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CONTROL EXPOSED MATERIAL WASTE PIT 5 FINAL REPORT CERCLA/RCRA UNIT 1 FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

05/13/93

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FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT COMPANY

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CERCLA/RCRA UNIT 1

CONTROL EXPOSED MATERIAL WASTE PIT 5 FINAL REPORT

MAY 13, 1993

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EXECUTIVE SUMMARY

This document summarizes information about the Control Exposed Material Waste Pit 5 project. The Control Exposed Material Waste Pit 5 project began September 24, 1992 and was completed December 15, 1992. A project specific Health and Safety Plan was prepared and implemented for this project.

The removal action involved the redistribution of 2,517 cu. yds. of material from the east end to the west end of Pit 5, thereby reducing the potential for wind erosion of the pit material.

Revision 0
May 13,1993

I INTRODUCTION

This document describes activities preformed during the Control Exposed Material Waste Pit 5 project. This removal action was initiated to reduce the potential release of contaminants such as airborne particulate radioactive material and radon emissions from Waste Pit 5. This document has been placed in the Administrative Record.

II BACKGROUND INFORMATION

Waste Pit 5 was constructed in 1968 and received wastes from 1968 to 1983. The pit was lined with clay and a 60 mil thick elastomeric membrane. This pit received liquid waste slurries from the refinery and the Recovery Plant, including neutralized raffinate, settled solids, slag leach slurry, sump slurries, and lime sludge. The waste volume contains an estimated 50,729 kg. of uranium and 17,000 kg. of thorium.

From 1983 to 1987, after the pit 5 was taken out of service, it received only clear decant from the General Sump, filtrate from the recovery plant, or non-radioactive slurries, such as filtrate (clear liquor) from the Boiler Plant and the Water Treatment Plant. The surface of Waste Pit 5 was open and was not covered with any type of fill material.

III DESCRIPTION OF CONTROL EXPOSED MATERIAL WASTE PIT 5 REMOVAL ACTION

A small dredge was purchased and utilized to pump the exposed material from the east end to the west end of the pit. Two weeks prior to starting the dredging operation, the surface of the exposed sludge was sprayed with water. This softened the sludge enough to allow the use of a hose and high pressure water jet to wash the sludge away from the plastic berm of the pit. This activity was necessary to provide the clearance between the plastic pit liner berm and the dredge rotary cutter to prevent damaging the pit liner. After the dredging operation was completed, the water level was returned to the preexisting elevation. At this maintained level, the entire waste pit surface is covered with an average of one foot of water.

IV WASTE DISPOSAL SUMMARY

The main objective of the project was to evenly distribute the material in the pit so that a uniform water cover can be maintained. The disposal and decontamination activities associated with this removal action were completed in accordance with site policies and procedures. The dredge was lifted from the pit and decontaminated at the waste pit and all the decontamination water was returned to pit 5. A bermed area was set up on the berm of pit 5 and the dredge was stored under a tarp for future use by the MAWS project. additional project waste material, such as PPE was placed in plastic bags, sent to the plant 8 baler, and placed in a Sealand for off site disposal.

