794 662B File: 541.460.000n
C.H.

THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 794

Part II of II

ATTACHMENT G

Summary of Detected Analytes

Attachment G

Legend for Data Summary Tables

DF: Dilution Factor

Conc: Concentration

Qual: Qualifier

J: Estimated Concentration

=: Detected Concentration

µg/L: micrograms per liter

mg/L: milligrams per liter

µg/kg: micrograms per kilogram

mg/kg: milligrams per kilogram

Attachment G
Study Area 1: Summary of Gases In Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETYLENE			ETHANE			ETHENE			METHANE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B	UG/L				1	1	=	1	1	=	1	2.6	=
Area1	IW-5	23-Jan-03	IW5-EBT-TS7	UG/L				1	0.66	=	1	1.6	=	1	12000	=
Area1	IW-6	21-May-02	IW6-EBT-B	UG/L				1	0.99	=	1	0.66	=	1	2.9	=
Area1	IW-6	23-Jan-03	IW6-EBT-TS7	UG/L				1	0 89	=	1	1 8	=	1	8500	=
Area1	IW-7	23-Jan-03	IW7-EBT-TS7	UG/L				1	0.35	=	1	0.76	=	1	12000	=
Area1	MW-100B	22-Mar-02	MW100B-117-BL	UG/L	1	1100	=									
Area1	MW-100B	23-May-02	MW100B-EBT-B	UG/L							1	0.27	=			
Area1	MW-100B	9-Jul-02	MW100B-EBT-TS1	UG/L				1	0.41	=	1	0 039	=	1	1	=
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2	UG/L				1	0.24	=	1	0.38	=			
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3	UG/L				1	0.52	=	1	0 66	=	1	17	=
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4	UG/L				1	0.66	=	1	0.91	=	1	3600	=
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5	UG/L				1	0 31	=	1	0 41	=	1	17000	=
Area1	MW-100B	19-Dec-02	MW100B-EBT-TS6	UG/L				1	0.08	=	1	0.18	=	1	7000	=
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	UG/L				1	0 36	=	1	0.23	=	1	19000	=
Area1	MW-100B	26-Feb-03	MW100B-EBT-TS8	UG/L				1	0.3	=	1	0.18	=	1	24000	=
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9	UG/L				1	0.78	=	1	0.11	=	1	26000	=
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10	UG/L				1	0 46	=	1	0.19	=	1	26000	=
Area1	MW-100B	19-May-03	MW100B-EBT-TS11	UG/L				1	0 28	=	1	0.11	=	1	22000	=
Area1	MW-100B	25-Jun-03	MW100B-EBT-TS12	UG/L							1	0.018	=	1	11000	=
Area1	MW-100B	23-Jul-03	MW100B-EBT-TS13	UG/L				1	0.15	=	1	0 059	=	1	22000	=
Area1	MW-115	21-May-02	MW115-EBT-B	UG/L				1	0.75	=	1	0.42	=			
Area1	MW-115	8-Jul-02	MW115-EBT-TS1	UG/L				1	0.51	=	1	0.17	=			
Area1	MW-115	31-Jul-02	MW115-EBT-TS2	UG/L				1	0 24	=						
Area1	MW-115	4-Sep-02	MW115-EBT-TS3B	UG/L				1	0.08	=	1	0.13	=	1	530	=
Area1	MW-115	8-Oct-02	MW115-EBT-TS4	UG/L				1	0.014	=				1	3000	=
Area1	MW-115	12-Nov-02	MW115-EBT-TS5	UG/L										1	2900	=
Area1	MW-115	17-Dec-02	MW115-EBT-TS6	UG/L							1	0.027	=	1	4000	=
Area1	MW-115	22-Jan-03	MW115-EBT-TS7	UG/L				1	0 051	=	1	0.037	=	1	4900	=
Area1	MW-115	24-Feb-03	MW115-EBT-TS8	UG/L				1	0.05	=	1	0 14	=	1	4900	=
Area1	MW-115	26-Mar-03	MW115-EBT-TS9	UG/L				1	0 028	=	1	0.026	=	1	4800	=
Area1	MW-115	22-Apr-03	MW115-EBT-TS10	UG/L				1	0.042	=	1	0.047	=	1	4500	=
Area1	MW-115	21-May-03	MW115-EBT-TS11	UG/L				1	0.033	=	1	0 03	=	1	5400	=
Area1	MW-115	25-Jun-03	MW115-EBT-TS12	UG/L							1	0.0082	=	1	5100	=
Area1	MW-115	23-Jul-03	MW115-EBT-TS13	UG/L										1	1.9	=
Area1	MW-116	9-Jul-02	MW116-EBT-TS1	UG/L				1	0.042	=	1	0.049	=	1	1.1	=
Area1	MW-116	31-Jul-02	MW116-EBT-TS2	UG/L							1	0.4	=			
Area1	MW-116	4-Sep-02	MW116-EBT-TS3B	UG/L				1	0.078	=	1	0.19	=	1	230	=
Area1	MW-116	9-Oct-02	MW116-EBT-TS4	UG/L				1	0.043	=				1	2400	=
Area1	MW-116	13-Nov-02	MW116-EBT-TS5	UG/L										1	3600	=
Area1	MW-116	17-Dec-02	MW116-EBT-TS6	UG/L										1	590	=
Area1	MW-116	22-Jan-03	MW116-EBT-TS7	UG/L				1	0 014	=	1	0.02	=	1	2200	=
Area1	MW-116	25-Feb-03	MW116-EBT-TS8	UG/L				1	0 022	=	1	0.18	=	1	2200	=
Area1	MW-116	25-Mar-03	MW116-EBT-TS9	UG/L				1	0 006	=	1	0.031	=	1	3300	=
Area1	MW-116	22-Apr-03	MW116-EBT-TS10	UG/L				1	0 017	=	1	0.034	=	1	3200	=
Area1	MW-116	20-May-03	MW116-EBT-TS11	UG/L				1	0.014	=	1	0.026	=	1	2600	=
Area1	MW-116	24-Jun-03	MW116-EBT-TS12	UG/L										1	2100	=
Area1	MW-116	22-Jul-03	MW116-EBT-TS13	UG/L										1	14	=
Area1	MW-117	11-Jul-02	MW117-EBT-TS1	UG/L				1	1.7	=	1	0.3	=	1	1.7	=
Area1	MW-117	30-Jul-02	MW117-EBT-TS2	UG/L				1	3	=	1	0.27	=	1	18	=
Area1	MW-117	5-Sep-02	MW117-EBT-TS3B	UG/L				1	0.81	=	1	0.74	=	1	2600	=
Area1	MW-117	9-Oct-02	MW117-EBT-TS4	UG/L				1	2.8	=	1	1	=	1	6200	=
Area1	MW-117	14-Nov-02	MW117-EBT-TS5	UG/L				1	1	=	1	0.73	=	1	12000	=
Area1	MW-117	18-Dec-02	MW117-EBT-TS6	UG/L				1	0 31	=	1	0.67	=	1	15000	=
Area1	MW-117	23-Jan-03	MW117-EBT-TS7	UG/L				1	0 43	=	1	0 64	=	1	9100	=
Area1	MW-117	27-Feb-03	MW117-EBT-TS8	UG/L				1	0.23	=	1	0.58	=	1	18000	=
Area1	MW-117	26-Mar-03	MW117-EBT-TS9	UG/L				1	0 25	=	1	0 59	=	1	19000	=
Area1	MW-117	23-Apr-03	MW117-EBT-TS10	UG/L				1	0.21	=	1	0 49	=	1	18000	=
Area1	MW-117	21-May-03	MW117-EBT-TS11	UG/L				1	0 28	=	1	0.58	=	1	18000	=
Area1	MW-117	25-Jun-03	MW117-EBT-TS12	UG/L							1	0.26	=	1	14000	=
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	UG/L				1	1	=	1	0.36	=	1	13000	=
Area1	MW-118	22-May-02	MW118-EBT-B	UG/L				1	1 2	=	1	0.88	=			
Area1	MW-118	9-Jul-02	MW118-EBT-TS1	UG/L				1	0 2	=	1	0.16	=	1	0.97	=
Area1	MW-118	30-Jul-02	MW118-EBT-TS2	UG/L				1	2.2	=	1	0.32	=	1	3.4	=
Area1	MW-118	4-Sep-02	MW118-EBT-TS3B	UG/L				1	0.2	=	1	0.17	=	1	130	=
Area1	MW-118	8-Oct-02	MW118-EBT-TS4	UG/L				1	0.06	=				1	3400	=
Area1	MW-118	12-Nov-02	MW118-EBT-TS5	UG/L										1	4600	=
Area1	MW-118	17-Dec-02	MW118-EBT-TS6	UG/L							1	0.03	=	1	5300	=
Area1	MW-118	21-Jan-03	MW118-EBT-TS7	UG/L				1	0 044	=	1	0.051	=	1	6800	=
Area1	MW-118	25-Feb-03	MW118-EBT-TS8	UG/L				1	0 048	=	1	0.12	=	1	6400	=
Area1	MW-118	25-Mar-03	MW118-EBT-TS9	UG/L				1	0.031	=	1	0.036	=	1	6400	=
Area1	MW-118	22-Apr-03	MW118-EBT-TS10	UG/L				1	0 05	=	1	0.042	=	1	7100	=
Area1	MW-118	20-May-03	MW118-EBT-TS11	UG/L				1	0.036	=	1	0 055	=	1	3200	=
Area1	MW-118	24-Jun-03	MW118-EBT-TS12	UG/L										1	5700	=
Area1	MW-118	22-Jul-03	MW118-EBT-TS13	UG/L				1	0.077	=	1	0 025	=	1	6900	=
Area1	MW-119	22-May-02	MW119-EBT-B	UG/L				1	0.77	=	1	0.62	=			
Area1	MW-119	9-Jul-02	MW119-EBT-TS1	UG/L				1	0 036	=	1	0 096	=			
Area1	MW-119	5-Sep-02	MW119-EBT-TS3	UG/L							1	0 027	=			
Area1	MW-119	5-Sep-02	MW119-EBT-TS3d	UG/L							1	0.026	=			
Area1	MW-119	8-Oct-02	MW119-EBT-TS4	UG/L				1	0 014	=						
Area1	MW-119	16-Dec-02	MW119-EBT-TS6	UG/L							1	0 028	=			
Area1	MW-119	21-Jan-03	MW119-EBT-TS7	UG/L				1	0.011	=	1	0.0094	=			
Area1	MW-119	27-Feb-03	MW119-EBT-TS8	UG/L							1	0.12	=	1	11	=
Area1	MW-119	26-Mar-03	MW119-EBT-TS9	UG/L										1	19	=

Attachment G
Study Area 1: Summary of Gases In Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETYLENE			ETHANE			ETHENE			METHANE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	MW-119	23-Apr-03	MW119-EBT-TS10	UG/L										1	92	=
Area1	MW-119	21-May-03	MW119-EBT-TS11	UG/L							1	0 0067	=	1	27	=
Area1	MW-119	24-Jun-03	MW119-EBT-TS12	UG/L				1	0.0097	=	1	0.012	=	1	6 1	=
Area1	MW-119	23-Jul-03	MW119-EBT-TS13	UG/L										1	0 8	=
Area1	MW-120	22-May-02	MW120-EBT-B	UG/L				1	0.81	=	1	0 49	=			
Area1	MW-120	10-Jul-02	MW120-EBT-TS1	UG/L				1	0.52	=	1	0.17	=	1	0 71	=
Area1	MW-120	30-Jul-02	MW120-EBT-TS2	UG/L				1	0 99	=	1	0.35	=	1	4.4	=
Area1	MW-120	4-Sep-02	MW120-EBT-TS3B	UG/L				1	0.19	=	1	0.23	=	1	3800	=
Area1	MW-120	8-Oct-02	MW120-EBT-TS4	UG/L				1	0.42	=	1	0.37	=	1	9400	=
Area1	MW-120	13-Nov-02	MW120-EBT-TS5	UG/L				1	1.8	=	1	0.35	=	1	12000	=
Area1	MW-120	13-Nov-02	MW120-EBT-TS5D	UG/L				1	1.6	=	1	0.3	=	1	12000	=
Area1	MW-120	17-Dec-02	MW120-EBT-TS6	UG/L				1	0.5	J	1	0 42	=	1	13000	=
Area1	MW-120	17-Dec-02	MW120-EBT-TS6D	UG/L				1	0.35	J	1	0 35	=	1	13000	=
Area1	MW-120	22-Jan-03	MW120-EBT-TS7	UG/L				1	0.081	=	1	0.066	=	1	12000	=
Area1	MW-120	22-Jan-03	MW120-EBT-TS7D	UG/L				1	0.087	=	1	0.08	=	1	14000	=
Area1	MW-120	25-Feb-03	MW120-EBT-TS8	UG/L				1	0.016	=	1	0.12	=	1	15000	=
Area1	MW-120	25-Feb-03	MW120-EBT-TS8D	UG/L				1	0.029	=	1	0.14	=	1	15000	=
Area1	MW-120	25-Mar-03	MW120-EBT-TS9	UG/L				1	0.038	=	1	0 059	=	1	14000	=
Area1	MW-120	25-Mar-03	MW120-EBT-TS9D	UG/L				1	0.034	=	1	0.066	=	1	15000	=
Area1	MW-120	22-Apr-03	MW120-EBT-TS10	UG/L				1	0.082	J	1	0.095	J	1	15000	=
Area1	MW-120	22-Apr-03	MW120-EBT-TS10D	UG/L				1	0.066	J	1	0.07	J	1	16000	=
Area1	MW-120	20-May-03	MW120-EBT-TS11	UG/L				1	0.078	=	1	0.072	=	1	17000	=
Area1	MW-120	20-May-03	MW120-EBT-TS11D	UG/L				1	0.078	=	1	0.064	=	1	16000	=
Area1	MW-120	23-Jun-03	MW120-EBT-TS12	UG/L										1	18000	=
Area1	MW-120	23-Jun-03	MW120-EBT-TS12D	UG/L										1	18000	=
Area1	MW-120	22-Jul-03	MW120-EBT-TS13	UG/L				1	0.064	=	1	0.046	=	1	14000	=
Area1	MW-120	22-Jul-03	MW120-EBT-TS13D	UG/L				1	0 058	=	1	0.044	=	1	13000	=
Area1	MW-121	22-May-02	MW121-EBT-B	UG/L				1	1	=	1	0.62	=	1	2.7	=
Area1	MW-121	22-May-02	MW121-EBT-B-D	UG/L				1	0.95	J	1	0 67	J			
Area1	MW-121	10-Jul-02	MW121-EBT-TS1	UG/L				1	0.19	=	1	0.087	=			
Area1	MW-121	4-Sep-02	MW121-EBT-TS3B	UG/L							1	0.036	=	1	51	=
Area1	MW-121	8-Oct-02	MW121-EBT-TS4	UG/L				1	0.0082	=				1	210	=
Area1	MW-121	12-Nov-02	MW121-EBT-TS5	UG/L										1	320	=
Area1	MW-121	18-Dec-02	MW121-EBT-TS6	UG/L							1	0.027	=	1	320	=
Area1	MW-121	22-Jan-03	MW121-EBT-TS7	UG/L										1	840	=
Area1	MW-121	27-Feb-03	MW121-EBT-TS8	UG/L							1	0.12	=	1	460	=
Area1	MW-121	25-Mar-03	MW121-EBT-TS9	UG/L										1	630	=
Area1	MW-121	24-Apr-03	MW121-EBT-TS10	UG/L				1	0.011	=				1	1600	=
Area1	MW-121	21-May-03	MW121-EBT-TS11	UG/L				1	0.013	=	1	0 015	=	1	890	=
Area1	MW-121	26-Jun-03	MW121-EBT-TS12	UG/L										1	960	=
Area1	MW-121	23-Jul-03	MW121-EBT-TS13	UG/L										1	16	=
Area1	MW-122	23-May-02	MW122-EBT-B	UG/L							1	0.2	=			
Area1	MW-122	11-Jul-02	MW122-EBT-TS1	UG/L				1	0.084	=	1	0.038	=			
Area1	MW-122	31-Jul-02	MW122-EBT-TS2	UG/L				1	0.56	=	1	0.43	=			
Area1	MW-122	6-Sep-02	MW122-EBT-TS3	UG/L				1	0.82	=	1	0.069	=			
Area1	MW-122	9-Oct-02	MW122-EBT-TS4	UG/L				1	3.7	=	1	0 62	=			
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	UG/L				1	0.28	=	1	0 34	=	1	450	=
Area1	MW-122	18-Dec-02	MW122-EBT-TS6	UG/L				1	0 15	=	1	0 25	=	1	860	=
Area1	MW-122	21-Jan-03	MW122-EBT-TS7	UG/L				1	0 051	=	1	0.18	=	1	1000	=
Area1	MW-122	25-Feb-03	MW122-EBT-TS8	UG/L							1	0.16	=	1	2000	=
Area1	MW-122	26-Mar-03	MW122-EBT-TS9	UG/L				1	0.0057	=	1	0.068	=	1	4200	=
Area1	MW-122	22-Apr-03	MW122-EBT-TS10	UG/L							1	0.057	=	1	5200	=
Area1	MW-122	20-May-03	MW122-EBT-TS11	UG/L				1	0.0077	=	1	0.039	=	1	4600	=
Area1	MW-122	24-Jun-03	MW122-EBT-TS12	UG/L										1	7200	=
Area1	MW-122	22-Jul-03	MW122-EBT-TS13	UG/L				1	0 0078	=	1	0.024	=	1	7100	=
Area1	MW-123	23-May-02	MW123-EBT-B	UG/L							1	0 32	=			
Area1	MW-123	10-Jul-02	MW123-EBT-TS1	UG/L				1	0 098	=	1	0 093	=			
Area1	MW-123	30-Jul-02	MW123-EBT-TS2	UG/L				1	0.67	=	1	0.64	=	1	2 7	=
Area1	MW-123	5-Sep-02	MW123-EBT-TS3	UG/L				1	0 46	=	1	0.4	=	1	1600	=
Area1	MW-123	10-Oct-02	MW123-EBT-TS4	UG/L				1	1.3	=	1	0.72	=	1	8000	=
Area1	MW-123	10-Oct-02	MW123-EBT-TS4D	UG/L				1	1.3	=	1	0.71	=	1	8100	=
Area1	MW-123	13-Nov-02	MW123-EBT-TS5	UG/L				1	0.19	=	1	0.15	=	1	13000	=
Area1	MW-123	18-Dec-02	MW123-EBT-TS6	UG/L				1	0.062	=	1	0 11	=	1	14000	=
Area1	MW-123	22-Jan-03	MW123-EBT-TS7	UG/L				1	0.22	=	1	0.13	=	1	16000	=
Area1	MW-123	26-Feb-03	MW123-EBT-TS8	UG/L				1	0 057	=	1	0 16	=	1	17000	=
Area1	MW-123	27-Mar-03	MW123-EBT-TS9	UG/L				1	0.06	=	1	0.097	=	1	19000	=
Area1	MW-123	23-Apr-03	MW123-EBT-TS10	UG/L				1	0.098	=	1	0 087	=	1	18000	=
Area1	MW-123	21-May-03	MW123-EBT-TS11	UG/L				1	0.15	=	1	0.09	=	1	21000	=
Area1	MW-123	25-Jun-03	MW123-EBT-TS12	UG/L										1	20000	=
Area1	MW-123	23-Jul-03	MW123-EBT-TS13	UG/L				1	0.1	=	1	0.088	=	1	21000	=
Area1	MW-124	23-May-02	MW124-EBT-B	UG/L							1	0 28	=			
Area1	MW-124	10-Jul-02	MW124-EBT-TS1	UG/L				1	0.041	=	1	0 044	=			
Area1	MW-124	10-Jul-02	MW124-EBT-TS1-D	UG/L				1	0 036	=	1	0.04	=			
Area1	MW-124	31-Jul-02	MW124-EBT-TS2	UG/L							1	0.42	=			
Area1	MW-124	3-Sep-02	MW124-EBT-TS3	UG/L				1	0.034	=	1	0.033	=			
Area1	MW-124	9-Oct-02	MW124-EBT-TS4	UG/L				1	0.022	=						
Area1	MW-124	17-Dec-02	MW124-EBT-TS6	UG/L							1	0.013	=	1	68	=
Area1	MW-124	21-Jan-03	MW124-EBT-TS7	UG/L							1	0.032	=	1	220	=
Area1	MW-124	25-Feb-03	MW124-EBT-TS8	UG/L				1	0 0079	=	1	0 14	=	1	410	=
Area1	MW-124	25-Mar-03	MW124-EBT-TS9	UG/L				1	0.017	=	1	0 036	=	1	380	=
Area1	MW-124	23-Apr-03	MW124-EBT-TS10	UG/L				1	0 0056	=	1	0 0095	=	1	580	=
Area1	MW-124	20-May-03	MW124-EBT-TS11	UG/L				1	0 0094	=	1	0 016	=	1	500	=
Area1	MW-124	24-Jun-03	MW124-EBT-TS12	UG/L							1	0.035	=	1	1200	=

Attachment G
Study Area 1: Summary of Gases In Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETYLENE			ETHANE			ETHENE			METHANE		
					DF	[illegible]	[illegible]	DF	[illegible]	[illegible]	DF	[illegible]	[illegible]	DF	[illegible]	[illegible]
Area1	MW-124	22-Jul-03	MW124-EBT-TS13	UG/L				1	0.0086	=	1	0 0075	=	1	9 7	=
Area1	MW-125	10-Jul-02	MW125-EBT-TS1	UG/L				1	2.8	=	1	0.38	=	1	3.8	=
Area1	MW-125	30-Jul-02	MW125-EBT-TS2	UG/L				1	0.73	=	1	0.27	=	1	5	=
Area1	MW-125	5-Sep-02	MW125-EBT-TS3	UG/L				1	0.13	=	1	0.42	=	1	3700	=
Area1	MW-125	9-Oct-02	MW125-EBT-TS4	UG/L				1	0.048	=	1	0.16	=	1	3500	=
Area1	MW-125	12-Nov-02	MW125-EBT-TS5	UG/L										1	8600	=
Area1	MW-125	18-Dec-02	MW125-EBT-TS6	UG/L							1	0.06	=	1	11000	=
Area1	MW-125	21-Jan-03	MW125-EBT-TS7	UG/L				1	0.028	=	1	0.036	=	1	7900	=
Area1	MW-125	26-Feb-03	MW125-EBT-TS8	UG/L				1	0.025	=	1	0.19	=	1	9200	=
Area1	MW-125	26-Mar-03	MW125-EBT-TS9	UG/L				1	0.028	=	1	0 034	=	1	15000	=
Area1	MW-125	23-Apr-03	MW125-EBT-TS10	UG/L				1	0.026	=	1	0 032	=	1	13000	=
Area1	MW-125	22-May-03	MW125-EBT-TS11	UG/L				1	0 031	=	1	0 026	=	1	12000	=
Area1	MW-125	25-Jun-03	MW125-EBT-TS12	UG/L										1	12000	=
Area1	MW-125	23-Jul-03	MW125-EBT-TS13	UG/L				1	0.013	=	1	0 006	=	1	9100	=
Area1	MW-21	21-Mar-02	MW21-BL	UG/L	1	1000	=									
Area1	MW-21	9-Jul-02	MW21-EBT-TS1	UG/L										1	0.61	=
Area1	MW-21	29-Jul-02	MW21-EBT-TS2	UG/L										1	2	=
Area1	MW-21	3-Sep-02	MW21-EBT-TS3	UG/L										1	7.2	=
Area1	MW-21	20-Jan-03	MW21-EBT-TS7	UG/L				1	0.0052	=	1	0 016	=			
Area1	MW-21	24-Feb-03	MW21-EBT-TS8	UG/L							1	0.18	=	1	2	=
Area1	MW-21	24-Mar-03	MW21-EBT-TS9	UG/L							1	0.0058	=	1	21	=
Area1	MW-21	21-Apr-03	MW21-EBT-TS10	UG/L				1	0.015	=	1	0 014	=	1	9 2	=
Area1	MW-21	19-May-03	MW21-EBT-TS11	UG/L										1	3.9	=
Area1	MW-21	23-Jun-03	MW21-EBT-TS12	UG/L										1	34	=
Area1	MW-21	21-Jul-03	MW21-EBT-TS13	UG/L				1	0.01	=	1	0 017	=	1	4.9	=

Attachment G
Study Area 1: Summary of General Chemistry in Soil
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	TOTAL ORGANIC CARBON		
					DF	Conc	Qual
Area1	IW-7	5-May-02	IW7-108	MG/KG	1	290	=
Area1	MW-100	8-Oct-01	MW100-98Ft-10	MG/KG	1	601	=
Area1	MW-116	21-Apr-02	MW-116-100	MG/KG	1	670	=
Area1	MW-121	20-Apr-02	MW-121-102	MG/KG	1	627	=
Area1	MW-121	20-Apr-02	MW-121-102D	MG/KG	1	240	=

