

**ANNUAL REPORT**

Prepared for

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

**Hampstead, Maryland**

Prepared by

**ROY F. WESTON, INC.**

West Chester, Pennsylvania 19380-1499

July 1999

W.O. No. 02501.004.001.0200

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## 1. INTRODUCTION

This Annual Report has been prepared to meet the requirements of Condition IV.L 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) and the Addendum to Administrative Consent Order dated 29 June 1995. Specifically, Condition IV.L calls for preparation of an Annual Report containing a summary of the information contained in the Discharge Monitoring Reports (Table 2-3), a summary of all analyses of water samples (Tables 2-4 to 2-7), an explanation of all problems encountered and the manner in which they were resolved (Table 3-1), a performance evaluation of the treatment system (Section 4), and recommendations for continuation of, or changes to, the treatment system (Section 5).

The submission of the April 1999 Quarterly Monitoring Report completed four years of post Consent Order quarterly monitoring. In accordance with Section IV E (4)(b) of the Consent Order, the frequency and number of wells monitored should be re-evaluated after four years. The frequency and number of wells to be monitored is evaluated in Sections 2 and 5 of this report. It is recommended in Section 5 of this report, that beginning in 2000, the quarterly monitoring program be reduced to a semi-annual schedule. It is also recommended in Section 5 of this report that the site water level and extraction well pumping rate measurements and the groundwater treatment system influent and effluent sampling continue on the current monthly schedule. However, Black & Decker will continue the current quarterly monitoring program until written approval to modify the current sampling program is received from MDE.

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.

## **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 July 1998 through June 1999. Pumping records showing the total gallons pumped per month of treatment system operation are presented in Table 2-1. Copies of the Withdrawal Reports, for the periods of July through December 1998 and January through June 1999, are included in Appendix A. Water levels (Water Level Monitoring Report) for wells included in the water level monitoring plan are presented in Table 2-2. Based on the June 1999 water levels, a representative groundwater elevation contour map under pumping conditions is presented in Figure 2-1. At the time the data were collected, the extraction wells were pumping at a combined rate of approximately 148 gpm.

A graph showing the combined system flow rate during the entire operation period of the system (August 1994 to present) is shown in Figure 2-2. This figure shows that the system was initially pumped at approximately 250 gpm and then was reduced the first year to an average rate of approximately 160 gpm. Since that time, the system has been maintained at a relatively consistent pumping rate of approximately 140 to 180 gpm. The minor variations in the pumping rate are caused by seasonal fluctuations in site groundwater levels. The system flow rate data presented in Figure 2-2 shows that equilibrium conditions were reached in 1995. Therefore, the current groundwater sampling program can be reduced from a quarterly to a semi-annual schedule and still provide sufficient data to monitor system performance. Site water levels and recovery well pumping rates should continue to be collected on a monthly schedule.

### **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

**Table 2-1**  
**Treatment System Pumping Records**  
**(July 1998 through June 1999)**

**Black & Decker**  
**Hampstead, Maryland**

<b>Date</b>	<b>Water Pumped (gallons)</b>
July 1998	7,189,264
August 1998	7,302,213
September 1998	6,834,425
October 1998	6,831,458
November 1998	6,068,374
December 1998	6,507,153
January 1999	6,361,715
February 1999	5,660,960
March 1999	6,208,586
April 1999	6,033,180
May 1999	6,277,272
June 1999	6,013,645

**Table 2-2**  
**Groundwater Elevation Data (July 1998 through June 1999)**  
**Black & Decker**  
**Hampstead, Maryland**

