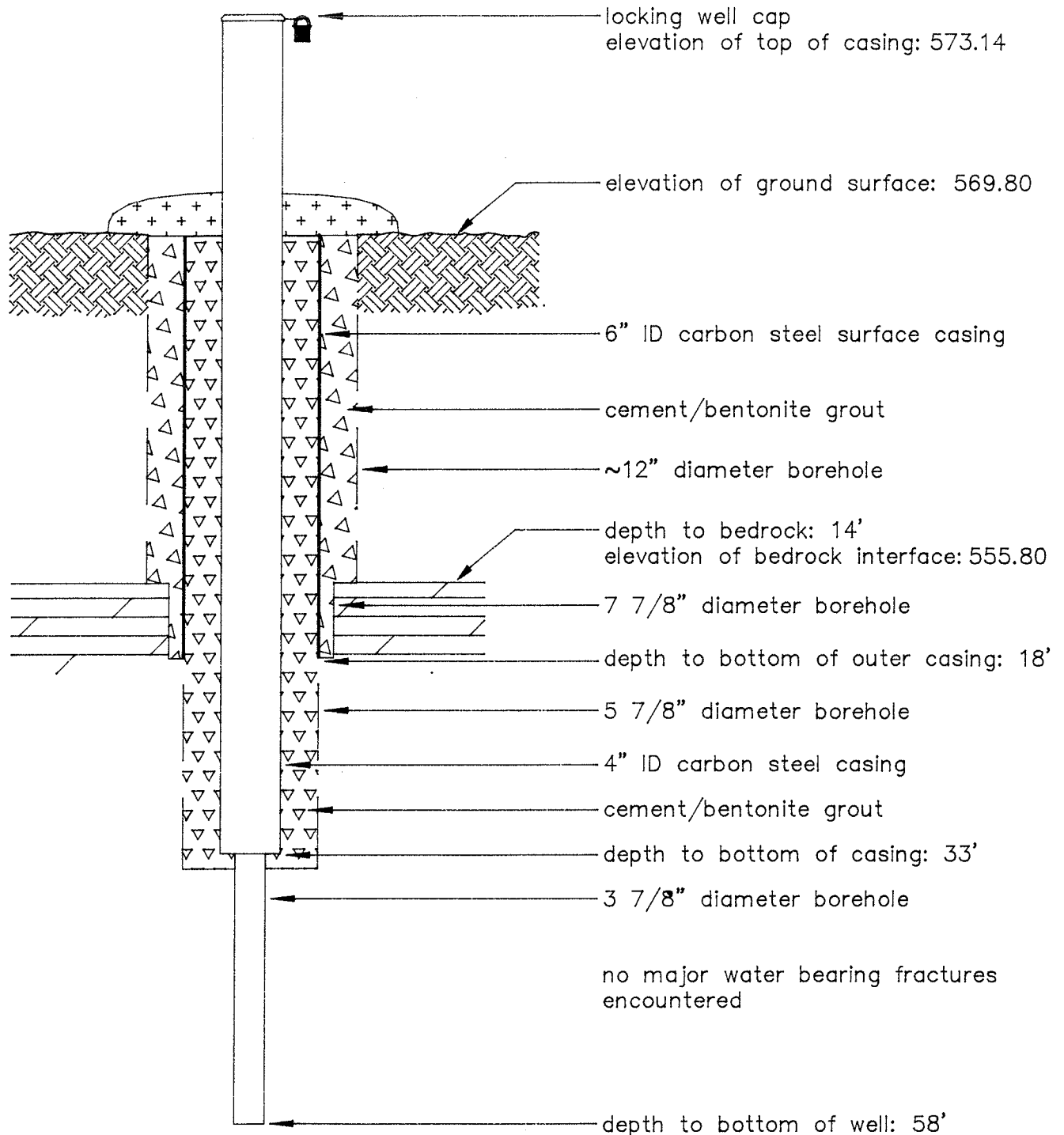
DATE: 4/23/90

FIGURE NO:

Olin Chemicals
Niagara Plant RFI



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REPORT OF MONITORING WELL OBA-3C/CD

COMPLETION DATE: 7/11/89

INSPECTED BY: Paul F. Mazierski

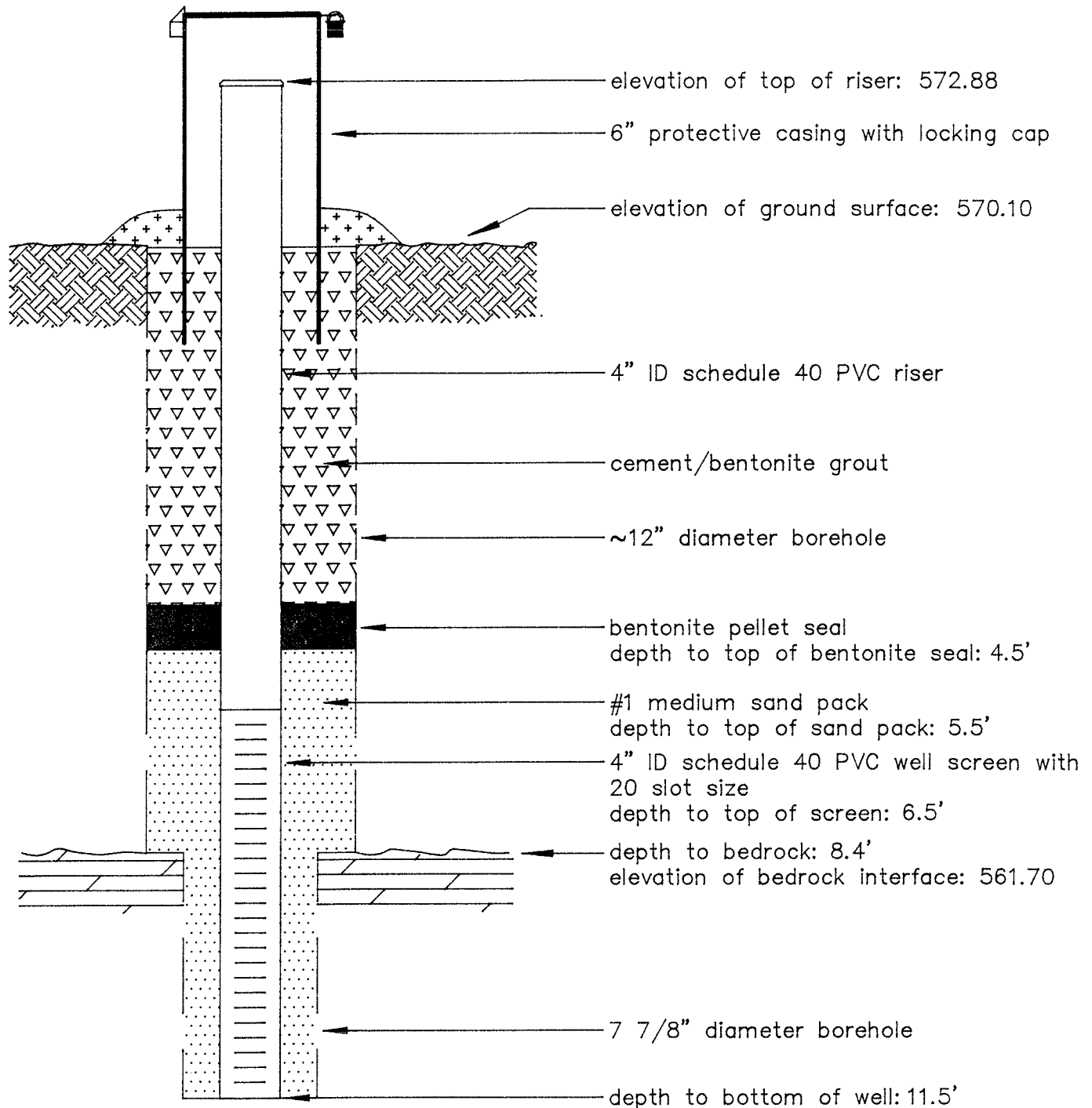
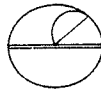
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-4A

COMPLETION DATE: 7/14/89

INSPECTED BY: Paul F. Mazierski

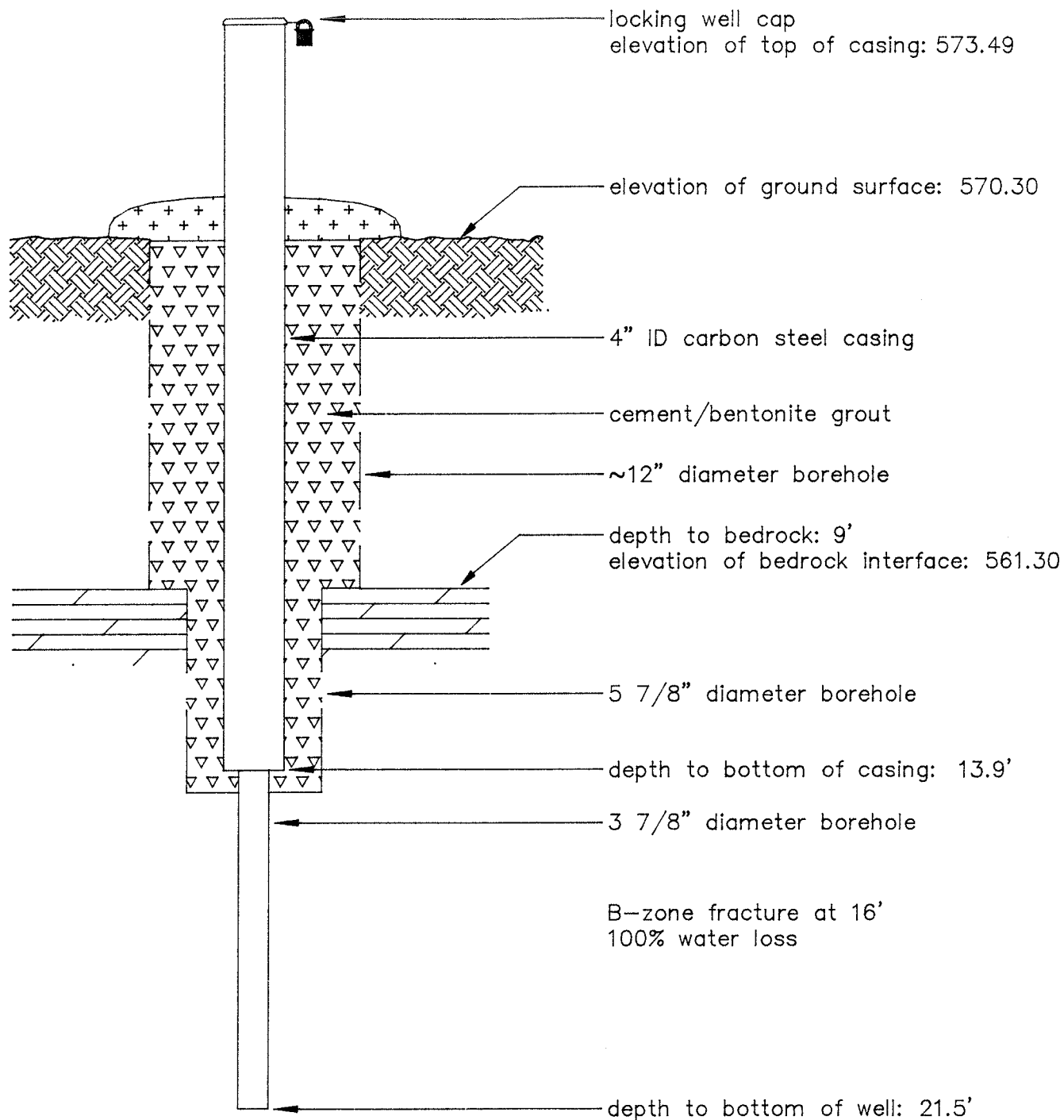
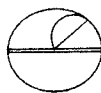
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-4B

COMPLETION DATE: 7/20/89

INSPECTED BY: Paul F. Mazierski

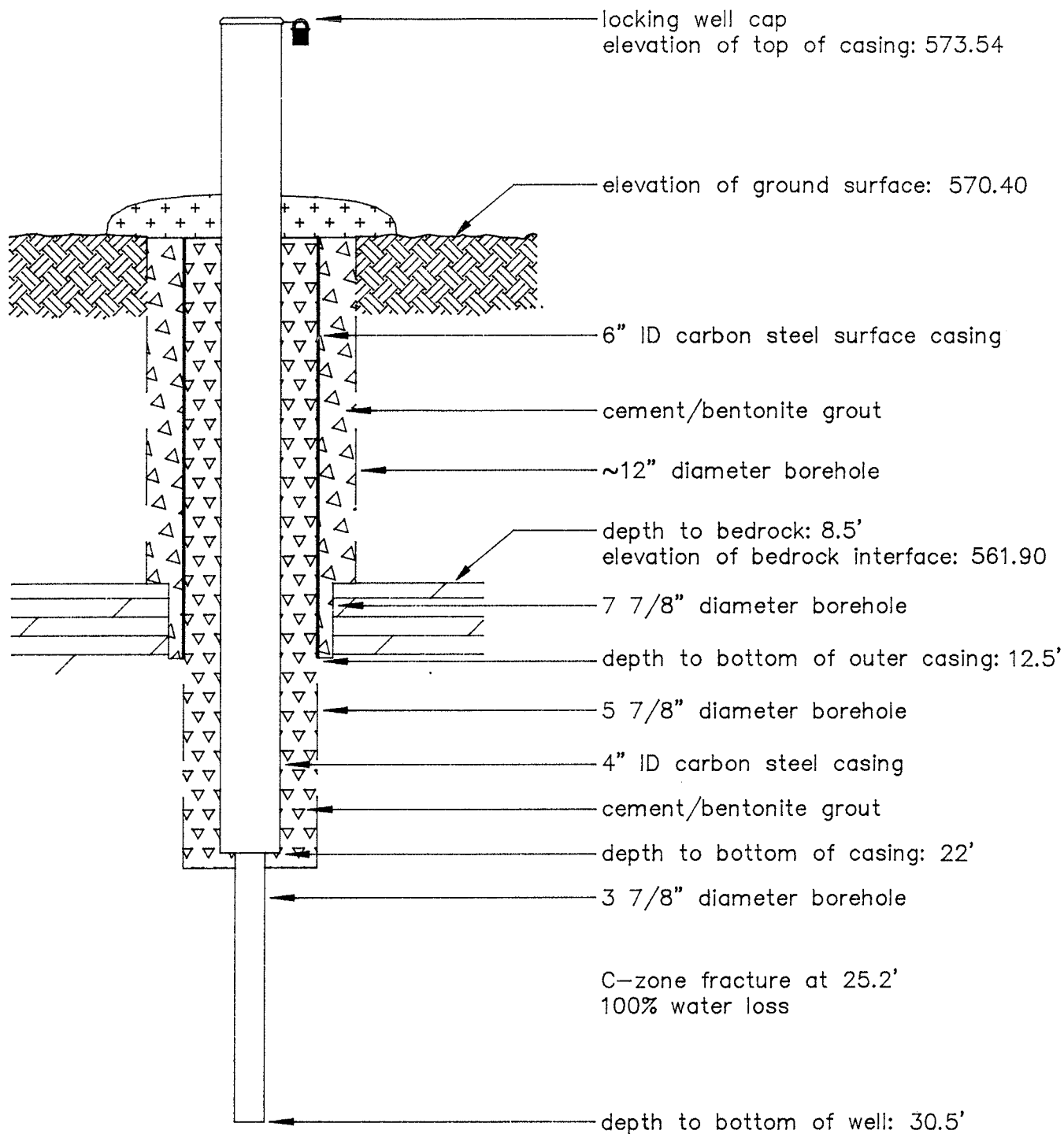
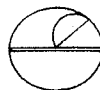
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-4C/CD

COMPLETION DATE: 7/24/89

INSPECTED BY: Paul F. Mazierski

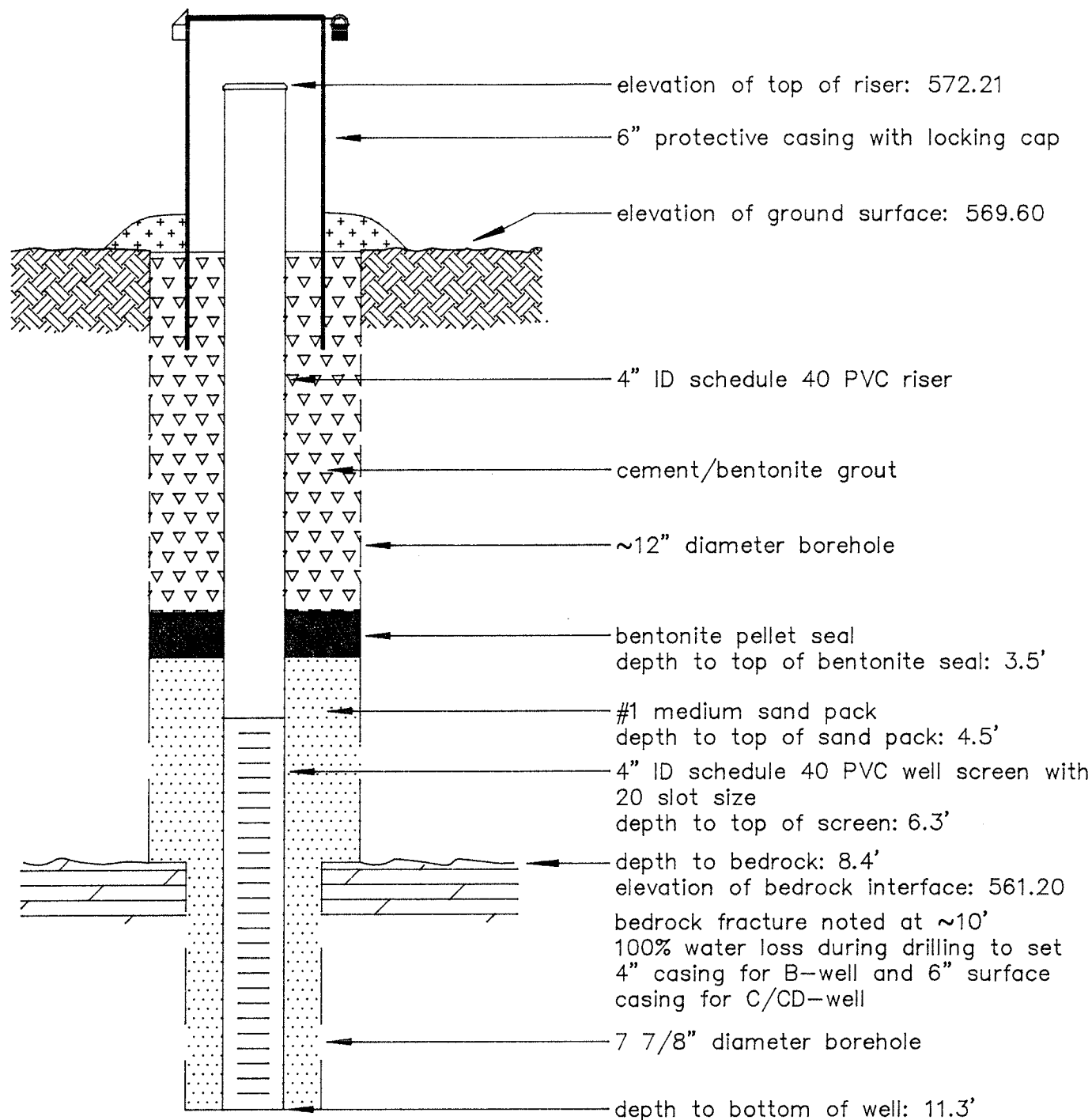
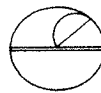
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-5A

COMPLETION DATE: 8/7/89

INSPECTED BY: Paul F. Mazierski

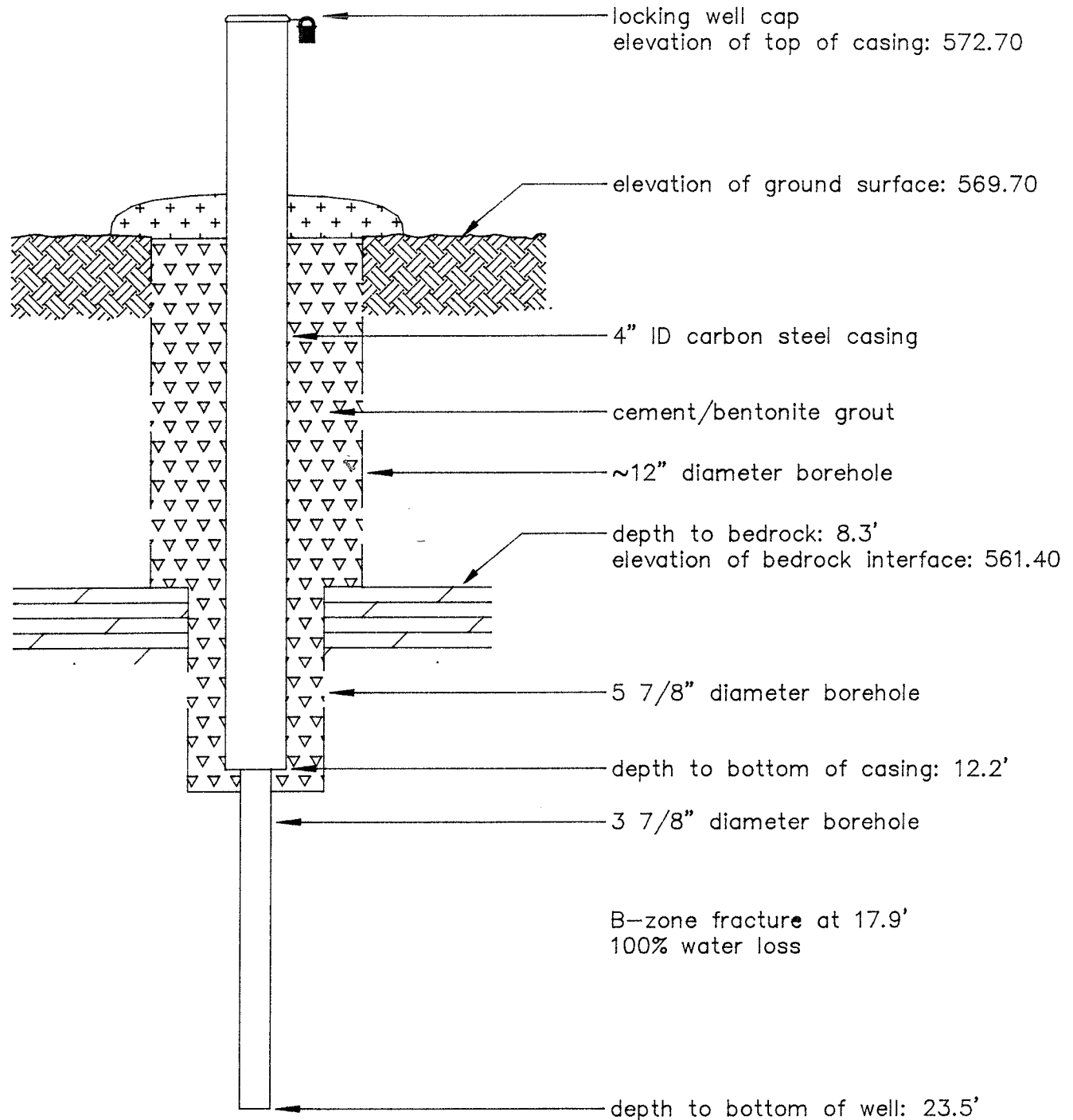
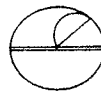
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-5B

COMPLETION DATE: 8/8/89

INSPECTED BY: Paul F. Mazierski

DRAWN BY: PFM

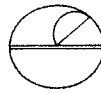
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PROJECT NUMBER: 88C2346-2

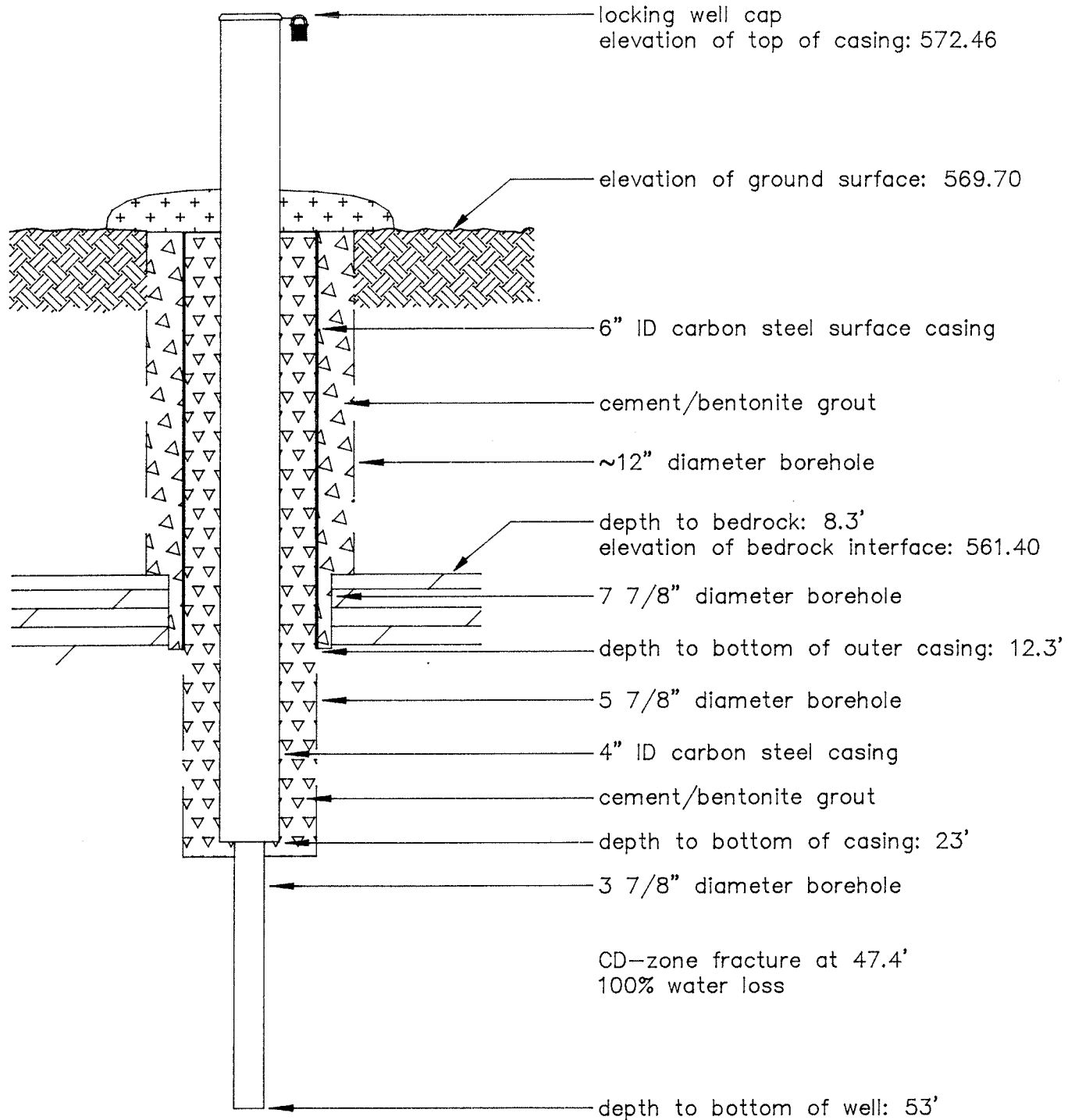
DATE: 4/23/90

FIGURE NO:

Olin Chemicals
Niagara Plant RFI



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Consulting Engineers, Geologists and Environmental Scientists



REPORT OF MONITORING WELL OBA-5C/CD

COMPLETION DATE: 8/10/89

INSPECTED BY: Paul F. Mazierski

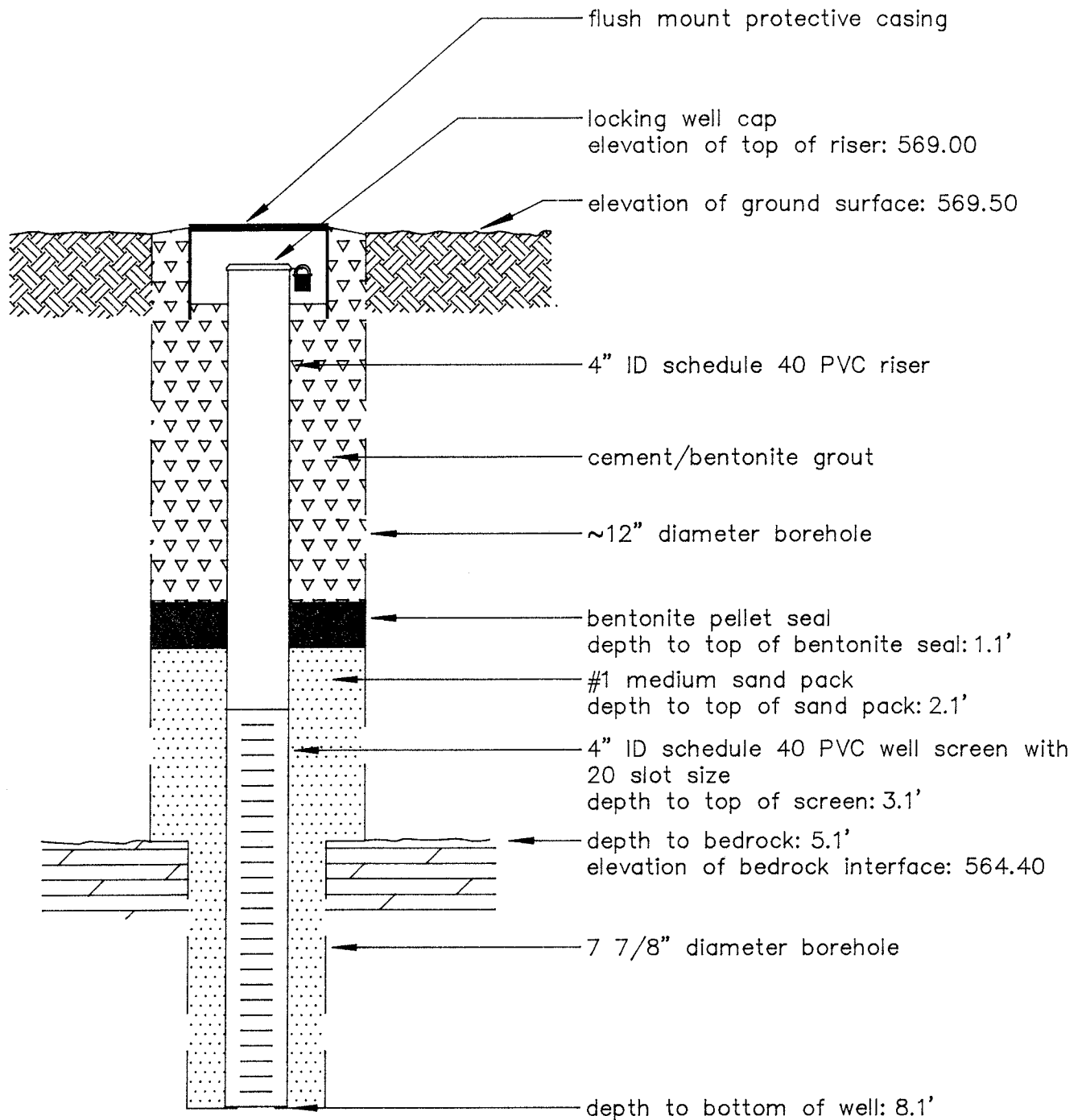
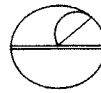
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE : 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-6A

COMPLETION DATE: 8/15/89

INSPECTED BY: Paul F. Mazierski

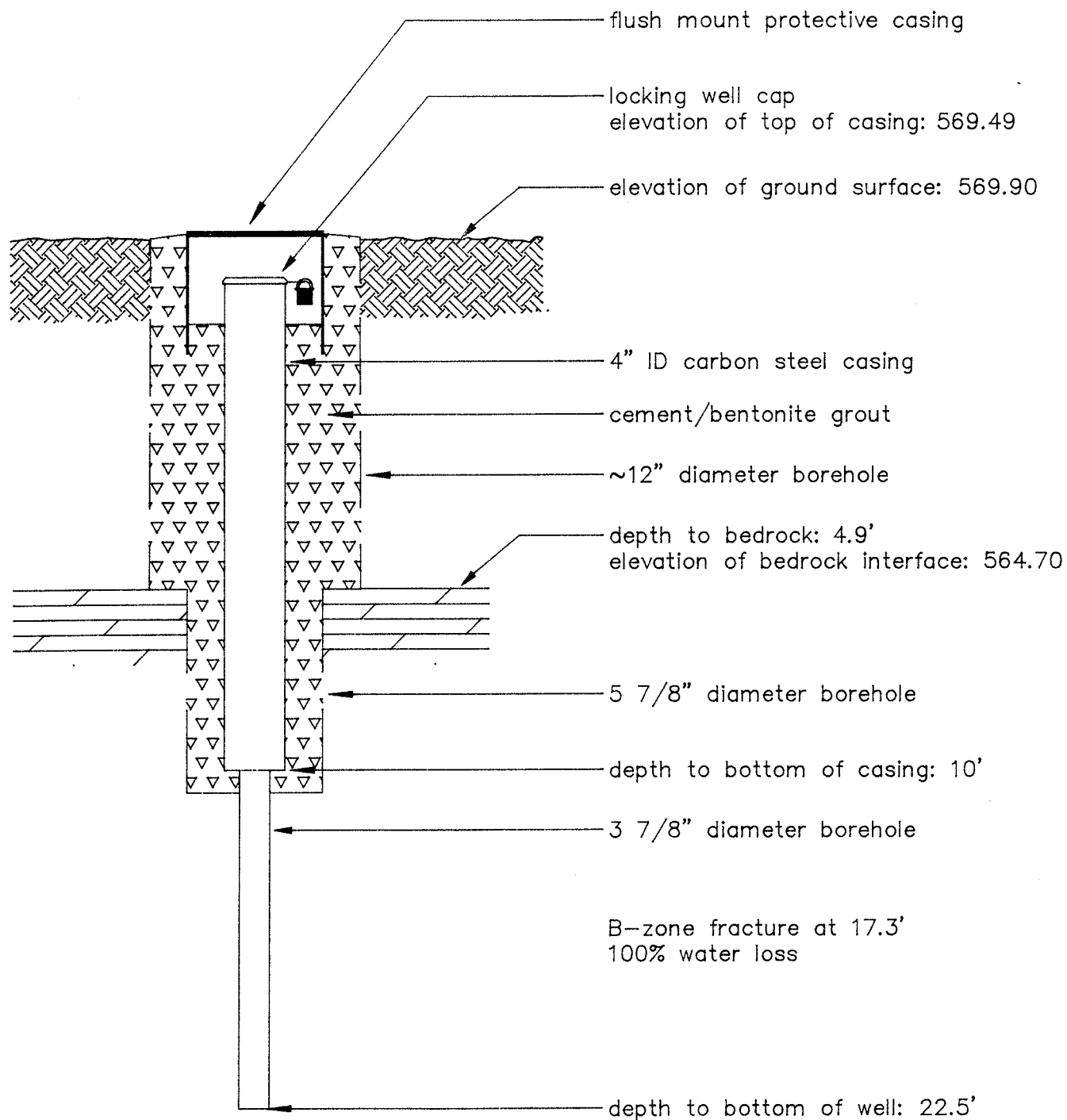
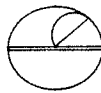
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-6B

COMPLETION DATE: 8/15/89

INSPECTED BY: Paul F. Mazierski

DRAWN BY: PFM

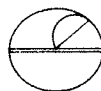
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PROJECT NUMBER: 88C2346-2

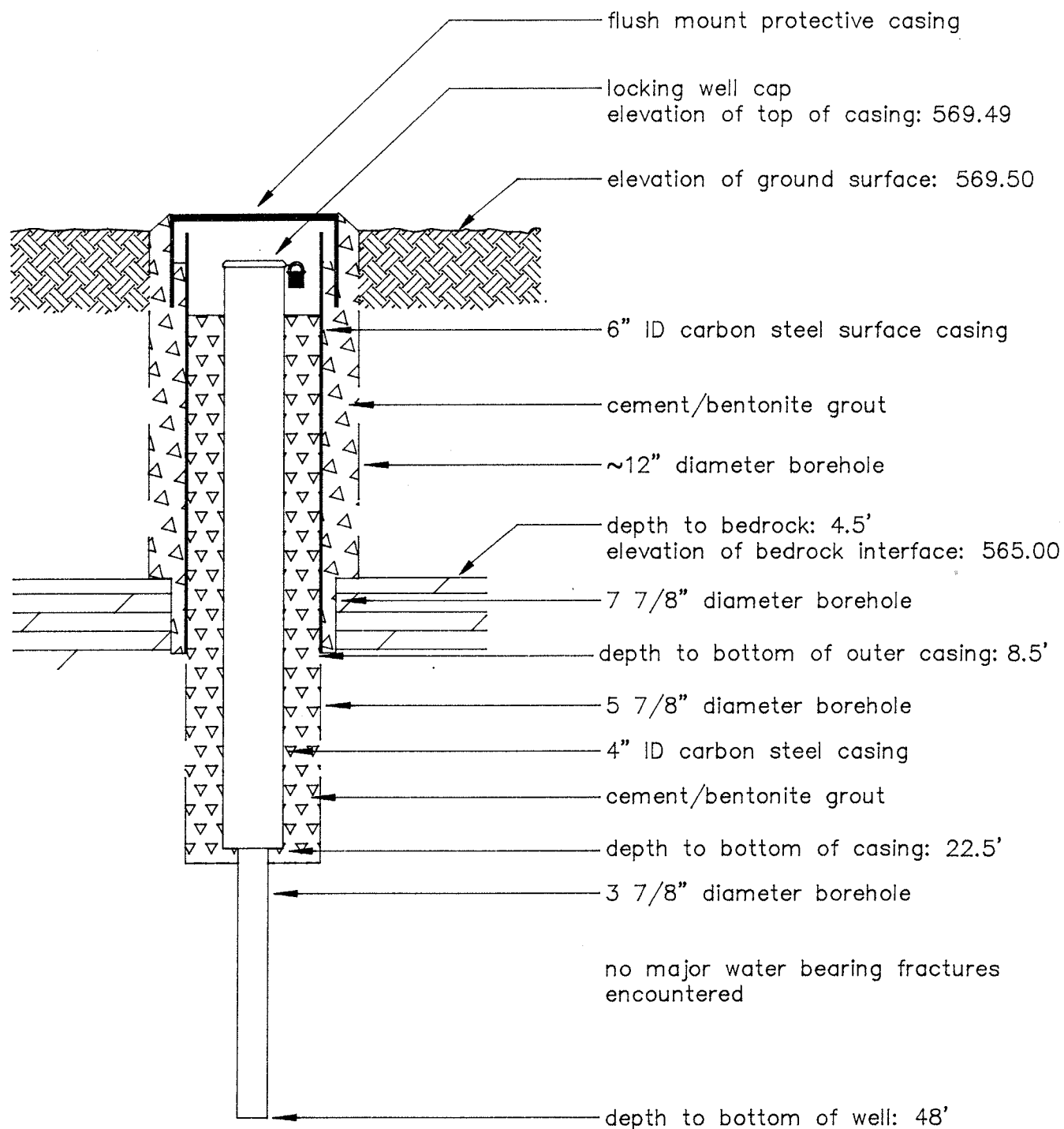
DATE: 4/23/90

FIGURE NO:

Olin Chemicals
Niagara Plant RFI



WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists



REPORT OF MONITORING WELL OBA-6C/CD

COMPLETION DATE: 8/18/89

INSPECTED BY: Paul F. Mazierski

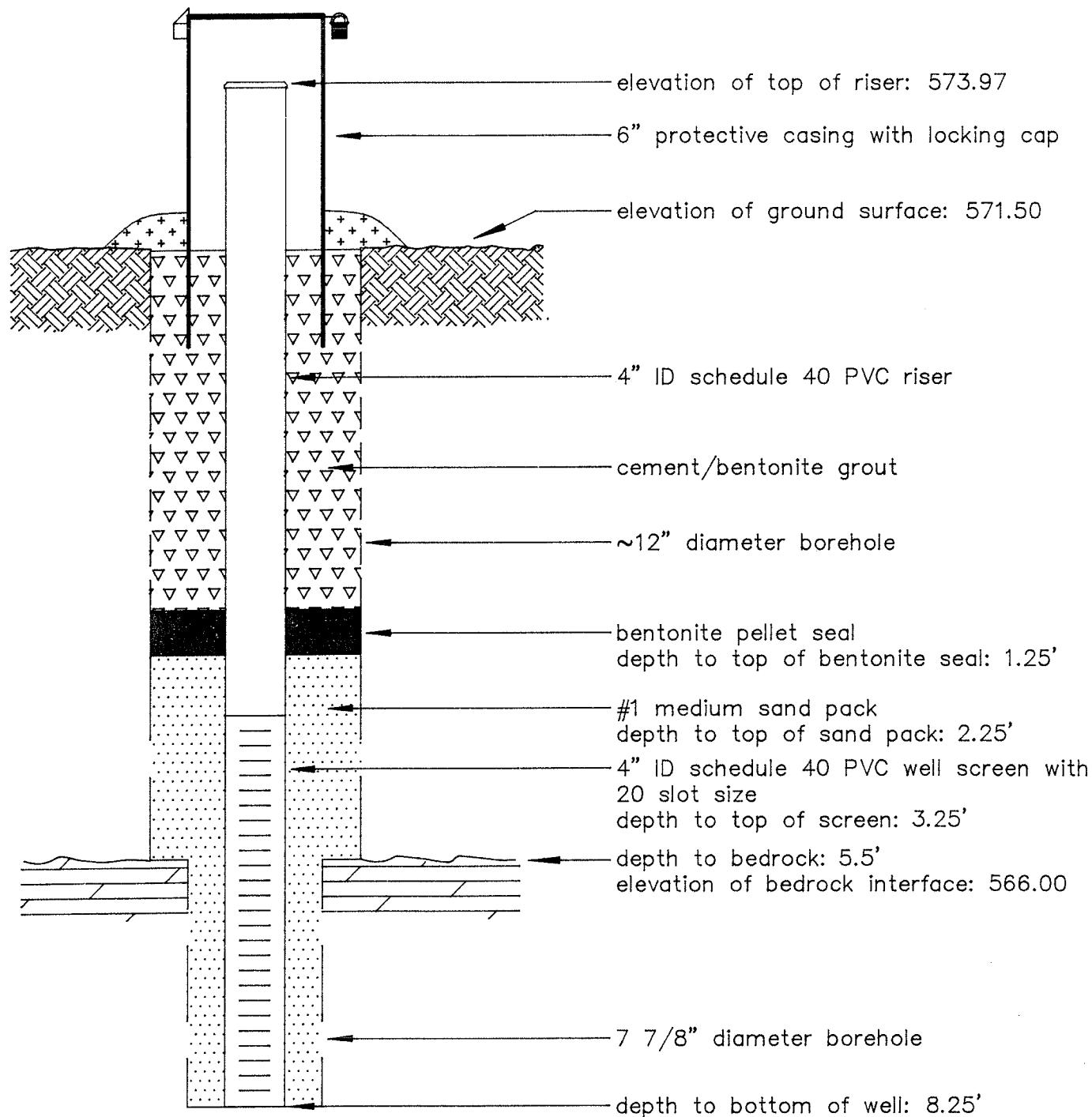
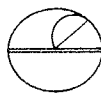
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-7A

COMPLETION DATE: 6/7/89

INSPECTED BY: Paul F. Mazierski

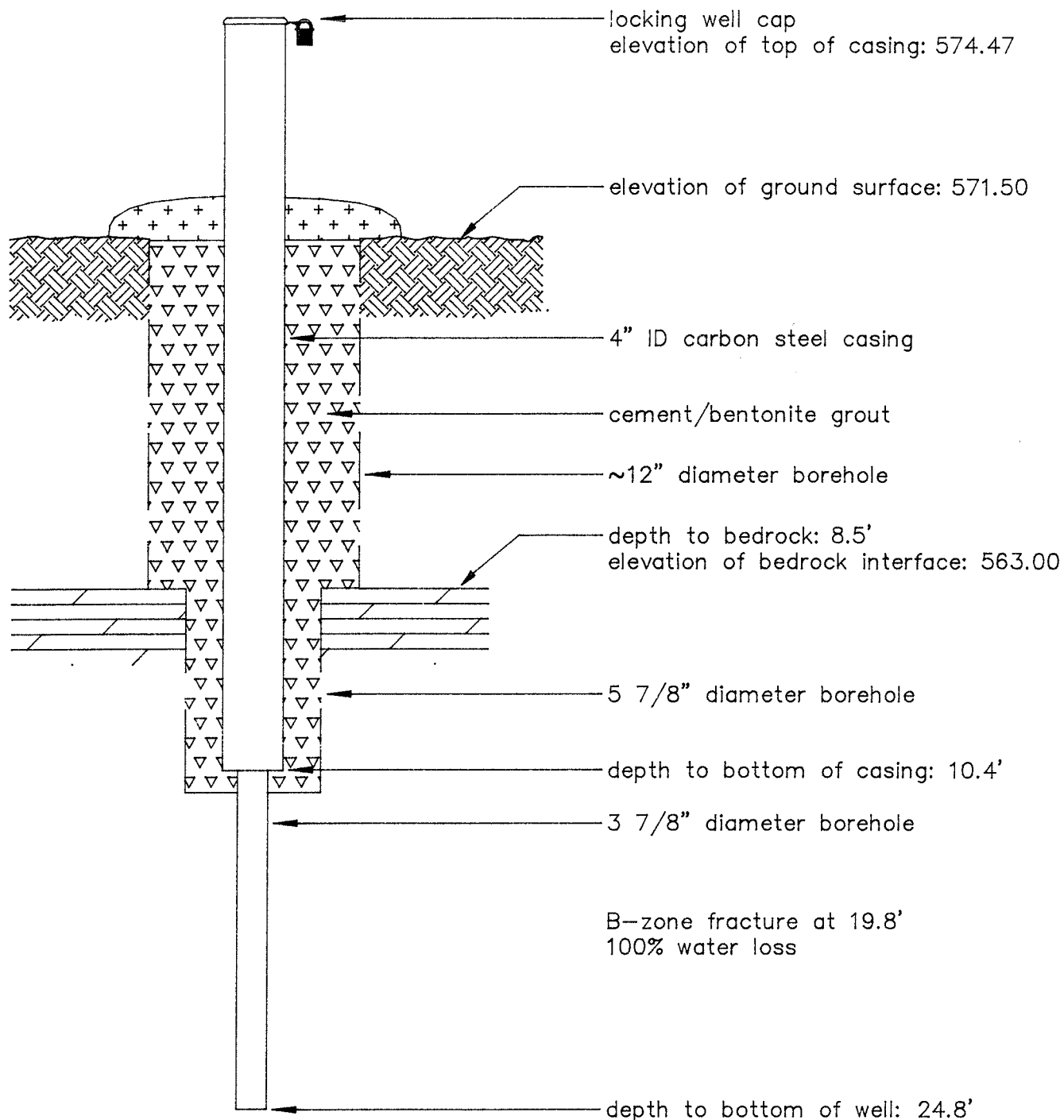
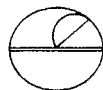
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-7B

COMPLETION DATE: 6/13/89

INSPECTED BY: Paul F. Mazierski

DRAWN BY: PFM

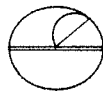
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PROJECT NUMBER: 88C2346-2

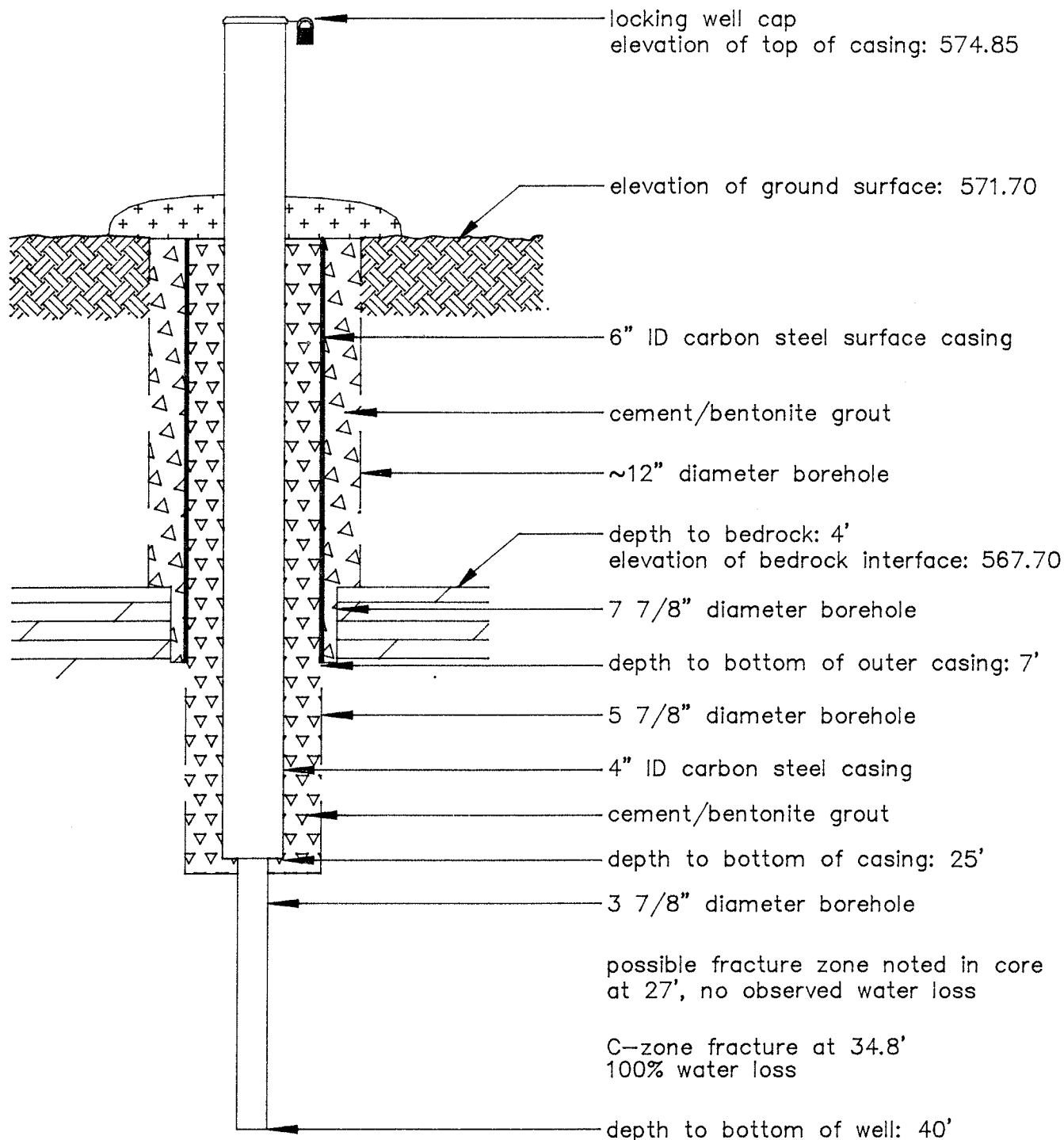
DATE: 4/23/90

FIGURE NO:

Olin Chemicals
Niagara Plant RFI



WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists



REPORT OF MONITORING WELL OBA-7C/CD

COMPLETION DATE: 6/20/89

INSPECTED BY: Paul F. Mazierski

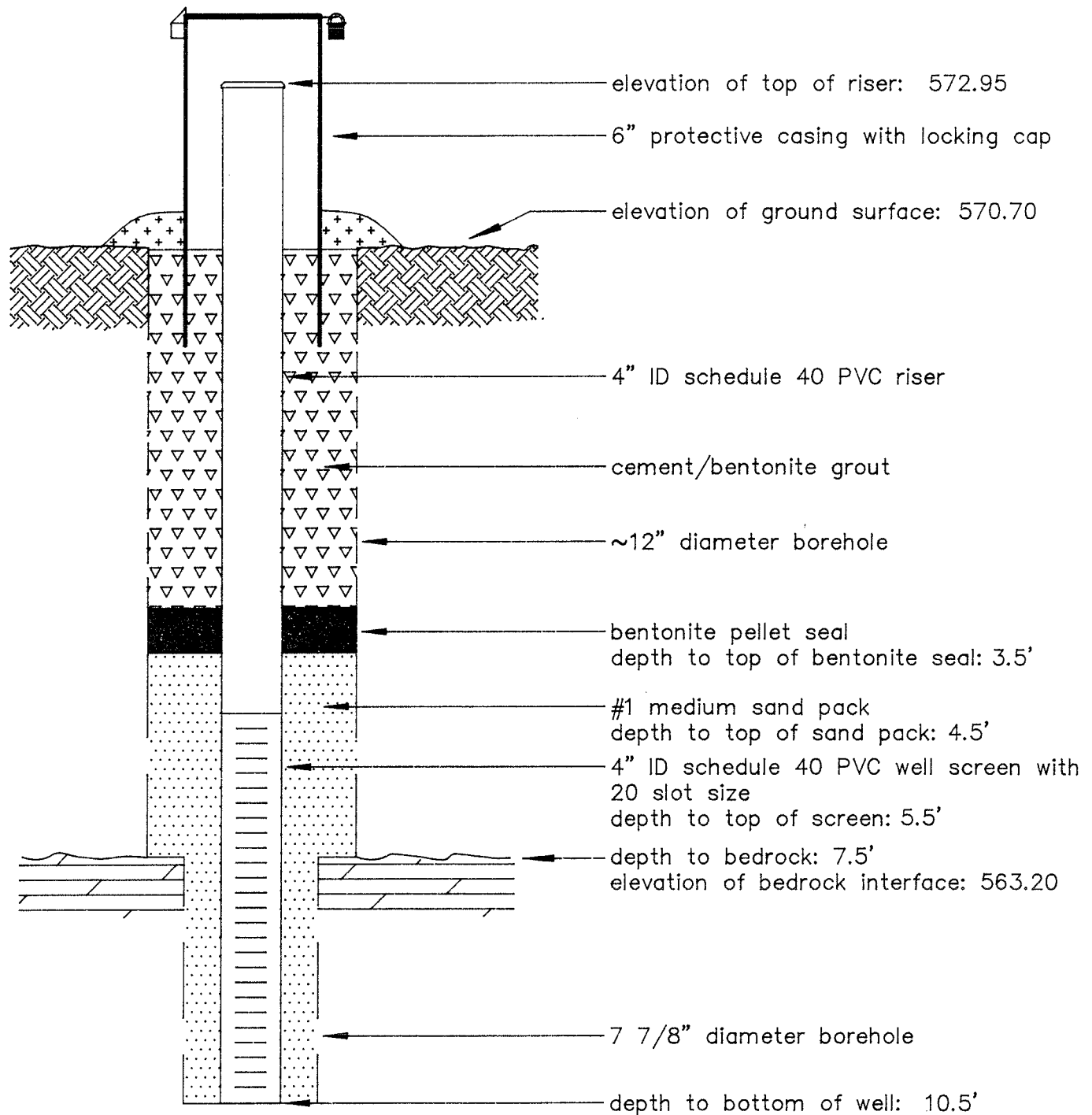
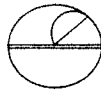
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE : 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-8A

COMPLETION DATE: 7/26/89

INSPECTED BY: Paul F. Mazierski

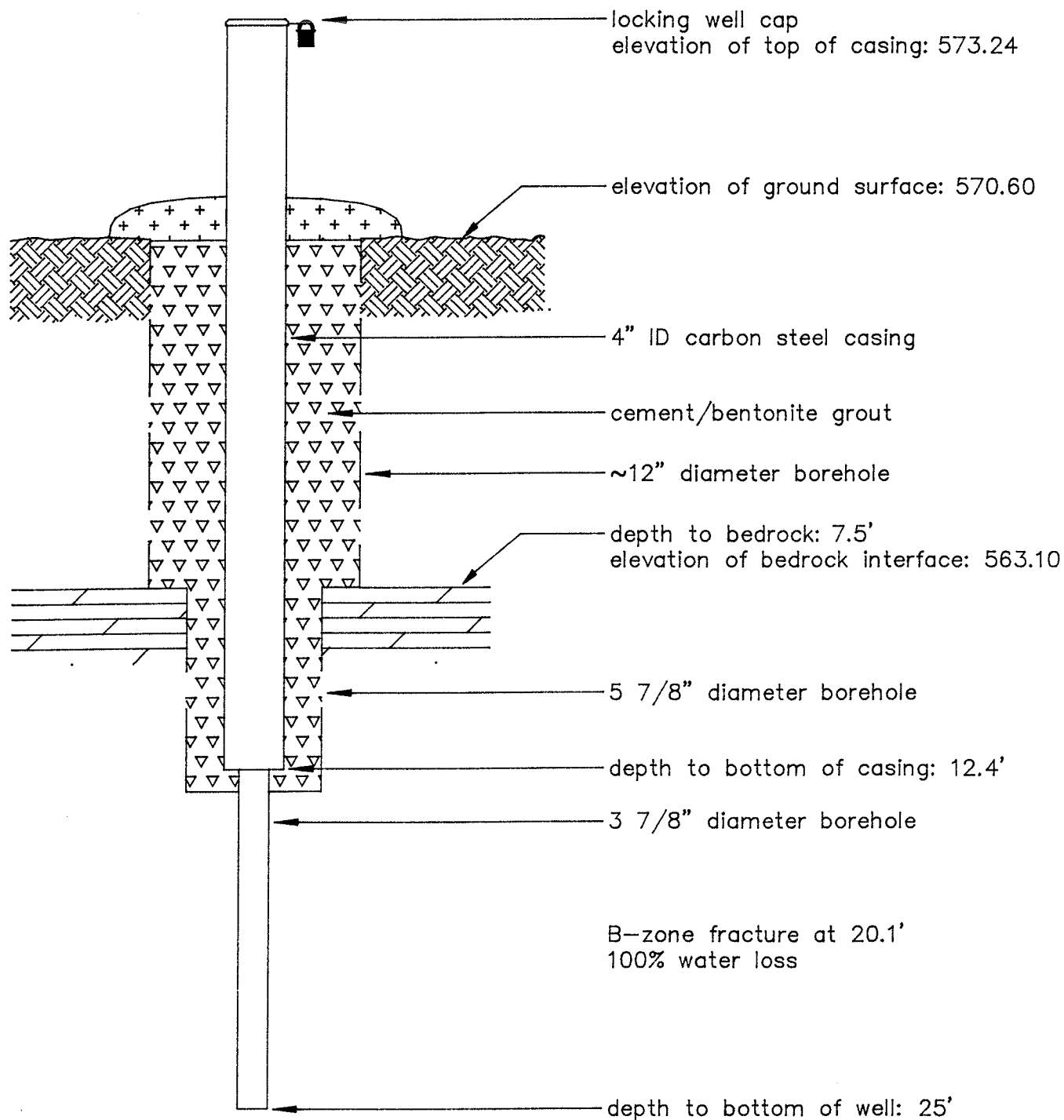
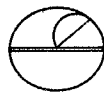
DRAWN BY: PFM

CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE: 4/23/90

FIGURE NO:



REPORT OF MONITORING WELL OBA-8B

COMPLETION DATE: 7/28/89

INSPECTED BY: Paul F. Mazierski

DRAWN BY: PFM

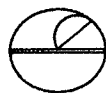
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PROJECT NUMBER: 88C2346-2

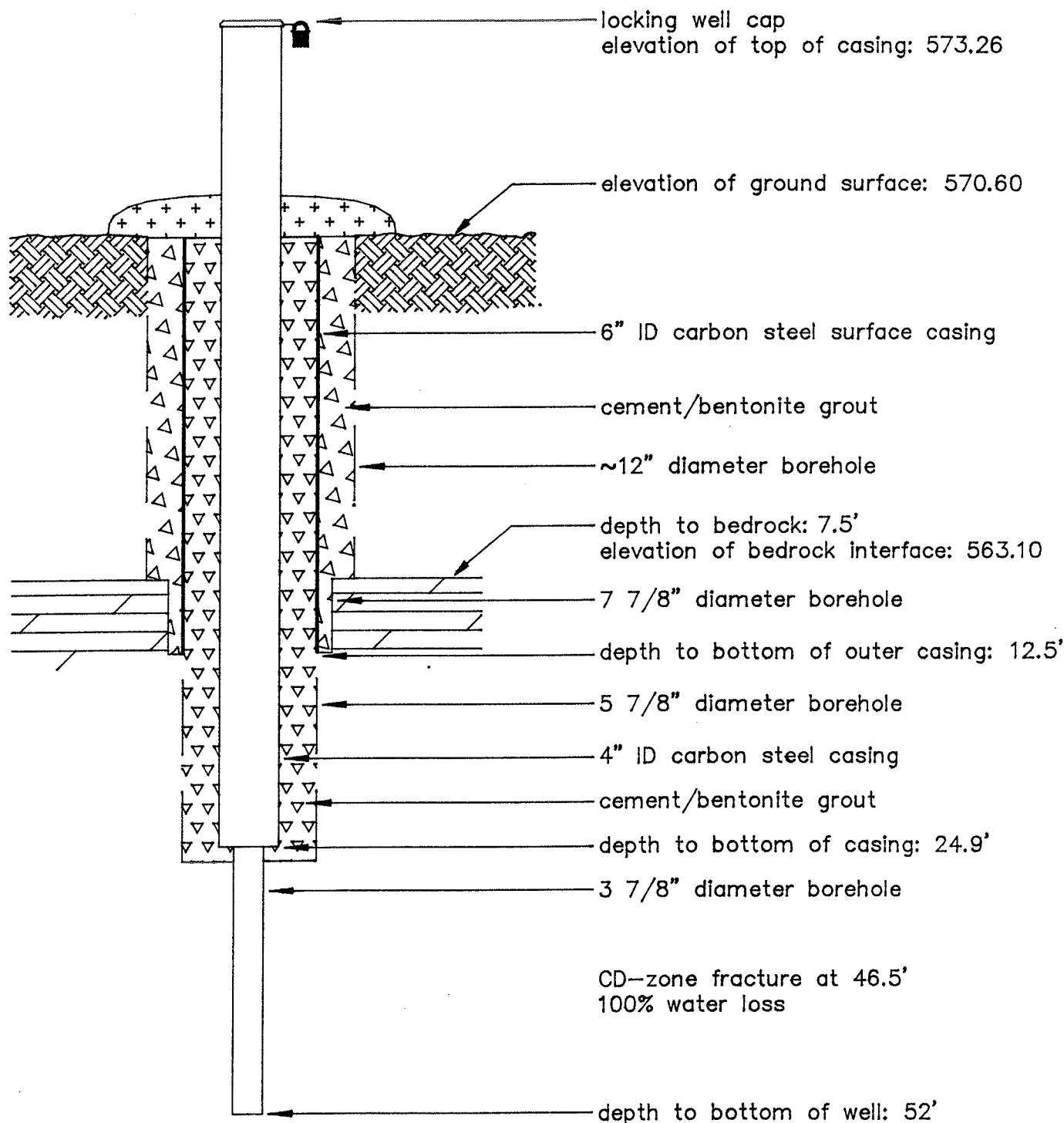
DATE: 4/23/90

FIGURE NO:

Olin Chemicals
Niagara Plant RFI



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Consulting Engineers, Geologists and Environmental Scientists



REPORT OF MONITORING WELL OBA-8C/CD

COMPLETION DATE: 8/4/89

INSPECTED BY: Paul F. Mazierski

DRAWN BY: PFM

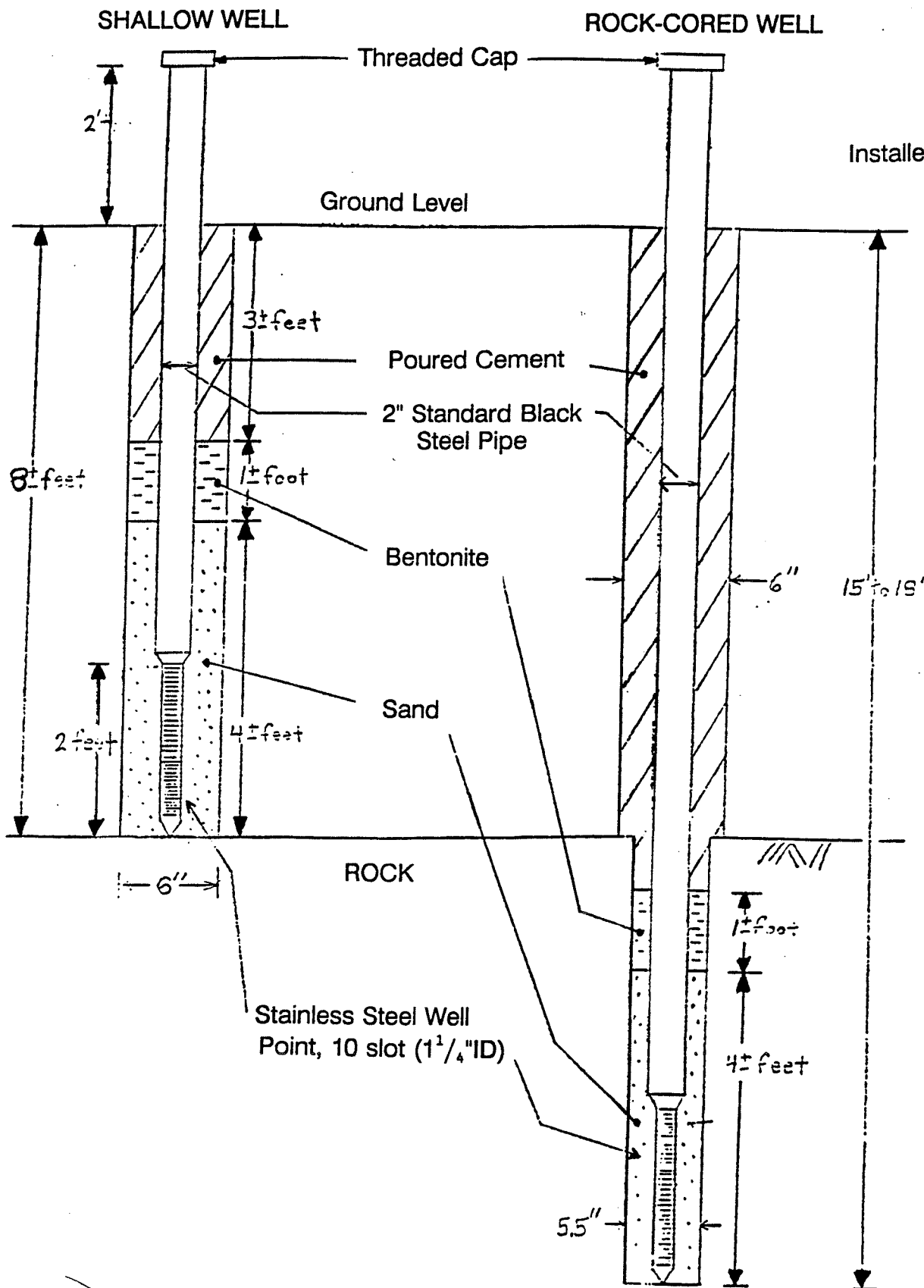
CHECKED BY: KRM

PROJECT NUMBER: 88C2346-2

DATE : 4/23/90

FIGURE NO:

TYPICAL WELL CONSTRUCTION SPECIFICATIONS - HARZA ENGINEERING CO.