Attachment G
Study Area 1: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ALKALINITY, TOTAL			BROMIDE			CHLORIDE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B	MG/L	1	79	=	1	0.21	=	2	13	=
Area1	IW-5	23-Jan-03	IW5-EBT-TS7	MG/L	1	342	=	4	26	=	4	12.9	=
Area1	IW-6	21-May-02	IW6-EBT-B	MG/L	1	88	=	1	0.17	J	1	12	=
Area1	IW-6	23-Jan-03	IW6-EBT-TS7	MG/L	2	863	=	40	188	=	40	36	=
Area1	IW-7	21-May-02	IW7-EBT-B	MG/L	1	88	=	1	0.17	J	2	12	=
Area1	IW-7	23-Jan-03	IW7-EBT-TS7	MG/L	1	225	=	1	5.01	=	1	11.8	=
Area1	MW-100B	22-Mar-02	MW100B-117-BL	MG/L	1	85	=						
Area1	MW-100B	15-Apr-02	MW100B-BL	MG/L				1	0.58	=	1	5.1	=
Area1	MW-100B	9-Jul-02	MW100B-EBT-TS1	MG/L	1	87	=	1	0.28	=	1	12	=
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2	MG/L	1	139	=	5	38.5	=	1	11.9	=
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3	MG/L	1	343	=	25	168	=	2	14.4	=
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4	MG/L	1	355	=	10	75.9	=	1	11.9	=
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5	MG/L	1	411	=	19	61	=	1	11.8	=
Area1	MW-100B	19-Dec-02	MW100B-EBT-TS6	MG/L	1	419	=	5	44.5	=	2	10.9	=
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	MG/L	1	444	=	5	45.1	=	2	14.3	=
Area1	MW-100B	26-Feb-03	MW100B-EBT-TS8	MG/L	1	356	=	4	24.8	=	1	10.1	=
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9	MG/L	1	399	=	2	18.8	=	2	14.2	=
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10	MG/L	1	360	=	4	14.9	=	4	13	=
Area1	MW-100B	19-May-03	MW100B-EBT-TS11	MG/L				2	10.4	=	2	14.6	=
Area1	MW-100B	25-Jun-03	MW100B-EBT-TS12	MG/L	1	160	=	1	4.03	=	2	14.1	=
Area1	MW-100B	23-Jul-03	MW100B-EBT-TS13	MG/L	1	236	=	5	3.1	=	5	15.1	=
Area1	MW-115	21-May-02	MW115-EBT-B	MG/L	1	55	=	1	0.22	=	5	22	=
Area1	MW-115	8-Jul-02	MW115-EBT-TS1	MG/L	1	110	=	10	52	=	1	12	=
Area1	MW-115	31-Jul-02	MW115-EBT-TS2	MG/L	1	113	=	1	7.37	=	2	12.8	=
Area1	MW-115	5-Sep-02	MW115-EBT-TS3	MG/L	1	100	=	1	0.118	J	2	15.8	=
Area1	MW-115	8-Oct-02	MW115-EBT-TS4	MG/L	1	133	=	1	1.31	=	2	12.9	=
Area1	MW-115	12-Nov-02	MW115-EBT-TS5	MG/L	1	117	=	1	0.8	=	2	12.4	=
Area1	MW-115	17-Dec-02	MW115-EBT-TS6	MG/L	1	116	=	1	0.537	=	2	12.5	=
Area1	MW-115	22-Jan-03	MW115-EBT-TS7	MG/L	1	104	=	1	0.6	=	2	12.4	=
Area1	MW-115	24-Feb-03	MW115-EBT-TS8	MG/L	1	108	=	1	0.632	=	2	12.4	=
Area1	MW-115	26-Mar-03	MW115-EBT-TS9	MG/L	1	103	=				2	13.1	=
Area1	MW-115	22-Apr-03	MW115-EBT-TS10	MG/L	1	120	=	1	0.48	=	2	13.3	=
Area1	MW-115	21-May-03	MW115-EBT-TS11	MG/L	1	65.6	=	1	0.235	=	2	14.8	=
Area1	MW-115	25-Jun-03	MW115-EBT-TS12	MG/L	1	93.6	=				2	14.1	=
Area1	MW-115	23-Jul-03	MW115-EBT-TS13	MG/L	1	83.3	=				2	15.6	=
Area1	MW-116	22-May-02	MW116-EBT-B	MG/L	1	64	=	1	0.14	J	1	11	=
Area1	MW-116	9-Jul-02	MW116-EBT-TS1	MG/L	1	86	=	1	4.3	=	1	11	=
Area1	MW-116	31-Jul-02	MW116-EBT-TS2	MG/L	1	116	=	1	0.62	=	1	10.9	=
Area1	MW-116	6-Sep-02	MW116-EBT-Ta3	MG/L	1	92.1	=	1	0.229	=	1	11.4	=
Area1	MW-116	9-Oct-02	MW116-EBT-TS4	MG/L	1	105	=	1	0.286	=	1	12	=
Area1	MW-116	13-Nov-02	MW116-EBT-TS5	MG/L	1	106	=	1	0.23	=	2	11.7	=
Area1	MW-116	17-Dec-02	MW116-EBT-TS6	MG/L	1	89.2	=	1	0.216	=	1	11.9	=
Area1	MW-116	22-Jan-03	MW116-EBT-TS7	MG/L	1	99.4	=	1	0.281	=	2	12.3	=
Area1	MW-116	25-Feb-03	MW116-EBT-TS8	MG/L	1	101	=	1	0.291	=	2	11.8	=
Area1	MW-116	25-Mar-03	MW116-EBT-TS9	MG/L	1	109	=				2	12.2	=
Area1	MW-116	22-Apr-03	MW116-EBT-TS10	MG/L	1	97.8	=	1	0.299	=	2	12.5	=
Area1	MW-116	20-May-03	MW116-EBT-TS11	MG/L	1	113	=				2	13.4	=
Area1	MW-116	24-Jun-03	MW116-EBT-TS12	MG/L	1	113	=	1	0.108	J	2	12.6	=
Area1	MW-116	22-Jul-03	MW116-EBT-TS13	MG/L	1	91.2	=	1	0.382	=	2	12.9	=
Area1	MW-117	22-May-02	MW117-EBT-B	MG/L	1	93	=	1	0.19	J	2	14	=
Area1	MW-117	11-Jul-02	MW117-EBT-TS1	MG/L	20	370	=	10	95	=	2	13	=
Area1	MW-117	30-Jul-02	MW117-EBT-TS2	MG/L	10	106	=	10	68.4	=	2	14.4	=
Area1	MW-117	5-Sep-02	MW117-EBT-TS3	MG/L	5	83.7	=	4	35.5	=	4	16.2	=
Area1	MW-117	9-Oct-02	MW117-EBT-TS4	MG/L	1	214	=	4	22.4	=	4	14.5	=
Area1	MW-117	14-Nov-02	MW117-EBT-TS5	MG/L	1	238	=	2	18.7	=	2	15.4	=
Area1	MW-117	18-Dec-02	MW117-EBT-TS6	MG/L	1	315	=	2	15.7	=	2	13.4	=
Area1	MW-117	23-Jan-03	MW117-EBT-TS7	MG/L	1	400	=	2	12.8	=	2	13.4	=
Area1	MW-117	27-Feb-03	MW117-EBT-TS8	MG/L	1	309	=	1	0.243	=	1	11.9	=
Area1	MW-117	26-Mar-03	MW117-EBT-TS9	MG/L	1	352	=	1	7.91	=	2	15.9	=
Area1	MW-117	23-Apr-03	MW117-EBT-TS10	MG/L	1	337	=	1	4.19	=	4	16.3	=
Area1	MW-117	21-May-03	MW117-EBT-TS11	MG/L	1	340	=	10	8.11	=	10	17.8	=
Area1	MW-117	25-Jun-03	MW117-EBT-TS12	MG/L	1	349	=	10	11	=	10	19.2	=
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	MG/L	1	302	=	1	4.47	=	2	15.3	=
Area1	MW-118	22-May-02	MW118-EBT-B	MG/L	1	64	=	1	0.16	J	1	11	=
Area1	MW-118	9-Jul-02	MW118-EBT-TS1	MG/L	1	100	=	3	31	=	3	12	=
Area1	MW-118	30-Jul-02	MW118-EBT-TS2	MG/L	1	153	=	10	83.2	=	2	12.2	=
Area1	MW-118	6-Sep-02	MW118-EBT-TS3	MG/L	1	132	=	1	9.37	=	2	15	=
Area1	MW-118	8-Oct-02	MW118-EBT-TS4	MG/L	1	171	=	2	15	=	2	13.1	=
Area1	MW-118	12-Nov-02	MW118-EBT-TS5	MG/L	1	159	=	1	6.36	=	2	12.8	=
Area1	MW-118	17-Dec-02	MW118-EBT-TS6	MG/L	1	160	=	1	5.18	=	2	13.3	=
Area1	MW-118	21-Jan-03	MW118-EBT-TS7	MG/L	1	167	=	1	3.94	=	4	13.3	=
Area1	MW-118	25-Feb-03	MW118-EBT-TS8	MG/L	1	143	=	1	2.86	=	2	12.8	=
Area1	MW-118	25-Mar-03	MW118-EBT-TS9	MG/L	1	130	=	1	1.3	=	2	13.5	=
Area1	MW-118	22-Apr-03	MW118-EBT-TS10	MG/L	1	153	=	1	1.34	=	2	13.1	=
Area1	MW-118	20-May-03	MW118-EBT-TS11	MG/L	1	110	=	1	0.718	=	2	14.2	=
Area1	MW-118	24-Jun-03	MW118-EBT-TS12	MG/L	1	106	=	1	0.199	J	2	14.5	=
Area1	MW-118	22-Jul-03	MW118-EBT-TS13	MG/L	1	135	=	1	0.521	=	2	14.4	=
Area1	MW-119	22-May-02	MW119-EBT-B	MG/L	1	72	=	1	0.11	J	1	10	=
Area1	MW-119	9-Jul-02	MW119-EBT-TS1	MG/L	1	58	=	1	0.23	=	1	10	=
Area1	MW-119	30-Jul-02	MW119-EBT-TS2	MG/L	1	69.8	=	1	0.276	=	1	10.2	=
Area1	MW-119	30-Jul-02	MW119-EBT-TS2D	MG/L	1	64.2	=	1	0.251	=	1	10	=
Area1	MW-119	5-Sep-02	MW119-EBT-TS3	MG/L	1	47.9	J	1	0.211	=	1	10.4	=
Area1	MW-119	5-Sep-02	MW119-EBT-TS3d	MG/L	1	61.4	J	1	0.184	J	1	10.5	=
Area1	MW-119	8-Oct-02	MW119-EBT-TS4	MG/L	1	72.4	=	1	0.189	J	1	9.99	=
Area1	MW-119	13-Nov-02	MW119-EBT-TS5	MG/L	1	71	=	1	0.166	J	1	9.95	=
Area1	MW-119	16-Dec-02	MW119-EBT-TS6	MG/L	1	84.8	=	1	0.168	J	1	10.2	=
Area1	MW-119	21-Jan-03	MW119-EBT-TS7	MG/L	1	65.3	=	1	0.188	J	1	10.4	=
Area1	MW-119	27-Feb-03	MW119-EBT-TS8	MG/L	1	64.5	=	1	7.53	=	2	12.9	=
Area1	MW-119	26-Mar-03	MW119-EBT-TS9	MG/L	1	80.3	=				1	10.9	=
Area1	MW-119	23-Apr-03	MW119-EBT-TS10	MG/L	1	81.6	=	1	0.421	=	1	11	=
Area1	MW-119	21-May-03	MW119-EBT-TS11	MG/L	1	69.7	=				2	11.7	=
Area1	MW-119	24-Jun-03	MW119-EBT-TS12	MG/L	1	94.8	=				1	11.5	=
Area1	MW-119	23-Jul-03	MW119-EBT-TS13	MG/L	1	67.5	=				1	11.6	=
Area1	MW-120	22-May-02	MW120-EBT-B	MG/L	1	77	=	1	0.17	J	1	11	=
Area1	MW-120	10-Jul-02	MW120-EBT-TS1	MG/L				10	94	=	2	12	=
Area1	MW-120	30-Jul-02	MW120-EBT-TS2	MG/L	1	141	=	4	31.3	=	2	12.5	=
Area1	MW-120	5-Sep-02	MW120-EBT-TS3	MG/L	1	148	=	1	0.67	=	1	12.3	=
Area1	MW-120	8-Oct-02	MW120-EBT-TS4	MG/L	1	180	=	1	0.728	=	2	14	=
Area1	MW-120	13-Nov-02	MW120-EBT-TS5	MG/L	1	198	J	1	0.741	=	2	13.6	=
Area1	MW-120	13-Nov-02	MW120-EBT-TS5D	MG/L	1	161	J	1	0.568	=	2	13.4	=
Area1	MW-120	17-Dec-02	MW120-EBT-TS6	MG/L	1	128	=	1	0.536	=	2	13.4	=
Area1	MW-120	17-Dec-02	MW120-EBT-TS6D	MG/L	1	126	=	1	0.561	=	2	13.6	=
Area1	MW-120	22-Jan-03	MW120-EBT-TS7	MG/L	1	151	=	1	0.417	=	2	13.7	=
Area1	MW-120	22-Jan-03	MW120-EBT-TS7D	MG/L	1	156	=	1	0.438	=	2	14.2	=
Area1	MW-120	25-Feb-03	MW120-EBT-TS8	MG/L	1	129	=	1	0.402	=	2	13.8	=
Area1	MW-120	25-Feb-03	MW120-EBT-TS8D	MG/L	1	133	=	1	0.369	=	2	13.8	=
Area1	MW-120	25-Mar-03	MW120-EBT-TS9	MG/L	1	142	=				2	13.9	=
Area1	MW-120	25-Mar-03	MW120-EBT-TS9D	MG/L	1	168	=				2	14.2	=
Area1	MW-120	22-Apr-03	MW120-EBT-TS10	MG/L	1	157	=	1	0.371	=	2	13.9	=
Area1	MW-120	22-Apr-03	MW120-EBT-TS10D	MG/L	1	147	=	1	0.361	=	2	13.7	=

Attachment G
Study Area 1: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ALKALINITY, TOTAL			BROMIDE			CHLORIDE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	MW-120	20-May-03	MW120-EBT-TS11	MG/L	1	130	=	1	0.295	=	2	15	=
Area1	MW-120	20-May-03	MW120-EBT-TS11D	MG/L	1	140	=	1	0.246	=	2	14.9	=
Area1	MW-120	23-Jun-03	MW120-EBT-TS12	MG/L	1	123	=	1	0.31	=	2	15.2	=
Area1	MW-120	23-Jun-03	MW120-EBT-TS12D	MG/L	1	122	=	1	0.314	=	2	14.9	=
Area1	MW-120	22-Jul-03	MW120-EBT-TS13	MG/L	1	151	=	1	0.448	=	2	14.1	=
Area1	MW-120	22-Jul-03	MW120-EBT-TS13D	MG/L	1	141	=	1	0.374	=	2	14.5	=
Area1	MW-121	22-May-02	MW121-EBT-B	MG/L	1	91	J	1	0.12	J	1	10	=
Area1	MW-121	22-May-02	MW121-EBT-B-D	MG/L	1	77	=	1	0.13	J	1	10	=
Area1	MW-121	10-Jul-02	MW121-EBT-TS1	MG/L	1	83	=	3	25	=	1	11	=
Area1	MW-121	31-Jul-02	MW121-EBT-TS2	MG/L	1	108	=	1	0.885	=	1	11.1	=
Area1	MW-121	5-Sep-02	MW121-EBT-TS3	MG/L	1	83.8	=				1	11.6	=
Area1	MW-121	8-Oct-02	MW121-EBT-TS4	MG/L	1	80.1	=	1	0.219	=	1	10.8	=
Area1	MW-121	12-Nov-02	MW121-EBT-TS5	MG/L	1	80.4	=	1	0.189	J	1	11.4	=
Area1	MW-121	18-Dec-02	MW121-EBT-TS6	MG/L	1	83.5	=	1	0.223	=	1	11.4	=
Area1	MW-121	22-Jan-03	MW121-EBT-TS7	MG/L	1	85	=	1	0.198	J	1	12	=
Area1	MW-121	27-Feb-03	MW121-EBT-TS8	MG/L	1	81.3	=	1	0.169	J	2	11.5	=
Area1	MW-121	25-Mar-03	MW121-EBT-TS9	MG/L	1	81.2	=				2	11.9	=
Area1	MW-121	24-Apr-03	MW121-EBT-TS10	MG/L	1	63.1	=	1	0.298	=	2	11.3	=
Area1	MW-121	21-May-03	MW121-EBT-TS11	MG/L	1	90.1	=				2	12.8	=
Area1	MW-121	21-May-03	MW121-EBT-TS11-EB	MG/L									
Area1	MW-121	26-Jun-03	MW121-EBT-TS12	MG/L	1	84.9	=				2	12.9	=
Area1	MW-121	23-Jul-03	MW121-EBT-TS13	MG/L	1	71.8	=	1	0.355	=	2	12.7	=
Area1	MW-122	23-May-02	MW122-EBT-B	MG/L	1	93	=	1	0.19	J	1	11	=
Area1	MW-122	11-Jul-02	MW122-EBT-TS1	MG/L	1	96	=	1	1	=	1	12	=
Area1	MW-122	31-Jul-02	MW122-EBT-TS2	MG/L	1	100	=	1	0.23	=	2	11.7	=
Area1	MW-122	6-Sep-02	MW122-EBT-TS3	MG/L	1	96.4	=	1	0.189	J	2	14.4	=
Area1	MW-122	9-Oct-02	MW122-EBT-TS4	MG/L	1	111	=	1	0.266	=	2	12.6	=
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	MG/L	1	133	=	1	0.231	=	2	12.8	=
Area1	MW-122	18-Dec-02	MW122-EBT-TS6	MG/L	1	136	=	1	0.255	=	2	12.8	=
Area1	MW-122	21-Jan-03	MW122-EBT-TS7	MG/L	1	133	=	1	0.261	=	2	13.2	=
Area1	MW-122	25-Feb-03	MW122-EBT-TS8	MG/L	1	124	=	1	0.253	=	2	13	=
Area1	MW-122	26-Mar-03	MW122-EBT-TS9	MG/L	1	145	=				2	13.7	=
Area1	MW-122	22-Apr-03	MW122-EBT-TS10	MG/L	1	138	=	1	0.383	=	2	12.7	=
Area1	MW-122	20-May-03	MW122-EBT-TS11	MG/L	1	123	=	1	0.188	J	2	13.9	=
Area1	MW-122	24-Jun-03	MW122-EBT-TS12	MG/L	1	137	=				2	14.7	=
Area1	MW-122	22-Jul-03	MW122-EBT-TS13	MG/L	1	148	=	1	0.4	=	2	14.9	=
Area1	MW-123	23-May-02	MW123-EBT-B	MG/L	1	86	=	1	0.16	J	2	12	=
Area1	MW-123	10-Jul-02	MW123-EBT-TS1	MG/L	1	89	=	3	22	=	3	13	=
Area1	MW-123	30-Jul-02	MW123-EBT-TS2	MG/L	1	177	=	20	97.2	=	2	12.9	=
Area1	MW-123	5-Sep-02	MW123-EBT-TS3	MG/L	1	159	=	4	26.8	=	4	14.2	=
Area1	MW-123	10-Oct-02	MW123-EBT-TS4	MG/L	1	201	=	2	21	=	2	12.7	=
Area1	MW-123	10-Oct-02	MW123-EBT-TS4D	MG/L	1	213	=	2	21.4	=	2	12.8	=
Area1	MW-123	13-Nov-02	MW123-EBT-TS5	MG/L	1	198	=	2	14	=	2	12.9	=
Area1	MW-123	18-Dec-02	MW123-EBT-TS6	MG/L	1	210	=	1	5.23	=	2	13.2	=
Area1	MW-123	22-Jan-03	MW123-EBT-TS7	MG/L	1	216	=	1	2.92	=	2	13.6	=
Area1	MW-123	26-Feb-03	MW123-EBT-TS8	MG/L	1	215	=	1	1.55	=	2	13.6	=
Area1	MW-123	27-Mar-03	MW123-EBT-TS9	MG/L	1	194	=	1	1.46	=	4	13.7	=
Area1	MW-123	23-Apr-03	MW123-EBT-TS10	MG/L	1	161	=	1	1.04	=	4	16.9	=
Area1	MW-123	21-May-03	MW123-EBT-TS11	MG/L	1	137	=	1	1.13	=	4	14.4	=
Area1	MW-123	25-Jun-03	MW123-EBT-TS12	MG/L	1	136	=	1	1.38	=	2	13.8	=
Area1	MW-123	23-Jul-03	MW123-EBT-TS13	MG/L	1	185	=	5	1.28	=	5	12.4	=
Area1	MW-124	23-May-02	MW124-EBT-B	MG/L	1	86	=	1	0.17	J	1	11	=
Area1	MW-124	10-Jul-02	MW124-EBT-TS1	MG/L	1	88	=	1	1.2	=	1	12	=
Area1	MW-124	10-Jul-02	MW124-EBT-TS1-D	MG/L	1	86	=	1	1.2	=	1	12	=
Area1	MW-124	31-Jul-02	MW124-EBT-TS2	MG/L	1	99.4	=	1	0.282	=	1	11.6	=
Area1	MW-124	3-Sep-02	MW124-EBT-TS3	MG/L	1	90.5	=	1	0.2	=	1	12.2	=
Area1	MW-124	9-Oct-02	MW124-EBT-TS4	MG/L	1	130	=	1	0.211	=	1	11.7	=
Area1	MW-124	12-Nov-02	MW124-EBT-TS5	MG/L	1	103	=	1	0.218	=	1	11.3	=
Area1	MW-124	17-Dec-02	MW124-EBT-TS6	MG/L	1	96.6	=	1	0.228	=	1	12	=
Area1	MW-124	21-Jan-03	MW124-EBT-TS7	MG/L	1	107	=	1	0.259	=	1	12	=
Area1	MW-124	25-Feb-03	MW124-EBT-TS8	MG/L	1	96.9	=	1	0.216	=	2	11.8	=
Area1	MW-124	25-Mar-03	MW124-EBT-TS9	MG/L	1	144	=				2	11.7	=
Area1	MW-124	23-Apr-03	MW124-EBT-TS10	MG/L	1	108	=	1	0.294	=	2	11.3	=
Area1	MW-124	20-May-03	MW124-EBT-TS11	MG/L	1	96.4	=	1	0.252	=	2	12.4	=
Area1	MW-124	24-Jun-03	MW124-EBT-TS12	MG/L	1	114	=				2	12.3	=
Area1	MW-124	22-Jul-03	MW124-EBT-TS13	MG/L	1	96.3	=				2	12.7	=
Area1	MW-125	23-May-02	MW125-EBT-B	MG/L	1	96	=	1	0.16	J	2	12	=
Area1	MW-125	10-Jul-02	MW125-EBT-TS1	MG/L	1	130	=	3	23	=	3	12	=
Area1	MW-125	30-Jul-02	MW125-EBT-TS2	MG/L	1	135	=	2	12.1	=	2	12.5	=
Area1	MW-125	5-Sep-02	MW125-EBT-TS3	MG/L	1	123	=	1	1.55	=	2	14.5	=
Area1	MW-125	9-Oct-02	MW125-EBT-TS4	MG/L	1	124	=	1	0.404	=	1	11.4	=
Area1	MW-125	12-Nov-02	MW125-EBT-TS5	MG/L	1	138	=	1	0.379	=	2	12.1	=
Area1	MW-125	18-Dec-02	MW125-EBT-TS6	MG/L	1	138	=	1	0.299	=	2	13.2	=
Area1	MW-125	21-Jan-03	MW125-EBT-TS7	MG/L	1	127	=	1	0.292	=	2	13.2	=
Area1	MW-125	26-Feb-03	MW125-EBT-TS8	MG/L	1	116	=	1	0.258	=	2	13.2	=
Area1	MW-125	26-Mar-03	MW125-EBT-TS9	MG/L	1	139	=				2	12.6	=
Area1	MW-125	23-Apr-03	MW125-EBT-TS10	MG/L	1	103	=	1	0.508	=	2	13.6	=
Area1	MW-125	22-May-03	MW125-EBT-TS11	MG/L	1	108	=				2	14.7	=
Area1	MW-125	25-Jun-03	MW125-EBT-TS12	MG/L	1	111	=				2	14.6	=
Area1	MW-125	23-Jul-03	MW125-EBT-TS13	MG/L	1	106	=	1	0.303	=	2	13.4	=
Area1	MW-21	21-Mar-02	MW-21-BL	MG/L	1	70	=				2	13	=
Area1	MW-21	9-Jul-02	MW21-EBT-TS1	MG/L	1	64	=	1	0.27	=	2	13	=
Area1	MW-21	29-Jul-02	MW21-EBT-TS2	MG/L	1	77.2	=	1	0.161	J	2	13.3	=
Area1	MW-21	3-Sep-02	MW21-EBT-TS3	MG/L	1	69.7	=	1	0.16	J	2	14.7	=
Area1	MW-21	7-Oct-02	MW21-EBT-TS4	MG/L	1	85.4	=	1	0.218	=	2	11.8	=
Area1	MW-21	11-Nov-02	MW21-EBT-TS5	MG/L	1	78.7	=	1	0.219	=	2	12.4	=
Area1	MW-21	16-Dec-02	MW21-EBT-TS6	MG/L	1	81.9	=	1	0.23	=	2	12.5	=
Area1	MW-21	20-Jan-03	MW21-EBT-TS7	MG/L	1	73.6	=	1	0.489	=	2	12.8	=
Area1	MW-21	24-Feb-03	MW21-EBT-TS8	MG/L	1	73.1	=	1	0.235	=	2	12.2	=
Area1	MW-21	24-Mar-03	MW21-EBT-TS9	MG/L	1	87.6	=				2	12	=
Area1	MW-21	21-Apr-03	MW21-EBT-TS10	MG/L	1	67.6	=	1	0.361	=	4	11.8	=
Area1	MW-21	19-May-03	MW21-EBT-TS11	MG/L	1	91.7	=	1	0.373	=	2	12.8	=
Area1	MW-21	23-Jun-03	MW21-EBT-TS12	MG/L	1	67.6	=	1	0.231	=	2	12.6	=
Area1	MW-21	21-Jul-03	MW21-EBT-TS13	MG/L	1	82.6	=	1	0.371	=	1	11.4	=