WELL NO.	TOC ELEV	TOTAL DEPTH	7/23/98		8/18/98		9/24/98		10/23/98	
			DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
EW-1	847.21	55	NA	--	NA	--	NA	--	NA	--
EW-2	849.21	110	80.19	769.02	80.74	768.47	81.11	768.10	81.43	767.78
EW-3	846.64	118	86.33	760.31	87.36	759.28	87.67	758.97	87.47	759.17
EW-4	858.01	97.5	87.42	770.59	88.43	769.58	88.94	769.07	86.22	771.79
EW-5	864.17	98	83.11	781.06	87.94	776.23	88.31	775.86	88.84	775.33
EW-6	831.98	115	57.12	774.86	59.12	772.86	60.41	771.57	61.05	770.93
EW-7	818.38	78	31.46	786.92	37.44	780.94	38.74	779.64	39.52	778.86
EW-8	811.13	98	73.11	738.02	74.21	736.92	74.94	736.19	75.41	735.72
EW-9	811.35	141	75.67	735.68	74.58	736.77	74.63	736.72	74.68	736.67
EW-10	807.74	NA	48.01	759.73	45.49	762.25	46.51	761.23	46.82	760.92
RFW-1A	864.37	78	47.51	816.86	49.29	815.08	50.11	814.26	51.33	813.04
RFW-1B	864.23	200	47.52	816.71	49.33	814.90	50.10	814.13	51.36	812.87
RFW-2A	857.41	35	12.45	844.96	14.77	842.64	14.43	842.98	16.08	841.33
RFW-2B	857.73	75	13.12	844.61	15.41	842.32	15.02	842.71	16.44	841.29
RFW-3B	839.21	153	26.86	812.35	26.77	812.44	27.23	811.98	29.87	809.34
RFW-4A	830.37	62	35.06	795.31	34.86	795.51	35.21	795.16	38.03	792.34
RFW-4B	830.37	120	34.98	795.39	34.81	795.56	35.17	795.20	37.96	792.41
RFW-5A	817.50	30	DRY	--	DRY	--	DRY	--	DRY	--
RFW-6	785.04	120	2.43	782.61	3.14	781.90	2.78	782.26	3.76	781.28
RFW-7	805.14	29	6.86	798.28	6.83	798.31	6.47	798.67	7.91	797.23
RFW-8	860.07	53	DRY	--	DRY	--	DRY	--	DRY	--
RFW-9	862.02	49	24.12	837.90	24.11	837.91	24.43	837.59	25.88	836.14
RFW-10	852.06	58	57.16	794.90	57.31	794.75	58.09	793.97	DRY	--
RFW-11A	849.32	72	67.79	781.53	67.78	781.54	67.88	781.44	68.63	780.69
RFW-11B	849.62	116	75.85	773.77	75.88	773.74	75.94	773.68	76.47	773.15
RFW-12B	844.87	264	52.81	792.06	52.43	792.44	52.53	792.34	53.21	791.66
RFW-13	849.11	150	58.21	790.90	59.11	790.00	59.34	789.77	60.67	788.44
RFW-14B	812.39	281	38.09	774.30	38.20	774.19	38.31	774.08	38.77	773.62
RFW-16	856.14	41	37.91	818.23	38.23	817.91	38.74	817.40	DRY	856.14
RFW-17	834.66	60.5	25.11	809.55	25.08	809.58	25.17	809.49	26.95	807.71
RFW-18	843.67	50	5.74	837.93	6.36	837.31	6.46	837.21	7.62	836.05
RFW-19	858.28	60	3.81	854.47	3.22	855.06	3.30	854.98	4.89	853.39
RFW-20	842.29	142	32.67	809.62	32.84	809.45	33.16	809.13	35.48	806.81
RFW-21	832.65	102	19.73	812.92	19.22	813.43	19.42	813.23	20.98	811.67
PH-7	805.94	89	28.11	777.83	28.00	777.94	28.08	777.86	28.37	777.57
PH-9	814.94	98	30.87	784.07	31.09	783.85	31.13	783.81	31.65	783.29
PH-11	820.68	78	37.94	782.74	38.59	782.09	38.48	782.20	38.53	782.15
PH-12	828.35	87	40.61	787.74	41.17	787.18	41.42	786.93	41.66	786.69
B-2	807.68	100	5.94	801.74	5.81	801.87	5.87	801.81	5.94	801.74
B-3	803.02	83	7.31	795.71	6.94	796.08	7.01	796.01	7.04	795.98
Amoco	842.29	NA	21.22	821.07	21.40	820.89	21.63	820.66	22.84	819.45
Hamp. Town #22	NA	NA	0.94	--	0.69	--	0.78	--	0.73	--
Pembroke #1	NA	NA	10.43	--	10.11	--	10.87	--	10.86	--
Pembroke #2	NA	NA	NA	--	NA	--	NA	--	NA	--
N. Houcks. Rd.	NA	NA	NA	--	NA	--	NA	--	9.88	--
E. Century St.	NA	NA	11.26	--	11.23	--	11.19	--	11.22	--
Lwr. Beckleys. Rd.	NA	NA	48.11	--	47.36	--	47.84	--	47.87	--

Notes: DTW - Depth to water (ft below top of well casing)  
ELEV - Groundwater elevation (ft above mean sea level)  
NA - Not Available/Not Accessible

**Table 2-2**  
**Groundwater Elevation Data (July 1998 through June 1999)**  
**Black & Decker**  
**Hampstead, Maryland**