V SAMPLING AND ANALYSIS SUMMARY

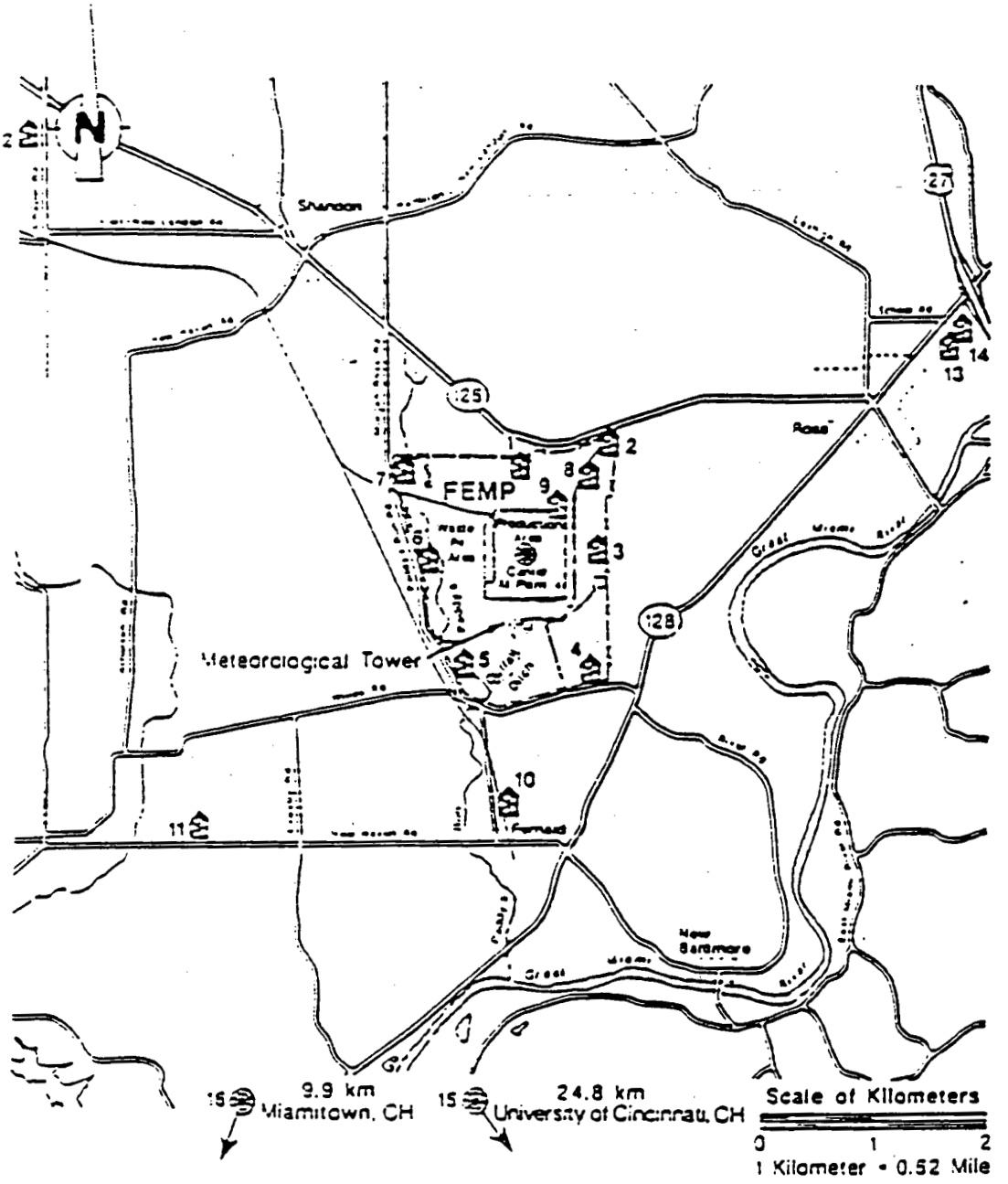
As specified in the Removal Action Work Plan, air monitoring was conducted while the pit 5 sludge redistribution action was being done. Four Air Monitoring Station units were installed (Figure 11-2, Page 4) in addition to the 16 existing units shown on (Figure 11-1, Page 3) making a total of 20 high-volume air monitoring stations (AMS) in operation around the FEMP. Samples were taken (Ref. pages 5, 6, 7, 8, & 9) prior to the start of the removal action field activities, to establish a baseline. Air monitoring was used to track the effectiveness of the removal action.

The data taken from the weekly air samples 6 months prior to the start of the removal action indicate a composite average for net uranium of 6.0 μ g. per filter sample. The weekly air samples taken over the 5 months after the removal action indicate a composite average of 2.4 μ g. per filter sample.

The Air Monitoring Station 18 sampler, by it's location (Ref. page 4) in relation to the pits and prevailing wind, measures the air born contamination from pits 1, 2, 3, and 5. This sampler collected the highest and most varying samples (Ref. page 10).