Attachment G
Study Area 1: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	NITRATE			NITRITE			OIL & GREASE, TOTAL REC		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B	MG/L	1	2.5	=	1	0.12	J			
Area1	IW-5	23-Jan-03	IW5-EBT-TS7	MG/L							1	52	=
Area1	IW-6	21-May-02	IW6-EBT-B	MG/L	1	2.9	=	1	0.19	J			
Area1	IW-6	23-Jan-03	IW6-EBT-TS7	MG/L				1	4.65	=	3	174	=
Area1	IW-7	21-May-02	IW7-EBT-B	MG/L	1	3.3	=	1	0.15	J			
Area1	IW-7	23-Jan-03	IW7-EBT-TS7	MG/L							1	27.4	=
Area1	MW-100B	22-Mar-02	MW100B-117-BL	MG/L									
Area1	MW-100B	15-Apr-02	MW100B-BL	MG/L									
Area1	MW-100B	9-Jul-02	MW100B-EBT-TS1	MG/L	1	5.1	=						
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2	MG/L	1	0.564	J						
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3	MG/L							1	6.7	=
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4	MG/L							1	2.7	J
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5	MG/L							1	4.8	J
Area1	MW-100B	19-Dec-02	MW100B-EBT-TS6	MG/L							1	4.1	J
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	MG/L									
Area1	MW-100B	26-Feb-03	MW100B-EBT-TS8	MG/L									
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9	MG/L									
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10	MG/L									
Area1	MW-100B	19-May-03	MW100B-EBT-TS11	MG/L									
Area1	MW-100B	25-Jun-03	MW100B-EBT-TS12	MG/L									
Area1	MW-100B	23-Jul-03	MW100B-EBT-TS13	MG/L									
Area1	MW-115	21-May-02	MW115-EBT-B	MG/L	1	2.4	=	1	0.17	J			
Area1	MW-115	8-Jul-02	MW115-EBT-TS1	MG/L	1	2.2	=						
Area1	MW-115	31-Jul-02	MW115-EBT-TS2	MG/L	1	1.02	=	1	0.34	J			
Area1	MW-115	5-Sep-02	MW115-EBT-TS3	MG/L	1	4.52	=						
Area1	MW-115	8-Oct-02	MW115-EBT-TS4	MG/L	1	1.97	=						
Area1	MW-115	12-Nov-02	MW115-EBT-TS5	MG/L	1	4.84	=						
Area1	MW-115	17-Dec-02	MW115-EBT-TS6	MG/L	1	2.3	=						
Area1	MW-115	22-Jan-03	MW115-EBT-TS7	MG/L	1	2.4	=						
Area1	MW-115	24-Feb-03	MW115-EBT-TS8	MG/L	1	2.45	=	1	0.182	J			
Area1	MW-115	26-Mar-03	MW115-EBT-TS9	MG/L	1	2.62	=						
Area1	MW-115	22-Apr-03	MW115-EBT-TS10	MG/L	1	2.53	=						
Area1	MW-115	21-May-03	MW115-EBT-TS11	MG/L	1	3.38	=						
Area1	MW-115	25-Jun-03	MW115-EBT-TS12	MG/L	1	2.93	=						
Area1	MW-115	23-Jul-03	MW115-EBT-TS13	MG/L	1	3.46	J						
Area1	MW-116	22-May-02	MW116-EBT-B	MG/L	1	4.7	=	1	0.14	J			
Area1	MW-116	9-Jul-02	MW116-EBT-TS1	MG/L									
Area1	MW-116	31-Jul-02	MW116-EBT-TS2	MG/L	1	0.906	=						
Area1	MW-116	6-Sep-02	MW116-EBT-Te3	MG/L	1	1.63	=						
Area1	MW-116	9-Oct-02	MW116-EBT-TS4	MG/L	1	2.1	=	1	0.176	J			
Area1	MW-116	13-Nov-02	MW116-EBT-TS5	MG/L	1	2.23	=	1	0.162	J			
Area1	MW-116	17-Dec-02	MW116-EBT-TS6	MG/L	1	2.89	=						
Area1	MW-116	22-Jan-03	MW116-EBT-TS7	MG/L	1	2.63	=						
Area1	MW-116	25-Feb-03	MW116-EBT-TS8	MG/L	1	3.91	=	1	0.203	J			
Area1	MW-116	25-Mar-03	MW116-EBT-TS9	MG/L	1	2.33	=						
Area1	MW-116	22-Apr-03	MW116-EBT-TS10	MG/L	1	2.47	=						
Area1	MW-116	20-May-03	MW116-EBT-TS11	MG/L	1	2.79	=						
Area1	MW-116	24-Jun-03	MW116-EBT-TS12	MG/L	1	2.9	=						
Area1	MW-116	22-Jul-03	MW116-EBT-TS13	MG/L	1	3.37	=						
Area1	MW-117	22-May-02	MW117-EBT-B	MG/L	1	3.5	=	1	0.13	J			
Area1	MW-117	11-Jul-02	MW117-EBT-TS1	MG/L	1	0.23	J				1	25	=
Area1	MW-117	30-Jul-02	MW117-EBT-TS2	MG/L							1	313	J
Area1	MW-117	5-Sep-02	MW117-EBT-TS3	MG/L							2	195	=
Area1	MW-117	9-Oct-02	MW117-EBT-TS4	MG/L							1	192	=
Area1	MW-117	14-Nov-02	MW117-EBT-TS5	MG/L							1	45.2	=
Area1	MW-117	18-Dec-02	MW117-EBT-TS6	MG/L	1	0.166	J						
Area1	MW-117	23-Jan-03	MW117-EBT-TS7	MG/L							1	46.5	=
Area1	MW-117	27-Feb-03	MW117-EBT-TS8	MG/L	1	3.88	=	1	0.179	J	1	66.9	=
Area1	MW-117	26-Mar-03	MW117-EBT-TS9	MG/L	1	1.12	=				1	9.19	=
Area1	MW-117	23-Apr-03	MW117-EBT-TS10	MG/L				1	0.216	J	1	3.03	J
Area1	MW-117	21-May-03	MW117-EBT-TS11	MG/L							1	4.02	J
Area1	MW-117	25-Jun-03	MW117-EBT-TS12	MG/L							1	6.98	=
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	MG/L							1	7.01	=
Area1	MW-118	22-May-02	MW118-EBT-B	MG/L	1	4.1	=	1	0.1	J			
Area1	MW-118	9-Jul-02	MW118-EBT-TS1	MG/L	1	2.9	=						
Area1	MW-118	30-Jul-02	MW118-EBT-TS2	MG/L	1	1.93	=						
Area1	MW-118	6-Sep-02	MW118-EBT-TS3	MG/L	1	1.34	=	1	0.105	J	1	8.8	=
Area1	MW-118	8-Oct-02	MW118-EBT-TS4	MG/L	1	1.38	=				1	9.5	=
Area1	MW-118	12-Nov-02	MW118-EBT-TS5	MG/L	1	1.56	=	1	0.2	J			
Area1	MW-118	17-Dec-02	MW118-EBT-TS6	MG/L	1	1.61	=	1	0.211	J			
Area1	MW-118	21-Jan-03	MW118-EBT-TS7	MG/L	1	1.59	=						
Area1	MW-118	25-Feb-03	MW118-EBT-TS8	MG/L	1	1.57	=						
Area1	MW-118	25-Mar-03	MW118-EBT-TS9	MG/L	1	1.69	=	1	0.187	J			
Area1	MW-118	22-Apr-03	MW118-EBT-TS10	MG/L	1	1.67	=						
Area1	MW-118	20-May-03	MW118-EBT-TS11	MG/L	1	2.31	=						
Area1	MW-118	24-Jun-03	MW118-EBT-TS12	MG/L	1	2.61	=						
Area1	MW-118	22-Jul-03	MW118-EBT-TS13	MG/L	1	2.41	=						
Area1	MW-119	22-May-02	MW119-EBT-B	MG/L	1	4.7	=	1	0.11	J			
Area1	MW-119	9-Jul-02	MW119-EBT-TS1	MG/L	1	4.9	=						
Area1	MW-119	30-Jul-02	MW119-EBT-TS2	MG/L	1	4.73	=						
Area1	MW-119	30-Jul-02	MW119-EBT-TS2D	MG/L	1	4.73	=						
Area1	MW-119	5-Sep-02	MW119-EBT-TS3	MG/L	1	4.74	=						
Area1	MW-119	5-Sep-02	MW119-EBT-TS3d	MG/L	1	4.79	=						
Area1	MW-119	8-Oct-02	MW119-EBT-TS4	MG/L	1	4.29	=						
Area1	MW-119	13-Nov-02	MW119-EBT-TS5	MG/L	1	4.22	=						
Area1	MW-119	16-Dec-02	MW119-EBT-TS6	MG/L	1	4.18	=						
Area1	MW-119	21-Jan-03	MW119-EBT-TS7	MG/L	1	4.11	=						
Area1	MW-119	27-Feb-03	MW119-EBT-TS8	MG/L									
Area1	MW-119	26-Mar-03	MW119-EBT-TS9	MG/L	1	3.8	=						
Area1	MW-119	23-Apr-03	MW119-EBT-TS10	MG/L	1	3.86	=						
Area1	MW-119	21-May-03	MW119-EBT-TS11	MG/L	1	4.32	=						
Area1	MW-119	24-Jun-03	MW119-EBT-TS12	MG/L	1	4.2	=						
Area1	MW-119	23-Jul-03	MW119-EBT-TS13	MG/L	1	4.42	J						
Area1	MW-120	22-May-02	MW120-EBT-B	MG/L	1	3.6	=	1	0.18	J			
Area1	MW-120	10-Jul-02	MW120-EBT-TS1	MG/L	1	0.77	=				1	8.9	=
Area1	MW-120	30-Jul-02	MW120-EBT-TS2	MG/L	1	0.564	J						
Area1	MW-120	5-Sep-02	MW120-EBT-TS3	MG/L							1	4.6	J
Area1	MW-120	8-Oct-02	MW120-EBT-TS4	MG/L				1	0.226	J	1	16.4	=
Area1	MW-120	13-Nov-02	MW120-EBT-TS5	MG/L							1	6.7	=
Area1	MW-120	13-Nov-02	MW120-EBT-TS5D	MG/L							1	8	=
Area1	MW-120	17-Dec-02	MW120-EBT-TS6	MG/L	1	0.663	=				1	17.1	=
Area1	MW-120	17-Dec-02	MW120-EBT-TS6D	MG/L	1	0.612	=				1	9.6	=
Area1	MW-120	22-Jan-03	MW120-EBT-TS7	MG/L	1	0.727	=						
Area1	MW-120	22-Jan-03	MW120-EBT-TS7D	MG/L	1	0.738	=				1	2.6	J
Area1	MW-120	25-Feb-03	MW120-EBT-TS8	MG/L	1	0.769	=						
Area1	MW-120	25-Feb-03	MW120-EBT-TS8D	MG/L	1	0.81	=						
Area1	MW-120	25-Mar-03	MW120-EBT-TS9	MG/L									
Area1	MW-120	25-Mar-03	MW120-EBT-TS9D	MG/L									
Area1	MW-120	22-Apr-03	MW120-EBT-TS10	MG/L	1	0.805	=						
Area1	MW-120	22-Apr-03	MW120-EBT-TS10D	MG/L	1	0.963	=						

Attachment G
Study Area 1- Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	NITRATE			NITRITE			OIL & GREASE, TOTAL REC		
					Det	Conc	Qual	Det	Conc	Qual	Det	Conc	Qual
Area1	MW-120	20-May-03	MW120-EBT-TS11	MG/L	1	0.721	=				1	2.78	J
Area1	MW-120	20-May-03	MW120-EBT-TS11D	MG/L	1	0.656	=				1	3.27	J
Area1	MW-120	23-Jun-03	MW120-EBT-TS12	MG/L							1	4.44	J
Area1	MW-120	23-Jun-03	MW120-EBT-TS12D	MG/L							1	5.06	J
Area1	MW-120	22-Jul-03	MW120-EBT-TS13	MG/L							1	2.76	J
Area1	MW-120	22-Jul-03	MW120-EBT-TS13D	MG/L							1	2.76	J
Area1	MW-121	22-May-02	MW121-EBT-B	MG/L	1	3.6	=	1	0.3	J			
Area1	MW-121	22-May-02	MW121-EBT-B-D	MG/L	1	3.5	=	1	0.27	J			
Area1	MW-121	10-Jul-02	MW121-EBT-TS1	MG/L	1	1.8	=						
Area1	MW-121	31-Jul-02	MW121-EBT-TS2	MG/L	1	1.86	=	1	0.172	J			
Area1	MW-121	5-Sep-02	MW121-EBT-TS3	MG/L	1	4.16	=						
Area1	MW-121	8-Oct-02	MW121-EBT-TS4	MG/L	1	3.14	=	1	0.156	J			
Area1	MW-121	12-Nov-02	MW121-EBT-TS5	MG/L	1	3.32	=	1	0.14	J			
Area1	MW-121	18-Dec-02	MW121-EBT-TS6	MG/L	1	3.26	=	1	0.165	J			
Area1	MW-121	22-Jan-03	MW121-EBT-TS7	MG/L	1	3.3	=						
Area1	MW-121	27-Feb-03	MW121-EBT-TS8	MG/L	1	3.48	=	1	0.166	J			
Area1	MW-121	25-Mar-03	MW121-EBT-TS9	MG/L	1	3.22	=						
Area1	MW-121	24-Apr-03	MW121-EBT-TS10	MG/L	1	3.27	=						
Area1	MW-121	21-May-03	MW121-EBT-TS11	MG/L	1	3.83	=						
Area1	MW-121	21-May-03	MW121-EBT-TS11-EB	MG/L									
Area1	MW-121	26-Jun-03	MW121-EBT-TS12	MG/L	1	3.8	=						
Area1	MW-121	23-Jul-03	MW121-EBT-TS13	MG/L	1	3.75	J						
Area1	MW-122	23-May-02	MW122-EBT-B	MG/L	1	5.1	=	1	0.19	J			
Area1	MW-122	11-Jul-02	MW122-EBT-TS1	MG/L	1	0.77	=						
Area1	MW-122	31-Jul-02	MW122-EBT-TS2	MG/L	1	0.802	=						
Area1	MW-122	6-Sep-02	MW122-EBT-TS3	MG/L				1	0.106	J	1	52.2	=
Area1	MW-122	9-Oct-02	MW122-EBT-TS4	MG/L							1	59.3	=
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	MG/L				1	0.195	J			
Area1	MW-122	18-Dec-02	MW122-EBT-TS6	MG/L	1	0.444	J				1	2.8	J
Area1	MW-122	21-Jan-03	MW122-EBT-TS7	MG/L	1	0.636	=	1	0.182	J	1	2.8	J
Area1	MW-122	25-Feb-03	MW122-EBT-TS8	MG/L	1	0.856	=						
Area1	MW-122	26-Mar-03	MW122-EBT-TS9	MG/L							1	3.98	J
Area1	MW-122	22-Apr-03	MW122-EBT-TS10	MG/L	1	0.718	=						
Area1	MW-122	20-May-03	MW122-EBT-TS11	MG/L	1	0.477	J						
Area1	MW-122	24-Jun-03	MW122-EBT-TS12	MG/L									
Area1	MW-122	22-Jul-03	MW122-EBT-TS13	MG/L									
Area1	MW-123	23-May-02	MW123-EBT-B	MG/L	1	3.9	=	1	0.12	J			
Area1	MW-123	10-Jul-02	MW123-EBT-TS1	MG/L									
Area1	MW-123	30-Jul-02	MW123-EBT-TS2	MG/L	1	0.252	J	1	0.164	J			
Area1	MW-123	5-Sep-02	MW123-EBT-TS3	MG/L							5	170	=
Area1	MW-123	10-Oct-02	MW123-EBT-TS4	MG/L				1	0.129	J	1	54.5	J
Area1	MW-123	10-Oct-02	MW123-EBT-TS4D	MG/L	1	4.19	=	1	0.13	J	1	38.2	J
Area1	MW-123	13-Nov-02	MW123-EBT-TS5	MG/L				1	0.273	J	1	23.4	=
Area1	MW-123	18-Dec-02	MW123-EBT-TS6	MG/L	1	0.616	=				1	3.7	J
Area1	MW-123	22-Jan-03	MW123-EBT-TS7	MG/L							1	2.8	J
Area1	MW-123	26-Feb-03	MW123-EBT-TS8	MG/L									
Area1	MW-123	27-Mar-03	MW123-EBT-TS9	MG/L							1	5.15	=
Area1	MW-123	23-Apr-03	MW123-EBT-TS10	MG/L	1	0.225	J	1	0.104	J			
Area1	MW-123	21-May-03	MW123-EBT-TS11	MG/L							1	5.94	=
Area1	MW-123	25-Jun-03	MW123-EBT-TS12	MG/L							1	3.67	J
Area1	MW-123	23-Jul-03	MW123-EBT-TS13	MG/L									
Area1	MW-124	23-May-02	MW124-EBT-B	MG/L	1	4.2	=	1	0.11	J			
Area1	MW-124	10-Jul-02	MW124-EBT-TS1	MG/L	1	1.5	=						
Area1	MW-124	10-Jul-02	MW124-EBT-TS1-D	MG/L	1	1.6	=						
Area1	MW-124	31-Jul-02	MW124-EBT-TS2	MG/L	1	1.97	=						
Area1	MW-124	3-Sep-02	MW124-EBT-TS3	MG/L	1	1.64	=						
Area1	MW-124	9-Oct-02	MW124-EBT-TS4	MG/L	1	1.8	=						
Area1	MW-124	12-Nov-02	MW124-EBT-TS5	MG/L	1	4.75	=	1	0.173	J			
Area1	MW-124	17-Dec-02	MW124-EBT-TS6	MG/L	1	2.45	=	1	0.174	J			
Area1	MW-124	21-Jan-03	MW124-EBT-TS7	MG/L	1	2.41	=	1	0.179	J			
Area1	MW-124	25-Feb-03	MW124-EBT-TS8	MG/L	1	3.44	=						
Area1	MW-124	25-Mar-03	MW124-EBT-TS9	MG/L	1	2.66	=						
Area1	MW-124	23-Apr-03	MW124-EBT-TS10	MG/L	1	2.44	=						
Area1	MW-124	20-May-03	MW124-EBT-TS11	MG/L	1	3.33	=						
Area1	MW-124	24-Jun-03	MW124-EBT-TS12	MG/L	1	3.1	=						
Area1	MW-124	22-Jul-03	MW124-EBT-TS13	MG/L	1	2.85	J						
Area1	MW-125	23-May-02	MW125-EBT-B	MG/L	1	3.7	=	1	0.15	J			
Area1	MW-125	10-Jul-02	MW125-EBT-TS1	MG/L							1	4.9	=
Area1	MW-125	30-Jul-02	MW125-EBT-TS2	MG/L									
Area1	MW-125	5-Sep-02	MW125-EBT-TS3	MG/L				1	0.103	J			
Area1	MW-125	9-Oct-02	MW125-EBT-TS4	MG/L	1	2.27	=						
Area1	MW-125	12-Nov-02	MW125-EBT-TS5	MG/L	1	1.64	=						
Area1	MW-125	18-Dec-02	MW125-EBT-TS6	MG/L	1	1.3	=						
Area1	MW-125	21-Jan-03	MW125-EBT-TS7	MG/L	1	1.51	=	1	0.181	J			
Area1	MW-125	26-Feb-03	MW125-EBT-TS8	MG/L	1	2.01	=						
Area1	MW-125	26-Mar-03	MW125-EBT-TS9	MG/L	1	1.42	=						
Area1	MW-125	23-Apr-03	MW125-EBT-TS10	MG/L	1	1.34	=						
Area1	MW-125	22-May-03	MW125-EBT-TS11	MG/L	1	2.4	=						
Area1	MW-125	25-Jun-03	MW125-EBT-TS12	MG/L	1	2.38	=						
Area1	MW-125	23-Jul-03	MW125-EBT-TS13	MG/L	1	2.54	J						
Area1	MW-21	21-Mar-02	MW-21-BL	MG/L	1	3.5	=						
Area1	MW-21	9-Jul-02	MW21-EBT-TS1	MG/L	1	3.4	=						
Area1	MW-21	29-Jul-02	MW21-EBT-TS2	MG/L	1	3.4	=						
Area1	MW-21	3-Sep-02	MW21-EBT-TS3	MG/L	1	3.43	=						
Area1	MW-21	7-Oct-02	MW21-EBT-TS4	MG/L	1	3.25	=						
Area1	MW-21	11-Nov-02	MW21-EBT-TS5	MG/L	1	3.25	=						
Area1	MW-21	16-Dec-02	MW21-EBT-TS6	MG/L	1	3.21	=						
Area1	MW-21	20-Jan-03	MW21-EBT-TS7	MG/L	1	3.22	=						
Area1	MW-21	24-Feb-03	MW21-EBT-TS8	MG/L	1	3.16	=						
Area1	MW-21	24-Mar-03	MW21-EBT-TS9	MG/L	1	2.96	=						
Area1	MW-21	21-Apr-03	MW21-EBT-TS10	MG/L	1	2.87	=						
Area1	MW-21	19-May-03	MW21-EBT-TS11	MG/L	1	3.15	=						
Area1	MW-21	23-Jun-03	MW21-EBT-TS12	MG/L	1	3.14	=						
Area1	MW-21	21-Jul-03	MW21-EBT-TS13	MG/L	1	2.85	=						

Attachment G
Study Area 1: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	SULFATE			SULFIDE			TOTAL ORGANIC CARBON		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B	MG/L	1	11	=						
Area1	IW-5	23-Jan-03	IW5-EBT-TS7	MG/L	1	5.68	=				200	2080	=
Area1	IW-6	21-May-02	IW6-EBT-B	MG/L	1	10	=	1	0.53	J			
Area1	IW-6	23-Jan-03	IW6-EBT-TS7	MG/L				1	0.8	J	500	3460	=
Area1	IW-7	21-May-02	IW7-EBT-B	MG/L	1	12	=						
Area1	IW-7	23-Jan-03	IW7-EBT-TS7	MG/L							100	656	=
Area1	MW-100B	22-Mar-02	MW100B-117-BL	MG/L							1	0.79	J
Area1	MW-100B	15-Apr-02	MW100B-BL	MG/L	1	6.4	=						
Area1	MW-100B	9-Jul-02	MW100B-EBT-TS1	MG/L	1	11	=						
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2	MG/L	1	10.1	=				2	67	=
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3	MG/L	1	1.07	=				50	871	=
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4	MG/L	1	1.32	=				20	682	=
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5	MG/L	1	1.42	=				100	458	=
Area1	MW-100B	19-Dec-02	MW100B-EBT-TS6	MG/L							25	526	=
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	MG/L	1	5.19	=				100	318	=
Area1	MW-100B	26-Feb-03	MW100B-EBT-TS8	MG/L							40	131	=
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9	MG/L	1	0.802	J				20	88	=
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10	MG/L	1	0.799	J				1	43.3	=
Area1	MW-100B	19-May-03	MW100B-EBT-TS11	MG/L							1	19.9	=
Area1	MW-100B	25-Jun-03	MW100B-EBT-TS12	MG/L							4	7.09	=
Area1	MW-100B	23-Jul-03	MW100B-EBT-TS13	MG/L							5	6.8	=
Area1	MW-115	21-May-02	MW115-EBT-B	MG/L	1	12	=						
Area1	MW-115	8-Jul-02	MW115-EBT-TS1	MG/L	1	12	=				10	230	=
Area1	MW-115	31-Jul-02	MW115-EBT-TS2	MG/L	1	7.75	=				4	79.3	=
Area1	MW-115	5-Sep-02	MW115-EBT-TS3	MG/L	1	11.7	=				2	55.3	=
Area1	MW-115	8-Oct-02	MW115-EBT-TS4	MG/L	1	6.95	=				2	64.7	=
Area1	MW-115	12-Nov-02	MW115-EBT-TS5	MG/L	1	6.57	=				10	55.8	=
Area1	MW-115	17-Dec-02	MW115-EBT-TS6	MG/L	1	7.86	=				1	25.4	=
Area1	MW-115	22-Jan-03	MW115-EBT-TS7	MG/L	1	9	=				5	37.3	=
Area1	MW-115	24-Feb-03	MW115-EBT-TS8	MG/L	1	8.5	=				2	13.8	=
Area1	MW-115	26-Mar-03	MW115-EBT-TS9	MG/L	1	8.88	=				1	7.45	=
Area1	MW-115	22-Apr-03	MW115-EBT-TS10	MG/L	1	8.64	=				1	9.17	=
Area1	MW-115	21-May-03	MW115-EBT-TS11	MG/L	1	9.78	=				1	6.42	=
Area1	MW-115	25-Jun-03	MW115-EBT-TS12	MG/L	1	10.4	=				2	7.6	=
Area1	MW-115	23-Jul-03	MW115-EBT-TS13	MG/L	1	12.9	=				4	14.7	=
Area1	MW-116	22-May-02	MW116-EBT-B	MG/L	1	10	=						
Area1	MW-116	9-Jul-02	MW116-EBT-TS1	MG/L	1	9.7	=				1	24	=
Area1	MW-116	31-Jul-02	MW116-EBT-TS2	MG/L	1	7.11	=				1	8.17	=
Area1	MW-116	6-Sep-02	MW116-EBT-Ts3	MG/L	1	7.87	=				1	5.54	=
Area1	MW-116	9-Oct-02	MW116-EBT-TS4	MG/L	1	8.47	=				1	23.1	=
Area1	MW-116	13-Nov-02	MW116-EBT-TS5	MG/L	1	9.2	=				1	21.7	=
Area1	MW-116	17-Dec-02	MW116-EBT-TS6	MG/L	1	9.96	=				1	11.6	=
Area1	MW-116	22-Jan-03	MW116-EBT-TS7	MG/L	1	9.78	=				2	10	=
Area1	MW-116	25-Feb-03	MW116-EBT-TS8	MG/L	1	10.5	=				1	7.8	=
Area1	MW-116	25-Mar-03	MW116-EBT-TS9	MG/L	1	8.99	=				1	5.33	=
Area1	MW-116	22-Apr-03	MW116-EBT-TS10	MG/L	1	9.65	=				1	9.26	=
Area1	MW-116	20-May-03	MW116-EBT-TS11	MG/L	1	11	=				1	5.74	=
Area1	MW-116	24-Jun-03	MW116-EBT-TS12	MG/L	1	11.7	=				1	3.95	=
Area1	MW-116	22-Jul-03	MW116-EBT-TS13	MG/L	1	12.6	=				1	5.42	=
Area1	MW-117	22-May-02	MW117-EBT-B	MG/L	1	12	=						
Area1	MW-117	11-Jul-02	MW117-EBT-TS1	MG/L	1	7.7	=	1	1.1	=	50	2000	=
Area1	MW-117	30-Jul-02	MW117-EBT-TS2	MG/L	1	2.21	=				50	1410	=
Area1	MW-117	5-Sep-02	MW117-EBT-TS3	MG/L	1	1.11	=	1	0.5	J	20	465	=
Area1	MW-117	8-Oct-02	MW117-EBT-TS4	MG/L	1	1.11	=				20	586	=
Area1	MW-117	14-Nov-02	MW117-EBT-TS5	MG/L	1	1.46	=				20	645	=
Area1	MW-117	16-Dec-02	MW117-EBT-TS6	MG/L							50	844	=
Area1	MW-117	23-Jan-03	MW117-EBT-TS7	MG/L							200	866	=
Area1	MW-117	27-Feb-03	MW117-EBT-TS8	MG/L	1	9.92	=				100	500	=
Area1	MW-117	26-Mar-03	MW117-EBT-TS9	MG/L	1	1.09	=				100	494	=
Area1	MW-117	23-Apr-03	MW117-EBT-TS10	MG/L	1	0.916	J				25	443	=
Area1	MW-117	21-May-03	MW117-EBT-TS11	MG/L	1	10.9	=				20	442	=
Area1	MW-117	25-Jun-03	MW117-EBT-TS12	MG/L							20	446	=
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	MG/L							50	352	=
Area1	MW-118	22-May-02	MW118-EBT-B	MG/L	1	20	=						
Area1	MW-118	9-Jul-02	MW118-EBT-TS1	MG/L	1	19	=				4	100	=
Area1	MW-118	30-Jul-02	MW118-EBT-TS2	MG/L	1	12.5	=				20	452	=
Area1	MW-118	6-Sep-02	MW118-EBT-TS3	MG/L	1	8.83	=				4	110	=
Area1	MW-118	8-Oct-02	MW118-EBT-TS4	MG/L	1	7.02	=				5	232	=
Area1	MW-118	12-Nov-02	MW118-EBT-TS5	MG/L	1	8.8	=				50	164	=
Area1	MW-118	17-Dec-02	MW118-EBT-TS6	MG/L	1	8.12	=				4	109	=
Area1	MW-118	21-Jan-03	MW118-EBT-TS7	MG/L	4	140	=				20	75	=
Area1	MW-118	25-Feb-03	MW118-EBT-TS8	MG/L	1	7.42	=				10	57.6	=
Area1	MW-118	25-Mar-03	MW118-EBT-TS9	MG/L	1	8.38	=				10	64.7	=
Area1	MW-118	22-Apr-03	MW118-EBT-TS10	MG/L	1	7.28	=				4	59.6	=
Area1	MW-118	20-May-03	MW118-EBT-TS11	MG/L	1	9.11	=				2	13.7	=
Area1	MW-118	24-Jun-03	MW118-EBT-TS12	MG/L	1	10.7	=				1	9.5	=
Area1	MW-118	22-Jul-03	MW118-EBT-TS13	MG/L	1	14.1	=				2	16.4	=
Area1	MW-119	22-May-02	MW119-EBT-B	MG/L	1	8.5	=						
Area1	MW-119	9-Jul-02	MW119-EBT-TS1	MG/L	1	8.7	=						
Area1	MW-119	30-Jul-02	MW119-EBT-TS2	MG/L	1	9.34	=						
Area1	MW-119	30-Jul-02	MW119-EBT-TS2D	MG/L	1	9.4	=						
Area1	MW-119	5-Sep-02	MW119-EBT-TS3	MG/L	1	10.2	=				1	1.82	=
Area1	MW-119	5-Sep-02	MW119-EBT-TS3d	MG/L	1	10.3	=				1	1.68	=
Area1	MW-119	8-Oct-02	MW119-EBT-TS4	MG/L	1	9.75	=						
Area1	MW-119	13-Nov-02	MW119-EBT-TS5	MG/L	1	10	=						
Area1	MW-119	16-Dec-02	MW119-EBT-TS6	MG/L	1	10.2	=						
Area1	MW-119	21-Jan-03	MW119-EBT-TS7	MG/L	1	10.1	=						
Area1	MW-119	27-Feb-03	MW119-EBT-TS8	MG/L									
Area1	MW-119	26-Mar-03	MW119-EBT-TS9	MG/L	1	9.57	=						
Area1	MW-119	23-Apr-03	MW119-EBT-TS10	MG/L	1	9.65	=						
Area1	MW-119	21-May-03	MW119-EBT-TS11	MG/L	1	10.7	=						
Area1	MW-119	24-Jun-03	MW119-EBT-TS12	MG/L	1	10.9	=						
Area1	MW-119	23-Jul-03	MW119-EBT-TS13	MG/L	1	11.2	=				1	1.28	=
Area1	MW-120	22-May-02	MW120-EBT-B	MG/L	1	13	=						
Area1	MW-120	10-Jul-02	MW120-EBT-TS1	MG/L	1	12	=	1	2	=	50	1400	=
Area1	MW-120	30-Jul-02	MW120-EBT-TS2	MG/L	1	3.58	=	1	0.53	J	20	415	=
Area1	MW-120	5-Sep-02	MW120-EBT-TS3	MG/L	1	1.04	=				4	123	=
Area1	MW-120	8-Oct-02	MW120-EBT-TS4	MG/L	1	3.77	=				5	181	=
Area1	MW-120	13-Nov-02	MW120-EBT-TS5	MG/L	1	3.9	=				5	189	J
Area1	MW-120	13-Nov-02	MW120-EBT-TS5D	MG/L	1	3.98	=				5	145	J
Area1	MW-120	17-Dec-02	MW120-EBT-TS6	MG/L	1	4.09	=	1	1	=	4	114	=
Area1	MW-120	17-Dec-02	MW120-EBT-TS6D	MG/L	1	3.87	=				4	121	=
Area1	MW-120	22-Jan-03	MW120-EBT-TS7	MG/L							10	58	J
Area1	MW-120	22-Jan-03	MW120-EBT-TS7D	MG/L							10	73.9	J
Area1	MW-120	25-Feb-03	MW120-EBT-TS8	MG/L							10	41.2	=
Area1	MW-120	25-Feb-03	MW120-EBT-TS8D	MG/L							10	44.8	=
Area1	MW-120	25-Mar-03	MW120-EBT-TS9	MG/L	1	5	J				10	66.3	=
Area1	MW-120	25-Mar-03	MW120-EBT-TS9D	MG/L	1	8.73	J				10	67.9	=
Area1	MW-120	22-Apr-03	MW120-EBT-TS10	MG/L	1	4.69	=				4	59	J
Area1	MW-120	22-Apr-03	MW120-EBT-TS10D	MG/L	1	5.22	=				4	34.2	J