WELL NO.	TOC ELEV	TOTAL DEPTH	11/23/98		12/17/98		1/28/99		2/22/99	
			DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
EW-1	847.21	55	NA	--	NA	--	NA	--	NA	--
EW-2	849.21	110	80.08	769.13	73.51	775.70	73.18	776.03	72.52	776.69
EW-3	846.64	118	86.53	760.11	84.59	762.05	85.72	760.92	93.53	753.11
EW-4	858.01	97.5	84.31	773.70	80.65	777.36	NA	--	NA	--
EW-5	864.17	98	88.66	775.51	88.22	775.95	87.98	776.19	88.23	775.94
EW-6	831.98	115	62.41	769.57	63.89	768.09	63.70	768.28	62.49	769.49
EW-7	818.38	78	43.73	774.65	46.46	771.92	45.72	772.66	58.68	759.70
EW-8	811.13	98	74.31	736.82	69.63	741.50	75.54	735.59	76.70	734.43
EW-9	811.35	141	89.49	721.86	100.68	710.67	101.00	710.35	92.97	718.38
EW-10	807.74	NA	51.06	756.68	53.82	753.92	52.77	754.97	52.93	754.81
RFW-1A	864.37	78	52.62	811.75	53.41	810.96	53.82	810.55	53.80	810.57
RFW-1B	864.23	200	52.71	811.52	53.45	810.78	53.83	810.40	53.83	810.40
RFW-2A	857.41	35	17.91	839.50	18.36	839.05	17.68	839.73	16.43	840.98
RFW-2B	857.73	75	18.56	839.17	18.98	838.75	17.93	839.80	17.06	840.67
RFW-3B	839.21	153	34.43	804.78	34.92	804.29	34.80	804.41	34.81	804.40
RFW-4A	830.37	62	39.15	791.22	39.71	790.66	39.48	790.89	39.36	791.01
RFW-4B	830.37	120	39.20	791.17	39.66	790.71	39.38	790.99	39.22	791.15
RFW-5A	817.50	30	DRY	--	DRY	--	DRY	--	DRY	--
RFW-6	785.04	120	4.81	780.23	5.03	780.01	2.81	782.23	4.28	780.76
RFW-7	805.14	29	9.00	796.14	9.04	796.10	7.57	797.57	7.67	797.47
RFW-8	860.07	53	DRY	--	DRY	--	DRY	--	DRY	--
RFW-9	862.02	49	27.94	834.08	28.00	834.02	27.43	834.59	27.14	834.88
RFW-10	852.06	58	DRY	--	DRY	--	DRY	--	DRY	--
RFW-11A	849.32	72	69.71	779.61	70.52	778.80	70.96	778.36	71.36	777.96
RFW-11B	849.62	116	77.27	772.35	77.89	771.73	78.18	771.44	78.24	771.38
RFW-12B	844.87	264	54.31	790.56	54.86	790.01	54.44	790.43	54.72	790.15
RFW-13	849.11	150	61.47	787.64	62.47	786.64	62.53	786.58	63.77	785.34
RFW-14B	812.39	281	38.94	773.45	44.95	767.44	47.06	765.33	47.53	764.86
RFW-16	856.14	41	DRY	--	DRY	--	DRY	--	DRY	--
RFW-17	834.66	60.5	28.87	805.79	29.36	805.30	28.74	805.92	28.05	806.61
RFW-18	843.67	50	8.13	835.54	5.59	838.08	7.01	836.66	6.88	836.79
RFW-19	858.28	60	5.48	852.80	7.19	851.09	5.48	852.80	5.26	853.02
RFW-20	842.29	142	36.78	805.51	37.30	804.99	36.47	805.82	32.58	809.71
RFW-21	832.65	102	22.63	810.02	22.94	809.71	22.41	810.24	22.62	810.03
PH-7	805.94	89	28.43	777.51	35.24	770.70	35.27	770.67	34.70	771.24
PH-9	814.94	98	32.13	782.81	41.00	773.94	42.79	772.15	43.21	771.73
PH-11	820.68	78	38.48	782.20	42.66	778.02	43.01	777.67	41.77	778.91
PH-12	828.35	87	41.94	786.41	47.97	780.38	48.12	780.23	48.63	779.72
B-2	807.68	100	6.12	801.56	6.59	801.09	6.40	801.28	4.55	803.13
B-3	803.02	83	7.03	795.99	10.23	792.79	9.64	793.38	7.64	795.38
Amoco	842.29	NA	23.41	818.88	28.28	814.01	27.99	814.30	34.23	808.06
Hamp. Town #22	NA	NA	0.70	--	3.31	--	0.76	--	2.08	--
Pembroke #1	NA	NA	10.83	--	16.73	--	15.86	--	14.86	--
Pembroke #2	NA	NA	NA	--	NA	--	NA	--	NA	--
N. Houcks. Rd.	NA	NA	10.04	--	10.36	--	9.91	--	9.58	--
E. Century St.	NA	NA	11.24	--	11.39	--	11.18	--	11.16	--
Lwr. Beckleys. Rd.	NA	NA	48.36	--	54.76	--	53.94	--	55.54	--