VI HEALTH AND SAFETY CONTROLS

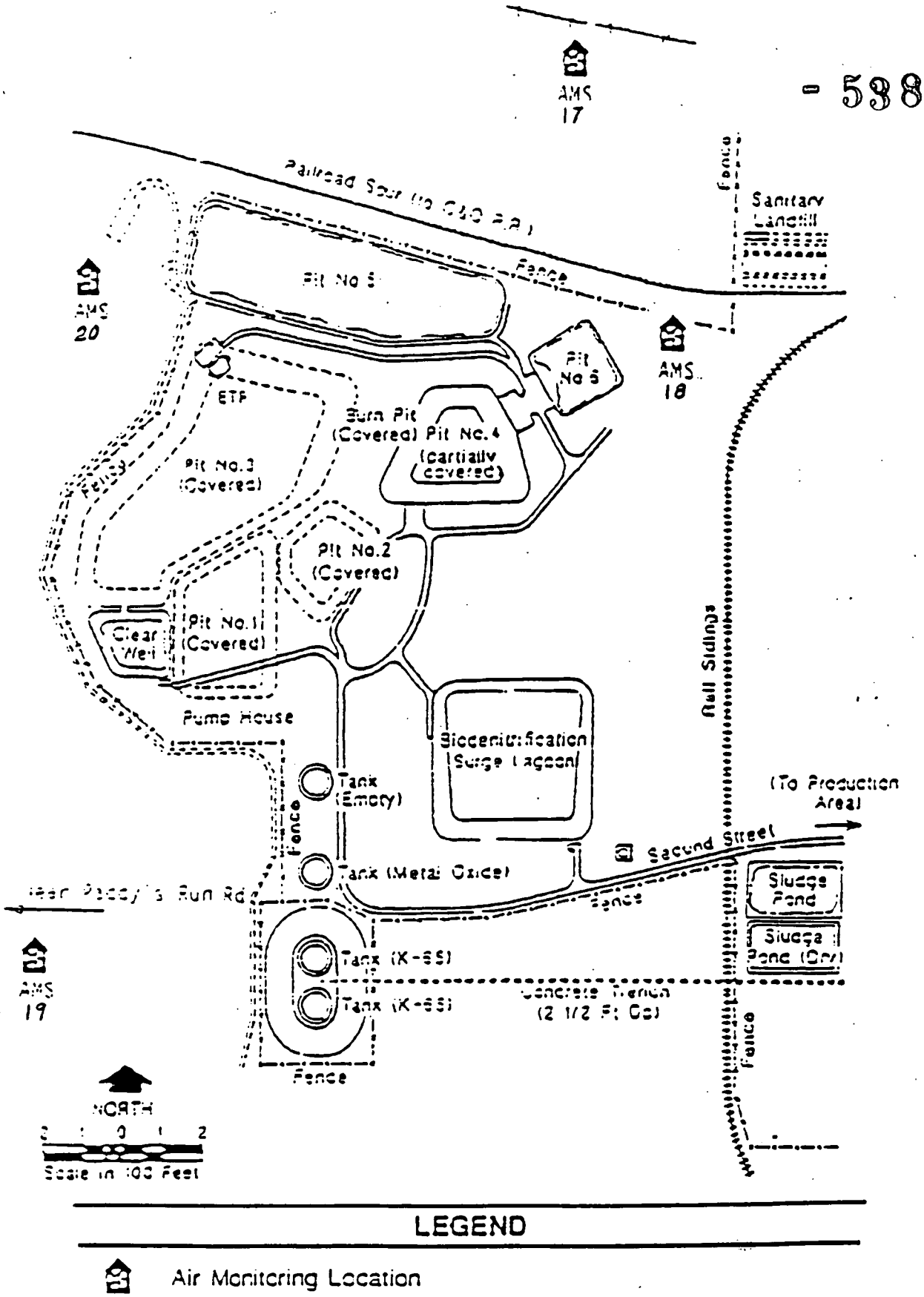
The work done for this removal action was consistent with the project specific Health and Safety Plan. The plan recognizes, evaluates, and controls all identified safety and health hazards. In addition, it provides for emergency response for hazardous operations and decontamination procedures. The project specific Health and Safety Plan was consistent with 29 1910.120, OAC 3745-54-15(A), and the FEMP Site Health and Safety Plan.



LEGEND

Air Monitoring Location	Plant Perimeter
Distance from Center of Production Area to Sampling Locations off Map	Production Area Perimeter

