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October 3, 1994

Mr. Bruce Gilles
Oregon Department of Environmental Quality
Waste Management and Cleanup Division
811 S.W. Sixth Avenue
Portland, Oregon 97204

Subject: McCormick & Baxter Monthly Creosote Extraction Report
PTI Contract C412-03-04

Dear Bruce:

Enclosed is the August progress report for ongoing creosote extraction at the McCormick & Baxter site. If you would like any additional site data reported, please let me know and we will modify the report format.

If you have any questions, please call Merina Chase or me at the Lake Oswego office.

Sincerely,

J. Stephen Barnett, R.G.
Senior Geohydrologist

Enclosures

cc: Steve Campbell, DEQ
Paul Burnet, DEQ
Merina Chase, PTI Lake Oswego
Bob Barrick, PTI Bellevue

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ATTACHMENT A

CREOSOTE EXTRACTION SUMMARY — AUGUST 1994

INTRODUCTION

This report summarizes the results of creosote extraction activities for August 1994 at the McCormick & Baxter Creosoting Company (McCormick & Baxter) site. Data are summarized for the month and for cumulative nonaqueous-phase liquid (NAPL) extracted and stored onsite. Other related activities associated with system maintenance, total fluids pumping, NAPL disposal, NAPL thickness measurements, and general operations such as security are included.

DATA SUMMARY

NAPL thickness is measured in wells within the estimated NAPL plume area each month. Figure 1 presents well locations, site layout, and the estimated extent of the NAPL plume. The historical maximum and monthly thickness is summarized in Table 1. In August, the maximum NAPL thickness at the former waste disposal area (FWDA) was nearly 20 ft (MW-20i). In the tank farm area (TFA), the maximum NAPL thickness was approximately 9 ft (MW-Is). In both wells, the NAPL occurs as dense nonaqueous-phase liquid (DNAPL). Monitoring wells that had not been measured for several months were measured for NAPL thickness in August. Wells MW-Rs and EW-14s contained NAPL for the first time since installation in 1985 and 1993, respectively. The product phase in MW-Rs is DNAPL; MW-14s contains light nonaqueous-phase liquid (LNAPL). Extraction well EW-5s, which previously produced only LNAPL, now also contains DNAPL.

NAPL is removed from wells within the extraction network that contain significant amounts of NAPL (Figure 1). Extraction is performed by weekly monitoring and purging of selected wells in the TFA and FWDA. Table 2 presents a summary of cumulative NAPL extracted since 1989, NAPL extracted by the automated system since February 1993, and NAPL extracted for the reporting period.