Notes: DTW - Depth to water (ft below top of well casing)  
ELEV - Groundwater elevation (ft above mean sea level)  
NA - Not Available/Not Accessible



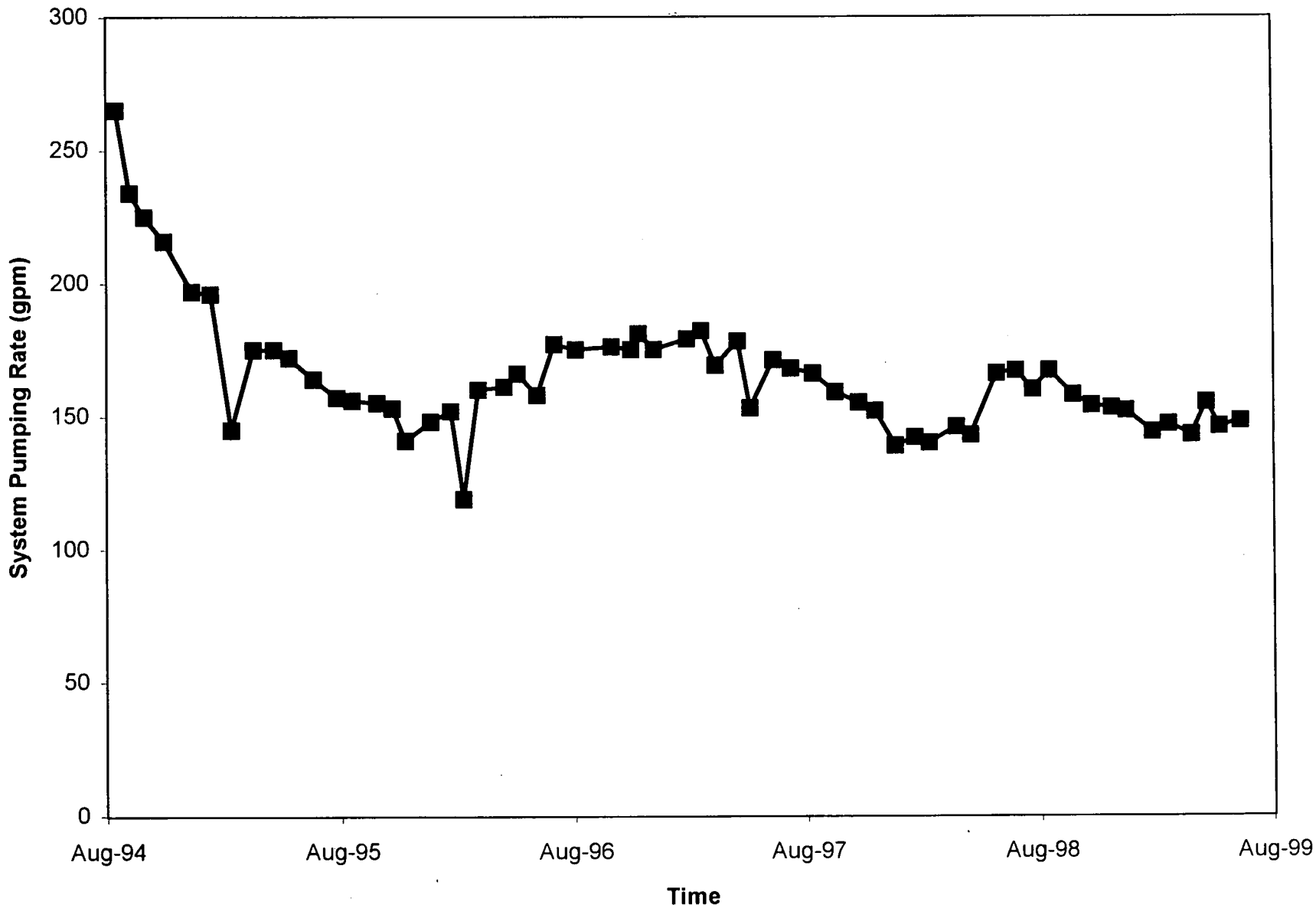
**Table 2-2**  
**Groundwater Elevation Data (July 1998 through June 1999)**  
**Black & Decker**  
**Hampstead, Maryland**

