



**QUARTERLY GROUNDWATER MONITORING REPORT**

**Prepared for**

**BLACK & DECKER (U.S.) INC.  
Hampstead, Maryland**

**APRIL 1998**

**Prepared by**

**Roy F. Weston, Inc.  
One Weston Way  
West Chester, Pennsylvania 19380**

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## SECTION 1 INTRODUCTION

This Groundwater Monitoring Report has been prepared to meet the requirements of Condition IV.G of the Administrative Consent Order between the State of Maryland Department of the Environment (MDE) and Black & Decker (U.S.) Inc. (April 1995) (Consent Order). Specifically, Condition IV.G calls for preparation of a Groundwater Monitoring Report containing the following information for each reporting period: the quantities of groundwater pumped, treated, and discharged; the calculation of quantities of contaminants removed from groundwater; a summary of all sampling analyses; an explanation of all operational or other problems encountered, and the manner in which each problem was resolved; copies of all reports submitted to the Department of Natural Resources in conjunction with the Groundwater Appropriations Permit; and recommendations for changes to the Interim Groundwater Treatment System. This document is one of several which are being prepared in response to the Consent Order; each of these documents are to be submitted to the MDE in accordance with the schedule outlined in the Consent Order. This document will become part of the Administrative Record for the site which is maintained at the Hampstead Public Library.

**SECTION 2**  
**SITE CHARACTERISTICS**

**2.1 HYDRAULIC PROPERTIES**

In accordance with the Consent Order and the Water Appropriation Permit issued to the Black and Decker (U.S.) Inc. Hampstead, Maryland, facility, the following pumping and water level information is included for the period of January through March 1998.

Pumping records showing the total gallons pumped per month of treatment system operation are presented in Table 2-1. The daily groundwater treatment system pumping records are included in Appendix A.

Monthly water levels for wells included in the water level monitoring plan are presented in Table 2-2. At the time the water level measurements were collected, the extraction wells were pumping at an average combined rate of approximately 136 gallons per minute (gpm).

**2.2 EFFLUENT CHARACTERISTICS**

Effluent characteristics of the NPDES discharge points are recorded monthly on Discharge Monitoring Reports (DMRs) and are submitted to MDE, Water Management Administration, on a quarterly basis. A summary of the sample results from the DMRs is presented in Table 2-3. DMRs for the period of January through March 1998 are included in Appendix B

**2.3 GROUNDWATER QUALITY DATA**

For the reporting period of January through March 1998, approximately 125 pounds of total volatile organic compounds (VOCs) were removed from the groundwater by the extraction and treatment

**Table 2-1**  
**Treatment System Pumping Records - 1st Quarter 1998**  
**Black & Decker**  
**Hampstead, Maryland**

<b>Date</b>	<b>Water Pumped (gallons)</b>
January 1998	6,169,693
February 1998	5,254,613
March 1998	6,211,987