Not to Scale

Olin Corporation
Niagara Falls

DESCRIPTIVE LOG

Site: Olin Corporation, Niagara Falls, N.Y.Logged by: WRCDrill Hole No.: BH-1Date: 11/30/78

Depth		Symbol No.	Classification, Description and Remarks	SPT Blows per 6" penetration
From	To			
0	10.1	GW	Sandy gravel fill, gravel less than 1/2 inch diameter, sub - angular, high permeability, poorly graded 5.-6.5 ft. Split Spoon Sample #1 Same as above but some red brick colored fill. Split Spoon #2 9.5-10.1 ft. Hit rock at 10.1 ft. Same as above but with 1 inch diameter pieces of angular red brick.	2/.5' 2/.5' 4/.5' 16/.5' 100/.1'
10.1	11.0		Rock coring Dolomite: Rubble, broken up by corer, grey, crystalline. Largest piece 2" diameter.	
11.0	16.1		Dolomite: Dark grey, crystalline, thickly bedded, irregular stylolitic partings parallel to bedding; bedding horizontal, breaks along partings with medium hammer blow. Fine vuggy porosity throughout, diameter .5 mm to 2.0 mm. Vugs partially filled with calcite, also gypsum. 13.0 ft. - Lost drilling water, cored .5 ft. in 30 seconds. 14.2' Calcite filled vug 1.0" diameter 15.3' Calcite filled vug, .5" diameter 16.1 Finished coring, Recovery 100%. Bottom of well point set at 16.1 ft.	

DESCRIPTIVE LOG

Site: Olin Corporation, Niagara Falls, N.Y.Logged by: WRCDrill Hole No.: BH-3Date: 12/3/78

Depth		Symbol No.	Classification, Description and Remarks	SPT Blows p .5' penetra
From	To			
0	1	GP	Gravel fill, subangular, .5" to 1.0" diameter no fines, poorly graded, very high permeability.	
1	5	ML	Split Spoon Sample #1 3.5 to 5 ft. Clayey silt, grey-brown with some sand and gravel. Very low permeability, very low plasticity. Water hit at 5.0 ft.	6/.5' 6/.5' 7/.5'
5	8.5	GM	Split Spoon Sample #2 8.0 to 8.5 ft. Sandy gravel, with silt and clay, grey gravel sub-angular to rounded gravel poorly graded, low-moderate permeability.	6/.5' 100/0.0'
8.5	18.0		Dolomite: Grey, thickly bedded, irregular stylolitic partings parallel to horizontal bedding. Breaks along partings with medium hammer blow. Fine vuggy porosity, some vugs partially filled with gypsum or calcite. Fracturing: 8-9.5' Fractures averaging every 3" 9.5-11.0 Fractures averaging every 8" 11.0-13.0 Largest piece 3" long 15.0-18.1 Pieces averaging 1.0 ft. 12.0-12.6 Very porous, caused by fine vugs Bottom of well point set at 18.0 ft.	

DESCRIPTIVE LOG

Site: Olin Corporation, Niagara Falls, N.Y.Logged by: WRCDrill Hole No.: BH-9Date: 12/13/78

Depth		Symbol No.	Classification, Description and Remarks	SPT Blows per .5' penetratio
From	To			
0	1	ML	Sandy <u>silt</u> , some fine gravel, dark brown, low permeability, very low plasticity.	
1	5	GW	Split Spoon Sample #1 3-5ft. Sandy <u>Gravel</u> , fine to medium black, angular-subangular, coated with substance, organic smell, high permeability.	10/.5' 22/.5' 10/.5' 11/.5'
5	7		Split Spoon Sample #2 5-7 ft. Same as above but with some plastic fines. Moderate permeability	11/.5' 13/.5' 7/.5' 6/.5'
7	8.4	CL	Soil Sample #3 7-8.4 ft. <u>Clay</u> , some silt, organic smell brown-black, very low permeability Bottom of well point set at 8.4 ft.	5/.5' 11/.5' 100/.4'

APPENDIX B
SOIL BORING AND ROCK CORING DESCRIPTIVE LOGS

LOG of BORING No. OBA-1

Sheet 1 of 1

DATE _____ SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Black asphalt overlying concrete foundation						
		34	SS	Gray shot rock fill, some brown silt, trace clay, saturated just above clay. organic smell noted in fill above clay						
		113	SS	(FILL)						
		100/4"	SS	Brown-tan clay, some (+) silt, cohesive low plasticity, some angular to subangular bedrock fragments close to bedrock contact (CL)						
5				Bedrock encountered @ 5.5', gray dolomite						
10				NOTES: (1) Top of bedrock @ 5.5'. (2) Perched water table at about 2.5'. (3) Solvent smell noted in fill material directly above clay.						
15										

Completion Depth: 5.5 Ft.Water Depth: See ft., After _____ hrs.Project No.: 88C2346-2Notes ft., After _____ hrs.Project Name: OLIN REI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OBA-3

Sheet 1 of 1

DATE _____ SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0		16	SS	Gray shot rock fill, some (-) clay and silt, poorly graded for first 2 feet, miscellaneous layered fill to lower clay contact						
		8	SS							
		7	SS	(FILL)						
5				Tan-brown glaciolacustrine clay, moderate to high plasticity, coherent						
		16	SS	- same, trace silt, high plasticity, damp, becoming more orange-brown toward bottom of sample						
		20	SS	- orange-brown clay with tan mottling, dry at top, very wet 1.2' into spoon, some subrounded black crystalline rock fragments within clay						
10		128/7"	SS	- same, increase in abundance of rock fragments down through sample, rock shard lodged in spoon tip. rock fragments do not resemble gray dolomite country rock.						
		104	SS	- same, abundant rock fragments throughout recovered sample (CH)						
15				Bedrock encountered @14.3', gray dolomite						
				NOTES: (1) Top of bedrock @14.3'. (2) No significant water table observed at overburden/rock contact.						

Completion Depth: 14.3 Ft.Water Depth: See ft., After _____ hrs.Project No.: 88C2346-2Notes ft., After _____ hrs.Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OBA-4

Sheet 1 of 1

DATE _____ SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Black asphalt with black granular subbase material						
10			SS	Miscellaneous layered fill deposits to bedrock interface, shot rock and black sandy slag						
5			SS	- black-brown-tan fill with shot rock, slag, glass shards, etc., little sand and silt						
31			SS	- same, menthol-like odor noted						
5										
14			SS	- same, black-gray fill for first 0.3', then red-brown fill material, little (+) clay and silt						
				(FILL)						
100/0"			SS.	Bedrock encountered @8.4', gray dolomite						
10				NOTES: (1) Top of bedrock @8.4'. (2) No significant water table at overburden/rock interface.						
15										

Completion Depth: 8.4 Ft.Water Depth: See ft., After _____ hrs.Project No.: 88C2346-2Notes ft., After _____ hrs.Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OBA-5

Sheet 1 of 1

DATE _____ SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0		21	SS	Gray shot rock fill, some brown sandy silt						
				Coarse miscellaneous fill, coarse gravel sized shot rock with mottled brown-tan-red matrix, brick fragments						
		22	SS	(FILL)						
		35	SS	Miscellaneous brown-tan fill, some (+) clay, very wet, white powdery material noted in spoon tip, strong naphthalene-like odor noted						
5		10	SS	(FILL)						
		100/1"	SS	Black peat with roots, saturated, strong organic odor noted						
				Bedrock encountered @8.4', gray dolomite						
10				NOTES: (1) Top of bedrock @8.4'. (2) Water table at about 4'.						
15										

Completion Depth: 8.4 Ft.Water Depth: See ft., After _____ hrs.Project No.: 88C2346-2Notes ft., After _____ hrs.Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



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LOG of BORING No. OBA-6

Sheet 1 of 1

DATE _____ SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Black asphalt with granular subbase material						
15			SS	Brown-black miscellaneous fill, rock fragments, dry - black fill with some oil staining						
5			SS	(FILL)						
				Brown-red-tan glaciolacustrine clay						
				(CL)						
100/1"			SS	- same, very wet						
5				(CH)						
				Bedrock encountered @5.1', gray dolomite						
				NOTES: (1) Top of bedrock @5.1'. (2) Water table at about 4.5'.						
10										
15										

Completion Depth: 5.1 Ft.Water Depth: See ft., After _____ hrs.Project No.: 88C2346-2Notes ft., After _____ hrs.Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OBA-7

Sheet 1 of 1

DATE _____ SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0		31	SS	Gray shot rock fill, some brown sandy silt, trace clay						
		23	SS	- orange-red brick from 1.1' to 1.6'						
				- gray shot rock fill to bedrock						
		105/8"	SS	(FILL)						
5				Bedrock encountered @5.5', gray dolomite						
				NOTES: (1) Top of bedrock @5.5'. (2) Water table at about 5'.						
10										
15										

Completion Depth: 5.5 Ft.Water Depth: See ft., After _____ hrs.Project No.: 88C2346-2Notes ft., After _____ hrs.Project Name: OLIN REI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OBA-8

Sheet 1 of 1

DATE _____ SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Black asphalt with granular subbase material						
20			SS	Dark gray to black shot rock fill, little (+) silt and clay, dark near bottom of spoon (FILL)						
20			SS	Tan-brown sand, trace silt, homogenous, damp from 2.3' to 2.8' (SW)						
22			SS	Red-brown glaciolacustrine clay, some mottling, dry, cohesive, occasional gray veinlets						
5			136/9" .SS.	(CL)						
10				Bedrock encountered @7.5', gray dolomite						
15				NOTES: (1) Top of bedrock @7.5. (2) No significant water table noted at overburden/rock interface.						

Completion Depth: 7.5 Ft.Water Depth: See ft., After _____ hrs.Project No.: 88C2346-2Notes ft., After _____ hrs.Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

DATE 10/14/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Bituminous asphalt with gray shot rock subbase material						0.40/ND
8			SS	Dark brown silt/clay fill with small rock clasts						
2			SS	Light brown-tan lime sludge, very soft, very wet to saturated						458/1.6
5			WOR							167/0.6
5			SS	(FILL)						624/8.6
100/4"			SS	Black-brown coarse sand and gravel, wet, elemental mercury beads noted in sample at about 8 feet, little brick fragments						1210/3
10				(FILL)						
15				NOTES: (1) Top of bedrock @ 9.1'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						

Completion Depth: 9.1 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.

DATE 10/15/91 SURFACE ELEVATION _____ LOCATION _____

[illegible]

Completion Depth: 4.6 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



LOG of BORING No. OSB-3

Sheet 1 of 1

DATE 10/15/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Bituminous asphalt with gray shot rock subbase material						2.3/0.2
		19	SS	Miscellaneous black-brown fill materials, dry						
		9	SS	- same, damp, softer						0.77/ND
		4	SS	(FILL)						0.44/ND
5				Tan-light brown clay, little silt and sand, becoming more brown near bottom of spoon						
		100/5"	SS	- same, brown-tan clay, little sand with rock clasts, wet, very firm						ND/ND
				(CL)						
10				NOTES: (1) Top of bedrock @ 6.9'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
15										

Completion Depth: 6.9 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN REI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OSB-4

Sheet 1 of 1

DATE 10/15/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0		126/0.9"	SS	Bituminous asphalt for first 3", miscellaneous gray-brown fill, shot rock, brick fragments, etc. to refusal (FILL)						57/ 0.4
		100/2"	SS							2.9/ 2.4
5				NOTES: (1) Auger refusal on old cell room foundation at 2.5'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 2.5 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



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LOG of BORING No. OSB-5

Sheet 1 of 1

DATE 10/15/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Bituminous asphalt with gray shot rock subbase material						
		18	SS	Coarse shot rock fill (FILL)						11.4/.2
		10	SS	Brown-tan mottled clay, little(-) silt, thin sand lense at 3', damp (FILL)						35.4/.9
		13	SS	Brown clay, little(-) sand - brown-orange-tan clay, trace sand, little sand in some sections, dry, hard (CL)						1.3/ND
5		100/ 0.9"	SS							
10				NOTES: (1) Top of bedrock @ 6.5'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
15										

Completion Depth: 6.5 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



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LOG of BORING No. OSB-6

Sheet 1 of 1

DATE 10/15/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Bituminous asphalt with black shot rock subbase						79/3.7
		119/2"	SS	Black-orange-red miscellaneous fill, cinder, brick, shot rock, difficult drilling from 1.5'-2' (FILL)						
		18	SS	DIFFICULT DRILLING AT 2', AUGER TO 3' AND BEGIN CONTINUOUS SAMPLING						55/6.6
5		2	SS	Miscellaneous black-brown fill brown, clay and brick cinder						
			SS	- same, black sand/fine gravel, some silt, saturated, very soft (FILL)						6.5/ND
		100/6"	SS	Brown-tan clay, very firm, moist, slight organic odor noted at bottom of spoon						1.7/.8
10				NOTES: (1) Top of bedrock @ 8.2'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
15										

Completion Depth: 8.2 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN REI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



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LOG of BORING No. OSB-7

Sheet 1 of 1

DATE 10/16/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0										
		29	SS	Bituminous asphalt with gray shot rock subbase material						21/
				Gray shot rock fill (FILL)						1.3
		200/6.06"	SS	Brown-red-tan clay with abundant rock clasts (FILL)						7.8/
				Gray shot rock fill - very difficult augering through hard rock fill from 3' to bedrock refusal at 5.3'						ND
5										
10										
15										

NOTES:

- (1) Top of bedrock @ 5.3'.
 (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.

Completion Depth: 5.3 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



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LOG of BORING No. OSB-8

Sheet 1 of 1

DATE 10/16/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0		20	SS	Bituminous asphalt for first 3", coarse gray shot rock fill						30/ 1.3
		100/4"	SS	- same, thin black-brown clay layer observed (FILL)						18.5/ .3
5				NOTES: (1) Auger refusal on old cell room foundation at 3.2'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 3.2 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OSB-9

Sheet 1 of 1

DATE 10/16/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0		19	SS	Bituminous asphalt for first 3" Gray shot rock fill						23.7/ ND
		100/ 0.5"	SS	- miscellaneous fill, some brown-black clay (FILL)						112/ 4.6
5				NOTES: (1) Auger refusal on old cell room foundation at 3.2'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 3.2 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN REI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



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LOG of BORING No. OSB-10

Sheet 1 of 1

DATE 10/16/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Bituminous asphalt for first 3"						
		22	SS	Miscellaneous fill, compact clay and shot rock, slag, dry						250/ 13
		20	SS	- same, wet above auger refusal at 4'						626/ 14
				(FILL)						
5										
				NOTES: (1) Auger refusal on old cell room foundation at 4'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 4.0 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OSB-11

Sheet 1 of 1

DATE 10/16/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0		39	SS	Bituminous asphalt for first 3" Miscellaneous shot rock/brick fill						588/ 32
				(FILL)						
		100/ 0.1"	SS							165/ 2.5
5				NOTES: (1) Auger refusal on old cell room foundation at 2.5'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 2.5 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OSB-12

Sheet 1 of 1

DATE 10/16/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Gray shot rock fill						
		56	SS							50/ 3.2
		100/ 0.6"	SS	(FILL)						63/ 16.3
5				NOTES: (1) Auger refusal on old cell room foundation at 3'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 3.0 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OSB-13

Sheet 1 of 1

DATE 10/17/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0		27	SS	Bituminous asphalt for first 3" Miscellaneous shot rock fill						418/ 8.6
		106/11"	SS	- same, clay above refusal (FILL)						95/ 1.5
5				NOTES: (1) Auger refusal on old cell room foundation at 3.4'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 3.4 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OSB-14

Sheet 1 of 1

DATE 10/17/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Bituminous asphalt for first 3"						
		30	SS	Miscellaneous shot rock fill, some compacted clay, very firm						113/ 1.1
		100/4"	SS	- same, wet (FILL)						95/ 1.4
5				NOTES: (1) Auger refusal on old cell room foundation at 2.8'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 2.8 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

LOG of BORING No. OSB-15

Sheet 1 of 1

DATE 10/17/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Gray shot rock fill						
		99	SS							28/ 1.2
		100/2"	SS	(FILL)						104/ 0.3
5				NOTES: (1) Auger refusal on old cell room foundation at 2.6'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
10										
15										

Completion Depth: 2.6 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN REI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

DATE 10/18/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Concrete pad						
25			SS	Shot rock fill						8.3/ND
9			SS	Black fine sand/cinder fill						5.2/0.2
7			SS	- same, some tan mottling, damp at 2', wet at 4'						15.7/ND
100/3"			SS	- same, black fine sand fill, saturated, sheen on water, slight organic odor						NR/ND
				(FILL)						
				NOTES: (1) Top of bedrock @ 6.7'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L. (3) NR: no analytic result.						

Completion Depth: 6.7 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



DATE 10/18/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Concrete pad						
21			SS	Shot rock fill						
15			SS	Tan-red-brown fine brick and sand fill, large clasts of tan-red porous brick throughout						
10			SS	- same, spoon wet upon retrieval						
5		100/3"	SS	- fill becoming black above refusal and sheen noted on water NOTE: (1) Top of bedrock @ 7'.						
				(FILL)						

Completion Depth: 7.0 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

ft., After _____ hrs.

Project Name: OLIN RFI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

ft., After _____ hrs.



LOG of BORING No. OSB-18

Sheet 1 of 1

DATE 10/18/91 SURFACE ELEVATION _____ LOCATION _____

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				Bituminous asphalt for first 2", concrete for next 6", augered to 1' to begin sampling again						
		13/6"	SS	Mottled black-brown fill, damp, organic odor noted						404/ 4.0
		13	SS	- same, mottled brown-black-tan fill						161/ 5.1
		8	SS	- same, more massive and clay/silt dominated (FILL)						1.7/ 0.5
5				Mottled brown-gray clay, firm, damp, slight organic odor noted						
		100/0.6"	SS	- same, with rock clasts above bedrock						12/ 1.3
10				NOTES: (1) Top of bedrock @ 6.7'. (2) Values under "OTHER TESTS" are total Hg concentration in mg/kg over TCLP Hg concentration in ug/L.						
15										

Completion Depth: 6.7 Ft.

Water Depth: _____ ft., After _____ hrs.

Project No.: 88C2346-8

_____ ft., After _____ hrs.

Project Name: OLIN REI

_____ ft., After _____ hrs.

Drilling Method: Hollow-Stem Auger

_____ ft., After _____ hrs.



Woodward-Clyde Consultants

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-1A</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>571.3</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>6/21/89</u> Finish <u>6/21/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6	6/21/89 RUN 1 5.5'-8.5'		0'3" (0%)		3'3" (100%)		NX	565.8 5.5	Medium to fine grained, medium to light gray, medium to thinly bedded dolomite, abundant thin stylolites, occasional thin brown beds, highly fractured	3 11		
7										8		
8								562.8 8.5		1		

General Notes:

- 100% water loss from onset of coring and reaming operations

Total Depth 8.5'Rock Drilling 3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-1A

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-1B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>571.3</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>6/22/89</u> Finish <u>6/23/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5	6/22/89 RUN 1 4.7'-9.7'		0'/5' (0%)		5'/5' (100%)		NX	566.6 4.7	Medium to fine grained, medium to light gray, medium to thin bedded dolomite, abundant stylolites, occasional brownish layers where majority of fractures are observed, no vugs	8		
6										11		
7										6		
8										6		
9									- same, predominantly dark gray, increase in amount of vugs, large vugs with sphalerite crystal lining at 9.6'	3		
10	6/23/89 RUN 1 9.7'-13.3'		0.8'/3.6' (22%)		3.6'/3.6' (100%)		NX	560.3	- same, dark gray, dark brown, some vugs, occasional stylolites	3+		
11								11.0	Medium to fine grained, medium to dark brown massive dolomite, fine vugs throughout	11		
12										5		
13										6		
14	RUN 2 13.3'-18.2'		2.8'/4.9' (57%)		4.85'/4.9' (99%)		NX	558.0 13.3	Medium to fine grained, medium brown to medium/dark gray, massive dolomite, occasional vuggy intervals, occasional stylolites, highly vuggy from 13.6' to 14.2'	2		
15									- predominantly massive beyond 15', thick stylolite at 17.9', becoming medium to finely bedded beyond 17.9'	3		
16										3		
17										6		
18										2		
19	RUN 3 18.2'-23.3'		2.45'/5' (49%)		5'/5' (100%)		NX		-same, slump structure at 18.2'-18.5', vuggy at 19', gypsum seams/veins at 20.1', 20.5', 21.2', becoming more massive from 21.4' to 23.2'	8		

CONTINUED ON THE NEXT SHEET

General Notes:

- B-zone fracture between 19.5' and 21', 100% water loss

Total Depth 25.2'Rock Drilling 20.5'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-1B

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-1B</u> Boring Offset _____ Surface Elevation <u>571.3</u> Date Start <u>6/22/89</u> Finish <u>6/23/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21									SAME AS ABOVE	5		
22										2		
23										4		
24	RUN 4 23.3'-25.2'		1.15'/2' (58%)		2'/2' (100%)				-same, gypsum seam at 23.6', rugose corals after 24.8', large gypsum filled void at 24.8	3		
25								546.1 25.2		3		

General Notes:

- B-zone fracture between 19.5' and 21', 100% water loss

Total Depth 25.2'Rock Drilling 20.5'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-1B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-1C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>571.3</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>6/27/89</u> Finish <u>6/27/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												

CONTINUED ON THE NEXT SHEET

General Notes:

- C-zone fracture at 33.5', 100% water loss

Total Depth 38.5'Rock Drilling 13.5'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-1C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-1C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>571.3</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>6/27/89</u> Finish <u>6/27/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21												
22												
23												
24								547.1				
25	6/27/89 RUN 1 24.2'-28.7'		2.45'/4.5' (54%)		4.4'/4.5' (98%)		NX	24.2 546.3 25.0	GROUT PLUG			
26									Medium grained, medium/dark brown to medium gray, massive dolomite, frequent gypsum seams, gypsum filled voids and corals from 25' to 26.5'	2		
27									- gypsum seams becoming occasional and corals disappear beyond 26.5'	3		
28								543.8 27.5	Medium grained, light to medium brown, massive dolomite light brown zones are massive (no gypsum or corals)	4		
29	RUN 2 28.7'-33.4'		3.5'/4.7' (74%)		4.5'/4.7' (96%)		NX		-same, moderately fractured	2		
30									- same, now with occasional gypsum seams and stylolites prominent stylolite at 30.5'	4		
31										1		
32									- cluster of gypsum filled circular voids at 32'	1		
33										5		
34	RUN 3 33.4'-38.5'		3.85'/5.1' (75%)		4.9'/5.1' (96%)		NX		- same, gypsum seam/stylolite at 35.6'	1		
35										0		
36									- same, massive	2		
37										1		
38								532.8 38.5		3		
										3+		

General Notes:

- C-zone fracture at 33.5', 100% water loss

Total Depth 38.5'Rock Drilling 13.5'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-1C/CD

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-2A</u> Boring Offset _____ Surface Elevation <u>570.4</u> Date Start <u>8/21/89</u> Finish <u>8/21/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
1												
2												
3												
4												
5												
6	8/21/89						NX	564.6				
7	RUN 1		0'3'		0'3'			5.8	Predominantly fine grained, dark to light gray dolomite, occasional stylolites in massive fine grained portions, very soft in finely vuggy interval at about 7.3', rapid drilling advancement in this interval, highly fractured	8		
8	5.8'-8.8'		(0%)		(0%)					?		
										?		
								561.6				
								8.8				

General Notes:

- Void noted at 7.3', 75% water loss

Total Depth 8.8'Rock Drilling 3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-2A

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.						Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>				Boring Number <u>OBA-2B</u> Boring Offset _____ Surface Elevation <u>570.5</u> Date Start <u>8/22/89</u> Finish <u>8/23/89</u>			
DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*		DIP
1													
2													
3													
4													
5													
6	8/22/89 RUN 1 5.9'-10.9'		1.11'/5' (22%)		4.05'/5' (100%)		NX	564.6	Medium to fine grained, dark to light gray to brown dolomite, highly fractured for first 0.5', mottled appearance at 6.9' before a highly vuggy, brown, soft interval. Dark to medium gray dolomite with occasional vugs to the end of the run		Soft Interval		
7								5.9					
8													
9													
10													
11	8/23/89 RUN 1 10.8'-14.8'		0.75'/4' (19%)		3.75'/4' (94%)		NX	559.6	Fine grained, brown massive bedded dolomite, few stylolites, vuggy just before major fracture at 14.4', massive throughout run				
12								10.9					
13													
14													
15	RUN 2 14.8'-19.8'		1.3'/5' (26%)		4.5'/5' (90%)		NX	555.7	Medium to fine grained, light gray to light gray-brown mottled, medium bedded dolomite, occasional stylolites, vuggy for 0.5' before fracture at 18'				
16								14.8					
17													
18													
19													
								550.7	CONTINUED ON THE NEXT SHEET				

General Notes:
 - Void noted at 7.7', 75% water loss (setting 4" casing) - Fracture noted at 14.5', 100% water loss
 - B-zone fracture (large void) noted between 19.1' and 19.7'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Total Depth 25.0'
 Rock Drilling 19.1'

Hole No. OBA-2B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-2B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.5</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/22/89</u> Finish <u>8/23/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21	RUN 3 19.8'-25'		2.2'/5.2' (42%)		5.15'/5.2' (99%)		NX	19.8	Medium to fine grained, light gray to brown dolomite, occasional stylolites, large calcite filled cavities and coral pieces, medium to massive bedding, more massive for first 1.6' and for last 0.3'	4		
22										3		
23										1		
24										4		
25										5		
								545.5 25.0				

General Notes:

- Void noted at 7.7', 75% water loss (setting 4" casing) - Fracture noted at 14.5', 100% water loss
- B-zone fracture (large void) noted between 19.1' and 19.7'

Total Depth 25.0'Rock Drilling 19.1'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-2B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-2C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.3</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/29/89</u> Finish <u>8/29/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
CONTINUED ON THE NEXT SHEET												

General Notes:

- No major water bearing fractures encountered

Total Depth 50.3'Rock Drilling 25.3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-2C/CD

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-2C/CD</u> Boring Offset _____ Surface Elevation <u>570.3</u> Date Start <u>8/29/89</u> Finish <u>8/29/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
21												
22												
23												
24												
25	8/29/89 RUN 1 24.6'-29.7'		2.4'/5.1' (47%)		5'/5.1' (98%)		NX	545.7 24.6 545.3 25.0	GROUT PLUG Fine grained, light brown, massive dolomite, moderately fractured, rare stylolites	- 3		
26										4		
27										3		
28								542.5 27.8	Medium to fine grained, light gray to brown dolomite, more mottled appearance, occasional stylolites and isolated coral pods	4		
29										3		
30	RUN 2 29.7'-34.2'		1.45'/4.5' (32%)		4'/4.5' (89%)		NX		- same, interbedded mottled fossiliferous dolomite and massive gray dolomite, mottled dolomite dominates highly fractured zone from 30.4' to 31.4'			
31										Highly Fractured		
32								538.5 31.8	Medium to fine grained, light brown to gray, massive dolomite, slightly fractured	2		
33										2		
34	RUN 3 34.2'-39.2'		2'/5' (40%)		5'/5' (100%)		NX		- same, increase in occurrence of coral fragments to 35.6'	1		
35								534.7 35.6	Medium to fine grained, light to medium gray mottled dolomite, abundant isolated coral fragments, highly fractured, sphalerite microcrystals in tabulae of coral fragments	5		
36										6		
37										7		
38										3		
39							NX		CONTINUED ON THE NEXT SHEET	4		

General Notes:

- No major water bearing fractures encountered

Total Depth 50.3'Rock Drilling 25.3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-2C/CD

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-2C/CD</u> Boring Offset _____ Surface Elevation <u>570.3</u> Date Start <u>8/29/89</u> Finish <u>8/29/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES			BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP	
									SAME AS ABOVE	4			
41	RUN 4	39.2'-44.2'	1.8'/5'	(36%)	5'/5'	(100%)		528.5		2+			
42								41.8	Medium to fine grained, light brown to light gray massive dolomite, occasional stylolites, rare small coral fragments	4			
43										3			
44										2+			
45	RUN 5	44.2'-49.2'	4.2'/5'	(84%)	4.9'/5'	(98%)	NX			2			
46										2			
47										2			
48										3			
49										2			
50	RUN 6	49.2'-50.3'	0.48'/1.1'	(44%)	1.1'/1.1'	(100%)	NX	520.0		0			
								50.3					

General Notes:

- No major water bearing fractures encountered

Total Depth 50.3'Rock Drilling 25.3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-2C/CD

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>		Boring Number OBA-3A Boring Offset _____ Surface Elevation <u>569.9</u> Date Start <u>6/30/89</u> Finish <u>6/30/89</u>	
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14								555.6				
15	6/30/89 RUN 1 14.3'-17.4'		0.45'/3.1' (15%)		2.6'/3.1' (84%)		NX	14.3	Medium grained, medium gray-brown massive bedded dolomite, heavily fractured from 14.3' to 15.8', completely fractured from 15.5' to 15.8', irregular vugs with sphalerite and calcite infilling from 16.2' to 16.7'	Highly Fractured		
16										3		
17								552.5		1		
								17.4				

General Notes:

- 100% water loss from onset of coring operations - Large void noted at 15.7'

Total Depth 17.4'Rock Drilling 3.1'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-3A

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>		Boring Number OBA-3B Boring Offset _____ Surface Elevation <u>569.9</u> Date Start <u>7/5/89</u> Finish <u>7/5/89</u>	
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14	7/5/89 RUN 1 14.05'-19.3'		1.15'/5.25' (22%)	4.65'/5.25' (89%)	NX	555.8	Medium to fine grained, medium gray to brown dolomite, pitting observed from 14' to 14.9', highly fractured from 15.2' to 16.5', especially between 15.8' and 16.5', coral fragments abundant in heavily fractured interval, more massive at end of run	2+	Highly Fractured			
14.1						9+						
15												
16												
17												
18												
19												

General Notes:

- 100% water loss from onset of coring, void noted at 16' (setting 4" casing) - No major water bearing fractures encountered through completion of well

Total Depth 33.3'Rock Drilling 19.25'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-3B

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-3B</u> Boring Offset _____ Surface Elevation <u>569.9</u> Date Start <u>7/5/89</u> Finish <u>7/5/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
21	7/7/89 RUN 1 19.3'-23.1'		3.45'/4.1' (84%)		3.9'/4.1' (95%)				Medium grained, medium gray to brown-gray, medium to massive bedded dolomite, slightly fractured, occasional stylolites, increase in vug and coral content between 21' and 21.8', more massive at end of run	1		
22										2		
23										3		
24										2+		
25	RUN 2 23.1'-28.3'		4.4'/5.2' (85%)		4.9'/5.2' (94%)				- same, massive bedding, fractured interval from 23.7' to 24.2', transition to an abundant coral zone after a prominent stylolite at 25.85'	2+		
26										2+		
27										3		
28										1		
29	RUN 3 28.3'-33.3'		4.75'/5' (95%)		4.9'/5' (98%)	NX		541.6 28.3	Medium grained, medium to light gray dolomite, occasional concentration of vugs/coral, becoming more massive after 29.7'	1		
30										0		
31										2		
32										3		
33								536.6 33.3		0		
										0		

General Notes:

- 100% water loss from onset of coring, void noted at 16' (setting 4" casing) - No major water bearing fractures encountered through completion of well

Total Depth 33.3'Rock Drilling 19.25'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-3B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-3C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.8</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/11/89</u> Finish <u>7/11/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
CONTINUED ON THE NEXT SHEET												

General Notes:

- No major water bearing fractures encountered

Total Depth 58.0'Rock Drilling 25'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-3C/CD

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.						Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>				Boring Number OBA-3C/CD Boring Offset _____ Surface Elevation <u>569.8</u> Date Start <u>7/11/89</u> Finish <u>7/11/89</u>			
DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	FROM	TO	INCH	%	INCH	%				No. / Ft.	DIP*		DIP
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
32													
33	7/11/89 RUN 1 33'-38'						NX	536.8	Medium grained, medium brown, massive dolomite, little stylolites, rare small vugs, no coral fragments, some limited medium gray areas, very few calcite filled larger vugs, slightly fractured				
34						33.0							
35													
36													
37													
38	RUN 2 38'-43'						NX		- same, prominent stylolites at 39.5' and 39.8', becoming finely bedded before character change at 40', slightly fractured				
39													
								529.8	CONTINUED ON THE NEXT SHEET				

General Notes: - No major water bearing fractures encountered										Total Depth <u>58.0'</u> Rock Drilling <u>25'</u>	
%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										Hole No. OBA-3C/CD	

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-3C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.8</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/11/89</u> Finish <u>7/11/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
41							NX	40.0	Medium grained, medium to dark brown dolomite with occasional light gray limy seams and light brown-tan small irregular splotches, sandy adjacent to limy seams	3		
								528.7				
41								41.1	Medium to coarse grained, medium to dark brown dolomite, abundant limy seams, very sandy from 41.6' to 41.9', ostracods	5		
42								527.7				
42								42.1	Medium grained, medium brown to medium gray, massive dolomite, occasional stylolites and isolated gypsum filled vugs prominent stylolites at 43.75', 45.1', 46.35' and 47.5'	4		
43	RUN 3		5'5'		5'5'					0		
	43'-48'		(100%)		(100%)							
44										1		
45										1		
46										1		
47										1		
48	RUN 4		4.7'5'		5'5'			521.8				
	48'-53'		(94%)		(100%)			48.0	Medium grained, medium to dark brown, massive dolomite, more mottled appearance starting at 47.4', small isolated pitted splotches, limited vuggy intervals, occasional stylolites, prominent stylolites at 48.55', 49.4', and 51.1'	1		
49										1		
50										0		
51										1		
52										1		
53	RUN 5		4.9'5'		5'5'				- same, prominent stylolites at 53.2', 55.95', and 57.2' marked change to more mottled dolomite after 57.2'	0		
	53'-58'		(98%)		(100%)					1		
54										1		
55										1		
56										1		
57										2		
58								511.8				
								58.0				

General Notes:

- No major water bearing fractures encountered

Total Depth 58.0'Rock Drilling 25'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-3C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-4A</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.1</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/13/89</u> Finish <u>7/13/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8								561.7				
9	7/13/89 RUN 1 8.4'-9.2'		- *		- *		NX	8.4	Fine to medium grained, medium gray to brown, fine to medium bedded dolomite			
10	RUN 2 9.2'-11.4'		- *		- *		NX					
11								558.7 11.4	SEE FIELD ROCK LOG FOR OBA-4B FOR FULLY RECOVERED CORE DESCRIPTION			

General Notes:

* Problems during coring operations - 100% water loss from onset of coring operations

Total Depth 11.4'Rock Drilling 3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-4A

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-4B</u> Boring Offset _____ Surface Elevation <u>570.3</u> Date Start <u>7/17/89</u> Finish <u>7/17/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
1												
2												
3												
4												
5												
6												
7												
8												
9	7/17/89 RUN 1 9'-14'		3.15'/5' (63%)		4.85'/5' (95%)	NX	561.3	Fine grained, medium brown to gray dolomite, pinhole vugs throughout				
9.0												
559.9												
10.4												
10								Fine to medium grained, medium brown to gray, medium to massive bedded dolomite, predominantly medium grained and massive, some isolated vuggy zones from 11.5' to 12.5', occasional irregular stylolites, rare coral fragments				
11												
12												
13												
14	7/19/89 RUN 1 13.1'-18.1'		3.4'/5' (68%)		4.25'/5' (85%)	NX		- same, moderately fractured, occasional stylolites, rare vugs, no coral				
15												
16												
17												
18	RUN 2 18.1'-21'		1.9'/2.9' (66%)		2.85'/2.9' (98%)	NX		- same, some coral fragments and vugs between 18.7' and 20'				
19												
CONTINUED ON THE NEXT SHEET												

General Notes:

- 100% water loss from onset of coring operations, fracture noted at 12.7' (setting 4" casing) - B-zone fracture noted at 16', 100% water loss

Total Depth 21.0'Rock Drilling 12'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-4B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-4B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.3</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/17/89</u> Finish <u>7/17/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21								549.3 21.0	SAME AS ABOVE	6		

General Notes:

- 100% water loss from onset of coring operations, fracture noted at 12.7' (setting 4" casing) - B-zone fracture noted at 16', 100% water loss

Total Depth 21.0'Rock Drilling 12'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-4B

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.			Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>			Boring Number <u>OBA-4C/CD</u> Boring Offset _____ Surface Elevation <u>570.4</u> Date Start <u>7/24/89</u> Finish <u>7/24/89</u>		
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
CONTINUED ON THE NEXT SHEET												

CONTINUED ON THE NEXT SHEET

General Notes:

- C-zone fracture noted at 25.2', 100% water loss

Total Depth 30.2'Rock Drilling 8.7'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-4C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-4C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.4</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/24/89</u> Finish <u>7/24/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21	7/24/89 RUN 1 20.9'-25.2'		2.55'/4.3' (59%)		4.15'/4.3' (97%)		NX	549.5	GROUT PLUG Fine to medium grained, medium brown to dark gray, medium to massive bedded dolomite, some small coral colonies, vugs and stylolites throughout, large gypsum dike from 23.8' to 24'	1		
22								20.9				
23								548.9		3		
24								21.5		4		
25	RUN 2 25.2'-30.2'		4.8'/5' (96%)		4.95'/5' (99%)		NX		- same, dominantly massive from 25.2' to 26.4' (no coral, few small vugs), becoming more irregular at 26.4', vugs more common, occasional coral fragments	2		
26										1		
27										2		
28										1		
29										1		
30										1		
								540.2				
								30.2				

General Notes:

- C-zone fracture noted at 25.2', 100% water loss

Total Depth 30.2'Rock Drilling 8.7'

% Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-4C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-5A</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.6</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/7/89</u> Finish <u>8/7/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8								561.4				
9	8/7/89 RUN 1 8.2'-10.3'		0.45'/2.1' (21%)		1.95'/2.1' (93%)		NX	8.2	Fine to medium grained, medium gray to light brown dolomite, highly fractured, occasional stylolites, massive throughout			
10												
11	RUN 2 10.3'-11.4'		0'/1.1' (0%)		1.0'/1.1' (90%)		NX					
								558.2 11.4				

General Notes:

- 40 % water loss from onset of coring operations, upwards of 80 % loss by completion of coring,
100 % water loss during reaming operations

Total Depth 11.4'Rock Drilling 3.2'

%Proportions used: trace 0-10 %, little 10-20 %, some 20-35 %, and 35-50 %

Hole No. OBA-5A

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number OBA-5B Boring Offset _____ Surface Elevation <u>569.7</u> Date Start <u>8/7/89</u> Finish <u>8/7/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
1												
2												
3												
4												
5												
6												
7												
8								561.4				
9	8/7/89 RUN 1 8.3'-13.3'		0'/5' (0%)		5'/5' (100%)		NX	8.3	Fine to medium grained, medium gray to brown dolomite, occasional isolated vuggy sections, medium to massive bedding, highly fractured, few stylolites		5+	
10												
11								558.9			5	
12								10.8	Fine to medium grained, dark gray, finely bedded dolomite with tan-brown irregular vuggy pods		8	
13								558.3	Fine to medium grained, light to medium brown dolomite, occasional thin stylolites			
14	8/8/89 RUN 1 12.5'-15.9'		0.8'/3.4' (24%)		2.8'/3.4' (82%)		NX	11.4			6	
15								556.4			1	
16	RUN 2 15.9'-20.9'		3.8'/5' (76%)		4.6'/5' (92%)		NX	13.3	Meidum grained, medium brown to medium gray dolomite, few stylolites, predominantly brown at beginning of run, becoming dominantly gray at end of run		4	
17									- same, large vug and fine contorted bedding prior to B-zone, possible slump structures		3	
18											1	
19								551.8			3	
								17.9	B-zone SECTION MISSING		4	
								551.4	Fine to medium grained, medium brown to gray, fine to medium bedded dolomite, bedding absent after 19.3', dominantly massive after this			
								18.3			3	
									CONTINUED ON THE NEXT SHEET			

General Notes:

- Fracture noted at 10.2', 100% water loss (setting 4" casing) - B-zone fracture noted at 17.9', 100% water loss

Total Depth 23.5'Rock Drilling 15.2'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-5B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-5B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.7</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/7/89</u> Finish <u>8/7/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
21	RUN 3 20.9'-23.5'		1.8'/2.6' (70%)		2.6'/2.6' (100%)		NX	548.8 20.9	SAME AS ABOVE	2		
22									Medium grained, medium gray to brown dolomite, more mottled appearance than before, some isolated coral colonies, isolated vuggy zones and irregular stylolites	3		
23								546.2 23.5		4		

General Notes:

- Fracture noted at 10.2', 100% water loss (setting 4" casing) - B-zone fracture noted at 17.9', 100% water loss

Total Depth 23.5'Rock Drilling 15.2'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-5B

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>		Boring Number <u>OBA-5C/CD</u> Boring Offset _____ Surface Elevation <u>569.7</u> Date Start <u>8/10/89</u> Finish <u>8/10/89</u>	
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
CONTINUED ON THE NEXT SHEET												

CONTINUED ON THE NEXT SHEET

General Notes:

- CD-zone fracture noted at 47.4', 100% water loss

Total Depth 52.2'Rock Drilling 29.2'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-5C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-5C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.7</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/10/89</u> Finish <u>8/10/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21												
22												
23	8/10/89		3.15'	4.8'	4.8'	4.8'	NX	546.7	Fine to medium grained, medium to dark gray dolomite, occasional stylolites and isolated vuggy areas, few tabulate coral fragments, large undulating stylolite at 25.4'	7+		
24	RUN 1	23'-27.8'	(66%)		(100%)			23.0		4		
25										3		
26										2		
27										4		
28	RUN 2	27.8'-32.8'	3.6'	5'	5'	5'	NX		- same, more massive, vugs and coral fragments rare, few stylolites, gypsum dike at 30.2'	0		
29			(72%)		(100%)					3		
30								539.5		3		
31								30.2	Medium grained, medium gray to brown dolomite, some small coral colonies, stylolites and vuggy intervals, becoming predominantly light brown after 31.7' with increase in abundance of coral, vugs	3		
32										3		
33	RUN 3	32.8'-38'	3.05'	5.2'	5.1'	5.2'	NX			3		
34			(58%)		(98%)					2		
35									- same, becoming predominantly gray at 33.3', large coral colonies from 35.2' to 35.8', where coral fragments are found, dolomite is more dominantly brown colored	4		
36										3		
37										2		
38									- same, becoming a more mottled gray-brown dolomite at 37.4'	2		
39	RUN 4	38'-43'	4.25'	5'	5'	5'	NX			2		
			(85%)		(100%)				- same, mottled appearance with abundant light brown fine to medium grained dolomite associated with semicircular coral colonies, gypsum and sphalerite crystals common in vugs and tabulae of coral	2		
									CONTINUED ON THE NEXT SHEET			

General Notes:

- CD-zone fracture noted at 47.4', 100% water loss

Total Depth 52.2'Rock Drilling 29.2'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-5C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-5C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.7</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/10/89</u> Finish <u>8/10/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
41									SAME AS ABOVE	3		
42										3		
43										3+		
44	RUN 5 43'-48'		4.3'/5' (86%)		5'/5' (100%)		NX	526.3 43.4	Medium grained, mottled brown-gray dolomite with abundant small coral pods and other fossil fragments, possible bioherm, predominantly stylolites at 46.5'	4		
45										2		
46								523.2 46.5	Fine to medium grained, gray, massive dolomite, no vugs or fossil fragments, becoming more brown-gray toward end of run	2		
47										4		
48	RUN 6 48'-52.2'		3.6'/4.2' (86%)		3.85'/4.2' (92%)		NX	521.7 48.0	Medium grained, predominantly brown, massive dolomite, gray areas have dendritic crystal pattern, no vugs or corals, rare stylolites, large calcite crystals at 51.8'	1		
49										1		
50										2		
51										2		
52								517.8 51.9 517.5 52.2	BROKEN UP IN CORE BARREL			

General Notes:

- CD-zone fracture noted at 47.4', 100% water loss

Total Depth 52.2'Rock Drilling 29.2'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-5C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-6A</u>
At _____ Ft. at Completion		Drilling Rig _____	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.5</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/14/89</u> Finish <u>8/14/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5								564.4				
6	8/14/89 RUN 1 5.1'-8.1'		0'3' (0%)		2.35'3' (78%)		NX	5.1	Fine grained, light gray to light brown dolomite, highly fractured			
7												
8								561.4 8.1				

General Notes:

Total Depth 8.1'Rock Drilling 3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-6A

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-6B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.9</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/15/89</u> Finish <u>8/16/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5	8/15/89 RUN 1 4.9'-7.4'		0'/2.5' (0%)		2.05'/2.5' (82%)		NX	565.0 4.9	Fine grained, light brown to light gray dolomite, highly fractured, some stylolites and bedding observed in small segments			
6												
7								562.5 7.4				
8									UNABLE TO CORE, BROKEN CORE BARREL LIFTER, SEE OBA-6C/CD LOG	Highly Fractured		
9												
10	8/16/89 RUN 1 9.7'-13.2'		0.4'/3.5' (11%)		3.5'/3.5' (100%)		NX	559.5 10.4	Fine grained, light brown dolomite, pinhole vugs throughout, vugs very uniform in size (< 1 mm)	10		
11										6+		
12								558.2 11.7	Fine grained, light brown to light gray dolomite, some vugs of variable size, vug content decreasing to zero at end of run	8		
13										3		
14	RUN 2 13.2'-18.2'		2.25'/5' (45%)		4.9'/5' (98%)		NX		- same, gradual transition from light gray, fine grained dolomite to light brown, medium grained dolomite across run, occasional stylolites, moderately fractured	5		
15										4		
16										5		
17								553.0 16.9	Fine to medium grained, light brown to light gray finely bedded dolomite, differential weathering in bedding planes, some stylolites	5		
18								551.7 18.2		3		
19	RUN 3 18.2'-22.5'		0.95'/4.3' (22%)		4.25'/4.3' (99%)		NX		Fine to medium grained, light gray to light brown, fairly massive dolomite, occasional isolated vugs, rare stylolites and coral colonies	4		
									CONTINUED ON THE NEXT SHEET			

General Notes:

- B-zone fracture at 17.3', 100% water loss

Total Depth 22.5'Rock Drilling 15.3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-6B

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-6B</u> Boring Offset _____ Surface Elevation <u>569.9</u> Date Start <u>8/15/89</u> Finish <u>8/16/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES			BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP	
21									SAME AS ABOVE	3			
22								547.4 22.5		6			
										2			

General Notes:

- B-zone fracture at 17.3', 100% water loss

Total Depth 22.5'Rock Drilling 15.3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-6B

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>		Boring Number <u>OBA-6C/CD</u> Boring Offset _____ Surface Elevation <u>569.5</u> Date Start <u>8/16/89</u> Finish <u>8/18/89</u>	
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
1												
2												
3												
4												
5	8/16/89 RUN 1 4.5'-6.1'		0'/1.6' (0%)		1.4'/1.6' (88%)		NX	565.0 4.5	Fine grained, light gray dolomite, highly fractured, bedding noted in small fragments			
6	RUN 2 6.1'-9.5'		0'/3.4' (0%)		3.4'/3.4' (100%)		NX		- same, medium grained, finely bedded in short intervals, occasional stylolites			
7												
8												
9								560.0 9.5				
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												

CONTINUED ON THE NEXT SHEET

General Notes:

- No major water bearing fractures encountered

Total Depth 48.1'Rock Drilling 31.3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-6C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-6C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>569.5</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>8/16/89</u> Finish <u>8/18/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21								547.7				
22	8/18/89 RUN 1 21.8'-27'		2.65'/5.2' (51%)		4.9'/5.2' (94%)		NX	21.8 547.0 22.5	GROUT PLUG	1		
23									Fine to medium grained, medium gray to light brown, massive bedded dolomite, occasional irregular stylolites, some gypsum filled vugs, large stylolite with organic staining at 24.4'	5		
24										3		
25										2		
26										1		
27	RUN 2 27'-32'		3.65'/5' (73%)		5'/5' (100%)		NX		- same, becoming a mottled brown-gray dolomite after a prominent stylolite at 29.2'	1		
28										2		
29								540.3 29.2		3		
30									Fine to medium grained, mottled medium gray-brown dolomite with isolated patches of gypsum/sphalerite filled vugs and irregular stylolites	1		
31									- breccia/slump structures with large calcite crystals from 31.1' to 31.6'	3		
32	RUN 3 32'-37'		2.65'/5' (53%)		5'/5' (100%)		NX		- same, more massive from 32' to 33', after 33' more sucrosic in appearance with increase in vug content, occasional isolated coral pods after 34', abundant coral between 35' and 36'	1		
33										3		
34										4		
35										6		
36										4		
37	RUN 4 37'-42'		2.6'/5' (52%)		5'/5' (100%)		NX		- same, very variable in structure/composition, abundant isolated tabulate coral masses, large gypsum veins at 39.2', irregular stylolites, very mottled appearance from 39.7' to 41.4'	3		
38										6		
39									CONTINUED ON THE NEXT SHEET	5		

General Notes:

- No major water bearing fractures encountered

Total Depth 48.1'Rock Drilling 31.3'

% Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-6C/CD

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-6C/CD</u> Boring Offset _____ Surface Elevation <u>569.5</u> Date Start <u>8/16/89</u> Finish <u>8/18/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
									SAME AS ABOVE	4		
41										1		
42	RUN 5		2'5"		5'5"		NX	527.5		4		
43	42'-47'		(40%)		(100%)			42.0	Fine to medium grained, light brown to light gray mottled, fossiliferous dolomite, abundant coral colonies and other fossil fragments from 42.3' to 43', large calcite crystals at 44.5'	3		
44										5		
45										4		
46										3		
47	RUN 6		1.1'/1.1'		1.1'/1.1'		NX			1		
48	47'-48.1'		(100%)		(100%)			521.4				
								48.1				

General Notes:

- No major water bearing fractures encountered

Total Depth 48.1'Rock Drilling 31.3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-6C/CD

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>		Boring Number <u>OBA-7A</u> Boring Offset _____ Surface Elevation <u>571.5</u> Date Start <u>6/6/89</u> Finish <u>6/6/89</u>	
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
1												
2												
3												
4												
5								566.0				
6	6/6/89 RUN 1 5.5'-7.2'		0'/1.7' (0%)		0.95'/1.7' (56%)		NX	5.5	Fine to medium grained, light to medium brown, fine to medium bedded dolomite, abundant thin stylolites, heavily fractured		Highly Fractured	
7											11	
8	RUN 2 7.2'-8.5'		0'/1.3' (0%)		1.3'/1.3' (100%)		NX				5	
								563.0 8.5				

General Notes:

- 100 % water loss at 6.5' while reaming

Total Depth 8.5'Rock Drilling 3'

% Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-7A

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-7B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>571.5</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>6/12/89</u> Finish <u>6/13/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5								566.0		2		
6	6/12/89 RUN 1 5.5'-10.7'		3.45'/5.2' (66%)		5.1'/5.2' (98%)		NX	5.5	CONCRETE FOUNDATION (OLD DRUM STORAGE AREA: CSA-3)	2		
7										1		
8										2		
9								562.4		2		
10								9.1	Fine to medium grained, medium to dark brown to gray, fine to massive bedded dolomite, finely bedded from 9.1' to 10', vuggy interval from 10.4' to 10.7', occasional stylolites	2		
11	6/13/89 RUN 1 10.5'-13.3'		0.95'/2.8' (34%)		2.45'/2.8' (88%)		NX		- same, becoming predominantly light brown with fine pinhole vugs from 12.2' to 13.3'	4+		
12										8		
13								558.2		3		
14	RUN 2 13.3'-18.2'		2.55'/4.9' (52%)		4.8'/4.9' (98%)		NX	13.3	Fine to medium grained, medium to dark brown to gray, massive dolomite, occasional stylolites and limited vuggy intervals, becoming finely bedded after a prominent stylolite at 18.7', moderately fractured	7		
15										3		
16										3		
17										5		
18										3		
19	RUN 3 18.2'-23.2'		3'/5' (60%)		5'/5' (100%)		NX		- same, highly fractured from 20.8' to 21', occasional calcite filled vugs with sphalerite crystals after 21', dark gray vuggy interval from 22.5' to 23'	2		
CONTINUED ON THE NEXT SHEET												

General Notes:

- B-zone fracture noted at 19.8', 100% water loss

Total Depth 24.8'Rock Drilling 19.3'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-7B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-7B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>571.5</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>6/12/89</u> Finish <u>6/13/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21									SAME AS ABOVE	2+		
22										5		
23										6		
24										5+		
	RUN 4		0.5'/1.6'		1.5'/1.6'		NX			3		
	23.2'-24.8'		(31%)		(94%)			546.7 24.8				

General Notes:

- B-zone fracture noted at 19.8', 100% water loss

Total Depth 24.8'Rock Drilling 19.3'

% Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-7B

Ground Water Observation		Job <u>OLIN - RFI</u>	No. <u>88C2346-2</u>	Boring Number <u>OBA-7C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>		Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>		Surface Elevation <u>571.7</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>		Date Start <u>6/20/89</u> Finish <u>6/20/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												

CONTINUED ON THE NEXT SHEET

General Notes:

- Potential fracture noted in core at 27', no observed water loss - C-zone fracture noted at 34.8', 100% water loss

Total Depth 40.0'Rock Drilling 15.5'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-7C/CD

Ground Water Observation At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.	Job <u>OLIN - RFI</u> No. <u>88C2346-2</u> Drilling Rig <u>ACKER AD II</u> Operator <u>Larry Schroder (Emp)</u> Inspector <u>Paul Mazierski (WCC)</u>	Boring Number <u>OBA-7C/CD</u> Boring Offset _____ Surface Elevation <u>571.7</u> Date Start <u>6/20/89</u> Finish <u>6/20/89</u>
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DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
21												
22												
23												
24												
25	6/20/89 RUN 1 24.5'-28'		2.5'/3.5' (71%)		3.4'/3.5' (97%)		NX	547.2 24.5 546.7 25.0	GROUT PLUG			
26									Medium grained, medium to dark brown to gray, massive dolomite, occasional stylolites and calcite seams, some coral fragments ranging from large colonies with well developed tabulae to irregular mineralized coral lenses,fractured in areas where corals are abundant	1		
27										6		
28										0		
29	RUN 2 28'-33'		4.7'/5' (94%)		5'/5' (100%)		NX		- same, occasional small calcite filled voids, occasional stylolites, massive throughout run	3		
30										1		
31										0		
32										1		
33										2		
34	RUN 3 33'-38'		3.8'/5' (76%)		4.8'/5' (96%)		NX		- same, large calcite seams at 33.8' and 36.8', finely bedded from 34' to 34.5', highly fractured around 34' and 34.8'	2		
35										7+		
36										1		
37										3		
38										1		
39	RUN 4 38'-40'		2'/2' (100%)		2'/2' (100%)		NX		- same, some small coral pods	0		
										0		
								531.7	CONTINUED ON THE NEXT SHEET			

General Notes:

- Potential fracture noted in core at 27', no observed water loss - C-zone fracture noted at 34.8', 100% water loss

Total Depth 40.0'Rock Drilling 15.5'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-7C/CD

Ground Water Observation		Job <u>OLIN - RFI</u>	No. <u>88C2346-2</u>	Boring Number <u>OBA-7C/CD</u>
At _____ Ft.	at Completion	Drilling Rig <u>ACKER AD II</u>	Boring Offset _____	
At _____ Ft.	after _____ hrs.	Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>571.7</u>	
At _____ Ft.	after _____ hrs.	Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>6/20/89</u>	Finish <u>6/20/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
								40.0				

General Notes: - Potential fracture noted in core at 27', no observed water loss - C-zone fracture noted at 34.8', 100% water loss	Total Depth <u>40.0'</u> Rock Drilling <u>15.5'</u>
%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	Hole No. OBA-7C/CD

Ground Water Observation		Job <u>OLIN - RFI</u>	No. <u>88C2346-2</u>	Boring Number <u>OBA-8A</u>
At _____ Ft.	at Completion	Drilling Rig <u>ACKER AD II</u>	Boring Offset _____	
At _____ Ft.	after _____ hrs.	Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.7</u>	
At _____ Ft.	after _____ hrs.	Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/25/89</u>	Finish <u>7/25/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	
1												
2												
3												
4												
5												
6												
7								563.3				
8	7/25/89 RUN 1 7.4'-9.7'		0.4'/2.3' (17%)		1.9'/23' (83%)		NX	7.4	Fine to medium grained, light to medium gray, thin to medium bedded dolomite, abundant gently undulating to finely serated stylolites, heavily fractured			
9												
10	RUN 2 9.7'-10.5'		0'/0.8' (0%)		0.65'/0.8' (81%)		NX	560.2 10.5				

General Notes:

- 100% water loss from onset of coring operations

Total Depth 10.5'

Rock Drilling 3.1'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-8A

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-8B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.6</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/26/89</u> Finish <u>7/26/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No. / Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8	7/26/89 RUN 1 7.5'-12.5'						NX	563.1 7.5	Fine to medium grained, medium gray to brown, thin to medium bedded dolomite, abundant stylolites, finely bedded throughout majority of recovered core, highly fractured			
9			??		??							
10												
11												
12	7/28/89 RUN 1 11.7'-13.8'		0.71'/2.1' (33%)		1.6'/2.1' (76%)		NX		- same, occasional vugs from 12.5' to 13.4'			
13												
14	RUN 2 13.8'-18.6'		2.95'/4.8' (61%)		4.8'/4.8' (100%)		NX	556.8 13.8	Fine to medium grained, medium gray to brown, medium bedded to massive dolomite, pinhole vugs from 13.8' to 15.3', predominantly brown in vuggy sections, more gray and massive after 15.3', moderately fractured			
15												
16												
17												
18												
19	RUN 3 18.6'-21.7'		2.1'/3.1' (68%)		2.9'/3.1' (93%)		NX	552.0 18.6	Medium grained, medium to dark gray to brown, fine to massive bedded dolomite, massive to 20.1', then finely bedded to fractured interval at 20.9', gently undulating beds with			