WELL NO.	TOC ELEV	TOTAL DEPTH	3/30/99		4/28/99		5/12/99		6/14/99	
			DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV
EW-1	847.21	55	NA	--	NA	--	NA	--	NA	--
EW-2	849.21	110	74.41	774.80	106.30	742.91	106.00	743.21	106.00	743.21
EW-3	846.64	118	84.61	762.03	99.70	746.94	88.50	758.14	89.55	757.09
EW-4	858.01	97.5	NA	--	NA	--	NA	--	NA	--
EW-5	864.17	98	87.41	776.76	88.23	775.94	86.41	777.76	87.12	777.05
EW-6	831.98	115	64.12	767.86	59.83	772.15	59.67	772.31	59.77	772.21
EW-7	818.38	78	44.99	773.39	47.76	770.62	46.57	771.81	47.89	770.49
EW-8	811.13	98	75.36	735.77	73.58	737.55	72.75	738.38	73.40	737.73
EW-9	811.35	141	100.00	711.35	101.90	709.45	101.60	709.75	100.50	710.85
EW-10	807.74	NA	51.90	755.84	51.06	756.68	51.48	756.26	51.84	755.90
RFW-1A	864.37	78	53.56	810.81	52.50	811.87	52.12	812.25	52.36	812.01
RFW-1B	864.23	200	53.57	810.66	52.52	811.71	52.18	812.05	52.39	811.84
RFW-2A	857.41	35	15.19	842.22	14.79	842.62	14.94	842.47	15.06	842.35
RFW-2B	857.73	75	16.21	841.52	15.43	842.30	15.51	842.22	15.81	841.92
RFW-3B	839.21	153	34.73	804.48	32.43	806.78	31.95	807.26	31.74	807.47
RFW-4A	830.37	62	38.82	791.55	37.99	792.38	37.57	792.80	37.83	792.54
RFW-4B	830.37	120	38.66	791.71	37.82	792.55	37.41	792.96	37.71	792.66
RFW-5A	817.50	30	DRY	--	DRY	--	DRY	--	DRY	--
RFW-6	785.04	120	1.19	783.85	3.77	781.27	3.65	781.39	2.26	782.78
RFW-7	805.14	29	7.54	797.60	7.21	797.93	7.21	797.93	7.97	797.17
RFW-8	860.07	53	DRY	--	DRY	--	DRY	--	DRY	--
RFW-9	862.02	49	26.84	835.18	26.16	835.86	26.16	835.86	26.31	835.71
RFW-10	852.06	58	DRY	--	DRY	--	DRY	--	DRY	--
RFW-11A	849.32	72	71.01	778.31	70.96	778.36	71.21	778.11	71.04	778.28
RFW-11B	849.62	116	78.17	771.45	78.02	771.60	78.18	771.44	78.06	771.56
RFW-12B	844.87	264	55.41	789.46	54.71	790.16	55.11	789.76	54.94	792.74
RFW-13	849.11	150	63.19	785.92	64.05	785.06	63.75	785.36	63.84	785.27
RFW-14B	812.39	281	47.63	764.76	47.25	765.14	46.69	765.70	47.12	765.27
RFW-16	856.14	41	DRY	--	DRY	--	DRY	--	DRY	--
RFW-17	834.66	60.5	29.77	804.89	27.83	806.83	27.75	806.91	27.80	806.86
RFW-18	843.67	50	6.24	837.43	6.47	837.20	6.68	836.99	6.69	836.98
RFW-19	858.28	60	5.10	853.18	4.94	853.34	4.77	853.51	4.86	853.42
RFW-20	842.29	142	32.34	809.95	34.77	807.52	21.75	820.54	22.01	810.08
RFW-21	832.65	102	22.47	810.18	22.01	810.64	35.92	796.73	35.86	813.57
PH-7	805.94	89	33.39	772.55	32.36	773.58	32.43	773.51	32.54	773.40
PH-9	814.94	98	42.94	772.00	42.27	772.67	42.41	772.53	41.87	773.07
PH-11	820.68	78	41.60	779.08	40.89	779.79	40.80	779.88	40.84	779.84
PH-12	828.35	87	48.52	779.83	48.29	780.06	48.03	780.32	47.92	780.43
B-2	807.68	100	4.60	803.08	5.44	802.24	5.67	802.01	5.83	801.85
B-3	803.02	83	7.71	795.31	7.51	795.51	7.45	795.57	7.49	795.53
Amoco	842.29	NA	32.71	809.58	NA	--	26.43	815.86	27.42	814.87
Hamp. Town #22	NA	NA	1.43	--	0.69	--	0.71	--	0.75	--
Pembroke #1	NA	NA	13.97	--	14.17	--	10.19	--	10.40	--
Pembroke #2	NA	NA	NA	--	NA	--	NA	--	NA	--
N. Houcks. Rd.	NA	NA	9.63	--	9.71	--	9.76	--	10.08	--
E. Century St.	NA	NA	11.24	--	11.41	--	11.46	--	11.24	--
Lwr. Beckleys. Rd.	NA	NA	55.14	--	54.99	--	49.71	--	52.61	--