Attachment G
Study Area 1: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	SULFATE			SULFIDE			TOTAL ORGANIC CARBON		
Area1	MW-120	20-May-03	MW120-EBT-TS11	MG/L	1	5.28	=				2	18.4	=
Area1	MW-120	20-May-03	MW120-EBT-TS11D	MG/L	1	5.67	=				2	16.7	=
Area1	MW-120	23-Jun-03	MW120-EBT-TS12	MG/L	1	5.86	=				2	21.5	J
Area1	MW-120	23-Jun-03	MW120-EBT-TS12D	MG/L	1	5.96	=				1	16.1	J
Area1	MW-120	22-Jul-03	MW120-EBT-TS13	MG/L	1	6.52	=				2	16	J
Area1	MW-120	22-Jul-03	MW120-EBT-TS13D	MG/L	1	6.46	=				2	47.6	J
Area1	MW-121	22-May-02	MW121-EBT-B	MG/L	1	17	=						
Area1	MW-121	22-May-02	MW121-EBT-B-D	MG/L	1	18	=						
Area1	MW-121	10-Jul-02	MW121-EBT-TS1	MG/L	1	12	=				4	120	=
Area1	MW-121	31-Jul-02	MW121-EBT-TS2	MG/L	1	8.73	=				1	15.5	=
Area1	MW-121	5-Sep-02	MW121-EBT-TS3	MG/L	1	12.1	=				1	5.78	=
Area1	MW-121	8-Oct-02	MW121-EBT-TS4	MG/L	1	9.32	=						
Area1	MW-121	12-Nov-02	MW121-EBT-TS5	MG/L	1	9.53	=				1	1.25	=
Area1	MW-121	18-Dec-02	MW121-EBT-TS6	MG/L	1	8.85	=						
Area1	MW-121	22-Jan-03	MW121-EBT-TS7	MG/L	1	9.4	=						
Area1	MW-121	27-Feb-03	MW121-EBT-TS8	MG/L	1	10.8	=						
Area1	MW-121	25-Mar-03	MW121-EBT-TS9	MG/L	1	9.19	=						
Area1	MW-121	24-Apr-03	MW121-EBT-TS10	MG/L	1	9.3	=						
Area1	MW-121	21-May-03	MW121-EBT-TS11	MG/L	1	11.1	=						
Area1	MW-121	21-May-03	MW121-EBT-TS11-EB	MG/L							1	0.63	J
Area1	MW-121	26-Jun-03	MW121-EBT-TS12	MG/L	1	12.5	=						
Area1	MW-121	23-Jul-03	MW121-EBT-TS13	MG/L	1	12.4	=				1	1.33	=
Area1	MW-122	23-May-02	MW122-EBT-B	MG/L	1	11	=						
Area1	MW-122	11-Jul-02	MW122-EBT-TS1	MG/L	1	10	=				1	3.8	=
Area1	MW-122	31-Jul-02	MW122-EBT-TS2	MG/L	1	9.69	=						
Area1	MW-122	6-Sep-02	MW122-EBT-TS3	MG/L	1	8.01	=				1	11.8	J
Area1	MW-122	9-Oct-02	MW122-EBT-TS4	MG/L	1	3.06	=				1	35.5	=
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	MG/L	1	3.15	=				1	21.3	=
Area1	MW-122	18-Dec-02	MW122-EBT-TS6	MG/L	1	3.26	=				1	24.8	=
Area1	MW-122	21-Jan-03	MW122-EBT-TS7	MG/L							5	21.8	=
Area1	MW-122	25-Feb-03	MW122-EBT-TS8	MG/L							2	10.5	=
Area1	MW-122	26-Mar-03	MW122-EBT-TS9	MG/L	1	3.97	=				1	10.5	=
Area1	MW-122	22-Apr-03	MW122-EBT-TS10	MG/L	1	4.23	=				1	10.6	=
Area1	MW-122	20-May-03	MW122-EBT-TS11	MG/L	1	4.08	=				1	6.32	=
Area1	MW-122	24-Jun-03	MW122-EBT-TS12	MG/L	1	5.35	=				1	7.51	=
Area1	MW-122	22-Jul-03	MW122-EBT-TS13	MG/L	1	3.12	=				1	7.79	=
Area1	MW-123	23-May-02	MW123-EBT-B	MG/L	1	12	=						
Area1	MW-123	10-Jul-02	MW123-EBT-TS1	MG/L	1	9.6	=				4	83	=
Area1	MW-123	30-Jul-02	MW123-EBT-TS2	MG/L	1	5.87	=	1	0.96	J	10	326	=
Area1	MW-123	5-Sep-02	MW123-EBT-TS3	MG/L	1	2.79	=	1	0.5	J	10	307	=
Area1	MW-123	10-Oct-02	MW123-EBT-TS4	MG/L	1	2.03	=				10	291	=
Area1	MW-123	10-Oct-02	MW123-EBT-TS4D	MG/L	1	2.04	=				10	294	=
Area1	MW-123	13-Nov-02	MW123-EBT-TS5	MG/L	1	2.85	=				10	244	=
Area1	MW-123	18-Dec-02	MW123-EBT-TS6	MG/L	1	2.11	=				4	181	=
Area1	MW-123	22-Jan-03	MW123-EBT-TS7	MG/L							25	166	=
Area1	MW-123	26-Feb-03	MW123-EBT-TS8	MG/L							20	122	=
Area1	MW-123	27-Mar-03	MW123-EBT-TS9	MG/L	1	1.86	=				1	66	=
Area1	MW-123	23-Apr-03	MW123-EBT-TS10	MG/L	1	1.84	=				4	89	=
Area1	MW-123	21-May-03	MW123-EBT-TS11	MG/L	1	1.13	=				4	56	=
Area1	MW-123	25-Jun-03	MW123-EBT-TS12	MG/L	1	1.8	=				4	50.7	=
Area1	MW-123	23-Jul-03	MW123-EBT-TS13	MG/L	5	2.6	J				10	52.7	=
Area1	MW-124	23-May-02	MW124-EBT-B	MG/L	1	11	=						
Area1	MW-124	10-Jul-02	MW124-EBT-TS1	MG/L	1	11	=						
Area1	MW-124	10-Jul-02	MW124-EBT-TS1-D	MG/L	1	11	=						
Area1	MW-124	31-Jul-02	MW124-EBT-TS2	MG/L	1	12.3	=						
Area1	MW-124	3-Sep-02	MW124-EBT-TS3	MG/L	1	11	=				1	9.27	=
Area1	MW-124	9-Oct-02	MW124-EBT-TS4	MG/L	1	10.6	=				1	8.98	=
Area1	MW-124	12-Nov-02	MW124-EBT-TS5	MG/L	1	9.3	=	1	0.5	J	1	3.94	=
Area1	MW-124	17-Dec-02	MW124-EBT-TS6	MG/L	1	10.9	=				1	3.4	=
Area1	MW-124	21-Jan-03	MW124-EBT-TS7	MG/L	1	9.83	=				1	2.54	=
Area1	MW-124	25-Feb-03	MW124-EBT-TS8	MG/L	1	9.46	=						
Area1	MW-124	25-Mar-03	MW124-EBT-TS9	MG/L	1	9.03	=						
Area1	MW-124	23-Apr-03	MW124-EBT-TS10	MG/L	1	9.09	=						
Area1	MW-124	20-May-03	MW124-EBT-TS11	MG/L	1	10.7	=						
Area1	MW-124	24-Jun-03	MW124-EBT-TS12	MG/L	1	10.9	=						
Area1	MW-124	22-Jul-03	MW124-EBT-TS13	MG/L	1	11.7	=				1	2.86	=
Area1	MW-125	23-May-02	MW125-EBT-B	MG/L	1	12	=						
Area1	MW-125	10-Jul-02	MW125-EBT-TS1	MG/L	1	6.5	=	1	0.7	J	10	260	=
Area1	MW-125	30-Jul-02	MW125-EBT-TS2	MG/L	1	5.99	=				4	100	=
Area1	MW-125	5-Sep-02	MW125-EBT-TS3	MG/L	1	5.44	=				4	57.2	=
Area1	MW-125	9-Oct-02	MW125-EBT-TS4	MG/L	1	8.24	=				2	14	J
Area1	MW-125	12-Nov-02	MW125-EBT-TS5	MG/L	1	6.88	=				4	24.5	=
Area1	MW-125	18-Dec-02	MW125-EBT-TS6	MG/L	1	6.63	=				1	18.6	=
Area1	MW-125	21-Jan-03	MW125-EBT-TS7	MG/L	1	6.69	=				2	12.2	=
Area1	MW-125	26-Feb-03	MW125-EBT-TS8	MG/L	1	7.89	=				1	5.67	=
Area1	MW-125	26-Mar-03	MW125-EBT-TS9	MG/L	1	6.53	=				1	5.04	=
Area1	MW-125	23-Apr-03	MW125-EBT-TS10	MG/L	1	6.85	=				1	5.54	=
Area1	MW-125	22-May-03	MW125-EBT-TS11	MG/L	1	9.59	=				1	3.64	=
Area1	MW-125	25-Jun-03	MW125-EBT-TS12	MG/L	1	9.85	=				1	4.99	=
Area1	MW-125	23-Jul-03	MW125-EBT-TS13	MG/L	1	10.1	=				1	2.88	=
Area1	MW-21	21-Mar-02	MW-21-BL	MG/L	1	8.1	=						
Area1	MW-21	9-Jul-02	MW21-EBT-TS1	MG/L	1	7	=						
Area1	MW-21	29-Jul-02	MW21-EBT-TS2	MG/L	1	7.29	=						
Area1	MW-21	3-Sep-02	MW21-EBT-TS3	MG/L	1	7.34	=				1	1.58	=
Area1	MW-21	7-Oct-02	MW21-EBT-TS4	MG/L	1	6.84	=						
Area1	MW-21	11-Nov-02	MW21-EBT-TS5	MG/L	1	6.79	=				1	0.67	J
Area1	MW-21	16-Dec-02	MW21-EBT-TS6	MG/L	1	6.89	=						
Area1	MW-21	20-Jan-03	MW21-EBT-TS7	MG/L	1	6.9	=						
Area1	MW-21	24-Feb-03	MW21-EBT-TS8	MG/L	1	6.6	=						
Area1	MW-21	24-Mar-03	MW21-EBT-TS9	MG/L	1	6.29	=						
Area1	MW-21	21-Apr-03	MW21-EBT-TS10	MG/L	1	6.63	=						
Area1	MW-21	19-May-03	MW21-EBT-TS11	MG/L	1	7.25	=						
Area1	MW-21	23-Jun-03	MW21-EBT-TS12	MG/L	1	7.85	=						
Area1	MW-21	21-Jul-03	MW21-EBT-TS13	MG/L	1	7.99	=				1	3.12	=

Attachment G
Study Area 1. Summary of Volatile Fatty Acids in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETIC ACID			BUTYRIC ACID			FORMIC ACID		
					DF	Concentration	Qual	DF	Concentration	Qual	DF	Concentration	Qual
Area1	IW-5	23-Jan-03	IW5-EBT-TS7	MG/L	1	195 6	=	1	262 2	=			
Area1	IW-6	23-Jan-03	IW6-EBT-TS7	MG/L	10	837.1	=	10	508.7	=			
Area1	IW-7	23-Jan-03	IW7-EBT-TS7	MG/L	10	120	=	1	147 5	=			
Area1	MW-100B	22-Mar-02	MW100B-117-BL	MG/L	1	0.8	J				1	0.5	J
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2	MG/L	1	29 2	=	1	2	=			
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3	MG/L	1	181	=	1	44 3	=			
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4	MG/L	1	164	=	1	41.5	=			
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5	MG/L	1	78.5	=	1	49.9	=			
Area1	MW-100B	19-Dec-02	MW100B-EBT-TS6	MG/L	1	119.2	=	1	47	=			
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	MG/L	1	55.6	=	1	29	=	1	0 7	J
Area1	MW-100B	26-Feb-03	MW100B-EBT-TS8	MG/L	1	73.1	=	1	10 3	=			
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9	MG/L	1	13.4	=	1	0 8	J			
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10	MG/L	1	7 6	=	1	0 5	J			
Area1	MW-115	8-Jul-02	MW115-EBT-TS1	MG/L	1	43 1	=	1	1 5	=	1	5 9	=
Area1	MW-115	31-Jul-02	MW115-EBT-TS2	MG/L	1	21 5	=						
Area1	MW-115	4-Sep-02	MW115-EBT-TS3B	MG/L	1	27 8	=	1	6 7	=			
Area1	MW-115	8-Oct-02	MW115-EBT-TS4	MG/L	1	20 6	=	1	2 9	=			
Area1	MW-115	12-Nov-02	MW115-EBT-TS5	MG/L	1	25 7	J	1	6 2	=			
Area1	MW-115	17-Dec-02	MW115-EBT-TS6	MG/L				1	1 8	=			
Area1	MW-115	22-Jan-03	MW115-EBT-TS7	MG/L				1	0 4	J	1	0 7	J
Area1	MW-115	24-Feb-03	MW115-EBT-TS8	MG/L	1	2 9	=				1	0 5	J
Area1	MW-115	26-Mar-03	MW115-EBT-TS9	MG/L									
Area1	MW-115	22-Apr-03	MW115-EBT-TS10	MG/L	1	2 7	=						
Area1	MW-115	25-Jun-03	MW115-EBT-TS12	MG/L	1	2 3	=				1	0 6	J
Area1	MW-115	23-Jul-03	MW115-EBT-TS13	MG/L									
Area1	MW-116	9-Jul-02	MW116-EBT-TS1	MG/L	1	6 9	=						
Area1	MW-116	9-Oct-02	MW116-EBT-TS4	MG/L	1	1 9	=						
Area1	MW-116	13-Nov-02	MW116-EBT-TS5	MG/L	1	1 7	=						
Area1	MW-116	22-Jan-03	MW116-EBT-TS7	MG/L							1	0 6	J
Area1	MW-116	25-Feb-03	MW116-EBT-TS8	MG/L	1	2 6	=	1	1	=	1	0 5	J
Area1	MW-116	22-Apr-03	MW116-EBT-TS10	MG/L	1	2 7	=						
Area1	MW-116	22-Jul-03	MW116-EBT-TS13	MG/L									
Area1	MW-117	11-Jul-02	MW117-EBT-TS1	MG/L	1	92 5	=	1	15 9	=	1	3 9	=
Area1	MW-117	30-Jul-02	MW117-EBT-TS2	MG/L	1	103 1	=	1	24 2	=			
Area1	MW-117	5-Sep-02	MW117-EBT-TS3B	MG/L	10	130	=	1	31 7	=			
Area1	MW-117	9-Oct-02	MW117-EBT-TS4	MG/L	1	154 3	=	1	59 1	=			
Area1	MW-117	14-Nov-02	MW117-EBT-TS5	MG/L	1	173 6	=	1	67 4	=			
Area1	MW-117	18-Dec-02	MW117-EBT-TS6	MG/L	1	170 6	=	1	116 9	=			
Area1	MW-117	23-Jan-03	MW117-EBT-TS7	MG/L	1	119 3	=	1	113	=	1	2 2	=
Area1	MW-117	27-Feb-03	MW117-EBT-TS8	MG/L	1	254 3	=	1	101 7	=	1	2 2	=
Area1	MW-117	26-Mar-03	MW117-EBT-TS9	MG/L	5	224 6	=	5	135 9	=	1	2	=
Area1	MW-117	23-Apr-03	MW117-EBT-TS10	MG/L	1	45	=	1	25 4	=			
Area1	MW-117	21-May-03	MW117-EBT-TS11	MG/L	5	168 7	=	5	107 9	=			
Area1	MW-117	25-Jun-03	MW117-EBT-TS12	MG/L	1	101 2	=	1	104 6	=			
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	MG/L	1	71 5	=	1	85 1	=			
Area1	MW-118	9-Jul-02	MW118-EBT-TS1	MG/L	1	34 5	=				1	10 7	=
Area1	MW-118	30-Jul-02	MW118-EBT-TS2	MG/L	1	66 3	=	1	21 3	J			
Area1	MW-118	4-Sep-02	MW118-EBT-TS3B	MG/L	1	47 1	=	1	11 5	=			
Area1	MW-118	8-Oct-02	MW118-EBT-TS4	MG/L	1	46 8	=	1	12 8	=			
Area1	MW-118	12-Nov-02	MW118-EBT-TS5	MG/L	1	28 3	=	1	16 8	=			
Area1	MW-118	17-Dec-02	MW118-EBT-TS6	MG/L	1	24 4	=	1	15 4	=			
Area1	MW-118	21-Jan-03	MW118-EBT-TS7	MG/L	1	20 1	=	1	14 2	=	1	0 7	J
Area1	MW-118	25-Feb-03	MW118-EBT-TS8	MG/L	1	12 6	=	1	4 9	=	1	1	=
Area1	MW-118	25-Mar-03	MW118-EBT-TS9	MG/L	1	7 7	=						
Area1	MW-118	22-Apr-03	MW118-EBT-TS10	MG/L	1	9 2	=	1	1 4	=			
Area1	MW-118	22-Jul-03	MW118-EBT-TS13	MG/L	1	4 2	=						
Area1	MW-119	5-Sep-02	MW119-EBT-TS3	MG/L									
Area1	MW-119	27-Feb-03	MW119-EBT-TS8	MG/L	1	1 7	=						
Area1	MW-119	23-Apr-03	MW119-EBT-TS10	MG/L	1	1 7	=						
Area1	MW-120	10-Jul-02	MW120-EBT-TS1	MG/L	1	94 7	=	1	19 8	=	1	3 3	=
Area1	MW-120	30-Jul-02	MW120-EBT-TS2	MG/L				1	7 2	=			
Area1	MW-120	4-Sep-02	MW120-EBT-TS3B	MG/L	1	54 3	=	1	15 5	=			
Area1	MW-120	8-Oct-02	MW120-EBT-TS4	MG/L	1	29 8	=	1	10 5	=			
Area1	MW-120	13-Nov-02	MW120-EBT-TS5	MG/L	1	26 9	=	1	12 1	=	1	0 7	J
Area1	MW-120	13-Nov-02	MW120-EBT-TS5D	MG/L	10	28	=	1	11 9	=			
Area1	MW-120	17-Dec-02	MW120-EBT-TS6	MG/L	1	21 1	=	1	5 9	=			
Area1	MW-120	17-Dec-02	MW120-EBT-TS6D	MG/L	1	20 3	=	1	5 8	=			
Area1	MW-120	22-Jan-03	MW120-EBT-TS7	MG/L	1	17 6	=	1	11 9	=	1	0 6	J
Area1	MW-120	22-Jan-03	MW120-EBT-TS7D	MG/L	1	18 5	=	1	11	=	1	0 8	J
Area1	MW-120	25-Feb-03	MW120-EBT-TS8	MG/L	1	11 7	=	1	2 1	=			
Area1	MW-120	25-Feb-03	MW120-EBT-TS8D	MG/L	1	10 8	=	1	1 7	=	1	0 5	J
Area1	MW-120	25-Mar-03	MW120-EBT-TS9	MG/L	1	10 9	=						
Area1	MW-120	25-Mar-03	MW120-EBT-TS9D	MG/L	1	9 4	=						
Area1	MW-120	22-Apr-03	MW120-EBT-TS10	MG/L	1	9	=						
Area1	MW-120	22-Apr-03	MW120-EBT-TS10D	MG/L	1	8 9	=						
Area1	MW-120	20-May-03	MW120-EBT-TS11	MG/L	1	7 3	=						
Area1	MW-120	20-May-03	MW120-EBT-TS11D	MG/L	1	8 3	=						
Area1	MW-120	23-Jun-03	MW120-EBT-TS12	MG/L	1	8 9	=						
Area1	MW-120	23-Jun-03	MW120-EBT-TS12D	MG/L	1	8 3	=						
Area1	MW-120	22-Jul-03	MW120-EBT-TS13	MG/L	50	8	=						
Area1	MW-120	22-Jul-03	MW120-EBT-TS13D	MG/L	20	7 4	=						
Area1	MW-121	10-Jul-02	MW121EBT-TS1	MG/L	1	20 2	=						
Area1	MW-121	18-Dec-02	MW121-EBT-TS6	MG/L									
Area1	MW-121	27-Feb-03	MW121-EBT-TS8	MG/L	1	1 8	=						
Area1	MW-121	25-Mar-03	MW121-EBT-TS9	MG/L							1	0 8	J
Area1	MW-122	6-Sep-02	MW122-EBT-TS3	MG/L									
Area1	MW-122	9-Oct-02	MW122-EBT-TS4	MG/L	10	14 1	=	1	7	=			
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	MG/L	1	15	=	1	3 8	=			
Area1	MW-122	18-Dec-02	MW122-EBT-TS6	MG/L	1	17 4	=						
Area1	MW-122	21-Jan-03	MW122-EBT-TS7	MG/L				1	0 8	J	1	0 7	J
Area1	MW-122	25-Feb-03	MW122-EBT-TS8	MG/L	1	10 8	=				1	0 8	J
Area1	MW-122	26-Mar-03	MW122-EBT-TS9	MG/L	1	2 5	=						
Area1	MW-122	22-Apr-03	MW122-EBT-TS10	MG/L	1	6 2	=						
Area1	MW-122	22-Jul-03	MW122-EBT-TS13	MG/L									
Area1	MW-123	10-Jul-02	MW123-EBT-TS1	MG/L	1	27 6	=	1	0 5	J	1	2 2	=
Area1	MW-123	30-Jul-02	MW123-EBT-TS2	MG/L	1	98 5	=	1	28 4	=			
Area1	MW-123	5-Sep-02	MW123-EBT-TS3	MG/L	10	83 6	=	1	20 6	=			
Area1	MW-123	10-Oct-02	MW123-EBT-TS4	MG/L	1	76 3	J	1	28 9	J			
Area1	MW-123	13-Nov-02	MW123-EBT-TS5	MG/L	1	65 9	=	1	23 5	=			
Area1	MW-123	18-Dec-02	MW123-EBT-TS6	MG/L	1	29 8	=	1	20 2	=			
Area1	MW-123	22-Jan-03	MW123-EBT-TS7	MG/L	1	42 6	=	1	17 7	=	1	0 9	J
Area1	MW-123	26-Feb-03	MW123-EBT-TS8	MG/L	1	32 1	=	1	7 4	=			
Area1	MW-123	27-Mar-03	MW123-EBT-TS9	MG/L	1	16 3	=	1	2 1	=			
Area1	MW-123	23-Apr-03	MW123-EBT-TS10	MG/L	1	54 9	=	1	20 7	=			