**Table 2-2**  
**Groundwater Elevation Data - 1st Quarter 1998**  
**Black & Decker**  
**Hampstead, Maryland**

WELL NO.	TOC ELEV.	TOTAL DEPTH	1/19/98		2/10/98		3/18/98	
			DTW	ELEV	DTW	ELEV	DTW	ELEV
EW-1	847.21	55	NA	--	NA	--	NA	--
EW-2	849.21	110	88.04	761.17	84.33	764.88	87.11	762.10
EW-3	846.64	118	84.73	761.91	88.23	758.41	86.99	759.65
EW-4	858.01	97.5	86.21	771.80	93.32	764.69	91.47	766.54
EW-5	864.17	98	88.28	775.89	88.06	776.11	87.43	776.74
EW-6	831.98	115	57.93	774.05	62.56	769.42	64.10	767.88
EW-7	818.38	78	47.26	771.12	44.51	773.87	42.41	775.97
EW-8	811.13	98	76.08	735.05	75.55	735.58	75.02	736.11
EW-9	811.35	141	99.84	711.51	99.50	711.85	99.50	711.85
EW-10	807.74	NA	55.14	752.60	63.68	744.06	59.74	748.00
RFW-1A	864.37	78	54.97	809.40	53.69	810.68	54.07	810.30
RFW-1B	864.23	200	54.94	809.29	53.69	810.54	54.06	810.17
RFW-2A	857.41	35	18.77	838.64	14.95	842.46	13.87	843.54
RFW-2B	857.73	75	20.04	837.69	15.60	842.13	14.83	842.90
RFW-3B	839.21	153	36.78	802.43	34.81	804.40	33.69	805.52
RFW-4A	830.37	62	39.45	790.92	38.17	792.20	35.66	794.71
RFW-4B	830.37	120	39.23	791.14	37.89	792.48	35.40	794.97
RFW-5A	817.50	30	DRY	--	DRY	--	DRY	--
RFW-6	785.04	120	2.02	783.02	3.36	781.68	3.03	782.01
RFW-7	805.14	29	6.49	798.65	6.78	798.36	6.44	798.70
RFW-8	860.07	56	DRY	--	DRY	--	DRY	--
RFW-9	862.02	49	27.58	834.44	26.54	835.48	24.73	837.29
RFW-10	852.06	58	DRY	--	DRY	--	DRY	--
RFW-11A	849.32	72	70.77	778.55	70.56	778.76	70.06	779.26
RFW-11B	849.62	116	78.00	771.62	77.63	771.99	77.26	772.36
RFW-12B	844.87	264	54.53	790.34	54.62	790.25	55.11	789.76
RFW-13	849.11	150	62.27	786.84	63.61	785.50	63.17	785.94
RFW-14B	812.39	281	48.49	763.90	47.41	764.98	47.16	765.23
RFW-16	856.14	41	DRY	--	DRY	--	DRY	--
RFW-17	834.66	60.5	29.41	805.25	28.05	806.61	28.41	806.25
RFW-18	843.67	50	5.62	838.05	5.55	838.12	5.33	838.34
RFW-19	858.28	60	7.33	850.95	4.53	853.75	5.02	853.26
RFW-20	842.49	142	37.31	805.18	36.58	805.91	36.23	806.26
RFW-21	832.65	102	22.69	809.96	21.86	810.79	21.36	811.29
PH-7	805.94	89	37.22	768.72	35.94	770.00	33.12	772.82
PH-9	814.94	98	41.83	773.11	40.88	774.06	34.71	780.23
PH-11	820.68	78	43.13	777.55	42.87	777.81	40.90	779.78
PH-12	828.35	87	48.32	780.03	47.81	780.54	46.42	781.93
B-2	807.68	100	8.06	799.62	5.49	802.19	5.53	802.15
B-3	803.02	83	10.17	792.85	7.18	795.84	7.27	795.75
Amoco	842.29	NA	26.63	815.66	27.13	815.16	27.08	815.21
Hamp. Town #22	804.96	NA	1.42	803.54	0.71	804.25	0.63	804.33
Pembroke #1	NA	NA	16.61	--	16.84	--	15.71	--
Pembroke #2	NA	NA	NA	--	NA	--	NA	--
N. Houcks. Rd.	NA	NA	8.94	--	8.21	--	8.11	--
E. Century St.	NA	NA	11.04	--	11.17	--	10.97	--
Lwr. Beckleys. Rd.	NA	NA	56.11	--	55.32	--	55.62	--

NA - Not Available/Not Accessible

**Table 2-3  
Effluent Characteristics Summary - 1st Quarter 1998  
Black & Decker  
Hampstead, Maryland**

Discharge Number	Parameter	Units	Permit Limits	DMR DATE			
				January 1998	February 1998	March 1998	
001	FLOW	average	MGD	NA	0.214	0.415	0.478
		maximum	MGD	NA	0.308	0.478	1.049
	1,1,1-Trichloroethane		ug/l	5	< 5	< 5	< 5
	Tetrachloroethylene		ug/l	5	< 5	< 5	< 5
	Trichloroethylene		ug/l	5	< 5	< 5	< 5
	Total Residual Chlorine		mg/l	<0.1	<0.1	<0.1	<0.1
	Oil & Grease	maximum	mg/l	15	< 5	< 5	< 5
		quarterly average	mg/l	10	NR	NR	< 5
	pH	minimum	STD	6.0	6.48	6.77	6.44
		maximum	STD	8.5	7.04	7.20	8.39
	BOD		mg/l	15	3	<2	6
TSS	maximum	mg/l	30	6	3	4	
	quarterly average	mg/l	20	NR	NR	4	
101 (Monitoring Point)	FLOW	average	MGD	NA	0.499	0.576	0.548
		maximum	MGD	NA	0.504	0.576	0.576
	Fecal Coliform		MPN/100ml	200	< 2	< 2	< 2
201 (Monitoring Point)	FLOW	average	MGD	NA	0.199	0.188	0.201
		maximum	MGD	NA	0.220	0.211	0.209
	1,1,1-Trichloroethane		ug/l	NA	< 5	< 5	< 5
	Tetrachloroethylene		ug/l	NA	< 5	< 5	< 5
	Trichloroethylene		ug/l	NA	< 5	< 5	< 5

DMR - Discharge Monitoring Report

NA - Not Applicable

NR - Not Reported



system. In general, the total VOCs removed from the groundwater were comprised primarily of trichloroethene (TCE) (76 %) and tetrachlorethene (PCE) (24 %). Analytical results of the groundwater collected at the inlet to the air stripper for the period of January through March 1998 are included in Appendix C.