General Notes:

* Core barrel lifter broke during coring operations, lost some of core down hole - 100% water loss from onset of coring and reaming operations (setting 4" casing) - B-zone fracture noted at 20.1', 100% water loss

Total Depth 25.0'Rock Drilling 17.5'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-8B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-8B</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.6</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/26/89</u> Finish <u>7/26/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21								548.9	stylolites, gradual change to massive bedding from fractured interval to end of run	3+		
22	RUN 4		3.25'/3.3'		3.25'/3.3'		NX	21.7	Fine to medium grained, dark to medium gray to brown, massive dolomite, becoming more irregular in structure beyond 24', several coral pods at 24', occasional stylolites, isolated vuggy zones	2+		
23	21.7'-25'		(98%)		(98%)					1		
24										2		
25								545.6		0		
								25.0				

General Notes:

* Core barrel lifter broke during coring operations, lost some of core down hole - 100% water loss from onset of coring and reaming operations (setting 4" casing) - B-zone fracture noted at 20.1', 100% water loss

Total Depth 25.0'Rock Drilling 17.5'

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-8B

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-8C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.6</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/27/89</u> Finish <u>8/2/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
1												
2												
3												
4												
5												
6												
7												
8	7/27/89 RUN 1 7.5'-10.8'		0'3.3' (0%)		2.5'3.3' (76%)		NX	563.1 7.5	Fine to medium grained, medium to dark gray, thin to medium bedded dolomite, highly fractured abundant stylolites, thinly bedded throughout			
9												
10												
11	RUN 2 10.8'-12.6'		0.35'1.8' (19%)		1.8'1.8' (100%)		NX	559.8 10.8	Medium grained, medium to dark gray, medium to massive bedded dolomite, some isolated vugs after 11.5', more massive than run 1	4		
12								558.0 12.6		2		
13												
14												
15												
16												
17												
18												
19												
CONTINUED ON THE NEXT SHEET												

General Notes:

- 100% water loss at 10' during coring and reaming operations (setting 6" casing) - CD-zone
fracture noted at 46.5', 100% water loss

Total Depth 50.0'Rock Drilling 31.1

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-8C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-8C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.6</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/27/89</u> Finish <u>8/2/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
21												
22												
23												
24	8/2/89 RUN 1		1.8'/4.2'	(43%)	3.9'/4.2'	(93%)	NX	546.6 24.0	GROUT PLUG			
25	24'-28.2'							545.6 25.0	Fine to medium grained, medium to dark gray to brown, fine to massive bedded dolomite, finely bedded with calcite filled voids in highly fractured area centered around 26', large vug at 27'	7		
26										5		
27								543.6 27.0	Fine to medium grained, mottled medium to dark gray and brown dolomite, brown coral pods abundant, some stylolites, isolated vugs and calcite filled voids	4		
28									- same, decrease in coral abundance from 28.5' to 29.7'	6		
29	RUN 2		1.5'/5'	(30%)	5'/5'	(100%)	NX			6+		
30	28.2'-33.2'							540.9 29.7	Fine to medium grained, medium gray to brown, massive dolomite, occasional limited thinly bedded zones where fracturing is observed, occasional calcite filled voids and stylolites, small isolated coral colonies, moderately fractured	6		
31										2		
32										3		
33												
34	RUN 3		4.6'/5'	(92%)	5'/5'	(100%)	NX		- same, large calcite filled void at 33.3', slightly fractured	1		
35	33.2'-38.2'									2		
36										2		
37										5+		
38										1		
39	RUN 4		3.95'/5'	(79%)	4.9'/5'	(100%)	NX		- same, thinly bedded fractured zones not as evident, occasional mottled zones with small brown coral pods, slightly fractured	1		
	38.2'-43.2'									2		
CONTINUED ON THE NEXT SHEET												

General Notes:

- 100% water loss at 10' during coring and reaming operations (setting 6" casing) - CD-zone fracture noted at 46.5', 100% water loss

Total Depth 50.0'Rock Drilling 31.1

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-8C/CD

Ground Water Observation		Job <u>OLIN - RFI</u> No. <u>88C2346-2</u>	Boring Number <u>OBA-8C/CD</u>
At _____ Ft. at Completion		Drilling Rig <u>ACKER AD II</u>	Boring Offset _____
At _____ Ft. after _____ hrs.		Operator <u>Larry Schroder (Emp)</u>	Surface Elevation <u>570.6</u>
At _____ Ft. after _____ hrs.		Inspector <u>Paul Mazierski (WCC)</u>	Date Start <u>7/27/89</u> Finish <u>8/2/89</u>

DEPTH	CORE RUN		RQD		RECOVERY		CORE TYPE & RESIST.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	FROM	TO	INCH	%	INCH	%				No./Ft.	DIP*	DIP
41									SAME AS ABOVE	3		
42										2		
43										2		
44	RUN 5 43.2'-45'		1'1.8' (56%)		1.8'1.8' (100%)		NX		- same, several large calcite filled voids between 43.2' and 43.5', moderately fractured	1		
45								525.6		3		
46	8/3/89 RUN 1 45'-50'		0.7'5' (14%)		4.45'5' (89%)		NX	45.0	Fine to medium grained, medium to dark gray, medium to massive bedded dolomite, some brown mottling, occasional stylolites and calcite filled voids	8		
47										7		
48										6		
49										7+		
50								520.6 50.0		2		

General Notes:

- 100% water loss at 10' during coring and reaming operations (setting 6" casing) - CD-zone
fracture noted at 46.5', 100% water loss

Total Depth 50.0'Rock Drilling 31.1

%Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Hole No. OBA-8C/CD

APPENDIX C
SINGLE WELL PERMEABILITY TEST SOLUTIONS

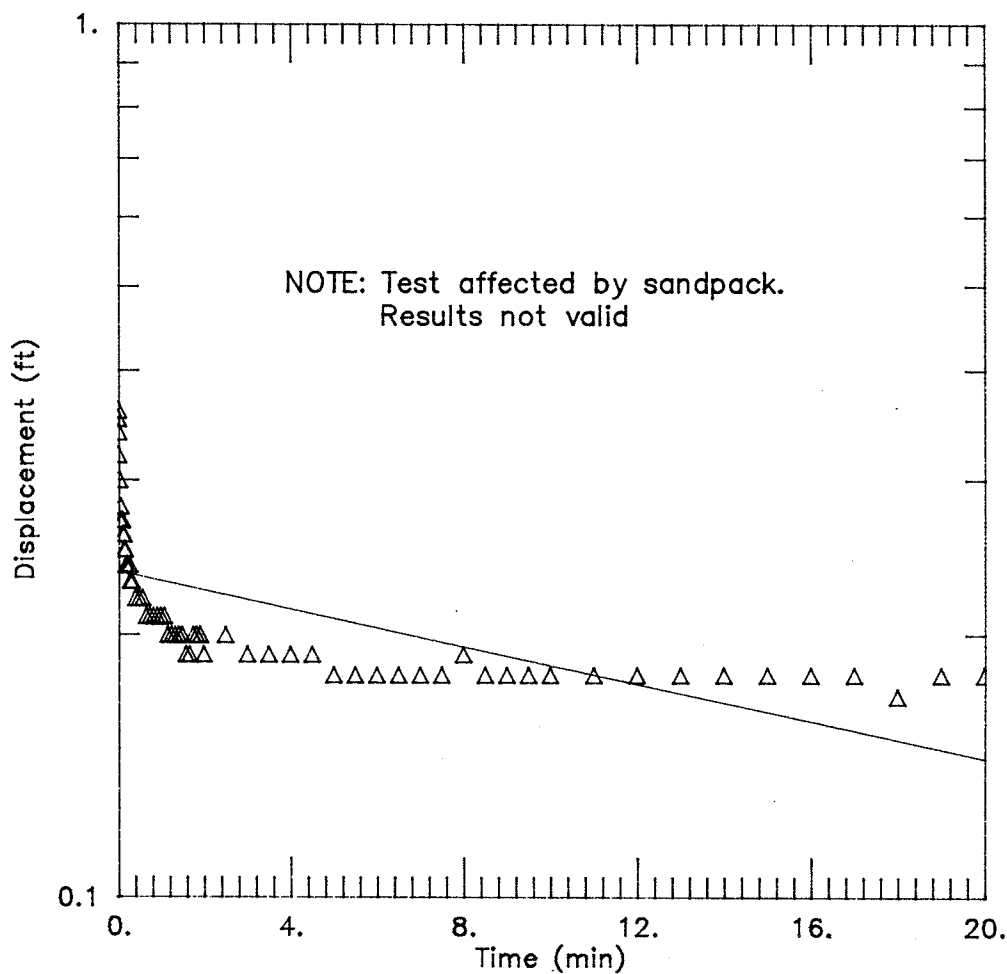
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-1A Falling Head Test



DATA SET:

oba1afal.dat

01/04/92

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$K = 5.8505E-05$ ft/min

$y_0 = 0.2359$ ft

TEST DATA:

$H_0 = 0.352$ ft

$r_c = 0.1667$ ft

$r_w = 1.$ ft

$L = 5.$ ft

$b = 3.03$ ft

$H = 3.03$ ft

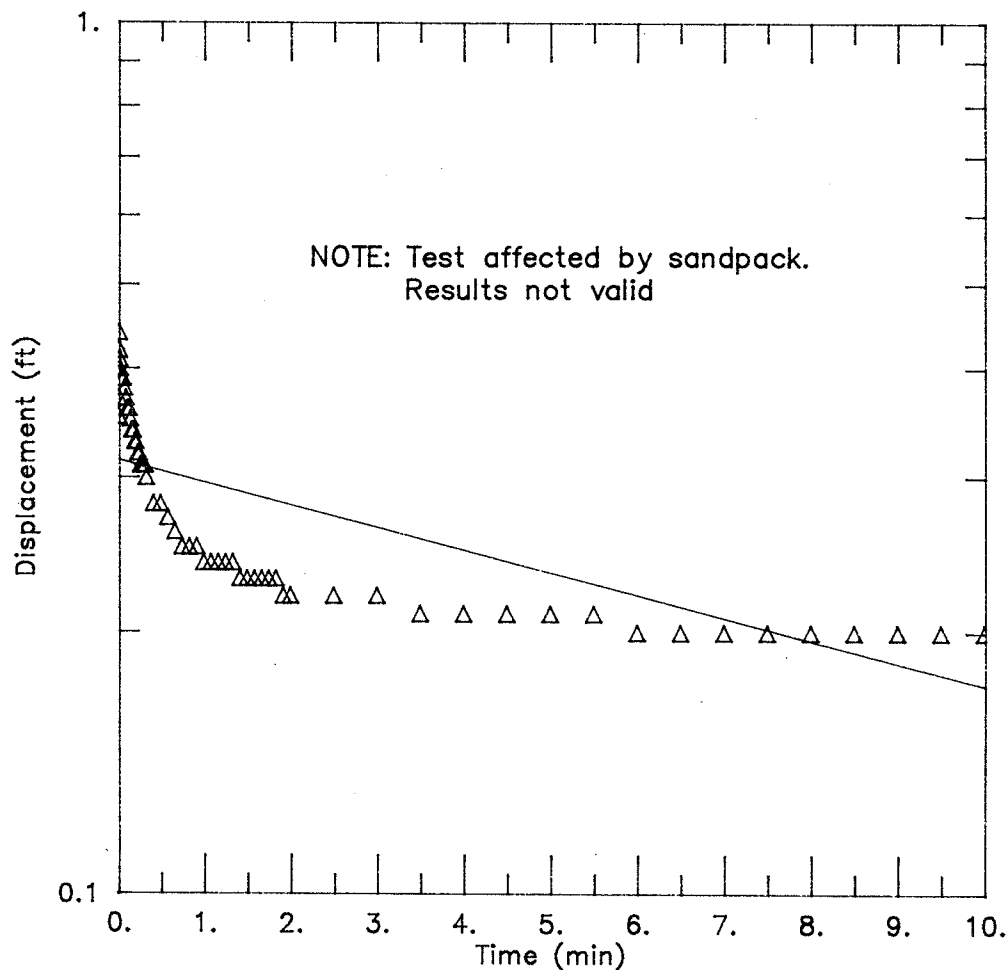
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-1A Rising Head Test



DATA SET:

obalaris.dat

01/04/92

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$K = 0.0001409$ ft/min

$y_0 = 0.3141$ ft

TEST DATA:

$H_0 = 0.352$ ft

$r_c = 0.1667$ ft

$r_w = 1.$ ft

$L = 5.$ ft

$b = 3.03$ ft

$H = 3.03$ ft

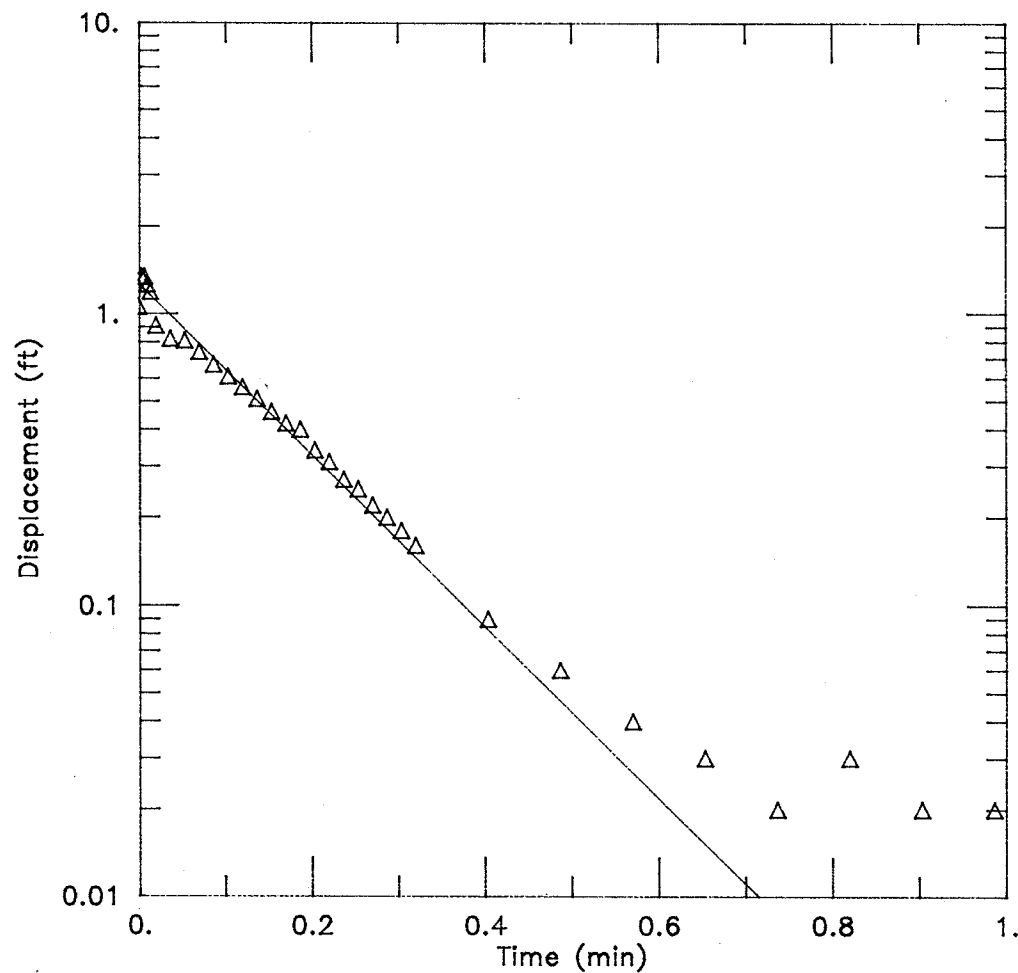
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-3A Falling Head Test



DATA SET:
oba3afal.dat
01/04/92

AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
1/25/91

ESTIMATED PARAMETERS:
 $K = 0.02325$ ft/min
 $y_0 = 1.262$ ft

TEST DATA:
 $H_0 = 1.053$ ft
 $r_c = 0.1667$ ft
 $r_w = 1.$ ft
 $L = 5.$ ft
 $b = 5.66$ ft
 $H = 5.66$ ft

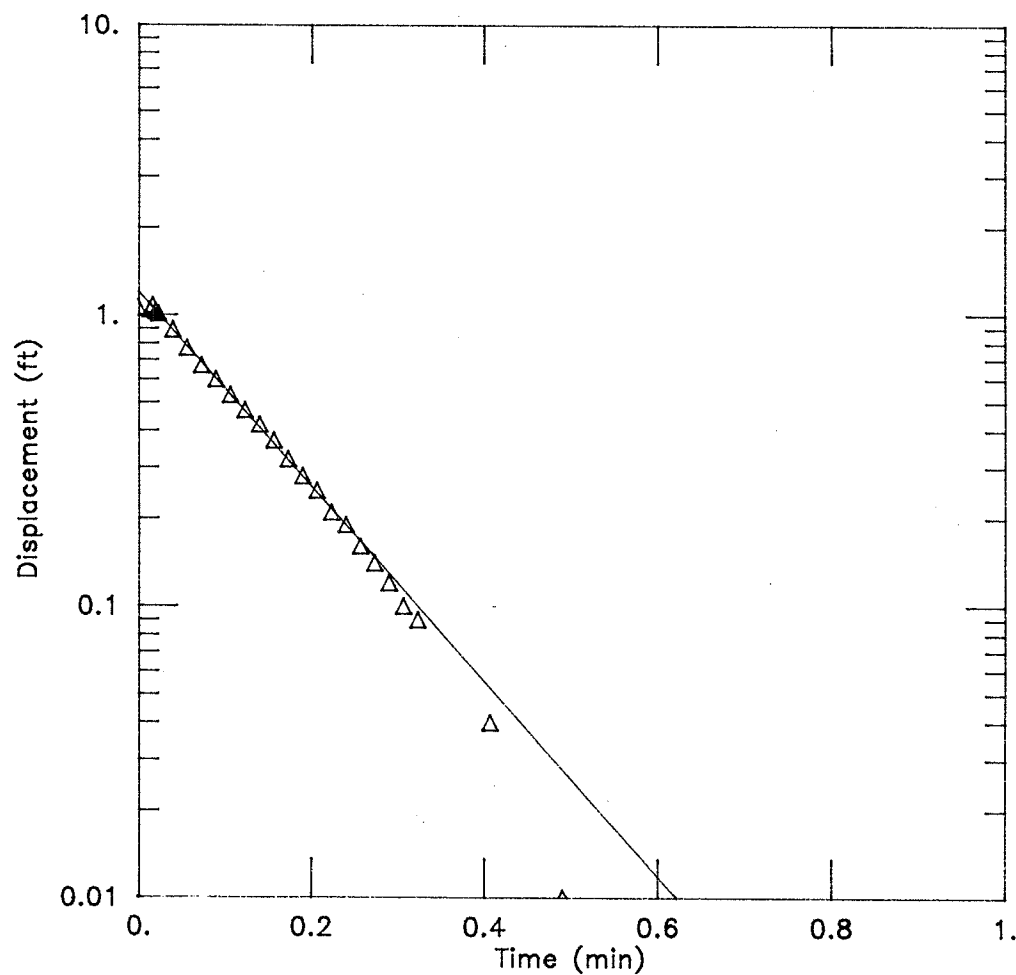
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-3A Rising Head Test



DATA SET:
oba3aris.dat
01/04/92

AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
1/25/91

ESTIMATED PARAMETERS:
 $K = 0.02644$ ft/min
 $y_0 = 1.199$ ft

TEST DATA:
 $H_0 = 1.053$ ft
 $r_c = 0.1667$ ft
 $r_w = 1.$ ft
 $L = 5.$ ft
 $b = 5.66$ ft
 $H = 5.66$ ft

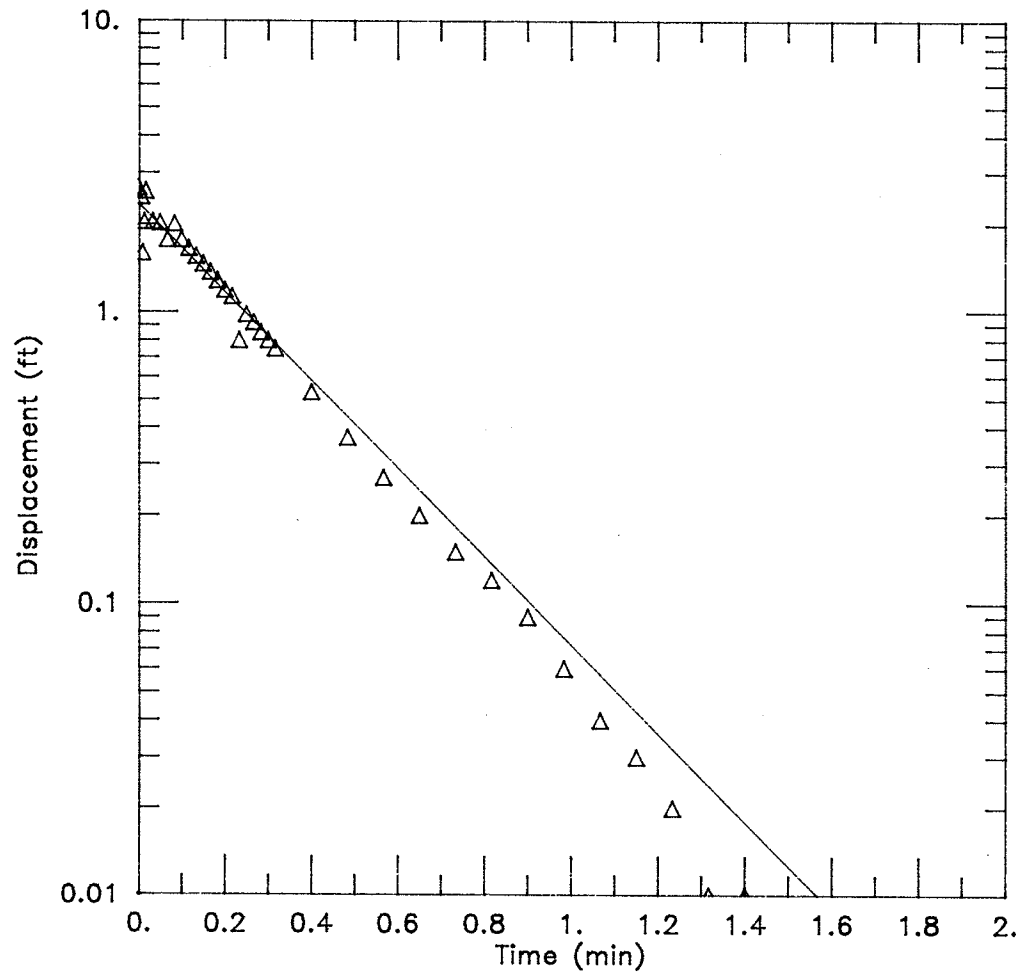
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-5A Falling Head Test



DATA SET:
oba5afal.dat
01/04/92

AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
1/24/91

ESTIMATED PARAMETERS:
 $K = 0.01261$ ft/min
 $y_0 = 2.34$ ft

TEST DATA:
 $H_0 = 2.65$ ft
 $r_c = 0.1667$ ft
 $r_w = 1.$ ft
 $L = 5.$ ft
 $b = 6.4$ ft
 $H = 6.4$ ft

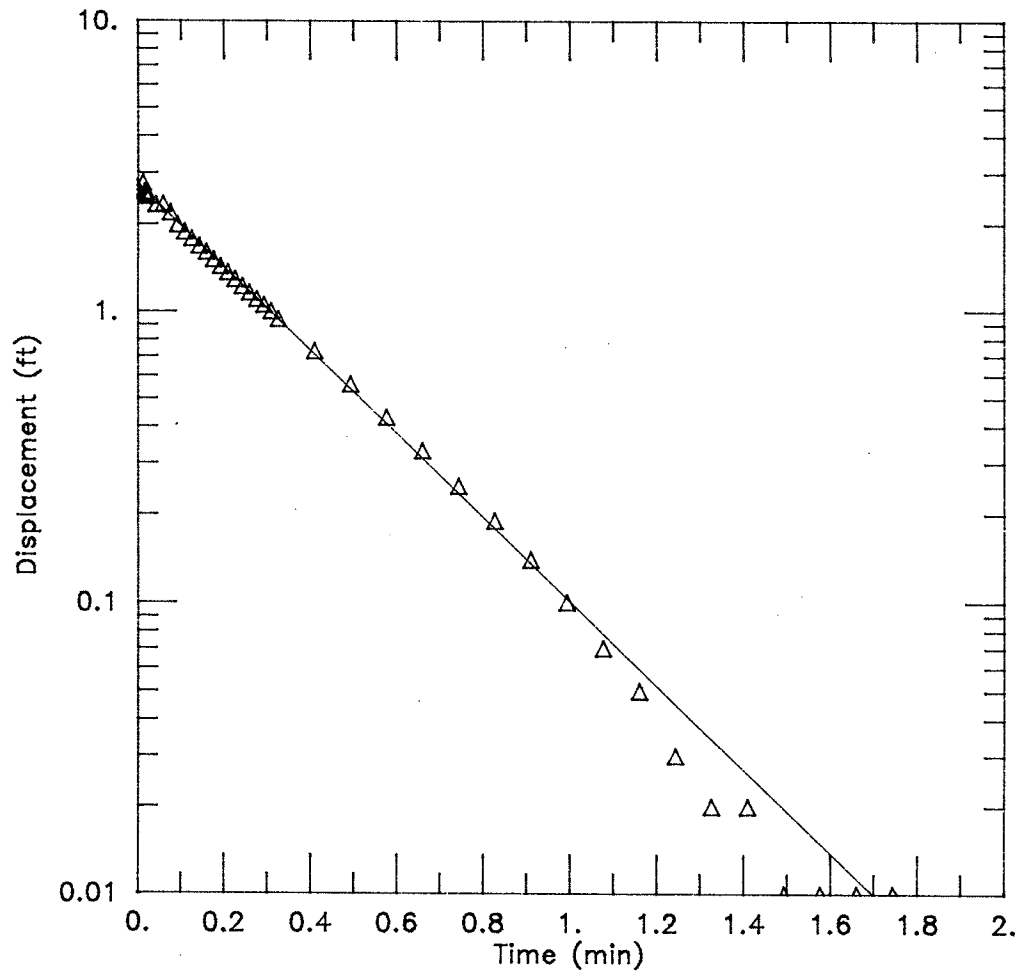
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-5A Rising Head Test



DATA SET:

oba5aris.dat

01/04/92

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$K = 0.01198$ ft/min

$y_0 = 2.747$ ft

TEST DATA:

$H_0 = 2.65$ ft

$r_c = 0.1667$ ft

$r_w = 1.$ ft

$L = 5.$ ft

$b = 6.4$ ft

$H = 6.4$ ft

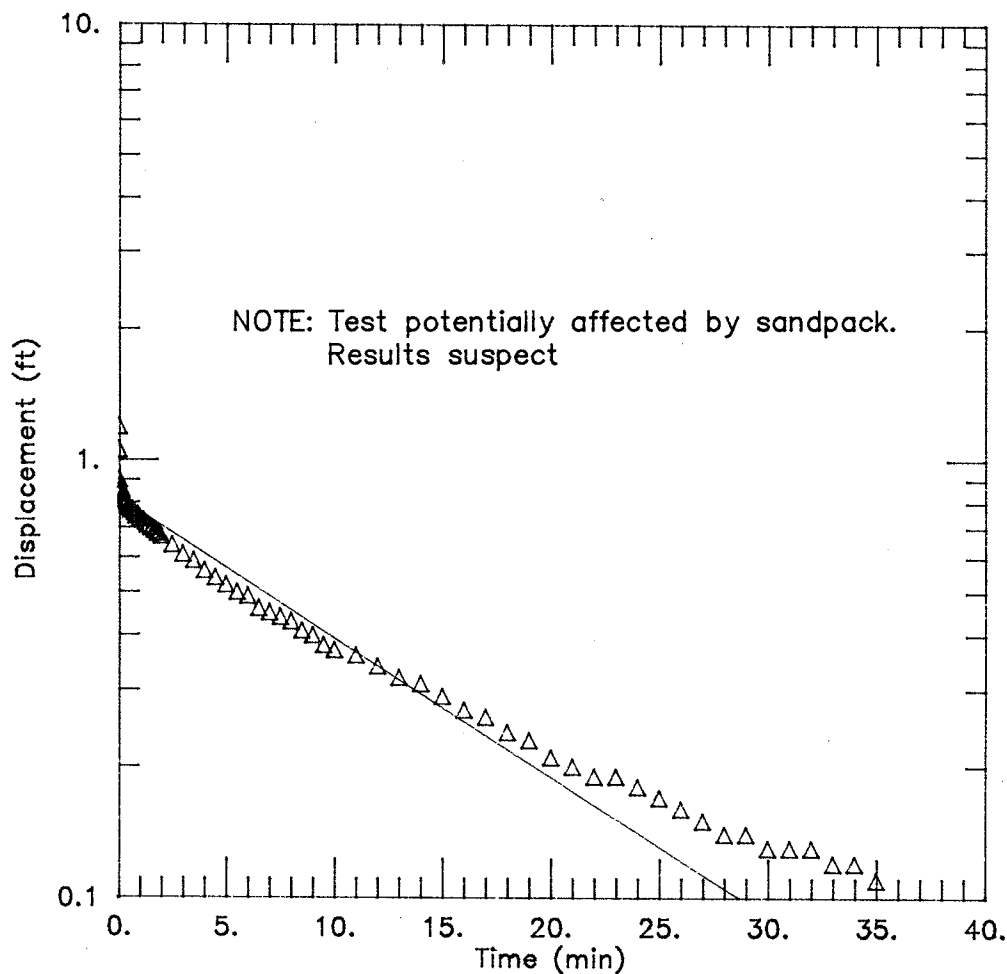
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-6A Falling Head Test



DATA SET:

oba6afal.dat

01/04/92

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

1/23/91

ESTIMATED PARAMETERS:

$K = 0.0002313$ ft/min

$y_0 = 0.8181$ ft

TEST DATA:

$H_0 = 1.053$ ft

$r_c = 0.1667$ ft

$r_w = 1.$ ft

$L = 5.$ ft

$b = 4.74$ ft

$H = 4.74$ ft

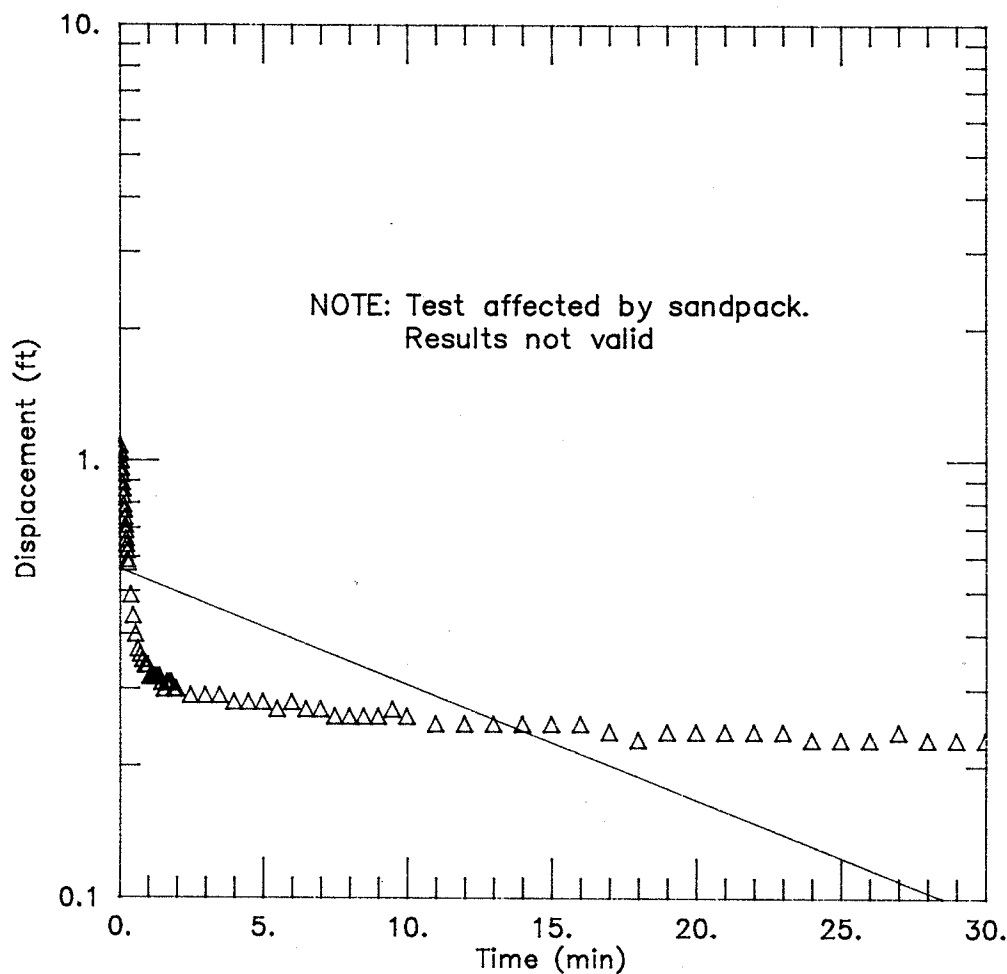
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-6A Rising Head Test



DATA SET:
oba6aris.dat
01/04/92

AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
1/23/91

ESTIMATED PARAMETERS:
 $K = 0.000191$ ft/min
 $y_0 = 0.5622$ ft

TEST DATA:
 $H_0 = 1.053$ ft
 $r_c = 0.1667$ ft
 $r_w = 1.$ ft
 $L = 5.$ ft
 $b = 4.74$ ft
 $H = 4.74$ ft

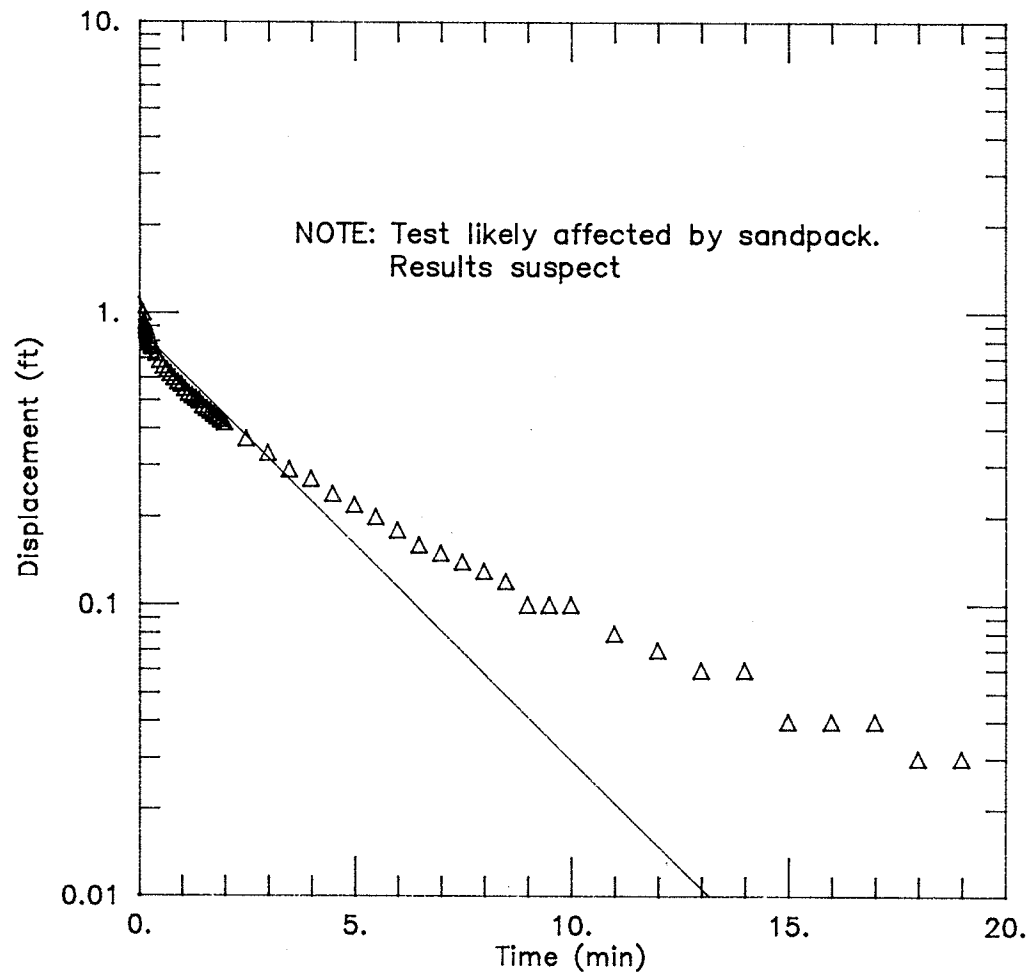
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-7A Falling Head Test



DATA SET:
oba7afal.dat
01/04/92

AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
1/24/91

ESTIMATED PARAMETERS:
 $K = 0.0009748$ ft/min
 $y_0 = 0.8711$ ft

TEST DATA:
 $H_0 = 1.053$ ft
 $r_c = 0.1667$ ft
 $r_w = 1.$ ft
 $L = 5.$ ft
 $b = 4.$ ft
 $H = 4.$ ft

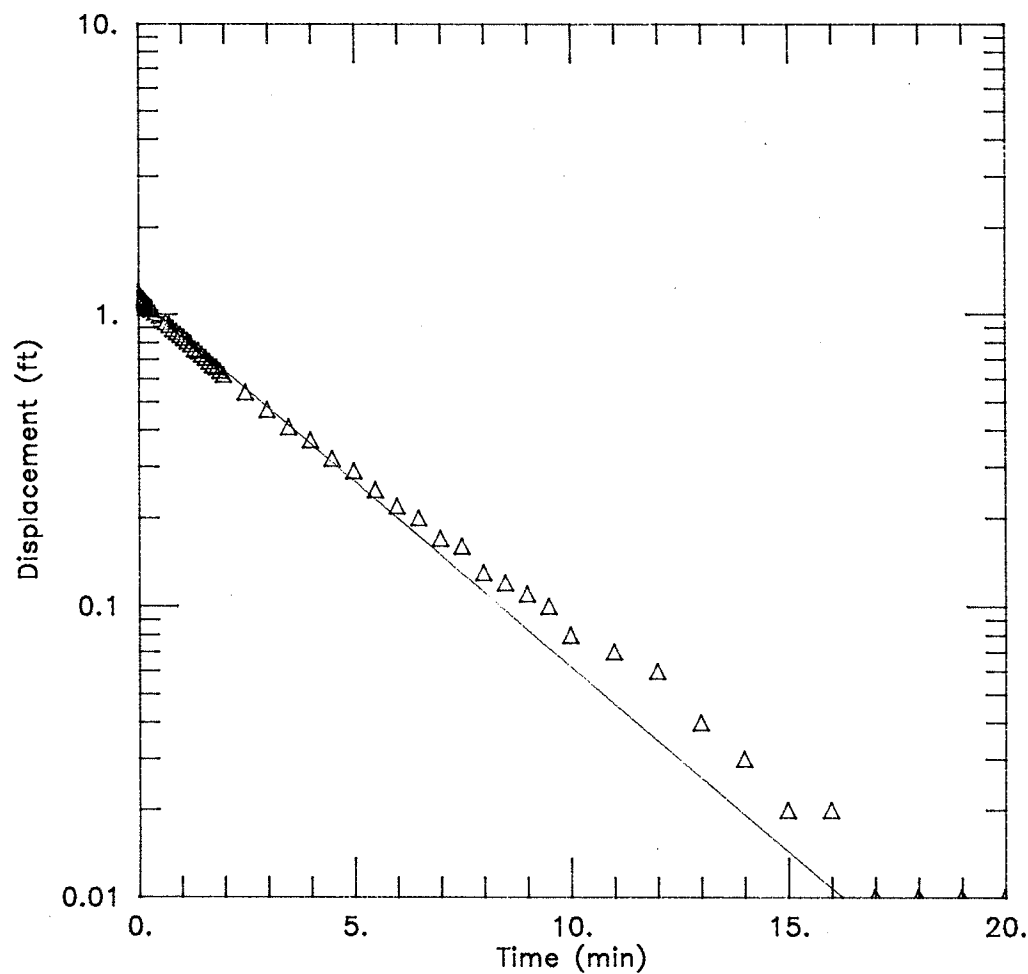
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-7A Rising Head Test



DATA SET:

oba7aris.dat

01/04/92

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$K = 0.0008388$ ft/min

$y_0 = 1.146$ ft

TEST DATA:

$H_0 = 1.053$ ft

$r_c = 0.1667$ ft

$r_w = 1$ ft

$L = 5$ ft

$b = 4$ ft

$H = 4$ ft

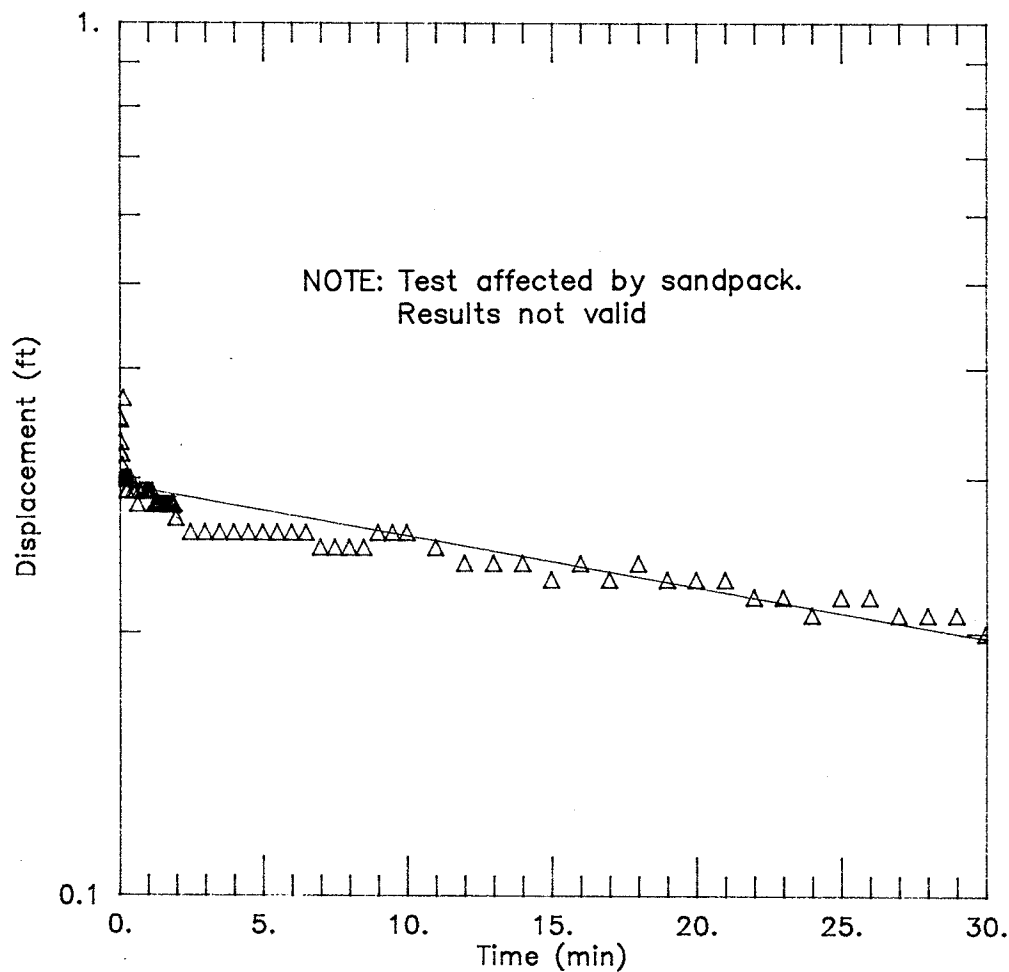
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-8A Falling Head Test



DATA SET:

oba8afal.dat

01/04/92

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$K = 2.042E-05$ ft/min

$y_0 = 0.2948$ ft

TEST DATA:

$H_0 = 0.352$ ft

$r_c = 0.1667$ ft

$r_w = 1.$ ft

$L = 5.$ ft

$b = 1.95$ ft

$H = 1.95$ ft

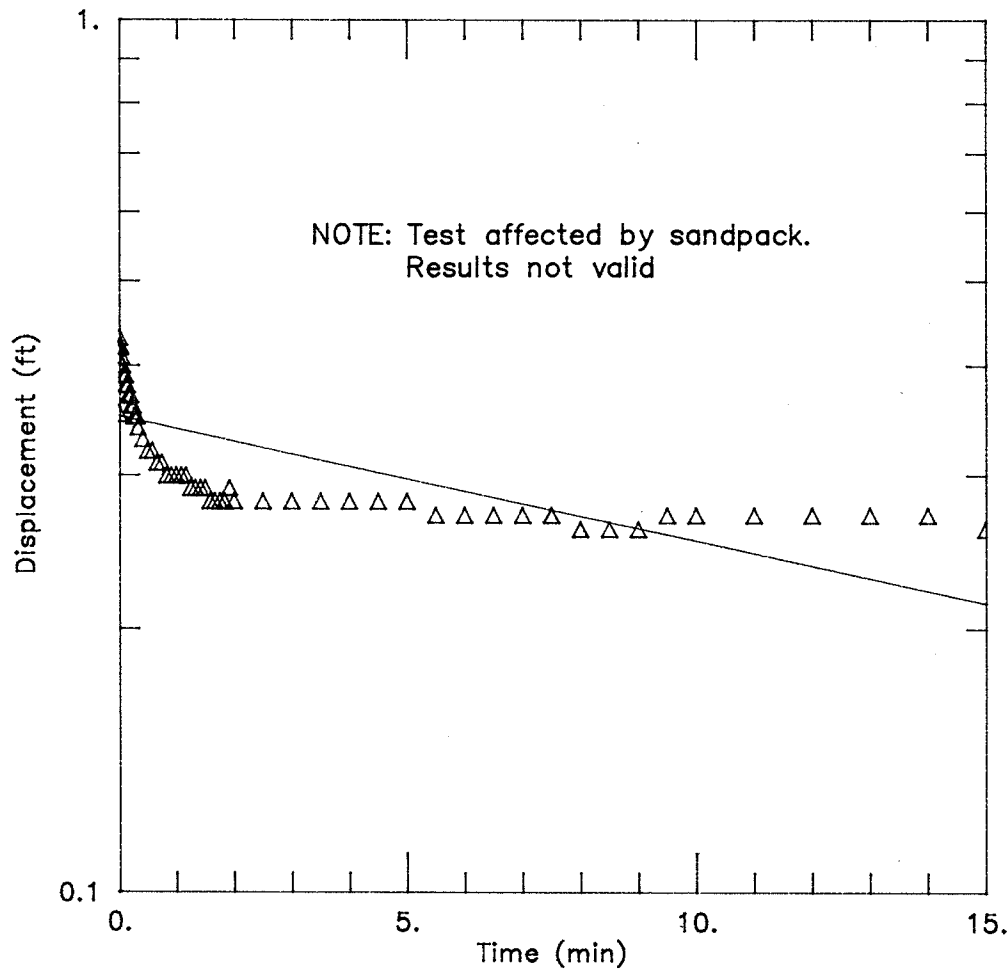
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-8A Rising Head Test



DATA SET:
oba8aris.dat
01/04/92

AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
1/22/91

ESTIMATED PARAMETERS:
 $K = 5.0107E-05$ ft/min
 $y_0 = 0.3502$ ft

TEST DATA:
 $H_0 = 0.352$ ft
 $r_c = 0.1667$ ft
 $r_w = 1.$ ft
 $L = 5.$ ft
 $b = 1.95$ ft
 $H = 1.95$ ft

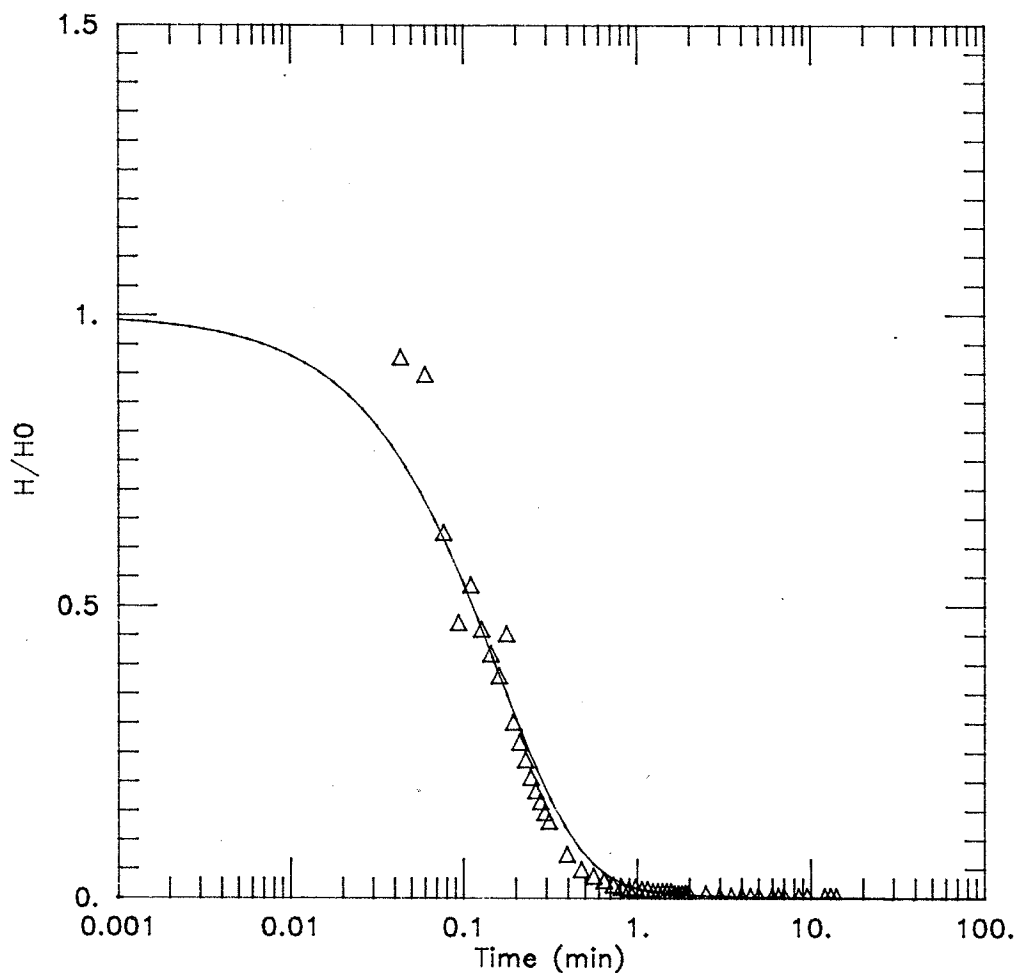
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-1B Falling Head Test



DATA SET:

oba1bfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$T = 0.8494 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

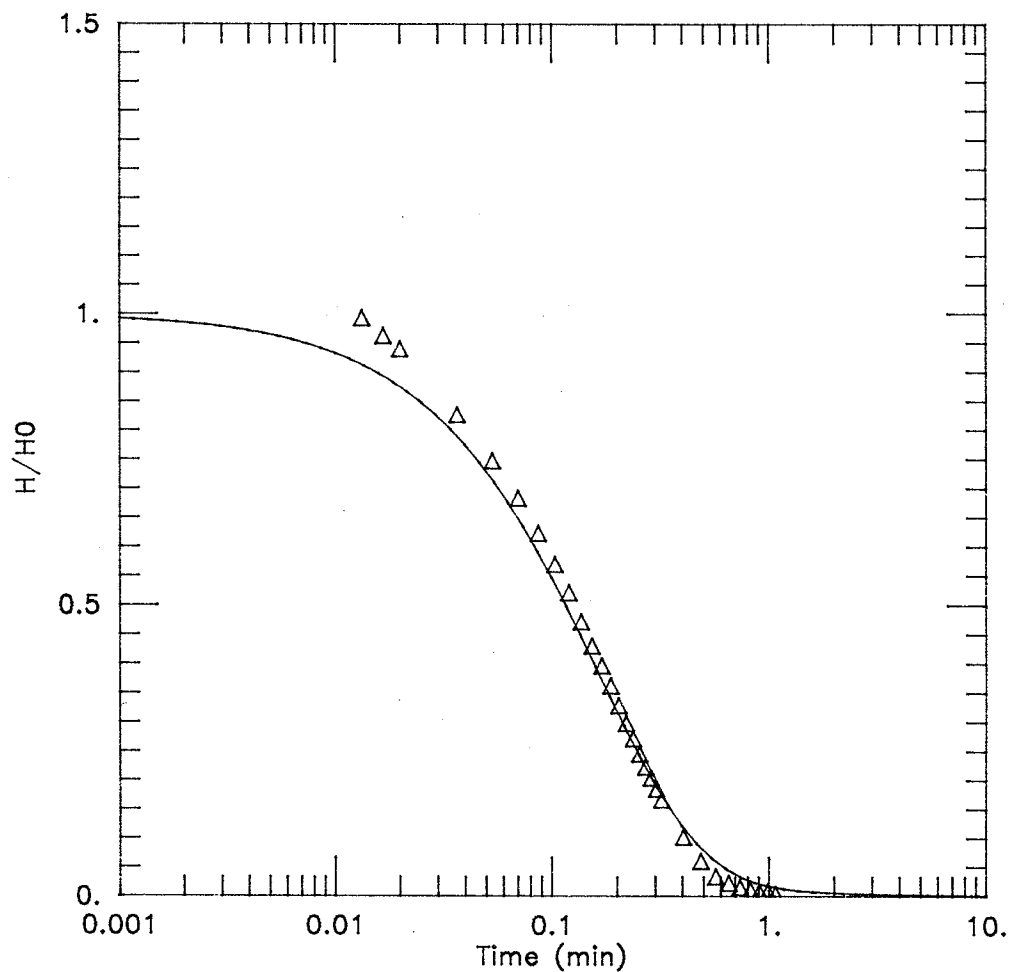
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-1B Rising Head Test



DATA SET:

oba1bris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$T = 0.8286 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

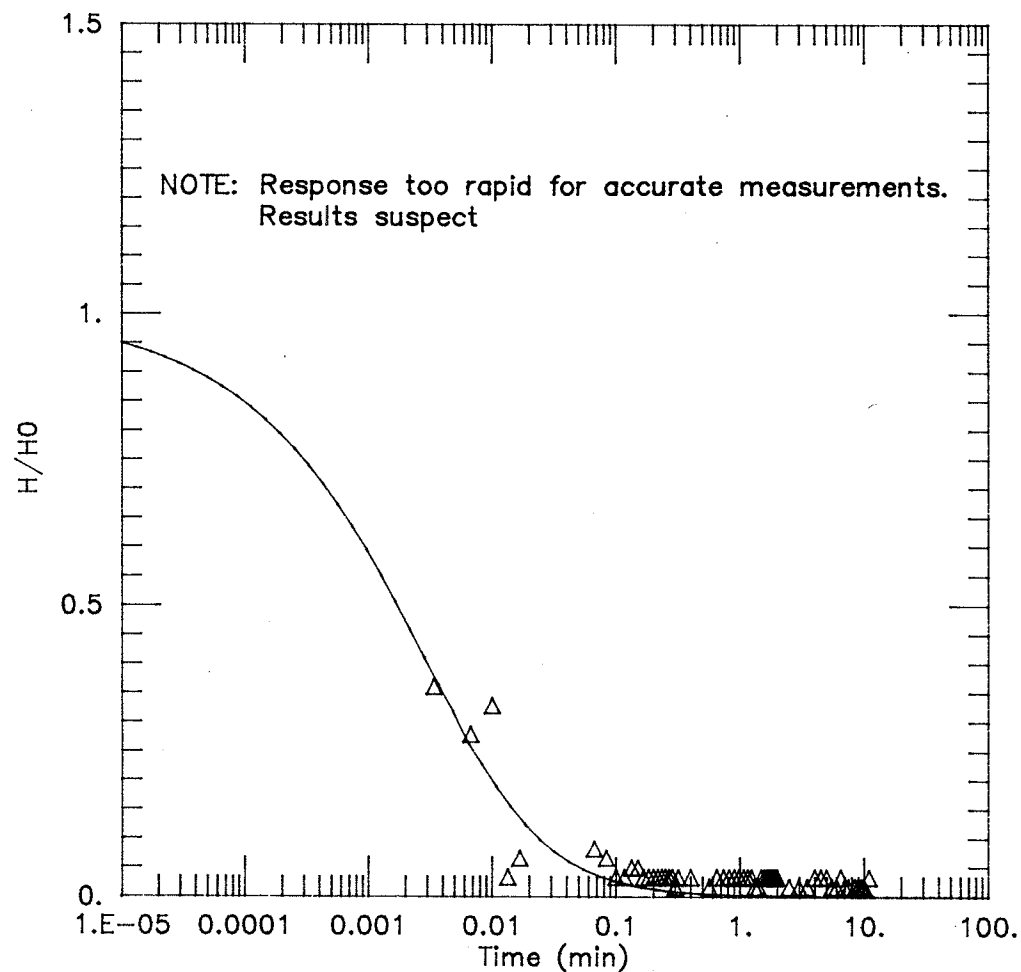
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-2B Falling Head Test



DATA SET:

oba2bfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/25/91

ESTIMATED PARAMETERS:

$T = 2.901 \text{ ft}^2/\text{min}$

$S = 0.5$

TEST DATA:

$H_0 = 0.61 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

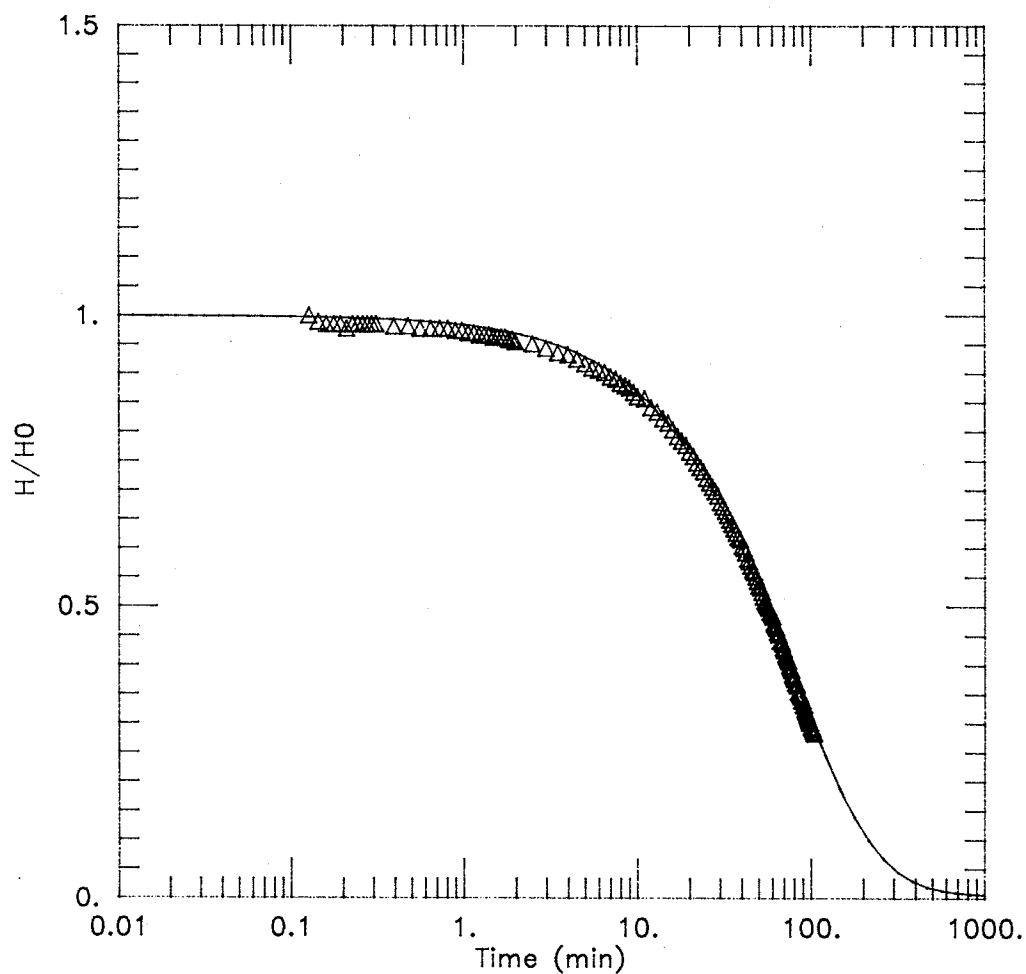
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-3B Falling Head Test



DATA SET:

oba3bfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/25/91

ESTIMATED PARAMETERS:

$T = 0.001595 \text{ ft}^2/\text{min}$

$S = 4.4286\text{E-}08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

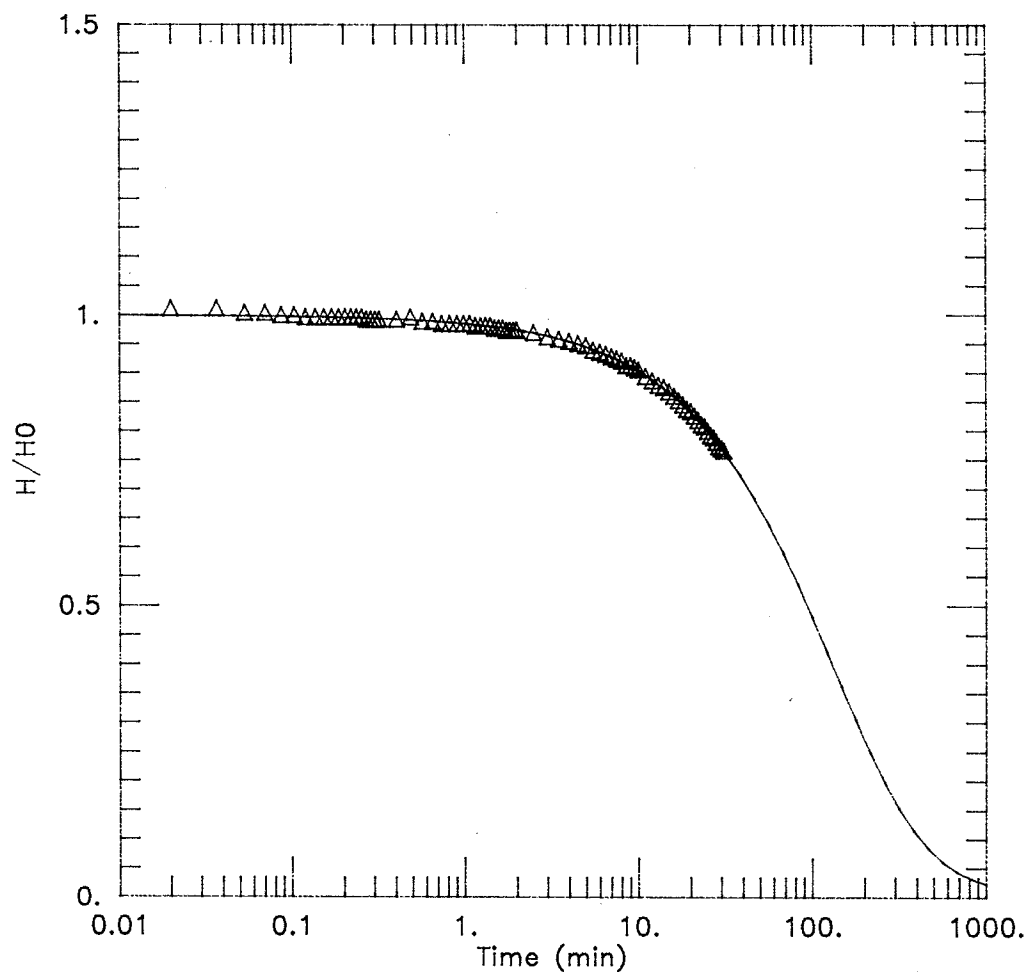
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-3B Rising Head Test