Figure 11-1 - Location of Existing Air Monitoring Stations



LEGEND

Air Monitoring Location

Figure 11-2 - Locations of Additional Air Monitoring Stations

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	AMSNAME	AMSNUMBER	OPHRS	START	STOP	TOTALU	TSP	VOLUME	NETU * (µg / Filter)
06/12/92	AMS17	17	166.8	46.2	43.2	6.9	0.4431	12668	4.6
	AMS18	18	166.9	46.4	45.6	28.5	0.4839	13044	26.2
	AMS19	19	NO POWER TO STATION						
	AMS20	20	166.9	46.1	44.9	4.6	0.3449	12902	2.3
	BLANK	99				2.3		0	
06/19/92	AMS17	17	166.7	45.7	45.6	3.9	0.5708	12929	1.9
	AMS18	18	167.2	46.3	46.3	25.0	0.6317	13153	23
	AMS19	19	NO POWER TO STATION						
	AMS20	20	167.2	43.7	44.9	4.0	0.5110	12584	2
	BLANK	99				2.0		0	
06/26/92	AMS17	17	168.6	46.3	45.8	4.1	0.3668	13191	1.2
	AMS18	18	168.8	46.6	45.6	16.5	0.3639	13221	13.6
	AMS19	19	NO POWER TO STATION						
	AMS20	20	168.6	44.8	45.4	4.4	0.2912	12919	1.5
	BLANK	99				2.9		0	
07/02/92	AMS17	17	143.8	46.3	46.4	7.3	0.3501	11324	5.8
	AMS18	18	143.8	46.6	45.2	31.9	0.5127	11214	30.4
	AMS19	19	NO POWER TO STATION						
	AMS20	20	143.8	44.8	45.4	6.0	0.8264	11019	4.5
	BLANK	99				1.5		0	
07/10/92	AMS17	17	192.3	46.1	45.4	7.9	0.5168	14947	5.1
	AMS18	18	192.3	45.6	44.7	18.4	0.5197	14751	15.6
	AMS19	19	186.1	45.0	45.1	4.5	0.4284	14244	1.7
	AMS20	20	192.3	43.8	46.3	4.9	0.5156	14719	2.1
	BLANK	99				2.8		0	
07/17/92	AMS17	17	167.5	47.0	46.3	4.7	0.5069	13276	2.5
	AMS18	18	167.2	45.6	45.6	10.4	0.5256	12954	8.2
	AMS19	19	166.9	44.9	44.9	2.8	0.4446	12732	0.6
	AMS20	20	167.4	45.4	45.4	4.6	0.4651	12912	2.4
	BLANK	99				2.2		0	
07/24/92	AMS17	17	167.4	45.4	45.4	3.3	0.3915	12912	1.2
	AMS18	18	167.7	45.6	45.5	11.1	0.4036	12978	9
	AMS19	19	168.5	45.2	45.2	4.5	0.3530	12940	2.4
	AMS20	20	167.3	46.3	46.4	4.3	0.3915	13175	2.2
	BLANK	99				2.1		0	
07/31/92	AMS17	17	169.0	44.7	45.4	3.6	0.3857	12935	0.6
	AMS18	18	168.6	45.7	45.7	8.3	0.3986	13091	5.3
	AMS19	19	168.3	44.8	45.1	3.6	0.3691	12853	0.6
	AMS20	20	169.0	46.9	46.5	4.2	0.3818	13409	1.2
	BLANK	99				3.0		0	
08/07/92	AMS17	17	172.1	44.7	45.4	6.2	0.2777	13173	3
	AMS18	18	172.1	45.7	44.9	30.7	0.4620	13246	27.5
	AMS19	19	172.1	44.8	46.4	3.6	0.2776	13333	0.4
	AMS20	20	172.1	46.9	46.5	6.0	0.3911	13655	2.8
	BLANK	99				3.2		0	
08/14/92	AMS17	17	163.1	45.4	44.6	3.4	0.3347	12470	0.7
	AMS18	18	163.3	45.6	45.7	11.6	0.3795	12665	8.9
	AMS19	19	163.1	45.1	45.2	4.2	0.3271	12511	1.5
	AMS20	20	163.1	45.7	45.8	5.3	0.3554	12678	2.6
	BLANK	99				2.7		0	