Attachment G
Study Area 1: Summary of Volatile Fatty Acids in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETIC ACID			BUTYRIC ACID			FORMIC ACID		
					[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Area1	MW-123	21-May-03	MW123-EBT-TS11	MG/L	1	16.6	=	1	5	=			
Area1	MW-123	25-Jun-03	MW123-EBT-TS12	MG/L	1	15.5	=	1	1.6	=			
Area1	MW-123	23-Jul-03	MW123-EBT-TS13	MG/L	1	11.6	=						
Area1	MW-124	12-Nov-02	MW124-EBT-TS5	MG/L	1	1.7	=						
Area1	MW-124	21-Jan-03	MW124-EBT-TS7	MG/L							1	0.7	J
Area1	MW-124	25-Feb-03	MW124-EBT-TS8	MG/L	1	1.8	=						
Area1	MW-124	23-Apr-03	MW124-EBT-TS10	MG/L	1	2.4	=						
Area1	MW-124	20-May-03	MW124-EBT-TS11	MG/L									
Area1	MW-125	10-Jul-02	MW125-EBT-TS1	MG/L	1	41.9	=	1	1	J			
Area1	MW-125	30-Jul-02	MW125-EBT-TS2	MG/L	1	41.6	=	1	3.5	=			
Area1	MW-125	5-Sep-02	MW125-EBT-TS3	MG/L	1	18.9	=	1	0.9	J			
Area1	MW-125	12-Nov-02	MW125-EBT-TS5	MG/L									
Area1	MW-125	18-Dec-02	MW125-EBT-TS6	MG/L									
Area1	MW-125	21-Jan-03	MW125-EBT-TS7	MG/L									
Area1	MW-125	26-Feb-03	MW125-EBT-TS8	MG/L	1	2.9	=						
Area1	MW-125	23-Apr-03	MW125-EBT-TS10	MG/L	1	2.2	=						
Area1	MW-125	22-May-03	MW125-EBT-TS11	MG/L	1	2.3	=	1	0.3	J			
Area1	MW-125	25-Jun-03	MW125-EBT-TS12	MG/L									
Area1	MW-125	23-Jul-03	MW125-EBT-TS13	MG/L									
Area1	MW-21	21-Mar-02	MW21-BL	MG/L	1	0.6	J				1	0.3	J
Area1	MW-21	20-Jan-03	MW21-EBT-TS7	MG/L							1	3.9	=
Area1	MW-21	24-Feb-03	MW21-EBT-TS8	MG/L							1	0.6	J
Area1	MW-21	21-Jul-03	MW21-EBT-TS13	MG/L									

Attachment G
Study Area 1: Summary of Volatile Fatty Acids in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	LACTIC ACID			PROPIONIC ACID			PYRUVIC ACID		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	23-Jan-03	IW5-EBT-TS7	MG/L				1	104.6	=			
Area1	IW-6	23-Jan-03	IW6-EBT-TS7	MG/L				10	239.2	=			
Area1	IW-7	23-Jan-03	IW7-EBT-TS7	MG/L				10	94.3	=			
Area1	MW-100B	22-Mar-02	MW100B-117-BL	MG/L	1	0.7	J						
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2	MG/L				1	37.5	=			
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3	MG/L	1	0.7	J	1	379.3	=			
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4	MG/L				5	229.2	=			
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5	MG/L				1	180.3	=			
Area1	MW-100B	19-Dec-02	MW100B-EBT-TS6	MG/L	1	0.2	J	1	199.8	=			
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	MG/L				5	167.6	=			
Area1	MW-100B	26-Feb-03	MW100B-EBT-TS8	MG/L				1	77.6	=			
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9	MG/L				1	29.1	=			
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10	MG/L				1	9.6	=			
Area1	MW-115	8-Jul-02	MW115-EBT-TS1	MG/L				1	49.6	=			
Area1	MW-115	31-Jul-02	MW115-EBT-TS2	MG/L	1	0.7	J	1	20.3	=			
Area1	MW-115	4-Sep-02	MW115-EBT-TS3B	MG/L				1	30.3	=			
Area1	MW-115	8-Oct-02	MW115-EBT-TS4	MG/L				1	28.6	=			
Area1	MW-115	12-Nov-02	MW115-EBT-TS5	MG/L				1	29.7	J			
Area1	MW-115	17-Dec-02	MW115-EBT-TS6	MG/L				1	17.7	=			
Area1	MW-115	22-Jan-03	MW115-EBT-TS7	MG/L				1	21.1	=			
Area1	MW-115	24-Feb-03	MW115-EBT-TS8	MG/L				1	13.4	=			
Area1	MW-115	26-Mar-03	MW115-EBT-TS9	MG/L				1	2.5	=			
Area1	MW-115	22-Apr-03	MW115-EBT-TS10	MG/L				1	7.1	=			
Area1	MW-115	25-Jun-03	MW115-EBT-TS12	MG/L				1	3.5	=			
Area1	MW-115	23-Jul-03	MW115-EBT-TS13	MG/L							1	4	J
Area1	MW-116	9-Jul-02	MW116-EBT-TS1	MG/L				1	3.7	=			
Area1	MW-116	9-Oct-02	MW116-EBT-TS4	MG/L									
Area1	MW-116	13-Nov-02	MW116-EBT-TS5	MG/L				1	6.5	=			
Area1	MW-116	22-Jan-03	MW116-EBT-TS7	MG/L				1	1.8	=			
Area1	MW-116	25-Feb-03	MW116-EBT-TS8	MG/L				5	5.4	=			
Area1	MW-116	22-Apr-03	MW116-EBT-TS10	MG/L				1	3.8	=			
Area1	MW-116	22-Jul-03	MW116-EBT-TS13	MG/L							20	4.2	=
Area1	MW-117	11-Jul-02	MW117-EBT-TS1	MG/L				20	139.8	=			
Area1	MW-117	30-Jul-02	MW117-EBT-TS2	MG/L	1	1.3	=	5	216.5	=			
Area1	MW-117	5-Sep-02	MW117-EBT-TS3B	MG/L				10	201.4	=			
Area1	MW-117	9-Oct-02	MW117-EBT-TS4	MG/L				100	190.3	=			
Area1	MW-117	14-Nov-02	MW117-EBT-TS5	MG/L				1	181.5	=			
Area1	MW-117	18-Dec-02	MW117-EBT-TS6	MG/L	100	0.2	J	1	231.1	=			
Area1	MW-117	23-Jan-03	MW117-EBT-TS7	MG/L				1	219	=			
Area1	MW-117	27-Feb-03	MW117-EBT-TS8	MG/L				1	164.2	=			
Area1	MW-117	26-Mar-03	MW117-EBT-TS9	MG/L				5	174	=			
Area1	MW-117	23-Apr-03	MW117-EBT-TS10	MG/L				1	30.6	=			
Area1	MW-117	21-May-03	MW117-EBT-TS11	MG/L				5	137.8	=			
Area1	MW-117	25-Jun-03	MW117-EBT-TS12	MG/L	1	1.1	=	1	138.9	=			
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	MG/L				1	122	=	1	4.3	=
Area1	MW-118	9-Jul-02	MW118-EBT-TS1	MG/L	1	0.9	J	1	42	=			
Area1	MW-118	30-Jul-02	MW118-EBT-TS2	MG/L				1	147.6	=			
Area1	MW-118	4-Sep-02	MW118-EBT-TS3B	MG/L	1	0.4	J	1	41.7	=			
Area1	MW-118	8-Oct-02	MW118-EBT-TS4	MG/L				1	77	=			
Area1	MW-118	12-Nov-02	MW118-EBT-TS5	MG/L				1	46.5	=			
Area1	MW-118	17-Dec-02	MW118-EBT-TS6	MG/L				1	32.2	=			
Area1	MW-118	21-Jan-03	MW118-EBT-TS7	MG/L				1	38.9	=			
Area1	MW-118	25-Feb-03	MW118-EBT-TS8	MG/L				1	45.4	=			
Area1	MW-118	25-Mar-03	MW118-EBT-TS9	MG/L				1	5.6	=	1	4.1	=
Area1	MW-118	22-Apr-03	MW118-EBT-TS10	MG/L				1	26	=			
Area1	MW-118	22-Jul-03	MW118-EBT-TS13	MG/L				1	10.1	=	1	4.1	=
Area1	MW-119	5-Sep-02	MW119-EBT-TS3	MG/L	100	0.6	J						
Area1	MW-119	27-Feb-03	MW119-EBT-TS8	MG/L									
Area1	MW-119	23-Apr-03	MW119-EBT-TS10	MG/L				1	1.6	=			
Area1	MW-120	10-Jul-02	MW120-EBT-TS1	MG/L				1	157.2	=			
Area1	MW-120	30-Jul-02	MW120-EBT-TS2	MG/L				1	41.6	=			
Area1	MW-120	4-Sep-02	MW120-EBT-TS3B	MG/L	1	0.6	J	1	86.2	=			
Area1	MW-120	8-Oct-02	MW120-EBT-TS4	MG/L				1	95.7	=	1	5.4	=
Area1	MW-120	13-Nov-02	MW120-EBT-TS5	MG/L				1	59.5	=			
Area1	MW-120	13-Nov-02	MW120-EBT-TS5D	MG/L				10	59.7	=			
Area1	MW-120	17-Dec-02	MW120-EBT-TS6	MG/L				1	57.1	=	1	4.6	=
Area1	MW-120	17-Dec-02	MW120-EBT-TS6D	MG/L				1	56.1	=	1	4.5	=
Area1	MW-120	22-Jan-03	MW120-EBT-TS7	MG/L				1	43.1	=	1	3.6	J
Area1	MW-120	22-Jan-03	MW120-EBT-TS7D	MG/L				1	42.5	=	1	3.9	J
Area1	MW-120	25-Feb-03	MW120-EBT-TS8	MG/L				1	29.4	=			
Area1	MW-120	25-Feb-03	MW120-EBT-TS8D	MG/L				1	28.3	=	1	3.9	J
Area1	MW-120	25-Mar-03	MW120-EBT-TS9	MG/L				1	10.7	=	1	3.7	J
Area1	MW-120	25-Mar-03	MW120-EBT-TS9D	MG/L				1	9.5	=	1	3.8	J
Area1	MW-120	22-Apr-03	MW120-EBT-TS10	MG/L				1	10.7	=			
Area1	MW-120	22-Apr-03	MW120-EBT-TS10D	MG/L				1	10.9	=			
Area1	MW-120	20-May-03	MW120-EBT-TS11	MG/L				1	5.4	=			
Area1	MW-120	20-May-03	MW120-EBT-TS11D	MG/L	1	5.7	=	1	6.4	=			
Area1	MW-120	23-Jun-03	MW120-EBT-TS12	MG/L				1	1.9	=			
Area1	MW-120	23-Jun-03	MW120-EBT-TS12D	MG/L				1	1.6	=			
Area1	MW-120	22-Jul-03	MW120-EBT-TS13	MG/L				50	3.1	=	50	4.3	=
Area1	MW-120	22-Jul-03	MW120-EBT-TS13D	MG/L				20	3.2	=	5	4.4	=
Area1	MW-121	10-Jul-02	MW121EBT-TS1	MG/L				1	25.9	=			
Area1	MW-121	18-Dec-02	MW121-EBT-TS6	MG/L	1	2.2	=						
Area1	MW-121	27-Feb-03	MW121-EBT-TS8	MG/L									
Area1	MW-121	25-Mar-03	MW121-EBT-TS9	MG/L									
Area1	MW-122	6-Sep-02	MW122-EBT-TS3	MG/L				1	3.9	=			
Area1	MW-122	9-Oct-02	MW122-EBT-TS4	MG/L	100	1.3	=	10	15.5	=	1	4.9	=
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	MG/L				1	10.2	=	1	4.7	=
Area1	MW-122	18-Dec-02	MW122-EBT-TS6	MG/L	1	0.2	J				1	4	=
Area1	MW-122	21-Jan-03	MW122-EBT-TS7	MG/L				1	4.6	=			
Area1	MW-122	25-Feb-03	MW122-EBT-TS8	MG/L				1	4.1	=			
Area1	MW-122	26-Mar-03	MW122-EBT-TS9	MG/L	1	6.3	=	1	3	=			
Area1	MW-122	22-Apr-03	MW122-EBT-TS10	MG/L				1	3.2	=			
Area1	MW-122	22-Jul-03	MW122-EBT-TS13	MG/L							20	5	=
Area1	MW-123	10-Jul-02	MW123-EBT-TS1	MG/L				1	22.8	=			
Area1	MW-123	30-Jul-02	MW123-EBT-TS2	MG/L	1	1.6	=	1	162.1	=			
Area1	MW-123	5-Sep-02	MW123-EBT-TS3	MG/L				10	122.6	=			
Area1	MW-123	10-Oct-02	MW123-EBT-TS4	MG/L				1	108.1	J			
Area1	MW-123	13-Nov-02	MW123-EBT-TS5	MG/L				1	94.1	=			
Area1	MW-123	18-Dec-02	MW123-EBT-TS6	MG/L	1	0.2	J	1	86.3	=			
Area1	MW-123	22-Jan-03	MW123-EBT-TS7	MG/L				1	80.6	=	1	4.8	=
Area1	MW-123	26-Feb-03	MW123-EBT-TS8	MG/L				1	74.5	=			
Area1	MW-123	27-Mar-03	MW123-EBT-TS9	MG/L	1	24.2	=	1	56.7	=	1	4.3	=
Area1	MW-123	23-Apr-03	MW123-EBT-TS10	MG/L	1	53.2	=	1	94.6	=			

Attachment G
Study Area 1: Summary of Volatile Fatty Acids in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	LACTIC ACID			PROPIONIC ACID			PYRUVIC ACID		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	MW-123	21-May-03	MW123-EBT-TS11	MG/L	1	13.2	=	1	45.1	=			
Area1	MW-123	25-Jun-03	MW123-EBT-TS12	MG/L	1	1.2	=	1	33.9	=			
Area1	MW-123	23-Jul-03	MW123-EBT-TS13	MG/L				1	24.1	=	1	4.9	=
Area1	MW-124	12-Nov-02	MW124-EBT-TS5	MG/L				1	6.5	=			
Area1	MW-124	21-Jan-03	MW124-EBT-TS7	MG/L									
Area1	MW-124	25-Feb-03	MW124-EBT-TS8	MG/L				1	1.6	=			
Area1	MW-124	23-Apr-03	MW124-EBT-TS10	MG/L	1	2.3	=	1	3.1	=			
Area1	MW-124	20-May-03	MW124-EBT-TS11	MG/L							1	4.2	=
Area1	MW-125	10-Jul-02	MW125-EBT-TS1	MG/L				1	70.2	=			
Area1	MW-125	30-Jul-02	MW125-EBT-TS2	MG/L				1	59.7	=			
Area1	MW-125	5-Sep-02	MW125-EBT-TS3	MG/L				1	30.9	=			
Area1	MW-125	12-Nov-02	MW125-EBT-TS5	MG/L				1	2.4	=			
Area1	MW-125	18-Dec-02	MW125-EBT-TS6	MG/L				10	17.2	=			
Area1	MW-125	21-Jan-03	MW125-EBT-TS7	MG/L				1	7.6	=			
Area1	MW-125	26-Feb-03	MW125-EBT-TS8	MG/L				1	3.9	=			
Area1	MW-125	23-Apr-03	MW125-EBT-TS10	MG/L	1	0.6	J	1	2.2	=			
Area1	MW-125	22-May-03	MW125-EBT-TS11	MG/L	1	33.9	=	1	3.1	=			
Area1	MW-125	25-Jun-03	MW125-EBT-TS12	MG/L	1	0.2	J						
Area1	MW-125	23-Jul-03	MW125-EBT-TS13	MG/L							1	4.1	=
Area1	MW-21	21-Mar-02	MW21-BL	MG/L	1	0.5	J						
Area1	MW-21	20-Jan-03	MW21-EBT-TS7	MG/L									
Area1	MW-21	24-Feb-03	MW21-EBT-TS8	MG/L									
Area1	MW-21	21-Jul-03	MW21-EBT-TS13	MG/L							50	3.9	J

Attachment G
Study Area 1: Summary of Metals in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ARSENIC			MANGANESE			SELENIUM		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B	UG/L				1	844	=			
Area1	IW-5	23-Jan-03	IW5-EBT-TS7	UG/L				1	2580	=			
Area1	IW-6	21-May-02	IW6-EBT-B	UG/L				1	299	=			
Area1	IW-6	23-Jan-03	IW6-EBT-TS7	UG/L	50	274	=	1	3980	=	50	454	=
Area1	IW-7	21-May-02	IW7-EBT-B	UG/L				1	78.2	=			
Area1	IW-7	23-Jan-03	IW7-EBT-TS7	UG/L	1	19	=	1	1420	=	1	13	=
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3	UG/L				1	2920	=			
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4	UG/L				1	2120	=			
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5	UG/L				1	3580	=			
Area1	MW-100B	19-Dec-02	MW100B-EBT-TS6	UG/L				1	4910	=			
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	UG/L				1	6740	=			
Area1	MW-100B	26-Feb-03	MW100B-EBT-TS8	UG/L				1	4600	=			
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9	UG/L				1	5180	=			
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10	UG/L				1	4690	=			
Area1	MW-100B	19-May-03	MW100B-EBT-TS11	UG/L				1	4220	=			
Area1	MW-100B	25-Jun-03	MW100B-EBT-TS12	UG/L				1	3200	=			
Area1	MW-100B	23-Jul-03	MW100B-EBT-TS13	UG/L				1	3260	=			
Area1	MW-115	21-May-02	MW115-EBT-B	UG/L				1	296	=			
Area1	MW-115	8-Jul-02	MW115-EBT-TS1	UG/L				1	83 1	=			
Area1	MW-115	5-Sep-02	MW115-EBT-TS3	UG/L				1	467	=			
Area1	MW-115	8-Oct-02	MW115-EBT-TS4	UG/L				1	514	=			
Area1	MW-115	12-Nov-02	MW115-EBT-TS5	UG/L				1	430	=			
Area1	MW-115	17-Dec-02	MW115-EBT-TS6	UG/L				1	262	=			
Area1	MW-115	22-Jan-03	MW115-EBT-TS7	UG/L				1	255	=			
Area1	MW-115	24-Feb-03	MW115-EBT-TS8	UG/L				1	230	=			
Area1	MW-115	21-May-03	MW115-EBT-TS11	UG/L				1	143	=			
Area1	MW-115	25-Jun-03	MW115-EBT-TS12	UG/L				1	125	=			
Area1	MW-116	22-May-02	MW116-EBT-B	UG/L				1	9 5	J			
Area1	MW-116	6-Sep-02	MW116-EBT-Ts3	UG/L				1	160	=			
Area1	MW-116	9-Oct-02	MW116-EBT-TS4	UG/L				1	169	=			
Area1	MW-116	13-Nov-02	MW116-EBT-TS5	UG/L				1	187	=			
Area1	MW-116	20-May-03	MW116-EBT-TS11	UG/L				1	49.6	=			
Area1	MW-117	11-Jul-02	MW117-EBT-TS1	UG/L				1	193	=			
Area1	MW-117	5-Sep-02	MW117-EBT-TS3	UG/L				1	626	=			
Area1	MW-117	9-Oct-02	MW117-EBT-TS4	UG/L				1	867	=			
Area1	MW-117	14-Nov-02	MW117-EBT-TS5	UG/L				1	1250	=			
Area1	MW-117	18-Dec-02	MW117-EBT-TS6	UG/L				1	2120	=			
Area1	MW-117	23-Jan-03	MW117-EBT-TS7	UG/L				1	2300	=			
Area1	MW-117	27-Feb-03	MW117-EBT-TS8	UG/L				1	2100	=			
Area1	MW-117	26-Mar-03	MW117-EBT-TS9	UG/L				1	2860	=			
Area1	MW-117	23-Apr-03	MW117-EBT-TS10	UG/L				1	2160	=			
Area1	MW-117	21-May-03	MW117-EBT-TS11	UG/L				1	2370	=			
Area1	MW-117	25-Jun-03	MW117-EBT-TS12	UG/L				1	2380	=			
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	UG/L				1	2050	=			
Area1	MW-118	22-May-02	MW118-EBT-B	UG/L				1	91.8	=			
Area1	MW-118	6-Sep-02	MW118-EBT-TS3	UG/L				1	310	=			
Area1	MW-118	8-Oct-02	MW118-EBT-TS4	UG/L				1	473	=			
Area1	MW-118	12-Nov-02	MW118-EBT-TS5	UG/L				1	625	=			
Area1	MW-118	17-Dec-02	MW118-EBT-TS6	UG/L				1	618	=			
Area1	MW-118	21-Jan-03	MW118-EBT-TS7	UG/L				1	475	=			
Area1	MW-118	25-Feb-03	MW118-EBT-TS8	UG/L				1	606	=			
Area1	MW-118	25-Mar-03	MW118-EBT-TS9	UG/L				1	338	=			
Area1	MW-118	20-May-03	MW118-EBT-TS11	UG/L				1	307	=			
Area1	MW-118	24-Jun-03	MW118-EBT-TS12	UG/L				1	178	=			
Area1	MW-118	22-Jul-03	MW118-EBT-TS13	UG/L				1	266	=			
Area1	MW-119	22-May-02	MW119-EBT-B	UG/L				1	71 7	=			
Area1	MW-119	21-Jan-03	MW119-EBT-TS7	UG/L				1	803	=			
Area1	MW-120	22-May-02	MW120-EBT-B	UG/L				1	37	=			
Area1	MW-120	5-Sep-02	MW120-EBT-TS3	UG/L				1	519	=			
Area1	MW-120	8-Oct-02	MW120-EBT-TS4	UG/L				1	899	=			
Area1	MW-120	13-Nov-02	MW120-EBT-TS5	UG/L				1	561	=			
Area1	MW-120	13-Nov-02	MW120-EBT-TS5D	UG/L				1	577	=			
Area1	MW-120	17-Dec-02	MW120-EBT-TS6	UG/L				1	496	=			
Area1	MW-120	17-Dec-02	MW120-EBT-TS6D	UG/L				1	500	=			
Area1	MW-120	22-Jan-03	MW120-EBT-TS7	UG/L				1	497	=			
Area1	MW-120	22-Jan-03	MW120-EBT-TS7D	UG/L				1	511	=			
Area1	MW-120	25-Feb-03	MW120-EBT-TS8	UG/L				1	387	=			
Area1	MW-120	25-Feb-03	MW120-EBT-TS8D	UG/L				1	398	=			
Area1	MW-120	25-Mar-03	MW120-EBT-TS9	UG/L				1	388	=			
Area1	MW-120	25-Mar-03	MW120-EBT-TS9D	UG/L				1	387	=			
Area1	MW-120	20-May-03	MW120-EBT-TS11	UG/L				1	265	=			
Area1	MW-120	20-May-03	MW120-EBT-TS11D	UG/L				1	272	=			
Area1	MW-120	23-Jun-03	MW120-EBT-TS12	UG/L				1	292	=			
Area1	MW-120	23-Jun-03	MW120-EBT-TS12D	UG/L				1	279	=			
Area1	MW-120	22-Jul-03	MW120-EBT-TS13	UG/L				1	230	=			
Area1	MW-120	22-Jul-03	MW120-EBT-TS13D	UG/L				1	236	=			
Area1	MW-121	22-May-02	MW121-EBT-B	UG/L				1	44.8	=			
Area1	MW-121	22-May-02	MW121-EBT-B-D	UG/L				1	49.7	=			
Area1	MW-121	10-Jul-02	MW121-EBT-TS1	UG/L				1	61.6	=			
Area1	MW-121	5-Sep-02	MW121-EBT-TS3	UG/L				1	137	=			
Area1	MW-121	8-Oct-02	MW121-EBT-TS4	UG/L				1	131	=			
Area1	MW-121	12-Nov-02	MW121-EBT-TS5	UG/L				1	116	=			
Area1	MW-121	21-May-03	MW121-EBT-TS11	UG/L				1	67.9	=			
Area1	MW-122	23-May-02	MW122-EBT-B	UG/L				1	25.7	=			
Area1	MW-122	11-Jul-02	MW122-EBT-TS1	UG/L				1	55 1	=			
Area1	MW-122	6-Sep-02	MW122-EBT-TS3	UG/L				1	332	=			
Area1	MW-122	9-Oct-02	MW122-EBT-TS4	UG/L				1	1100	=			
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	UG/L				1	926	=			
Area1	MW-122	18-Dec-02	MW122-EBT-TS6	UG/L				1	683	=			
Area1	MW-122	21-Jan-03	MW122-EBT-TS7	UG/L				1	490	=			
Area1	MW-122	25-Feb-03	MW122-EBT-TS8	UG/L				1	344	=			
Area1	MW-122	26-Mar-03	MW122-EBT-TS9	UG/L				1	376	=			
Area1	MW-122	20-May-03	MW122-EBT-TS11	UG/L				1	312	=			
Area1	MW-122	24-Jun-03	MW122-EBT-TS12	UG/L				1	275	=			
Area1	MW-122	22-Jul-03	MW122-EBT-TS13	UG/L				1	281	=			
Area1	MW-123	23-May-02	MW123-EBT-B	UG/L				1	43 7	=			
Area1	MW-123	5-Sep-02	MW123-EBT-TS3	UG/L				1	479	=			
Area1	MW-123	10-Oct-02	MW123-EBT-TS4	UG/L				1	508	=			
Area1	MW-123	10-Oct-02	MW123-EBT-TS4D	UG/L				1	514	=			
Area1	MW-123	13-Nov-02	MW123-EBT-TS5	UG/L				1	747	=			
Area1	MW-123	18-Dec-02	MW123-EBT-TS6	UG/L				1	996	=			
Area1	MW-123	22-Jan-03	MW123-EBT-TS7	UG/L	1	35	=	1	1000	=	1	9 17	=
Area1	MW-123	26-Feb-03	MW123-EBT-TS8	UG/L				1	868	=			
Area1	MW-123	27-Mar-03	MW123-EBT-TS9	UG/L				1	859	=			
Area1	MW-123	23-Apr-03	MW123-EBT-TS10	UG/L				1	766	=			
Area1	MW-123	21-May-03	MW123-EBT-TS11	UG/L				1	807	=			
Area1	MW-123	25-Jun-03	MW123-EBT-TS12	UG/L				1	843	=			
Area1	MW-123	23-Jul-03	MW123-EBT-TS13	UG/L				1	884	=			
Area1	MW-124	23 May-02	MW124-EBT-B	UG/L				1	22 5	=			
Area1	MW-124	10-Jul-02	MW124-EBT-TS1	UG/L				1	104	=			