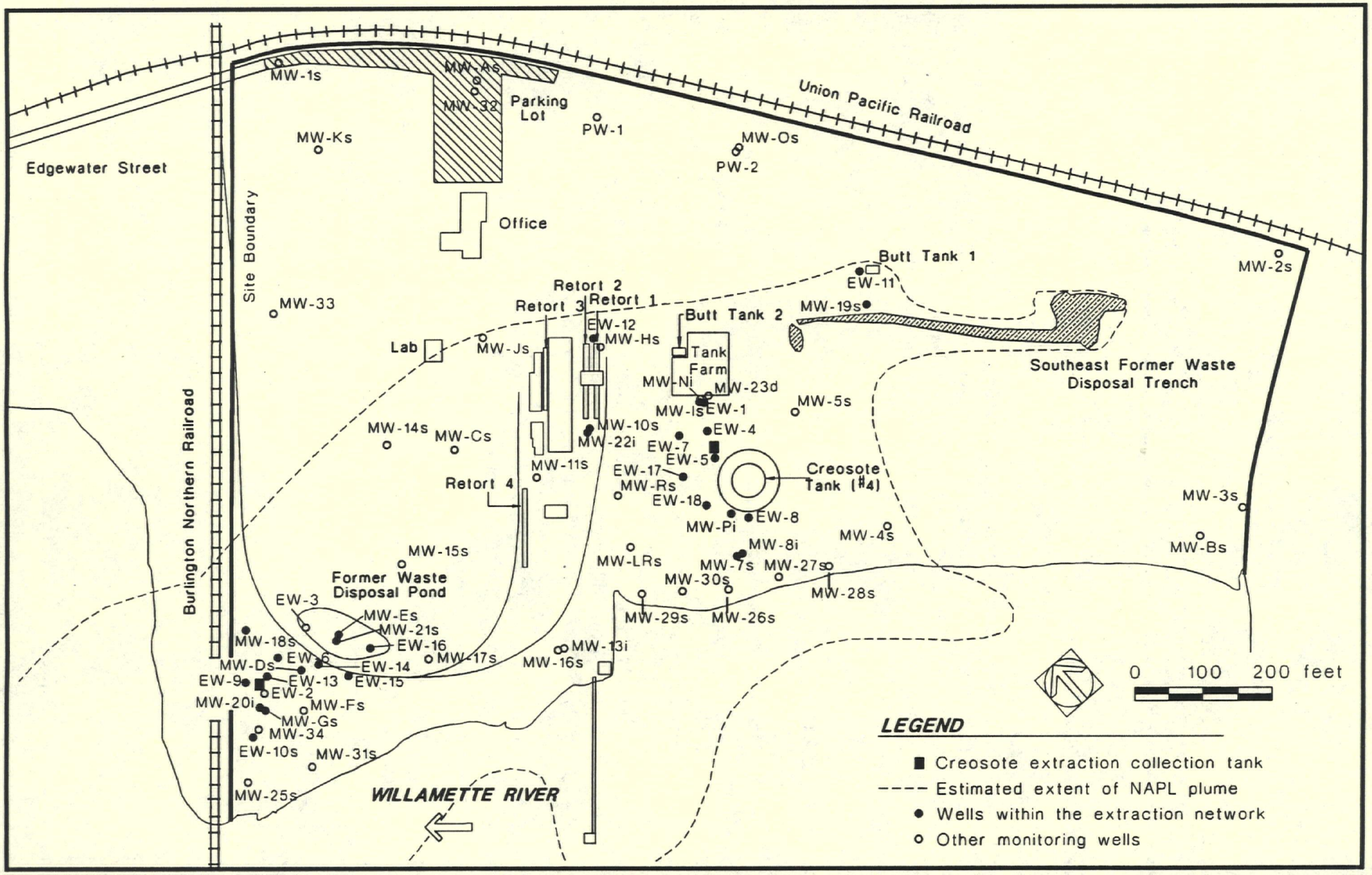

Figure 1. Site features and well locations.

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TABLE 1. HISTORICAL AND MONTHLY NAPL THICKNESS

Well ID	Maximum DNAPL Thickness (ft)	Date	Maximum LNAPL Thickness (ft)	Date	August 1994 DNAPL Thickness (ft)	August 1994 LNAPL Thickness (ft)
Tank Farm Area						
EW-1s	2.80	12/93	<0.01		1.31	<0.01
EW-4s	6.20	03/93	1.50	09/92	<0.01	<0.01
EW-5s	0.64	08/94	0.72	12/93	0.64	<0.01
EW-7s	0.56	12/92	1.40	09/92	<0.01	<0.01
EW-8s	2.70	07/93	<0.01		2.06	<0.01
EW-17s	1.06	03/93	<0.01		<0.01	<0.01
EW-18s	<0.01		4.43	04/94	<0.01	1.38
MW-Is	9.93	08/87	<0.01		8.95	<0.01
MW-LRs	<0.01		<0.01		<0.01	<0.01
MW-Ni	<0.01		<0.01		<0.01	<0.01
MW-Ps	<0.01		<0.01		--	--
MW-Rs	1.94	08/94	<0.01		1.94	<0.01
MW-7s	3.67	11/91	2.76	09/92	2.59	<0.01
MW-8i	1.78	11/91	<0.01		1.35	<0.01
MW-23d	<0.01		<0.01		<0.01	<0.01
Disposal Trench Area						
EW-11s	<0.01		<0.01		<0.01	<0.01
MW-19s	2.01	07/91	<0.01		1.36	<0.01
Retort Area						
EW-12s	1.09	03/94	<0.01		<0.01	<0.01
MW-10s	<0.01		8.08	02/93	<0.01	<0.01
MW-11s	<0.01		<0.01		<0.01	<0.01
MW-13i	<0.01		<0.01		<0.01	<0.01
MW-14s	<0.01		<0.01		<0.01	<0.01
MW-16s	<0.01		<0.01		<0.01	<0.01
MW-22i	2.76	08/94			2.76	<0.01
MW-Cs	<0.01		<0.01		<0.01	<0.01
MW-Hs	<0.01		<0.01		<0.01	<0.01
MW-Js	<0.01		<0.01		<0.01	<0.01
TFA Beach Wells						
TM-1	<0.01		<0.01		<0.01	<0.01
TM-2	<0.01		<0.01		<0.01	<0.01
TM-3	<0.01		<0.01		<0.01	<0.01

TABLE 1. (Cont.)