DATA SET:

oba3bris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/25/91

ESTIMATED PARAMETERS:

$T = 0.000488 \text{ ft}^2/\text{min}$

$S = 0.0001726$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

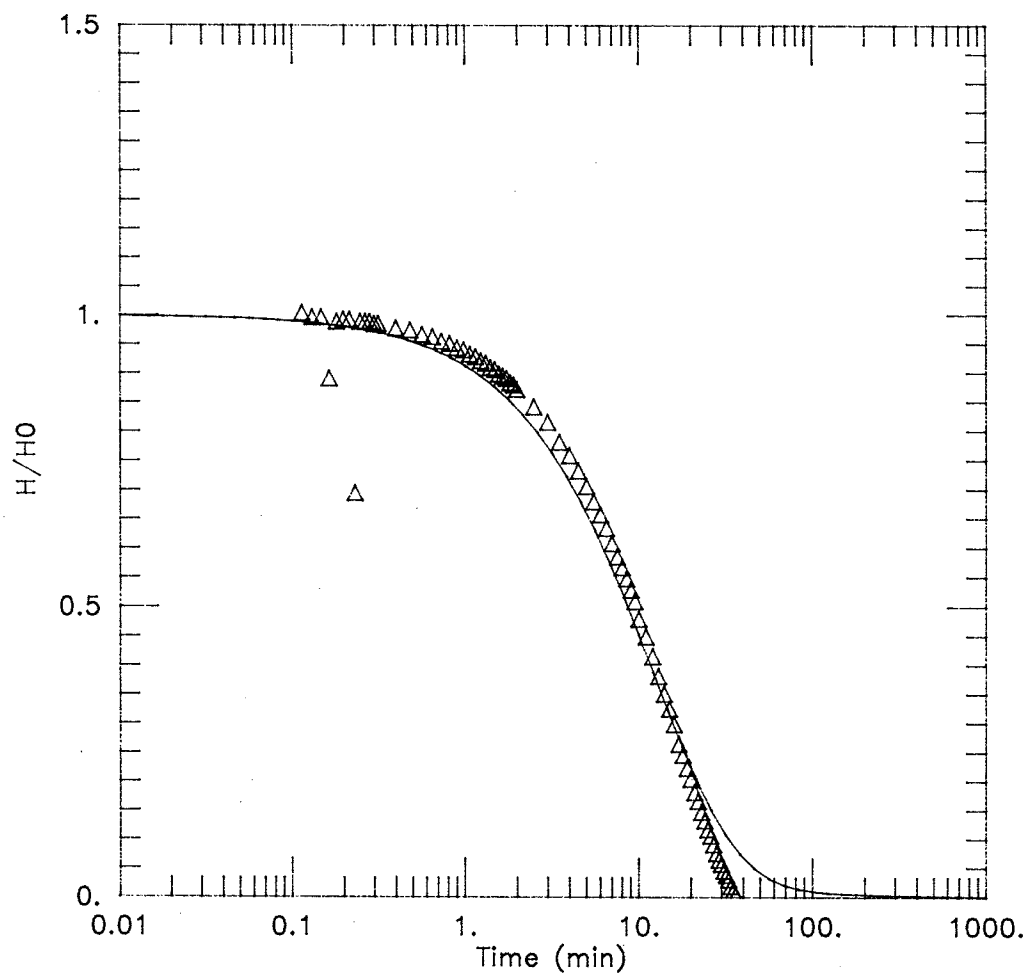
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-4B Falling Head Test



DATA SET:

oba4bfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/23/91

ESTIMATED PARAMETERS:

$T = 0.01109 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

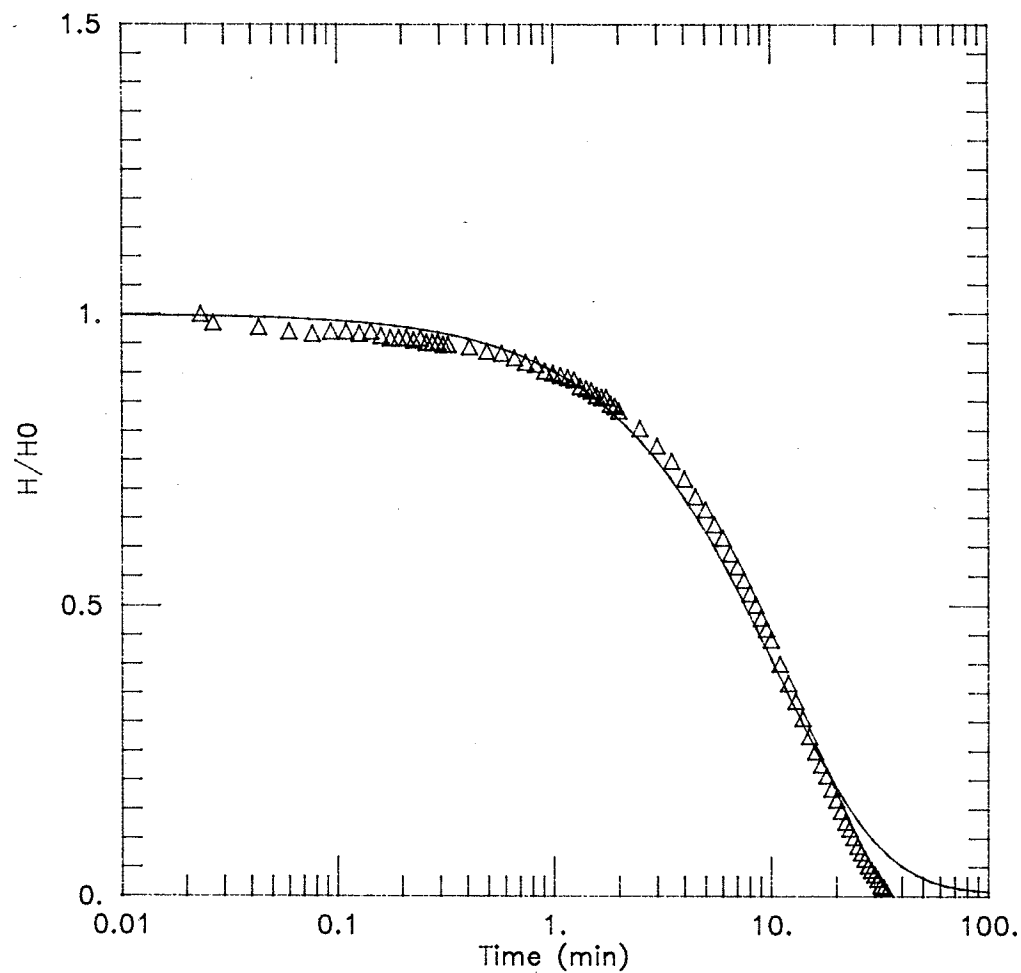
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-4B Rising Head Test



DATA SET:

oba4bris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/23/91

ESTIMATED PARAMETERS:

$T = 0.01261 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

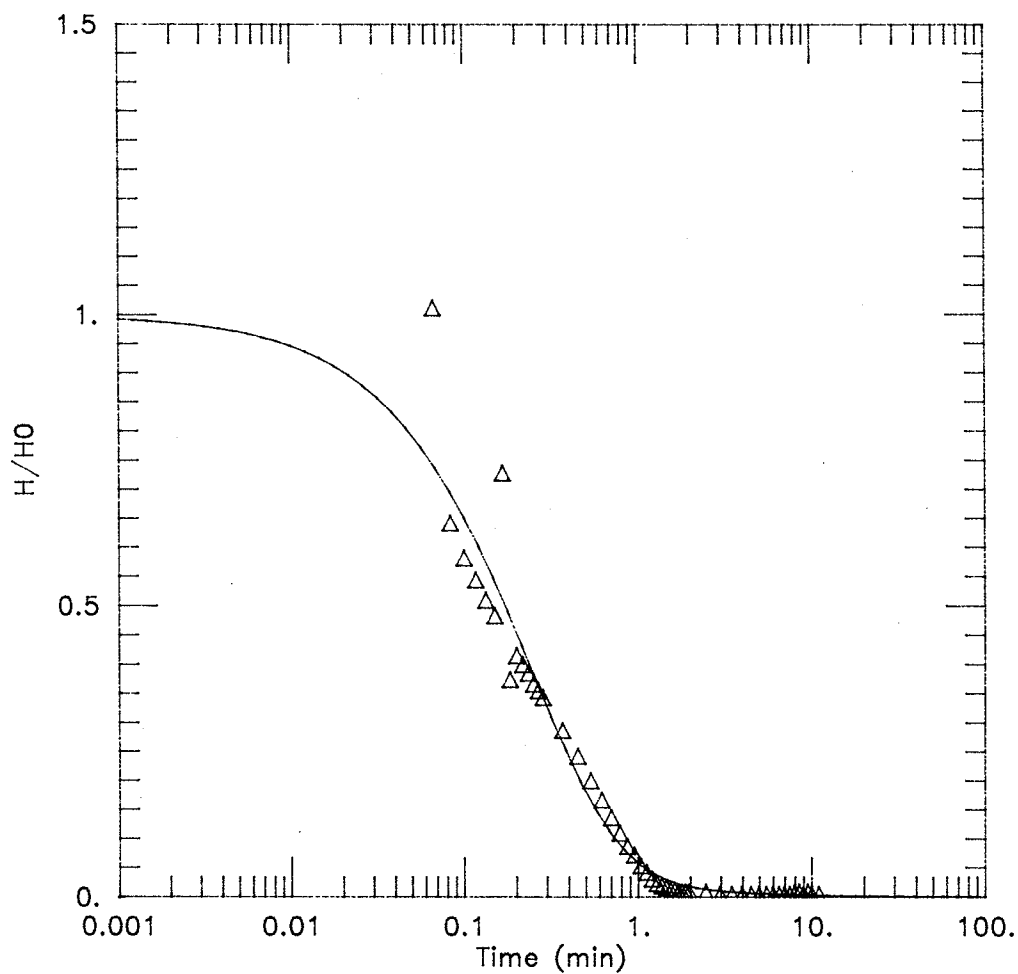
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-5B Falling Head Test



DATA SET:

oba5bfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 0.3181 \text{ ft}^2/\text{min}$

$S = 3.0035\text{E-}05$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

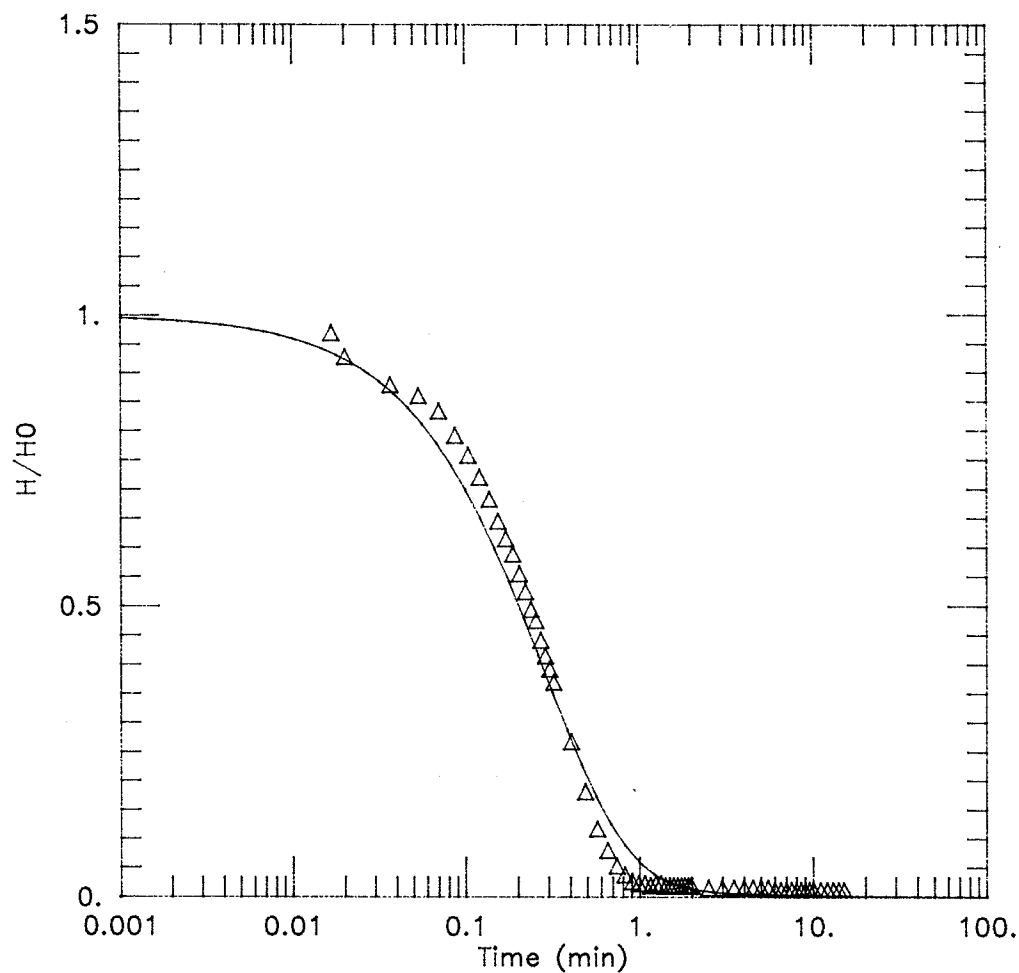
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-5B Rising Head Test



DATA SET:

oba5bris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 0.4738 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

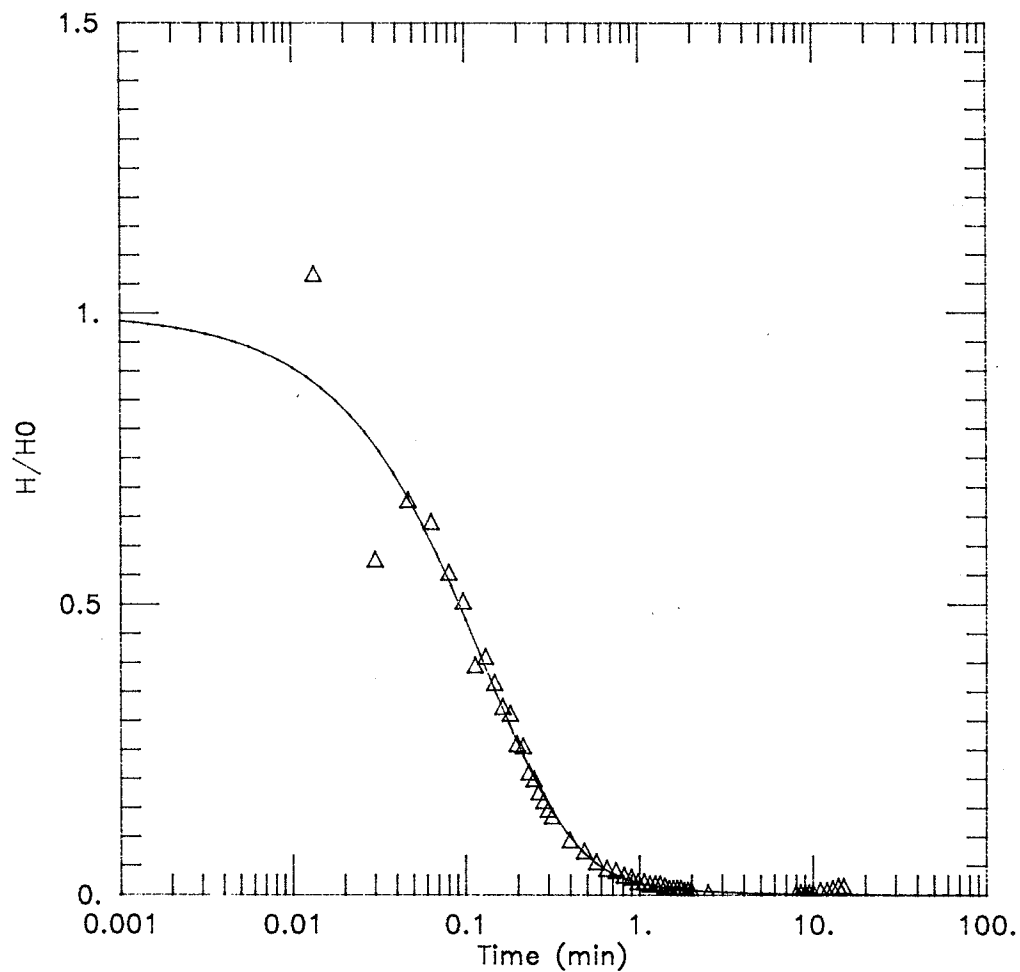
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-6B Falling Head Test



DATA SET:

oba6bfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/23/91

ESTIMATED PARAMETERS:

$T = 0.5667 \text{ ft}^2/\text{min}$

$S = 5.1073\text{E-}05$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

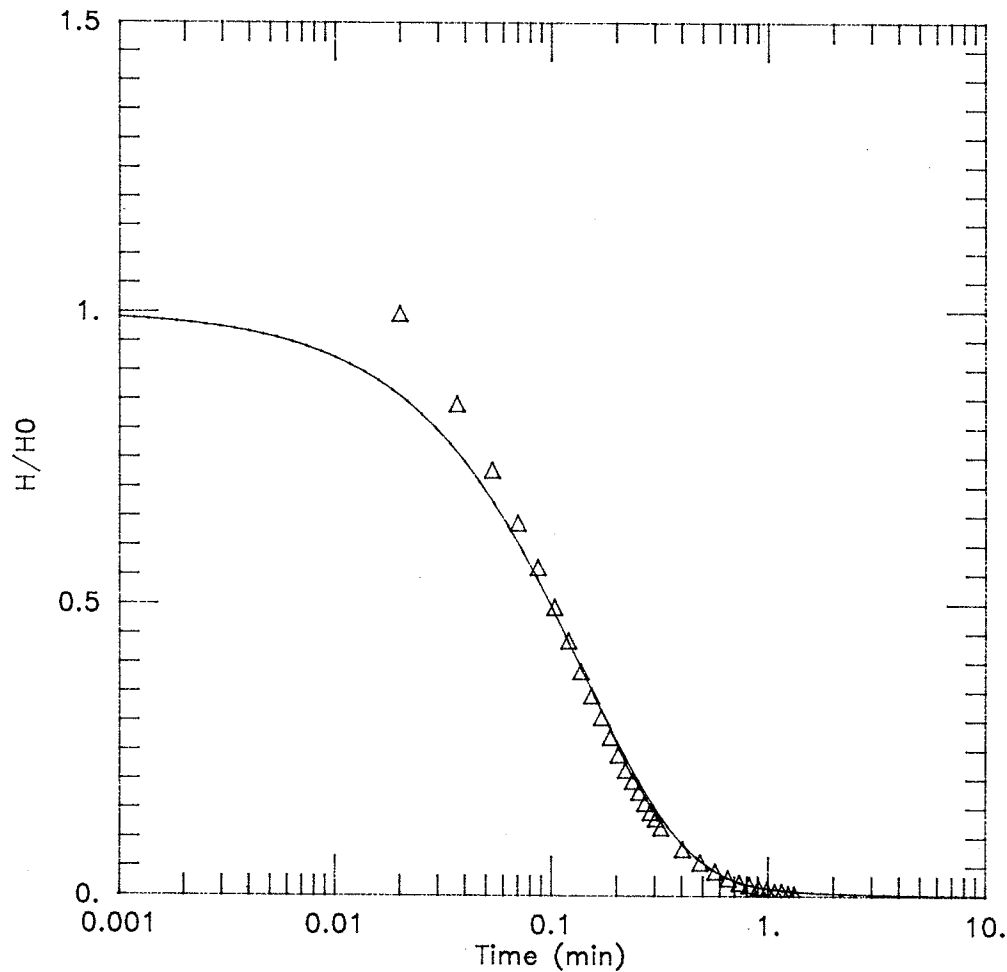
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-6B Rising Head Test



DATA SET:

oba6bris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/23/91

ESTIMATED PARAMETERS:

$T = 0.9718 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$rc = 0.1667 \text{ ft}$

$rw = 0.1667 \text{ ft}$

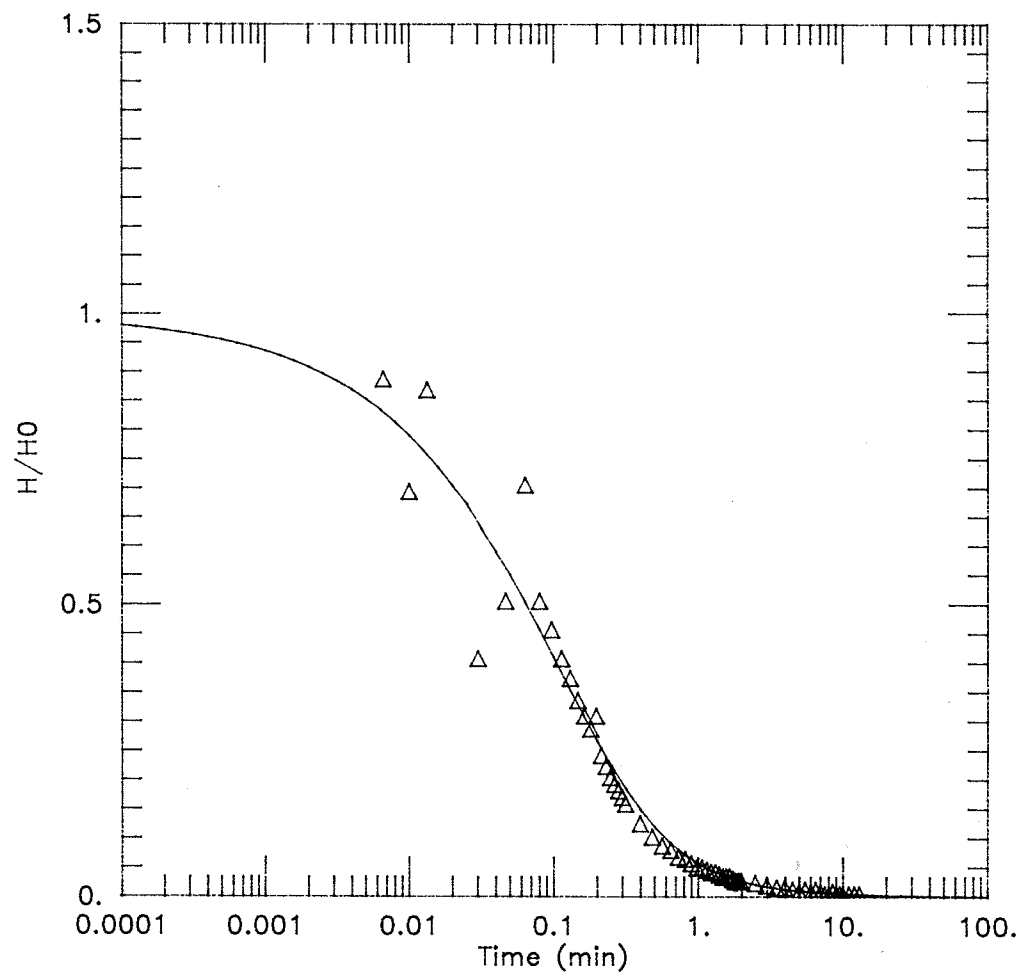
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-7B Falling Head Test



DATA SET:

oba7bfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 0.1568 \text{ ft}^2/\text{min}$

$S = 0.1364$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

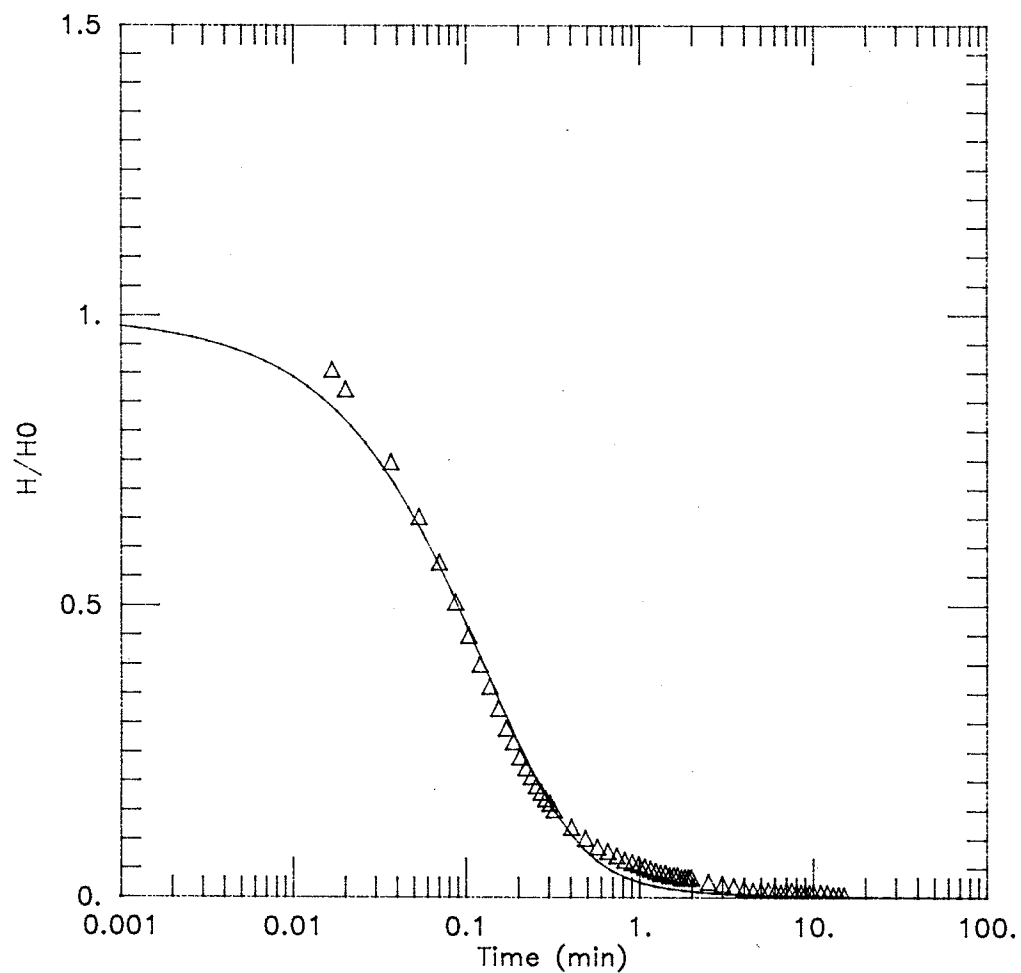
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-7B Rising Head Test



DATA SET:

oba7bris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 0.4264 \text{ ft}^2/\text{min}$

$S = 0.0006986$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

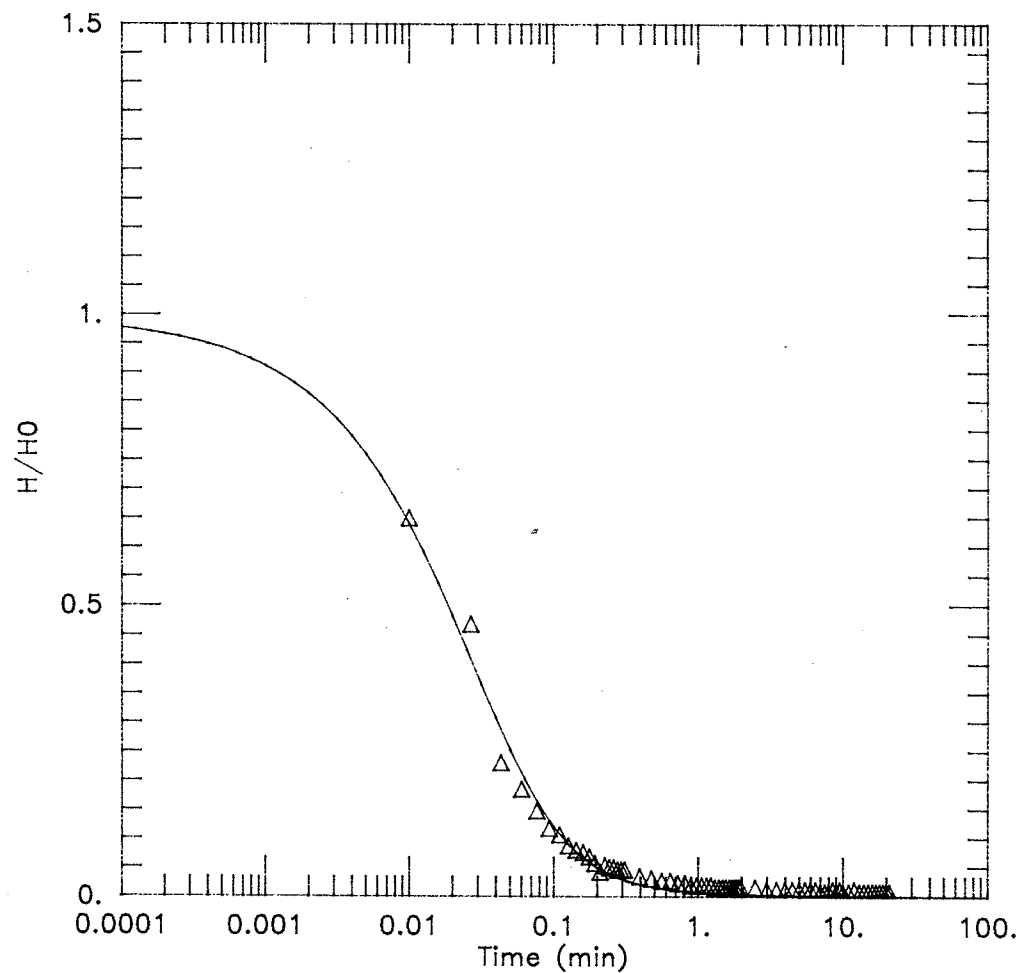
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-8B Falling Head Test



DATA SET:

oba8bfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$T = 1.098 \text{ ft}^2/\text{min}$

$S = 0.01865$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

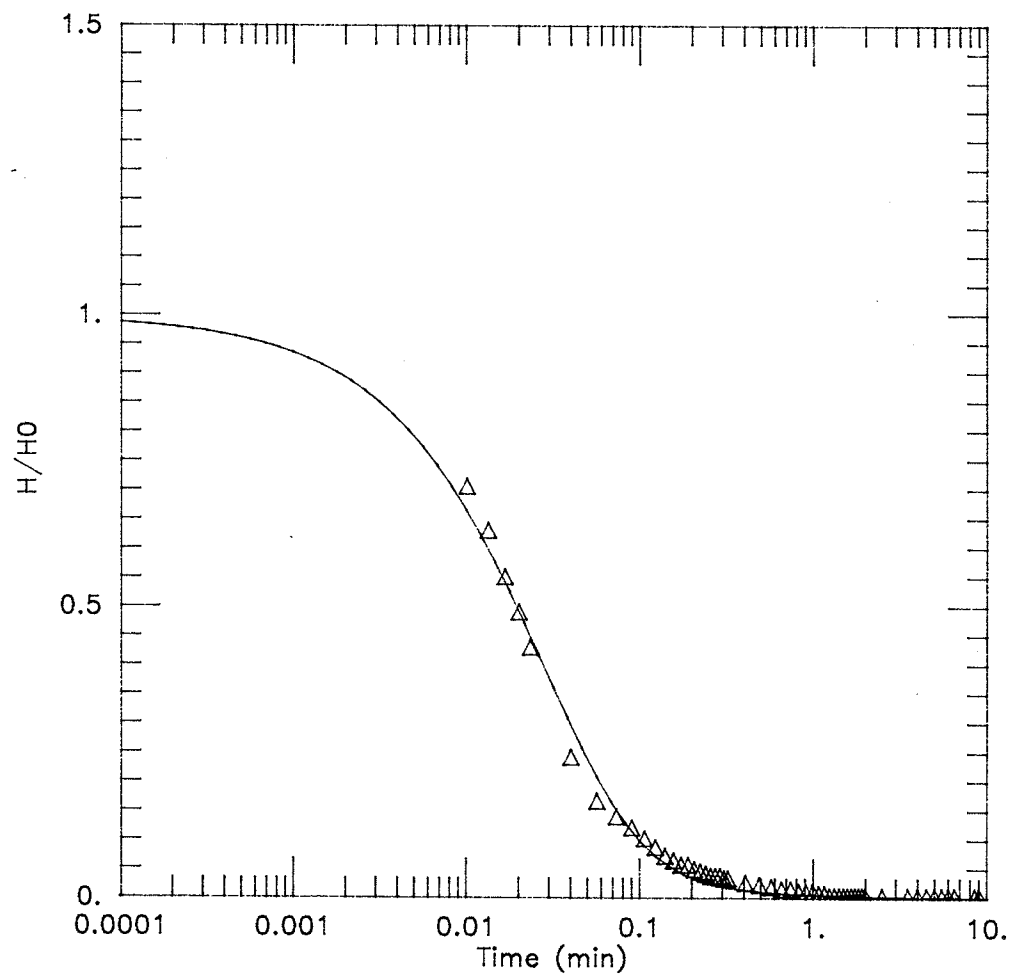
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-8B Rising Head Test



DATA SET:

oba8bris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$T = 1.641 \text{ ft}^2/\text{min}$

$S = 0.002208$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

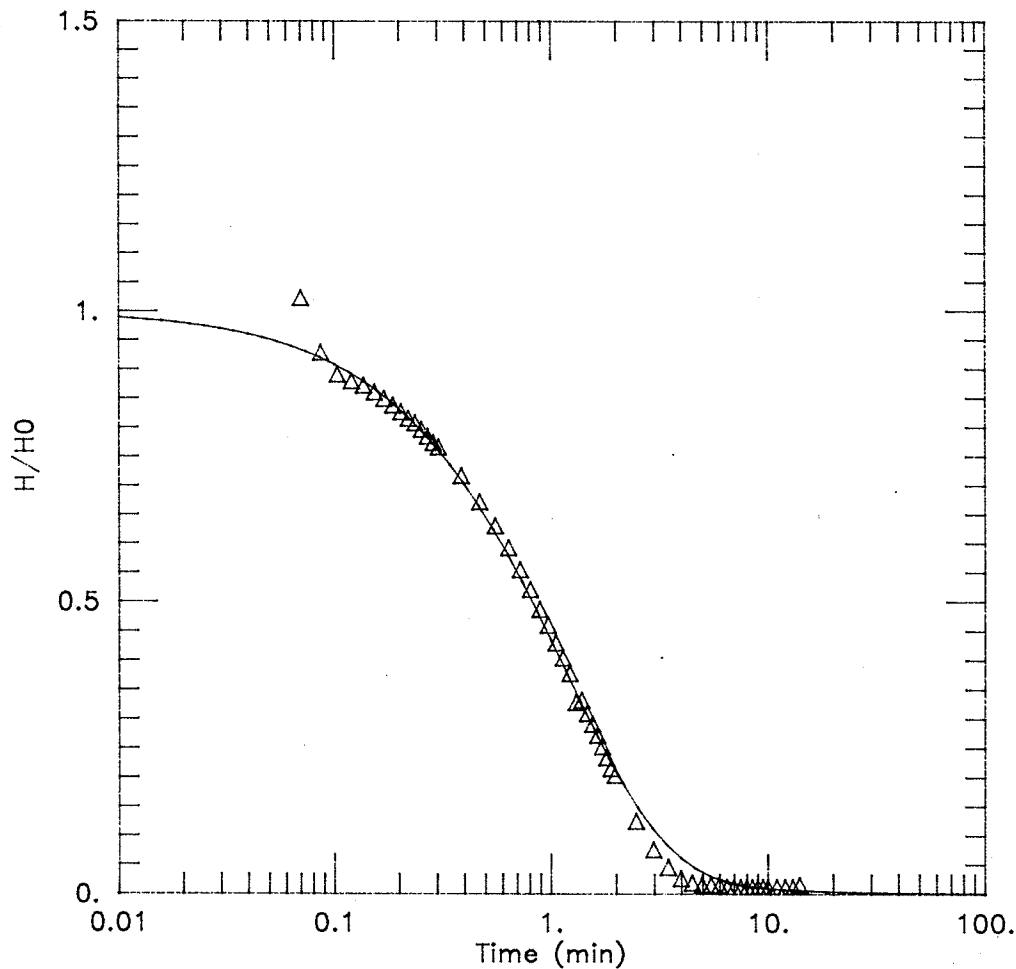
Woodward--Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-1C Falling Head Test



DATA SET:

oba1cfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$T = 0.1168 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

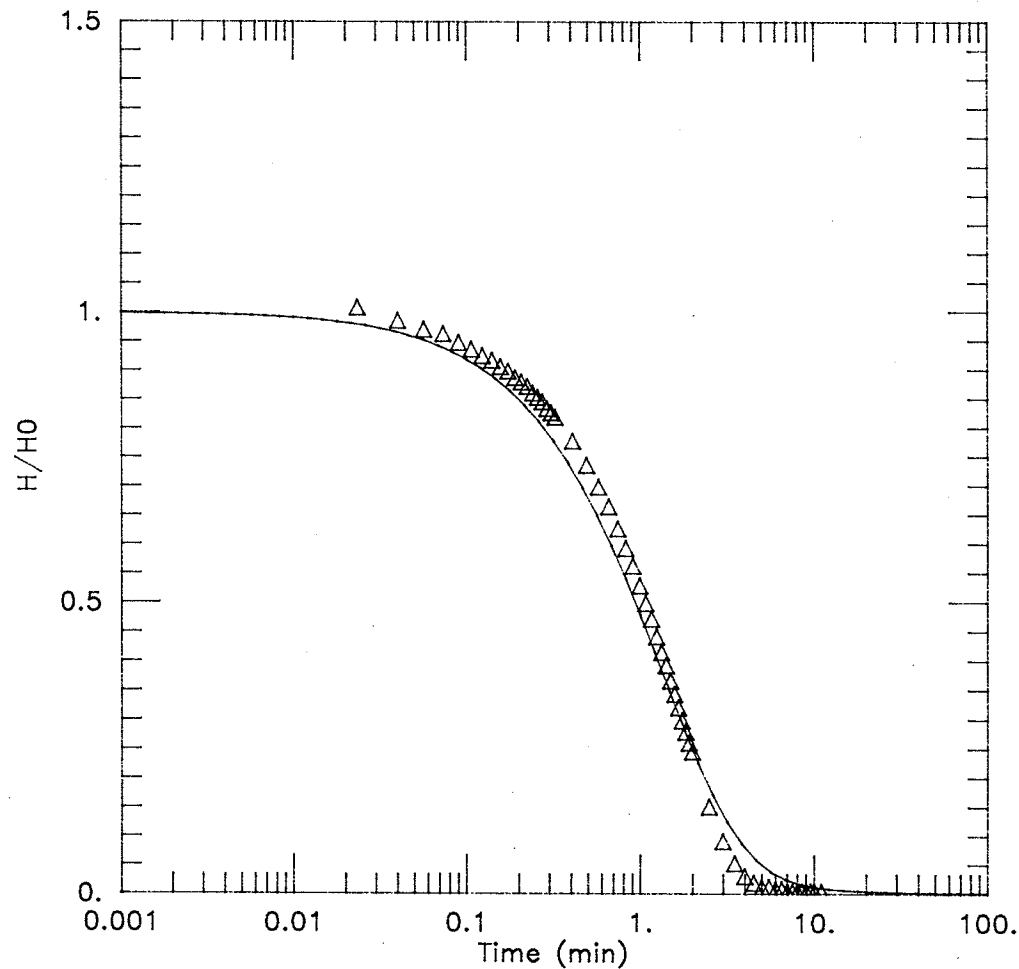
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-1C Rising Head Test



DATA SET:

oba1cris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$T = 0.1024 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

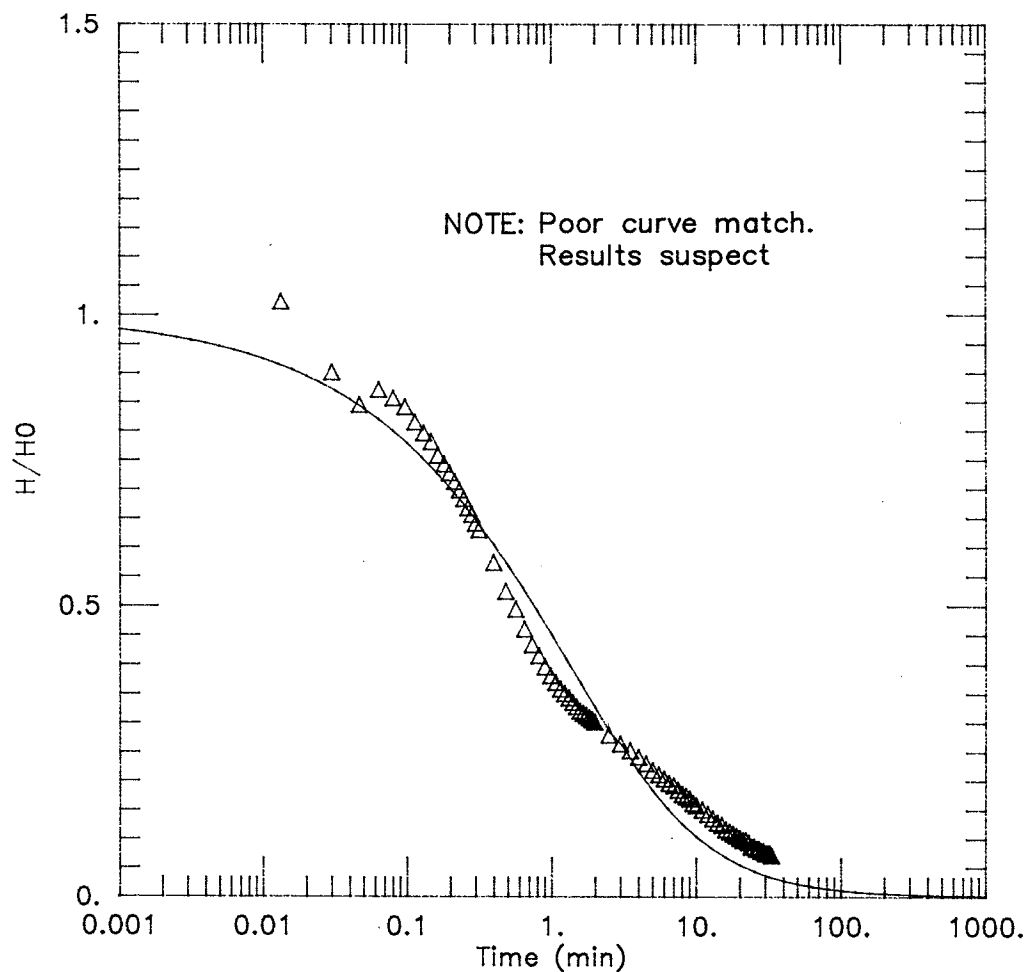
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-2C Falling Head Test



DATA SET:

oba2cfa1.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 0.006553 \text{ ft}^2/\text{min}$

$S = 0.5$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

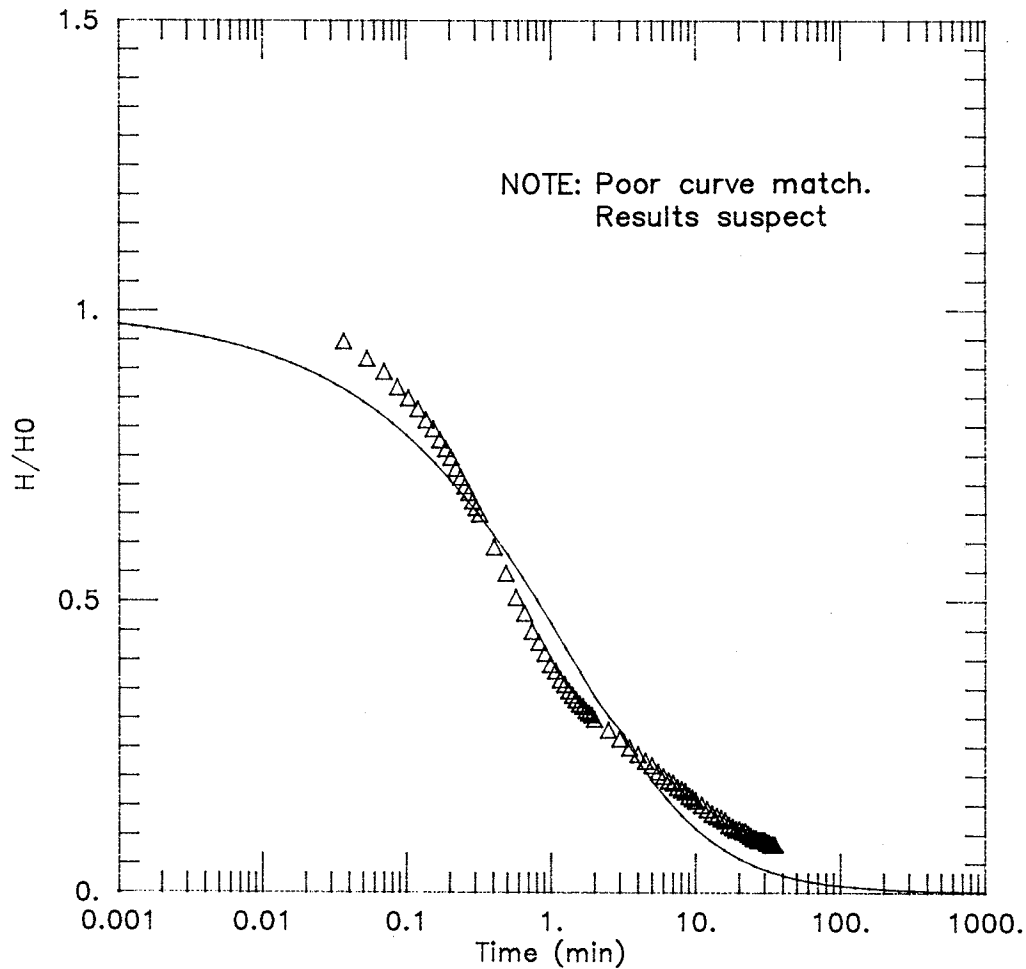
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-2C Rising Head Test



DATA SET:

oba2cris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 0.006147 \text{ ft}^2/\text{min}$

$S = 0.5$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

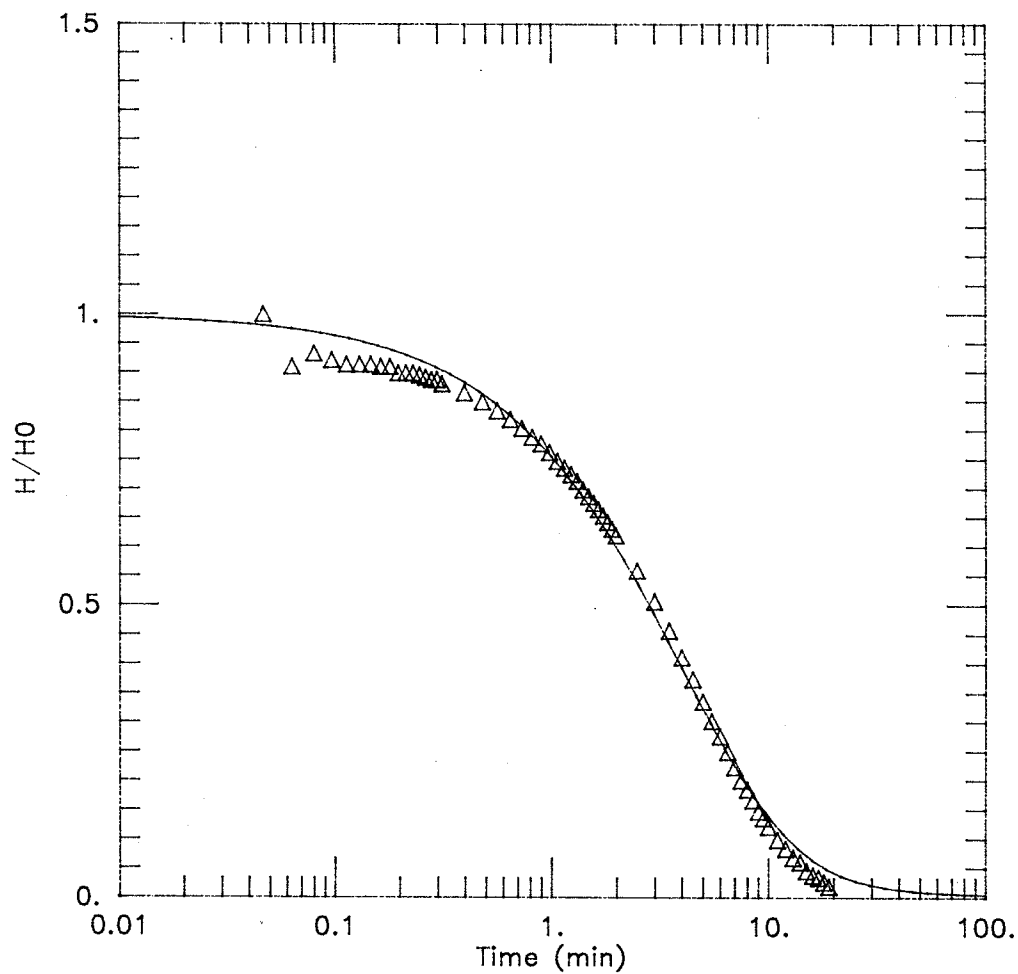
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-3C Falling Head Test



DATA SET:

oba3cfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/25/91

ESTIMATED PARAMETERS:

$T = 0.01783 \text{ ft}^2/\text{min}$

$S = 7.1163\text{E-}05$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

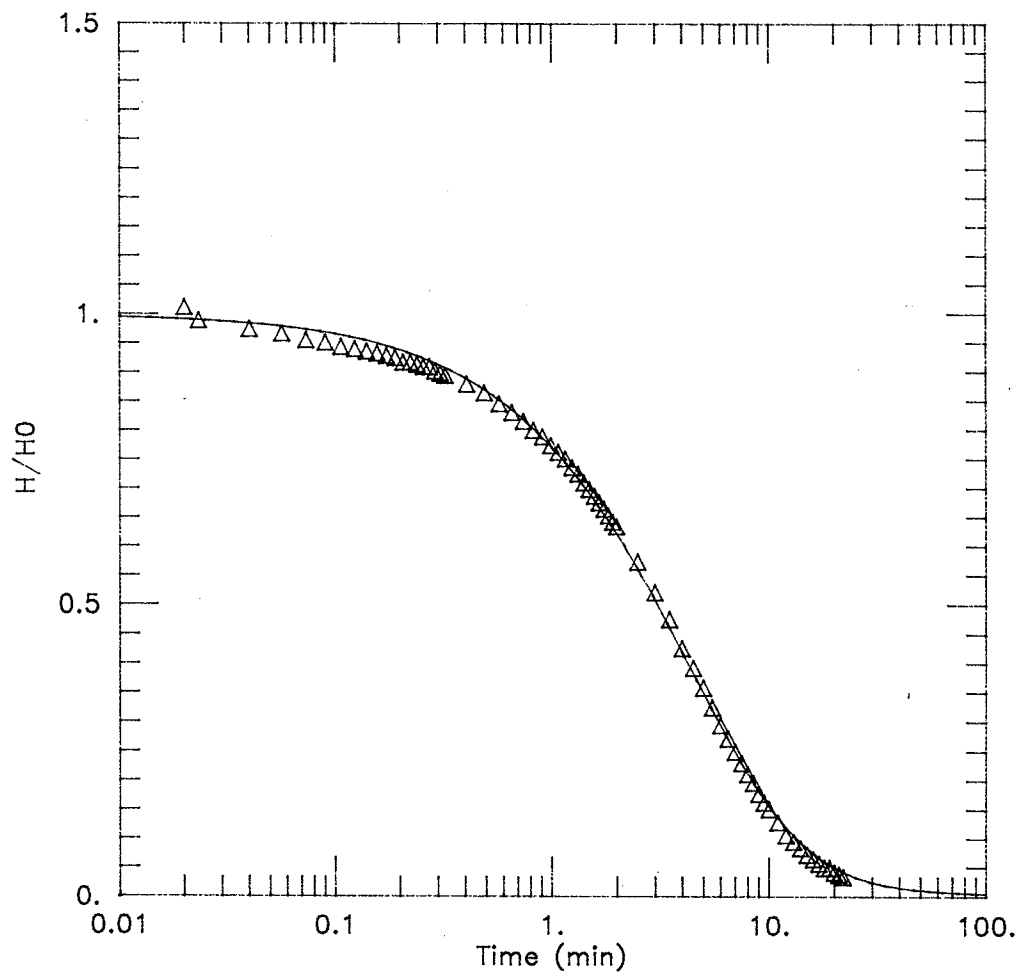
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-3C Rising Head Test



DATA SET:

oba3cris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/25/91

ESTIMATED PARAMETERS:

$T = 0.01638 \text{ ft}^2/\text{min}$

$S = 6.9406\text{E-}05$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

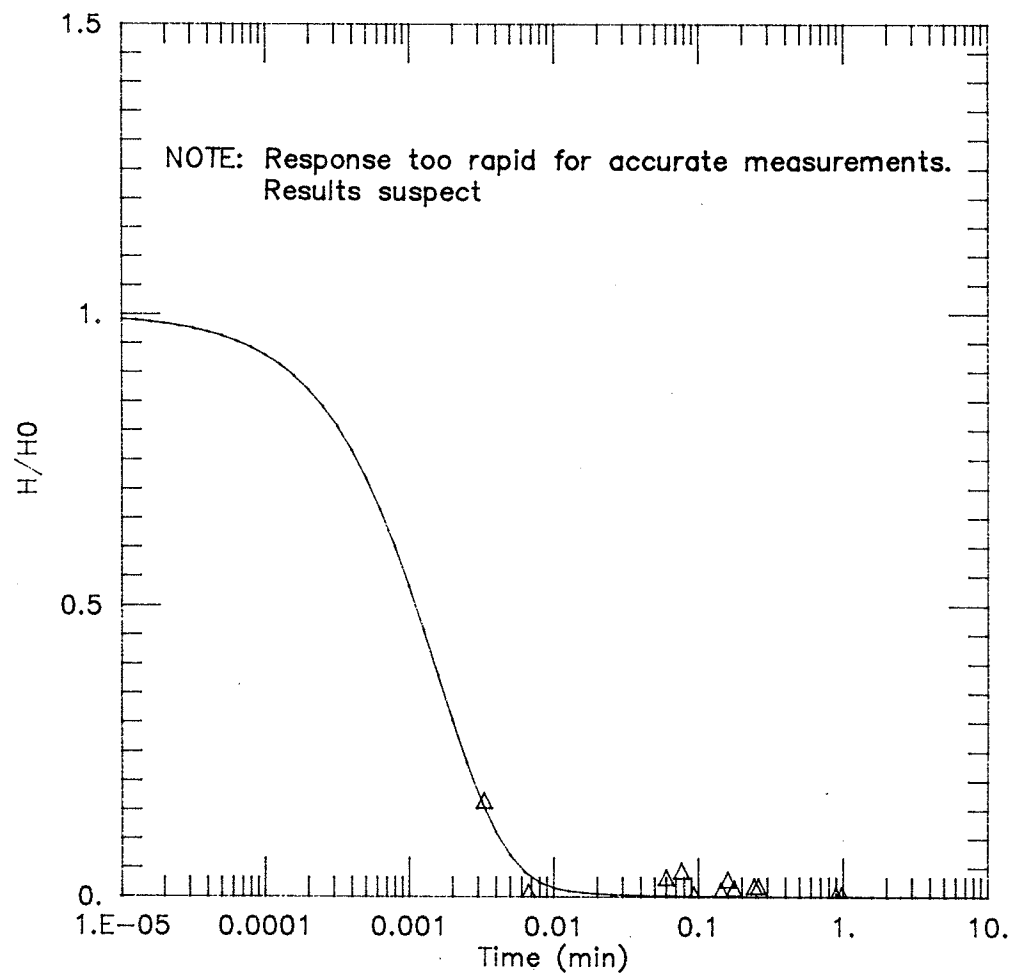
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-4C Falling Head Test



DATA SET:

oba4cfa1.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/23/91

ESTIMATED PARAMETERS:

$T = 86.47 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

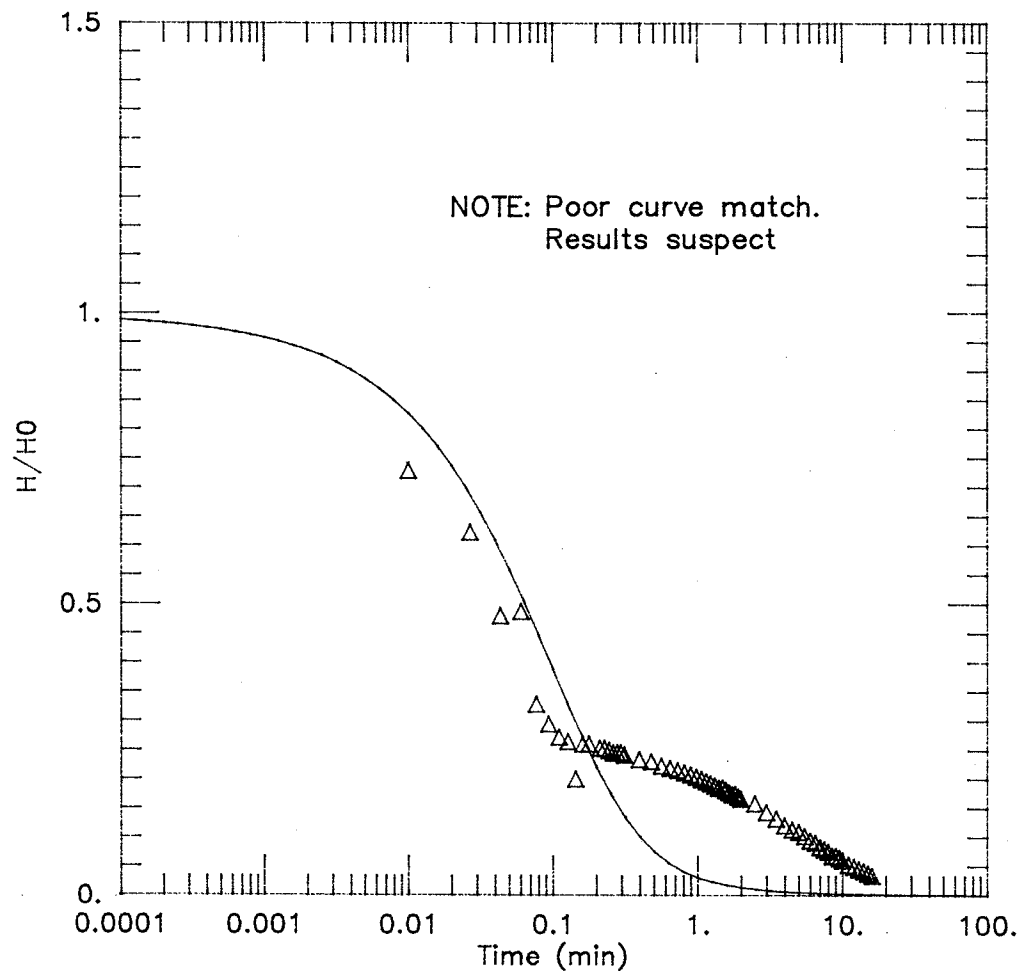
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-5C Falling Head Test



DATA SET:
oba5cfal.dat
01/06/92

AQUIFER TYPE:
Confined
SOLUTION METHOD:
Cooper et al.
TEST DATE:
1/24/91

ESTIMATED PARAMETERS:
 $T = 0.314 \text{ ft}^2/\text{min}$
 $S = 0.01963$

TEST DATA:
 $H_0 = 2.65 \text{ ft}$
 $r_c = 0.1667 \text{ ft}$
 $r_w = 0.1667 \text{ ft}$

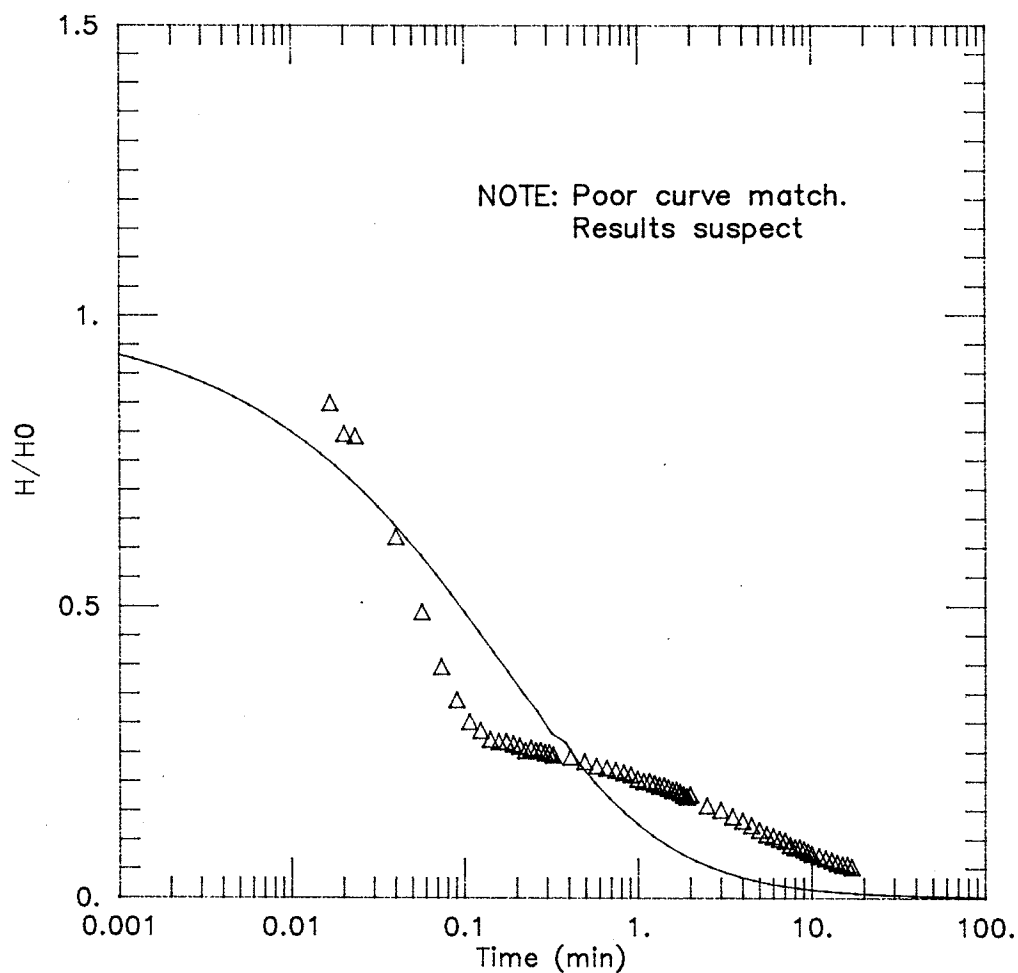
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-5C Rising Head Test