A summary of the analytical results from the first quarter (February 1998) groundwater sampling round of the extraction and monitor wells is included in Table 2-4. The complete analytical data package is included in Appendix D. As found in earlier sampling events at the Black & Decker facility, TCE and PCE were the VOCs detected at the highest concentrations in the groundwater samples. The highest concentrations of TCE were detected in the groundwater samples collected from wells RFW-12B and EW-2 and the highest concentration of PCE was detected in the groundwater sample collected from extraction well EW-9. VOCs detected at lower concentrations were 1,2-dichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethene, and 1,1,2-trichloroethane. The remainder of VOCs present were detected at levels well below the Federal Maximum Contaminant Levels (MCL).

**Table 2-4**  
**Summary of Groundwater Analytical Results - February 1998**  
**Black & Decker**  
**Hampstead, Maryland**

PARAMETER	Units	EW-1	EW-2	EW-3	EW-4	EW-5	EW-6	EW-7	EW-8	EW-9	EW-9	EW-10	RFW-1A	RFW-1B	RFW-2A
			(20)	(10)	(20)	(10)			(2)	(5)	(DUP)	(5)			
Chloromethane	ug/L	NS	200 U	100 U	200 U	100 U	10 U	10 U	20 U	50 U	50 U	10 U	10 U	10 U	10 U
Bromomethane	ug/L	NS	200 U	100 U	200 U	100 U	10 U	10 U	20 U	50 U	50 U	10 U	10 U	10 U	10 U
Vinyl Chloride	ug/L	NS	200 U	100 U	200 U	100 U	10 U	10 U	20 U	50 U	50 U	10 U	10 U	10 U	10 U
Chloroethane	ug/L	NS	200 U	100 U	200 U	100 U	10 U	10 U	20 U	50 U	50 U	10 U	10 U	10 U	10 U
Methylene Chloride	ug/L	NS	330 B	40 JB	67 JB	54 B	5 B	4 JB	15 B	12 JB	21 JB	7 B	5 U	2 JB	1 JB
Acetone	ug/L	NS	150 JB	100 U	200 U	27 JB	10 U	10 U	20 U	50 U	50 U	10 U	4 JB	7 JB	10 U
Carbon Disulfide	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	ug/L	NS	100 U	50 U	100 U	50 U	1 J	12	39	10 J	9 J	5 U	5 U	5 U	5 U
Chloroform	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
2-Butanone	ug/L	NS	200 U	100 U	200 U	100 U	10 U	10 U	20 U	50 U	50 U	10 U	10 U	1 J	10 U
1,1,1-Trichloroethane	ug/L	NS	100 U	50 U	100 U	17 J	5 U	5 U	10 U	25 U	25 U	5 U	1 J	2 J	2 J
Carbon Tetrachloride	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Vinyl Acetate	ug/L	NS	200 U	100 U	200 U	100 U	10 U	10 U	20 U	50 U	50 U	10 U	10 U	10 U	10 U
Bromodichloromethane	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Trichloroethene	ug/L	NS	2600	920	1600	1800	18	18	21	15 J	16 J	5 U	5 U	5 U	6
Dibromochloromethane	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Benzene	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Bromoform	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	ug/L	NS	200 U	100 U	200 U	100 U	10 U	10 U	20 U	50 U	50 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	NS	200 U	100 U	200 U	100 U	10 U	10 U	20 U	50 U	50 U	10 U	10 U	10 U	10 U
Tetrachloroethene	ug/L	NS	110	22 J	36 J	32 J	68	51	230	890	920	72	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Toluene	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Chlorobenzene	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Ethylbenzene	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Styrene	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U
Xylene (total)	ug/L	NS	100 U	50 U	100 U	50 U	5 U	5 U	10 U	25 U	25 U	5 U	5 U	5 U	5 U

Notes: U = Compound was analyzed for but not detected. Value shown is the method detection limit for quantification.  
 J = Indicates an estimated value.  
 B = Indicates that the analyte was found in the associated blank as well as in the sample.