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	AMSNAME	AMSNUMBER	OPHRS	START	STOP	TOTALU	TSP	VOLUME	NETU
08/21/92	AMS17	17	167.4	45.4	45.5	4.7	0.3479	12927	2.2
	AMS18	18	171.1	45.6	46.1	18.4	0.4882	13329	15.9
	AMS19	19	167.3	45.1	45.2	2.7	0.2937	12834	0.2
	AMS20	20	167.5	45.7	46.9	4.0	0.3553	13176	1.5
	BLANK	99				2.5		0	
08/28/92	AMS17	17	168.6	44.7	45.5	4.7	0.4811	12919	2.4
	AMS18	18	164.9	44.8	45.5	10.7	0.4521	12649	3.4
	AMS19	19	168.0	45.3	45.1	3.2	0.4391	12902	0.9
	AMS20	20	169.0	46.4	45.4	3.9	0.4536	13179	1.6
	BLANK	99				2.3		0	
09/04/92	AMS17	17	168.0	44.7	45.3	4.0	0.3540	12844	1.3
	AMS18	18	168.0	45.6	45.6	6.3	0.3128	13016	3.6
	AMS19	19	168.7	45.1	45.1	3.6	0.3235	12927	0.9
	AMS20	20	168.1	45.1	46.3	4.3	0.3540	13052	1.6
	BLANK	99				2.7		0	
09/11/92	AMS17	17	167.4	45.4	45.5	3.6	0.4008	12927	0.9
	AMS18	18	166.7	45.8	44.9	4.9	0.2580	12844	2.2
	AMS19	19	168.9	45.1	45.6	3.4	0.3456	13014	0.7
	AMS20	20	168.0	45.1	46.2	4.5	0.3808	13030	1.8
	BLANK	99				1.3		0	
09/18/92	AMS17	17	167.6	46.5	44.7	4.6	0.6268	12985	2.3
	AMS18	18	168.3	44.9	45.5	12.9	0.5393	12925	10.6
	AMS19	19	167.2	45.5	44.9	4.5	0.4512	12840	2.2
	AMS20	20	166.9	46.1	46.4	2.9	0.6129	13115	0.6
	BLANK	99				2.3		0	
09/25/92	AMS17	17	169.5	54.9	44.6	3.0	0.2677	14327	1.5
	AMS18	18	169.5	44.8	45.6	10.3	0.2842	13017	8.8
	AMS19	19	169.5	46.1	45.0	1.5	0.2544	13118	0
	AMS20	20	169.6	45.7	46.4	3.3	0.3062	13269	1.8
	BLANK	99				1.5		0	
10/02/92	AMS17	17	167.2	45.0	44.6	3.2	0.2651	12726	1.3
	AMS18	18	167.9	45.0	44.9	15.6	0.5653	12823	13.7
	AMS19	19	167.2	45.8	45.3	2.8	0.2454	12940	0.9
	AMS20	20	143.0	46.5	46.8	3.4	0.3600	11334	1.5
	BLANK	99				1.9		0	
10/09/92	AMS17	17	167.2	45.5	44.1	11.8	0.4216	12726	9.5
	AMS18	18	166.7	46.2	45.6	36.9	0.6566	13000	34.6
	AMS19	19	167.2	45.3	45.2	3.0	0.3449	12854	0.7
	AMS20	20	167.0	45.0	44.1	8.3	0.5190	12640	6
	BLANK	99				2.3		0	
10/16/92	AMS17	17	170.1	44.8	44.6	2.6	0.3520	12918	0.7
	AMS18	18	170.2	45.7	45.4	17.0	0.4386	13172	15.1
	AMS19	19	169.6	45.2	45.1	2.6	0.3370	13010	0.7
	AMS20	20	170.1	45.8	46.3	1.6	0.3093	13308	−0.3
	BLANK	99				1.9		0	
10/23/92	AMS17	17	165.9	44.8	44.8	3.8	0.2743	12754	2.3
	AMS18	18	165.6	45.7	45.0	22.7	0.4316	12689	21.2
	AMS19	19	166.4	45.2	45.1	1.9	0.3039	12849	0.4
	AMS20	20	166.0	45.8	45.8	3.1	0.2777	6459	1.6
	BLANK	99				1.5		0	