DATA SET:

oba5cris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 0.05248 \text{ ft}^2/\text{min}$

$S = 0.5$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

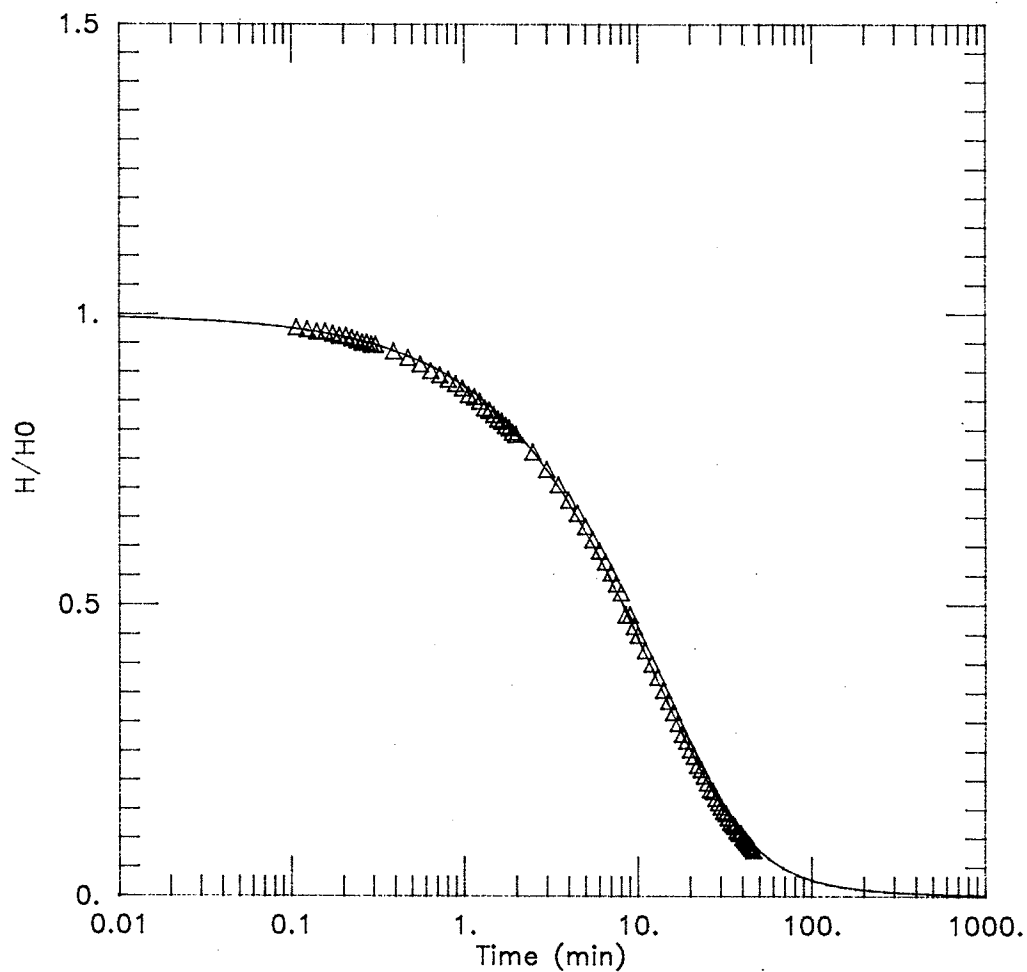
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-6C Falling Head Test



DATA SET:
oba6cfal.dat
01/06/92

AQUIFER TYPE:
Confined
SOLUTION METHOD:
Cooper et al.
TEST DATE:
1/23/91

ESTIMATED PARAMETERS:
 $T = 0.003753 \text{ ft}^2/\text{min}$
 $S = 0.002809$

TEST DATA:
 $H_0 = 2.65 \text{ ft}$
 $r_c = 0.1667 \text{ ft}$
 $r_w = 0.1667 \text{ ft}$

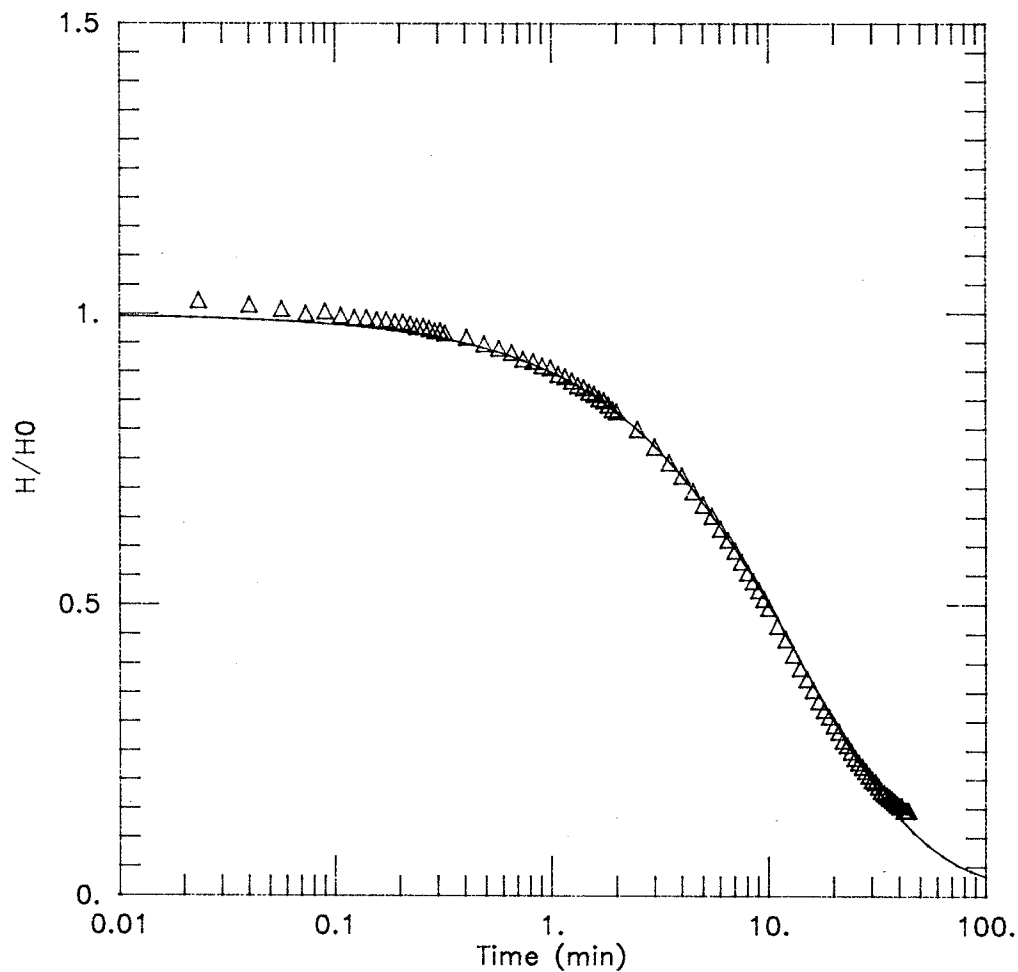
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-6C Rising Head Test



DATA SET:

oba6cris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/23/91

ESTIMATED PARAMETERS:

$T = 0.003416 \text{ ft}^2/\text{min}$

$S = 0.001443$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

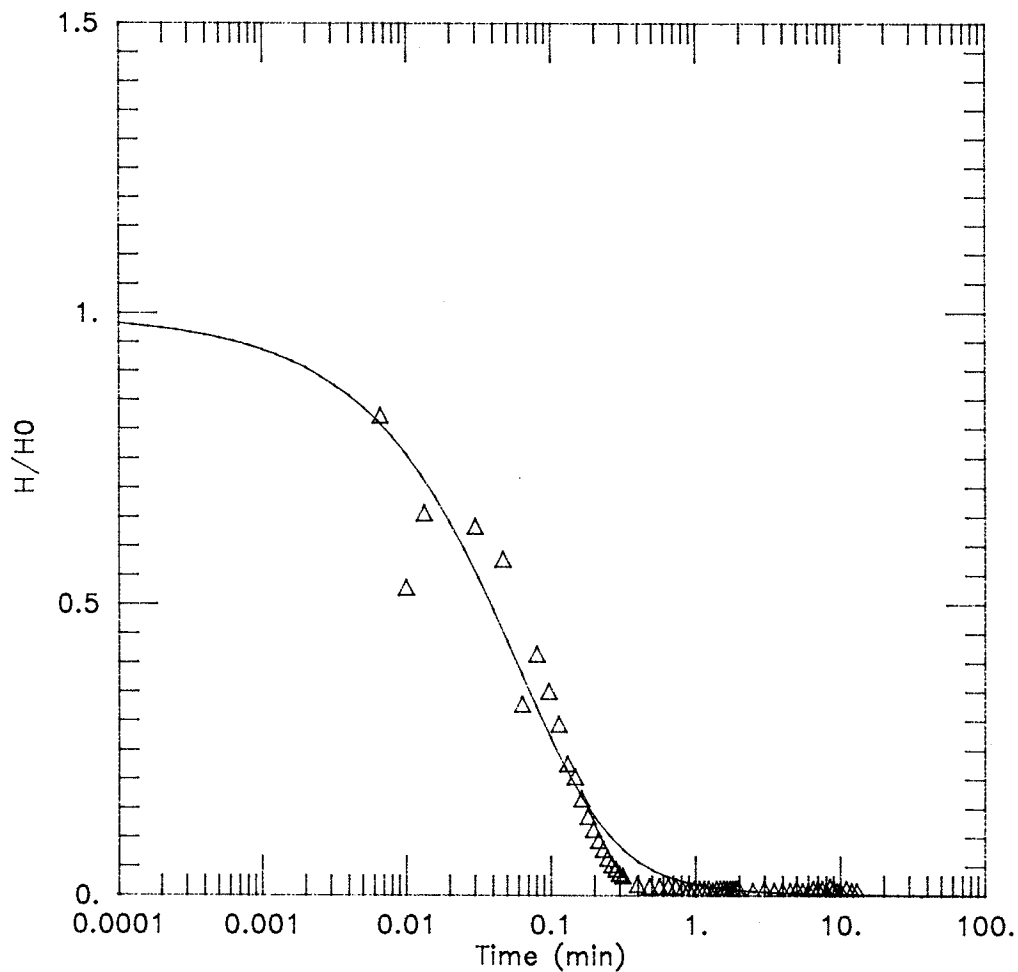
Woodward--Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-7C Falling Head Test



DATA SET:

oba7cfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 0.4553 \text{ ft}^2/\text{min}$

$S = 0.03187$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

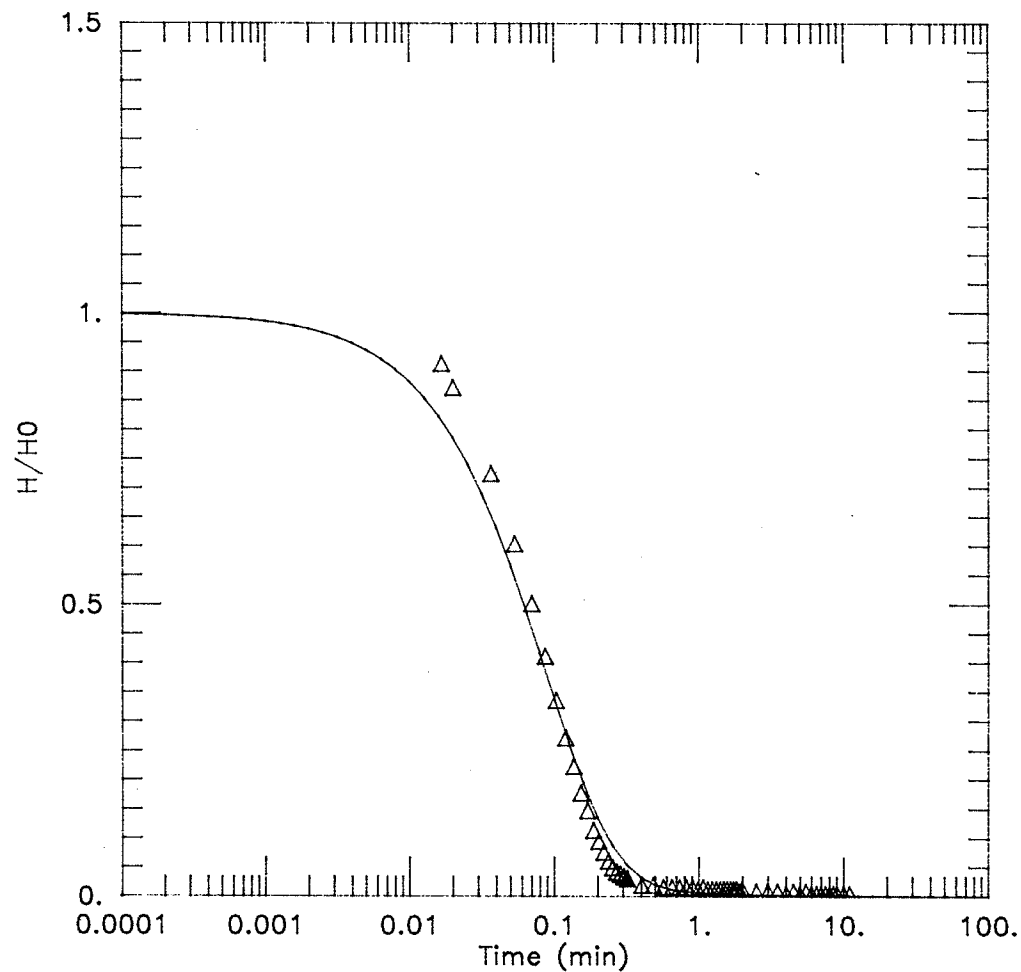
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-7C Rising Head Test



DATA SET:

oba7cris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/24/91

ESTIMATED PARAMETERS:

$T = 1.552 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

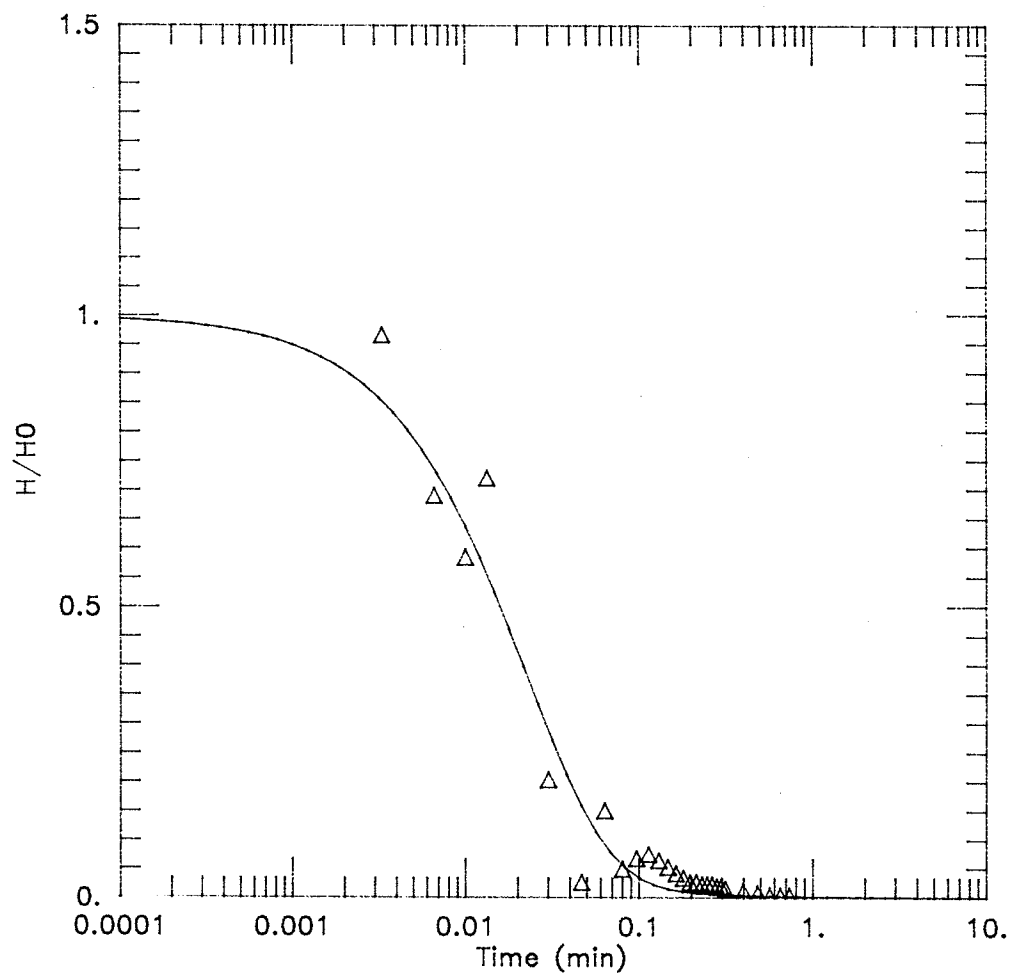
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-8C Falling Head Test



DATA SET:

oba8cfal.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$T = 6.037 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

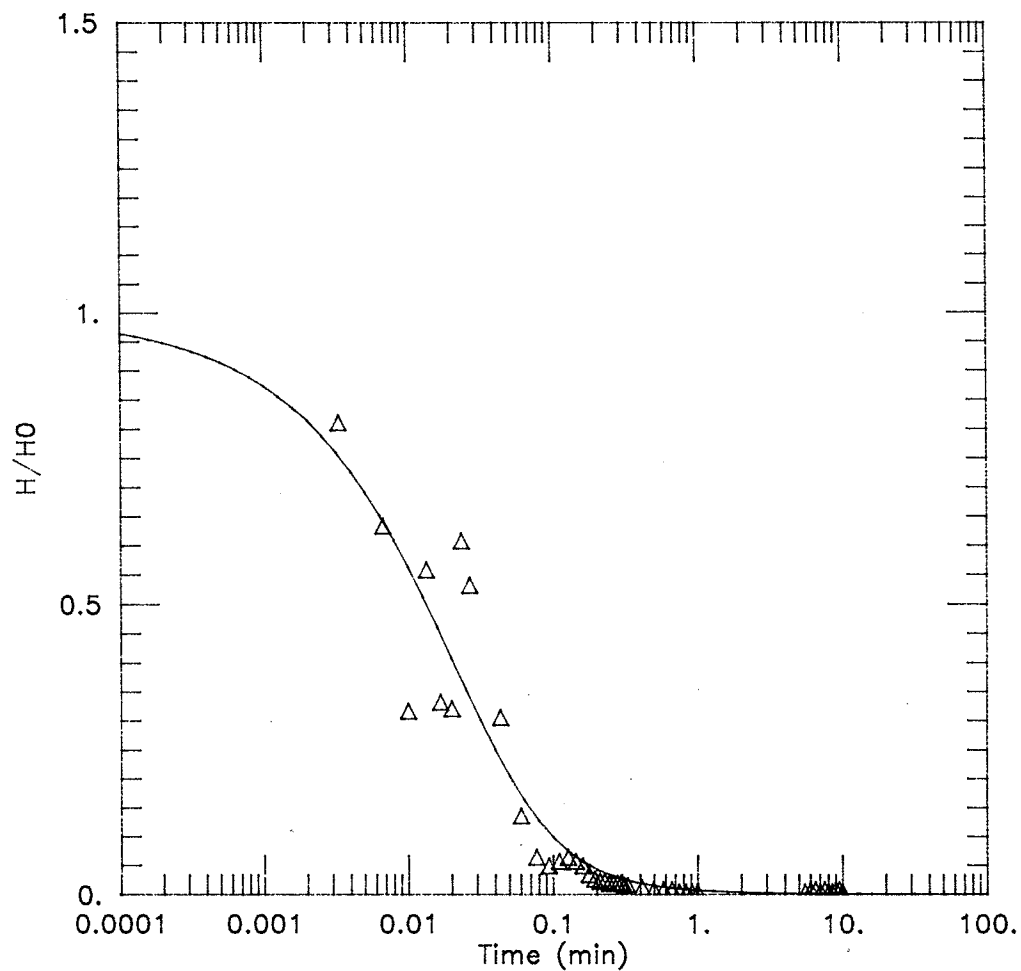
Woodward-Clyde Consultants

Client: Olin Chemicals

Project No.: 88C2346-3

Location: Niagara Plant RFI

OBA-8C Rising Head Test



DATA SET:

oba8cris.dat

01/06/92

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

1/22/91

ESTIMATED PARAMETERS:

$T = 1.103 \text{ ft}^2/\text{min}$

$S = 0.05386$

TEST DATA:

$H_0 = 2.65 \text{ ft}$

$r_c = 0.1667 \text{ ft}$

$r_w = 0.1667 \text{ ft}$

APPENDIX D

**ANALYTICAL DATA QUALITY ASSESSMENT AND VALIDATION
OLIN BUFFALO AVENUE PLANT
RCRA FACILITY INVESTIGATION**

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INTRODUCTION

An assessment and validation of the analytical data resulting from the RCRA Facility Investigation (RFI) at the Olin Corporation facility in Niagara Falls, New York is presented herein. Groundwater and soil samples were collected in September and October 1991, by Woodward-Clyde Consultants (WCC), as representatives of Olin Corporation (Olin). Analytical services were provided by Recra Environmental Inc. (Recra) of Tonawanda, New York. The samples submitted for analyses consisted of the following:

Matrix	Investigative Samples	Field Duplicate Samples	Rinsate Blank Samples	Field Blank Samples	Trip Blank Samples	Total
Groundwater⁽¹⁾						
TCL-VOCs	27	4	3	2	2	38
TCL-BNAs	27	4	3	--	--	34
TCL-Pesticides	27	4	3	--	--	34
Mercury	27	4	3	--	--	34
Methanol	27	4	3	2	2	38
Soil						
TCL-VOCs	8	1	1	--	--	10
TCL-BNAs	8	1	1	--	--	10
TCL-Pesticides	8	1	1	--	--	10
Mercury	46	5	5	--	--	56
TCLP - Mercury	46	5	5	--	--	56

(1) Includes one non-aqueous phase liquid (NAPL) sample.

Samples collected and submitted to Recra were analyzed in accordance with the following methods:

Matrix	Parameter	Analytical Method	Method Reference
Groundwater	TCL-VOCs, BNAs, Pesticides/PCBs	USEPA CLP	1
	Mercury	USEPA CLP	2
	Methanol	8015	3
Soils	TCL-VOCs, BNAs, Pesticides/PCBs	USEPA CLP	1
	TCLP extraction	1311	4
	Mercury/TCLP Mercury	USEPA CLP	2

Method references:

1. "USEPA Contract Laboratory Program (USEPA CLP) Statement of Work (SOW) for Organics Analysis". February 1988.
2. "USEPA Contract Laboratory Program (USEPA CLP) Statement of Work (SOW) for Inorganics Analysis". July 1985.
3. "Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition". September 1986.
4. 40 CFR Part 261 Appendix II, June 1990.

The QA/QC criteria by which these data have been assessed are presented in detail in the method references and are summarized in the following documents:

1. "RCRA Facility Investigation Work Plan: Appendix A
Data Collection Quality Assurance Plan (DQAP)
Olin Corporation Buffalo Avenue Plants
Niagara Falls, New York". January 1990.
2. "Laboratory Data Validation Functional Guidelines for Evaluating Organics Analysis", February 1, 1988. Prepared by the USEPA Data Review Work Group.

3. "Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis", July 1, 1988. Prepared by the USEPA Data Review Group.

The "Guidelines" presented above were used as a basis for the data quality assessment and validation. Assessment of analytical and field data included the following: checks for data consistency with respect to comparability of field duplicate sample analyses; potential sample contamination as indicated by results of rinsate blank sample analyses; laboratory QA procedure conformance to analytical methods; adherence to accuracy and precision criteria; transmittal errors; and anomalously high or low parameter values. In addition, data were checked for legibility, completeness, correctness and the presence of requisite dates, initials and signatures.

It should be noted that during the initial analyses of many samples, several compounds exceeded the analyzing instrument linear range and therefore required subsequent dilutions. To report data with the lowest detection limits, the initial analytical data is reported in the RFI Report for compounds which did not exceed the instrument linear range. The elevated detection limit results for subsequent dilutions for compounds which did not exceed the instrument linear range in the initial analyses were not subjected to data qualification. Therefore, only data that were used from either the initial or diluted analyses were subjected to data qualification in this document and are presented in the Olin RFI Report data summary tables. In this document, sample identifications followed by the suffix DI refer to the diluted sample results which required qualification.

The following sections present the results of the data quality assessment and validation.

2.0

ORGANICS DATA

2.1 SAMPLE HOLDING TIMES

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc.. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded should be qualified as estimated, "J". The non-detects (sample quantitation limits) should be flagged as estimated "UJ", or unusable "R", if the holding times are grossly exceeded.

Sample holding time requirements for groundwater and soil samples were those prescribed by the analytical methods and are presented in the DQAP.

The following groundwater samples exceeded their prescribed holding times:

Sample	Fraction	Actual Holding Time	Required Holding Time	Required Data Qualification
OBA-3DDI (Dup. of 3A)	BNA	39 days from VTSR to extraction	5 days	J/UJ
OBA-5ARe	BNA	13 days from VTSR to extraction	5 days	J/UJ
OBA-5ARe- DI	BNA	13 days from VTSR to extraction	5 days	J/UJ
OBA-5ARe- Re	BNA	13 days from VTSR to extraction	5 days	J/UJ

Sample	Fraction	Actual Holding Time	Required Holding Time	Required Data Qualification
OBA-5DRe (Dup of 5A)	BNA	13 days from VTSR to extraction	5 days	J/UJ
OBA-5DRe-DI	BNA	13 days from VTSR to extraction	5 days	J/UJ

DI - diluted result

Re - reanalyzed

VTSR - verified time of sample receipt

Review of the data showed that OBA-5A and OBA-5D were reanalyzed for BNAs due to low surrogate recoveries. The reanalyses of both samples and subsequent dilutions showed the same surrogate recoveries. Therefore, the results of the original analyses and original diluted analyses performed within holding time constraints were used rather than the reanalyses. Therefore, no qualification of OBA-5A and OBA-5D was required based on holding time exceedances.

Results for OBA-3DDI (Dup of 3A) which were used included only those compounds which upon initial analyses, exceeded the instruments linear range. These compounds were 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene and 1,2,4-trichlorobenzene. Qualification of these data were required as follows:

Sample	Compound	ug/L	Qualified Conc. ug/L
OBA-3D DI	1,2-dichlorobenzene	370	370J
	1,3-dichlorobenzene	1400	1400J
	1,4-dichlorobenzene	320	320J
	1,2,4-trichlorobenzene	1700	1700J

J - estimated value

All soil samples were extracted and/or analyzed within their respective holding time requirements. Therefore, no qualification of the soil data was required based on holding time exceedances.

Sample holding times are summarized in Attachment 1.

2.2 SURROGATE SPIKE RECOVERIES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied in accordance with USEPA data validation guidelines.

Surrogate compounds required by the analytical protocols to be added to each sample prior to extraction and/or analyses included:

Fraction	Surrogate Compound
VOC	toluene-d8 bromofluorobenzene 1,2-trichloroethane-d4
B/N	nitrobenzene-d5
B/N	2-fluorobiphenyl
B/N	terphenyl
Acid	phenol-d5
Acid	2-fluorophenol
Acid	2,4,6-tribromophenol
Pesticide/ PCBs	dibutylchloroendate (DBC)
Methanol	methyl ethyl ketone (MEK)

Samples which showed surrogate spike recoveries below 10 percent required qualification as follows:

1. positive data - J (estimated)
2. non-detects - R (unusable)

Samples which showed surrogate spike recoveries outside control limits but greater than 10 percent required qualification as follows:

1. positive data - J (estimated)
2. non-detects - UJ (estimated quantitation limit)

USEPA validation guidelines allow one BNA surrogate compound spike recovery per fraction to be outside control limits, provided that the outlying recovery is above 10 percent.

All but two non-diluted samples analyzed for VOC's yielded surrogate spike recoveries within the method control limits. The non-diluted analyses of groundwater samples OBA-1C and OBA-8B reported 1,2-dichloroethane-d4 surrogate recoveries below the method control limits as shown below:

Matrix	Sample	Surrogate Compound	Percent Recovery	Control Limits (%)
Groundwater	OBA-1C	1,2-dichloroethane-d4	46	76-114
	OBA-8B	1,2-dichloroethane-d4	62	76-114

The subject samples required subsequent dilutions due to elevated concentrations of targeted compounds. The diluted sample analyses yielded acceptable VOC surrogate spike recoveries. Therefore, only the non-diluted VOC sample results reported and used for OBA-1C and OBA-8B required qualification as estimated (J for positive and UJ for non-detects). Qualification of samples OBA-1C and OBA-8B non-diluted VOC results due to outlying surrogate spike recoveries is reflected in the Olin RFI Report data summary tables.

Similarly, most non-diluted TCL-BNA analyses yielded no more than one outlying (but above 10 percent) surrogate spike recovery in either the base neutral or acid fraction. Surrogate recoveries for BNA samples requiring dilutions were not considered for qualification purposes due to the fact that their outlying surrogate spike recoveries more than likely resulted from the dilution process. The following samples yielded more than one base neutral or acid surrogate recovery outside control limits and less than 10 percent recovery:

Matrix	Sample	Surrogate Compound	Percent Recovery	Control Limits (%)
Groundwater	OBA-5A	All acid	0	--
Groundwater	OBA-5D	Phenol-d5	0	24-113
	(Dup of 5A)	2-fluorophenol	0	25-121
		2,4,6-tribromophenol	4	19-122

Both samples were re-extracted and re-analyzed in accordance with method protocols. However, the re-extracted and re-analyzed samples yielded similar recoveries. Furthermore, the re-extractions were performed outside holding time constraints and, as such, the resulting data were not used.

Based on the outlying BNA surrogate recoveries reported for OBA-5A and its field duplicate OBA-5D, the original acid results and original diluted acid results (phenolics) required qualification as estimated (J) for positive data and as unusable (R) for non-detected data. Qualification of the BNA data due to outlying surrogate recoveries is reflected in the Olin RFI Report data summary tables. Additionally, one rinsate blank reported a 111 percent recovery for surrogate compound 2-fluorophenol, which was above the upper control limit of 100 percent. Qualification was not required in this case since a substantial high bias was not implied.

Among the samples submitted for TCL pesticide/PCB analyses, a total of three groundwater samples, and all but three soil samples had their surrogate compound DBC diluted out of solution. Groundwater samples which did not require dilution yielded acceptable DBC surrogate spike recoveries. Therefore, no qualification of the groundwater pesticide/PCB data was required on the basis of surrogate spike recoveries. Of the three soil samples (one being a rinsate blank) OSB-17 (6'-8') yielded a recovery outside control limits at 885 percent (control limit 20-150 percent). The outlying recovery was caused by elevated detections of BHC isomers. The sample underwent subsequent dilution which resulted in diluting out the surrogate. No qualification of the soil pesticide/PCB data was therefore required on the basis of surrogate spike recoveries.

Only one groundwater sample (2C-DNAPL) submitted for methanol analyses yielded an outlying surrogate spike recovery. The analyses of sample 2C-DNAPL reported an MEK surrogate recovery of 56 percent which was below the lower laboratory established control limit of 64 percent.

Since the surrogate recovery indicated a low bias, the methanol result relative to 2C-DNAPL required qualification as estimated (data qualifier UJ for non-detects). Qualification of the methanol data due to outlying surrogate spike recoveries is reflected in the Olin RFI Report data summary tables.

All surrogate compound spike recoveries are summarized on USEPA CLP forms in Attachment 1.

2.3 MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) ANALYSES

MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria to assess both analytical accuracy and precision.

MS/MSD analyses were performed for the full Project Analyte List (PAL) on groundwater samples collected from OSB-1B and the Olin Production Well (OPW). One MS/MSD analyses was performed for the full Olin PAL less methanol (not required for this matrix) on soil sample OSB-18(4'-6'). In addition, since soil sample OSB-17(6'-8') required a medium level BNA analysis (in contrast to low level) a medium level BNA MS/MSD analyses was therefore performed on this sample in accordance with USEPA CLP protocol.

Based on the total MS/MSD analyses performed, it is noted that the prescribed frequency identified in the analytical methods of one MS/MSD per 20 samples was adhered to. Copies of the laboratory Form 3's indicating actual spike recoveries and relative percent differences (RPD's) between MS/MSD analyses are presented in Attachment 1.

Based on the reported VOC spike recoveries and RPD values, it was noted that on most

occasions satisfactory accuracy and precision were achieved. Exceptions to this included an outlying RPD value for trichloroethene (TCE) at 38 percent (control limit 14 percent) relative to the MS/MSD analyses of groundwater sample OBA-1B and, outlying spike recoveries for TCE of 140 and 180 percent (upper control limit of 120 percent) reported for the VOC MS/MSD of groundwater sample OPW. In addition, the outlying TCE spike recoveries resulted in a RPD value of 27 percent, which was above the method control limit of 14 percent.

The outlying TCE RPD value reported for the MS/MSD analyses of OBA-1B was caused by a concentration of TCE in the sample greater than 2.5 times that which was spiked. Therefore, it is recommended that the TCE data for OBA-1B not be qualified on the basis of the MS/MSD recoveries. Similarly, the concentration of TCE reported in the Olin Production Well (OPW) sample was approximately 10 times that which was spiked, thereby inhibiting the reproducibility of the spike recoveries. The OPW MS/MSD was subsequently diluted and reanalyzed. The resulting RPD value was still above the method control limit of 14 percent. However, the concentration of TCE in the diluted MS/MSD analyses was still greater than the TCE concentration spiked (by a factor of approximately 2.5), which affected the reproducibility of the spike recoveries. Therefore, no qualification of the OPW TCE data was recommended.

Methanol MS/MSD analyses performed on groundwater samples OBA-1B and OPW yielded spike recoveries and RPD values within the established laboratory control limits. These data, therefore reflect satisfactory accuracy and precision of the analytical method for this matrix.

BNA MS/MSD results reported for groundwater samples OBA-1B and OPW showed all RPD values to be within established control limits, indicating acceptable reproducibility was achieved. The MS/MSD analyses for both samples yielded 4-chloro-3-methyl-phenol recoveries above the established control limits. The outlying recoveries were as follows:

	MS Recovery (%)	MSD Recovery (%)	Control Limits (%)
OBA-1B	125	125	23-97
OPW	102	101	23-97

Typically, spike recoveries for acid fraction compounds (phenolics) are low (as USEPA laboratory method validation studies have shown). Although the spike recoveries are outside method control limits, technically they indicate accuracy was achieved and no matrix effects were observed. Although the 4-chloro-3-methyl-phenol recoveries may have indicated a slight high bias, the sample concentrations were non-detected, and therefore no qualification of the data was required.

BNA MS/MSD analyses performed on soil samples OSB-17 (6'-8') and OSB-18 (4'-6') yielded several spike recoveries and RPD values outside the established method control limits. The BNA MS/MSD analyses of sample OSB-17 (6'-8') showed 3 out of 11 outlying RPD values and 10 out of 22 outlying spike recoveries. These outlying values were attributed to sample concentrations of acenaphthene and pyrene between 4 to 10 times the concentrations spiked into the sample. Similarly, the BNA MS/MSD analyses of soil sample OSB-18 (4'-6') showed 4 out of 11 outlying RPD values and 6 out of 22 outlying spike recoveries. These outlying values were attributed to sample concentrations of 1,2,4-trichlorobenzene several orders of magnitude greater than the concentration of same spiked into the sample.

Based on the above, the soil BNA MS/MSD results were unable to be used as a measure of analytical accuracy and precision and no qualification of the data was required.

Among the groundwater samples submitted for Pesticide/PCB MS/MSD analyses, outlying spike recoveries and/or RPD values were noted for the following samples:

Sample	Matrix	Compound	Outlying ⁽¹⁾ MS(%) Recovery	Outlying ⁽¹⁾ MSD(%) Recovery	Outlying ⁽¹⁾ RPD Value
OBA-1B	Ground-water	lindane	173(56-123)	224(56-123)	26(15)
		endrin	39(56-121)	-----	27(21)
		dieldrin	-----	-----	29(18)
OPW	Ground-water	lindane	150(56-123)	127(56-123)	17(15)

(1) Control limits in parentheses

Lindane was not-detected in OBA-1B and therefore, since the MS/MSD recoveries implied a high bias, qualification was not required. The OBA-1B MS recovery for endrin indicated a low bias and therefore the corresponding sample, which was reported as non-detected, required qualification as estimated (UJ). The lindane MS/MSD results reported for OPW indicated a high bias and a variability in the data (from the outlying RPD). Since lindane was detected in the corresponding sample, qualification was required as estimated (J).

A pesticide/PCB MS/MSD analyses was performed on soil sample OSB-18(4'-6'). Due to levels of pesticides detected in this sample, all spiking compounds were diluted out of solution and, as such, could not be validated with respect to MS/MSD control limits.

Qualification of the sample data due to MS/MSD recoveries is reflected in the Olin RFI Report data summary tables. All MS/MSD recoveries are presented on USEPA CLP forms in Attachment 1.

2.4 BLANK CONTAMINATION

Quality Assurance (QA) blanks, i.e., method, rinse, field, and trip blanks, are prepared to identify contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Trip blanks measure cross-contamination of samples during shipment. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times

for common contaminants), the analytes required qualification as non-detects, "U". Since field, trip, and rinsate blanks have different reporting units than soil samples, their detected results are not comparable. In these cases, the affected soil sample data was qualified as estimated "J".

2.4.1 Method Blank Analyses

Contamination of samples contributed by laboratory conditions or procedures was monitored by the concurrent preparation and analysis of method blank samples. The frequency of method blank sample analyses per parameter were in accordance with those prescribed by the appropriate method.

Most method blank analyses yielded non-detectable and/or below method detection limit concentrations of the parameters of concern. Qualification of organic data was limited to 2 BNA analyses and 2 pesticide/PCB analyses. The remaining qualification of data was due to potential laboratory contamination from Tentatively Identified Compounds (TICs). TICs identified in investigative samples caused by potential laboratory contamination were rejected as unusable (data qualifier R). In addition, several sample results required the removal of the USEPA CLP data qualifier "B" which indicates that the compound was also detected in the corresponding laboratory method blank analyses, an implication that the result was caused by laboratory contamination. The "B" qualifier was removed in cases where the sample concentration exceeded the blank concentration by a factor of 5 or more (10 times for common contaminants) and as such the sample concentration was not considered to be directly contributed from laboratory contamination. In all cases prior to qualification of data due to method blank contamination, sample dilution factors were taken into consideration before comparison to method blank results.

Sample results qualified due to probable laboratory contamination are presented in Table 1. Qualification of the sample on the basis of laboratory contamination is reflected in the Olin RFI Report data summary tables.

2.4.2 Rinsate Blank Samples

A total of three rinsate blank samples were collected during the groundwater collection phases and one rinsate blank (for organics) sample was collected during the soil boring sampling phase. Based on these numbers, it is noted that the prescribed number of rinsate blank samples identified in the DQAP were collected.

Presented below are the rinsate blank samples which yielded detectable concentrations of the parameters of concern and associated samples.

Groundwater Rinsate Blank 1	ug/L	Associated Samples
VOC - 1,2-dichloropropane	1J	OBA-1B
chlorobenzene	2J	OBA-1C
		OBA-4B
		OBA-4C
		OBA-8B
		OBA-8C
		OBA-8B Dup.

Rinsate Blank 2

VOC - chloroform	2J	OBA-5B
methylene chloride	0.6J	OBA-6B
1,2-dichloropropane	0.9J	OBA-6C
trichloroethene	62	OBA-7A
tetrachloroethene	15	OBA-7B
toluene	2J	

Rinsate Blank 3

VOC - trichloroethene	3J	OBA-5C
		OBA-7C
		OBA-7C Dup.

Soil			Associated
Rinsate Blank 5		ug/L	Samples
VOC - 1,2-dichloropropane	3J		All soil samples collected from soil borings OSB-17 and OSB-18
chlorobenzene	4J		
Pest. - a-BHC	0.14		
b-BHC	0.063		
d-BHC	0.12		
lindane	0.041		

When applying the five times or ten times criteria for Rinsate Blanks 1 and 3, it was found that none of the associated samples required qualification. Rinsate Blank 2 required qualification of two samples:

Groundwater Sample	Fraction	Compound	Rinsate Blank Conc. (ug/L)	Sample Conc.	Qualified Sample Conc.
OBA-7A (ug/L)	VOC	Trichloroethene	62	11	11U
		Tetrachloroethene	15	9	9U
OBA-7B (ug/L)	VOC	Trichloroethene	62	11J	50U
		Tetrachloroethene	15	10J	50U

All collected soil samples yielded non-detectable concentrations of 1,2-dichloropropane which was detected in the corresponding rinsate blank (Rinsate blank 5). In addition, with the exception of OSB-18 2'-4', OSB-18 4'-6', and OSB-18 6'-8', all soil chlorobenzene results were non-detected or detected below the practical quantitation limit and as such already qualified as estimated (data qualifier J). Chlorobenzene concentrations exhibited in OSB-18 2'-4' and OSB-18 4'-6' were great enough not to have been caused by potential field contamination. However, the concentration of chlorobenzene detected in OSB-18 6'-8' at 15 ppb may have resulted in carryover from the previous sample collected, OSB-18 4'-6', in which the reported chlorobenzene result was 22,000 ppb. Therefore, qualification of the chlorobenzene result reported for OSB-18 6'-8' as estimated (data qualifier J) was required due to potential residual carryover from the decontamination process.

Most BHC isomer results reported for soil samples were great enough not to be considered as resulting from field contamination. Other BHC data was either non-detected or detected below the PQL and as such already qualified as estimated. Therefore, no further qualification of the pesticide data was required on the basis of potential field contamination.

It should be noted that the cause of the organic detections in the rinsate blank samples may be related to the use of hexane as a sole solvent in the decontamination process. Hexane is hydrophobic and therefore will not remove water bound materials from a bailer as efficiently as a polar organic solvent such as isopropanol.

Qualification of the sample data due to potential field contamination is reflected in the Olin RFI Report data summary tables.

2.4.3 Trip Blank Samples

Trip blank samples for VOC and methanol analyses were prepared in the laboratory, shipped to the Site and returned to the laboratory without being opened to assess the potential for aqueous sample contamination from diffusion during shipment. A total of two trip blank samples were submitted to Recra during implementation of the groundwater sampling phase. Trip blank samples were required for each shipment containing aqueous samples to be analyzed for VOCs and methanol. A total of five sample shipments containing aqueous samples for VOC and methanol analyses were submitted to the project laboratory. Therefore, the required frequency for the collection of trip blank samples was not adhered to. However, the number of rinsate blank, laboratory method blank and field blank samples were more than sufficient to determine potential sources of VOC contamination for the groundwater sampling phase. Trip blanks were not required as part of the soil sample collection program.

Both trip blank samples yielded non-detectable concentrations of TCL-VOCs and methanol. The second trip blank sample was submitted with samples collected from the OBA-5 wells, which yielded the greatest concentrations of VOCs per well nest. Therefore, for those samples shipped without accompanying trip blank samples it may be assumed that the potential for sample contamination attributable to cross-



contamination during transport was minimal.

2.4.4 Field Blank Samples

Field blank samples for VOC and methanol analyses were prepared in the field by pouring laboratory provided water into appropriate sample containers. Field blank sample results were used as an additional check on contamination from sample shipment and ambient conditions at the Site. Two field blank samples were submitted to the project laboratory during implementation of the groundwater sampling phase. The DQAP stipulated that field blanks were required for each shipment of aqueous samples submitted for TCL-VOC and methanol analyses. As previously noted, five shipments containing aqueous samples for VOC and methanol analyses were submitted to Recra. Therefore, the required DQAP frequency for the collection of same was not adhered to. However, USEPA Region II does not mandate the collection of field blank samples for such programs. Detection of VOCs in the individual field blank samples are presented as follows:

Field Blank	Date Shipped	Compound	Concentration
Field Blank 1	9/18/91	1,2-dichloropropane	1J
		chlorobenzene	2J
Field Blank 2	10/7/91	trichloroethene	28
		tetrachloroethene	4J
		toluene	2J
		chlorobenzene	1J

Most samples shipped on the same date as the field blank samples yielded non-detectable concentrations or concentrations exceeding five times those of their corresponding field blank. Exception to this included only VOC samples from OBA-1A and BH-1 which were shipped with field blank 1. Qualification of these samples were required as follows:

Sample	Compound	Blank Conc. (ug/L)	Sample Conc. (ug/L)	Qualified Sample Conc. (ug/L)
OBA-1A	Chlorobenzene	2J	2J	5U
BH-1	Chlorobenzene	2J	2J	5U

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit and has been adjusted to reflect potential contamination from laboratory or field activities.

Qualification of the sample data attributed to contamination from field activities is also reflected in the Olin RFI Report data summary tables.

2.5 FIELD DUPLICATE SAMPLES

Four groundwater field duplicate samples and one soil field duplicate sample were submitted for organics analyses. This frequency therefore met and/or exceeded the prescribed frequency of one field duplicate per ten investigative samples identified in the DQAP. Field duplicate samples were submitted "blind" to the project laboratory to assess the aggregate analytical and sampling protocol precision. Field duplicate samples were identified as follows:

Groundwater

OBA-3A and OBA-3D
OBA-5A and OBA-5D
OBA-7C and QA1
OBA-8B and OBA-9B

Soil

OSB-18(0'-2') and QA5

Field duplicate results are included in the Olin RFI Report data summary tables. In general, most field duplicate data were reproducible, which indicated satisfactory analytical and sampling protocol precision were achieved. Exceptions to this occurred for the BNA analyses of groundwater samples OBA-3A and 5A and corresponding duplicate samples, and the methanol results relative to groundwater sample OBA-8B and its corresponding field duplicate sample.

Detected BNA results for OBA-3D (dup of OBA-3A) were approximately one-half of those reported for OBA-3A. The discrepancies in the data may have been attributed to holding time exceedances for OBA-3D as discussed in Section 2.1. Since holding time exceedances tend to demonstrate a low bias in results, the OBA-3D BNA data was qualified for same. No further qualification was therefore required on the basis of field duplicate sample results. Similarly, the OBA-5A and OBA-5D BNA results were previously qualified due to outlying surrogate spike recoveries. Both samples were re-extracted and re-analyzed in accordance with the method protocols and yielded the same surrogate recovery results. This implies that matrix interferences inhibited the quantitation of the detected compounds and ultimately affected the reproducibility of the field duplicate data. Therefore, no further qualification of these data was required.

The methanol results reported OBA-8B and its corresponding field duplicate sample differed by one order of magnitude. Based on the differences in the methanol field duplicate results, the data required qualification as estimated (data qualifier J).

Qualification of the data is reflected in the Olin RFI Report data summary tables.

2.6 GC/MS TUNING AND PERFORMANCE

To ensure that the data produced by the analytical instruments may be correctly interpreted, the tuning and performance criteria established in the relevant methods have been assessed. No transcription errors were noted in re-calculation of at least two of the GC/MS tuning and mass calibration values reported for each mass listing.

In general, the provided GC/MS tuning and calibration data accompanying the Recra data packages indicated that the instruments were tuned in accordance with prescribed analytical frequency and all tuning and calibration criteria for bromofluorobenzene (BFB) and decafluorotriphenylphosphine (DFTPP) were met for analysis of VOCs and BNAs. Thus, the utility of the GC/MS tuning and mass calibration data was not suspect.

2.7 GC/MS INSTRUMENT CALIBRATION

Satisfactory instrument calibration is established to ensure that the instruments are

capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration documents that the instruments are giving satisfactory daily performance. The number of initial and continuing calibrations performed for GC/MS compounds met the prescribed frequencies identified in the analytical methods.

The response factor measures the instrument's response to specific chemical compounds. The average response factors for the parameters of concern must be ≥ 0.05 in both the initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity).

Qualification of samples analyzed for which initial and/or continuing calibration data yielded compound average response factors below a value of 0.05 is performed as follows:

1. Compounds detected in the sample are qualified as estimated-data qualifier J
2. Compounds reported as non-detected are qualified as unusable-data qualifier R.

Based on review of all GC/MS initial and continuing calibration response factors, only 2-butanone in a VOC continuing calibration performed on September 27, 1991 yielded an average response factor below 0.05. The outlying average response factor value for 2-butanone and affected samples are presented as follows:

Calibration Type	Matrix	Compound	Average Response Factor	Affected Samples
Continuing	Groundwater	2-butanone(VOC)	0.049	OBA-5C OBA-7C OBA-7C Dup.

2-Butanone was not detected in the affected samples, nor for any samples analyzed for this program. Therefore, the summary of detected compounds in the Olin RFI Report does not include 2-butanone. Qualification of the 2-butanone data as unusable (data qualifier R) is required as follows:

Sample	Compound	Conc. ug/L	Qualified Sample Conc. ug/L
OBA-5C	2-butanone	ND200	ND200R
OBA-7C	2-butanone	ND200	ND200R
OBA-7C dup	2-butanone	ND200	ND200R

R - unusable

Percent relative standard deviations (RSD's) are calculated from initial calibrations and are used to indicate the stability of a response factor over increasing concentration. Percent differences (%Ds) compare response factors of continuing calibrations to initial calibration mean response factors. In accordance with the USEPA data validation guidelines, initial calibration RSD values are required to be below 30 percent, whereas continuing calibration %D values are required to be below 25 percent.

RSD and %D values below 50 percent have minimal effect on the ability of the GC/MS to detect compounds. Consequently, the following criteria were used for qualification of outlyings RSD or %D results:

- 1) For initial calibration outlying percent RSD values:

	RSDs between 30-50%	RSDs between 50-90%	RSDs greater than 90%
Positive sample data	J	J	J
Non-detected sample data	--	UJ	R

- 2) For continuing calibration outlying % D values:

	% Ds between 25-50%	% Ds between 50-90%	% Ds greater than 90%
Positive sample data	J	J	J
Non-detected sample data	--	UJ	R

J - estimated value

UJ - estimated quantitation limit

R - unusable

With the exception of one RSD value reported for acetone (VOCs) at 31.1 percent, no initial calibrations yielded outlying RSD values. All samples associated with the initial calibration performed on September 23, 1991 which yielded the outlying RSD value for acetone, reported non-detected concentrations of same. Therefore, no qualification was required based on the reported GC/MS initial calibration RSD values.

Presented in Table 2 are the samples associated with continuing calibrations having outlying %D values and the appropriate qualification required for each. In addition, qualification of the data based on outlying VOC and BNA calibration results are reflected in the Olin RFI Report data summary tables.

2.8 INTERNAL STANDARD PERFORMANCE (GC/MS)

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ± 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS require qualification as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

The following groundwater sample analyses yielded outlying internal standard

performance data:

Sample	Fraction	Internal Standard	Peak Area	Peak Area Window
OBA-5ARe	BNA	Perylene-d12	14,600	14,800-29,600
OBA-5D (Dup of 5A)	BNA	Perylene-d12	1,750	22,450-44,900
OBA-5DRe	BNA	Perylene-d12	6,740	14,800-29,600
OBA-5Re-Re	BNA	Perylene-d12	3,070	22,450-44,900

The above samples containing the suffix "Re", were re-analyzed due to low BNA surrogate spike recoveries. As noted in previous sections of this report, the re-analyses were not used since they exhibited outlying BNA surrogate recoveries as well. Therefore, qualification of the groundwater samples due to outlying internal peak areas was required only on OBA-5D. Since the perylene-d12 peak area for this sample showed a major decrease, qualification of the affected compounds was required as follows:

1. Positive data estimated - data qualifier J
2. Non-detectable data unusable - data qualifier R

The affected compounds are as follows:

di-n-octylphthalate
benzo(b)-fluoranthene
benzo(k)-fluoranthene
benzo(a)-pyrene
indeno 1,2,3-cd-pyrene
benzo (g,h,i) perylene
dibenzo (a,h) anthracene

Qualification of the sample data due to outlying IS areas is reflected in the Olin RFI Report data summary tables.

All soil samples with the exception of OSB-18(4'-6') MS/MSD yielded internal area counts and retention times within their specified control limits. Both internal standard retention times and peak areas were within control limits for the BNA analysis of OSB-18 (4'-6'). The outlying recoveries in the MS/MSD data therefore have no effect on the original sample analyses and no data qualification is required.

2.9 PESTICIDE/PCB ANALYSES

2.9.1 Instrument Performance

1. Resolution

To ensure that adequate separation of pesticides/PCBs is achieved, 4,4'-DDT must have a retention time on megabore columns greater than or equal to 12 minutes. Based upon review of the standard chromatograms and the data reported on the pesticide/PCB standard summaries, it was established that the retention times for 4,4'-DDT were greater than 12 minutes for all primary and secondary column analyses.

2. 4,4'-DDT/Endrin Degradation Check

To measure the amount of decomposition that 4,4'-DDT and endrin undergo when analyzed by the chromatographic system, the percent breakdown of these two compounds is evaluated and compared against the control limits identified in the method. The measurement of 4,4'-DDT and endrin degradation is accomplished by the analysis of evaluation standards throughout the analytical sequence. In accordance with the control limits identified in the method, the individual and combined percent breakdowns for both 4,4'-DDT and endrin cannot exceed 20 percent.

Based on review of all pesticide evaluation standard summaries provided in the data packages, it is noted that all percent degradation results reported for 4,4'-DDT and endrin yielded values below 20 percent. Further, all combined breakdown percentages were below 20 percent. This indicated that the GC instrument columns and injection ports were sufficiently free of high boiling residues which may have restricted the identification and quantification of the targeted pesticides and/or PCBs.

3. DBC Retention Time Check

Based on the method protocols, the maximum allowable retention time shift for dibutylchlorodate (DBC) is ± 1.5 percent for megabore columns. Upon review of the DBC retention time shifts reported, it is noted that in all cases (where the surrogate was not diluted out), the maximum allowable retention time shift was not exceeded.

2.9.2 Pesticide/PCB - Calibration GC/ECD

To ensure that satisfactory instrument performance was established and maintained during the analysis of pesticides/PCBs, the technical acceptance criteria outlined in the USEPA CLP methodology were evaluated. The evaluation included assessment of the analytical sequence, initial calibration data and continuing calibration data. Both primary column analyses and confirmatory column analyses were evaluated against the technical acceptance criteria.

1. Analytical Sequence

Upon review of the pesticide/PCB evaluation standard summaries (Form VIII) it is noted that the proper 72 hour sequence was adhered to in all cases for primary and secondary column analyses. In addition, the evaluation standard mixtures, individual standard mixtures, and multi-response pesticide/PCB standards were analyzed at the frequencies prescribed by the method.

In addition, it is noted that retention time (RT) windows were established for all pesticides/PCBs and properly reported on each Form IX. All pesticide/PCB standards yielded RTs within the established RT windows. As well, all identified sample pesticide compounds yielded retention times within their respective RT windows.

2. Initial Calibration

Based on review of the initial calibration data, it was concluded that the calibration factors (CFs) and RSDs of the calibration factors were properly determined for aldrin, endrin, 4,4'-DDT and DBC. In addition, all initial calibrations for the aforementioned

compounds yielded RSD values less than 10 percent. This indicated that satisfactory linearity was achieved upon initial calibration.

3. Continuing Calibration

Linearity of initial calibrations were monitored over the analytical sequence by analyses of individual standard mixes. The calibration factors were compared to those obtained at the beginning of the analytical sequence.

Most continuing calibration standards showed %Ds in calibration factors less than 15 percent for primary column analyses and less than 20 percent for confirmatory column analyses. In cases where the primary column yielded %Ds greater than 15 percent, quantitation (if required) was performed by use of the confirmatory column analyses, provided its corresponding %Ds were below 15 percent.

Therefore, the continuing calibration criteria identified in the USEPA CLP methodology were met.

2.10 INSTRUMENT CALIBRATION AND PERFORMANCE - METHANOL ANALYSES

Calibration and performance data for methanol analyses were assessed to determine conformance with the analytical method referenced in Section 1.0 of this report.

A gas chromatographic (GC) instrument was used for all methanol analyses. Initial calibrations of the GC were performed by generation of standard curves of peak height or area response versus mass injected.

Inspection and recalibration of the initial calibration curves showed that in all cases, methanol standard curves demonstrated acceptable linearity as noted by resulting correlation coefficients greater than 0.995.

Continuing calibration standard analyses were performed to verify that initial calibrations were still able to be used for quantitation. Continuing calibrations were accomplished

by analyzing mid-level standards and blanks at an approximate frequency of one per ten samples as required by the analytical method.

With one exception (28.6 percent), continuing calibration analyses yielded concentrations within ± 15 percent difference (%D) of the actual analyte value. In accordance with the analytical method, a new calibration curve or average calibration factors are required to be generated if the continuing calibration %D is greater than $\pm 15\%$. In this case a new curve was not generated prior to the analyses of four Olin groundwater samples. Those samples were:

OBA-2B

OBA-3B

OBA-3A

OBA-3A Dup.

The outlying continuing calibration %D reported has minimal effect on the ability of the instrument to detect the subject compound, methanol. Therefore, since the associated Olin groundwater samples yielded non-detectable concentrations of same, no qualification was required.

2.11 OVERALL ORGANICS DATA ASSESSMENT

Based on the criteria outlined, it is recommended that the results reported for the organics analyses be accepted as accurate and complete. However, these data require some qualification as noted. In most cases, these qualifications are necessary due to potential laboratory contamination, calibration difficulties, matrix effects resulting in surrogate and matrix spike compound spike recoveries outside specified control limits, and holding time exceedances.

3.0

INORGANIC DATA

3.1 SAMPLE HOLDING TIMES

Holding time criteria as required by the analytical methods and/or the DQAP are as follows:

Total mercury: 26 days from VTSR to analysis

TCLP mercury: 28 days from collection to TCLP extraction;
28 days from TCLP extraction to analysis

Due to potential loss of analyte(s), exceeding the holding time for a sample requires that positive data and minimum detection limits (MDLs) be qualified as estimated, and the results annotated to indicate the holding times were exceeded.

Examination of the extraction and/or analyses data reported in the raw data showed all samples were extracted and/or analyzed within their allotted time frame. Therefore, no qualification was required on this basis.

Sample holding times are summarized in Attachment 1.

3.2 CALIBRATION

The reported total mercury and TCLP mercury data was checked for calibration frequency, the number and type of standards analyzed and linearity.

In all instances, the instruments were calibrated using a five point curve (including a blank), in accordance with the method requirements. All percent recovery (%R) values reported on the initial calibrations summaries were within the control limits specified by the method. It should also be noted that all standard curve correlation coefficients were greater than 0.995, which demonstrated satisfactory linearity was achieved.

The verification of continuing calibration was conducted in accordance with the prescribed methods. All reported %R values were within the established control limits.

3.3 LABORATORY/METHOD BLANK SAMPLE ANALYSES

Potential contamination of samples contributed by laboratory conditions or procedures was monitored by the concurrent preparation and analysis of method blanks. Method blanks were analyzed as a check on the potential for contamination from sample preparation procedures.

Laboratory method blanks analyzed for mercury yielded non-detectable concentrations of same. Thus, the potential for sample contamination attributable to laboratory conditions was minimal and no data qualification was required.

Laboratory method blank results are presented in Attachment 1.

3.4 MATRIX SPIKE AND LABORATORY DUPLICATE SAMPLE ANALYSES

Mercury matrix spike (MS) and laboratory duplicate sample analyses were performed on groundwater samples collected from OBA-1B and the Olin Production Well (OPW). Mercury matrix spikes and laboratory duplicate samples were performed on soil borings collected from OSB-1 (2'-4'), OSB-8 (2'-4') and OSB-18 (4'-6'). In addition, a total of four TCLP mercury matrix spike analyses were performed on Olin soil boring samples.

Based on the results of the mercury MS and laboratory duplicate sample analyses, it is noted that no significant matrix effects were observed. All MS and duplicate sample analyses indicated satisfactory analytical accuracy and precision were achieved.

Laboratory MS and duplicate results are presented on USEPA CLP forms in Attachment 1.

3.5 LABORATORY CONTROL SAMPLES

The laboratory control sample (LCS) serves as a monitor of overall performance of each

step in an analysis, including sample preparation. Laboratory control samples are not required for mercury according to the USEPA CLP protocol and, as such, were not performed during analysis of the groundwater samples. However, solid laboratory control sample results were reported for soil sample analyses.

Based on the data reported among the laboratory control sample summaries, it is noted all mercury results yielded recoveries within the laboratory control limits established for the sample.

3.6 FIELD DUPLICATE SAMPLES

A total of four groundwater duplicate samples were collected and submitted for mercury analyses. Groundwater field duplicates were collected from wells OBA-3A, OBA-5A, OBA-7C and OBA-8C. A total of five soil boring field duplicate samples were collected for this program and submitted for total and TCLP mercury analyses. Soil field duplicate samples were identified as follows:

Soil Sample	Corresponding Field Duplicate
OSB-3(4'-6')	QA 1
OSB-6 (0'-2')	QA 2
OSB-10 (2'-4')	QA 3
OSB-16 (2'-4')	QA 4
OSB-18 (0'-2')	QA 5

Based on the total number of investigative samples collected as identified in Section 1.0, the number of groundwater and soil field duplicate samples met and/or exceeded the prescribed frequency identified in the DQAP of 1 per 10 investigative samples. Field duplicate sample results are presented in the Olin RFI Report data summary tables.