Well ID	Maximum DNAPL Thickness (ft)	Date	Maximum LNAPL Thickness (ft)	Date	August 1994 DNAPL Thickness (ft)	August 1994 LNAPL Thickness (ft)
TM-4	<0.01		<0.01		<0.01	<0.01
TM-5	<0.01		<0.01		<0.01	<0.01
MW-26s	<0.01		<0.01		<0.01	<0.01
MW-27s	<0.01		<0.01		<0.01	<0.01
MW-28s	<0.01		<0.01		<0.01	<0.01
MW-29s	<0.01		<0.01		<0.01	<0.01
MW-30s	<0.01		<0.01		<0.01	<0.01
Former Waste Disposal Area						
EW-2s	1.90	08/91	<0.01		0.72	<0.01
EW-3s	<0.01		<0.01		<0.01	<0.01
EW-6s	3.40	08/93	2.13	04/94	<0.01	1.43
EW-9s	2.50	02/94	<0.01		1.00	<0.01
EW-10s	<0.01		7.50	07/93	<0.01	0.29
EW-13s	<0.01		<0.01		<0.01	<0.01
EW-14s	<0.01		1.11	08/94	<0.01	1.11
EW-15s	<0.01		5.65	03/94	<0.01	5.56
EW-16s	<0.01		<0.01		<0.01	<0.01
MW-15s	<0.01		<0.01		<0.01	<0.01
MW-17s	<0.01		<0.01		<0.01	<0.01
MW-18s	<0.01		<0.01		<0.01	<0.01
MW-20i	21.60	09/91			19.46	<0.01
MW-21s	<0.01		10.28	09/92	<0.01	1.34
MW-34i	<0.01		<0.01		<0.01	<0.01
MW-Ds	6.01	01/94	<0.01		1.25	<0.01
MW-Es	4.20	08/87	2.97	09/92	<0.01	0.64
MW-Fs	<0.01		<0.01		<0.01	<0.01
MW-Gs	14.85	03/91	2.34	09/92	<0.01	1.00
FWDA Beach Wells						
MW-25s	<0.01		<0.01		<0.01	<0.01
MW-31s	<0.01		<0.01		<0.01	<0.01

Note: -- no measurement taken
DNAPL - dense nonaqueous-phase liquid
FWDA - former waste disposal area
LNAPL - light nonaqueous-phase liquid

TABLE 2. NAPL EXTRACTION SUMMARY

Area	Total NAPL Extracted (gal)		
	Cumulative (since 1989)	Extraction System (since February 1993)	Current Month (August 1994)
TFA	892	230	6
FWDA	1,122	546	34
TFAB Trench	0	N/A	0
Other Areas	10	8	0
Total LNAPL	NA	NA	14
Total DNAPL	NA	NA	26
Site Total	2,024	784	40

Note: FWDA - former waste disposal area
TFA - tank farm area
TFAB - tank farm area beach
N/A - not applicable
NA - not available

Approximately 40 gal of NAPL were recovered in August. Most of the NAPL was recovered from MW-20i (17 gal) in the FWDA. Limited extraction took place in the TFA due to tank demolition and development of the total fluids pumping program. Approximately 6 gal of LNAPL were extracted from the TFA from EW-18. NAPL was not recovered from wells in other areas. NAPL extracted from individual wells is summarized in Table 3. Figure 2 presents a graphic summary of NAPL extracted during 1994. Figure 3 presents the cumulative NAPL extracted from the site since 1989.

The tank farm area beach (TFAB) trench wells (TM-1 through TM-5) were monitored for the presence of LNAPL. LNAPL appears to be entering the trench wells but the quantity is insufficient to measure. LNAPL is expected to accumulate in the trench as it migrates toward the river from the TFA.