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	AMSNAME	AMSNUMBER	OPHRS	START	STOP	TOTALU	TSP	VOLUME	NETU	*
10/30/92	AMS17	17	168.2	44.6	45.4	7.2	0.5008	12860	5.3	
	AMS18	18	168.3	45.6	45.3	6.3	1.0711	12996	4.4	
	AMS19	19	170.2	45.1	45.1	2.6	0.5221	13042	0.7	
	AMS20	20	168.2	45.2	45.6	4.5	0.5367	12974	2.6	
	BLANK	99				1.9		0		
11/06/92	AMS17	17	167.7	43.9	44.8	1.6	0.2448	12636	0.8	
	AMS18	18	168.2	45.6	44.5	12.7	0.3394	12874	11.9	
	AMS19	19	167.8	45.2	45.1	1.6	0.2506	12872	0.8	
	AMS20	20	168.0	45.3	46.3	1.3	0.2382	13073	0.5	
	BLANK	99				0.8		0		
11/13/92	AMS17	17	168.8	44.2	45.4	2.2	0.1953	12848	0.9	
	AMS18	18	169.2	45.0	44.3	4.0	0.1952	12836	2.7	
	AMS19	19	168.8	44.8	46.4	1.8	0.2132	13078	0.5	
	AMS20	20	168.8	44.8	46.6	1.6	0.1882	13106	0.3	
	BLANK	99				1.3		0		
11/20/92	AMS17	17	166.2	44.9	45.0	2.0	0.2342	12693	0.6	
	AMS18	18	164.6	45.5	45.0	3.4	0.2279	12654	2	
	AMS19	19	170.8	46.0	46.2	2.1	0.2770	13378	0.7	
	AMS20	20	170.9	45.8	45.8	2.0	0.2329	13298	0.6	
	BLANK	99				1.4		0		
11/27/92	AMS17	17	163.8	45.0	45.4	2.2	0.1333	12579	0.6	
	AMS18	18	164.7	45.0	45.6	3.8	0.1566	12676	2.2	
	AMS19	19	236.8	45.7	45.2	1.8	0.2506	18286	0.2	
	AMS20	20	236.8	45.7	46.1	2.8	0.2282	18467	1.2	
	BLANK	99				1.6		0		
12/04/92	AMS17	17	99.2	45.1	44.0	3.2	0.1082	7508	0.6	
	AMS18	18	98.7	44.8	45.4	3.4	0.1981	7563	0.8	
	AMS19	19	99.2	45.6	44.0	2.9	0.1298	7551	0.3	
	AMS20	20	123.3	45.7	46.2	3.2	0.1316	9626	0.6	
	BLANK	99				2.6		0		
12/11/92	AMS17	17	164.5	44.7	44.8	4.6	0.2213	12507	1.8	
	AMS18	18	164.9	45.1	46.1	35.2	0.4820	12776	32.4	
	AMS19	19	164.5	45.5	46.0	6.1	0.2394	12786	3.3	
	AMS20	20	165.2	46.3	46.0	4.2	0.2743	12953	1.4	
	BLANK	99				2.8		0		
12/18/92	AMS17	17	167.2	44.6	45.0	2.4	0.1562	12726	1.3	
	AMS18	18	168.2	45.7	45.5	4.2	0.2009	13031	3.1	
	AMS19	19	167.2	45.7	45.9	1.8	0.2768	13011	0.7	
	AMS20	20	167.2	45.8	46.2	1.8	0.3128	13067	0.7	
	BLANK	99				1.1		0		
12/25/92	AMS17	17	143.8	45.3	45.3	4.4	0.2114	11068	1.2	
	AMS18	18	142.7	45.6	44.6	8.6	0.2215	10934	5.4	
	AMS19	19	144.4	45.2	46.2	4.2	0.2710	11212	1	
	AMS20	20	143.9	45.7	45.8	4.6	0.3073	11185	1.4	
	BLANK	99				3.2		0		
01/01/93	AMS17	17	168.1	45.2	45.8	4.1	0.1783	12995	0.9	
	AMS18	18	168.7	45.0	43.6	9.6	0.1977	12697	6.4	
	AMS19	19	167.4	44.6	44.6	4.1	0.2138	12685	0.9	
	AMS20	20	168.2	45.8	47.0	4.3	0.1036	13260	1.1	
	BLANK	99				2.4				