The results of field duplicate sample analyses were reproducible in most cases indicating aggregate sampling and analytical protocol precision were achieved. Exceptions to this occurred for the following sample results:

Sample	Matrix	Total Mercury Result	Field Duplicate Result
OBA-3A	Groundwater	6.3 ug/L	0.3 ug/L
OSB-10 (2'-4')	Soil	626 mg/Kg	1920 mg/kg

The discrepancies in these data may have been caused by varying amounts of solids in the groundwater sample and heterogeneity of the soil sample. Slight differences in the sample matrix may have a substantial effect on the reproducibility of the data. Based on the differences between the aforementioned field duplicate results, the data required qualification as estimated (data qualifier J).

Qualification of the data is presented in the Olin RFI Report data summary tables.

3.7 RINSATE BLANK SAMPLES

A total of three rinsate blank samples were collected during implementation of the groundwater sampling phase of the RFI. A total of five rinsate blank samples were collected during the soil boring sampling phase. The number of rinsate blanks therefore met and/or exceeded the prescribed frequency for the collection of same as identified in the DQAP.

All rinsate blank samples collected during the groundwater sampling phase yielded non-detectable concentrations of mercury. Therefore, the potential for cross contamination due to field conditions was minimal. Three of the five rinsate blank samples collected during the soil boring sampling phase yielded detections of mercury, those being:

	Mercury Conc. (ug/L)	Quantitation Limit (ug/L)
Rinsate Blank 1	0.2	0.2
Rinsate Blank 2	57.7	0.2
Rinsate Blank 4	0.7	0.2

The concentration of mercury in Rinsate Blank 1 was at the quantitation limit, and since

samples associate with this blank (OSB-1 through OSB-6) were a minimum of four times their quantitation limit, no qualification with respect to field contamination was required.

Samples associated with Rinsate Blank 4 (0.7 ug/L mercury) were collected from soil boring OSB-16. Based on the magnitude of mercury detections in these samples, contamination due to carry over was assumed to be an insignificant factor and consequently, no qualification was performed.

The concentration of mercury in Rinsate Blank 2 was significant at 57.7 ug/L. Samples collected on the same day as Rinsate Blank 2 included those collected from soil borings OSB-7 through OSB-11. Therefore, the results of same were required to be qualified as estimated (data qualifier J) due to potential (although unlikely) field contamination.

Qualification of the data based on rinsate blank sample results are presented in the Olin RFI Report data summary tables. A summary of rinsate blank detections is presented in Attachment 1.

3.8 COMPLETENESS

Due to an oversight by the project laboratory, the total mercury analyses of soil boring sample OSB-16 (6'-8') was not analyzed. All remaining samples for the program were analyzed for their respective groups of parameters requested.

3.9 OVERALL INORGANIC DATA ASSESSMENT

Overall, the inorganic data provided by Recra were found to be accurate and precise. Exceptions have been documented in previous sections of this report. Consequently, minimal qualification of the inorganic data was required and the data as qualified may be used qualitatively and quantitatively for its intended purpose.

Tables

TABLE 1
QUALIFIED DATA DUE TO
POTENTIAL LABORATORY CONTAMINATION

Sample	Fraction	Compound	Sample Conc.	Qualified Sample Conc.
VOCs				
1. VBLK35(ug/L)	VOCs	trichloroethene	0.6J	
Corresponding Samples				
BH-1		trichloroethene	18B	remove B
OBA-1BDI		trichloroethene	2700B	remove B
OBA-1CDI		trichloroethene	150,000B	remove B
OBA-4B		trichloroethene	32B	remove B
OBA-8C		trichloroethene	620B	remove B
2. VBLK32(ug/kg)	VOCs	acetone	1J	
Corresponding Samples				
OSB-18(4'-6')		acetone	45B	remove B
BNAs				
1. SBLK50(ug/L)	BNA	1,2-dichlorobenzene	3J	
		hexachloroethane	2J	
Corresponding Samples				
OBA-2CDI		1,2-dichlorobenzene	450B	remove B
		hexachloroethane	440B	remove B
OBA-3CDI		1,2-dichlorobenzene	5900B	remove B
OBA-7C		1,2-dichlorobenzene	6BJ	12U
OBA-7C Dup.		1,2-dichlorobenzene	6BJ	11U
2. SBLK66(ug/kg)	BNA-TIC	unknown 5.47RT	330J	
		unknown 6.50RT	2700J	
Corresponding Samples				
OSB-18(6'-8')		unknown 5.43RT	450J	450R
		aldol cond. prod.	1200AJ	1200R
		6.20RT		

TABLE 1 (continued)

**QUALIFIED DATA DUE TO
POTENTIAL LABORATORY CONTAMINATION**

Sample	Fraction	Compound	Sample Conc.	Qualified Sample Conc.
Pesticides/PCBs				
1. PBLK22(ug/kg)	Pest/PCBs	alpha-chlordane	120J	
Corresponding Samples				
OSB-17 (4'-6')		alpha-chlordane	130BJ	360U
OSB-17(6'-8')		alpha-chlordane	150BJ	370U

Notes:

- B - Compound was found in associated method blank.
- J - Estimated data - detected below quantitation limit or compound was a TIC.
- U - The material was analyzed for but was not detected. The numerical value is the sample quantitation limit and has been adjusted to reflect contamination from laboratory or field activities.

TABLE 2
SAMPLES REQUIRING QUALIFICATION
DUE TO OUTLYING CONTINUING CALIBRATION
%D VALUES

Groundwater

Sample	Fraction	Compound	Cont. Calibration %D Value	Qualifier
OBA-1BDI	VOC	methylene chloride	27.2	J/-
OBA-1CDI	VOC	methylene chloride	27.2	J/-
OBA-4C	VOC	methylene chloride	27.2	J/-
		1,1,2,2-tetrachloroethane	34.1	J/-
OBA-8B Dup.	VOC	1,1,2,2-tetrachloroethane	34.1	J/-
OBA-8C	VOC	1,1,2,2-tetrachloroethane	34.1	J/-
OBA-8BDI	VOC	1,1,2,2-tetrachloroethane	35.0	J/-
		methylene chloride	36.7	J/-
OBA-8BDI Dup.	VOC	methylene chloride	36.7	J/-
OBA-5A	VOC	chloroform	26.7	J/-
OBA-5ADI	VOC	trichloroethene	26.2	J/-
OBA-5A Dup.	VOC	chloroform	26.7	J/-
		trichloroethene	26.2	J/-
OBA-5BDI	VOC	chloroform	26.7	J/-
	VOC	trichloroethene	26.2	J/-
OBA-6A	VOC	trichloroethene	26.2	J/-

TABLE 2 (continued)

**SAMPLES REQUIRING QUALIFICATION
DUE TO OUTLYING CONTINUING CALIBRATION
%D VALUES**

Groundwater

Sample	Fraction	Compound	Cont. Calibration %D Value	Qualifier
OBA-6B	VOC	trichloroethene	26.2	J/-
OBA-6CDI	VOC	trichloroethene	26.2	J/-
2C-DNAPL	VOC	chloromethane	57.8	J/UJ
	VOC	trans-1,2-dichloropropene	90.8	J/R
OPW	VOC	methylene chloride	99.9	J/R
		acetone	60.3	J/UJ
		1,1,2,2-tetrachloroethane	26.4	J/-
OBA-3A	VOC	methylene chloride	99.9	J/R
		acetone	60.3	J/UJ
OBA-2B	VOC	methylene chloride	99.9	J/R
		acetone	60.3	J/UJ
OBA-3B	VOC	methylene chloride	99.9	J/R
Rinsate Blank 3	VOC	vinyl acetate	71.8	J/UJ
Field Blank 2	VOC	vinyl acetate	71.8	J/UJ
OBA-5C	VOC	2-hexanone	70.1	J/UJ
		vinyl acetate	71.6	J/UJ

TABLE 2 (continued)

**SAMPLES REQUIRING QUALIFICATION
DUE TO OUTLYING CONTINUING CALIBRATION
%D VALUES**

Groundwater

OBA-7C Dup.	VOC	vinyl acetate	71.6	J/UJ
		2-hexanone	70.1	J/UJ
OBA-2B	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ
OBA-4B	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ
OBA-5A	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ
OBA-5B	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ
OBA-6A	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ
OBA-6B	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ
OBA-7A	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ

TABLE 2 (continued)

**SAMPLES REQUIRING QUALIFICATION
DUE TO OUTLYING CONTINUING CALIBRATION
%D VALUES**

Groundwater

OBA-7B	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ
OBA-8A	BNA	hexachlorocyclopentadiene	66.6	J/UJ
		2,3,4,5-tetrachlorophenol	57.1	J/UJ
		2,3,5,6-tetrachlorophenol	54.2	J/UJ
OBA-3A Dup.	BNA	2,3,4,5-tetrachlorophenol	58.6	J/UJ
OPW	BNA	2,3,4,5-tetrachlorophenol	58.6	J/UJ
OBA-3A	BNA	2,3,4,5-tetrachlorophenol	58.6	J/UJ
OBA-3B	BNA	2,3,4,5-tetrachlorophenol	58.6	J/UJ
OBA-6B	BNA	2,3,4,5-tetrachlorophenol	58.6	J/UJ
OBA-6C	BNA	benzoic acid	53.2	J/UJ
		2,4-dinitrophenol	54.4	J/UJ
		2,3,4,5-tetrachlorophenol	59.1	J/UJ
		2,3,5,6-tetrachlorophenol	56.0	J/UJ
		2,3,4,6-tetrachlorophenol	64.0	J/UJ
2C-DNAPL	BNA	benzoic acid	53.2	J/UJ
		2,4-dinitrophenol	54.4	J/UJ
		2,3,4,5-tetrachlorophenol	59.1	J/UJ
		2,3,5,6-tetrachlorophenol	56.0	J/UJ
		2,3,4,6-tetrachlorophenol	64.0	J/UJ
OBA-2C	BNA	4-methylphenol	33.3	J/-
		2,3,4,6-tetrachlorophenol	55.3	J/UJ

TABLE 2 (continued)

**SAMPLES REQUIRING QUALIFICATION
DUE TO OUTLYING CONTINUING CALIBRATION
%D VALUES**

Groundwater

OBA-3C	BNA	4-methylphenol	33.3	J/-
		2,3,4,6-tetrachlorophenol	55.3	J/UJ
OBA-5C	BNA	4-methylphenol	33.3	J/-
		2,3,4,6-tetrachlorophenol	55.3	J/UJ
OBA-7C	BNA	4-methylphenol	33.3	J/-
		2,3,4,6-tetrachlorophenol	55.3	J/UJ
OBA-7C Dup.	BNA	4-methylphenol	33.3	J/-
		2,3,4,6-tetrachlorophenol	55.3	J/UJ
Rinsate Blank 3	BNA	4-methylphenol	33.3	J/-
		2,3,4,6-tetrachlorophenol	55.3	J/UJ
OBA-2CDL	BNA	benzoic acid	29.2	J/-

Soil

OBS-17 (6'-8')	VOC	acetone	29.0	J/-
OSB-18 (0'-2')	VOC	acetone	29.0	J/-
OSB-18 (0'-2')Dup.	VOC	acetone	29.0	J/-
OSB-18 (2'-4')	VOC	acetone	29.0	J/-

TABLE 2 (continued)

**SAMPLES REQUIRING QUALIFICATION
DUE TO OUTLYING CONTINUING CALIBRATION
%D VALUES**

Soil				
OSB-18 (4'-6')	VOC	acetone	25.4	J/-
OSB-18 (0'-2')	BNA	2,3,5,6-tetrachlorophenol	99.9	J/R
OSB-18 (0'-2')Dup.	BNA	2,3,5,6-tetrachlorophenol	99.9	J/R
		2,3,4,6-tetrachlorophenol	99.9	J/R
OSB-18 (2'-4')	BNA	2,3,4,6-tetrachlorophenol	99.9	J/R
		2,3,5,6-tetrachlorophenol	99.9	J/R
OSB-18 (4'-6')	BNA	2-methylnapthalene	61.8	J/UJ
		2,3,5,6-tetrachlorophenol	99.9	J/R
OSB-18 (6'-8')	BNA	2-methylnapthalene	61.8	J/UJ
		2,3,4,6-tetrachlorophenol	99.9	J/R
		2,3,5,6-tetrachlorophenol	99.9	J/R
OSB-17 (0'-2')	BNA	2,3,4,5-tetrachlorophenol	62.6	J/UJ
		2,3,4,6-tetrachlorophenol	99.9	J/R
		2,3,5,6-tetrachlorophenol	99.9	J/R
OSB-17 (2'-4')	BNA	2,3,4,5-tetrachlorophenol	62.6	J/UJ
		2,3,5,6-tetrachlorophenol	99.9	J/R
		2,3,4,6-tetrachlorophenol	99.9	J/R
OSB-17 (4'-6')	BNA	2,3,4,5-tetrachlorophenol	62.6	J/UJ
		2,3,5,6-tetrachlorophenol	99.9	J/R
		2,3,4,6-tetrachlorophenol	99.9	J/R

TABLE 2 (continued)

**SAMPLES REQUIRING QUALIFICATION
DUE TO OUTLYING CONTINUING CALIBRATION
%D VALUES**

Soil

OSB-17 (6'-8')	BNA	2-methylnaphthalene	78.6	J/UJ
		2,3,4,5-tetrachlorophenol	62.6	J/UJ
		2,3,5,6-tetrachlorophenol	99.9	J/R
		2,3,4,6-tetrachlorophenol	99.9	J/R

Notes:

J/- - Estimated data for detected compounds/no qualification for non-detected compounds.

J/UJ - Estimated data for detected compounds and estimated quantitation limits for non-detected compounds

R - Unusable.

ATTACHMENT 1

LABORATORY QC SUMMARY FORMS

FORM 2A **ANALYTICAL QA/QC: HOLDING** **TIME WORKSHEET**

Location: OLIN - NF
 Data Type: CLP
 Quarter: 1
 Year: 91
 Auditor: AJM
 Reviewer: _____
 Page 1 of 7

Well	Date Sampled & VTSR	VOC	VTSR	BNA	No. of days between VTSR & Analysis			Pesticides			No. of days between VTSR & Analysis	
		Date Analyzed	No. of Days	Date Extracted	No. of Days	Date Analyzed		Date Extracted	No. of Days	Date Analyzed		
BH-1	9/18/91	9/20/91	2					9/23/91	5	10/03/91	15	
BH-3	9/18/91	9/20/91	2	9/23/91	5	9/26/91	8	9/23/91	5	10/04/91	16	
BH-3DL	9/18/91	9/20/91	2	9/23/91	5	9/27/91	9	9/23/91	5	10/04/91	16	
OBA-1A	9/17/91	9/21/91	3					9/24/91	4	10/04/91	14	
OBA-1B	9/17/91	9/19/91	1	9/23/91	5	9/26/91	8	9/23/91	5	10/02/91	14	
OBA-1B DL	9/17/91	9/20/91	2	NA	NA	NA	NA					
OBA-1C	9/17/91	9/19/91	1	9/23/91	5	9/26/91	8	9/23/91	5	10/03/91	15	
OBA-1C DL	9/17/91	9/20/91	2	NA	NA	NA	NA					
OBA-4B	9/18/91	9/20/91	2	9/23/91	5	9/27/91	9	9/23/91	5	10/03/91	15	
OBA-4C	9/18/91	9/20/91	2	9/23/91	5	9/27/91	9	9/23/91	5	10/04/91	16	
OBA-4C DL	9/18/91	9/21/91	3									
OBA-8B	9/18/91	9/20/91	2	9/23/91	5	9/26/91	8	9/23/91	5	10/04/91	16	
OBA-8B DL	9/18/91	9/21/91	3	9/23/91	5	9/26/91	8					
OBA-8C	9/18/91	9/20/91	2	9/23/91	5	9/26/91	8	9/23/91	5	10/03/91	15	
OBA-9B	9/18/91	9/20/91	2	9/23/91	5	9/26/91	8	9/23/91	5	10/04/91	16	
OBA-9B DL	9/18/91	9/21/91	3									
FB-1	9/18/91	9/19/91	1									
RB-1	9/18/91	9/19/91	1	9/23/91	5	9/27/91	9	9/23/91	5	10/03/91	15	
TB-1	9/18/91	9/19/91	1									
2CONAPL	9/20/91	9/26/91	6	9/27/91	7	10/02/91	12	9/27/91	7	10/04/91	14	
2CONAPL DL	9/20/91	9/27/91	7	9/27/91	7	10/03/91	13	9/27/91	7	10/04/91	14	
OBA-2B	9/23/91	9/25/91	2	9/26/91	3	10/01/91	8	9/27/91	4	10/04/91	14	
OBA-3A	9/23/91	9/25/91	2	9/26/91	3	10/01/91	8	9/27/91	4	10/04/91	11	
OBA-3B	9/23/91	9/26/91	3	9/26/91	3	10/01/91	8	9/27/91	4	10/04/91	11	
OBA-3D	9/23/91	9/26/91	3	9/26/91	3	10/01/91	8	9/27/91	4	10/04/91	11	
OBA-4A	9/20/91	9/23/91	3	9/25/91	5	9/30/91	10	9/24/91	4	10/03/91	13	
OBA-5A	9/20/91	9/24/91	4	9/25/91	5	10/01/91	11	9/24/91	4	10/09/91	19	
OBA-5ADL	9/20/91	9/24/91	4	9/25/91	5	10/01/91	11	9/24/91	4	10/09/91	19	
OBA-5B	9/20/91	9/24/91	4	9/25/91	5	9/30/91	10	9/24/91	4	10/09/91	19	
OBA-5B DL	9/20/91	9/24/91	4	9/25/91	5	10/01/91	11	9/24/91	4	10/09/91	19	
OBA-5D	9/20/91	9/24/91	4	9/25/91	5	10/07/91	17	9/24/91	4	10/03/91	13	
OBA-6A	9/20/91	9/24/91	4	9/25/91	5	9/30/91	10	9/24/91	4	10/03/91	13	
OBA-6B	9/19-20/91	9/24/91	4	9/25/91	5	9/30/91	10	9/24/91	4	10/04/91	14	
OBA-6C	9/19-20/91	9/23/91	3	9/25/91	5	10/02/91	12	9/24/91	4	10/09/91	19	
OBA-6C DL	9/19-20/91	9/24/91	4									
OBA-7A	9/19-20/91	9/23/91	3	9/25/91	5	9/30/91	10	9/24/91	4	10/03/91	13	
OBA-7B	9/19-20/91	9/24/91	4	9/25/91	5	9/30/91	10	9/24/91	4	10/03/91	13	
OBA-8B	9/19-20/91	9/23/91	3	9/25/91	5	9/30/91	10	9/24/91	4	10/03/91	13	

Location: OLIN-1
Data Type: CLP
Quarter: 1
Year: 91
Auditor: AJM
Reviewer: _____
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Woodward-Clyde Consultants

FORM 2A **ANALYTICAL QA/QC: HOLDING** **TIME WORKSHEET**

Location: OLIN-NF
 Date Type: CLP
 Quarter: 1
 Year: 91
 Auditor: AJM
 Reviewer: _____
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Well	Date Sampled EVTSR	METHANOL		MERCURY		No. of days between VTSR & Analysis	No. of days between Extraction & Analysis			
		Date Analyzed	No. of Days	Date Extracted	No. of Days	Date Analyzed	Date Extracted	No. of Days	Date Analyzed	No. of days between Extraction & Analysis
BH-1	9/18/91	9/28/91	10			9/26/91				
BH-3	9/18/91	9/28/91	10			9/30/91				
OBA-1A	9/17-18/91	9/28/91	10			9/26/91				
OBA-1B	9/17-18/91	9/28/91	10			9/30/91				
OBA-1C	9/17-18/91	9/28/91	10			9/24/91				
OBA-4B	9/18/91	9/28/91	10			9/24/91				
OBA-4C	9/18/91	9/28/91	10			9/24/91				
OBA-8B	9/18/91	9/28/91	10			9/24/91				
OBA-8C	9/18/91	9/28/91	10			9/24/91				
OBA-9B	9/18/91	9/28/91	10			9/24/91				
FB-1	9/18/91	9/28/91	10							
RB-1	9/18/91	9/28/91	10			9/24/91				
TB-1	9/18/91	9/28/91	10			9/30/91				
OBA-2B	9/23/91	9/27/91	4							
OBA-3A	9/23/91	9/27/91	4			9/26/91				
OBA-3B	9/23/91	9/27/91	4			9/26/91				
OBA-3D	9/23/91	9/27/91	4			9/26/91				
OBA-4A	9/23/91	9/27/91	4			9/26/91				
OBA-5A	9/20/91	9/27/91	7			9/30/91				
OBA-5B	9/20/91	9/27/91	7			9/26/91				
OBA-5D	9/20/91	9/27/91	7			9/30/91				
OBA-6A	9/20/91	9/27/91	7			9/26/91				
OBA-6ADL	9/20/91	9/27/91	7							
OBA-6B	9/19-20/91	9/27/91	7			9/30/91				
OBA-6C	9/19-20/91	9/27/91	7			9/26/91				
OBA-7A	9/19-20/91	9/27/91	7			9/26/91				
OBA-7B	9/19-20/91	9/27/91	7			9/30/91				
OBA-8A	9/19-20/91	9/27/91	7			9/30/91				
OPW	9/23/91	9/27/91	4			9/26/91				
RB-2	9/20/91	9/26/91	6			9/26/91				
TB-2	9/20/91	9/27/91	7							
Zc-DNAPL	9/20/91	9/27/91	7			10/02/91				
FB-2	10/7/91	10/8/91	1							
OBA-2C	10/4/91	10/7/91	3			10/9/91				
OBA-3C	10/4/91	10/7/91	3			10/9/91				
OBA-5C	10/7/91	10/8/91	1			10/9/91				
OBA-7C	10/7/91	10/8/91	1			10/9/91				
QA-1	10/7/91	10/8/91	1			10/9/91				
RB-3	10/7/91	10/8/91	1							

FORM 2B **ANALYTICAL QA/QC: HOLDING** **TIME WORKSHEET**

Location: OLIN-NF
 Data Type: CLP
 Quarter: 1
 Year: 91
 Auditor: AJM
 Reviewer: _____
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Well	Date Sampled VTSR	Total Hg		TCLP Hg		TCLP Hg		TCLP Hg			
		Date Analyzed	No. of Days	Date Collected	TCLP Prep DATE	No. of DAYS		Date Analyzed	No. of Days	Date Analyzed	No. of Days
1-0-2	10/17/91	10/28/91	11	10/14/91	10/25/91	11		10/25/91	0		
1-2-4	10/17/91	10/31/91	14	10/14/91	10/25/91	11		10/25/91	0		
1-4-6	10/17/91	10/30/91	13	10/14/91	10/25/91	11		10/25/91	0		
1-6-8	10/17/91	10/30/91	13	10/14/91	10/28/91	14		10/28/91	0		
1-8-10	10/17/91	10/31/91	14	10/14/91	10/25/91	11		10/25/91	0		
2-0-2	10/17/91	10/29/91	12	10/15/91	10/25/91	10		10/25/91	0		
2-2-4	10/17/91	10/28/91	11	10/15/91	10/25/91	10		10/25/91	0		
3-0-2	10/17/91	10/28/91	11	10/15/91	10/25/91	10		10/25/91	0		
3-2-4	10/17/91	10/28/91	11	10/15/91	10/25/91	10		10/25/91	0		
3-4-6	10/17/91	10/28/91	11	10/15/91	10/25/91	10		10/25/91	0		
3-6-8	10/17/91	10/28/91	11	10/15/91	10/25/91	10		10/25/91	0		
QA1	10/17/91	10/29/91	12	10/15/91	10/25/91	10		10/25/91	0		
4-0-2	10/17/91	10/30/91	13	10/15/91	10/25/91	10		10/25/91	0		
4-2-4	10/17/91	10/28/91	11	10/15/91	10/25/91	10		10/25/91	0		
5-0-2	10/17/91	10/29/91	12	10/15/91	10/25/91	10		10/25/91	0		
5-2-4	10/17/91	10/30/91	13	10/15/91	10/25/91	10		10/25/91	0		
5-4-6	10/17/91	10/28/91	11	10/15/91	10/25/91	10		10/25/91	0		
QA2	10/17/91	10/30/91	13	10/15/91	10/25/91	10		10/25/91	0		
6-0-2	10/17/91	10/30/91	13	10/15/91	10/25/91	10		10/25/91	0		
6-3-5	10/17/91	10/30/91	13	10/15/91	10/25/91	10		10/25/91	0		
6-5-7	10/17/91	10/29/91	12	10/15/91	10/25/91	10		10/25/91	0		
6-7-9	10/17/91	10/28/91	11	10/15/91	10/25/91	10		10/25/91	0		
7-0-2	10/17/91	10/30/91	13	10/16/91	10/25/91	9		10/25/91	0		
7-2-4	10/17/91	10/30/91	13	10/16/91	10/25/91	9		10/25/91	0		
8-0-2	10/17/91	10/30/91	13	10/16/91	10/25/91	9		10/25/91	0		
8-2-4	10/17/91	10/30/91	13	10/16/91	10/25/91	9		10/25/91	0		
9-0-2	10/17/91	10/30/91	13	10/16/91	10/25/91	9		10/25/91	0		
9-2-4	10/17/91	10/30/91	13	10/16/91	10/25/91	9		10/25/91	0		
10-0-2	10/17/91	10/31/91	14	10/16/91	10/29/91	13		10/29/91	0		
10-2-4	10/17/91	10/31/91	14	10/16/91	10/29/91	13		10/29/91	0		
11-0-2	10/17/91	10/31/91	14	10/16/91	10/29/91	13		10/29/91	0		
11-2-4	10/17/91	10/30/91	13	10/16/91	10/25/91	9		10/25/91	0		
QA3	10/17/91	10/31/91	14	10/16/91	10/29/91	13		10/29/91	0		
12-0-2	10/17/91	10/30/91	13	10/17/91	10/25/91	8		10/25/91	0		
12-2-4	10/17/91	10/30/91	13	10/17/91	10/29/91	12		10/29/91	0		
13-0-2	10/17/91	10/30/91	13	10/17/91	10/29/91	12		10/29/91	0		
13-2-4	10/17/91	10/30/91	13	10/17/91	10/25/91	8		10/25/91	0		
14-0-2	10/17/91	10/30/91	13	10/17/91	10/25/91	8		10/25/91	0		

Location: OLIN-N
Data Type: CLP
Quarter: 1
Year: 91
Auditor: AJM
Reviewer: _____
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Woodward-Clyde Consultants 

Location: OLIN - NF
Data Type: CLP
Quarter: 1
Year: 91
Auditor: AJM
Reviewer: _____
Page 7 of 7

Woodward-Clyde Consultants 

2A
WATER VOLATILE SURROGATE RECOVERY

0120

b Name: RECRA ENVIRON Contract: Q89-240
b Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	BH1	102	101	89	0	0
02	BH3	101	89	90	0	0
03	BH3DL	102	96	88	0	0
04	FB1	98	93	94	0	0
05	OBA1A	107	100	89	0	0
06	OBA1B	106	93	88	0	0
07	OBA1BDL	102	104	93	0	0
08	OBA1C	100	106	46 *	0	1
09	OBA1CDL	107	90	85	0	0
10	OBA4B	106	92	85	0	0
11	OBA4C	105	94	86	0	0
12	OBA4CDL	108	98	86	0	0
13	OBA8B	100	106	62 *	0	1
14	OBA8BDL	102	96	88	0	0
15	OBA8C	104	93	88	0	0
16	OBA9B	102	93	82	0	0
17	OBA9BDL	104	97	86	0	0
18	RB1	99	89	90	0	0
19	TB1	99	95	92	0	0
20	OBA1BMSDDL	95	90	87	0	0
21	OBA1BMSDL	96	95	86	0	0
22	VBLK34	98	95	90	0	0
23	VBLK35	105	106	96	0	0
24	VBLK37	104	105	93	0	0

QC LIMITS

S1 (TOL) = Toluene-d8 (88-110)
S2 (BFB) = Bromofluorobenzene (86-115)
S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

252

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	OBA2B	100	100	91	0	0
02	OBA3A	96	98	99	0	0
03	OBA3B	94	93	92	0	0
04	OBA3D	96	92	94	0	0
05	OBA4A	102	99	97	0	0
06	OBA5A	99	102	95	0	0
07	OBA5ADL	102	96	98	0	0
08	OBA5B	99	104	92	0	0
09	OBA5BDL	101	99	96	0	0
10	OBA5D	100	102	97	0	0
11	OBA6A	100	98	101	0	0
12	OBA6B	102	88	100	0	0
13	OBA6C	98	94	97	0	0
14	OBA6CDL	98	97	100	0	0
15	OBA7A	102	98	96	0	0
16	OBA7B	102	93	101	0	0
17	OBA8A	102	97	90	0	0
18	OBA8ADL	100	99	93	0	0
19	OPW	100	94	86	0	0
20	OPWDL	99	98	92	0	0
21	RB-2	102	96	98	0	0
22	TB-2	103	96	96	0	0
23	OPWMS	98	94	92	0	0
24	OPWMSD	97	94	86	0	0
25	OPWMSDDL	98	101	92	0	0
26	OPWMSDL	99	99	93	0	0
27	VLK42D	102	98	95	0	0
28	VLK43	102	102	97	0	0
29	VLK41	102	105	93	0	0
30	VLK42E	99	99	95	0	0

QC LIMITS
S1 (TOL) = Toluene-d8 (88-110)
S2 (BFB) = Bromofluorobenzene (86-115)
S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2B
SOIL VOLATILE SURROGATE RECOVERY

Name: RECRA ENVIRON Contract: Q89-240
 Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 el: (low/med) MED

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	2CDNAPL	91	92	85	0	0
02	2CDNAPLDL	99	99	94	0	0
03	VBLK45	99	99	94	0	0

QC LIMITS
 S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2A
WATER VOLATILE SURROGATE RECOVERY

81

I b Name: RECRA ENVIRON Contract: Q89-240
I b Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA-2C

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	FIELD BLANK2	104	110	100	0	0
02	OBA2C	89	86	100	0	0
03	OBA2CDL	100	108	98	0	0
04	OBA3C	94	101	98	0	0
05	OBA5C	100	104	95	0	0
06	OBA7C	102	94	89	0	0
07	QA1	106	96	94	0	0
08	RINSE BLANK3	101	101	97	0	0
09	VLK20	103	106	94	0	0
10	VLK22	100	106	98	0	0
11	VLK49	103	100	94	0	0
12	VLK50	103	94	89	0	0

QC LIMITS

S1 (TOL) = Toluene-d8 (88-110)
S2 (BFB) = Bromofluorobenzene (86-115)
S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2A
WATER VOLATILE SURROGATE RECOVERY

149

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

	EPA SAMPLE NO. =====	S1 (TOL) # =====	S2 (BFB) # =====	S3 (DCE) # =====	OTHER =====	TOT OUT =====
01	RB5	100	100	94	0	0
02	VBLK61	101	99	95	0	0

QC LIMITS

S1 (TOL) = Toluene-d8 (88-110)
 S2 (BFB) = Bromofluorobenzene (86-115)
 S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2B
SOIL VOLATILE SURROGATE RECOVERY

I b Name: RECRA ENVIRON Contract: Q89-240R
 I b Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
 Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
	=====	=====	=====	=====	=====	=====
01	MSBLANK	99	100	90	0	0
02	OSB1702	102	94	92	0	0
03	OSB1724	103	97	102	0	0
04	OSB1746	95	101	93	0	0
05	OSB1768	105	94	98	0	0
06	OSB1802	106	91	97	0	0
07	OSB1824	105	91	94	0	0
08	OSB1846	99	98	96	0	0
09	OSB1868	97	99	100	0	0
10	QA5	95	80	95	0	0
11	OSB1846MS	98	95	99	0	0
12	OSB1846MSD	103	96	99	0	0
13	VBLK31	100	104	103	0	0
14	VBLK32	98	99	92	0	0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

0121

Lab Name: RECRA ENVIRON

Contract: Q89-240

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: 1BH1

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	BH3	111	91	55	28	73	109	0	0
02	BH3DL	36	70	35	34	35	0 D	0	0
03	OBA1B	62	64	89	55	81	122	0	0
04	OBA1C	101	97	92	58	79	99	0	0
05	OBA4B	82	80	105	50	71	63	0	0
06	OBA4C	102	97	97	25	62	76	0	0
07	OBA8B	108	100	91	37	59	84	0	0
08	OBA8C	91	90	93	39	67	82	0	0
09	OBA9B	66	65	71	52	81	95	0	0
10	RB1	53	57	114	43	61	79	0	0
11	OBA1BMS	86	81	89	68	103 *	120	0	1
12	OBA1BMSD	74	70	98	56	88	113	0	0
13	SBLK24	58	63	97	39	69	93	0	0

S1 (NBZ) = Nitrobenzene-d5	QC LIMITS
S2 (FBP) = 2-Fluorobiphenyl	(35-114)
S3 (TPH) = Terphenyl	(43-116)
S4 (PHL) = Phenol-d5	(33-141)
S5 (2FP) = 2-Fluorophenol	(10-94)
S6 (TBP) = 2,4,6-Tribromophenol	(21-100)
	(10-123)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogates diluted out

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	BH1	72	77	57	27	38	63	0	0
02	OBA1A	90	88	38	28	42	80	0	0
03	OBA2B	72	71	73	40	61	85	0	0
04	OBA2BDL	50	65	55	33	53	46	0	0
05	OBA3A	73	69	53	38	58	95	0	0
06	OBA3ADL	46	58	40	28	48	40	0	0
07	OBA3B	82	84	68	40	59	101	0	0
08	OBA3BDL	52	66	42	25	42	28	0	0
09	OBA3D	115 *	105	65	48	74	84	0	1
10	OBA3DDL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
11	OBA4A	76	78	27 *	34	54	65	0	1
12	OBA5A	93	88	71	0 *	0 *	0 *	0	3
13	OBA5ADL	0 D	62	35	0 D	0 D	0 D	0	0
14	OBA5ARE	83	80	93	0 *	0 *	0 *	0	3
15	OBA5AREDL	43	58	57	0 D	0 D	0 D	0	0
16	OBA5ARERE	85	90	90	0 *	0 *	0 *	0	3
17	OBA5B	84	76	82	52	64	96	0	0
18	OBA5BDL	50	67	57	36	49	50	0	0
19	OBA5D	77	90	87	0 *	0 *	4 *	0	3
20	OBA5DDL	52	56	67	0 D	0 D	0 D	0	0
21	OBA5DRE	63	76	85	1 *	0 *	4 *	0	3
22	OBA5DREDL	35	55	49	0 D	0 D	0 D	0	0
23	OBA6A	81	72	70	40	55	79	0	0
24	OBA6B	90	75	86	34	47	87	0	0
25	OBA6BDL	0 D	70	55	12	26	0 D	0	0
26	OBA6C	58	60	44	19	22	35	0	0
27	OBA7A	76	83	70	35	56	93	0	0
28	OBA7B	82	80	86	42	52	93	0	0
29	OBA8A	81	72	63	30	42	62	0	0
30	OPW	99	105	115	55	80	96	0	0

QC LIMITS
S1 (NBZ) = Nitrobenzene-d5 (35-114)
S2 (FBP) = 2-Fluorobiphenyl (43-116)
S3 (TPH) = Terphenyl (33-141)
S4 (PHL) = Phenol-d5 (10-94)
S5 (2FP) = 2-Fluorophenol (21-100)
S6 (TBP) = 2,4,6-Tribromophenol (10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

255

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RECRA ENVIRON Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	OPWMS	87	92	99	46	69	112	0	0
02	OPWMSD	89	92	96	49	75	109	0	0
03	RB-2	71	72	89	31	48	93	0	0
04	SBLK24	79	53	99	39	56	66	0	0
05	SBLK25	67	68	78	38	56	74	0	0
06	SBLK32	79	82	100	42	59	72	0	0
07	SBLK65	97	56	129	45	73	117	0	0

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 (35-114)
 S2 (FBP) = 2-Fluorobiphenyl (43-116)
 S3 (TPH) = Terphenyl (33-141)
 S4 (PHL) = Phenol-d5 (10-94)
 S5 (2FP) = 2-Fluorophenol (21-100)
 S6 (TBP) = 2,4,6-Tribromophenol (10-123)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogates diluted out

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

151

Lab Name: RECRA ENVIRON Contract: Q89-240R
 b Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	RB-5	87	97	76	50	111 *	95	0	1
02	SBLK56	76	87	78	45	95	94	0	0

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 (35-114)
 S2 (FBP) = 2-Fluorobiphenyl (43-116)
 S3 (TPH) = Terphenyl (33-141)
 S4 (PHL) = Phenol-d5 (10-94)
 S5 (2FP) = 2-Fluorophenol (21-100)
 S6 (TBP) = 2,4,6-Tribromophenol (10-123)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogates diluted out

2D

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RECRA ENVIRON Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1Level: (low/med) MED

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	2CDNAPL	59	69	64	105	72	96	0	0
02	2CDNAPLDL	49	64	54	70	66	0 D	0	0
03	SBLK30	67	70	75	74	78	76	0	0

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 (23-120)

S2 (FBP) = 2-Fluorobiphenyl (30-115)

S3 (TPH) = Terphenyl (18-137)

S4 (PHL) = Phenol-d5 (24-113)

S5 (2FP) = 2-Fluorophenol (25-121)

S6 (TBP) = 2,4,6-Tribromophenol (19-122)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

82

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA2C

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	OBA2C	51	51	55	44	64	84	0	0
02	OBA2CDL	37	40 *	35	35	48	48	0	1
03	OBA3C	70	72	61	39	37	79	0	0
04	OBA3CDL	49	63	30 *	33	44	0 D	0	1
05	OBA5C	63	70	81	46	52	97	0	0
06	OBA7C	61	63	73	43	48	99	0	0
07	OBA7CDL	59	65	66	45	58	68	0	0
08	QA1	67	71	77	32	39	89	0	0
09	QA1DL	60	71	65	30	39	59	0	0
10	RINSEBLANK3	56	65	65	32	31	45	0	0
11	SBLK50	69	69	77	34	47	87	0	0

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 (35-114)
 S2 (FBP) = 2-Fluorobiphenyl (43-116)
 S3 (TPH) = Terphenyl (33-141)
 S4 (PHL) = Phenol-d5 (10-94)
 S5 (2FP) = 2-Fluorophenol (21-100)
 S6 (TBP) = 2,4,6-Tribromophenol (10-123)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogates diluted out

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

152

Lab Name: RECRA ENVIRON

Contract: Q89-240R

Lab Code: RECNY

Case No.: 3046

SAS No.: _____

SDG No.: OSB15A

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
	=====	=====	=====	=====	=====	=====	=====	=====	=====
01	OSB1702	82	115	88	91	103	49	0	0
02	OSB1702DL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
03	OSB1724	114	81	81	88	93	39	0	0
04	OSB1724DL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
05	OSB1746	102	73	99	95	99	55	0	0
06	OSB1746DL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
07	OSB1802	144 *	81	103	78	97	71	0	1
08	OSB1802DL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
09	OSB1824	156 *	102	100	83	95	86	0	1
10	OSB1824DL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
11	OSB1846	102	87	86	90	96	87	0	0
12	OSB1846DL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
13	OSB1868	122 *	100	103	102	109	101	0	1
14	OSB1868DL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
15	QA5	123 *	83	105	90	105	92	0	1
16	QA5DL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
17	OSB1846MS	111	98	99	105	101	93	0	0
18	OSB1846MSD	390 *	91	88	96	94	86	0	1
19	OSB1846MSDDL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
20	OSB1846MSDL	0 D	0 D	0 D	0 D	0 D	0 D	0	0
21	SBLK66	106	103	98	78	92	101	0	0

S1 (NBZ) = Nitrobenzene-d5	QC LIMITS
S2 (FBP) = 2-Fluorobiphenyl	(23-120)
S3 (TPH) = Terphenyl	(30-115)
S4 (PHL) = Phenol-d5	(18-137)
S5 (2FP) = 2-Fluorophenol	(24-113)
S6 (TBP) = 2,4,6-Tribromophenol	(25-121)
	(19-122)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogates diluted out

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

153

Lab Name: RECRA ENVIRON Contract: Q89-240R
 Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
 Level: (low/med) MED

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
	=====	=====	=====	=====	=====	=====	=====	=====	=====
01	OSB1768	101	87	89	113	137 *	68	0	1
02	OSB1768DL	127 *	0 D	127	144 *	150 *	0 D	0	3
03	OSB1768MS	65	69	66	110	111	65	0	0
04	OSB1768MSD	60	68	58	90	88	57	0	0
05	OSB1768MSDDL	0 D	0 D	104	113	106	0 D	0	0
06	OSB1768MSDL	0 D	0 D	0 D	144 *	132 *	0 D	0	2
07	SBLK67	99	99	108	83	102	109	0	0

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 (23-120)
 S2 (FBP) = 2-Fluorobiphenyl (30-115)
 S3 (TPH) = Terphenyl (18-137)
 S4 (PHL) = Phenol-d5 (24-113)
 S5 (2FP) = 2-Fluorophenol (25-121)
 S6 (TBP) = 2,4,6-Tribromophenol (19-122)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogates diluted out

2E
WATER PESTICIDE SURROGATE RECOVERY

0122

Name: RECRA ENVIRON Contract: _____

Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

	EPA SAMPLE NO.	S1 (DBC) #	OTHER
	=====	=====	=====
01	PBLK10	99	0
02	BH1	96	0
03	BH3	0 D	0
04	BH3DL	0 D	0
05	OBA1B	93	0
06	OBA1C	93	0
07	OBA4B	86	0
08	OBA4C	75	0
09	OBA8B	90	0
10	OBA8C	100	0
11	OBA9B	80	0
12	RB1	94	0
13	OBA1BMS	121	0
14	OBA1BMSD	99	0

ADVISORY
QC LIMITS
(24-154)

S1 (DBC) = Dibutylchloroendate

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

257

2E
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: RECRA ENVIRON Contract: _____
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

	EPA SAMPLE NO. =====	S1 (DBC) # =====	OTHER =====
01	PBLK11	103	0
02	PBLK12	94	0
03	OBA1A	92	0
04	OBA2B	53	0
05	OBA3A	85	0
06	OBA3B	79	0
07	OBA3D	76	0
08	OBA4A	104	0
09	OBA5A	0 D	0
10	OBA5ADL	0 D	0
11	OBA5B	0 D	0
12	OBA5BDL	0 D	0
13	OBA5D	0 D	0
14	OBA5DDL	0 D	0
15	OBA6A	54	0
16	OBA6B	73	0
17	OBA6C	0 D	0
18	OBA7A	93	0
19	OBA7B	96	0
20	OBA8A	106	0
21	OPW	90	0
22	RB2	103	0
23	OPWMS	91	0
24	OPWMSD	88	0

ADVISORY
QC LIMITS
(24-154)

S1 (DBC) = Dibutylchloroendate

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2F
SOIL PESTICIDE SURROGATE RECOVERY

258

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Level: (low/med) LOW

	EPA SAMPLE NO. =====	S1 (DBC) # =====	OTHER =====
01	PBLK13	109	0
02	2CDNAPL	101	0
03	2CDNAPLDL	0 D	0

ADVISORY
QC LIMITS
(20-150)

S1 (DBC) = Dibutylchloroendate

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2E
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA2C

	EPA SAMPLE NO.	S1 (DBC) #	OTHER
	=====	=====	=====
01	PBLK22 ✓	89	0
02	OBA2C	76	0
03	OBA3C	86	0
04	OBA5C	88	0
05	OBA7C	93	0
06	QA1	89	0
07	RB3	92	0

ADVISORY
QC LIMITS
(24-154)

S1 (DBC) = Dibutylchloroendate

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2E
WATER PESTICIDE SURROGATE RECOVERY

154

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB15A

	EPA SAMPLE NO. =====	S1 (DBC) # =====	OTHER =====
01	PBLK21	113	0
02	RB5	106	0

ADVISORY
QC LIMITS
(24-154)

S1 (DBC) = Dibutylchloroendate

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2F
SOIL PESTICIDE SURROGATE RECOVERY

155

al Name: RECRA ENVIRON Contract: _____
a Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB15A
level: (low/med) LOW

	EPA SAMPLE NO.	S1 (DBC) #	OTHER
	=====	=====	=====
01	PBLK22	113	0
02	OSB1702	0 D	0
03	OSB1702DL	0 D	0
04	OSB1724	0 D	0
05	OSB1724DL	0 D	0
06	OSB1746	100	0
07	OSB1746DL	0 D	0
08	OSB1768	885 *	0
09	OSB1768DL	0 D	0
10	OSB1802	0 D	0
11	OSB1802DL	0 D	0
12	OSB1824	0 D	0
13	OSB1824DL	0 D	0
14	OSB1846	0 D	0
15	OSB1846DL	0 D	0
16	OSB1868	83	0
17	OSB1868DL	0 D	0
18	QA5	0 D	0
19	QA5DL	0 D	0
20	OSB1846MS	0 D	0
21	OSB1846MSD	0 D	0
22	OSB1846MSDDL	0 D	0
23	OSB1846MSDL	0 D	0

ADVISORY
QC LIMITS
(20-150)

S1 (DBC) = Dibutylchloroendate

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

NYSDEC

6
DUPLICATES267
NYSDEC SAMPLE NO.

OPW

Lab Name: Recra Environmental, Inc.Contract: Q89-240Lab Code: RECNYCase No.: 3692SAS No.: SDG No.: BH-1Matrix (soil/water): WATERLevel (low/med): % Solids for Sample: 0.0% Solids for Duplicate: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample		Duplicate		RPD	Q	M
		(S)	C	(D)	C			
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury	0.2	0.3		0.2		40.0		CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

FORM VI - IN

B-116

2D
NON-HALOGENATED VOLATILE ORGANICS SURROGATE RECOVERY
METHOD 8015

259

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

	SAMPLE NO.	S1	OTHER
01	MB-3	98	
02	2C-DNAPL	56	N
03	MSB-3	123	
04	OBA-6B	99	
05	OBA-6C	97	
06	OBA-7A	75	
07	MSB-1	99	
08	OBA-7B	97	
09	OBA-8A	101	
10	TB-2	83	
11	MB-2	79	
12	MB-1	82	
13	RB-2	86	
14	OBA-4A	83	
15	OBA-5A	95	
16	OBA-5B	99	
17	OBA-5D	96	
18	OBA-6A	102	
19	VHB-1	87	
20	OBA-2B	98	
21	OBA-3A	87	
22	OBA-3B	84	
23	OBA-3D	83	
24	OPW	82	
25	OPW MS	88	
26	OPW MSD	86	
27	VHB	87	
28	MB-4	84	
29	MSB-2	86	
30			

S1 = 2-Hexanone

D Surrogates diluted out

CL_{A20} = 66-130

CL_{Solid} = 64-126

NYSDEC

5A
SPIKE SAMPLE RECOVERY

NYSDEC Sample NO.

OSB-8(2-4)S

Lab Name: Recra Environmental, Inc. Contract: 089-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-7(0-2')Matrix (soil/water): SOIL Level (low/med): _____Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spiked Added (SA)	%R	O	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury		76.8335		18.4581		54.91	106.3		CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

Comments: _____

FORM V (PART 1) - IN

B-114

69

NYSDEC

6

DUPLICATES

NYSDEC SAMPLE NO.

OBA1B

Lab Name: Recra Environmental, Inc. Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: SDG No.: BH-3Matrix (soil/water): WATER Level (low/med): % Solids for Sample: 0.0 % Solids for Duplicate: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		167		185		10.2		CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

FORM VI - IN

B-116

0124

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix Spike - EPA Sample No.: OBA1BDL

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	1000	0	1060	106	61-145
Trichloroethene	1000	2750	3870	112	71-120
Benzene	1000	18.4	1140	112	76-127
Toluene	1000	0	1110	111	76-125
Chlorobenzene	1000	29.2	1200	117	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene	1000	1000	100	6	14	61-145
Trichloroethene	1000	3510	76	38 *	14	71-120
Benzene	1000	1110	109	3	11	76-127
Toluene	1000	1020	102	8	13	76-125
Chlorobenzene	1000	1100	107	9	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

D: 1 out of 5 outside limits
 Spike Recovery: 0 out of 10 outside limits

COMMENTS: OBA1BDL JOB2683
 51E

2D
NON-HALOGENATED VOLATILE ORGANICS SURROGATE RECOVERY
METHOD 8015

0123

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

	SAMPLE NO.	S1	OTHER
01	Method Blank	98	
02	MSB	123	
03	OBA-1B	94	
04	OBA-1BMS	99	
05	OBA-1BMDS	98	
06	OBA-1C	102	
07	OBA-1A	103	
08	BH-3	101	
09	BH-1	96	
10	OBA-8C	103	
11	OBA-8B	101	
12	OBA-9B	98	
13	OBA-4C	102	
14	OBA-4B	100	
15	FB-1	97	
16	RB-1	100	
17	TB-1	99	
18	VHB-1	99	
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

S1 = Methyl Ethyl Ketone

D Surrogates diluted out

CL H₂O - 66-130

CL Sand 64-126

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Name: RECRA ENVIRON Contract: Q89-240
 Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Matrix Spike - EPA Sample No.: OPWDL

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	200	0	192	96	61-145
Trichloroethene	200	464	639	88	71-120
Benzene	200	0	194	97	76-127
Toluene	200	0	195	98	76-125
Chlorobenzene	200	0	199	100	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	200	214	107	-11	14 61-145
Trichloroethene	200	680	108	-20 *	14 71-120
Benzene	200	210	105	-8	11 76-127
Toluene	200	215	108	-10	13 76-125
Chlorobenzene	200	213	106	-6	13 75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

RPD. 1 out of 5 outside limits
 Spike Recovery: 0 out of 10 outside limits

COMMENTS: OPWDL JOB2729
 51E

2D
NON-HALOGENATED VOLATILE ORGANICS SURROGATE RECOVERY
METHOD 8015

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

	SAMPLE NO.	S1	OTHER
01	FB-2	105	
02	OBA-2C	96	
03	OBA-3C	97	
04	OBA-5C	101	
05	OBA-7C	97	
06	QA-1	97	
07	RB-3	101	
08	VHB-1	99	
09	VHB-2	105	
10	METHOD BLANK	103	
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

S1 = 2-Hexanone

D Surrogates diluted out

CL H₂O = 66-130

CL₃ 64-126

3B
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

157

Job Name: RECRA ENVIRON Contract: Q89-240R
 Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
 Matrix Spike - EPA Sample No.: OSB1846 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	59.0	0	61.6	104	59-172
Trichloroethene	59.0	0	56.4	96	62-137
Benzene	59.0	1.55	59.0	97	66-142
Toluene	59.0	0	57.6	98	59-139
Chlorobenzene	59.0	21.6	87.1	111	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	RPD	REC.
1,1-Dichloroethene	60.2	63.4	105	-1	22	59-172
Trichloroethene	60.2	56.6	94	2	24	62-137
Benzene	60.2	57.8	93	4	21	66-142
Toluene	60.2	57.6	96	2	21	59-139
Chlorobenzene	60.2	93.3	119	-7	21	60-133

Column to be used to flag recovery and RPD values with an asterisk
 Values outside of QC limits

0: 0 out of 5 outside limits
 Spike Recovery: 0 out of 10 outside limits

REMARKS: OSB1846 JOB3046
 I50H

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

o Name: RECRA ENVIRON Contract: Q89-240
 o Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 trix Spike - EPA Sample No.: OPW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.0	1.92	52.2	101	61-145
Trichloroethene	50.0	628	698	140 *	71-120
Benzene	50.0	1.68	52.6	102	76-127
Toluene	50.0	0	51.2	102	76-125
Chlorobenzene	50.0	0.866	53.6	106	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene	50.0	52.4	101	0	14	61-145
Trichloroethene	50.0	720	184 *	-27 *	14	71-120
Benzene	50.0	54.8	106	-4	11	76-127
Toluene	50.0	52.6	105	-3	13	76-125
Chlorobenzene	50.0	54.2	107	-1	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

D: 1 out of 5 outside limits
 ike Recovery: 2 out of 10 outside limits

MMMENTS: OPW JOB2729
 51E

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1
 Matrix Spike - EPA Sample No.: OBA1B

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	250	9.78	198	75	12- 86
2-Chlorophenol	250	0	248	99	27-123
1,4-Dichlorobenzene	125	0	95.8	77	36 97
N-Nitroso-di-n-prop. (1)	125	0	79.8	64	41 116
1,2,4-Trichlorobenzene	125	36.8	142	84	39 98
4-Chloro-3-methylphenol	250	0	312	125 *	23 97
Acenaphthene	125	0	101	81	46-118
4-Nitrophenol	250	0	158	63	10- 80
2,4-Dinitrotoluene	125	0	109	87	24- 96
Pentachlorophenol	250	0	169	68	9-103
Biphenyl	125	0	139	111	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
Phenol	250	165	62	19	42 12- 86
2-Chlorophenol	250	243	97	2	40 27-123
1,4-Dichlorobenzene	125	82.0	66	15	28 36 97
N-Nitroso-di-n-prop. (1)	125	74.2	59	8	38 41 116
1,2,4-Trichlorobenzene	125	118	65	26	28 39 98
4-Chloro-3-methylphenol	250	312	125 *	0	42 23 97
Acenaphthene	125	92.8	74	9	31 46-118
4-Nitrophenol	250	133	53	17	50 10- 80
2,4-Dinitrotoluene	125	113	90	-3	38 24- 96
Pentachlorophenol	250	186	74	-8	50 9-103
Biphenyl	125	152	122	-9	31 26-127

1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
 Values outside of QC limits

D. 0 out of 11 outside limits
 Spike Recovery: 2 out of 22 outside limits

COMMENTS: OBA-1B JOB2683 BN4003/04
 AUTOSAMPLER I50W

3X
SOIL VOLATILE MATRIX SPIKE RECOVERY

156

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix Spike - Sample No.: MSBLANK Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.0	0	50.2	100	75-125
Trichloroethene	50.0	0	47.6	95	75-125
Benzene	50.0	0	46.2	92	75-125
Toluene	50.0	0	48.6	97	75-125
Chlorobenzene	50.0	0	50.2	100	75-125

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS: VBLK32
I50H

3C

262

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RECRA ENVIRON

Contract: Q89-240

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: 2BH1

Matrix Spike - EPA Sample No.: OPW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	222	0	106	48	12- 86
2-Chlorophenol	222	0	205	92	27-123
1,4-Dichlorobenzene	111	0	89.0	80	36 97
N-Nitroso-di-n-prop. (1)	111	0	99.9	90	41 116
1,2,4-Trichlorobenzene	111	1.68	89.2	79	39 98
4-Chloro-3-methylphenol	222	0	226	102 *	23 97
Acenaphthene	111	0	105	95	46-118
4-Nitrophenol	222	0	87.7	40	10- 80
2,4-Dinitrotoluene	111	0	107	96	24- 96
Pentachlorophenol	222	0	96.3	43	9-103
Pyrene	111	0	124	112	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Phenol	222	105	47	2	42	12- 86
2-Chlorophenol	222	210	95	-3	40	27-123
1,4-Dichlorobenzene	111	91.9	83	-4	28	36 97
N-Nitroso-di-n-prop. (1)	111	101	91	-1	38	41 116
1,2,4-Trichlorobenzene	111	91.0	80	-1	28	39 98
4-Chloro-3-methylphenol	222	224	101 *	1	42	23 97
Acenaphthene	111	103	93	2	31	46-118
4-Nitrophenol	222	85.9	39	3	50	10- 80
2,4-Dinitrotoluene	111	104	94	2	38	24- 96
Pentachlorophenol	222	108	49	-13	50	9-103
Pyrene	111	120	108	4	31	26-127

1 N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limits

D: 0 out of 11 outside limits

Spiked Recovery: 2 out of 22 outside limits

Comments: OPW JOB2729 BN4103/04
AUTOSAMPLER I50W

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RECRA ENVIRON Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1Matrix Spike - EPA Sample No.: OBA1B

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	250	9.78	198	75	12- 86
2-Chlorophenol	250	0	248	99	27-123
1,4-Dichlorobenzene	125	0	95.8	77	36 97
N-Nitroso-di-n-prop. (1)	125	0	79.8	64	41 116
1,2,4-Trichlorobenzene	125	36.8	142	84	39 98
4-Chloro-3-methylphenol	250	0	312	125 *	23 97
Acenaphthene	125	0	101	81	46-118
4-Nitrophenol	250	0	158	63	10- 80
2,4-Dinitrotoluene	125	0	109	87	24- 96
Pentachlorophenol	250	0	169	68	9-103
Pyrene	125	0	139	111	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Phenol	250	165	62	19	42	12- 86
2-Chlorophenol	250	243	97	2	40	27-123
1,4-Dichlorobenzene	125	82.0	66	15	28	36 97
N-Nitroso-di-n-prop. (1)	125	74.2	59	8	38	41 116
1,2,4-Trichlorobenzene	125	118	65	26	28	39 98
4-Chloro-3-methylphenol	250	312	125 *	0	42	23 97
Acenaphthene	125	92.8	74	9	31	46-118
4-Nitrophenol	250	133	53	17	50	10- 80
2,4-Dinitrotoluene	125	113	90	-3	38	24- 96
Pentachlorophenol	250	186	74	-8	50	9-103
Pyrene	125	152	122	-9	31	26-127

1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limitsD: 0 out of 11 outside limits
like Recovery: 2 out of 22 outside limitsREMARKS: OBA-1B JOB2683 BN4003/04
AUTOSAMPLER I50W

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

158

Name: RECRA ENVIRONContract: Q89-240RCode: RECNYCase No.: 3046

SAS No.: _____

SDG No.: OSB15AMatrix Spike - EPA Sample No.: OSB1768DLLevel: (low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	433000	0	326000	75	26- 90
2-Chlorophenol	433000	0	237000	55	25-102
1,4-Dichlorobenzene	216000	0	145000	67	28 104
N-Nitroso-di-n-prop. (1)	216000	0	130000	60	41 126
1,2,4-Trichlorobenzene	216000	0	163000	75	38 107
4-Chloro-3-methylphenol	433000	0	171000	39	26 103
Acenaphthene	216000	1040000	853000	-87 *	31-137
4-Nitrophenol	433000	0	0	0 *	11-114
2,4-Dinitrotoluene	216000	0	0	0 *	28- 89
2,4,6-Trichlorophenol	433000	0	0	0 *	17-109
Pyrene	216000	2800000	2120000	-315 *	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Phenol	433000	317000	73	3	35	26- 90
2-Chlorophenol	433000	276000	64	-15	50	25-102
1,4-Dichlorobenzene	216000	140000	65	3	27	28 104
N-Nitroso-di-n-prop. (1)	216000	106000	49	20	38	41 126
1,2,4-Trichlorobenzene	216000	161000	75	0	23	38 107
4-Chloro-3-methylphenol	433000	198000	46	-16	33	26 103
Acenaphthene	216000	792000	-115 *	-28 *	19	31-137
4-Nitrophenol	433000	0	0 *	0	50	11-114
2,4-Dinitrotoluene	216000	0	0 *	0	47	28- 89
2,4,6-Trichlorophenol	433000	0	0 *	0	47	17-109
Pyrene	216000	1790000	-468 *	-39 *	36	35-142

() N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limitsRPD: 2 out of 11 outside limitsRecovery: 10 out of 22 outside limitsCOMMENTS: OSB-17(6-8)DL JOB3046 SS5072
AUTOSAMPLER I50W

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RECRA ENVIRONContract: Q89-240Lab Code: RECNYCase No.: 3692

SAS No.: _____

SDG No.: 1BH1Matrix Spike - EPA Sample No.: OBA1B

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC
3-Chlorophenol	250	0	230	92
3,5-Dichlorophenol	250	0	225	90
3,4,5-Trichlorophenol	250	0	294	118
2,3,4,5-Tetrachlorophen	250	0	295	118

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD
3-Chlorophenol	250	219	88	4
3,5-Dichlorophenol	250	213	85	5
3,4,5-Trichlorophenol	250	281	112	5
2,3,4,5-Tetrachlorophen	250	290	116	2

COMMENTS: OBA-1B JOB2683 BN4003/04
AUTOSAMPLER I50W

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

160

Lab Name: RECRA ENVIRON Contract: Q89-240R
Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
Matrix Spike - EPA Sample No.: OSB1846 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	16400	0	14300	87	26- 90
2-Chlorophenol	16400	0	15800	96	25-102
1,4-Dichlorobenzene	8200	2010	9920	96	28 104
N-Nitroso-di-n-prop. (1)	8200	0	2370	29 *	41 126
1,2,4-Trichlorobenzene	8200	1000000	546000	-999 *	38 107
4-Chloro-3-methylphenol	16400	0	15700	96	26 103
Acenaphthene	8200	0	7890	96	31-137
4-Nitrophenol	16400	0	17300	106	11-114
2,4-Dinitrotoluene	8200	0	7670	94 *	28- 89
Pentachlorophenol	16400	0	8360	51	17-109
Pyrene	8200	304	9100	107	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Phenol	16400	13800	84	4	35	26- 90
2-Chlorophenol	16400	13200	80	18	50	25-102
1,4-Dichlorobenzene	8220	7200	63	42 *	27	28 104
N-Nitroso-di-n-prop. (1)	8220	2540	31 *	-7	38	41 126
1,2,4-Trichlorobenzene	8220	1990000	9999 *	-244 *	23	38 107
4-Chloro-3-methylphenol	16400	46600	284 *	-99 *	33	26 103
Acenaphthene	8220	7680	93	3	19	31-137
4-Nitrophenol	16400	16100	98	8	50	11-114
2,4-Dinitrotoluene	8220	7280	89	5	47	28- 89
Pentachlorophenol	16400	15400	94	-59 *	47	17-109
Pyrene	8220	7890	92	15	36	35-142

1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limits

RPD: 4 out of 11 outside limits
Spike Recovery: 6 out of 22 outside limits

COMMENTS: OSB-18(4-6) JOB3046 SS5066
AUTOSAMPLER I50W

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RECRA ENVIRONContract: Q89-240Lab Code: RECNY Case No.: 3692

SAS No.: _____

SDG No.: 2BH1Matrix Spike - EPA Sample No.: OPW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #
3-Chlorophenol	222	0	77.2	35
3,5-Dichlorophenol	222	0	96.2	43
3,4,5-Trichlorophenol	222	0	104	47
2,3,4,5-Tetrachlorophenol	222	0	112	50

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #
3-Chlorophenol	222	81.4	37	-5
3,5-Dichlorophenol	222	93.5	42	9
3,4,5-Trichlorophenol	222	100	45	4
2,3,4,5-Tetrachlorophenol	222	111	50	0

COMMENTS: OPW JOB2729 BN4103/04
AUTOSAMPLER I50W

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

162

Lab Name: RECRA ENVIRON

Contract: Q89-240R

Lab Code: RECNY

Case No.: 3046

SAS No.: _____

SDG No.: 3SB15A

Matrix Spike - EPA Sample No.: OSB1846DL Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	16400	0	0	0 *	26- 90
2-Chlorophenol	16400	0	0	0 *	25-102
1,4-Dichlorobenzene	8200	0	0	0 *	28 104
N-Nitroso-di-n-prop. (1)	8200	0	0	0 *	41 126
1,2,4-Trichlorobenzene	8200	1930000	3210000	9999 *	38 107
4-Chloro-3-methylphenol	16400	0	0	0 *	26 103
Acenaphthene	8200	0	0	0 *	31-137
4-Nitrophenol	16400	0	0	0 *	11-114
2,4-Dinitrotoluene	8200	0	0	0 *	28- 89
Pentachlorophenol	16400	0	0	0 *	17-109
Pyrene	8200	0	0	0 *	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
Phenol	16600	0	0 *	0	35 26- 90
2-Chlorophenol	16600	0	0 *	0	50 25-102
1,4-Dichlorobenzene	8280	0	0 *	0	27 28 104
N-Nitroso-di-n-prop. (1)	8280	0	0 *	0	38 41 126
1,2,4-Trichlorobenzene	8280	1220000	-999 *	244 *	23 38 107
4-Chloro-3-methylphenol	16600	0	0 *	0	33 26 103
Acenaphthene	8280	0	0 *	0	19 31-137
4-Nitrophenol	16600	0	0 *	0	50 11-114
2,4-Dinitrotoluene	8280	0	0 *	0	47 28- 89
Pentachlorophenol	16600	0	0 *	0	47 17-109
Pyrene	8280	0	0 *	0	36 35-142

1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limits

RPD: 1 out of 11 outside limits

Like Recovery: 22 out of 22 outside limits

COMMENTS: OSB-18(4-6)DL JOB3046 SS5066
AUTOSAMPLR I50W

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

159

Lab Name: RECRA ENVIRONContract: Q89-240RLab Code: RECNYCase No.: 3046

SAS No.: _____

SDG No.: OSB15AMatrix Spike - EPA Sample No.: OSB1768Level: (low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	433000	0	234000	54	26- 90
2-Chlorophenol	433000	0	182000	42	25-102
1,4-Dichlorobenzene	217000	0	61800	28	28 104
N-Nitroso-di-n-prop. (1)	217000	0	82300	38 *	41 126
1,2,4-Trichlorobenzene	217000	0	66300	31 *	38 107
4-Chloro-3-methylphenol	433000	0	190000	44	26 103
Acenaphthene	217000	560000	440000	-55 *	31-137
4-Nitrophenol	433000	0	155000	36	11-114
2,4-Dinitrotoluene	217000	0	38800	18 *	28- 89
Pentachlorophenol	433000	0	325000	75	17-109
Pyrene	217000	2270000	1390000	-406 *	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Phenol	433000	193000	45	18	35	26- 90
2-Chlorophenol	433000	183000	42	0	50	25-102
1,4-Dichlorobenzene	217000	60900	28	0	27	28 104
N-Nitroso-di-n-prop. (1)	217000	83900	39 *	-3	38	41 126
1,2,4-Trichlorobenzene	217000	60900	28 *	10	23	38 107
4-Chloro-3-methylphenol	433000	141000	33	29	33	26 103
Acenaphthene	217000	349000	-97 *	-55 *	19	31-137
4-Nitrophenol	433000	113000	26	32	50	11-114
2,4-Dinitrotoluene	217000	54800	25 *	-33	47	28- 89
Pentachlorophenol	433000	88600	20	116 *	47	17-109
Pyrene	217000	912000	-626 *	-43 *	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
 Values outside of QC limits

PD: 3 out of 11 outside limitsSpike Recovery: 10 out of 22 outside limits

COMMENTS: OSB-17(6-8) JOB3046 SS5072
 AUTOSAMPLER I50W

3E

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RECRA ENVIRON Contract: _____

Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix Spike - EPA Sample No.: OBA1B

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
gamma-BHC (Lindane)	0.250	0	0.432	173 *	56-123
Heptachlor	0.250	0	0.310	124	40-131
Aldrin	0.250	0	0.298	119	40-120
Dieldrin	0.625	0	0.770	123	52-126
Eldrin	0.625	0	0.868	139 *	56-121
4,4'-DDT	0.625	0	0.738	118	38-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
gamma-BHC (Lindane)	0.250	0.559	224 *	-26 *	15	56-123
Heptachlor	0.250	0.256	102	19	20	40-131
Aldrin	0.250	0.244	98	19	22	40-120
Dieldrin	0.625	0.575	92	29 *	18	52-126
Eldrin	0.625	0.660	106	27 *	21	56-121
4,4'-DDT	0.625	0.605	97	20	27	38-127

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

Of 3 out of 6 outside limits
 Duplicate Recovery: 3 out of 12 outside limits

REMARKS:

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

161

Lab Name: RECRA ENVIRONContract: Q89-240RLab Code: RECNYCase No.: 3046

SAS No.: _____

SDG No.: OSB15AMatrix Spike - EPA Sample No.: OSB1846 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #
=====	=====	=====	=====	=====
3-Chlorophenol	16400	0	10090	62
3,5-Dichlorophenol	16400	0	10770	66
3,4,5-Trichlorophenol	16400	0	13210	81
2,3,4,5-Tetrachlorophenol	16400	0	13290	81

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #
=====	=====	=====	=====	=====
3-Chlorophenol	16400	38600	235	116
3,5-Chlorophenol	16400	11070	67	2
3,4,5-Trichlorophenol	16400	12540	76	6
2,3,4,5,-Tetrachlorophenol	16400	13500	82	1

COMMENTS: OSB-18(4-6) JOB3046 SS5066
AUTOSAMPLER I50W

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RECRA ENVIRON.