DUP = Duplicate sample  
 NS = Not sampled  
 (2.5) = Dilution factor.

**Table 2-4**  
**Summary of Groundwater Analytical Results - February 1998**  
**Black & Decker**  
**Hampstead, Maryland**

PARAMETER	Units	RFW-2B	RFW-3B	RFW-4A (2)	RFW-4A (DUP) (2)	RFW-4B	RFW-5A	RFW-6	RFW-7	RFW-8	RFW-9	RFW-10	RFW-11A	RFW-11B	RFW-12B (2.5)
Chloromethane	ug/L	10 U	10 U	20 U	20 U	10 U	NS	10 U	10 U	NS	10 U	NS	10 U	10 U	250 U
Bromomethane	ug/L	10 U	10 U	20 U	20 U	10 U	NS	10 U	10 U	NS	10 U	NS	10 U	10 U	250 U
Vinyl Chloride	ug/L	10 U	10 U	20 U	20 U	10 U	NS	10 U	10 U	NS	10 U	NS	10 U	10 U	250 U
Chloroethane	ug/L	10 U	10 U	20 U	20 U	10 U	NS	10 U	10 U	NS	10 U	NS	10 U	10 U	250 U
Methylene Chloride	ug/L	2 JB	7 B	26 B	10 B	4 JB	NS	4 JB	1 JB	NS	1 JB	NS	2 JB	2 JB	100 JB
Acetone	ug/L	10 U	10 U	18 JB	20 U	10 U	NS	10 U	4 JB	NS	3 JB	NS	3 JB	3 JB	250 U
Carbon Disulfide	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	2 J	NS	5 U	2 J	120 U
1,1-Dichloroethene	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
1,1-Dichloroethane	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	2 J	NS	5 U	5 U	120 U
1,2-Dichloroethene (total)	ug/L	5 U	55	4 J	3 J	8	NS	3 J	2 J	NS	5	NS	5 U	5 U	120 U
Chloroform	ug/L	5 U	5 U	10 U	10 U	2 J	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
1,2-Dichloroethane	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
2-Butanone	ug/L	10 U	10 U	20 U	20 U	10 U	NS	10 U	10 U	NS	10 U	NS	10 U	1 J	250 U
1,1,1-Trichloroethane	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	1 J	NS	5 U	5 U	120 U
Carbon Tetrachloride	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Vinyl Acetate	ug/L	10 U	10 U	20 U	20 U	10 U	NS	10 U	10 U	NS	10 U	NS	10 U	10 U	250 U
Bromodichloromethane	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
1,2-Dichloropropane	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
cis-1,3-Dichloropropene	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Trichloroethene	ug/L	5 U	22	130	110	63	NS	20	1 J	NS	25	NS	95	81	2800
Dibromochloromethane	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
1,1,2-Trichloroethane	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Benzene	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Trans-1,3-Dichloropropene	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Bromoform	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
4-Methyl-2-pentanone	ug/L	10 U	10 U	20 U	20 U	10 U	NS	10 U	10 U	NS	10 U	NS	10 U	10 U	250 U
2-Hexanone	ug/L	10 U	10 U	20 U	20 U	10 U	NS	10 U	10 U	NS	10 U	NS	10 U	10 U	250 U
Tetrachloroethene	ug/L	5 U	38	180	160	150	NS	18	5 U	NS	5	NS	1 J	2 J	110 J
1,1,2,2-Tetrachloroethane	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Toluene	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Chlorobenzene	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Ethylbenzene	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Styrene	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U
Xylene (total)	ug/L	5 U	5 U	10 U	10 U	5 U	NS	5 U	5 U	NS	5 U	NS	5 U	5 U	120 U

Notes: U = Compound was analyzed for but not detected. Value shown is the method detection limit for quantification.  
 J = Indicates an estimated value.  
 B = Indicates that the analyte was found in the associated blank as well as in the sample.

DUP = Duplicate sample  
 NS = Not sampled  
 (2.5) = Dilution factor.