Notes: DTW - Depth to water (ft below top of well casing)  
ELEV - Groundwater elevation (ft above mean sea level)  
NA - Not Available/Not Accessible



Figure 2-2  
Extraction Well System Pumping Rate  
Black & Decker - Hampstead, Maryland



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Table 2-3  
**Effluent Characteristics Summary (July 1998 through June 1999)**  
**Black & Decker**  
**Hampstead, Maryland**

Discharge Number	Parameter	Units	Permit Limits	DMR DATE						
				July 1998	August 1998	September 1998	October 1998	November 1998	December 1998	
001	FLOW	average	MGD	NA	0.202	0.179	0.132	0.177	0.210	0.077
		maximum	MGD	NA	0.246	0.719	0.154	0.195	1.226	0.087
	1,1,1-Trichloroethane	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Tetrachloroethylene	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Trichloroethylene	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Oil & Greas	maximum	mg/l	15	< 5	< 5	< 5	< 5	< 5	< 5
		quarterly average	mg/l	10	NR	NR	< 5	NR	NR	< 5
	pH	minimum	STD	6.0	6.18	6.71	6.68	6.76	6.29	6.53
		maximum	STD	8.5	7.22	7.86	7.34	7.35	6.90	7.24
BOD	maximum	mg/l	15	3	4	3	5	4	2	
	quarterly average	mg/l	20	NR	NR	10	NR	NR	10	
TSS	maximum	mg/l	30	18	9	12	10	8	11	
	quarterly average	mg/l	20	NR	NR	10	NR	NR	10	
101 (Monitoring Point)	FLOW	average	MGD	NA	0.473	0.463	0.475	0.473	0.471	0.476
		maximum	MGD	NA	0.473	0.470	0.500	0.490	0.475	0.477
	Fecal Coliform	MPN/100ml	200	< 2	< 2	< 2	< 2	< 2	< 2	
201 (Monitoring Point)	FLOW	average	MGD	NA	0.240	0.236	0.228	0.220	0.202	0.210
		maximum	MGD	NA	0.271	0.249	0.235	0.235	0.272	0.245
	1,1,1-Trichloroethane	ug/l	NA	< 5	< 5	< 5	< 5	< 5	< 5	
	Tetrachloroethylene	ug/l	NA	< 5	< 5	11	< 5	< 5	< 5	
	Trichloroethylene	ug/l	NA	< 5	< 5	< 5	< 5	< 5	< 5	

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DMR - Discharge Monitoring Report  
 NA - Not Applicable  
 NR - Not Reported

**Table 2-3**  
**Effluent Characteristics Summary (July 1998 through June 1999)**  
**Black & Decker**  
**Hampstead, Maryland**