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	AMSNAME	AMSNUMBER	OPHRS	START	STOP	TOTALU	TSP	VOLUME	NETU
01.08.93	AMS17	17	191.5	45.3	44.6	3.1	0.0988	14625	0.7
	AMS18	18	191.6	46.1	45.6	3.9	0.1376	14925	1.5
	AMS19	19	192.1	45.9	44.6	2.5	0.1110	14769	0.1
	AMS20	20	192.2	46.1	45.6	3.2	0.1335	14972	0.8
	BLANK	99				2.4		0	
01/15/93	AMS17	17	167.0	43.9	44.6	3.2	0.1053	12555	0.5
	AMS18	18	167.3	44.9	45.7	3.6	0.1745	12876	0.9
	AMS19	19	167.9	44.6	45.1	3.4	0.1214	12794	0.7
	AMS20	20	167.0	45.7	47.1	3.0	0.0999	13165	0.3
	BLANK	99				2.7		0	
01/22/93	AMS17	17	169.2	45.2	45.4	3.7	0.2522	13022	1.2
	AMS18	18	169.2	44.9	45.6	7.1	0.2442	13008	4.6
	AMS19	19	168.3	44.6	45.0	3.9	0.3400	12810	1.4
	AMS20	20	169.1	45.7	46.2	3.7	0.3823	13201	1.2
	BLANK	99				2.5		0	
01/29/93	AMS17	17	166.9	45.3	43.4	2.1	0.3232	12576	1
	AMS18	18	167.5	45.5	45.8	3.2	0.3668	12991	2.1
	AMS19	19	167.9	44.7	44.8	1.9	0.3645	12765	0.8
	AMS20	20	167.8	46.3	47.5	1.6	0.3166	13371	0.5
	BLANK	99				1.1		0	
02/05/93	AMS17	17	168.5	45.5	45.6	3.4	0.4531	13040	1.9
	AMS18	18	170.0	44.4	45.8	14.0	0.4273	13026	12.5
	AMS19	19	168.4	45.9	46.7	2.0	0.3503	13247	0.5
	AMS20	20	168.5	46.8	46.9	1.9	0.3639	13412	0.4
	BLANK	99				1.5		0	
02/12/93	AMS17	17	170.8	45.3	45.7	1.5	0.3953	13204	0.5
	AMS18	18	169.1	45.4	46.5	14.0	0.3930	13201	13
	AMS19	19	170.9	45.8	45.6	1.5	0.3862	13269	0.5
	AMS20	20	170.9	46.5	45.7	3.4	0.5615	13386	2.4
	BLANK	99				1.0		0	
02/19/93	AMS17	17	167.8	45.3	45.9	1.9	0.1953	13000	0.7
	AMS18	18	167.8	46.1	44.8	2.8	0.1844	12957	1.6
	AMS19	19	167.7	45.7	46.1	1.7	0.2212	13078	0.5
	AMS20	20	167.8	44.3	44.6	1.5	0.1742	12672	0.3
	BLANK	99				1.2		0	
02/26/93	AMS17	17	164.9	45.8	44.4	3.8	0.2233	12635	2.8
	AMS18	18	163.4	45.7	47.6	12.0	0.2525	12951	11
	AMS19	19	164.9	45.4	46.3	3.1	0.2585	12846	2.1
	AMS20	20	164.9	44.8	46.3	3.0	0.2436	12762	2
	BLANK	99				1.0		0	
03/05/93	AMS17	17	167.1	43.9	45.4	3.1	0.3651	12676	1.8
	AMS18	18	167.0	45.5	39.8	3.8	0.3083	12101	2.5
	AMS19	19	167.1	44.9	44.5	3.7	0.4645	12690	2.4
	AMS20	20	167.1	46.8	46.9	3.5	0.3909	13301	2.2
	BLANK	99				1.3		0	
03/12/93	AMS17	17	172.0	44.0	45.0	1.5	0.1062	13004	0.4
	AMS18	18	172.2	45.3	47.2	1.7	0.1688	13531	0.6
	AMS19	19	172.0	44.5	45.7	1.5	0.2844	13179	0.4
	AMS20	20	172.1	44.9	44.1	1.1	0.1508	13012	0
	BLANK	99				1.1		0	

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AIR MONITOR READINGS

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03/19/93	AMS17	17	163.8	45.9	44.8	2.5	0.1894	12621	1.2
	AMS18	18	163.8	46.3	50.3	11.9	0.2301	13442	10.5
	AMS19	19	163.7	45.2	45.6	2.4	0.2374	12627	1
	AMS20	20	163.9	45.6	46.4	2.7	0.2058	12309	1.3
	BLANK	99				1.4		0	
03/26/93	AMS17	17	168.3	43.1	43.8	3.0	0.2081	12424	1.7
	AMS18	18	169.1	47.0	44.8	4.1	0.2590	13187	2.8
	AMS19	19	168.4	44.6	43.6	2.6	0.2925	12618	1.3
	AMS20	20	168.3	45.7	54.5	3.9	0.3056	14326	2.6
	BLANK	99				1.3		0	

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