TABLE 3. AUGUST 1994 EXTRACTION RECORD
McCORMICK & BAXTER

Well ID	Pumping Frequency	NAPL Removed (gal) Monthly Total	NAPL Removed (gal) Cumulative Since Feb 1993	Remarks
Tank Farm Area				
MW–Is			89.0	Not purged due to demolition
MW–Ps			0.0	
MW–7s			1.3	
MW–8i			0.0	
EW–1s			75.2	
EW–3s			0.0	
EW–4s			5.0	Used for total fluids testing
EW–5s			0.6	
EW–7s			1.8	Used for total fluids testing
EW–8s			1.8	
EW–17			3.66	
EW–18	P2	5.85	51.2	LNAPL
Total		5.9	229.6	
Tank Farm Area Beach Interceptor Trench				
TM–1			0	
TM–2			0	
TM–3			0	
TM–4			0	
TM–5			0	
Total		0	0	
Former Waste Disposal Area				
MW–Ds	P1	1.4	45.6	DNAPL
MW–Es			0.0	
MW–Gs			0.5	
MW–18s			0.0	
MW–20i	P3	17.0	294.7	DNAPL
MW–21s	P2	2.3	47.1	LNAPL
EW–2s			0.6	
EW–6s	P1	2.4	22.1	LNAPL/DNAPL
EW–9s	P3	5.0	44.5	DNAPL
EW–10s			46.5	
EW–13			0.0	
EW–14			0.0	
EW–15	P3	5.76	44.3	LNAPL
EW–16			0.0	
Total		33.9	545.8	
Other Areas				
MW–10s			5.0	
EW–11			0.0	
EW–12			2.7	
MW–19s			0.0	
MW–22i			0.7	
Total		0.0	8.4	
Site Totals		39.7	783.8	

Note: C – pumped continuously for number of hours reported
DNAPL – dense nonaqueous–phase liquid
LNAPL – light nonaqueous–phase liquid
P – pumped intermittently for number of purges indicated