Discharge Number	Parameter	Units	Permit Limits	DMR DATE						
				January 1999	February 1999	March 1999	April 1999	May 1999	June 1999	
001	FLOW	average	MGD	NA	0.259	0.276	0.207	0.158	0.164	0.065
		maximum	MGD	NA	1.080	0.756	0.306	0.170	0.186	0.086
	1,1,1-Trichloroethane	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	
	Tetrachloroethylene	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	
	Trichloroethylene	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	
	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
	Oil & Greas	maximum	mg/l	15	< 5	< 5	< 5	< 5	< 5	< 5
		quarterly average	mg/l	10	NR	NR	< 5	< 5	< 5	< 5
	pH	minimum	STD	6.0	6.07	6.51	6.49	6.75	6.85	6.42
		maximum	STD	8.5	6.67	7.07	6.86	7.14	7.57	7.43
	BOD	mg/l	15	<2	3	3	2	3	3	5
TSS	maximum	mg/l	30	3	3	6	7	13	12	
	quarterly average	mg/l	20	NR	NR	4	7	13	11	
101 (Monitoring Point)	FLOW	average	MGD	NA	0.409	0.467	0.468	0.509	0.484	0.491
		maximum	MGD	NA	0.472	0.473	0.470	0.522	0.503	0.501
	Fecal Coliform	MPN/100ml	200	< 2	< 2	< 2	< 2	< 2	< 2	
201 (Monitoring Point)	FLOW	average	MGD	NA	0.205	0.202	0.200	0.201	0.202	0.200
		maximum	MGD	NA	0.218	0.216	0.216	0.210	0.207	0.208
	1,1,1-Trichloroethane	ug/l	NA	< 5	< 5	< 5	< 5	< 5	< 5	
	Tetrachloroethylene	ug/l	NA	< 5	< 5	< 5	< 5	< 5	< 5	
	Trichloroethylene	ug/l	NA	< 5	< 5	< 5	< 5	< 5	< 5	

DMR - Discharge Monitoring Report

NA - Not Applicable

NR - Not Reported

quarterly basis. A summary of the sample results from the DMRs is presented in Table 2-3. DMRs for the period of July 1998 through June 1999 are included in Appendix B.