002

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RECRA ENVIRON

Contract:

Lab Code: RECNY

Case No.: 3692

SAS No.:

SDG No.: OSB15A

Matrix Spike - EPA Sample No.: OSB1846

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
=====	=====	=====	=====	=====	=====
gamma-BHC (Lindane)	66.3	387	576	DL	46-127
Heptachlor	66.3	0	0	DL	35-130
Aldrin	66.3	0	0	DL	34-132
Dieldrin	166	0	0	DL	31-134
Endrin	166	0	0	DL	42-139
4,4'-DDT	166	0	0	DL	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	RPD	REC.
gamma-BHC (Lindane)	66.8	345	DL	0	50	46-127
Heptachlor	66.8	0	DL	0	31	35-130
Aldrin	66.8	0	DL	0	43	34-132
Dieldrin	167	0	DL	0	38	31-134
Endrin	167	0	DL	0	45	42-139
4,4'-DDT	167	0	DL	0	50	23-134

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 6 outside limits

Spike Recovery: 12 out of 12 outside limits

COMMENTS: SPIKE RECOVERIES DILUTED OUT DUE TO SAMPLE MATRIX.

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RECRA ENVIRON Contract: Q89-240RLab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15AMatrix Spike - EPA Sample No.: OSB1846DL Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #
3-Chlorophenol	16400	0	0	0
3,5-Dichlorophenol	16400	0	0	0
3,4,5-Trichlorophenol	16400	0	0	0
2,3,4,5-Tetrachlorophenol	16400	0	0	0

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #
3-Chlorophenol	16400	0	0	0
3,5-chlorophenol	16400	0	0	0
3,4,5-Trichlorophenol	16400	0	0	0
2,3,4,5,-Tetracholophenol	16400	0	0	0

COMMENTS: OSB-18(4-6) JOB3046 SS5066
AUTOSAMPLER I50W

FORM III SV-2

1/87 Rev.

3D
NON-HALOGENATED VOLATILE ORGANICS MATRIX SPIKE/BLANK
METHOD 8015

0129

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix Spike - Sample No.: Method Spike Blank

COMPOUND	SPIKE ADDED (ng)	MSB CONCENTRATION (ng)	MSB CONCENTRATION (ng)	MS & REC
Methanol	10	0	12	120

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

ab Name: RECRA ENVIRON Contract: _____ab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1Matrix Spike - EPA Sample No.: OPW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
=====	=====	=====	=====	=====	=====
gamma-BHC (Lindane) _____	0.222	0.274	0.607	150 *	56-123
Heptachlor _____	0.222	0	0.237	107	40-131
Aldrin _____	0.222	0	0.171	77	40-120
Dieldrin _____	0.555	0	0.521	94	52-126
Endrin _____	0.555	0	0.547	99	56-121
4,4'-DDT _____	0.555	0	0.472	85	38-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	=====	=====
gamma-BHC (Lindane) _____	0.222	0.556	127 *	17 *	15	56-123
Heptachlor _____	0.222	0.216	97	10	20	40-131
Aldrin _____	0.222	0.162	73	5	22	40-120
Dieldrin _____	0.555	0.515	93	1	18	52-126
Endrin _____	0.555	0.540	97	2	21	56-121
4,4'-DDT _____	0.555	0.454	82	4	27	38-127

* Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 6 outside limitsSpike Recovery: 2 out of 12 outside limits

COMMENTS:

5A
SPIKE SAMPLE RECOVERY

266

NYSDEC Sample No.

OPW

Lab Name: Recra Environmental, Inc. Contract: 089-240

Lab Code: RECNY Case No.: 3692 SAS No.: SDG No.: BH-1

Matrix (soil/water): WATER Level (low/med):

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spiked Added (SA)	%R	O	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury	75-125	5.1		0.3		5.0	96.0		CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

Comments: _____

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3D

NON-HALOGENATED VOLATILE ORGANICS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
METHOD 8015Lab Name: RECRA ENVIRONMENTAL, INC.Case No.: 3692Matrix Spike - Sample No.: OPW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC
Methanol	10,000	0	9900	99

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD
Methanol	10,000	9410	94	5.2

COMMENTS: _____

NON-HALOGENATED VOLATILE ORGANICS MATRIX-SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
METHOD 8015

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

0128

Matrix Spike - Sample No.: OBA-1B

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC
Methanol	10,000	2100	10,300	82.0

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD
Methanol	10,000	10400	83	1.2

NYSDEC

5A
SPIKE SAMPLE RECOVERY

NYSDEC Sample NO.

OBA1B

Lab Name: Recra Environmental, Inc.Contract: Q89-240Lab Code: RECNY Case No.: 3692SAS No.: SDG No.: BH-3Matrix (soil/water): WATERLevel (low/med): Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spiked Added (SA)	%R	O	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury	75-125	171		167		5.0	80.6		CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

Comments: _____

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NYSDEC

6
DUPLICATES

267

NYSDEC SAMPLE NO.

OPW

Lab Name: Recra Environmental, Inc. Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: SDG No.: BH-1

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	O	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury	0.2	0.3		0.2		40.0		CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

FORM VI - IN

B-116

NYSDEC

5A
SPIKE SAMPLE RECOVERY

NYSDEC Sample NO.

OSB-8(0-2)S

Lab Name: Recra Environmental, Inc. Contract: Q89-240RLab Code: RECN Case No.: 3692 SAS No.: SDG No.: OSB-7(0-2')Matrix (soil/water): WATER Level (low/med): Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spiked Added (SA)	%R	Q	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury		7.3422		1.3		5.00	120.8		CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

Comments: TCLP EXTRACT

FORM V (PART 1) - IN

B-114

70

NYSDEC

6
DUPLICATES

NYSDEC SAMPLE NO.

OBA1B

Lab Name: Recra Environmental, Inc. Contract: Q89-240Lab Code: RECN Case No.: 3692 SAS No.: SDG No.: BH-3Matrix (soil/water): WATER Level (low/med): % Solids for Sample: 0.0 % Solids for Duplicate: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	O	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		167		185		10.2		CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

FORM VI - IN

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NYSDEC

5A
SPIKE SAMPLE RECOVERY

NYSDEC Sample NO.

OSB-18(4-6)S

Lab Name: Recra Environmental, Inc.Contract: 089-240RLab Code: RECNYCase No.: 3692

SAS No.: _____

SDG No.: OSB-15A(2-4)Matrix (soil/water): SOIL

Level (low/med): _____

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spiked Added (SA)	%R	O	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury		6.7850		1.7405		4.99	101.1		CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

Comments: _____

FORM V (PART 1) - IN

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NYSDEC

3149

5A
SPIKE SAMPLE RECOVERY

NYSDEC Sample NO.

OSB-18(4-6)S

Lab Name: Recra Environmental, Inc.

Contract: Q89-240R

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: OSB-15A(2-4)

Matrix (soil/water): WATER

Level (low/med): _____

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spiked Added (SA)	%R	O	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury		4.9196		0.5		5.00	88.3		CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

Comments: _____

NYSDEC

47

5A
SPIKE SAMPLE RECOVERY

NYSDEC Sample NO.

OSB-1(0-2)

Lab Name: Recra Environmental, Inc.

Contract: Q89-240R

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: OSB-1(0-2)

Matrix (soil/water): WATER

Level (low/med): _____

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spiked Added (SA)	%R	O	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury		5.0		0.2	U	5.0	100		CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

Comments: TCLP EXTRACT

NYSDEC

5A
SPIKE SAMPLE RECOVERY

NYSDEC Sample NO.

OSB-1(2-4)

Lab Name: Recra Environmental, Inc.

Contract: Q89-240R

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: OSB-1(0-2)

Matrix (soil/water): SOIL

Level (low/med): _____

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spiked Added (SA)	%R	Q
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		467.5743		458.1540		11.63	81.0	CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

Lab Spm

Comments: TCLP EXTRACT

NYSDEC

6
DUPLICATES

NYSDEC SAMPLE NO.

OSB-8(2-4)D

Lab Name: Recra Environmental, Inc. Contract: Q89-240R
 Lab Code: RECNY Case No.: 3692 SAS No.: SDG No. OSB-7(0-2')
 Matrix (soil/water): SOIL Level (low/med):
 % Solids for Sample: 90.4 % Solids for Duplicate: 90.4

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	O	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		18.4581		19.0913		3.4		CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

FORM VI - IN

NYSDEC

6

DUPLICATES

NYSDEC SAMPLE NO.

OSB-18(4-6)D

Lab Name: Recra Environmental, Inc.Contract: Q89-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No. OSB-15A(2-4)Matrix (soil/water): SOIL

Level (low/med): _____

% Solids for Sample: 83% Solids for Duplicate: 83Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		1.7405		1.6394		6.0		CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

FORM VI - IN

B-116

NYSDEC

46

6
DUPLICATES

NYSDEC SAMPLE NO.

OSB-1(2-4)

Lab Name: Recra Environmental, Inc. Contract: Q89-240RLab Code: RECN Case No.: 3692 SAS No.: _____ SDG No. OSB-1(0-2)Matrix (soil/water): SOIL Level (low/med): _____% Solids for Sample: 43.0 % Solids for Duplicate: 44.1Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								A
Antimony								F
Arsenic								F
Barium								A
Beryllium								A
Cadmium								A
Calcium								A
Chromium								A
Cobalt								A
Copper								A
Iron								A
Lead								A
Magnesium								A
Manganese								A
Mercury		458.1540		463.9803		1.3		CV
Nickel								A
Potassium								A
Selenium								F
Silver								A
Sodium								A
Thallium								F
Vanadium								A
Zinc								A
Cyanide								C

FORM VI - IN

B-116

Voc -1

0132

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1
Lab File ID: E3238 Lab Sample ID: VLK34
Date Analyzed: 09/19/91 Time Analyzed: 1806
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: 51E

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	BH3	BH3	E3254	0340
02	FB1	FB1	E3241	1954
03	OBA1B	OBA1B	E3243	2106
04	OBA1C	OBA1C	E3244	2142
05	OBA8B	OBA8B	E3248	0005
06	RB1	RB1	E3242	2030
07	TB1	TB1	E3240	1918

COMMENTS: VBLK34
51E

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK34

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix: (soil/water) WATER Lab Sample ID: VBLK34

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E3238

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/19/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK34

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1
Matrix: (soil/water) WATER Lab Sample ID: VBLK34
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E3238
Level: (low/med) LOW Date Received: _____
% Moisture: not dec. _____ Date Analyzed: 09/19/91
Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1
 Lab File ID: E3258 Lab Sample ID: VBLK35
 Date Analyzed: 09/20/91 Time Analyzed: 1439
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: 51E

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	BH1 [✓]	BH1	E3260	1556
02	BH3DL [×]	BH3DL	E3265	1859
03	OBA1BDL [✓]	OBA1BDL	E3259	1520
04	OBA1CDL	OBA1CDL	E3270	2159
05	OBA4B [×]	OBA4B	E3269	2124
06	OBA4C [×]	OBA4C	E3268	2048
07	OBA8C	OBA8C	E3266	1935
08	OBA9B	OBA9B	E3267	2012
09	OBA1BMSDDL	OBA1BMSDDL	E3262	1709
10	OBA1BMSDL	OBA1BMSDL	E3261	1633

COMMENTS: VBLK35
 51E

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK35

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix: (soil/water) WATER Lab Sample ID: VBLK35

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E3258

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/20/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	0.6	J
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

0137

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK35

Lab Name: RECRA ENVIRON Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1Matrix: (soil/water) WATERLab Sample ID: VBLK35Sample wt/vol: 5.0 (g/mL) MLLab File ID: E3258Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/20/91Column (pack/cap) PACKDilution Factor: 1.0Number TICs found: 0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

4A
VOLATILE METHOD BLANK SUMMARY

0133

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1
 Lab File ID: E3279 Lab Sample ID: VBK37
 Date Analyzed: 09/21/91 Time Analyzed: 1228
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: 51E

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	OBA1A	OBA1A	E3289	1829
02	OBA4CDL	OBA4CDL	E3291	1942
03	OBA8BDL	OBA8BDL	E3288	1753
04	OBA9BDL	OBA9BDL	E3290	1906

COMMENTS: VBK 37
51E

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK37

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix: (soil/water) WATER Lab Sample ID: VBLK37

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E3279

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/21/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

CAS NO.

COMPOUND

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

0140

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK37

Lab Name: RECRA ENVIRON Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1Matrix: (soil/water) WATERLab Sample ID: VBLK37Sample wt/vol: 5.0 (g/mL) MLLab File ID: E3279Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/21/91Column (pack/cap) PACKDilution Factor: 1.0Number TICs found: 0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

4A
VOLATILE METHOD BLANK SUMMARY

2-VOCs 268

Name: RECRA ENVIRON Contract: Q89-240
 Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 File ID: D5346 Lab Sample ID: VBK42D
 Date Analyzed: 09/23/91 Time Analyzed: 1432
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: 51D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	OBA4A	OBA4A	D5350	1656
02	OBA6C	OBA6C	D5358	2146
03	OBA7A	OBA7A	D5351	1732
04	OBA8A	OBA8A	D5352	1808
05	RB-2	RB-2	D5349	1620
06	TB-2	TB-2	D5348	1544

REMARKS: VBK42
51D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VLBK42D

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: VLBK42D

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D5346

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/23/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK42D

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
Matrix: (soil/water) WATER Lab Sample ID: VBLK42D
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D5346
Level: (low/med) LOW Date Received: _____
% Moisture: not dec. _____ Date Analyzed: 09/23/91
Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Lab File ID: D5365 Lab Sample ID: VBLK43
 Date Analyzed: 09/24/91 Time Analyzed: 1547
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: 51D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	OBA5A ✕	OBA5A	D5367	1659
02	OBA5ADL ✕	OBA5ADL	D5375	2158
03	OBA5B ✕	OBA5B	D5368	1735
04	OBA5BDL ✕	OBA5BDL	D5378	2352
05	OBA5D ✕	OBA5D	D5369	1811
06	OBA6A ✕	OBA6A	D5374	2121
07	OBA6B ✕	OBA6B	D5371	1932
08	OBA6CDL ✕	OBA6CDL	D5372	2008
09	OBA7B ✕	OBA7B	D5373	2045
10	OBA8ADL ✕	OBA8ADL	D5366	1623

REMARKS: VBLK43
51D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBK43

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: VBK43

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D5365

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/24/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK43

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER

Lab Sample ID: VBLK43

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: D5365

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/24/91

Column (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

4A
VOLATILE METHOD BLANK SUMMARY

a Name: RECRA ENVIRON Contract: Q89-240
b Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
a File ID: E3363 Lab Sample ID: VLK41
e Analyzed: 09/25/91 Time Analyzed: 1334
rix: (soil/water) WATER Level: (low/med) LOW
n trument ID: 51E

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	OBA2B ✓	OBA2B	E3375	2052
02	OBA3A ✗	OBA3A	E3374	2015
03	OPW	OPW	E3368	1640
04	OPWDL ✓	OPWDL	E3376	2128
05	OPWMS ✗	OPWMS	E3369	1716
06	OPWMSD ✗	OPWMSD	E3370	1752
07	OPWMSDDL ✗	OPWMSDDL	E3378	2241
08	OPWMSDL ✗	OPWMSDL	E3377	2204

MMENTS: VBLK41
51E

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: RECRA ENVIRON

Contract: Q89-240

VBK41

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: 2BH1

Matrix: (soil/water) WATER

Lab Sample ID: VBK41

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E3363

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.0

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	10	U
67-64-1-----	Acetone	5	U
75-15-0-----	Carbon Disulfide	10	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	5	U
71-55-6-----	1,1,1-Trichloroethane	10	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	5	U
75-27-4-----	Bromodichloromethane	10	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	5	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	10	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

276

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK41

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Matrix: (soil/water) WATER Lab Sample ID: VBLK41
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E3363
 Level: (low/med) LOW Date Received: _____
 % Moisture: not dec. _____ Date Analyzed: 09/25/91
 Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS:
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

277

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: 089-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
Lab File ID: E3383 Lab Sample ID: VBLK42E
Date Analyzed: 09/26/91 Time Analyzed: 1157
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: 51E

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	OBA3B ✕	OBA3B	E3386	1350
02	OBA3D ✕	OBA3D	E3387	1426

COMMENTS: VBLK42
51E

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK42E

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
Matrix: (soil/water) WATER Lab Sample ID: VBLK42E
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E3383
Level: (low/med) LOW Date Received: _____
% Moisture: not dec. _____ Date Analyzed: 09/26/91
Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

279

Lab Name: RECRA ENVIRONMENTAL, INC.

EPA Sample No.: VBLK42

Lab Code: RECNY

Case No: 3692

SAS No.:

Contract: Q89-240

SDG No.: 2BHL

Matrix (Soil/Water): WATER

Lab Sample ID.: VBLK42

Sample wt/vol: 5.0 (g/ml): ML

Lab File ID.: E3383

Level (low/med): LOW

Date Received:

% Moisture not Dec:

Date Analyzed: 09/26/91

Column (pack/cap): PACK

Dilution Factor: 1.0

Number TICs Found: 0

Concentration Units:

(ug/L or ug/Kg) - UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

4A
VOLATILE METHOD BLANK SUMMARY

Name: RECRA ENVIRON Contract: Q89-240
 Code: RECNY Case No.: 3692 SAS No.: SDG No.: 2BH1
 Lab File ID: D5394 Lab Sample ID: VBLK45
 Date Analyzed: 09/26/91 Time Analyzed: 1854
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: 51D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	2CDNAPL	2CDNAPL	D5396	2159
02	2CDNAPLDL	2CDNAPLDL	D5399	0002

MENTS: VBLK45
51D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK45

Lab Name: RECRA ENVIRON

Contract: Q89-240

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: 2BH1

Matrix: (soil/water) SOIL

Lab Sample ID: VBLK45

Sample wt/vol: 4.0 (g/mL) G

Lab File ID: D5394

Level: (low/med) MED

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/26/91

Column: (pack/cap) PACK

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u> <i>Ky</i>	Q
---------	----------	---	---

74-87-3-----	Chloromethane	1200	U
74-83-9-----	Bromomethane	1200	U
75-01-4-----	Vinyl Chloride	1200	U
75-00-3-----	Chloroethane	1200	U
75-09-2-----	Methylene Chloride	620	U
67-64-1-----	Acetone	1200	U
75-15-0-----	Carbon Disulfide	620	U
75-35-4-----	1,1-Dichloroethene	620	U
75-34-3-----	1,1-Dichloroethane	620	U
540-59-0-----	1,2-Dichloroethene (total)	620	U
67-66-3-----	Chloroform	620	U
107-06-2-----	1,2-Dichloroethane	620	U
78-93-3-----	2-Butanone	1200	U
71-55-6-----	1,1,1-Trichloroethane	620	U
56-23-5-----	Carbon Tetrachloride	620	U
108-05-4-----	Vinyl Acetate	1200	U
75-27-4-----	Bromodichloromethane	620	U
78-87-5-----	1,2-Dichloropropane	620	U
10061-01-5-----	cis-1,3-dichloropropene	620	U
79-01-6-----	Trichloroethene	620	U
124-48-1-----	Dibromochloromethane	620	U
79-00-5-----	1,1,2-Trichloroethane	620	U
71-43-2-----	Benzene	620	U
10061-02-6-----	trans-1,3-dichloropropene	620	U
75-25-2-----	Bromoform	620	U
108-10-1-----	4-Methyl-2-Pentanone	1200	U
591-78-6-----	2-Hexanone	1200	U
127-18-4-----	Tetrachloroethene	620	U
79-34-5-----	1,1,2,2-Tetrachloroethane	620	U
108-88-3-----	Toluene	620	U
108-90-7-----	Chlorobenzene	620	U
100-41-4-----	Ethylbenzene	620	U
100-42-5-----	Styrene	620	U
1330-20-7-----	Total Xylenes	620	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK45

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
Matrix: (soil/water) SOIL Lab Sample ID: VBLK45
Sample wt/vol: 4.0 (g/mL) G Lab File ID: D5394
Level: (low/med) MED Date Received: _____
Moisture: not dec. _____ Date Analyzed: 09/26/91
Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

VOC-3

85

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA-2C
Lab File ID: A4158 Lab Sample ID: VBK20
Date Analyzed: 10/07/91 Time Analyzed: 1122
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: 51A

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	OBA2C	OBA2C	A4162	1404
02	OBA3C	OBA3C	A4167	1811

COMMENTS: VBK20
51A

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 86

VBK20

Lab Name: RECRA ENVIRON

Contract: Q89-240

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: OBA-2C

Matrix: (soil/water) WATER

Lab Sample ID: VBK20

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: A4158

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/07/91

Column: (pack/cap) PACK

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

87

Lab Name: RECRA ENVIRONMENTAL, INC.	EPA Sample No.: VBLK20
Lab Code: RECNY Case No: 3692 SAS No.:	Contract: Q89-240
Matrix (Soil/Water): WATER	SDG No.: OBA2C
Sample wt/vol: 5.0 (g/ml): ML	Lab Sample ID.: VBLK20
Level (low/med): LOW	Lab File ID.: A4158
% Moisture not Dec:	Date Received:
Column (pack/cap): PACK	Date Analyzed: 10/07/91
Number TICs Found: 0	Dilution Factor: 1.0
	Concentration Units:
	(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA-2C
 Lab File ID: A4181 Lab Sample ID: VBLK22
 Date Analyzed: 10/08/91 Time Analyzed: 1226
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: 51A

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	OBA2CDL	OBA2CDL	A4184	1424

COMMENTS: VBLK22
51A

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK22

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA-2C

Matrix: (soil/water) WATER Lab Sample ID: VBLK22

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A4181

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 10/08/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	5	U
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-dichloropropene	5	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Total Xylenes	5	U

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA Sample No.: VBLK22

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: Q89-240

Lab Code: RECNY

Case No: 3692

SAS No.:

SDG No.: OBA2C

Matrix (Soil/Water): WATER

Lab Sample ID.: VBLK22

Sample wt/vol: 5.0 (g/ml): ML

Lab File ID.: A4181

Level (low/med): LOW

Date Received:

% Moisture not Dec:

Date Analyzed: 10/08/91

Column (pack/cap): PACK

Dilution Factor: 1.0

Number TICs Found: 0

Concentration Units:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

4A
VOLATILE METHOD BLANK SUMMARY

91

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA-2C

Lab File ID: E3530 Lab Sample ID: VBLK49

Date Analyzed: 10/08/91 Time Analyzed: 1419

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 51E

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	FIELDBLANK2	FIELDBLANK2	E3538	1948
02	RINSEBLANK3	RINSEBLANK3	E3539	2024

COMMENTS: VBLK49
51E

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK49

Lab Name: RECRA ENVIRON Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA-2CMatrix: (soil/water) WATERLab Sample ID: VBLK49Sample wt/vol: 5.0 (g/mL) MLLab File ID: E3530Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/08/91Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

93

Lab Name: RECRA ENVIRONMENTAL, INC.
Lab Code: RECNY Case No: 3692 SAS No.:
Matrix (Soil/Water): WATER
Sample wt/vol: 5.0 (g/ml): ML
Level (low/med): LOW
% Moisture not Dec:
Column (pack/cap): PACK
Number TICs Found: 0

EPA Sample No.: VBLK49
Contract: Q89-240
SDG No.: OBA2C
Lab Sample ID.: VBLK49
Lab File ID.: E3530
Date Received:
Date Analyzed: 10/08/91
Dilution Factor: 1.0
Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
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27				
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4A
VOLATILE METHOD BLANK SUMMARY

94

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA-2C
 Lab File ID: E3557 Lab Sample ID: VBLK50
 Date Analyzed: 10/09/91 Time Analyzed: 1119
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: 51E

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	OBA5C	OBA5C	E3560	1323
02	OBA7C	OBA7C	E3559	1242
03	QA1	QA1	E3558	1200

COMMENTS: VBLK50
51E

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBK50

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA-2C

Matrix: (soil/water) WATER Lab Sample ID: VBK50

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E3557

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 10/09/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

96

Lab Name: RECRA ENVIRONMENTAL, INC.	EPA Sample No.: VBLK50
Lab Code: RECNY	Contract: Q89-240
Case No: 3692	SDG No.: OBA2C
SAS No.:	Lab Sample ID.: VBLK50
Matrix (Soil/Water): WATER	Lab File ID.: E3557
Sample wt/vol: 5.0 (g/ml): ML	Date Received:
Level (low/med): LOW	Date Analyzed: 10/09/91
% Moisture not Dec:	Dilution Factor: 1.0
Column (pack/cap): PACK	Concentration Units:
Number TICs Found: 0	(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
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4A
VOLATILE METHOD BLANK SUMMARY

167

Lab Name: RECRA ENVIRON Contract: Q89-240R
Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
Lab File ID: D5625 Lab Sample ID: VBLK61
Date Analyzed: 10/21/91 Time Analyzed: 1237
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: 51D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO. =====	LAB SAMPLE ID =====	LAB FILE ID =====	TIME ANALYZED =====
01	RB5	RB5	D5629	1510

COMMENTS: VBLK61
51D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO 168

VBLK61

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) WATER Lab Sample ID: VBLK61

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D5625

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 10/21/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	0.4	J
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA Sample No.: VBLK61

169

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: Q89-240R

Lab Code: RECNY Case No: 3046 SAS No.:

SDG No.: OSB15A *MTM 11/25/91*

Matrix (Soil/Water): WATER

Lab Sample ID.: VBLK61

Sample wt/vol: 5.0 (g/ml): ML

Lab File ID.: D5625

Level (low/med): LOW

Date Received:

% Moisture not Dec:

Date Analyzed: 10/21/91

Volume (pack/cap): PACK

Dilution Factor: 1.0

Number TICs Found: 0

Concentration Units:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
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4A
VOLATILE METHOD BLANK SUMMARY

170

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Lab File ID: H6834 Lab Sample ID: VBLK31

Date Analyzed: 10/22/91 Time Analyzed: 1341

Matrix: (soil/water) SOIL Level: (low/med) LOW

Instrument ID: I50H

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	OSB1702	OSB1702	H6836	1539
02	OSB1724	OSB1724	H6838	1704
03	OSB1746	OSB1746	H6837	1624
04	OSB1768	OSB1768	H6835	1453
05	OSB1802	OSB1802	H6841	1912
06	OSB1824	OSB1824	H6839	1746
07	OSB1868	OSB1868	H6840	1829
08	QA5	QA5	H6843	2038

COMMENTS: VBLK31
I50H

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO 71

VLBK31

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) SOIL Lab Sample ID: VLBK31

sample wt/vol: 5.0 (g/mL) G Lab File ID: H6834

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 10/22/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	5	U
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-dichloropropene	5	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

172

Lab Name: RECRA ENVIRONMENTAL, INC.
Lab Code: RECNY Case No: 3046 SAS No.:
Matrix (Soil/Water): SOIL
Sample wt/vol: 5.0 (g/ml): G
Level (low/med): LOW
Moisture not Dec:
Column (pack/cap): PACK
Number TICs Found: 0

EPA Sample No.: VBLK31
Contract: Q89-240R
SDG No.: OSB15A *mm 11/25/91*
Lab Sample ID.: VBLK31
Lab File ID.: H6834
Date Received:
Date Analyzed: 10/22/91
Dilution Factor: 1.0
Concentration Units:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
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4A
VOLATILE METHOD BLANK SUMMARY

173

Lab Name: RECRA ENVIRON Contract: Q89-240R
 Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
 Lab File ID: H6847 Lab Sample ID: VLK32
 Date Analyzed: 10/23/91 Time Analyzed: 1515
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: I50H

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO. =====	LAB SAMPLE ID =====	LAB FILE ID =====	TIME ANALYZED =====
01	MSBLANK	MSBLANK	H6846	1432
02	OSB1846	OSB1846	H6849	1655
03	OSB1846MS	OSB1846MS	H6850	1737
04	OSB1846MSD	OSB1846MSD	H6851	1819

COMMENTS: VBLK32
I50H

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. ¹⁷⁴

VBLK32

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) SOIL Lab Sample ID: VBLK32

Sample wt/vol: 5.0 (g/mL) G Lab File ID: H6847

Level: (low/med) LOW Date Received: _____

Moisture: not dec. _____ Date Analyzed: 10/23/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	0.4	J
67-64-1	-----Acetone	1	J
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-dichloropropene	5	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. ¹⁷⁵

VBLK32

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) SOIL

Lab Sample ID: VBLK32

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: H6847

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/23/91

Column (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

S-VOC - ~~P~~
0141

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1
 Lab File ID: 6309W Lab Sample ID: SBLK24
 Date Extracted: 09/23/91 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed: 09/26/91 Time Analyzed: 1646
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	BH3	BH3	6314W	09/26/91
02	BH3DL	BH3DL	6331W	09/27/91
03	OBA1B	OBA1B	6310W	09/26/91
04	OBA1C	OBA1C	6313W	09/26/91
05	OBA4B	OBA4B	6319W	09/27/91
06	OBA4C	OBA4C	6318W	09/27/91
07	OBA8B	OBA8B	6316W	09/26/91
08	OBA8C	OBA8C	6315W	09/26/91
09	OBA9B	OBA9B	6317W	09/26/91
10	RB1	RB1	6330W	09/27/91
11	OBA1BMS	OBA1BMS	6311W	09/26/91
12	OBA1BMSD	OBA1BMSD	6312W	09/26/91

COMMENTS: SBLK24 JOB2683 BN4001/02
AUTOSAMPLER I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK24

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK24

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6309W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/23/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/26/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10	U
111-44-4-----	bis(2-Chloroethyl) Ether	10	U
95-57-8-----	2-Chlorophenol	10	U
541-73-1-----	1,3-Dichlorobenzene	10	U
106-46-7-----	1,4-Dichlorobenzene	10	U
100-51-6-----	Benzyl Alcohol	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U
95-48-7-----	2-Methylphenol	10	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	10	U
106-44-5-----	4-Methylphenol	10	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	10	U
67-72-1-----	Hexachloroethane	10	U
98-95-3-----	Nitrobenzene	10	U
78-59-1-----	Isophorone	10	U
88-75-5-----	2-Nitrophenol	10	U
105-67-9-----	2,4-Dimethylphenol	10	U
65-85-0-----	Benzoic Acid	50	U
111-91-1-----	bis(2-Chloroethoxy) Methane	10	U
120-83-2-----	2,4-Dichlorophenol	10	U
120-82-1-----	1,2,4-Trichlorobenzene	10	U
91-20-3-----	Naphthalene	10	U
106-47-8-----	4-Chloroaniline	10	U
87-68-3-----	Hexachlorobutadiene	10	U
59-50-7-----	4-Chloro-3-Methylphenol	10	U
91-57-6-----	2-Methylnaphthalene	10	U
77-47-4-----	Hexachlorocyclopentadiene	10	U
88-06-2-----	2,4,6-Trichlorophenol	10	U
95-95-4-----	2,4,5-Trichlorophenol	50	U
91-58-7-----	2-Chloronaphthalene	10	U
88-74-4-----	2-Nitroaniline	50	U
131-11-3-----	Dimethyl Phthalate	10	U
208-96-8-----	Acenaphthylene	10	U
606-20-2-----	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

0143
EPA SAMPLE NO.

SBLK24

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK24

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6309W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/23/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/26/91

SPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
99-09-2-----	3-Nitroaniline	50	U
83-32-9-----	Acenaphthene	10	U
51-28-5-----	2,4-Dinitrophenol	50	U
100-02-7-----	4-Nitrophenol	50	U
132-64-9-----	Dibenzofuran	10	U
121-14-2-----	2,4-Dinitrotoluene	10	U
84-66-2-----	Diethylphthalate	10	U
7005-72-3-----	4-Chlorophenyl-phenylether	10	U
86-73-7-----	Fluorene	10	U
100-01-6-----	4-Nitroaniline	50	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	50	U
86-30-6-----	N-Nitrosodiphenylamine (1)	10	U
101-55-3-----	4-Bromophenyl-phenylether	10	U
118-74-1-----	Hexachlorobenzene	10	U
87-86-5-----	Pentachlorophenol	50	U
85-01-8-----	Phenanthrene	10	U
120-12-7-----	Anthracene	10	U
84-74-2-----	Di-n-Butylphthalate	10	U
206-44-0-----	Fluoranthene	10	U
129-00-0-----	Pyrene	10	U
85-68-7-----	Butylbenzylphthalate	10	U
91-94-1-----	3,3'-Dichlorobenzidine	20	U
56-55-3-----	Benzo(a)Anthracene	10	U
218-01-9-----	Chrysene	10	U
117-81-7-----	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0-----	Di-n-Octyl Phthalate	10	U
205-99-2-----	Benzo(b)Fluoranthene	10	U
207-08-9-----	Benzo(k)Fluoranthene	10	U
50-32-8-----	Benzo(a)Pyrene	10	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3-----	Dibenz(a,h)Anthracene	10	U
191-24-2-----	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

C144

SAMPLE NO.

1X
ORGANICS ANALYSIS DATA SHEET

SBLK24

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK24

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6309W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/23/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/26/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
576-24-9-----	2,3-Dichlorophenol	10	U
583-78-8-----	2,5-Dichlorophenol	10	U
95-77-2-----	3,4-Dichlorophenol	10	U
591-35-5-----	3,5-Dichlorophenol	10	U
15950-66-0-----	2,3,4-Trichlorophenol	10	U
933-78-8-----	2,3,5-Trichlorophenol	10	U
933-75-5-----	2,3,6-Trichlorophenol	10	U
609-19-8-----	3,4,5-Trichlorophenol	10	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	10	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	10	U
108-43-0-----	3-Chlorophenol	10	U
106-48-9-----	4-Chlorophenol	10	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	10	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

0145
EPA SAMPLE NO.

SBLK24

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix: (soil/water) WATER

Lab Sample ID: SBLK24

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 6309W

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____ dec. _____

Date Extracted: 09/23/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 09/26/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

2-540CS
283

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Lab File ID: 6333W Lab Sample ID: SBLK24

Date Extracted: 09/25/91 Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 09/27/91 Time Analyzed: 1757

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED.
01	BH1	BH1	6336W	09/27/91
02	OBA1A	OBA1A	6334W	09/27/91
03	OBA4A	OBA4A	6345W	09/30/91
04	OBA5A	OBA5A	6371W	10/01/91
05	OBA5ADL	OBA5ADL	6372W	10/01/91
06	OBA5B	OBA5B	6351W	09/30/91
07	OBA5BDL	OBA5BDL	6373W	10/01/91
08	OBA5D	OBA5D	6422W	10/07/91
09	OBA5DDL	OBA5DDL	6423W	10/07/91
10	OBA6A	OBA6A	6353W	09/30/91
11	OBA6B	OBA6B	6346W	09/30/91
12	OBA6BDL	OBA6BDL	6370W	10/01/91
13	OBA6C	OBA6C	6382W	10/02/91
14	OBA7A	OBA7A	6348W	09/30/91
15	OBA7B	OBA7B	6349W	09/30/91
16	OBA8A	OBA8A	6354W	09/30/91
17	RB-2	RB-2	6335W	09/27/91

COMMENTS: SBLK24 JOB2713 BN4065/66
AUTOSAMPLER I50W

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK24

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK24

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6333W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/27/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10	U
111-44-4-----	bis(2-Chloroethyl) Ether	10	U
95-57-8-----	2-Chlorophenol	10	U
541-73-1-----	1,3-Dichlorobenzene	10	U
106-46-7-----	1,4-Dichlorobenzene	10	U
100-51-6-----	Benzyl Alcohol	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U
95-48-7-----	2-Methylphenol	10	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	10	U
106-44-5-----	4-Methylphenol	10	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	10	U
67-72-1-----	Hexachloroethane	10	U
98-95-3-----	Nitrobenzene	10	U
78-59-1-----	Isophorone	10	U
88-75-5-----	2-Nitrophenol	10	U
105-67-9-----	2,4-Dimethylphenol	10	U
65-85-0-----	Benzoic Acid	50	U
111-91-1-----	bis(2-Chloroethoxy) Methane	10	U
120-83-2-----	2,4-Dichlorophenol	10	U
120-82-1-----	1,2,4-Trichlorobenzene	10	U
91-20-3-----	Naphthalene	10	U
106-47-8-----	4-Chloroaniline	10	U
87-68-3-----	Hexachlorobutadiene	10	U
59-50-7-----	4-Chloro-3-Methylphenol	10	U
91-57-6-----	2-Methylnaphthalene	10	U
77-47-4-----	Hexachlorocyclopentadiene	10	U
88-06-2-----	2,4,6-Trichlorophenol	10	U
95-95-4-----	2,4,5-Trichlorophenol	50	U
91-58-7-----	2-Chloronaphthalene	10	U
88-74-4-----	2-Nitroaniline	50	U
131-11-3-----	Dimethyl Phthalate	10	U
208-96-8-----	Acenaphthylene	10	U
606-20-2-----	2,6-Dinitrotoluene	10	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK24

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Matrix: (soil/water) WATER Lab Sample ID: SBLK24
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6333W
 Level: (low/med) LOW Date Received: _____
 % Moisture: not dec. _____ dec. _____ Date Extracted: 09/25/91
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/27/91
 APC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

99-09-2-----3-Nitroaniline	50	U
83-32-9-----Acenaphthene	10	U
51-28-5-----2,4-Dinitrophenol	50	U
100-02-7-----4-Nitrophenol	50	U
132-64-9-----Dibenzofuran	10	U
121-14-2-----2,4-Dinitrotoluene	10	U
84-66-2-----Diethylphthalate	10	U
7005-72-3-----4-Chlorophenyl-phenylether	10	U
86-73-7-----Fluorene	10	U
100-01-6-----4-Nitroaniline	50	U
534-52-1-----4,6-Dinitro-2-Methylphenol	50	U
86-30-6-----N-Nitrosodiphenylamine (1)	10	U
101-55-3-----4-Bromophenyl-phenylether	10	U
118-74-1-----Hexachlorobenzene	10	U
87-86-5-----Pentachlorophenol	50	U
85-01-8-----Phenanthrene	10	U
120-12-7-----Anthracene	10	U
84-74-2-----Di-n-Butylphthalate	10	U
206-44-0-----Fluoranthene	10	U
129-00-0-----Pyrene	10	U
85-68-7-----Butylbenzylphthalate	10	U
91-94-1-----3,3'-Dichlorobenzidine	20	U
56-55-3-----Benzo(a)Anthracene	10	U
218-01-9-----Chrysene	10	U
117-81-7-----Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0-----Di-n-Octyl Phthalate	10	U
205-99-2-----Benzo(b)Fluoranthene	10	U
207-08-9-----Benzo(k)Fluoranthene	10	U
50-32-8-----Benzo(a)Pyrene	10	U
193-39-5-----Indeno(1,2,3-cd)Pyrene	10	U
53-70-3-----Dibenz(a,h)Anthracene	10	U
191-24-2-----Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

SBLK24

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: SBLK24

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6333W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/27/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

576-24-9-----	2,3-Dichlorophenol	10	U
583-78-8-----	2,5-Dichlorophenol	10	U
95-77-2-----	3,4-Dichlorophenol	10	U
591-35-5-----	3,5-Dichlorophenol	10	U
15950-66-0-----	2,3,4-Trichlorophenol	10	U
933-78-8-----	2,3,5-Trichlorophenol	10	U
933-75-5-----	2,3,6-Trichlorophenol	10	U
609-19-8-----	3,4,5-Trichlorophenol	10	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	10	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	10	U
108-43-0-----	3-Chlorophenol	10	U
106-48-9-----	4-Chlorophenol	10	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	10	U

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: RECRA ENVIRONMENTAL, INC. EPA Sample No.: SBLK24
 Lab Code: RECNY Case No: 3692 SAS No.: Contract: Q89-240
 Matrix (Soil/Water): WATER SDG No.: 2BHL
 Sample wt/vol: 1000 (g/ml): ML Lab Sample ID.: SBLK24
 Level (low/med): LOW Lab File ID.: 6333W
 % Moisture not Dec: Dec: Date Received:
 Extraction: (SepF/Cont/Sonc/Sox): SEPF Date Extracted: 09/25/91
 % Cleanup: (Y/N): N pH: 7.0 Date Analyzed: 09/27/91
 Number TICs Found: 0 Dilution Factor: 1.0
 Concentration Units:
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Lab File ID: 6355W Lab Sample ID: SBLK25
 Date Extracted: 09/26/91 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed: 09/30/91 Time Analyzed: 2343
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	OBA2B X	OBA2B	6356W	10/01/91
02	OBA2BDL X	OBA2BDL	6379W	10/02/91
03	OBA3A X	OBA3A	6366W	10/01/91
04	OBA3ADL X	OBA3ADL	6380W	10/02/91
05	OBA3B X	OBA3B	6367W	10/01/91
06	OBA3BDL X	OBA3BDL	6381W	10/02/91
07	OBA3D X	OBA3D	6362W	10/01/91
08	OPW	OPW	6363W	10/01/91
09	OPWMS	OPWMS	6364W	10/01/91
10	OPWMSD	OPWMSD	6365W	10/01/91

COMMENTS: SBLK25 JOB 2729 BN4093/94
 AUTOSAMPLER I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK25

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Matrix: (soil/water) WATER Lab Sample ID: SBLK25
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6355W
 Level: (low/med) LOW Date Received: _____
 % Moisture: not dec. _____ dec. _____ Date Extracted: 09/26/91
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/30/91
 GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10	U
111-44-4-----	bis(2-Chloroethyl) Ether	10	U
95-57-8-----	2-Chlorophenol	10	U
541-73-1-----	1,3-Dichlorobenzene	10	U
106-46-7-----	1,4-Dichlorobenzene	10	U
100-51-6-----	Benzyl Alcohol	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U
95-48-7-----	2-Methylphenol	10	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	10	U
106-44-5-----	4-Methylphenol	10	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	10	U
67-72-1-----	Hexachloroethane	10	U
98-95-3-----	Nitrobenzene	10	U
78-59-1-----	Isophorone	10	U
88-75-5-----	2-Nitrophenol	10	U
105-67-9-----	2,4-Dimethylphenol	10	U
65-85-0-----	Benzoic Acid	50	U
111-91-1-----	bis(2-Chloroethoxy) Methane	10	U
120-83-2-----	2,4-Dichlorophenol	10	U
120-82-1-----	1,2,4-Trichlorobenzene	10	U
91-20-3-----	Naphthalene	10	U
106-47-8-----	4-Chloroaniline	10	U
87-68-3-----	Hexachlorobutadiene	10	U
59-50-7-----	4-Chloro-3-Methylphenol	10	U
91-57-6-----	2-Methylnaphthalene	10	U
77-47-4-----	Hexachlorocyclopentadiene	10	U
88-06-2-----	2,4,6-Trichlorophenol	10	U
95-95-4-----	2,4,5-Trichlorophenol	50	U
91-58-7-----	2-Chloronaphthalene	10	U
88-74-4-----	2-Nitroaniline	50	U
131-11-3-----	Dimethyl Phthalate	10	U
208-96-8-----	Acenaphthylene	10	U
606-20-2-----	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK25

Lab Name: RECRA ENVIRON Contract: Q89-240
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
Matrix: (soil/water) WATER Lab Sample ID: SBLK25
Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6355W
Level: (low/med) LOW Date Received: _____
% Moisture: not dec. _____ dec. _____ Date Extracted: 09/26/91
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/30/91
GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

99-09-2-----	3-Nitroaniline	50	U
83-32-9-----	Acenaphthene	10	U
51-28-5-----	2,4-Dinitrophenol	50	U
100-02-7-----	4-Nitrophenol	50	U
132-64-9-----	Dibenzofuran	10	U
121-14-2-----	2,4-Dinitrotoluene	10	U
84-66-2-----	Diethylphthalate	10	U
7005-72-3-----	4-Chlorophenyl-phenylether	10	U
86-73-7-----	Fluorene	10	U
100-01-6-----	4-Nitroaniline	50	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	50	U
86-30-6-----	N-Nitrosodiphenylamine (1)	10	U
101-55-3-----	4-Bromophenyl-phenylether	10	U
118-74-1-----	Hexachlorobenzene	10	U
87-86-5-----	Pentachlorophenol	50	U
85-01-8-----	Phenanthrene	10	U
120-12-7-----	Anthracene	10	U
84-74-2-----	Di-n-Butylphthalate	10	U
206-44-0-----	Fluoranthene	10	U
129-00-0-----	Pyrene	10	U
85-68-7-----	Butylbenzylphthalate	10	U
91-94-1-----	3,3'-Dichlorobenzidine	20	U
56-55-3-----	Benzo(a)Anthracene	10	U
218-01-9-----	Chrysene	10	U
117-81-7-----	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0-----	Di-n-Octyl Phthalate	10	U
205-99-2-----	Benzo(b)Fluoranthene	10	U
207-08-9-----	Benzo(k)Fluoranthene	10	U
50-32-8-----	Benzo(a)Pyrene	10	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3-----	Dibenz(a,h)Anthracene	10	U
191-24-2-----	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

SBLK25

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: SBLK25

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6355W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/26/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/30/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

576-24-9-----	2,3-Dichlorophenol	10	U
583-78-8-----	2,5-Dichlorophenol	10	U
95-77-2-----	3,4-Dichlorophenol	10	U
591-35-5-----	3,5-Dichlorophenol	10	U
15950-66-0-----	2,3,4-Trichlorophenol	10	U
933-78-8-----	2,3,5-Trichlorophenol	10	U
933-75-5-----	2,3,6-Trichlorophenol	10	U
609-19-8-----	3,4,5-Trichlorophenol	10	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	10	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	10	U
108-43-0-----	3-Chlorophenol	10	U
106-48-9-----	4-Chlorophenol	10	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	10	U

EPA Sample No.: SBLK25

Tab Name: RECRA ENVIRONMENTAL, INC.

Contract: Q89-240

Lab Code: RECNY Case No: 3692 SAS No.:

SDG No.: 2BH1

Matrix (Soil/Water): WATER

Lab Sample ID.: SBLK25

Sample wt/vol: 1000 (g/ml): ML

Lab File ID.: 6355W

level (low/med): LOW

Date Received:

% Moisture not Dec: Dec:

Date Extracted: 09/26/91

Extraction: (SepF/Cont/Sonc/Sox): SEPF

Date Analyzed: 09/30/91

PC Cleanup: (Y/N): N pH: 7.0

Dilution Factor: 1.0

Number TICs Found: 0

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
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4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Lab File ID: 6383W Lab Sample ID: SBLK30
 Date Extracted: 09/27/91 Extraction: (SepF/Cont/Sonc) _____
 Date Analyzed: 10/02/91 Time Analyzed: 1426
 Matrix: (soil/water) SOIL Level: (low/med) MED
 Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2CDNAPL ✓	2CDNAPL	6384W	10/02/91
02	2CDNAPLDL ✓	2CDNAPLDL	6388W	10/03/91

COMMENTS: SBLK30 JOB2713A 011654
 AUTOSAMPLR I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK30

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) SOIL Lab Sample ID: SBLK30

Sample wt/vol: 1.0 (g/mL) G Lab File ID: 6383W

Level: (low/med) MED Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/27/91

Extraction: (SepF/Cont/Sonc) _____ Date Analyzed: 10/02/91

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	9900	U
111-44-4-----	bis(2-Chloroethyl) Ether	9900	U
95-57-8-----	2-Chlorophenol	9900	U
541-73-1-----	1,3-Dichlorobenzene	9900	U
106-46-7-----	1,4-Dichlorobenzene	9900	U
100-51-6-----	Benzyl Alcohol	9900	U
95-50-1-----	1,2-Dichlorobenzene	9900	U
95-48-7-----	2-Methylphenol	9900	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	9900	U
106-44-5-----	4-Methylphenol	9900	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	9900	U
67-72-1-----	Hexachloroethane	9900	U
98-95-3-----	Nitrobenzene	9900	U
78-59-1-----	Isophorone	9900	U
88-75-5-----	2-Nitrophenol	9900	U
105-67-9-----	2,4-Dimethylphenol	9900	U
65-85-0-----	Benzoic Acid	48000	U
111-91-1-----	bis(2-Chloroethoxy) Methane	9900	U
120-83-2-----	2,4-Dichlorophenol	9900	U
120-82-1-----	1,2,4-Trichlorobenzene	9900	U
91-20-3-----	Naphthalene	9900	U
106-47-8-----	4-Chloroaniline	9900	U
87-68-3-----	Hexachlorobutadiene	9900	U
59-50-7-----	4-Chloro-3-Methylphenol	9900	U
91-57-6-----	2-Methylnaphthalene	9900	U
77-47-4-----	Hexachlorocyclopentadiene	9900	U
88-06-2-----	2,4,6-Trichlorophenol	9900	U
95-95-4-----	2,4,5-Trichlorophenol	48000	U
91-58-7-----	2-Chloronaphthalene	9900	U
88-74-4-----	2-Nitroaniline	48000	U
131-11-3-----	Dimethyl Phthalate	9900	U
208-96-8-----	Acenaphthylene	9900	U
606-20-2-----	2,6-Dinitrotoluene	9900	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK30

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) SOIL Lab Sample ID: SBLK30

Sample wt/vol: 1.0 (g/mL) G Lab File ID: 6383W

Level: (low/med) MED Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/27/91

Extraction: (SepF/Cont/Sonc) _____ Date Analyzed: 10/02/91

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

CAS NO.

COMPOUND

99-09-2-----	3-Nitroaniline	48000	U
83-32-9-----	Acenaphthene	9900	U
51-28-5-----	2,4-Dinitrophenol	48000	U
100-02-7-----	4-Nitrophenol	48000	U
132-64-9-----	Dibenzofuran	9900	U
121-14-2-----	2,4-Dinitrotoluene	9900	U
84-66-2-----	Diethylphthalate	9900	U
7005-72-3-----	4-Chlorophenyl-phenylether	9900	U
86-73-7-----	Fluorene	9900	U
100-01-6-----	4-Nitroaniline	48000	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	48000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	9900	U
101-55-3-----	4-Bromophenyl-phenylether	9900	U
118-74-1-----	Hexachlorobenzene	9900	U
87-86-5-----	Pentachlorophenol	48000	U
85-01-8-----	Phenanthrene	9900	U
120-12-7-----	Anthracene	9900	U
84-74-2-----	Di-n-Butylphthalate	9900	U
206-44-0-----	Fluoranthene	9900	U
129-00-0-----	Pyrene	9900	U
85-68-7-----	Butylbenzylphthalate	9900	U
91-94-1-----	3,3'-Dichlorobenzidine	20000	U
56-55-3-----	Benzo(a) Anthracene	9900	U
218-01-9-----	Chrysene	9900	U
117-81-7-----	Bis(2-Ethylhexyl) Phthalate	9900	U
117-84-0-----	Di-n-Octyl Phthalate	9900	U
205-99-2-----	Benzo(b) Fluoranthene	9900	U
207-08-9-----	Benzo(k) Fluoranthene	9900	U
50-32-8-----	Benzo(a) Pyrene	9900	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	9900	U
53-70-3-----	Dibenz(a,h) Anthracene	9900	U
191-24-2-----	Benzo(g,h,i) Perylene	9900	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

SBLK30

Lab Name: RECRA ENVIRON

Contract: Q89-240

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: 2BH1

Matrix: (soil/water) SOIL

Lab Sample ID: SBLK30

Sample wt/vol: 1.0 (g/mL) G

Lab File ID: 6383W

Level: (low/med) MED

Date Received: _____

% Moisture: not dec. _____ dec. _____

Date Extracted: 09/27/91

Extraction: (SepF/Cont/Sonc) _____

Date Analyzed: 10/02/91

GPC Cleanup: (Y/N) N pH: _____

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

576-24-9-----	2,3-Dichlorophenol	9900	U
583-78-8-----	2,5-Dichlorophenol	9900	U
95-77-2-----	3,4-Dichlorophenol	9900	U
591-35-5-----	3,5-Dichlorophenol	9900	U
15950-66-0-----	2,3,4-Trichlorophenol	9900	U
933-78-8-----	2,3,5-Trichlorophenol	9900	U
933-75-5-----	2,3,6-Trichlorophenol	9900	U
609-19-8-----	3,4,5-Trichlorophenol	9900	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	9900	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	9900	U
108-43-0-----	3-Chlorophenol	9900	U
106-48-9-----	4-Chlorophenol	9900	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	9900	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: RECRA ENVIRONMENTAL, INC.