Attachment G
Study Area 1: Summary of Metals in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ARSENIC			MANGANESE			SELENIUM		
					[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Area1	MW-124	10-Jul-02	MW124-EBT-TS1-D	UG/L				1	116	=			
Area1	MW-124	3-Sep-02	MW124-EBT-TS3	UG/L				1	580	=			
Area1	MW-124	9-Oct-02	MW124-EBT-TS4	UG/L				1	515	=			
Area1	MW-124	12-Nov-02	MW124-EBT-TS5	UG/L				1	328	=			
Area1	MW-124	17-Dec-02	MW124-EBT-TS6	UG/L				1	216	=			
Area1	MW-124	20-May-03	MW124-EBT-TS11	UG/L				1	53.2	=			
Area1	MW-125	23-May-02	MW125-EBT-B	UG/L				1	11	=			
Area1	MW-125	10-Jul-02	MW125-EBT-TS1	UG/L				1	120	=			
Area1	MW-125	5-Sep-02	MW125-EBT-TS3	UG/L				1	956	=			
Area1	MW-125	9-Oct-02	MW125-EBT-TS4	UG/L				1	404	=			
Area1	MW-125	12-Nov-02	MW125-EBT-TS5	UG/L				1	928	=			
Area1	MW-125	18-Dec-02	MW125-EBT-TS6	UG/L				1	747	=			
Area1	MW-125	21-Jan-03	MW125-EBT-TS7	UG/L				1	683	=			
Area1	MW-125	26-Feb-03	MW125-EBT-TS8	UG/L				1	563	=			
Area1	MW-125	26-Mar-03	MW125-EBT-TS9	UG/L				1	677	=			
Area1	MW-125	22-May-03	MW125-EBT-TS11	UG/L				1	429	=			
Area1	MW-125	25-Jun-03	MW125-EBT-TS12	UG/L				1	344	=			
Area1	MW-125	23-Jul-03	MW125-EBT-TS13	UG/L				1	335	=			

Attachment
Study Area 1: Summary of VOCs in Soil
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETONE			BENZENE			BROMOFORM			CARBON DISULFIDE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	18-Apr-02	IW5-82.5	UG/KG							1.01	18.9	=			
Area1	IW-7	23-Jan-03	IW7-EBT-TS7-OIL	UG/KG												
Area1	MW-100	8-Oct-01	MW-100-92.5	UG/KG	1	9.3	J				1	0.92	J			
Area1	MW-116	21-Apr-02	MW116-52 5	UG/KG	0.96	12.6	=				0.96	1 5	J	0.96	1.62	J
Area1	MW-116	21-Apr-02	MW116-52 5D	UG/KG	0 93	16	=	0.93	0.64	J				0.93	2.76	J
Area1	MW-117	1-Aug-02	MW117-EBT-TS2-OIL	UG/KG												
Area1	MW-117	5-Sep-02	MW117EBT-TS3-OIL	UG/KG												
Area1	MW-117	9-Oct-02	MW117-EBT-TS4-OIL	UG/KG												
Area1	MW-117	13-Nov-02	MW117-EBT-TS5-OIL	UG/KG												
Area1	MW-117	18-Dec-02	MW117-EBT-TS6-OIL	UG/KG												
Area1	MW-120	19-Apr-02	MW120-62.5	UG/KG							0.94	13.6	=			
Area1	MW-123	5-Sep-02	MW123-EBT-TS3-OIL	UG/KG												

Area	StationID	DateCollected	Sample	Unit	DIBROMOCHLOROMETHANE			DIBROMOMETHANE			METHYL ETHYL KETONE			METHYLENE CHLORIDE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	18-Apr-02	IW5-82.5	UG/KG	1.01	0 564	J									
Area1	IW-7	23-Jan-03	IW7-EBT-TS7-OIL	UG/KG												
Area1	MW-100	8-Oct-01	MW-100-92.5	UG/KG										1	1.9	J
Area1	MW-116	21-Apr-02	MW116-52 5	UG/KG				0.96	0.963	J	0 96	4.53	J			
Area1	MW-116	21-Apr-02	MW116-52 5D	UG/KG							0.93	5.97	J			
Area1	MW-117	1-Aug-02	MW117-EBT-TS2-OIL	UG/KG												
Area1	MW-117	5-Sep-02	MW117EBT-TS3-OIL	UG/KG												
Area1	MW-117	9-Oct-02	MW117-EBT-TS4-OIL	UG/KG												
Area1	MW-117	13-Nov-02	MW117-EBT-TS5-OIL	UG/KG												
Area1	MW-117	18-Dec-02	MW117-EBT-TS6-OIL	UG/KG							500	1530	J			
Area1	MW-120	19-Apr-02	MW120-62.5	UG/KG												
Area1	MW-123	5-Sep-02	MW123-EBT-TS3-OIL	UG/KG												

Area	StationID	DateCollected	Sample	Unit	TETRACHLOROETHYLENE			TOLUENE			TRICHLOROETHYLENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	18-Apr-02	IW5-82.5	UG/KG							1.01	0 612	J
Area1	IW-7	23-Jan-03	IW7-EBT-TS7-OIL	UG/KG	500	274	J						
Area1	MW-100	8-Oct-01	MW-100-92 5	UG/KG	1	1.1	J				1	65	=
Area1	MW-116	21-Apr-02	MW116-52.5	UG/KG				0 96	0.589	J			
Area1	MW-116	21-Apr-02	MW116-52.5D	UG/KG				0.93	0.782	J	0 93	2.43	J
Area1	MW-117	1-Aug-02	MW117-EBT-TS2-OIL	UG/KG	500	265	J				500	972	J
Area1	MW-117	5-Sep-02	MW117EBT-TS3-OIL	UG/KG	500	1070	J				500	3240	=
Area1	MW-117	9-Oct-02	MW117-EBT-TS4-OIL	UG/KG	500	1330	J				500	2690	=
Area1	MW-117	13-Nov-02	MW117-EBT-TS5-OIL	UG/KG	500	1360	J				500	3100	=
Area1	MW-117	18-Dec-02	MW117-EBT-TS6-OIL	UG/KG	500	809	J	500	481	J	500	2350	J
Area1	MW-120	19-Apr-02	MW120-62.5	UG/KG							0.94	2.18	J
Area1	MW-123	5-Sep-02	MW123-EBT-TS3-OIL	UG/KG	500	6860	=				500	25200	=

Attachment G
Study Area1 Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,1,1,2-TETRACHLOROETHANE			1,1,2,2-TETRACHLOROETHANE			1,1-DICHLOROETHENE			1,2,3-TRICHLOROBENZENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B-105-110	UG/L												
Area1	IW-6	20-Jan-03	IW6-EBT-TS7-102-107	UG/L												
Area1	IW-6	21-May-02	IW6-EBT-B-101-106	UG/L												
Area1	IW-6	20-Jan-03	IW6-EBT-TS7-101-106	UG/L												
Area1	IW-7	21-May-02	IW7-EBT-B-102-107	UG/L												
Area1	IW-7	20-Jan-03	IW7-EBT-TS7-102-107	UG/L												
Area1	MW-100	11-Dec-01	MW-100-1	UG/L				1	17	=	1	0.13	J			
Area1	MW-100	11-Dec-01	MW-100-2	UG/L				1	0.38	J	1	0.12	J			
Area1	MW-100	11-Dec-01	MW-100-3	UG/L				1	0.42	J	1	0.14	J			
Area1	MW-100	11-Dec-01	MW-100-4	UG/L							1	0.28	J			
Area1	MW-100	11-Dec-01	MW-100-5	UG/L				1	0.59	J	1	0.29	J			
Area1	MW-100	11-Dec-01	MW-100-6	UG/L				1	0.12	J						
Area1	MW-100	11-Dec-01	MW-100-7	UG/L				1	0.15	J	1	0.2	J			
Area1	MW-100	11-Dec-01	MW-100-8	UG/L				1	0.23	J	1	0.21	J			
Area1	MW-100	11-Dec-01	MW-100-9	UG/L				1	0.13	J	1	0.18	J			
Area1	MW-100	11-Dec-01	MW-100-10	UG/L				1	0.1	J	1	0.26	J			
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115	UG/L												
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115D	UG/L												
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2-110-115	UG/L												
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3-110-115	UG/L												
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115	UG/L												
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115D	UG/L												
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5-110-115	UG/L												
Area1	MW-100B	16-Dec-02	MW100B-EBT-TS6-100-115	UG/L												
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	UG/L												
Area1	MW-100B	24-Feb-03	MW100B-EBT-TS8-110-115	UG/L										1	0.168	J
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9-100-115	UG/L												
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10-110-115	UG/L												
Area1	MW-100B	19-May-03	MW100B-EBT-TS11-110-115	UG/L												
Area1	MW-100B	23-Jun-03	MW100B-EBT-TS12-110-115	UG/L												
Area1	MW-100B	21-Jul-03	MW100B-EBT-TS13-110-115	UG/L												
Area1	MW-115	21-May-02	MW115-EBT-B-94-99	UG/L												
Area1	MW-115	8-Jul-02	MW115-EBT-TS1-94-99	UG/L												
Area1	MW-115	29-Jul-02	MW115-EBT-TS2-94-99	UG/L												
Area1	MW-115	3-Sep-02	MW115-EBT-TS3-94-99	UG/L												
Area1	MW-115	7-Oct-02	MW115-EBT-TS4-94-99	UG/L												
Area1	MW-115	11-Nov-02	MW115-EBT-TS5-94-99	UG/L												
Area1	MW-115	16-Dec-02	MW115-EBT-TS6-94-99	UG/L												
Area1	MW-115	20-Jan-03	MW115-EBT-TS7-94-99	UG/L												
Area1	MW-115	24-Feb-03	MW115-EBT-TS8-94-99	UG/L												
Area1	MW-115	24-Mar-03	MW115-EBT-TS9-94-99	UG/L												
Area1	MW-115	21-Apr-03	MW115-EBT-TS10-94-99	UG/L												
Area1	MW-115	19-May-03	MW115-EBT-TS11-94-99	UG/L												
Area1	MW-115	23-Jun-03	MW115-EBT-TS12-94-99	UG/L												
Area1	MW-115	21-Jul-03	MW115-EBT-TS13-94-99	UG/L												
Area1	MW-116	21-May-02	MW116-EBT-B-101-106	UG/L												
Area1	MW-116	21-May-02	MW116-EBT-B-101-106D	UG/L												
Area1	MW-116	8-Jul-02	MW116-EBT-TS1-101-106	UG/L												
Area1	MW-116	29-Jul-02	MW116-EBT-TS2-101-106	UG/L												
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106	UG/L												
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106D	UG/L												
Area1	MW-116	7-Oct-02	MW116-EBT-TS4-101-106	UG/L												
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106	UG/L												
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106D	UG/L												
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106	UG/L												
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106D	UG/L												
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106	UG/L												
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106D	UG/L												
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106	UG/L												
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106D	UG/L												
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106	UG/L												
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106D	UG/L												
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106	UG/L												
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106D	UG/L												
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106	UG/L												
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106D	UG/L												
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106	UG/L												
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106D	UG/L												
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106	UG/L												
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106D	UG/L												
Area1	MW-117	21-May-02	MW117-EBT-B-101-106	UG/L												
Area1	MW-117	8-Jul-02	MW117-EBT-TS1 101-106	UG/L												
Area1	MW-117	29-Jul-02	MW117-EBT-TS2-101-106	UG/L												
Area1	MW-117	3-Sep-02	MW117-EBT-TS3-101-106	UG/L												
Area1	MW-117	7-Oct-02	MW117-EBT-TS4-101-106	UG/L												
Area1	MW-117	11-Nov-02	MW117-EBT-TS5-101-106	UG/L												
Area1	MW-117	16-Dec-02	MW117-EBT-TS6-101-106	UG/L												
Area1	MW-117	20-Jan-03	MW117-EBT-TS7 101-106	UG/L												
Area1	MW-117	24-Feb-03	MW117-EBT-TS8-101-106	UG/L												
Area1	MW-117	24-Mar-03	MW117-EBT-TS9-101-106	UG/L							1	0.693	J			
Area1	MW-117	21-Apr-03	MW117-EBT-TS10-101-106	UG/L							1	0.632	J			
Area1	MW-117	19-May-03	MW117-EBT-TS11-101-106	UG/L							1	0.604	J			
Area1	MW-117	23-Jun-03	MW117-EBT-TS12-101-106	UG/L												
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	UG/L												
Area1	MW-118	21-May-02	MW118-EBT-B-94-99	UG/L												
Area1	MW-118	8-Jul-02	MW118-EBT-TS1-94-99	UG/L										1	0.34	J
Area1	MW-118	29-Jul-02	MW118-EBT-TS2-94-99	UG/L												
Area1	MW-118	3-Sep-02	MW118-EBT-TS3-94-99	UG/L												
Area1	MW-118	7-Oct-02	MW118-EBT-TS4-94-99	UG/L												
Area1	MW-118	11-Nov-02	MW118-EBT-TS5-94-99	UG/L												
Area1	MW-118	16-Dec-02	MW118-EBT-TS6-94-99	UG/L												
Area1	MW-118	20-Jan-03	MW118-EBT-TS7-94-99	UG/L												
Area1	MW-118	24-Feb-03	MW118-EBT-TS8-94-99	UG/L												
Area1	MW-118	24-Mar-03	MW118-EBT-TS9-94-99	UG/L												
Area1	MW-118	21-Apr-03	MW118-EBT-TS10-94-99	UG/L												
Area1	MW-118	19-May-03	MW118-EBT-TS11-94-99	UG/L												
Area1	MW-118	23-Jun-03	MW118-EBT-TS12-94-99	UG/L												
Area1	MW-118	21-Jul-03	MW118-EBT-TS13-94-99	UG/L												
Area1	MW-119	21-May-02	MW119-EBT-B-94-99	UG/L												
Area1	MW-119	8-Jul-02	MW119-EBT-TS1-94-99	UG/L												
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99	UG/L												
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99D	UG/L												
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99	UG/L												
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99D	UG/L												
Area1	MW-119	7-Oct-02	MW119-EBT-TS4-94-99	UG/L												
Area1	MW-119	11-Nov-02	MW119-EBT-TS5-94-99	UG/L												
Area1	MW-119	16-Dec-02	MW119-EBT-TS6-94-99	UG/L												
Area1	MW-119	20-Jan-03	MW119-EBT-TS7-94-99	UG/L												
Area1	MW-119	24-Feb-03	MW119-EBT-TS8-94-99	UG/L												
Area1	MW-119	24-Mar-03	MW119-EBT-TS9-94-99	UG/L												
Area1	MW-119	21-Apr-03	MW119-EBT-TS10-94-99	UG/L												
Area1	MW-119	19-May-03	MW119-EBT-TS11-94-99	UG/L												
Area1	MW-119	23-Jun-03	MW119-EBT-TS12-94-99	UG/L												
Area1	MW-119	21-Jul-03	MW119-EBT-TS13-94-99	UG/L												
Area1	MW-120	21-May-02	MW120-EBT-B-101-106	UG/L												
Area1	MW-120	8-Jul-02	MW120-EBT-TS1 101-106	UG/L												
Area1	MW-120	29-Jul-02	MW120-EBT-TS2-101-106	UG/L												
Area1	MW-120	3-Sep-02	MW120-EBT-TS3-101-106	UG/L												
Area1	MW-120	7-Oct-02	MW120-EBT-TS4-101-106	UG/L												
Area1	MW-120	11-Nov-02	MW120-EBT-TS5-101-106	UG/L												
Area1	MW-120	16-Dec-02	MW120-EBT-TS6-101-106	UG/L												
Area1	MW-120	20-Jan-03	MW120-EBT-TS7-101-106	UG/L												
Area1	MW-120	24-Feb-03	MW120-EBT-TS8-101-106	UG/L												
Area1	MW-120	24-Mar-03	MW120-EBT-TS9-101 106	UG/L												
Area1	MW-120	21-Apr-03	MW120-EBT-TS10-101-106	UG/L												
Area1	MW-120	19-May-03	MW120-EBT-TS11 101-106	UG/L												
Area1	MW-120	23-Jun-03	MW120-EBT-TS12-101-106	UG/L												
Area1	MW-120	21-Jul-03	MW120-EBT-TS13-101-106	UG/L												

Attachment G
Study Area1: Summary of VOCs in Groundwater
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Area	StationID	DateCollected	Sample	Unit	1,1,1,2-TETRACHLOROETHANE			1,1,2,2-TETRACHLOROETHANE			1,1-DICHLOROETHENE			1,2,3-TRICHLOROBENZENE		
					Det Flag	Conc	Qual	Det Flag	Conc	Qual	Det Flag	Conc	Qual	Det Flag	Conc	Qual
Area1	MW-121	21-May-02	MW121-EBT-B-95-100	UG/L												
Area1	MW-121	8-Jul-02	MW121-EBT-TS1-95-100	UG/L												
Area1	MW-121	29-Jul-02	MW121-EBT-TS2-95-100	UG/L												
Area1	MW-121	3-Sep-02	MW121-EBT-TS3-95-100	UG/L												
Area1	MW-121	7-Oct-02	MW121-EBT-TS4-95-100	UG/L												
Area1	MW-121	11-Nov-02	MW121-EBT-TS5-95-100	UG/L												
Area1	MW-121	16-Dec-02	MW121-EBT-TS6-95-100	UG/L												
Area1	MW-121	20-Jan-03	MW121-EBT-TS7-95-100	UG/L												
Area1	MW-121	24-Feb-03	MW121-EBT-TS8-95-100	UG/L												
Area1	MW-121	24-Mar-03	MW121-EBT-TS9-95-100	UG/L												
Area1	MW-121	21-Apr-03	MW121-EBT-TS10-95-100	UG/L												
Area1	MW-121	19-May-03	MW121-EBT-TS11-95-100	UG/L												
Area1	MW-121	23-Jun-03	MW121-EBT-TS12-95-100	UG/L												
Area1	MW-121	21-Jul-03	MW121-EBT-TS13-95-100	UG/L												
Area1	MW-122	21-May-02	MW122-EBT-B-101-106	UG/L												
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106	UG/L												
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106D	UG/L												
Area1	MW-122	29-Jul-02	MW122-EBT-TS2-101-106	UG/L												
Area1	MW-122	3-Sep-02	MW122-EBT-TS3-101-106	UG/L												
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106	UG/L							1	0.562	J			
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106D	UG/L												
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	UG/L												
Area1	MW-122	16-Dec-02	MW122-EBT-TS6-101-106	UG/L												
Area1	MW-122	20-Jan-03	MW122-EBT-TS7-101-106	UG/L												
Area1	MW-122	24-Feb-03	MW122-EBT-TS8-101-106	UG/L												
Area1	MW-122	24-Mar-03	MW122-EBT-TS9-101-106	UG/L												
Area1	MW-122	21-Apr-03	MW122-EBT-TS10-101-106	UG/L												
Area1	MW-122	19-May-03	MW122-EBT-TS11-101-106	UG/L												
Area1	MW-122	23-Jun-03	MW122-EBT-TS12-101-106	UG/L												
Area1	MW-122	21-Jul-03	MW122-EBT-TS13-101-106	UG/L												
Area1	MW-123	21-May-02	MW123-EBT-B-96-101	UG/L												
Area1	MW-123	8-Jul-02	MW123-EBT-TS1-96-101	UG/L												
Area1	MW-123	29-Jul-02	MW123-EBT-TS2-96-101	UG/L												
Area1	MW-123	3-Sep-02	MW123-EBT-TS3-96-100	UG/L												
Area1	MW-123	7-Oct-02	MW123-EBT-TS4-96-101	UG/L												
Area1	MW-123	11-Nov-02	MW123-EBT-TS5-96-101	UG/L												
Area1	MW-123	16-Dec-02	MW123-EBT-TS6-96-101	UG/L												
Area1	MW-123	20-Jan-03	MW123-EBT-TS7-96-101	UG/L												
Area1	MW-123	24-Feb-03	MW123-EBT-TS8-96-101	UG/L										1	0.173	J
Area1	MW-123	24-Mar-03	MW123-EBT-TS9-96-101	UG/L												
Area1	MW-123	21-Apr-03	MW123-EBT-TS10-96-101	UG/L												
Area1	MW-123	19-May-03	MW123-EBT-TS11-96-101	UG/L												
Area1	MW-123	23-Jun-03	MW123-EBT-TS12-96-101	UG/L												
Area1	MW-123	21-Jul-03	MW123-EBT-TS13-96-101	UG/L												
Area1	MW-124	21-May-02	MW124-EBT-B-96-101	UG/L												
Area1	MW-124	8-Jul-02	MW124-EBT-TS1-96-101	UG/L												
Area1	MW-124	29-Jul-02	MW124-EBT-TS2-96-101	UG/L												
Area1	MW-124	3-Sep-02	MW124-EBT-TS3-96-100	UG/L												
Area1	MW-124	7-Oct-02	MW124-EBT-TS4-96-101	UG/L												
Area1	MW-124	11-Nov-02	MW124-EBT-TS5-96-101	UG/L												
Area1	MW-124	16-Dec-02	MW124-EBT-TS6-96-101	UG/L												
Area1	MW-124	20-Jan-03	MW124-EBT-TS7-96-101	UG/L												
Area1	MW-124	24-Feb-03	MW124-EBT-TS8-96-101	UG/L												
Area1	MW-124	24-Mar-03	MW124-EBT-TS9-96-101	UG/L												
Area1	MW-124	21-Apr-03	MW124-EBT-TS10-96-101	UG/L												
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101	UG/L												
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101D	UG/L												
Area1	MW-124	23-Jun-03	MW124-EBT-TS12-96-101	UG/L												
Area1	MW-124	21-Jul-03	MW124-EBT-TS13-96-101	UG/L												
Area1	MW-125	21-May-02	MW125-EBT-B-99-104	UG/L												
Area1	MW-125	21-May-02	MW125-EBT-B-99-104D	UG/L												
Area1	MW-125	8-Jul-02	MW125-EBT-TS1-99-104	UG/L												
Area1	MW-125	29-Jul-02	MW125-EBT-TS2-99-104	UG/L												
Area1	MW-125	3-Sep-02	MW125-EBT-TS3-99-104	UG/L												
Area1	MW-125	7-Oct-02	MW125-EBT-TS4-99-104	UG/L												
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104	UG/L												
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104D	UG/L												
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104	UG/L												
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104D	UG/L												
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104	UG/L												
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104D	UG/L												
Area1	MW-125	24-Feb-03	MW125-EBT-TS8-99-104	UG/L												
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104	UG/L												
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104D	UG/L												
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104	UG/L												
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104D	UG/L												
Area1	MW-125	19-May-03	MW125-EBT-TS11-99-104	UG/L												
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104	UG/L												
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104D	UG/L												
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104	UG/L												
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104D	UG/L												
Area1	MW-21	20-Mar-02	MW21-98-103BL	UG/L												
Area1	MW-21	8-Jul-02	MW21-EBT-TS1-98.5-103.5	UG/L												
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5	UG/L												
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5D	UG/L												
Area1	MW-21	3-Sep-02	MW21-EBT-TS3-98.5-103.5	UG/L												
Area1	MW-21	7-Oct-02	MW21-EBT-TS4-98.5-103.5	UG/L												
Area1	MW-21	11-Nov-02	MW21-EBT-TS5-98.5-103.5	UG/L	1	0.29	J									
Area1	MW-21	16-Dec-02	MW21-EBT-TS6-98.5-103.5	UG/L	1	0.328	J									
Area1	MW-21	20-Jan-03	MW21-EBT-TS7-98.5-103.5	UG/L	1	0.327	J									
Area1	MW-21	24-Feb-03	MW21-EBT-TS8-98.5-103.5	UG/L	1	0.25	J									
Area1	MW-21	24-Mar-03	MW21-EBT-TS9-98.5-103.5	UG/L	1	0.261	J									
Area1	MW-21	21-Apr-03	MW21-EBT-TS10-98.5-103.5	UG/L												
Area1	MW-21	19-May-03	MW21-EBT-TS11-98.5-103.5	UG/L												
Area1	MW-21	23-Jun-03	MW21-EBT-TS12-98.5-103.5	UG/L												
Area1	MW-21	21-Jul-03	MW21-EBT-TS13-98.5-103.5	UG/L	1	1.22	J									