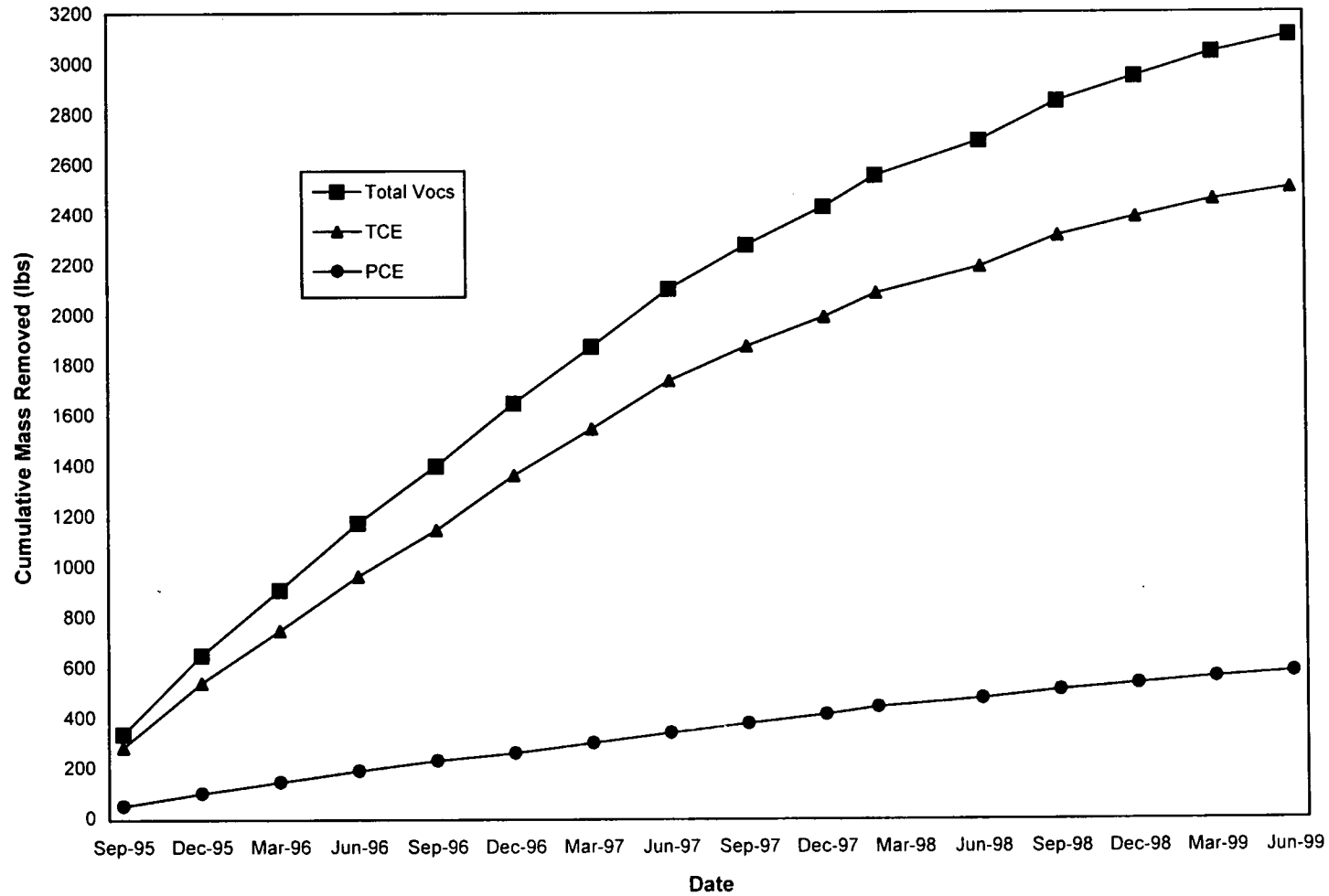
### 2.3 GROUNDWATER QUALITY DATA

For the reporting period of July 1998 through June 1999, approximately 418 lb of total volatile organic compounds (VOCs) were removed from the groundwater by the extraction and treatment system. In general, the total VOCs were comprised of trichloroethene (TCE) (70%), tetrachloroethene (PCE) (30%), and a small percentage of 1,1,1-Trichloroethane. Analytical results of the groundwater collected at the inlet to the air stripper for the period of July 1998 through June 1999 are included in Appendix C.

A graph showing cumulative groundwater PCE and TCE mass removal since July 1995 is shown in Figure 2-3. This graph shows that the system has removed over 500 pounds of PCE and over 2,300 pounds of TCE from the groundwater since July 1995. The site sampling data show that PCE and TCE comprise approximately 99% of the VOCs removed from the groundwater at the site. The treatment system VOC mass removal data presented in Figure 2-3 show that the extraction system is effectively removing VOC mass from the site groundwater and that a consistent mass removal trend has been established. Therefore, the current groundwater sampling program can be reduced from a quarterly to a semi-annual schedule and still provide sufficient data to monitor system performance. The groundwater treatment system influent and effluent sampling should continue on its current monthly schedule.

A summary of the analytical results of the groundwater samples collected from the monitor and extraction wells during the third and fourth quarters of 1998 and the first and second quarters of 1999 is included in Tables 2-4, 2-5, 2-6, and 2-7, respectively. 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 EW-2 and RFW-12B and the highest concentrations of PCE were detected in the groundwater samples collected from well EW-9. VOCs detected at lower concentrations included 1,2-dichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethene, and

**Figure 2-3**  
**Extraction Well System PCE, TCE, and Total VOC**  
**Cumulative Mass Removed (lbs), Black and Decker - Hampstead Maryland**



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

PARAMETER	Units	EW-1	EW-2	EW-2 (DUP) (20)	EW-3 (5)	EW-4 (20)	EW-5 (10)	EW-6	EW-7	EW-8	EW-9 (5)	EW-10	RFW-1A	RFW-1B	RFW-2A
Chloromethane	ug/L	NS	200 U	200 U	50 U	200 U	100 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U
Bromomethane	ug/L	NS	200 U	200 U	50 U	200 U	100 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U
Vinyl Chloride	ug/L	NS	200 U	200 U	50 U	200 U	100 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U
Chloroethane	ug/L	NS	200 U	200 U	50 U	200 U	100 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U
Methylene Chloride	ug/L	NS	480 B	460 B	130 B	67 JB	31 JB	24 B	2 JB	2 JB	12 JB	2 JB	2 JB	2 JB	2 JB
Acetone	ug/L	NS	200 U	200 U	14 JB	200 U	100 U	10 U	10 U	10 U	50 U	10 U	10 U	6 JB	10 U
Carbon Disulfide	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	1 J	1 J	25 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	8	31	25 U	5 U	5 U	5 U	5 U
Chloroform	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
2-Butanone	ug/L	NS	200 U	200 U	50 U	200 U	100 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Bromodichloromethane	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Trichloroethene	ug/L	NS	2400	2400	830	2200	1500	12	12	18	8 J	5 U	5 U	5 U	5 U
Dibromochloromethane	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Benzene	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Bromoform	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	ug/L	NS	200 U	200 U	50 U	200 U	100 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	NS	200 U	200 U	50 U	200 U	100 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U
Tetrachloroethene	ug/L	NS	76 JB	81 JB	13 JB	39 JB	26 JB	53 B	28	170	730	72	1 J	5 U	5 U
1,1,2,2-Tetrachloroethane	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Toluene	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Chlorobenzene	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Ethylbenzene	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Styrene	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U
Xylene (total)	ug/L	NS	100 U	100 U	25 U	100 U	50 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U

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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.