Code: RECNY Case No: 3692 SAS No.:

Matrix (Soil/Water): SOIL

Sample wt/vol: 1.0 (g/ml): G

Level (low/med): MED

Moisture not Dec: Dec:

Reaction: (SepF/Cont/Sonc/Sox):

PC Cleanup: (Y/N): N pH:

Number TICs Found: 0

EPA Sample No.: SBLK30

Contract: Q89-240

SDG No.: 2BH1

Lab Sample ID.: SBLK30

Lab File ID.: 6383W

Date Received:

Date Extracted: 09/27/91

Date Analyzed: 10/02/91

Dilution Factor: 1.00

Concentration Units:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
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4				
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4B
SEMIVOLATILE METHOD BLANK SUMMARY

298

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Lab File ID: 6411W Lab Sample ID: SBLK32
 Date Extracted: 10/03/91 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed: 10/04/91 Time Analyzed: 1411
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	OBA5ARE	OBA5ARE	6409W	10/04/91
02	OBA5AREDL	OBA5AREDL	6407W	10/04/91
03	OBA5ARERE	OBA5ARERE	6424W	10/07/91
04	OBA5DRE	OBA5DRE	6410W	10/04/91
05	OBA5DREDL	OBA5DREDL	6408W	10/04/91

COMMENTS: SBLK32 JOB2713 BN4169/70
AUTOSAMPLR I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 299

SBLK32

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK32

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6411W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/03/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl) Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl) Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy) Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 30

SBLK32

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK32

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6411W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/03/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

99-09-2-----	3-Nitroaniline	50	U
83-32-9-----	Acenaphthene	10	U
51-28-5-----	2,4-Dinitrophenol	50	U
100-02-7-----	4-Nitrophenol	50	U
132-64-9-----	Dibenzofuran	10	U
121-14-2-----	2,4-Dinitrotoluene	10	U
84-66-2-----	Diethylphthalate	10	U
7005-72-3-----	4-Chlorophenyl-phenylether	10	U
86-73-7-----	Fluorene	10	U
100-01-6-----	4-Nitroaniline	50	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	50	U
86-30-6-----	N-Nitrosodiphenylamine (1)	10	U
101-55-3-----	4-Bromophenyl-phenylether	10	U
118-74-1-----	Hexachlorobenzene	10	U
87-86-5-----	Pentachlorophenol	50	U
85-01-8-----	Phenanthrene	10	U
120-12-7-----	Anthracene	10	U
84-74-2-----	Di-n-Butylphthalate	10	U
206-44-0-----	Fluoranthene	10	U
129-00-0-----	Pyrene	10	U
85-68-7-----	Butylbenzylphthalate	10	U
91-94-1-----	3,3'-Dichlorobenzidine	20	U
56-55-3-----	Benzo(a) Anthracene	10	U
218-01-9-----	Chrysene	10	U
117-81-7-----	Bis(2-Ethylhexyl) Phthalate	10	U
117-84-0-----	Di-n-Octyl Phthalate	10	U
205-99-2-----	Benzo(b) Fluoranthene	10	U
207-08-9-----	Benzo(k) Fluoranthene	10	U
50-32-8-----	Benzo(a) Pyrene	10	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	10	U
53-70-3-----	Dibenz(a,h) Anthracene	10	U
191-24-2-----	Benzo(g,h,i) Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO. 301

SBLK32

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK32

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6411W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/03/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

576-24-9-----	2,3-Dichlorophenol	10	U
583-78-8-----	2,5-Dichlorophenol	10	U
95-77-2-----	3,4-Dichlorophenol	10	U
591-35-5-----	3,5-Dichlorophenol	10	U
15950-66-0-----	2,3,4-Trichlorophenol	10	U
933-78-8-----	2,3,5-Trichlorophenol	10	U
933-75-5-----	2,3,6-Trichlorophenol	10	U
609-19-8-----	3,4,5-Trichlorophenol	10	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	10	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	10	U
95-57-8-----	2-Chlorophenol	10	U
108-43-0-----	3-Chlorophenol	10	U
106-48-9-----	4-Chlorophenol	10	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	10	U

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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303

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Lab File ID: 6811W Lab Sample ID: SBLK65
 Date Extracted: 11/01/91 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed: 11/04/91 Time Analyzed: 1255
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	OBA3DDL X	OBA3DDL	6800W	11/02/91

COMMENTS: SBLK65 JOB2729 BN4093A/94A
AUTOSAMPLR I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

30
EPA SAMPLE NO.

SBLK65

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK65

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6811W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/01/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2-----	Phenol	10	U
111-44-4-----	bis(2-Chloroethyl) Ether	10	U
95-57-8-----	2-Chlorophenol	10	U
541-73-1-----	1,3-Dichlorobenzene	10	U
106-46-7-----	1,4-Dichlorobenzene	10	U
100-51-6-----	Benzyl Alcohol	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U
95-48-7-----	2-Methylphenol	10	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	10	U
106-44-5-----	4-Methylphenol	10	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	10	U
67-72-1-----	Hexachloroethane	10	U
98-95-3-----	Nitrobenzene	10	U
78-59-1-----	Isophorone	10	U
88-75-5-----	2-Nitrophenol	10	U
105-67-9-----	2,4-Dimethylphenol	10	U
65-85-0-----	Benzoic Acid	50	U
111-91-1-----	bis(2-Chloroethoxy) Methane	10	U
120-83-2-----	2,4-Dichlorophenol	10	U
120-82-1-----	1,2,4-Trichlorobenzene	10	U
91-20-3-----	Naphthalene	10	U
106-47-8-----	4-Chloroaniline	10	U
87-68-3-----	Hexachlorobutadiene	10	U
59-50-7-----	4-Chloro-3-Methylphenol	10	U
91-57-6-----	2-Methylnaphthalene	10	U
77-47-4-----	Hexachlorocyclopentadiene	10	U
88-06-2-----	2,4,6-Trichlorophenol	10	U
95-95-4-----	2,4,5-Trichlorophenol	50	U
91-58-7-----	2-Chloronaphthalene	10	U
88-74-4-----	2-Nitroaniline	50	U
131-11-3-----	Dimethyl Phthalate	10	U
208-96-8-----	Acenaphthylene	10	U
606-20-2-----	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK65

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK65

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6811W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/01/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
99-09-2-----	3-Nitroaniline	50	U
83-32-9-----	Acenaphthene	10	U
51-28-5-----	2,4-Dinitrophenol	50	U
100-02-7-----	4-Nitrophenol	50	U
132-64-9-----	Dibenzofuran	10	U
121-14-2-----	2,4-Dinitrotoluene	10	U
84-66-2-----	Diethylphthalate	10	U
7005-72-3-----	4-Chlorophenyl-phenylether	10	U
86-73-7-----	Fluorene	10	U
100-01-6-----	4-Nitroaniline	50	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	50	U
86-30-6-----	N-Nitrosodiphenylamine (1)	10	U
101-55-3-----	4-Bromophenyl-phenylether	10	U
118-74-1-----	Hexachlorobenzene	10	U
87-86-5-----	Pentachlorophenol	50	U
85-01-8-----	Phenanthrene	10	U
120-12-7-----	Anthracene	10	U
84-74-2-----	Di-n-Butylphthalate	10	U
206-44-0-----	Fluoranthene	10	U
129-00-0-----	Pyrene	10	U
85-68-7-----	Butylbenzylphthalate	10	U
91-94-1-----	3,3'-Dichlorobenzidine	20	U
56-55-3-----	Benzo(a) Anthracene	10	U
218-01-9-----	Chrysene	10	U
117-81-7-----	Bis(2-Ethylhexyl) Phthalate	10	U
117-84-0-----	Di-n-Octyl Phthalate	10	U
205-99-2-----	Benzo(b) Fluoranthene	10	U
207-08-9-----	Benzo(k) Fluoranthene	10	U
50-32-8-----	Benzo(a) Pyrene	10	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	10	U
53-70-3-----	Dibenz(a,h) Anthracene	10	U
191-24-2-----	Benzo(g,h,i) Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

306
SAMPLE NO. 6

SBLK65

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SBLK65

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6811W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/01/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
576-24-9-----	2,3-Dichlorophenol	10	U
583-78-8-----	2,5-Dichlorophenol	10	U
95-77-2-----	3,4-Dichlorophenol	10	U
591-35-5-----	3,5-Dichlorophenol	10	U
15950-66-0-----	2,3,4-Trichlorophenol	10	U
933-78-8-----	2,3,5-Trichlorophenol	10	U
933-75-5-----	2,3,6-Trichlorophenol	10	U
609-19-8-----	3,4,5-Trichlorophenol	10	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	10	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	10	U
95-57-8-----	2-Chlorophenol	10	U
108-43-0-----	3-Chlorophenol	10	U
106-48-9-----	4-Chlorophenol	10	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	10	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

307

Lab Name: RECRA ENVIRONMENTAL, INC. EPA Sample No.: SBLK65
 Lab Code: RECNY Case No: 3692 SAS No.: Contract: Q89-240
 Matrix (Soil/Water): WATER SDG No.: 2BH1
 Sample wt/vol: 1000 (g/ml): ML Lab Sample ID.: SBLK65
 Level (low/med): LOW Lab File ID.: ^{Q811W} ~~SBLK65~~ *for 11/4/91*
 % Moisture not Dec: Dec: Date Received:
 Extraction: (SepF/Cont/Sonc/Sox): SEPF Date Extracted: 11/01/91
 TPC Cleanup: (Y/N): N pH: 7 Date Analyzed: 11/04/91
 Number TICs Found: 0 Dilution Factor: 1.0
 Concentration Units:
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
3				
4				
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4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA2C

Lab File ID: 6627W Lab Sample ID: SBLK50

Date Extracted: 10/09/91 Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 10/20/91 Time Analyzed: 1317

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	OBA2C x	OBA2C	6628W	10/20/91
02	OBA2CDL v	OBA2CDL	6651W	10/22/91
03	OBA3C x	OBA3C	6629W	10/20/91
04	OBA3CDL x	OBA3CDL	6644W	10/21/91
05	OBA5C x	OBA5C	6632W	10/20/91
06	OBA7C	OBA7C	6630W	10/20/91
07	OBA7CDL	OBA7CDL	6694W	10/25/91
08	QA1	QA1	6631W	10/20/91
09	QA1DL	QA1DL	6693W	10/25/91
10	RINSEBLANK3	RINSEBLANK3	6633W	10/20/91

COMMENTS: SBLK50 JOB 2887/2901 BN4216/17
AUTOSAMPLR I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

98
EPA SAMPLE NO.

SBLK50

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA2C

Matrix: (soil/water) WATER Lab Sample ID: SBLK50

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6627W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/09/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

108-95-2-----	Phenol	10	U
111-44-4-----	bis(2-Chloroethyl) Ether	10	U
95-57-8-----	2-Chlorophenol	10	U
541-73-1-----	1,3-Dichlorobenzene	10	U
106-46-7-----	1,4-Dichlorobenzene	10	U
100-51-6-----	Benzyl Alcohol	10	U
95-50-1-----	1,2-Dichlorobenzene	3	J
95-48-7-----	2-Methylphenol	10	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	10	U
106-44-5-----	4-Methylphenol	10	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	10	U
67-72-1-----	Hexachloroethane	2	J
98-95-3-----	Nitrobenzene	10	U
78-59-1-----	Isophorone	10	U
88-75-5-----	2-Nitrophenol	10	U
105-67-9-----	2,4-Dimethylphenol	10	U
65-85-0-----	Benzoic Acid	50	U
111-91-1-----	bis(2-Chloroethoxy) Methane	10	U
120-83-2-----	2,4-Dichlorophenol	10	U
120-82-1-----	1,2,4-Trichlorobenzene	10	U
91-20-3-----	Naphthalene	10	U
106-47-8-----	4-Chloroaniline	10	U
87-68-3-----	Hexachlorobutadiene	10	U
59-50-7-----	4-Chloro-3-Methylphenol	10	U
91-57-6-----	2-Methylnaphthalene	10	U
77-47-4-----	Hexachlorocyclopentadiene	10	U
88-06-2-----	2,4,6-Trichlorophenol	10	U
95-95-4-----	2,4,5-Trichlorophenol	50	U
91-58-7-----	2-Chloronaphthalene	10	U
88-74-4-----	2-Nitroaniline	50	U
131-11-3-----	Dimethyl Phthalate	10	U
208-96-8-----	Acenaphthylene	10	U
606-20-2-----	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK50

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA2C

Matrix: (soil/water) WATER Lab Sample ID: SBLK50

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6627W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/09/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
99-09-2-----	3-Nitroaniline	50	U
83-32-9-----	Acenaphthene	10	U
51-28-5-----	2,4-Dinitrophenol	50	U
100-02-7-----	4-Nitrophenol	50	U
132-64-9-----	Dibenzofuran	10	U
121-14-2-----	2,4-Dinitrotoluene	10	U
84-66-2-----	Diethylphthalate	10	U
7005-72-3-----	4-Chlorophenyl-phenylether	10	U
86-73-7-----	Fluorene	10	U
100-01-6-----	4-Nitroaniline	50	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	50	U
86-30-6-----	N-Nitrosodiphenylamine (1)	10	U
101-55-3-----	4-Bromophenyl-phenylether	10	U
118-74-1-----	Hexachlorobenzene	10	U
87-86-5-----	Pentachlorophenol	50	U
85-01-8-----	Phenanthrene	10	U
120-12-7-----	Anthracene	10	U
84-74-2-----	Di-n-Butylphthalate	10	U
206-44-0-----	Fluoranthene	10	U
129-00-0-----	Pyrene	10	U
85-68-7-----	Butylbenzylphthalate	10	U
91-94-1-----	3,3'-Dichlorobenzidine	20	U
56-55-3-----	Benzo(a)Anthracene	10	U
218-01-9-----	Chrysene	10	U
117-81-7-----	Bis(2-Ethylhexyl) Phthalate	10	U
117-84-0-----	Di-n-Octyl Phthalate	10	U
205-99-2-----	Benzo(b) Fluoranthene	10	U
207-08-9-----	Benzo(k) Fluoranthene	10	U
50-32-8-----	Benzo(a) Pyrene	10	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	10	U
53-70-3-----	Dibenz(a,h) Anthracene	10	U
191-24-2-----	Benzo(g,h,i) Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO
100

SBLK50

Lab Name: RECRA ENVIRON Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA2C

Matrix: (soil/water) WATER Lab Sample ID: SBLK50

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6627W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/09/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
576-24-9-----	2,3-Dichlorophenol	10	U
583-78-8-----	2,5-Dichlorophenol	10	U
95-77-2-----	3,4-Dichlorophenol	10	U
591-35-5-----	3,5-Dichlorophenol	10	U
15950-66-0-----	2,3,4-Trichlorophenol	10	U
933-78-8-----	2,3,5-Trichlorophenol	10	U
933-75-5-----	2,3,6-Trichlorophenol	10	U
609-19-8-----	3,4,5-Trichlorophenol	10	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	10	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	10	U
108-43-0-----	3-Chlorophenol	10	U
106-48-9-----	4-Chlorophenol	10	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	10	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

101

Lab Name: RECRA ENVIRONMENTAL, INC. EPA Sample No.: SBLK50
 Lab Code: RECNY Case No: 3692 SAS No.: Contract: Q89-240
 Matrix (Soil/Water): WATER SDG No.: OBA2C
 Sample wt/vol: 1000 (g/mL): ML Lab Sample ID.: SBLK50
 Level (low/med): LOW Lab File ID.: 6627W
 % Moisture not Dec: Dec: Date Received:
 Extraction: (SepF/Cont/Sonc/Sox): SEPF Date Extracted: 10/09/91
 GPC Cleanup: (Y/N): N pH: 7.0 Date Analyzed: 10/20/91
 Number TICs Found: 0 Dilution Factor: 1.0
 Concentration Units:
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
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4B
SEMIVOLATILE METHOD BLANK SUMMARY

176

Lab Name: RECRA ENVIRON Contract: Q89-240R
 Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
 Lab File ID: 6711W Lab Sample ID: SBLK56
 Date Extracted: 10/22/91 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed: 10/26/91 Time Analyzed: 1315
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO. =====	LAB SAMPLE ID =====	LAB FILE ID =====	DATE ANALYZED =====
01	RB-5	RB-5	6713W	10/26/91

COMMENTS: SBLK56 JOB 3046A BN4250/51
AUTOSAMPLR I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 177

SBLK56

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) WATER Lab Sample ID: SBLK56

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6711W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/22/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/26/91

APC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10	U
111-44-4-----	bis(2-Chloroethyl) Ether	10	U
95-57-8-----	2-Chlorophenol	10	U
541-73-1-----	1,3-Dichlorobenzene	10	U
106-46-7-----	1,4-Dichlorobenzene	10	U
100-51-6-----	Benzyl Alcohol	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U
95-48-7-----	2-Methylphenol	10	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	10	U
106-44-5-----	4-Methylphenol	10	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	10	U
67-72-1-----	Hexachloroethane	10	U
98-95-3-----	Nitrobenzene	10	U
78-59-1-----	Isophorone	10	U
88-75-5-----	2-Nitrophenol	10	U
105-67-9-----	2,4-Dimethylphenol	10	U
65-85-0-----	Benzoic Acid	50	U
111-91-1-----	bis(2-Chloroethoxy) Methane	10	U
120-83-2-----	2,4-Dichlorophenol	10	U
120-82-1-----	1,2,4-Trichlorobenzene	10	U
91-20-3-----	Naphthalene	10	U
106-47-8-----	4-Chloroaniline	10	U
87-68-3-----	Hexachlorobutadiene	10	U
59-50-7-----	4-Chloro-3-Methylphenol	10	U
91-57-6-----	2-Methylnaphthalene	10	U
77-47-4-----	Hexachlorocyclopentadiene	10	U
88-06-2-----	2,4,6-Trichlorophenol	10	U
95-95-4-----	2,4,5-Trichlorophenol	50	U
91-58-7-----	2-Chloronaphthalene	10	U
88-74-4-----	2-Nitroaniline	50	U
131-11-3-----	Dimethyl Phthalate	10	U
208-96-8-----	Acenaphthylene	10	U
606-20-2-----	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO 78

SBLK56

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) WATER Lab Sample ID: SBLK56

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6711W

Level: (low/med) LOW Date Received: _____

Moisture: not dec. _____ dec. _____ Date Extracted: 10/22/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/26/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

99-09-2-----	3-Nitroaniline	50	U
83-32-9-----	Acenaphthene	10	U
51-28-5-----	2,4-Dinitrophenol	50	U
100-02-7-----	4-Nitrophenol	50	U
132-64-9-----	Dibenzofuran	10	U
121-14-2-----	2,4-Dinitrotoluene	10	U
84-66-2-----	Diethylphthalate	10	U
7005-72-3-----	4-Chlorophenyl-phenylether	10	U
86-73-7-----	Fluorene	10	U
100-01-6-----	4-Nitroaniline	50	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	50	U
86-30-6-----	N-Nitrosodiphenylamine (1)	10	U
101-55-3-----	4-Bromophenyl-phenylether	10	U
118-74-1-----	Hexachlorobenzene	10	U
87-86-5-----	Pentachlorophenol	50	U
85-01-8-----	Phenanthrene	10	U
120-12-7-----	Anthracene	10	U
84-74-2-----	Di-n-Butylphthalate	10	U
206-44-0-----	Fluoranthene	10	U
129-00-0-----	Pyrene	10	U
85-68-7-----	Butylbenzylphthalate	10	U
91-94-1-----	3,3'-Dichlorobenzidine	20	U
56-55-3-----	Benzo(a)Anthracene	10	U
218-01-9-----	Chrysene	10	U
117-81-7-----	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0-----	Di-n-Octyl Phthalate	10	U
205-99-2-----	Benzo(b)Fluoranthene	10	U
207-08-9-----	Benzo(k)Fluoranthene	10	U
50-32-8-----	Benzo(a)Pyrene	10	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3-----	Dibenz(a,h)Anthracene	10	U
191-24-2-----	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO. 979

SBLK56

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) WATER Lab Sample ID: SBLK56

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6711W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/22/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/26/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
576-24-9-----	2,3-Dichlorophenol_____	10	U
583-78-8-----	2,5-Dichlorophenol_____	10	U
95-77-2-----	3,4-Dichlorophenol_____	10	U
591-35-5-----	3,5-Dichlorophenol_____	10	U
15950-66-0-----	2,3,4-Trichlorophenol_____	10	U
933-78-8-----	2,3,5-Trichlorophenol_____	10	U
933-75-5-----	2,3,6-Trichlorophenol_____	10	U
609-19-8-----	3,4,5-Trichlorophenol_____	10	U
490-51-3-----	2,3,4,5-Tetrachlorophenol_____	10	U
935-95-5-----	2,3,5,6-Tetrachlorophenol_____	10	U
108-43-0-----	3-Chlorophenol_____	10	U
106-48-9-----	4-Chlorophenol_____	10	U
58-90-2-----	2,3,4,6-Tetrachlorophenol_____	10	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. 180

SBLK56

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: QSB15A

Matrix: (soil/water) WATER Lab Sample ID: SBLK56

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6711W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/22/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/26/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

4B
SEMIVOLATILE METHOD BLANK SUMMARY

181

Lab Name: RECRA ENVIRON Contract: Q89-240R
 Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
 Lab File ID: 6812W Lab Sample ID: SBLK66
 Date Extracted: 10/23/91 Extraction: (SepF/Cont/Sonc) SONC
 Date Analyzed: 11/04/91 Time Analyzed: 1351
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	OSB1702	OSB1702	6852W	11/06/91
02	OSB1702DL	OSB1702DL	6847W	11/06/91
03	OSB1724	OSB1724	6853W	11/06/91
04	OSB1724DL	OSB1724DL	6848W	11/06/91
05	OSB1746	OSB1746	6854W	11/06/91
06	OSB1746DL	OSB1746DL	6849W	11/06/91
07	OSB1802	OSB1802	6818W	11/04/91
08	OSB1802DL	OSB1802DL	6831W	11/05/91
09	OSB1824	OSB1824	6819W	11/04/91
10	OSB1824DL	OSB1824DL	6832W	11/05/91
11	OSB1846	OSB1846	6814W	11/04/91
12	OSB1846DL	OSB1846DL	6827W	11/05/91
13	OSB1868	OSB1868	6817W	11/04/91
14	OSB1868DL	OSB1868DL	6830W	11/05/91
15	QA5	QA5	6820W	11/04/91
16	QA5DL	QA5DL	6833W	11/05/91
17	OSB1846MS	OSB1846MS	6815W	11/04/91
18	OSB1846MSD	OSB1846MSD	6816W	11/04/91
19	OSB1846MSDDL	OSB1846MSDDL	6829W	11/05/91
20	OSB1846MSDL	OSB1846MSDL	6828W	11/05/91

COMMENTS: SBLK66 JOB3046 SS5059
AUTOSAMPLR I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 186

SBLK66

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) SOIL Lab Sample ID: SBLK66

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 6812W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/23/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/04/91

IPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

CAS NO.	COMPOUND		
108-95-2	Phenol	660	U
111-44-4	bis(2-Chloroethyl) Ether	660	U
95-57-8	2-Chlorophenol	660	U
541-73-1	1,3-Dichlorobenzene	660	U
106-46-7	1,4-Dichlorobenzene	660	U
100-51-6	Benzyl Alcohol	660	U
95-50-1	1,2-Dichlorobenzene	660	U
95-48-7	2-Methylphenol	660	U
108-60-1	bis(2-Chloroisopropyl) Ether	660	U
106-44-5	4-Methylphenol	660	U
621-64-7	N-Nitroso-Di-n-Propylamine	660	U
67-72-1	Hexachloroethane	660	U
98-95-3	Nitrobenzene	660	U
78-59-1	Isophorone	660	U
88-75-5	2-Nitrophenol	660	U
105-67-9	2,4-Dimethylphenol	660	U
65-85-0	Benzoic Acid	3200	U
111-91-1	bis(2-Chloroethoxy) Methane	660	U
120-83-2	2,4-Dichlorophenol	660	U
120-82-1	1,2,4-Trichlorobenzene	660	U
91-20-3	Naphthalene	660	U
106-47-8	4-Chloroaniline	660	U
87-68-3	Hexachlorobutadiene	660	U
59-50-7	4-Chloro-3-Methylphenol	660	U
91-57-6	2-Methylnaphthalene	660	U
77-47-4	Hexachlorocyclopentadiene	660	U
88-06-2	2,4,6-Trichlorophenol	660	U
95-95-4	2,4,5-Trichlorophenol	3200	U
91-58-7	2-Chloronaphthalene	660	U
88-74-4	2-Nitroaniline	3200	U
131-11-3	Dimethyl Phthalate	660	U
208-96-8	Acenaphthylene	660	U
606-20-2	2,6-Dinitrotoluene	660	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 183

SBLK66

Lab Name: RECRA ENVIRON Contract: Q89-240R
 Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
 Matrix: (soil/water) SOIL Lab Sample ID: SBLK66
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 6812W
 Level: (low/med) LOW Date Received: _____
 % Moisture: not dec. _____ dec. _____ Date Extracted: 10/23/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/04/91
 SPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

99-09-2-----	3-Nitroaniline	3200	U
83-32-9-----	Acenaphthene	660	U
51-28-5-----	2,4-Dinitrophenol	3200	U
100-02-7-----	4-Nitrophenol	3200	U
132-64-9-----	Dibenzofuran	660	U
121-14-2-----	2,4-Dinitrotoluene	660	U
84-66-2-----	Diethylphthalate	660	U
7005-72-3-----	4-Chlorophenyl-phenylether	660	U
86-73-7-----	Fluorene	660	U
100-01-6-----	4-Nitroaniline	3200	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	3200	U
86-30-6-----	N-Nitrosodiphenylamine (1)	660	U
101-55-3-----	4-Bromophenyl-phenylether	660	U
118-74-1-----	Hexachlorobenzene	660	U
87-86-5-----	Pentachlorophenol	3200	U
85-01-8-----	Phenanthrene	660	U
120-12-7-----	Anthracene	660	U
84-74-2-----	Di-n-Butylphthalate	660	U
206-44-0-----	Fluoranthene	660	U
129-00-0-----	Pyrene	660	U
85-68-7-----	Butylbenzylphthalate	660	U
91-94-1-----	3,3'-Dichlorobenzidine	1300	U
56-55-3-----	Benzo(a)Anthracene	660	U
218-01-9-----	Chrysene	660	U
117-81-7-----	Bis(2-Ethylhexyl) Phthalate	660	U
117-84-0-----	Di-n-Octyl Phthalate	660	U
205-99-2-----	Benzo(b) Fluoranthene	660	U
207-08-9-----	Benzo(k) Fluoranthene	660	U
50-32-8-----	Benzo(a) Pyrene	660	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	660	U
53-70-3-----	Dibenz(a,h) Anthracene	660	U
191-24-2-----	Benzo(g,h,i) Perylene	660	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO 684

SBLK66

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) SOIL Lab Sample ID: SBLK66

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 6812W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/23/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/04/91

IPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

CAS NO.	COMPOUND		
576-24-9-----	2,3-Dichlorophenol	660	U
583-78-8-----	2,5-Dichlorophenol	660	U
95-77-2-----	3,4-Dichlorophenol	660	U
591-35-5-----	3,5-Dichlorophenol	660	U
15950-66-0-----	2,3,4-Trichlorophenol	660	U
933-78-8-----	2,3,5-Trichlorophenol	660	U
933-75-5-----	2,3,6-Trichlorophenol	660	U
609-19-8-----	3,4,5-Trichlorophenol	660	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	660	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	660	U
108-43-0-----	3-Chlorophenol	660	U
106-48-9-----	4-Chlorophenol	660	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	660	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

185

Lab Name: RECRA ENVIRONMENTAL, INC. EPA Sample No.: SBLK66
 Lab Code: RECNY Case No: 3046 SAS No.: Contract: Q89-240R
 Matrix (Soil/Water): SOIL SDG No.: OSB154 *NTN 11/29/91*
 Sample wt/vol: 30.0 (g/ml): G Lab Sample ID.: SBLK66
 Level (low/med): LOW Lab File ID.: 6812W
 Moisture not Dec: Dec: Date Received:
 Extraction: (SepF/Cont/Sonc/Sox): SONC Date Extracted: 10/23/91
 PC Cleanup: (Y/N): Y pH: 7.0 Date Analyzed: 11/04/91
 Number TICs Found: 3 Dilution Factor: 1.0
 Concentration Units:
 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	UNKNOWN	5.47	330	J
2	UNKNOWN	6.50	2700	J
3	OXYGENATED COMPOUND	18.10	5400	J
4				
5				
6				
7				
8				
9				
10				
11				
12				
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28				
29				
30				

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: Q89-240R
 Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A
 Lab File ID: 6813W Lab Sample ID: SBLK67
 Date Extracted: 10/28/91 Extraction: (SepF/Cont/Sonc) SONC
 Date Analyzed: 11/04/91 Time Analyzed: 1434
 Matrix: (soil/water) SOIL Level: (low/med) MED
 Instrument ID: I50W

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	=====	=====	=====	=====
01	OSB1768	OSB1768	6846W	11/06/91
02	OSB1768DL	OSB1768DL	6836W	11/05/91
03	OSB1768MS	OSB1768MS	6844W	11/06/91
04	OSB1768MSD	OSB1768MSD	6858W	11/07/91
05	OSB1768MSDDL	OSB1768MSDDL	6835W	11/05/91
06	OSB1768MSDL	OSB1768MSDL	6834W	11/05/91

COMMENTS: SBLK67 JOB3046 SS5071
AUTOSAMPLR I50W

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 187

SBLK67

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) SOIL Lab Sample ID: SBLK67

Sample wt/vol: 1.0 (g/mL) G Lab File ID: 6813W

Level: (low/med) MED Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/28/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO. COMPOUND Q

108-95-2-----	Phenol	20000	U
111-44-4-----	bis(2-Chloroethyl) Ether	20000	U
95-57-8-----	2-Chlorophenol	20000	U
541-73-1-----	1,3-Dichlorobenzene	20000	U
106-46-7-----	1,4-Dichlorobenzene	20000	U
100-51-6-----	Benzyl Alcohol	20000	U
95-50-1-----	1,2-Dichlorobenzene	20000	U
95-48-7-----	2-Methylphenol	20000	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	20000	U
106-44-5-----	4-Methylphenol	20000	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	20000	U
67-72-1-----	Hexachloroethane	20000	U
98-95-3-----	Nitrobenzene	20000	U
78-59-1-----	Isophorone	20000	U
88-75-5-----	2-Nitrophenol	20000	U
105-67-9-----	2,4-Dimethylphenol	20000	U
65-85-0-----	Benzoic Acid	96000	U
111-91-1-----	bis(2-Chloroethoxy) Methane	20000	U
120-83-2-----	2,4-Dichlorophenol	20000	U
120-82-1-----	1,2,4-Trichlorobenzene	20000	U
91-20-3-----	Naphthalene	20000	U
106-47-8-----	4-Chloroaniline	20000	U
87-68-3-----	Hexachlorobutadiene	20000	U
59-50-7-----	4-Chloro-3-Methylphenol	20000	U
91-57-6-----	2-Methylnaphthalene	20000	U
77-47-4-----	Hexachlorocyclopentadiene	20000	U
88-06-2-----	2,4,6-Trichlorophenol	20000	U
95-95-4-----	2,4,5-Trichlorophenol	96000	U
91-58-7-----	2-Chloronaphthalene	20000	U
88-74-4-----	2-Nitroaniline	96000	U
131-11-3-----	Dimethyl Phthalate	20000	U
208-96-8-----	Acenaphthylene	20000	U
606-20-2-----	2,6-Dinitrotoluene	20000	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

186
EPA SAMPLE NO.

SBLK67

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) SOIL Lab Sample ID: SBLK67

Sample wt/vol: 1.0 (g/mL) G Lab File ID: 6813W

Level: (low/med) MED Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/28/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO. COMPOUND

99-09-2-----	3-Nitroaniline	96000	U
83-32-9-----	Acenaphthene	20000	U
51-28-5-----	2,4-Dinitrophenol	96000	U
100-02-7-----	4-Nitrophenol	96000	U
132-64-9-----	Dibenzofuran	20000	U
121-14-2-----	2,4-Dinitrotoluene	20000	U
84-66-2-----	Diethylphthalate	20000	U
7005-72-3-----	4-Chlorophenyl-phenylether	20000	U
86-73-7-----	Fluorene	20000	U
100-01-6-----	4-Nitroaniline	96000	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	96000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	20000	U
101-55-3-----	4-Bromophenyl-phenylether	20000	U
118-74-1-----	Hexachlorobenzene	20000	U
87-86-5-----	Pentachlorophenol	96000	U
85-01-8-----	Phenanthrene	20000	U
120-12-7-----	Anthracene	20000	U
84-74-2-----	Di-n-Butylphthalate	20000	U
206-44-0-----	Fluoranthene	20000	U
129-00-0-----	Pyrene	20000	U
85-68-7-----	Butylbenzylphthalate	20000	U
91-94-1-----	3,3'-Dichlorobenzidine	40000	U
56-55-3-----	Benzo(a)Anthracene	20000	U
218-01-9-----	Chrysene	20000	U
117-81-7-----	Bis(2-Ethylhexyl)Phthalate	20000	U
117-84-0-----	Di-n-Octyl Phthalate	20000	U
205-99-2-----	Benzo(b) Fluoranthene	20000	U
207-08-9-----	Benzo(k) Fluoranthene	20000	U
50-32-8-----	Benzo(a) Pyrene	20000	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	20000	U
53-70-3-----	Dibenz(a,h) Anthracene	20000	U
191-24-2-----	Benzo(g,h,i) Perylene	20000	U

(1) - Cannot be separated from Diphenylamine

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO. 189

SBLK67

Lab Name: RECRA ENVIRON Contract: Q89-240R

Lab Code: RECNY Case No.: 3046 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) SOIL Lab Sample ID: SBLK67

Sample wt/vol: 1.0 (g/mL) G Lab File ID: 6813W

Level: (low/med) MED Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/28/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/04/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO. COMPOUND Q

576-24-9-----	2,3-Dichlorophenol	20000	U
583-78-8-----	2,5-Dichlorophenol	20000	U
95-77-2-----	3,4-Dichlorophenol	20000	U
591-35-5-----	3,5-Dichlorophenol	20000	U
15950-66-0-----	2,3,4-Trichlorophenol	20000	U
933-78-8-----	2,3,5-Trichlorophenol	20000	U
933-75-5-----	2,3,6-Trichlorophenol	20000	U
609-19-8-----	3,4,5-Trichlorophenol	20000	U
490-51-3-----	2,3,4,5-Tetrachlorophenol	20000	U
935-95-5-----	2,3,5,6-Tetrachlorophenol	20000	U
108-43-0-----	3-Chlorophenol	20000	U
106-48-9-----	4-Chlorophenol	20000	U
58-90-2-----	2,3,4,6-Tetrachlorophenol	20000	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

190

Lab Name: RECRA ENVIRONMENTAL, INC.

Lab Code: RECNY Case No: 3046 SAS No.:

Matrix (Soil/Water): SOIL

Sample wt/vol: 1.0 (g/ml): G

Level (low/med): MED

Moisture not Dec: Dec:

Extraction: (SepF/Cont/Sonc/Sox): SONC

SPC Cleanup: (Y/N): Y pH: 7.0

Number TICs Found: 1

EPA Sample No.: SBLK67

Contract: Q89-240R

SDG No.: OSB154 *MTM 11/29/91*

Lab Sample ID.: SBLK67

Lab File ID.: 6813W

Date Received:

Date Extracted: 10/28/91

Date Analyzed: 11/04/91

Dilution Factor: 1.0

Concentration Units:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	UNKNOWN HYDROCARBON	24.60	36000	J
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
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29				
30				

4C
PESTICIDE METHOD BLANK SUMMARY

0146

pest -1

Lab Name: RECRA ENVIRON Contract: _____

Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Lab Sample ID: SW5403 Lab File ID: 6508W

Matrix: (soil/water) WATER Level: (low/med) LOW

Date Extracted: 09/23/91 Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed (1): 10/02/91 Date Analyzed (2): 10/02/91

Time Analyzed (1): 2132 Time Analyzed (2): 2132

Instrument ID (1): HP5890-5 Instrument ID (2): HP5890B5

Column ID (1): DB608 GC Column ID (2): DB1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	BH1	SW5409	10/03/91	10/03/91
02	BH3	SW5408	10/04/91	10/04/91
03	BH3DL	SW5408DL	10/04/91	10/04/91
04	OBA1B	SW5404	10/02/91	10/02/91
05	OBA1BMS	SW5405	10/02/91	10/02/91
06	OBA1BMSD	SW5406	10/03/91	10/03/91
07	OBA1C	SW5407	10/03/91	10/03/91
08	OBA4B	SW5414	10/03/91	10/03/91
09	OBA4C	SW5413	10/04/91	10/04/91
10	OBA8B	SW5411	10/04/91	10/04/91
11	OBA8C	SW5410	10/03/91	10/03/91
12	OBA9B	SW5412	10/04/91	10/04/91
13	RB1	SW5415	10/03/91	10/03/91

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK10

Lab Name: RECRA ENVIRON Contract: _____

Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 1BH1

Matrix: (soil/water) WATER Lab Sample ID: SW5403

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6508W

Level: (low/med) LOW Date Received: _____

Moisture: not dec. _____ dec. _____ Date Extracted: 09/23/91

Reaction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/02/91

Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

319-84-6-----	alpha-BHC	0.050	U
319-85-7-----	beta-BHC	0.050	U
319-86-8-----	delta-BHC	0.050	U
58-89-9-----	gamma-BHC(Lindane)	0.050	U
76-44-8-----	Heptachlor	0.050	U
309-00-2-----	Aldrin	0.050	U
1024-57-3-----	Heptachlor epoxide	0.050	U
959-98-8-----	Endosulfan I	0.050	U
60-57-1-----	Dieldrin	0.10	U
72-55-9-----	4,4'-DDE	0.10	U
72-20-8-----	Endrin	0.10	U
33213-65-9-----	Endosulfan II	0.10	U
72-54-8-----	4,4'-DDD	0.10	U
1031-07-8-----	Endosulfan sulfate	0.10	U
50-29-3-----	4,4'-DDT	0.10	U
72-43-5-----	Methoxychlor	0.50	U
53494-70-5-----	Endrin ketone	0.10	U
5103-71-9-----	alpha-chlordane	0.50	U
5103-74-2-----	gamma-chlordane	0.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Aroclor-1016	0.50	U
11104-28-2-----	Aroclor-1221	0.50	U
11141-16-5-----	Aroclor-1232	0.50	U
53469-21-9-----	Aroclor-1242	0.50	U
12672-29-6-----	Aroclor-1248	0.50	U
11097-69-1-----	Aroclor-1254	1.0	U
11096-82-5-----	Aroclor-1260	1.0	U

2-pest

4C
PESTICIDE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: _____
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Lab Sample ID: SW5423 Lab File ID: 6512W
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Date Extracted: 09/24/91 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed (1): 10/03/91 Date Analyzed (2): 10/03/91
 Time Analyzed (1): 0955 Time Analyzed (2): 0955
 Instrument ID (1): HP5890-5 Instrument ID (2): HP5890B5
 GC Column ID (1): DB608 GC Column ID (2): DB1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	OBA1A X	SW5424	10/04/91	10/04/91
02	OBA4A *	SW5426	10/03/91	10/03/91
03	OBA5A >	SW5427	10/09/91	10/09/91
04	OBA5ADL *	SW5427DL	10/09/91	10/09/91
05	OBA5B *	SW5428	10/09/91	10/09/91
06	OBA5BDL >	SW5428DL	10/09/91	10/09/91
07	OBA5D *	SW5429	10/03/91	10/03/91
08	OBA5DDL >	SW5429DL	10/04/91	10/04/91
09	OBA6A *	SW5430	10/03/91	10/03/91
10	OBA6B >	SW5431	10/04/91	10/04/91
11	OBA6C >	SW5432	10/09/91	10/09/91
12	OBA7A >	SW5433	10/03/91	10/03/91
13	OBA7B >	SW5434	10/03/91	10/03/91
14	OBA8A *	SW5435	10/03/91	10/03/91
15	RB2 †	SW5425	10/03/91	10/03/91

COMMENTS:

309

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK11

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SW5423

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6512W

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/24/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/03/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

319-84-6-----	alpha-BHC	0.050	U
319-85-7-----	beta-BHC	0.050	U
319-86-8-----	delta-BHC	0.050	U
58-89-9-----	gamma-BHC(Lindane)	0.050	U
76-44-8-----	Heptachlor	0.050	U
309-00-2-----	Aldrin	0.050	U
1024-57-3-----	Heptachlor epoxide	0.050	U
959-98-8-----	Endosulfan I	0.050	U
60-57-1-----	Dieldrin	0.10	U
72-55-9-----	4,4'-DDE	0.10	U
72-20-8-----	Endrin	0.10	U
33213-65-9-----	Endosulfan II	0.10	U
72-54-8-----	4,4'-DDD	0.10	U
1031-07-8-----	Endosulfan sulfate	0.10	U
50-29-3-----	4,4'-DDT	0.10	U
72-43-5-----	Methoxychlor	0.50	U
53494-70-5-----	Endrin ketone	0.10	U
5103-71-9-----	alpha-chlordane	0.50	U
5103-74-2-----	gamma-chlordane	0.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Aroclor-1016	0.50	U
11104-28-2-----	Aroclor-1221	0.50	U
11141-16-5-----	Aroclor-1232	0.50	U
53469-21-9-----	Aroclor-1242	0.50	U
12672-29-6-----	Aroclor-1248	0.50	U
11097-69-1-----	Aroclor-1254	1.0	U
11096-82-5-----	Aroclor-1260	1.0	U

4C

PESTICIDE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: _____
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
 Lab Sample ID: SW5460 Lab File ID: _____
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Date Extracted: 09/27/91 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed (1): 10/03/91 Date Analyzed (2): 10/03/91
 Time Analyzed (1): 2309 Time Analyzed (2): 2309
 Instrument ID (1): HP5890-5 Instrument ID (2): HP5890B5
 GC Column ID (1): DB608 GC Column ID (2): DB1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	=====	=====	=====	=====
01	OBA2B /	SW5461	10/04/91	10/04/91
02	OBA3A	SW5462	10/04/91	10/04/91
03	OBA3B	SW5463	10/04/91	10/04/91
04	OBA3D	SW5464	10/04/91	10/04/91
05	OPW	SW5465	10/04/91	10/04/91
06	OPWMS	SW5466	10/04/91	10/04/91
07	OPWMSD	SW5467	10/04/91	10/04/91

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 311

PBLK12

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1

Matrix: (soil/water) WATER Lab Sample ID: SW5460

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 09/27/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/03/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

319-84-6-----	alpha-BHC	0.050	U
319-85-7-----	beta-BHC	0.050	U
319-86-8-----	delta-BHC	0.050	U
58-89-9-----	gamma-BHC(Lindane)	0.050	U
76-44-8-----	Heptachlor	0.050	U
309-00-2-----	Aldrin	0.050	U
1024-57-3-----	Heptachlor epoxide	0.050	U
959-98-8-----	Endosulfan I	0.050	U
60-57-1-----	Dieldrin	0.10	U
72-55-9-----	4,4'-DDE	0.10	U
72-20-8-----	Endrin	0.10	U
33213-65-9-----	Endosulfan II	0.10	U
72-54-8-----	4,4'-DDD	0.10	U
1031-07-8-----	Endosulfan sulfate	0.10	U
50-29-3-----	4,4'-DDT	0.10	U
72-43-5-----	Methoxychlor	0.50	U
53494-70-5-----	Endrin ketone	0.10	U
5103-71-9-----	alpha-chlordane	0.50	U
5103-74-2-----	gamma-chlordane	0.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Aroclor-1016	0.50	U
11104-28-2-----	Aroclor-1221	0.50	U
11141-16-5-----	Aroclor-1232	0.50	U
53469-21-9-----	Aroclor-1242	0.50	U
12672-29-6-----	Aroclor-1248	0.50	U
11097-69-1-----	Aroclor-1254	1.0	U
11096-82-5-----	Aroclor-1260	1.0	U

312

4C
PESTICIDE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: _____
Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: 2BH1
Lab Sample ID: O-11652 Lab File ID: _____
Matrix: (soil/water) SOIL Level: (low/med) LOW
Date Extracted: 09/27/91 Extraction: (SepF/Cont/Sonc) SONC
Date Analyzed (1): 10/04/91 Date Analyzed (2): 10/04/91
Time Analyzed (1): 0635 Time Analyzed (2): 0635
Instrument ID (1): HP5890-5 Instrument ID (2): HP5890B5
GC Column ID (1): DB608 GC Column ID (2): DB1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO. =====	LAB SAMPLE ID =====	DATE ANALYZED 1 =====	DATE ANALYZED 2 =====
01	2CDNAPL	O-11653	10/04/91	10/04/91
02	2CDNAPLDL	O-11653DL	10/04/91	10/04/91

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK13

Lab Name: RECRA ENVIRON

Contract: _____

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: 2BH1

Matrix: (soil/water) SOIL

Lab Sample ID: Q-11652

Sample wt/vol: 0.1 (g/mL) G

Lab File ID: _____

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. dec.

Date Extracted: 09/27/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 10/04/91

CPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----alpha-BHC	1200	U
319-85-7-----beta-BHC	1200	U
319-86-8-----delta-BHC	1200	U
58-89-9-----gamma-BHC(Lindane)	1200	U
76-44-8-----Heptachlor	1200	U
309-00-2-----Aldrin	1200	U
1024-57-3-----Heptachlor epoxide	1200	U
959-98-8-----Endosulfan I	1200	U
60-57-1-----Dieldrin	2400	U
72-55-9-----4,4'-DDE	2400	U
72-20-8-----Endrin	2400	U
33213-65-9-----Endosulfan II	2400	U
72-54-8-----4,4'-DDD	2400	U
1031-07-8-----Endosulfan sulfate	2400	U
50-29-3-----4,4'-DDT	2400	U
72-43-5-----Methoxychlor	12000	U
53494-70-5-----Endrin ketone	2400	U
5103-71-9-----alpha-chlordane	12000	U
5103-74-2-----gamma-chlordane	12000	U
8001-35-2-----Toxaphene	24000	U
12674-11-2-----Aroclor-1016	12000	U
11104-28-2-----Aroclor-1221	12000	U
11141-16-5-----Aroclor-1232	12000	U
53469-21-9-----Aroclor-1242	12000	U
12672-29-6-----Aroclor-1248	12000	U
11097-69-1-----Aroclor-1254	24000	U
11096-82-5-----Aroclor-1260	24000	U

4C

PESTICIDE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA2C

Lab Sample ID: SW5502 Lab File ID: _____

Matrix: (soil/water) WATER Level: (low/med) LOW

Date Extracted: 10/09/91 Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed (1): 10/16/91 Date Analyzed (2): 10/16/91

Time Analyzed (1): 0916 Time Analyzed (2): 0916

Instrument ID (1): HP5890-5 Instrument ID (2): HP5890B5

GC Column ID (1): DB608 GC Column ID (2): DB1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	=====	=====	=====	=====
01	OBA2C	SW5496	10/16/91	10/16/91
02	OBA3C	SW5497	10/16/91	10/16/91
03	OBA5C	SW5500	10/16/91	10/16/91
04	OBA7C	SW5498	10/16/91	10/16/91
05	QA1	SW5499	10/16/91	10/16/91
06	RB3	SW5501	10/16/91	10/16/91

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK22

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OBA2C

Matrix: (soil/water) WATER Lab Sample ID: SW5502

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/09/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/16/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
319-84-6-----	alpha-BHC	0.050	U
319-85-7-----	beta-BHC	0.050	U
319-86-8-----	delta-BHC	0.050	U
58-89-9-----	gamma-BHC (Lindane)	0.050	U
76-44-8-----	Heptachlor	0.050	U
309-00-2-----	Aldrin	0.050	U
1024-57-3-----	Heptachlor epoxide	0.050	U
959-98-8-----	Endosulfan I	0.050	U
60-57-1-----	Dieldrin	0.10	U
72-55-9-----	4,4'-DDE	0.10	U
72-20-8-----	Endrin	0.10	U
33213-65-9-----	Endosulfan II	0.10	U
72-54-8-----	4,4'-DDD	0.10	U
1031-07-8-----	Endosulfan sulfate	0.10	U
50-29-3-----	4,4'-DDT	0.10	U
72-43-5-----	Methoxychlor	0.50	U
53494-70-5-----	Endrin ketone	0.10	U
5103-71-9-----	alpha-chlordane	0.50	U
5103-74-2-----	gamma-chlordane	0.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Aroclor-1016	0.50	U
11104-28-2-----	Aroclor-1221	0.50	U
11141-16-5-----	Aroclor-1232	0.50	U
53469-21-9-----	Aroclor-1242	0.50	U
12672-29-6-----	Aroclor-1248	0.50	U
11097-69-1-----	Aroclor-1254	1.0	U
11096-82-5-----	Aroclor-1260	1.0	U

4C
PESTICIDE METHOD BLANK SUMMARY

191

Lab Name: RECRA ENVIRON Contract: _____
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB15A
 Lab Sample ID: SW5520 Lab File ID: _____
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Date Extracted: 10/23/91 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed (1): 11/09/91 Date Analyzed (2): 11/09/91
 Time Analyzed (1): 1157 Time Analyzed (2): 1157
 Instrument ID (1): HP5890-5 Instrument ID (2): HP5890B5
 GC Column ID (1): DB608 GC Column ID (2): DB1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	=====	=====	=====	=====
01	RB5	SW5521	11/09/91	11/09/91

COMMENTS:

48C

NYSDEC

3
BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 089-240R

Lab Code: RECNY

Case No.: 3692

SAS No.: _____

SDG No.: OSB-1(0-2)

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Lab. BL

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.2	U	0.2	U					CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

B-167

4C
PESTICIDE METHOD BLANK SUMMARY

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB15A

Lab Sample ID: SS5059 Lab File ID: 9559Y

Matrix: (soil/water) SOIL Level: (low/med) LOW

Date Extracted: 10/23/91 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed (1): 11/09/91 Date Analyzed (2): 11/09/91

Time Analyzed (1): 1426 Time Analyzed (2): 1426

Instrument ID (1): HP5890-5 Instrument ID (2): HP5890B5

GC Column ID (1): DB608 GC Column ID (2): DB1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	=====	=====	=====	=====
01	OSB1702	SS5060	11/09/91	11/09/91
02	OSB1702DL	SS5060DL	11/09/91	11/09/91
03	OSB1724	SS5061	11/09/91	11/09/91
04	OSB1724DL	SS5061DL	11/09/91	11/09/91
05	OSB1746	SS5062	11/09/91	11/09/91
06	OSB1746DL	SS5062DL	11/09/91	11/09/91
07	OSB1768	SS5063	11/26/91	11/26/91
08	OSB1768DL	SS5063DL	11/26/91	11/26/91
09	OSB1802	SS5064	11/09/91	11/09/91
10	OSB1802DL	SS5064DL	11/09/91	11/09/91
11	OSB1824	SS5065	11/10/91	11/10/91
12	OSB1824DL	SS5065DL	11/09/91	11/09/91
13	OSB1846	SS5066	11/10/91	11/10/91
14	OSB1846DL	SS5066DL	11/10/91	11/10/91
15	OSB1868	SS5069	11/10/91	11/10/91
16	OSB1868DL	SS5069DL	11/10/91	11/10/91
17	QA5	SS5070	11/10/91	11/10/91
18	QA5DL	SS5070DL	11/10/91	11/10/91
19	OSB1846MS	SS5067	11/10/91	11/10/91
20	OSB1846MSD	SS5068	11/10/91	11/10/91
21	OSB1846MSDDL	SS5068DL	11/10/91	11/10/91
22	OSB1846MSDL	SS5067DL	11/10/91	11/10/91

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO 192

PBLK21

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB15A

Matrix: (soil/water) WATER Lab Sample ID: SW5520

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ dec. _____ Date Extracted: 10/23/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/09/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

319-84-6-----	alpha-BHC	0.050	U
319-85-7-----	beta-BHC	0.050	U
319-86-8-----	delta-BHC	0.050	U
58-89-9-----	gamma-BHC (Lindane)	0.050	U
76-44-8-----	Heptachlor	0.050	U
309-00-2-----	Aldrin	0.050	U
1024-57-3-----	Heptachlor epoxide	0.050	U
959-98-8-----	Endosulfan I	0.050	U
60-57-1-----	Dieldrin	0.10	U
72-55-9-----	4,4'-DDE	0.10	U
72-20-8-----	Endrin	0.10	U
33213-65-9-----	Endosulfan II	0.10	U
72-54-8-----	4,4'-DDD	0.10	U
1031-07-8-----	Endosulfan sulfate	0.10	U
50-29-3-----	4,4'-DDT	0.10	U
72-43-5-----	Methoxychlor	0.50	U
53494-70-5-----	Endrin ketone	0.10	U
5103-71-9-----	alpha-chlordane	0.50	U
5103-74-2-----	gamma-chlordane	0.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Aroclor-1016	0.50	U
11104-28-2-----	Aroclor-1221	0.50	U
11141-16-5-----	Aroclor-1232	0.50	U
53469-21-9-----	Aroclor-1242	0.50	U
12672-29-6-----	Aroclor-1248	0.50	U
11097-69-1-----	Aroclor-1254	1.0	U
11096-82-5-----	Aroclor-1260	1.0	U

4D
NON-HALOGENATED VOLATILE ORGANICS METHOD BLANK SUMMARY
METHOD 8015

Meoh-1
0148

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix: WATER

Lab File ID: METHOD BLANK

Instrument ID: HP5890

Lab Sample ID: METHOD BLANK

Date Analyzed: 9/27/91

Time Analyzed: 23:58

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	MSB	MSB	9/28/91
02	OBA-1B	OBA-1B	9/28/91
03	OBA-1BMS	OBA-1BMS	9/28/91
04	OBA-1BMSD	OBA-1BMSD	9/28/91
05	OBA-1C	OBA-1C	9/28/91
06	OBA-1A	OBA-1A	9/28/91
07	BH-3	BH-3	9/28/91
08	BH-1	BH-1	9/28/91
09	OBA-8C	OBA-8C	9/28/91
10	OBA-8B	OBA-8B	9/28/91
11	OBA-9B	OBA-9B	9/28/91
12	OBA-4C	OBA-4C	9/28/91
13	OBA-4B	OBA-4B	9/28/91
14	FB-1	FB-1	9/28/91
15	RB-1	RB-1	9/28/91
16	TB-1	TB-1	9/28/91
17	VHB-1	VHB-1	9/28/91
18			
19			
20			
21			
22			
23			
24			
25			
26			

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK22

Lab Name: RECRA ENVIRON Contract: _____
 Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB15A
 Matrix: (soil/water) SOIL Lab Sample ID: SS5059
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 9559Y
 Level: (low/med) LOW Date Received: _____
 % Moisture: not dec. _____ dec. _____ Date Extracted: 10/23/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/09/91
 PC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

319-84-6-----	alpha-BHC	16	U
319-85-7-----	beta-BHC	16	U
319-86-8-----	delta-BHC	16	U
58-89-9-----	gamma-BHC(Lindane)	16	U
76-44-8-----	Heptachlor	16	U
309-00-2-----	Aldrin	16	U
1024-57-3-----	Heptachlor epoxide	16	U
959-98-8-----	Endosulfan I	16	U
60-57-1-----	Dieldrin	32	U
72-55-9-----	4,4'-DDE	32	U
72-20-8-----	Endrin	32	U
33213-65-9-----	Endosulfan II	32	U
72-54-8-----	4,4'-DDD	32	U
1031-07-8-----	Endosulfan sulfate	32	U
50-29-3-----	4,4'-DDT	32	U
72-43-5-----	Methoxychlor	160	U
53494-70-5-----	Endrin ketone	32	U
5103-71-9-----	alpha-chlordane	120	J
5103-74-2-----	gamma-chlordane	160	U
8001-35-2-----	Toxaphene	320	U
12674-11-2-----	Aroclor-1016	160	U
11104-28-2-----	Aroclor-1221	160	U
11141-16-5-----	Aroclor-1232	160	U
53469-21-9-----	Aroclor-1242	160	U
12672-29-6-----	Aroclor-1248	160	U
11097-69-1-----	Aroclor-1254	320	U
11096-82-5-----	Aroclor-1260	320	U

NON-HALOGENATED VOLATILE ORGANICS METHOD BLANK SUMMARY
METHOD 8015

2-Meoh 314

Lab Name: RECRA ENVIRONMENTAL, INC.Case No.: 3692Matrix: WaterLab File ID: Method Blank-1Instrument ID: HP5890Lab Sample ID: Method Blank-1Date Analyzed: 9/26/91Time Analyzed: 17:28

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	RB-2	RB-2	9/26/91
02	OBA-5B	OBA-5B	9/27/91
03	OBA-5D	OBA-5D	9/27/91
04	OBA-6A	OBA-6A	9/27/91
05	OBA-6B	OBA-6B	9/27/91
06	OBA-6C	OBA-6C	9/27/91
07	OBA-7A	OBA-7A	9/27/91
08	MSB-1	MSB-1	9/27/91
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			

COMMENTS:

0149

1H
NON-HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET
METHOD 8015

SAMPLE NO.

METHOD
BLANK

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix: WATER

Date Received: -

Sample Vol: 1 ul

Date Analyzed: 9/27/91

Column: 116 Nukol Lab File ID: Blank

Dilution Factor: 1.0

COMPOUND

CONCENTRATION UNITS:
ug/l Q

Methanol	1000	U
----------	------	---

316

4D
NON-HALOGENATED VOLATILE ORGANICS METHOD BLANK SUMMARY
METHOD 8015

Lab Name: RECRA ENVIRONMENTAL, INC. Case No.: 3692
Matrix: Water Lab File ID: Method Blank-2
Instrument ID: HP5890 Lab Sample ID: Method Blank-2
Date Analyzed: 9/27/91 Time Analyzed: 4:54

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	OBA-7B	OBA-7B	9/27/91
02	OBA-8A	OBA-8A	9/27/91
03	TB-2	TB-2	9/27/91
04	VHB-1	VHB-1	9/27/91
05	OBA-2B	OBA-2B	9/27/91
06	OBA-3A	OBA-3A	9/27/91
07	OBA-3B	OBA-3B	9/27/91
08	OBA-3D	OBA-3D	9/27/91
09	OPW	OPW	9/27/91
10	OPWMS	OPWMS	9/27/91
11	OBA-4A	OBA-4A	9/27/91
12	OPW MSD	OPW MSD	9/27/91
13	OBA-5A	OBA-5A	9/27/91
14	VHB-2	VHB-2	9/27/91
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			

COMMENTS: _____

315

1H
NON-HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET
METHOD 8015

SAMPLE NO.
METHOD BLANK-1

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix: WATER

Date Received: _____

Sample Vol: 1.0 ul

Date Analyzed: 9/26/91

Column: 116 Nukol Lab File ID: METHOD BLANK-1

Dilution Factor: 1.0

COMPOUND

CONCENTRATION UNITS:

ug/l Q

Methanol	1000	U
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318

4D
NON-HALOGENATED VOLATILE ORGANICS METHOD BLANK SUMMARY
METHOD 8015

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix: Water

Lab File ID: Method Blank-3

Instrument ID: HP5890

Lab Sample ID: Method Blank-3

Date Analyzed: 9/27/91

Time Analyzed: 13:29

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	MSB-2	MSB-2	9/27/91
02	OBA-6A	OBA-6A	9/27/91
03	2C-DNAPL	2C-DNAPL	9/27/91
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			

COMMENTS: _____

317

1H
NON-HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET
METHOD 8015

SAMPLE NO.
METHOD BLANK-2

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix: WATER

Date Received: _____

Sample Vol: 1.0 ul

Date Analyzed: 9/27/91

Column: 116 Nukol Lab File ID: METHOD BLANK-2

Dilution Factor: 1.0

COMPOUND

CONCENTRATION UNITS:

ug/l Q

Methanol	1000	U
----------	------	---

4D
NON-HALOGENATED VOLATILE ORGANICS METHOD BLANK SUMMARY
METHOD 8015

Lab Name: RECRA ENVIRONMENTAL, INC.Case No.: 3692Matrix: WaterLab File ID: Method Blank-4Instrument ID: HP5890Lab Sample ID: Method Blank-4Date Analyzed: 9/27/91Time Analyzed: 23:58

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	MSB-3	MSB-3	9/28/91
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			

COMMENTS: _____

319

1H
NON-HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET
METHOD 8015

SAMPLE NO.
METHOD BLANK-3

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix: WATER

Date Received: _____

Sample Vol: 1.0 ul

Date Analyzed: 9/27/91

Column: 116 Nukol Lab File ID: METHOD BLANK-3

Dilution Factor: 1.0

COMPOUND

CONCENTRATION UNITS:
ug/l Q

Methanol_____	1000	U
---------------	------	---

4D
NON-HALOGENATED VOLATILE ORGANICS METHOD BLANK SUMMARY
METHOD 8015

Lab Name: RECRA ENVIRONMENTAL, INC.Case No.: 3692Matrix: WATERLab File ID: METHOD BLANKInstrument ID: HP5890Lab Sample ID: METHOD BLANKDate Analyzed: 10/7/91Time Analyzed: 12:10

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	FB-2	FB-2	10/8/91
02	OBA-2C	OBA-2C	10/7/91
03	OBA-3C	OBA-3C	10/7/91
04	OBA-5C	OBA-5C	10/8/91
05	OBA-7C	OBA-7C	10/7/91
06	QA-1	QA-1	10/7/91
07	RB-3	RB-3	10/8/91
08	VHB-1	VHB-1	10/7/91
09	VHB-2	VHB-2	10/8/91
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			

COMMENTS:

1H
NON-HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET
METHOD 8015

321
SAMPLE NO.

METHOD
BLANK-4

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix: WATER

Date Received: 9/20/91

Sample Vol: 1.0 ul

Date Analyzed: 9/27/91

Column: 116 Nukol Lab File ID: METHOD BLANK-4

Dilution Factor: 1.0

COMPOUND

CONCENTRATION UNITS:
ug/l Q

Methanol	1000	U
----------	------	---

3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: 089-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: BH-1Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

B-112

1H
NON-HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET
METHOD 8015

105
SAMPLE NO.

METHOD BLANK

Lab Name: RECRA ENVIRONMENTAL, INC.

Case No.: 3692

Matrix: WATER

Date Received: -

Sample Vol: 1.0 ul

Date Analyzed: 10/7/91

Column: 116 Nukol Lab File ID: METHOD BLANK Dilution Factor: 1.0

COMPOUND

CONCENTRATION UNITS:

ug/l Q

Methanol	1000	U
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Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 089-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: BH-1Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

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Lab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: BH-1

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.2	U	0.2	U					CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

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NYSDEC

3
BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 089-240

Lab Code: RECNV

Case No.: 3692

SAS No.: _____

SDG No.: BH-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U			0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

B-112

NYSDEC

3
BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC. Contract: Q89-240

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: BH-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

B-112

3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC. Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: BH-3

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.2	U							CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

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Lab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: BH-3Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

B-112

3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC. Contract: Q89-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-15A(2-4)Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

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3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240Lab Code: RECNYCase No.: 3692

SAS No.: _____

SDG No.: BH-3Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

B-112

NYSDEC

3145

3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240RLab Code: RECNYCase No.: 3692

SAS No.: _____

SDG No.: OSB-15A(2-4)Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

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BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 089-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-15A(2-4)

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)								Preparation Blank		M
		C	1	C	2	C	3	C			C		
Aluminum													
Antimony													
Arsenic													
Barium													
Beryllium													
Cadmium													
Calcium													
Chromium													
Cobalt													
Copper													
Iron													
Lead													
Magnesium													
Manganese													
Mercury			0.2	U									CV
Nickel													
Potassium													
Selenium													
Silver													
Sodium													
Thallium													
Vanadium													
Zinc													
Cyanide													

FORM III - IN

B-112

3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: 089-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-15A(2-4)

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank		C	M
			1	C	2	C	3	C				
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury			0.2	U								CV
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Cyanide												

FORM III - IN

B-112

3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-15A(2-4)Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank		C	M
			1	C	2	C	3	C				
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.1	U		CV
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Cyanide												

FORM III - IN

B-112

NYSDEC

48B

3
BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: Q89-240R

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-1(0-2)

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

*Los
Blanks*

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C		
			1	C	2	C	3	C				
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U		CV
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Cyanide												

FORM III - IN

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NYSDEC

3
BLANKS

48A

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 089-240R

Lab Code: RECN Case No.: 3692 SAS No.: _____ SDG No.: OSB-1(0-2)

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C
			1	C	2	C	3	C		
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Mercury			0.2	U						
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Thallium										
Vanadium										
Zinc										
Cyanide										

FORM III - IN

B-167

NYSDEC

48D

3
BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: Q89-240R

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-1(0-2)

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.1	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

Lab
Blanks

FORM III - IN

B-167

48E

NYSDEC

3
BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: Q89-240R

Lab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-1(0-2)

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank		C	M
	1		C	2	C	3	C					
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.1		U	U
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Cyanide												

FORM III - IN

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NYSDEC

48F

3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: 089-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-1(0-2)

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Lab
Blank

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.2	U	0.2	U					CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN

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48G

NYSDEC

3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240RLab Code: RECNY Case No.: 3692

SAS No.: _____

SDG No.: OSB-1(0-2)Preparation Blank Matrix (soil/water): soilPreparation Blank Concentration Units (ug/L or mg/kg): mg/kgLab
Blanks

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.1	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

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3
BLANKS

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Lab Blank

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: Q89-240R

Lab Code: RECNY Case No.: 3692

SAS No.: _____ SDG No.: OSB-1(0-2)

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese			0.2	U	0.2	U					CV
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

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NYSDEC

3
BLANKS

*Lab
Blanks*

b Name: RECRA ENVIRONMENTAL, INC. Contract: Q89-240R
 b Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-1(0-2)
 eparation Blank Matrix (soil/water): SOIL
 eparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U			0.1	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

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NYSDEC

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3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240RLab Code: RECNY Case No.: 3692 SAS No.: SDG No.: OSB-7(0-2')Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

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3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: 089-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-7(0-2')

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank		C	M
			1	C	2	C	3	C				
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury			0.2	U	0.2	U						CV
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Cyanide												

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3
BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC. Contract: Q89-240R
 Lab Code: RECNY Case No.: 3692 SAS No.: SDG No.: OSB-7(0-2')
 Preparation Blank Matrix (soil/water): WATER
 Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

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3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: 089-240RLab Code: RECNY Case No.: 3692 SAS No.: SDG No.: OSB-7(0-2')Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank		C	M
			1	C	2	C	3	C				
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Cadmium												
Calcium												
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium												
Manganese												
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U		CV
Nickel												
Potassium												
Selenium												
Silver												
Sodium												
Thallium												
Vanadium												
Zinc												
Cyanide												

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3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-7(0-2')

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel			0.2	U	0.2	U					
Potassium											CV
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
inc											
Cyanide											

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BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 089-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-7(0-2')Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.1	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

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3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240RI b Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-7(0-2')

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.2	U							
Nickel											CV
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Zyanide											

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3
BLANKSLab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240RLab Code: RECNY Case No.: 3692 SAS No.: _____ SDG No.: OSB-7(0-2')Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.1	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

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3
BLANKS

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: Q89-240RLab Code: RECNY Case No.: 3692 SAS No.: SDG No.: OSB-7(0-2')Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U			0.1	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

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Location: 3101
Data Type: CLP
Quarter: 1
Year: 21
Auditor: ATA
Reviewer: _____
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Woodward-Clyde Consultants

Location: ALBANY
Data Type: OLD
Quarter: 1
Year: 91
Auditor: ATM
Reviewer: _____
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Woodward-Clyde Consultants 

Location: 2100 1st St
 Data Type: 2100
 Quarter: 1st
 Year: 2011
 Auditor: 283
 Reviewer: 283
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