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Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,2-DICHLOROETHANE			2-HEXANONE			ACETONE			BENZENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B-105-110	UG/L										1	0.17	J
Area1	IW-5	20-Jan-03	IW5-EBT-TS7-102-107	UG/L							1	8.98	J			
Area1	IW-6	21-May-02	IW6-EBT-B-101-106	UG/L	1	0.35	J									
Area1	IW-6	20-Jan-03	IW6-EBT-TS7-101-106	UG/L							1	9.99	J			
Area1	IW-7	21-May-02	IW7-EBT-B-102-107	UG/L	1	0.35	J									
Area1	IW-7	20-Jan-03	IW7-EBT-TS7-102-107	UG/L							1	12	J			
Area1	MW-100	11-Dec-01	MW-100-1	UG/L	1	0.15	J				1	49	J			
Area1	MW-100	11-Dec-01	MW-100-2	UG/L	1	0.15	J									
Area1	MW-100	11-Dec-01	MW-100-3	UG/L	1	0.21	J									
Area1	MW-100	11-Dec-01	MW-100-4	UG/L	1	0.18	J									
Area1	MW-100	11-Dec-01	MW-100-5	UG/L	1	0.17	J									
Area1	MW-100	11-Dec-01	MW-100-6	UG/L	1	0.11	J									
Area1	MW-100	11-Dec-01	MW-100-7	UG/L	1	0.16	J									
Area1	MW-100	11-Dec-01	MW-100-8	UG/L	1	0.17	J									
Area1	MW-100	11-Dec-01	MW-100-9	UG/L	1	0.14	J									
Area1	MW-100	11-Dec-01	MW-100-10	UG/L	1	0.18	J									
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115	UG/L												
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115D	UG/L												
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2-110-115	UG/L										1	1.51	=
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3-110-115	UG/L												
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115	UG/L				1	2.58	J						
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115D	UG/L				1	2.6	J						
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5-110-115	UG/L				1	9.24	J	1	93	=	1	0.893	J
Area1	MW-100B	16-Dec-02	MW100B-EBT-TS6-100-115	UG/L				1	8.78	J	1	8.31	J			
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	UG/L				1	25.4	=	10	336	=			
Area1	MW-100B	24-Feb-03	MW100B-EBT-TS8-110-115	UG/L				1	12.7	=						
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9-100-115	UG/L				1	10.9	=						
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10-110-115	UG/L				1	5.55	J	1	3.76	J			
Area1	MW-100B	19-May-03	MW100B-EBT-TS11-110-115	UG/L												
Area1	MW-100B	23-Jun-03	MW100B-EBT-TS12-110-115	UG/L							1	3.94	J			
Area1	MW-100B	21-Jul-03	MW100B-EBT-TS13-110-115	UG/L												
Area1	MW-115	21-May-02	MW115-EBT-B-94-99	UG/L												
Area1	MW-115	8-Jul-02	MW115-EBT-TS1-94-99	UG/L												
Area1	MW-115	29-Jul-02	MW115-EBT-TS2-94-99	UG/L												
Area1	MW-115	3-Sep-02	MW115-EBT-TS3-94-99	UG/L												
Area1	MW-115	7-Oct-02	MW115-EBT-TS4-94-99	UG/L												
Area1	MW-115	11-Nov-02	MW115-EBT-TS5-94-99	UG/L												
Area1	MW-115	16-Dec-02	MW115-EBT-TS6-94-99	UG/L	1	0.261	J									
Area1	MW-115	20-Jan-03	MW115-EBT-TS7-94-99	UG/L												
Area1	MW-115	24-Feb-03	MW115-EBT-TS8-94-99	UG/L												
Area1	MW-115	24-Mar-03	MW115-EBT-TS9-94-99	UG/L												
Area1	MW-115	21-Apr-03	MW115-EBT-TS10-94-99	UG/L												
Area1	MW-115	19-May-03	MW115-EBT-TS11-94-99	UG/L												
Area1	MW-115	23-Jun-03	MW115-EBT-TS12-94-99	UG/L												
Area1	MW-115	21-Jul-03	MW115-EBT-TS13-94-99	UG/L												
Area1	MW-116	21-May-02	MW116-EBT-B-101-106	UG/L	1	0.31	J									
Area1	MW-116	21-May-02	MW116-EBT-B-101-106D	UG/L	1	0.3	J									
Area1	MW-116	8-Jul-02	MW116-EBT-TS1-101-106	UG/L	1	0.37	J									
Area1	MW-116	29-Jul-02	MW116-EBT-TS2-101-106	UG/L	1	0.376	J				1	4.66	J			
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106	UG/L	1	0.444	J							1	0.197	J
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106D	UG/L	1	0.435	J							1	0.195	J
Area1	MW-116	7-Oct-02	MW116-EBT-TS4-101-106	UG/L	1	0.529	J							1	0.26	J
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106	UG/L	1	0.4	J							1	0.215	J
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106D	UG/L	1	0.35	J							1	0.206	J
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106	UG/L	1	0.38	J							1	0.698	J
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106D	UG/L	1	0.309	J							1	0.807	J
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106	UG/L	1	0.41	J				1	16.9	J	1	2.94	=
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106D	UG/L	1	0.382	J				1	16	J	1	2.9	=
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106	UG/L	1	0.315	J							1	0.546	J
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106D	UG/L	1	0.328	J							1	0.647	J
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106	UG/L	1	0.294	J							1	0.387	J
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106D	UG/L	1	0.276	J							1	0.369	J
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106	UG/L												
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106D	UG/L	1	0.279	J									
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106	UG/L	1	0.302	J									
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106D	UG/L	1	0.318	J									
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106	UG/L	1	0.363	J									
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106D	UG/L	1	0.366	J									
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106	UG/L	1	0.348	J									
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106D	UG/L	1	0.395	J									
Area1	MW-117	21-May-02	MW117-EBT-B-101-106	UG/L										1	0.24	J
Area1	MW-117	8-Jul-02	MW117-EBT-TS1-101-106	UG/L				1	5.7	J						
Area1	MW-117	29-Jul-02	MW117-EBT-TS2-101-106	UG/L							1	6.17	J			
Area1	MW-117	3-Sep-02	MW117-EBT-TS3-101-106	UG/L												
Area1	MW-117	7-Oct-02	MW117-EBT-TS4-101-106	UG/L	1	0.268	J									
Area1	MW-117	11-Nov-02	MW117-EBT-TS5-101-106	UG/L				1	2.63	J	1	8.39	J			
Area1	MW-117	16-Dec-02	MW117-EBT-TS6-101-106	UG/L				1	5.44	J	1	18.5	=			
Area1	MW-117	20-Jan-03	MW117-EBT-TS7-101-106	UG/L				1	4.66	J	1	18.9	J			
Area1	MW-117	24-Feb-03	MW117-EBT-TS8-101-106	UG/L				5	46	J						
Area1	MW-117	24-Mar-03	MW117-EBT-TS9-101-106	UG/L				1	18.2	=						
Area1	MW-117	21-Apr-03	MW117-EBT-TS10-101-106	UG/L				1	25.5	=	1	20.3	=	1	0.234	J
Area1	MW-117	19-May-03	MW117-EBT-TS11-101-106	UG/L				1	21.3	=	1	14.1	=	1	0.29	J
Area1	MW-117	23-Jun-03	MW117-EBT-TS12-101-106	UG/L				1	31.6	=	1	26.7	=	1	0.239	J
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	UG/L				1	54.5	=	50	335	J	1	0.195	J
Area1	MW-118	21-May-02	MW118-EBT-B-94-99	UG/L										1	0.131	J
Area1	MW-118	8-Jul-02	MW118-EBT-TS1-94-99	UG/L												
Area1	MW-118	29-Jul-02	MW118-EBT-TS2-94-99	UG/L							1	2.65	J			
Area1	MW-118	3-Sep-02	MW118-EBT-TS3-94-99	UG/L												
Area1	MW-118	7-Oct-02	MW118-EBT-TS4-94-99	UG/L												
Area1	MW-118	11-Nov-02	MW118-EBT-TS5-94-99	UG/L												
Area1	MW-118	16-Dec-02	MW118-EBT-TS6-94-99	UG/L												
Area1	MW-118	20-Jan-03	MW118-EBT-TS7-94-99	UG/L												
Area1	MW-118	24-Feb-03	MW118-EBT-TS8-94-99	UG/L												
Area1	MW-118	24-Mar-03	MW118-EBT-TS9-94-99	UG/L												
Area1	MW-118	21-Apr-03	MW118-EBT-TS10-94-99	UG/L												
Area1	MW-118	19-May-03	MW118-EBT-TS11-94-99	UG/L												
Area1	MW-118	23-Jun-03	MW118-EBT-TS12-94-99	UG/L							1	4.08	J			
Area1	MW-118	21-Jul-03	MW118-EBT-TS13-94-99	UG/L												
Area1	MW-119	21-May-02	MW119-EBT-B-94-99	UG/L												
Area1	MW-119	8-Jul-02	MW119-EBT-TS1-94-99	UG/L												
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99	UG/L							1	2.88	J			
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99D	UG/L							1	2.72	J			
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99	UG/L												
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99D	UG/L												
Area1	MW-119	7-Oct-02	MW119-EBT-TS4-94-99	UG/L												
Area1	MW-119	11-Nov-02	MW119-EBT-TS5-94-99	UG/L							1	3.7	J			
Area1	MW-119	16-Dec-02	MW119-EBT-TS6-94-99	UG/L												
Area1	MW-119	20-Jan-03	MW119-EBT-TS7-94-99	UG/L												
Area1	MW-119	24-Feb-03	MW119-EBT-TS8-94-99	UG/L												
Area1	MW-119	24-Mar-03	MW119-EBT-TS9-94-99	UG/L												
Area1	MW-119	21-Apr-03	MW119-EBT-TS10-94-99	UG/L												
Area1	MW-119	19-May-03	MW119-EBT-TS11-94-99	UG/L												
Area1	MW-119	23-Jun-03	MW119-EBT-TS12-94-99	UG/L							1	3.51	J			
Area1	MW-119	21-Jul-03	MW119-EBT-TS13-94-99	UG/L												
Area1	MW-120	21-May-02	MW120-EBT-B-101-106	UG/L	1	0.31	J									
Area1	MW-120	8-Jul-02	MW120-EBT-TS1-101-106	UG/L												
Area1	MW-120	29-Jul-02	MW120-EBT-TS2-101-106	UG/L	1	0.254	J				1	30	=			
Area1	MW-120	3-Sep-02	MW120-EBT-TS3-101-106	UG/L												
Area1	MW-120	7-Oct-02	MW120-EBT-TS4-101-106	UG/L												
Area1	MW-120	11-Nov-02	MW120-EBT-TS5-101-106	UG/L	1	0.252	J				1	3.73	J			
Area1	MW-120	16-Dec-02	MW120-EBT-TS6-101-106	UG/L												
Area1	MW-120	20-Jan-03	MW120-EBT-TS7-101-106	UG/L							1	3.82	J			
Area1	MW-120	24-Feb-03	MW120-EBT-TS8-101-106	UG/L												
Area1	MW-120	24-Mar-03	MW120-EBT-TS9-101-106	UG/L	1	0.27	J									
Area1	MW-120	21-Apr-03	MW120-EBT-TS10-101-106	UG/L							1	4.49	J			
Area1	MW-120	19-May-03	MW120-EBT-TS11-101-106	UG/L	1	0.259	J									
Area1	MW-120	23-Jun-03	MW120-EBT-TS12-101-106	UG/L	1	0.273	J				1	3.99	J			
Area1	MW-120	21-Jul-03	MW120-EBT-TS13-101-106	UG/L	1	0.279	J									

Attachment G
Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,2-DICHLOROETHANE			2-HEXANONE			ACETONE			BENZENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	MW-121	21-May-02	MW121-EBT-B-95-100	UG/L												
Area1	MW-121	8-Jul-02	MW121-EBT-TS1-95-100	UG/L												
Area1	MW-121	29-Jul-02	MW121-EBT-TS2-95-100	UG/L												
Area1	MW-121	3-Sep-02	MW121-EBT-TS3-95-100	UG/L												
Area1	MW-121	7-Oct-02	MW121-EBT-TS4-95-100	UG/L												
Area1	MW-121	11-Nov-02	MW121-EBT-TS5-95-100	UG/L												
Area1	MW-121	16-Dec-02	MW121-EBT-TS6-95-100	UG/L												
Area1	MW-121	20-Jan-03	MW121-EBT-TS7-95-100	UG/L												
Area1	MW-121	24-Feb-03	MW121-EBT-TS8-95-100	UG/L												
Area1	MW-121	24-Mar-03	MW121-EBT-TS9-95-100	UG/L												
Area1	MW-121	21-Apr-03	MW121-EBT-TS10-95-100	UG/L												
Area1	MW-121	19-May-03	MW121-EBT-TS11-95-100	UG/L												
Area1	MW-121	23-Jun-03	MW121-EBT-TS12-95-100	UG/L							1	2.76	J			
Area1	MW-121	21-Jul-03	MW121-EBT-TS13-95-100	UG/L												
Area1	MW-122	21-May-02	MW122-EBT-B-101-106	UG/L	1	0.26	J									
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106	UG/L	1	0.34	J									
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106D	UG/L	1	0.33	J									
Area1	MW-122	29-Jul-02	MW122-EBT-TS2-101-106	UG/L	1	0.435	J				1	2.99	J			
Area1	MW-122	3-Sep-02	MW122-EBT-TS3-101-106	UG/L	1	0.367	J									
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106	UG/L	1	0.275	J									
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106D	UG/L	1	0.256	J									
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	UG/L	1	0.307	J				1	10.8	=			
Area1	MW-122	16-Dec-02	MW122-EBT-TS6-101-106	UG/L	1	0.317	J									
Area1	MW-122	20-Jan-03	MW122-EBT-TS7-101-106	UG/L	1	0.281	J									
Area1	MW-122	24-Feb-03	MW122-EBT-TS8-101-106	UG/L	1	0.282	J									
Area1	MW-122	24-Mar-03	MW122-EBT-TS9-101-106	UG/L	1	0.364	J									
Area1	MW-122	21-Apr-03	MW122-EBT-TS10-101-106	UG/L	1	0.277	J				1	3.42	J			
Area1	MW-122	19-May-03	MW122-EBT-TS11-101-106	UG/L	1	0.313	J									
Area1	MW-122	23-Jun-03	MW122-EBT-TS12-101-106	UG/L	1	0.275	J				1	4.25	J			
Area1	MW-122	21-Jul-03	MW122-EBT-TS13-101-106	UG/L	1	0.323	J									
Area1	MW-123	21-May-02	MW123-EBT-B-96-101	UG/L	1	0.3	J									
Area1	MW-123	8-Jul-02	MW123-EBT-TS1-96-101	UG/L												
Area1	MW-123	29-Jul-02	MW123-EBT-TS2-96-101	UG/L							1	12.8	=			
Area1	MW-123	3-Sep-02	MW123-EBT-TS3-96-100	UG/L												
Area1	MW-123	7-Oct-02	MW123-EBT-TS4-96-101	UG/L				1	4.35	J						
Area1	MW-123	11-Nov-02	MW123-EBT-TS5-96-101	UG/L				1	3.85	J	1	7.39	J			
Area1	MW-123	16-Dec-02	MW123-EBT-TS6-96-101	UG/L							1	4.45	J			
Area1	MW-123	20-Jan-03	MW123-EBT-TS7-96-101	UG/L				1	5.59	J	1	4.78	J			
Area1	MW-123	24-Feb-03	MW123-EBT-TS8-96-101	UG/L				1	2.88	J						
Area1	MW-123	24-Mar-03	MW123-EBT-TS9-96-101	UG/L												
Area1	MW-123	21-Apr-03	MW123-EBT-TS10-96-101	UG/L							1	3.61	J			
Area1	MW-123	19-May-03	MW123-EBT-TS11-96-101	UG/L							1	2.5	J			
Area1	MW-123	23-Jun-03	MW123-EBT-TS12-96-101	UG/L							1	2.98	J			
Area1	MW-123	21-Jul-03	MW123-EBT-TS13-96-101	UG/L												
Area1	MW-124	21-May-02	MW124-EBT-B-96-101	UG/L	1	0.28	J				1	3.7	J			
Area1	MW-124	8-Jul-02	MW124-EBT-TS1-96-101	UG/L												
Area1	MW-124	29-Jul-02	MW124-EBT-TS2-96-101	UG/L	1	0.337	J				1	3.84	J			
Area1	MW-124	3-Sep-02	MW124-EBT-TS3-96-100	UG/L	1	0.293	J									
Area1	MW-124	7-Oct-02	MW124-EBT-TS4-96-101	UG/L	1	0.273	J									
Area1	MW-124	11-Nov-02	MW124-EBT-TS5-96-101	UG/L	1	0.257	J									
Area1	MW-124	16-Dec-02	MW124-EBT-TS6-96-101	UG/L												
Area1	MW-124	20-Jan-03	MW124-EBT-TS7-96-101	UG/L												
Area1	MW-124	24-Feb-03	MW124-EBT-TS8-96-101	UG/L												
Area1	MW-124	24-Mar-03	MW124-EBT-TS9-96-101	UG/L												
Area1	MW-124	21-Apr-03	MW124-EBT-TS10-96-101	UG/L												
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101	UG/L												
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101D	UG/L												
Area1	MW-124	23-Jun-03	MW124-EBT-TS12-96-101	UG/L												
Area1	MW-124	21-Jul-03	MW124-EBT-TS13-96-101	UG/L												
Area1	MW-125	21-May-02	MW125-EBT-B-99-104	UG/L												
Area1	MW-125	21-May-02	MW125-EBT-B-99-104D	UG/L												
Area1	MW-125	8-Jul-02	MW125-EBT-TS1-99-104	UG/L												
Area1	MW-125	29-Jul-02	MW125-EBT-TS2-99-104	UG/L							1	5.56	J			
Area1	MW-125	3-Sep-02	MW125-EBT-TS3-99-104	UG/L												
Area1	MW-125	7-Oct-02	MW125-EBT-TS4-99-104	UG/L												
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104	UG/L												
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104D	UG/L												
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104	UG/L										1	0.154	J
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104D	UG/L										1	0.171	J
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104	UG/L				1	6.14	J				1	0.224	J
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104D	UG/L				1	6.23	J				1	0.206	J
Area1	MW-125	24-Feb-03	MW125-EBT-TS8-99-104	UG/L				1	2.55	J				1	0.181	J
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104	UG/L										1	0.312	J
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104D	UG/L										1	0.306	J
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104	UG/L										1	0.177	J
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104D	UG/L										1	0.201	J
Area1	MW-125	19-May-03	MW125-EBT-TS11-99-104	UG/L												
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104	UG/L							1	3.11	J			
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104D	UG/L							1	2.8	J			
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104	UG/L												
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104D	UG/L												
Area1	MW-21	20-Mar-02	MW21-98-103BL	UG/L												
Area1	MW-21	8-Jul-02	MW21-EBT-TS1-98.5-103.5	UG/L												
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5	UG/L												
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5D	UG/L							1	2.95	J			
Area1	MW-21	3-Sep-02	MW21-EBT-TS3-98.5-103.5	UG/L												
Area1	MW-21	7-Oct-02	MW21-EBT-TS4-98.5-103.5	UG/L												
Area1	MW-21	11-Nov-02	MW21-EBT-TS5-98.5-103.5	UG/L												
Area1	MW-21	16-Dec-02	MW21-EBT-TS6-98.5-103.5	UG/L												
Area1	MW-21	20-Jan-03	MW21-EBT-TS7-98.5-103.5	UG/L												
Area1	MW-21	24-Feb-03	MW21-EBT-TS8-98.5-103.5	UG/L												
Area1	MW-21	24-Mar-03	MW21-EBT-TS9-98.5-103.5	UG/L												
Area1	MW-21	21-Apr-03	MW21-EBT-TS10-98.5-103.5	UG/L												
Area1	MW-21	19-May-03	MW21-EBT-TS11-98.5-103.5	UG/L												
Area1	MW-21	23-Jun-03	MW21-EBT-TS12-98.5-103.5	UG/L							1	3.3	J			
Area1	MW-21	21-Jul-03	MW21-EBT-TS13-98.5-103.5	UG/L												

Attachment G
Study Area1, Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	BROMODICHLOROMETHANE			BROMOMETHANE			CHLOROBENZENE			CHLOROFORM		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B-105-110	UG/L	1	0.48	J							1	0.82	J
Area1	IW-5	20-Jan-03	IW5-EBT-TS7-102-107	UG/L												
Area1	IW-6	21-May-02	IW6-EBT-B-101-106	UG/L												
Area1	IW-6	20-Jan-03	IW6-EBT-TS7-101-106	UG/L												
Area1	IW-7	21-May-02	IW7-EBT-B-102-107	UG/L												
Area1	IW-7	20-Jan-03	IW7-EBT-TS7-102-107	UG/L												
Area1	MW-100	11-Dec-01	MW-100-1	UG/L												
Area1	MW-100	11-Dec-01	MW-100-2	UG/L												
Area1	MW-100	11-Dec-01	MW-100-3	UG/L												
Area1	MW-100	11-Dec-01	MW-100-4	UG/L				1	0.2	J						
Area1	MW-100	11-Dec-01	MW-100-5	UG/L												
Area1	MW-100	11-Dec-01	MW-100-6	UG/L												
Area1	MW-100	11-Dec-01	MW-100-7	UG/L												
Area1	MW-100	11-Dec-01	MW-100-8	UG/L												
Area1	MW-100	11-Dec-01	MW-100-9	UG/L												
Area1	MW-100	11-Dec-01	MW-100-10	UG/L												
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115	UG/L										1	0.19	J
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115D	UG/L										1	0.19	J
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2-110-115	UG/L												
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3-110-115	UG/L												
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115	UG/L												
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115D	UG/L												
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5-110-115	UG/L												
Area1	MW-100B	16-Dec-02	MW100B-EBT-TS6-100-115	UG/L												
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	UG/L												
Area1	MW-100B	24-Feb-03	MW100B-EBT-TS8-110-115	UG/L												
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9-100-115	UG/L												
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10-110-115	UG/L												
Area1	MW-100B	19-May-03	MW100B-EBT-TS11-110-115	UG/L												
Area1	MW-100B	23-Jun-03	MW100B-EBT-TS12-110-115	UG/L												
Area1	MW-100B	21-Jul-03	MW100B-EBT-TS13-110-115	UG/L												
Area1	MW-115	21-May-02	MW115-EBT-B-94-99	UG/L												
Area1	MW-115	8-Jul-02	MW115-EBT-TS1-94-99	UG/L												
Area1	MW-115	29-Jul-02	MW115-EBT-TS2-94-99	UG/L												
Area1	MW-115	3-Sep-02	MW115-EBT-TS3-94-99	UG/L												
Area1	MW-115	7-Oct-02	MW115-EBT-TS4-94-99	UG/L												
Area1	MW-115	11-Nov-02	MW115-EBT-TS5-94-99	UG/L												
Area1	MW-115	16-Dec-02	MW115-EBT-TS6-94-99	UG/L												
Area1	MW-115	20-Jan-03	MW115-EBT-TS7-94-99	UG/L												
Area1	MW-115	24-Feb-03	MW115-EBT-TS8-94-99	UG/L												
Area1	MW-115	24-Mar-03	MW115-EBT-TS9-94-99	UG/L												
Area1	MW-115	21-Apr-03	MW115-EBT-TS10-94-99	UG/L												
Area1	MW-115	19-May-03	MW115-EBT-TS11-94-99	UG/L												
Area1	MW-115	23-Jun-03	MW115-EBT-TS12-94-99	UG/L												
Area1	MW-115	21-Jul-03	MW115-EBT-TS13-94-99	UG/L												
Area1	MW-116	21-May-02	MW116-EBT-B-101-106	UG/L										1	0.18	J
Area1	MW-116	21-May-02	MW116-EBT-B-101-106D	UG/L										1	0.13	J
Area1	MW-116	8-Jul-02	MW116-EBT-TS1-101-106	UG/L												
Area1	MW-116	29-Jul-02	MW116-EBT-TS2-101-106	UG/L												
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106	UG/L												
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106D	UG/L												
Area1	MW-116	7-Oct-02	MW116-EBT-TS4-101-106	UG/L												
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106	UG/L												
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106D	UG/L												
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106	UG/L												
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106D	UG/L												
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106	UG/L												
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106D	UG/L												
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106	UG/L												
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106D	UG/L												
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106	UG/L												
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106D	UG/L												
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106	UG/L												
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106D	UG/L												
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106	UG/L												
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106D	UG/L												
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106	UG/L												
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106D	UG/L												
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106	UG/L												
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106D	UG/L												
Area1	MW-117	21-May-02	MW117-EBT-B-101-106	UG/L										1	0.25	J
Area1	MW-117	8-Jul-02	MW117-EBT-TS1-101-106	UG/L												
Area1	MW-117	29-Jul-02	MW117-EBT-TS2-101-106	UG/L												
Area1	MW-117	3-Sep-02	MW117-EBT-TS3-101-106	UG/L												
Area1	MW-117	7-Oct-02	MW117-EBT-TS4-101-106	UG/L												
Area1	MW-117	11-Nov-02	MW117-EBT-TS5-101-106	UG/L												
Area1	MW-117	16-Dec-02	MW117-EBT-TS6-101-106	UG/L												
Area1	MW-117	20-Jan-03	MW117-EBT-TS7-101-106	UG/L												
Area1	MW-117	24-Feb-03	MW117-EBT-TS8-101-106	UG/L												
Area1	MW-117	24-Mar-03	MW117-EBT-TS9-101-106	UG/L												
Area1	MW-117	21-Apr-03	MW117-EBT-TS10-101-106	UG/L												
Area1	MW-117	19-May-03	MW117-EBT-TS11-101-106	UG/L												
Area1	MW-117	23-Jun-03	MW117-EBT-TS12-101-106	UG/L												
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	UG/L												
Area1	MW-118	21-May-02	MW118-EBT-B-94-99	UG/L										1	0.16	J
Area1	MW-118	8-Jul-02	MW118-EBT-TS1-94-99	UG/L												
Area1	MW-118	29-Jul-02	MW118-EBT-TS2-94-99	UG/L												
Area1	MW-118	3-Sep-02	MW118-EBT-TS3-94-99	UG/L												
Area1	MW-118	7-Oct-02	MW118-EBT-TS4-94-99	UG/L												
Area1	MW-118	11-Nov-02	MW118-EBT-TS5-94-99	UG/L												
Area1	MW-118	16-Dec-02	MW118-EBT-TS6-94-99	UG/L												
Area1	MW-118	20-Jan-03	MW118-EBT-TS7-94-99	UG/L												
Area1	MW-118	24-Feb-03	MW118-EBT-TS8-94-99	UG/L												
Area1	MW-118	24-Mar-03	MW118-EBT-TS9-94-99	UG/L												
Area1	MW-118	21-Apr-03	MW118-EBT-TS10-94-99	UG/L												
Area1	MW-118	19-May-03	MW118-EBT-TS11-94-99	UG/L												
Area1	MW-118	23-Jun-03	MW118-EBT-TS12-94-99	UG/L												
Area1	MW-118	21-Jul-03	MW118-EBT-TS13-94-99	UG/L												
Area1	MW-119	21-May-02	MW119-EBT-B-94-99	UG/L										1	0.13	J
Area1	MW-119	8-Jul-02	MW119-EBT-TS1-94-99	UG/L												
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99	UG/L												
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99D	UG/L												
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99	UG/L												
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99D	UG/L												
Area1	MW-119	7-Oct-02	MW119-EBT-TS4-94-99	UG/L												
Area1	MW-119	11-Nov-02	MW119-EBT-TS5-94-99	UG/L												
Area1	MW-119	16-Dec-02	MW119-EBT-TS6-94-99	UG/L												
Area1	MW-119	20-Jan-03	MW119-EBT-TS7-94-99	UG/L												
Area1	MW-119	24-Feb-03	MW119-EBT-TS8-94-99	UG/L												
Area1	MW-119	24-Mar-03	MW119-EBT-TS9-94-99	UG/L												
Area1	MW-119	21-Apr-03	MW119-EBT-TS10-94-99	UG/L												
Area1	MW-119	19-May-03	MW119-EBT-TS11-94-99	UG/L												
Area1	MW-119	23-Jun-03	MW119-EBT-TS12-94-99	UG/L												
Area1	MW-119	21-Jul-03	MW119-EBT-TS13-94-99	UG/L												
Area1	MW-120	21-May-02	MW120-EBT-B-101-106	UG/L												
Area1	MW-120	8-Jul-02	MW120-EBT-TS1-101-106	UG/L												
Area1	MW-120	29-Jul-02	MW120-EBT-TS2-101-106	UG/L												
Area1	MW-120	3-Sep-02	MW120-EBT-TS3-101-106	UG/L												
Area1	MW-120	7-Oct-02	MW120-EBT-TS4-101-106	UG/L												
Area1	MW-120	11-Nov-02	MW120-EBT-TS5-101-106	UG/L												
Area1	MW-120	16-Dec-02	MW120-EBT-TS6-101-106	UG/L												
Area1	MW-120	20-Jan-03	MW120-EBT-TS7-101-106	UG/L												
Area1	MW-120	24-Feb-03	MW120-EBT-TS8-101-106	UG/L												
Area1	MW-120	24-Mar-03	MW120-EBT-TS9-101-106	UG/L												
Area1	MW-120	21-Apr-03	MW120-EBT-TS10-101-106	UG/L												
Area1	MW-120	19-May-03	MW120-EBT-TS11-101-106	UG/L												
Area1	MW-120	23-Jun-03	MW120-EBT-TS12-101-106	UG/L												
Area1	MW-120	21-Jul-03	MW120-EBT-TS13-101-106	UG/L												