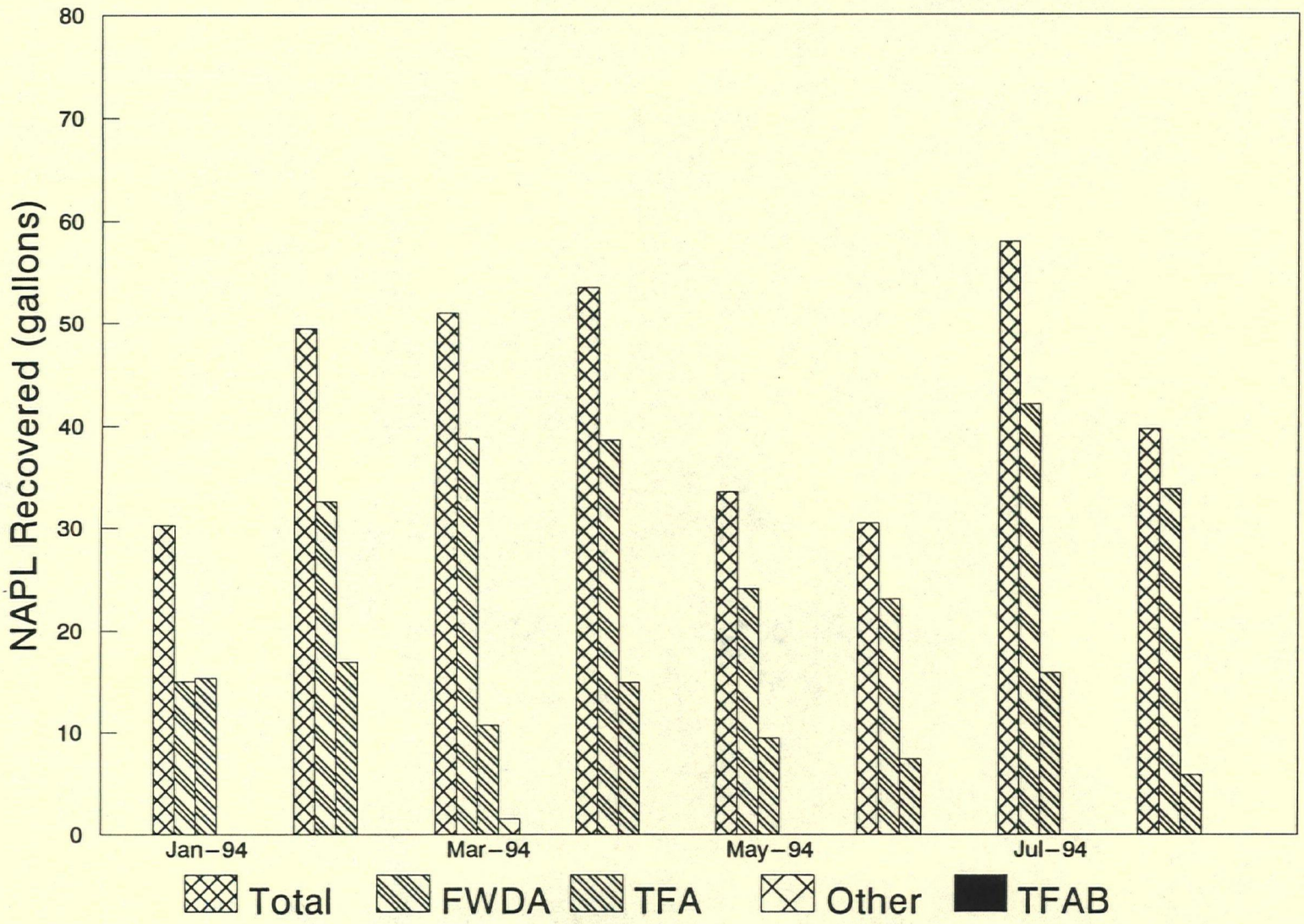

Figure 2. NAPL extraction system recovery.

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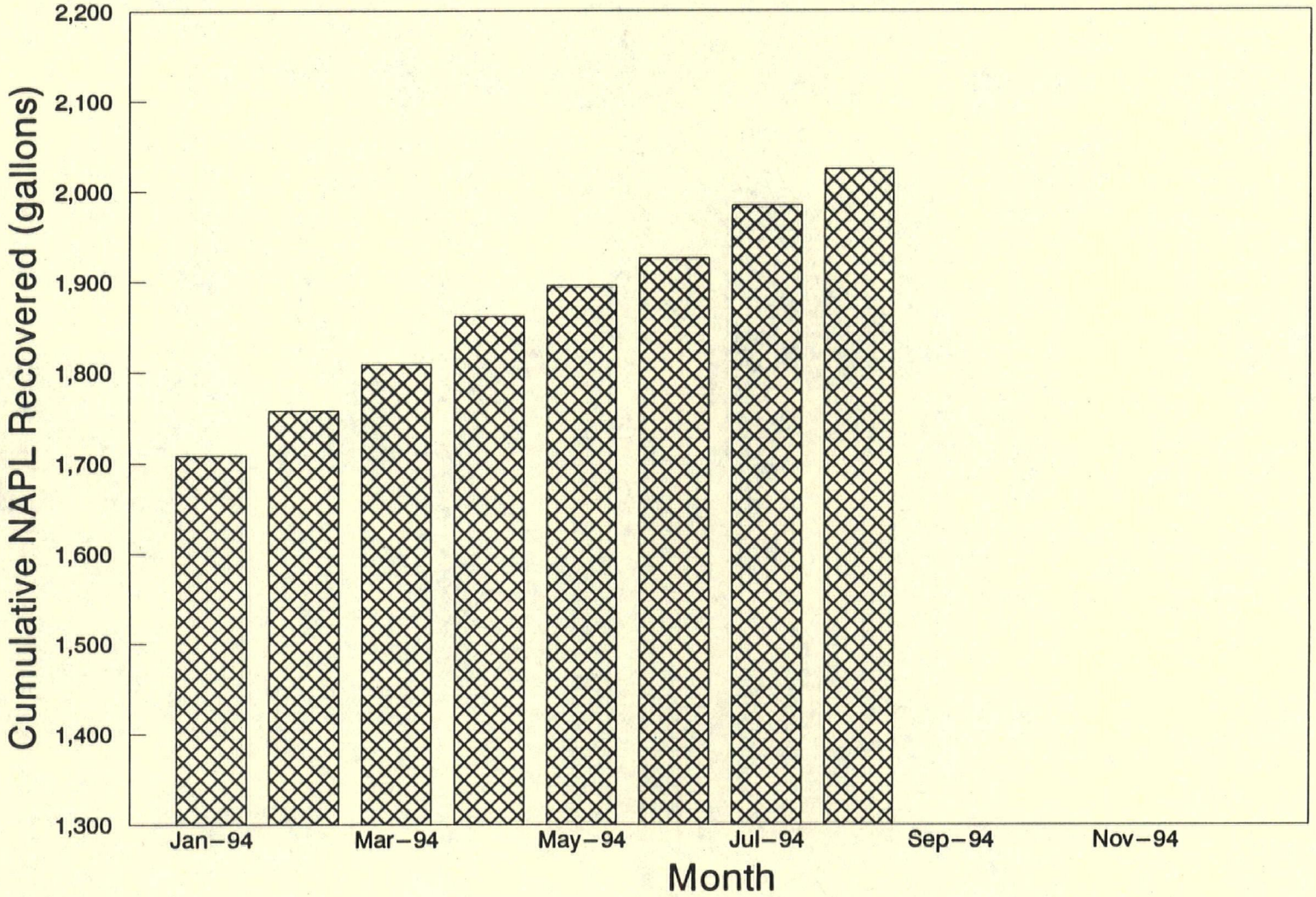