2-7

Table 2-4  
 Summary of Groundwater Analytical Results - February 1998  
 Black & Decker  
 Hampstead, Maryland

PARAMETER	Units	RFW-13	RFW-16	RFW-17	RFW-18	RFW-19	RFW-20	RFW-21	Town #22	Town #23	Leister Dairy	Leister Res. #1	Leister Res. #2	Field Blank	Trip Blank
Chloromethane	ug/L	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	NS	10 U	10 U	NS	10 U	10 U
Bromomethane	ug/L	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	NS	10 U	10 U	NS	10 U	10 U
Vinyl Chloride	ug/L	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	NS	10 U	10 U	NS	10 U	10 U
Chloroethane	ug/L	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	NS	10 U	10 U	NS	10 U	10 U
Methylene Chloride	ug/L	6 B	NS	6 B	5 JB	5 JB	5 U	4 JB	5 JB	NS	2 JB	2 JB	NS	5 JB	6 B
Acetone	ug/L	10 U	NS	4 JB	3 JB	10 U	4 JB	10 U	10 U	NS	2 JB	3 JB	NS	10 U	10 U
Carbon Disulfide	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
1,1-Dichloroethene	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
1,1-Dichloroethane	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
1,2-Dichloroethene (total)	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Chloroform	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
1,2-Dichloroethane	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
2-Butanone	ug/L	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	NS	10 U	10 U	NS	10 U	10 U
1,1,1-Trichloroethane	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Carbon Tetrachloride	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Vinyl Acetate	ug/L	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	NS	10 U	10 U	NS	10 U	10 U
Bromodichloromethane	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
1,2-Dichloropropane	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
cis-1,3-Dichloropropene	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Trichloroethene	ug/L	10	NS	5 U	5 U	5 U	8	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Dibromochloromethane	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
1,1,2-Trichloroethane	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Benzene	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Trans-1,3-Dichloropropene	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Bromoform	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
4-Methyl-2-pentanone	ug/L	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	NS	10 U	10 U	NS	10 U	10 U
2-Hexanone	ug/L	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	NS	10 U	10 U	NS	10 U	10 U
Tetrachloroethene	ug/L	62	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	3 J	5 U	NS	5 U	5 U
1,1,2,2-Tetrachloroethane	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Toluene	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Chlorobenzene	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Ethylbenzene	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Styrene	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U
Xylene (total)	ug/L	5 U	NS	5 U	5 U	5 U	5 U	5 U	5 U	NS	5 U	5 U	NS	5 U	5 U

Notes: U = Compound was analyzed for but not detected. Value shown is the method detection limit for quantification.

J = Indicates an estimated value.

B = Indicates that the analyte was found in the associated blank as well as in the sample.

DUP = Duplicate sample

NS = Not sampled

(2.5) = Dilution factor.

2-8

**SECTION 3**  
**OPERATION AND MAINTENANCE OF THE TREATMENT SYSTEM**

A summary of the maintenance activities which were undertaken with the extraction and treatment system during the reporting period (January through March 1998) is provided in Table 3-1. This table is comprehensive in summarizing significant maintenance events or activities, while not including those activities considered unworthy of note (such as replacement of light bulbs, lubrication of moving parts as appropriate, or other routine activities).

**Table 3-1**  
**Treatment System Maintenance Activities - 1st Quarter 1998**  
**Black & Decker**  
**Hampstead, Maryland**

<b>Date</b>	<b>Event/Corrective Action</b>
<b>January 1998</b>	Replaced electrical lines between the air stripper control panel and water tank control panel at the treatment plant.
<b>February 1998</b>	Extraction well EW-3 pump alarm tripped. Replaced broken fittings at well house. EW-3 operating properly.
<b>February 1998</b>	Installed still well around probes in the sump located at the air stripper.
<b>February 1998</b>	Repaired flow meter at extraction well EW-7 due to malfunction.



## SECTION 4 RECOMMENDATIONS

For the reporting period of January through March 1998, the treatment system continued to create a hydraulic boundary preventing off-site migration of groundwater. Operation of the extraction system as currently configured will continue, adjusting pumping rates as necessary according to the amount of groundwater recharge. Operation of the treatment system as currently configured will also continue, because the treatment system is fully effective in removing VOCs from the extracted groundwater.

**APPENDIX A**  
**GROUNDWATER TREATMENT SYSTEM PUMPING RECORDS**  
**(JANUARY - MARCH 1998)**



MONTH / YEAR

Jan - 1998

**BLACK DECKER  
AIR STRIPPER # 2  
OPERATING RECORD**

PAST MONTH READING

302936640

Date	Day	Time	Integ. Reading	GPD	Pump # 12	Pump # 11
1				↑		
2				↑		
3				↑		
4				824667		
5	M	1130	304173640	189135	15031	15088
6	T	10.00	304362775	188151	15031	15111
7	W	0815	304550926	219846	15031	15133
8	T	1015	304770772	192932	15031	15159
9	F	0915	304963704	↑	15031	15182
10				↑		
11				618968		
12	M	1036	305582672	191433	15031	15256
13	T	1000	305780105	201676	15054	15256
14	W	1000	305981781	187553	15078	15256
15	T	0830	306169334	217629	15101	15256
16	F	1030	306386963	↑	15126	15256
17		M		↑		
18				605830		
19	M	1045	306992793	192503	15199	15256
20	T	0955	307185296	193180	15199	15279
21	W	0915	307378476	197543	15199	15302
22	T	0915	307576019	206352	15199	15326
23	F	1030	307782371	↑	15199	15351
24				↑		
25				593596		
26	M	1045	308375967	188580	15199	15424
27	T	0945	308564547	201837	15221	15424
28	W	1015	308766384	191499	15245	15424
29	T	0945	308957883	202964	15269	15424
30	F	1030	309160847	↑	15294	15424
31				357819		
Total				6,169,693		
Average				199,000		

NEXT MONTH READING 309697575 on 2/2

MONTH / YEAR

**BLACK DECKER  
AIR STRIPPER # 2  
OPERATING RECORD**

PAST MONTH READING

Feb - 1998

309160847

Date	Day	Time	Integ. Reading	GPD	Pump # 12	Pump # 11
1				178909		
2	M	1100	309697575	211040	15367	15424
3	T	1045	309908615	199830	15367	15448
4	W	1030	310105445	201094	15367	15471
5	T	1030	310309539	200712	15367	15495
6	F	1030	310510251	↑	15367	15520
7						
8				588422		
9	M	1030	311098613	195838	15367	15591
10	T	1010	311244511	203192	15391	15591
11	W	1100	311497703	180659	15416	15591
12	T	0915	311678362	206654	15438	15591
13	F	1020	311885016	↑	15463	15591
14						
15				582754		
16	M	1035	312467770	185059	15535	15591
17	T	0925	312652829	190707	15535	15614
18	W	0855	312843536	192526	15535	15637
19	T	0845	313036062	203370	15535	15661
20	F	1015	313239432	↑	15535	15687
21						
22				574622		
23	M	1015	313814054	186081	15535	15759
24	T	0935	314000135	195027	15558	15759
25	W	1000	314195162	180427	15583	15759
26	T	0845	314375589	207067	15605	15759
27	F	1045	314582656	190623	15631	15759
28						
29						
30						
31						
Total				5254613		
Average				187665		

(321,247)

NEXT MONTH READING 315154526

on Mar. 2<sup>nd</sup>

MONTH / YEAR

March 1998

**BLACK DECKER  
AIR STRIPPER # 2  
OPERATING RECORD**

PAST MONTH READING

314582656

Date	Day	Time	Integ. Reading	GPD	Pump # 12	Pump # 11
1				381247		
2	M	1030	315154524	193290	15703	15759
3	T	1030	315347816	173578	15703	15783
4	W	0810	315521394	199755	15703	15805
5	T	0915	315721149	200410	15703	15830
6	F	1015	315921559	↑	15703	15855
7						
8				579663		
9	M	1030	316501222	184421	15703	15927
10	T	0920	316685643	193314	15726	15927
11	W	0930	316878957	194653	15750	15927
12	T	0930	317073610	195529	15774	15927
13	F	0945	317269139	↑	15798	15927
14						
15				588166		
16	M	1012	317867305	192522	15871	15927
17	T	1000	318049827	197878	15894	15927
18	W	1015	318247705	203173	15919	15927
19	T	1115	318450878	188426	15944	15927
20	F	1015	318639304	↑	15967	15927
21						
22				590547		
23	M	1045	319229851	194376	16039	15927
24	T	1030	319424227	187932	16039	15951
25	W	0920	319612159	208936	16039	15924
26	T	1130	319821095	↑	16039	15999
27	F					
28						
29				792216		
30	M	1100	320613311	189408	16039	16095
31	T	0945	320802719	182547	16062	16095
Total				6,211,987		
Average						

NEXT MONTH READING 320985266

**APPENDIX B**  
**DISCHARGE MONITORING REPORTS**  
**(JANUARY - MARCH 1998)**