1,240 gallons were extracted prior to implementation of extraction system.
440 gallons were extracted from February through December 1993.

Figure 3. Cumulative NAPL extracted since 1989.

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Initial total fluids testing began in August 1994 as part of a NAPL extraction enhancement program. The extraction system performance will be monitored to determine whether removal of total fluids influences NAPL migration and ultimately increases NAPL thickness at extraction wells. In August, wells EW-4s and EW-7s were used for total fluids extraction testing and to fill the effluent holding tank for the pilot treatment plant. Table 4 summarizes total fluids removed in August. Approximately 6,140 gal of fluids were removed from the two wells in August. Based upon visual estimation, the extracted fluids contained less than 1 percent NAPL. Quantities of NAPL extracted from the total fluids pumping will be measured directly from the holding tank. Accurate measurements of extracted NAPL cannot be made until several inches accumulate in the bottom of the holding tank. Extracted groundwater will be treated at the pilot treatment plant to be operating next month.

TABLE 4. TOTAL FLUIDS PUMPING SUMMARY

Well	Hours Pumped	Rate (gpm)	Total Fluids Extracted (gal)	Estimated NAPL Extracted (gal)
EW-4s	18.5	3.30	3,713	NM
EW-7s	18.0	2.25	2,430	NM
Total	26.5	NA	6,143	NM

Note: NM - Not measurable; NAPL will be measured when a sufficient quantity accumulates in holding tank.

NAPL EXTRACTION SYSTEM MAINTENANCE

Routine maintenance activities included inspection of the air compressors, air lines, pressure vessels, pumps, discharge tubing, pump controllers, and creosote storage and containment systems. The air compressors were checked and condensate was drained from the tanks weekly.

The containments were routinely inspected; due to low rainfall no water has collected in the containments. No product was observed in the containment areas.

SITE SECURITY AND SAFETY

In early August, three youths jumped the fence in the FWDA and walked to the office where they were intercepted by site personnel. One of the youths said he had been there before with his uncle. PTI personnel escorted them off site after explaining that it was an illegal and dangerous entry, and that the next time the police will be called.

PTI will continue to use the "buddy" system while conducting activities where exposure to hazardous materials is of concern (e.g., extracting NAPL). Special precautions to look for trespassers will be taken when initially entering the site each day.

NAPL COLLECTION AND DISPOSAL

The TFA collection tank was emptied into four- 55-gal drums and stored in a containment area. The tank is now being utilized as a holding tank for the total fluids testing. NAPL from routine extraction in the TFA is collected and stored in 55-gal drums and placed in the containment area. Previous records indicate the TFA collection tank contained 418 gal of NAPL. When the contents were placed into drums, the amount recovered was approximately 220 gal (the tank was not cleaned out). This quantity is more representative of the amount of NAPL recovered since implementation of the extraction system (230 gal). The discrepancy is likely due to tracking methods used during setup and testing of the system. NAPL accumulation measurements were made with a steel tank gauge because an interface probe was not available. The measurements were then converted to gallons. Error is likely due to measurement, but error in calculation is also a possibility.

Creosote continues to be collected and stored in the FWDA creosote collection tank. Water is not being removed during routine extraction. Table 5 lists the NAPL collection tank capacities and current tank measurements.

CET Environmental Services (CET) is scheduled to dispose of all NAPL stored onsite prior to concluding work under their present contract with DEQ. A subcontractor will be retained in the future to dispose of accumulated NAPL.

TABLE 5. SITE STORAGE TANK MEASUREMENTS

Tank	Water Volume	NAPL Volume	Total Tank Volume	Unused Storage
TFA drums	0	226	NA	NA
FWDA product collection tank	383	671	2,900	1,846

Note: Results reported in gal