Attachment G
Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	BROMODICHLOROMETHANE			BROMOMETHANE			CHLOROBENZENE			CHLOROFORM		
					RDF	ResConc	ResQual	RDF	ResConc	ResQual	RDF	ResConc	ResQual	RDF	ResConc	ResQual
Area1	MW-121	21-May-02	MW121-EBT-B-95-100	UG/L										1	0.23	J
Area1	MW-121	8-Jul-02	MW121-EBT-TS1-95-100	UG/L												
Area1	MW-121	29-Jul-02	MW121-EBT-TS2-95-100	UG/L												
Area1	MW-121	3-Sep-02	MW121-EBT-TS3-95-100	UG/L												
Area1	MW-121	7-Oct-02	MW121-EBT-TS4-95-100	UG/L												
Area1	MW-121	11-Nov-02	MW121-EBT-TS5-95-100	UG/L												
Area1	MW-121	16-Dec-02	MW121-EBT-TS6-95-100	UG/L												
Area1	MW-121	20-Jan-03	MW121-EBT-TS7-95-100	UG/L												
Area1	MW-121	24-Feb-03	MW121-EBT-TS8-95-100	UG/L												
Area1	MW-121	24-Mar-03	MW121-EBT-TS9-95-100	UG/L												
Area1	MW-121	21-Apr-03	MW121-EBT-TS10-95-100	UG/L												
Area1	MW-121	19-May-03	MW121-EBT-TS11-95-100	UG/L												
Area1	MW-121	23-Jun-03	MW121-EBT-TS12-95-100	UG/L												
Area1	MW-121	21-Jul-03	MW121-EBT-TS13-95-100	UG/L												
Area1	MW-122	21-May-02	MW122-EBT-B-101-106	UG/L												
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106	UG/L												
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106D	UG/L												
Area1	MW-122	29-Jul-02	MW122-EBT-TS2-101-106	UG/L												
Area1	MW-122	3-Sep-02	MW122-EBT-TS3-101-106	UG/L												
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106	UG/L												
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106D	UG/L												
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	UG/L												
Area1	MW-122	16-Dec-02	MW122-EBT-TS6-101-106	UG/L												
Area1	MW-122	20-Jan-03	MW122-EBT-TS7-101-106	UG/L												
Area1	MW-122	24-Feb-03	MW122-EBT-TS8-101-106	UG/L												
Area1	MW-122	24-Mar-03	MW122-EBT-TS9-101-106	UG/L												
Area1	MW-122	21-Apr-03	MW122-EBT-TS10-101-106	UG/L												
Area1	MW-122	19-May-03	MW122-EBT-TS11-101-106	UG/L												
Area1	MW-122	23-Jun-03	MW122-EBT-TS12-101-106	UG/L												
Area1	MW-122	21-Jul-03	MW122-EBT-TS13-101-106	UG/L												
Area1	MW-123	21-May-02	MW123-EBT-B-96-101	UG/L												
Area1	MW-123	8-Jul-02	MW123-EBT-TS1-96-101	UG/L							1	0.13	J			
Area1	MW-123	29-Jul-02	MW123-EBT-TS2-96-101	UG/L												
Area1	MW-123	3-Sep-02	MW123-EBT-TS3-96-100	UG/L												
Area1	MW-123	7-Oct-02	MW123-EBT-TS4-96-101	UG/L												
Area1	MW-123	11-Nov-02	MW123-EBT-TS5-96-101	UG/L												
Area1	MW-123	16-Dec-02	MW123-EBT-TS6-96-101	UG/L												
Area1	MW-123	20-Jan-03	MW123-EBT-TS7-96-101	UG/L												
Area1	MW-123	24-Feb-03	MW123-EBT-TS8-96-101	UG/L												
Area1	MW-123	24-Mar-03	MW123-EBT-TS9-96-101	UG/L												
Area1	MW-123	21-Apr-03	MW123-EBT-TS10-96-101	UG/L												
Area1	MW-123	19-May-03	MW123-EBT-TS11-96-101	UG/L												
Area1	MW-123	23-Jun-03	MW123-EBT-TS12-96-101	UG/L												
Area1	MW-123	21-Jul-03	MW123-EBT-TS13-96-101	UG/L												
Area1	MW-124	21-May-02	MW124-EBT-B-96-101	UG/L												
Area1	MW-124	8-Jul-02	MW124-EBT-TS1-96-101	UG/L												
Area1	MW-124	29-Jul-02	MW124-EBT-TS2-96-101	UG/L												
Area1	MW-124	3-Sep-02	MW124-EBT-TS3-96-100	UG/L												
Area1	MW-124	7-Oct-02	MW124-EBT-TS4-96-101	UG/L												
Area1	MW-124	11-Nov-02	MW124-EBT-TS5-96-101	UG/L												
Area1	MW-124	16-Dec-02	MW124-EBT-TS6-96-101	UG/L												
Area1	MW-124	20-Jan-03	MW124-EBT-TS7-96-101	UG/L												
Area1	MW-124	24-Feb-03	MW124-EBT-TS8-96-101	UG/L												
Area1	MW-124	24-Mar-03	MW124-EBT-TS9-96-101	UG/L												
Area1	MW-124	21-Apr-03	MW124-EBT-TS10-96-101	UG/L												
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101	UG/L												
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101D	UG/L												
Area1	MW-124	23-Jun-03	MW124-EBT-TS12-96-101	UG/L												
Area1	MW-124	21-Jul-03	MW124-EBT-TS13-96-101	UG/L												
Area1	MW-125	21-May-02	MW125-EBT-B-99-104	UG/L	1	0.41	J							1	0.5	J
Area1	MW-125	21-May-02	MW125-EBT-B-99-104D	UG/L	1	0.44	J							1	0.47	J
Area1	MW-125	8-Jul-02	MW125-EBT-TS1-99-104	UG/L												
Area1	MW-125	29-Jul-02	MW125-EBT-TS2-99-104	UG/L												
Area1	MW-125	3-Sep-02	MW125-EBT-TS3-99-104	UG/L												
Area1	MW-125	7-Oct-02	MW125-EBT-TS4-99-104	UG/L												
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104	UG/L												
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104D	UG/L												
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104	UG/L												
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104D	UG/L												
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104	UG/L												
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104D	UG/L												
Area1	MW-125	24-Feb-03	MW125-EBT-TS8-99-104	UG/L												
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104	UG/L												
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104D	UG/L												
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104	UG/L												
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104D	UG/L												
Area1	MW-125	19-May-03	MW125-EBT-TS11-99-104	UG/L												
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104	UG/L												
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104D	UG/L												
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104	UG/L												
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104D	UG/L												
Area1	MW-21	20-Mar-02	MW21-98-1038L	UG/L												
Area1	MW-21	8-Jul-02	MW21-EBT-TS1-98.5-103.5	UG/L												
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5	UG/L												
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5D	UG/L												
Area1	MW-21	3-Sep-02	MW21-EBT-TS3-98.5-103.5	UG/L										1	0.132	J
Area1	MW-21	7-Oct-02	MW21-EBT-TS4-98.5-103.5	UG/L										1	0.18	J
Area1	MW-21	11-Nov-02	MW21-EBT-TS5-98.5-103.5	UG/L												
Area1	MW-21	16-Dec-02	MW21-EBT-TS6-98.5-103.5	UG/L										1	0.171	J
Area1	MW-21	20-Jan-03	MW21-EBT-TS7-98.5-103.5	UG/L												
Area1	MW-21	24-Feb-03	MW21-EBT-TS8-98.5-103.5	UG/L												
Area1	MW-21	24-Mar-03	MW21-EBT-TS9-98.5-103.5	UG/L										1	0.14	J
Area1	MW-21	21-Apr-03	MW21-EBT-TS10-98.5-103.5	UG/L												
Area1	MW-21	19-May-03	MW21-EBT-TS11-98.5-103.5	UG/L												
Area1	MW-21	23-Jun-03	MW21-EBT-TS12-98.5-103.5	UG/L												
Area1	MW-21	21-Jul-03	MW21-EBT-TS13-98.5-103.5	UG/L												

Attachment G
Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	cis-1,2-DICHLOROETHYLENE			DIBROMOCHLOROMETHANE			ISOBUTANOL			METHYL ETHYL KETONE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B-105-110	UG/L	1	0.75	J	1	0.43	J						
Area1	IW-5	20-Jan-03	IW5-EBT-TS7-102-107	UG/L										1	17.3	=
Area1	IW-6	21-May-02	IW6-EBT-B-101-106	UG/L	1	0.67	J									
Area1	IW-6	20-Jan-03	IW6-EBT-TS7-101-106	UG/L										1	9.58	J
Area1	IW-7	21-May-02	IW7-EBT-B-102-107	UG/L	1	0.45	J									
Area1	IW-7	20-Jan-03	IW7-EBT-TS7-102-107	UG/L										1	33.3	=
Area1	MW-100	11-Dec-01	MW-100-1	UG/L	1	1.1	=									
Area1	MW-100	11-Dec-01	MW-100-2	UG/L	1	1.1	=									
Area1	MW-100	11-Dec-01	MW-100-3	UG/L	1	1.2	=									
Area1	MW-100	11-Dec-01	MW-100-4	UG/L	1	1.2	=									
Area1	MW-100	11-Dec-01	MW-100-5	UG/L	1	1.3	=									
Area1	MW-100	11-Dec-01	MW-100-6	UG/L	1	1.2	=									
Area1	MW-100	11-Dec-01	MW-100-7	UG/L	1	1.2	=									
Area1	MW-100	11-Dec-01	MW-100-8	UG/L	1	1.2	=									
Area1	MW-100	11-Dec-01	MW-100-9	UG/L	1	1.2	=									
Area1	MW-100	11-Dec-01	MW-100-10	UG/L	1	1.3	=									
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115	UG/L	1	1.3	=									
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115D	UG/L	1	1.3	=									
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2-110-115	UG/L	1	0.509	J									
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3-110-115	UG/L	1	17.7	=							1	4.6	J
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115	UG/L	1	33.4	=							1	9.65	J
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115D	UG/L	1	33.5	=							1	10.6	=
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5-110-115	UG/L	1	31.4	=				1	62.1	J	1	120	=
Area1	MW-100B	16-Dec-02	MW100B-EBT-TS6-100-115	UG/L	1	24.1	=							1	34.7	=
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	UG/L	1	26.4	=							10	374	=
Area1	MW-100B	24-Feb-03	MW100B-EBT-TS8-110-115	UG/L	1	28.7	=							1	54	=
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9-100-115	UG/L	1	59.4	=							1	40.3	=
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10-110-115	UG/L	1	61.3	=							1	18.2	=
Area1	MW-100B	19-May-03	MW100B-EBT-TS11-110-115	UG/L	1	75.2	=							1	2.96	J
Area1	MW-100B	23-Jun-03	MW100B-EBT-TS12-110-115	UG/L	1	88.2	=									
Area1	MW-100B	21-Jul-03	MW100B-EBT-TS13-110-115	UG/L	1	89	=									
Area1	MW-115	21-May-02	MW115-EBT-B-94-99	UG/L												
Area1	MW-115	8-Jul-02	MW115-EBT-TS1-94-99	UG/L												
Area1	MW-115	29-Jul-02	MW115-EBT-TS2-94-99	UG/L	1	0.334	J									
Area1	MW-115	3-Sep-02	MW115-EBT-TS3-94-99	UG/L												
Area1	MW-115	7-Oct-02	MW115-EBT-TS4-94-99	UG/L												
Area1	MW-115	11-Nov-02	MW115-EBT-TS5-94-99	UG/L												
Area1	MW-115	16-Dec-02	MW115-EBT-TS6-94-99	UG/L												
Area1	MW-115	20-Jan-03	MW115-EBT-TS7-94-99	UG/L												
Area1	MW-115	24-Feb-03	MW115-EBT-TS8-94-99	UG/L												
Area1	MW-115	24-Mar-03	MW115-EBT-TS9-94-99	UG/L												
Area1	MW-115	21-Apr-03	MW115-EBT-TS10-94-99	UG/L												
Area1	MW-115	19-May-03	MW115-EBT-TS11-94-99	UG/L												
Area1	MW-115	23-Jun-03	MW115-EBT-TS12-94-99	UG/L												
Area1	MW-115	21-Jul-03	MW115-EBT-TS13-94-99	UG/L												
Area1	MW-116	21-May-02	MW116-EBT-B-101-106	UG/L												
Area1	MW-116	21-May-02	MW116-EBT-B-101-106D	UG/L												
Area1	MW-116	8-Jul-02	MW116-EBT-TS1-101-106	UG/L	1	0.45	J									
Area1	MW-116	29-Jul-02	MW116-EBT-TS2-101-106	UG/L												
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106	UG/L												
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106D	UG/L												
Area1	MW-116	7-Oct-02	MW116-EBT-TS4-101-106	UG/L	1	0.544	J									
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106	UG/L	1	4.13	=									
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106D	UG/L	1	4.15	=									
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106	UG/L	1	5.31	=									
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106D	UG/L	1	4.99	=									
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106	UG/L	1	0.784	J									
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106D	UG/L	1	0.823	J									
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106	UG/L	1	1.29	=									
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106D	UG/L	1	1.38	=									
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106	UG/L	1	1.01	=									
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106D	UG/L	1	0.89	J									
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106	UG/L	1	0.907	J									
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106D	UG/L	1	0.803	J									
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106	UG/L	1	0.645	J									
Area1	MW 116	19-May-03	MW116-EBT-TS11-101-106D	UG/L	1	0.639	J									
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106	UG/L	1	0.713	J									
Area1	MW 116	23-Jun-03	MW116-EBT-TS12-101-106D	UG/L	1	0.726	J									
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106	UG/L	1	0.656	J									
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106D	UG/L	1	0.699	J									
Area1	MW-117	21-May-02	MW117-EBT-B-101-106	UG/L	1	0.31	J									
Area1	MW-117	8-Jul-02	MW117-EBT-TS1-101-106	UG/L												
Area1	MW-117	29-Jul-02	MW117-EBT-TS2-101-106	UG/L	1	0.867	J							1	4.26	J
Area1	MW-117	3-Sep-02	MW117-EBT-TS3-101-106	UG/L	1	1.11	=							1	19.2	=
Area1	MW-117	7-Oct-02	MW117-EBT-TS4-101-106	UG/L	1	1.22	=							10	194	=
Area1	MW-117	11-Nov-02	MW117-EBT-TS5-101-106	UG/L	1	1.27	=							10	188	=
Area1	MW-117	16-Dec-02	MW117-EBT-TS6-101-106	UG/L	1	1.34	=							10	314	=
Area1	MW-117	20-Jan-03	MW117-EBT-TS7-101-106	UG/L	1	1.59	=							10	234	=
Area1	MW-117	24-Feb-03	MW117-EBT-TS8-101-106	UG/L	5	2.12	J							5	236	=
Area1	MW-117	24-Mar-03	MW117-EBT-TS9-101-106	UG/L	1	3.05	=							1	128	=
Area1	MW-117	21-Apr-03	MW117-EBT-TS10-101-106	UG/L	1	3.83	=							1	120	=
Area1	MW-117	19-May-03	MW117-EBT-TS11-101-106	UG/L	1	4.85	=							1	102	=
Area1	MW-117	23-Jun-03	MW117-EBT-TS12-101-106	UG/L	1	6.43	=							1	159	=
Area1	MW 117	21-Jul-03	MW117-EBT-TS13	UG/L	1	5.41	=				1	101	=	50	1030	=
Area1	MW-118	21-May-02	MW118-EBT-B-94-99	UG/L	1	0.31	J									
Area1	MW-118	8-Jul-02	MW118-EBT-TS1-94-99	UG/L												
Area1	MW-118	29-Jul-02	MW118-EBT-TS2-94-99	UG/L												
Area1	MW-118	3-Sep-02	MW118-EBT-TS3-94-99	UG/L												
Area1	MW-118	7-Oct-02	MW118-EBT-TS4-94-99	UG/L												
Area1	MW-118	11-Nov-02	MW118-EBT-TS5-94-99	UG/L												
Area1	MW-118	16-Dec-02	MW118-EBT-TS6-94-99	UG/L												
Area1	MW-118	20-Jan-03	MW118-EBT-TS7-94-99	UG/L												
Area1	MW-118	24-Feb-03	MW118-EBT-TS8-94-99	UG/L	1	0.386	J									
Area1	MW-118	24-Mar-03	MW118-EBT-TS9-94-99	UG/L												
Area1	MW-118	21-Apr-03	MW118-EBT-TS10-94-99	UG/L										1	3.87	J
Area1	MW-118	19-May-03	MW118-EBT-TS11-94-99	UG/L												
Area1	MW-118	23-Jun-03	MW118-EBT-TS12-94-99	UG/L												
Area1	MW-118	21-Jul-03	MW118-EBT-TS13-94-99	UG/L												
Area1	MW-119	21-May-02	MW119-EBT-B-94-99	UG/L												
Area1	MW-119	8-Jul-02	MW119-EBT-TS1-94-99	UG/L												
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99	UG/L												
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99D	UG/L												
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99	UG/L												
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99D	UG/L												
Area1	MW-119	7-Oct-02	MW119-EBT-TS4-94-99	UG/L												
Area1	MW-119	11-Nov-02	MW119-EBT-TS5-94-99	UG/L												
Area1	MW-119	16-Dec-02	MW119-EBT-TS6-94-99	UG/L												
Area1	MW-119	20-Jan-03	MW119-EBT-TS7-94-99	UG/L												
Area1	MW-119	24-Feb-03	MW119-EBT-TS8-94-99	UG/L												
Area1	MW-119	24-Mar-03	MW119-EBT-TS9-94-99	UG/L												
Area1	MW-119	21-Apr-03	MW119-EBT-TS10-94-99	UG/L												
Area1	MW-119	19-May-03	MW119-EBT-TS11-94-99	UG/L												
Area1	MW-119	23-Jun-03	MW119-EBT-TS12-94-99	UG/L												
Area1	MW-119	21-Jul-03	MW119-EBT-TS13-94-99	UG/L												
Area1	MW-120	21-May-02	MW120-EBT-B-101 106	UG/L	1	0.71	J									
Area1	MW-120	8-Jul-02	MW120-EBT-TS1-101-106	UG/L	1	0.88	J									
Area1	MW-120	29-Jul-02	MW120-EBT-TS2-101-106	UG/L										1	4.96	J
Area1	MW-120	3-Sep-02	MW120-EBT-TS3-101-106	UG/L	1	1.47	=									
Area1	MW-120	7-Oct-02	MW120-EBT-TS4-101-106	UG/L	1	1.54	=							1	17	=
Area1	MW 120	11-Nov-02	MW120-EBT-TS5-101-106	UG/L	1	1.8	=							1	43.4	=
Area1	MW-120	16-Dec-02	MW120-EBT-TS6-101-106	UG/L	1	1.59	=							1	15.2	=
Area1	MW-120	20-Jan-03	MW120-EBT-TS7-101-106	UG/L	1	1.52	=							1	18.6	=
Area1	MW-120	24-Feb-03	MW120-EBT-TS8-101-106	UG/L	1	2.55	=							1	29.3	=
Area1	MW-120	24-Mar-03	MW120-EBT-TS9-101-106	UG/L	1	9	=							1	16.9	=
Area1	MW-120	21-Apr-03	MW120-EBT-TS10-101-106	UG/L	1	34.1	=							1	13.5	=
Area1	MW-120	19-May-03	MW120-EBT-TS11-101 106	UG/L	1	60.1	=							1	5.49	J
Area1	MW-120	23-Jun-03	MW120-EBT-TS12 101 106	UG/L	1	97.2	=							1	9.23	J
Area1	MW-120	21-Jul-03	MW120-EBT-TS13-101 106	UG/L	1	104	=									

Attachment G
Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	cis-1,2-DICHLOROETHYLENE			DIBROMOCHLOROMETHANE			ISOBUTANOL			METHYL ETHYL KETONE		
					MDF	Conc	Qual	MDF	Conc	Qual	MDF	Conc	Qual	MDF	Conc	Qual
Area1	MW-121	21-May-02	MW121-EBT-B-95-100	UG/L												
Area1	MW-121	8-Jul-02	MW121-EBT-TS1-95-100	UG/L												
Area1	MW-121	29-Jul-02	MW121-EBT-TS2-95-100	UG/L												
Area1	MW-121	3-Sep-02	MW121-EBT-TS3-95-100	UG/L												
Area1	MW-121	7-Oct-02	MW121-EBT-TS4-95-100	UG/L												
Area1	MW-121	11-Nov-02	MW121-EBT-TS5-95-100	UG/L												
Area1	MW-121	16-Dec-02	MW121-EBT-TS6-95-100	UG/L												
Area1	MW-121	20-Jan-03	MW121-EBT-TS7-95-100	UG/L												
Area1	MW-121	24-Feb-03	MW121-EBT-TS8-95-100	UG/L												
Area1	MW-121	24-Mar-03	MW121-EBT-TS9-95-100	UG/L												
Area1	MW-121	21-Apr-03	MW121-EBT-TS10-95-100	UG/L												
Area1	MW-121	19-May-03	MW121-EBT-TS11-95-100	UG/L												
Area1	MW-121	23-Jun-03	MW121-EBT-TS12-95-100	UG/L												
Area1	MW-121	21-Jul-03	MW121-EBT-TS13-95-100	UG/L												
Area1	MW-122	21-May-02	MW122-EBT-B-101-106	UG/L	1	0.99	J									
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106	UG/L	1	0.82	J									
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106D	UG/L	1	0.79	J									
Area1	MW-122	29-Jul-02	MW122-EBT-TS2-101-106	UG/L	1	0.866	J									
Area1	MW-122	3-Sep-02	MW122-EBT-TS3-101-106	UG/L	1	0.97	J									
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106	UG/L	1	1.36	=									
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106D	UG/L	1	1.38	=							1	3.36	J
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	UG/L	1	1.69	=							1	54.6	=
Area1	MW-122	16-Dec-02	MW122-EBT-TS6-101-106	UG/L	1	1.81	=							1	9.3	J
Area1	MW-122	20-Jan-03	MW122-EBT-TS7-101-106	UG/L	1	1.94	=							1	5.66	J
Area1	MW-122	24-Feb-03	MW122-EBT-TS8-101-106	UG/L	1	116	=							1	6.63	J
Area1	MW-122	24-Mar-03	MW122-EBT-TS9-101-106	UG/L	1	141	=							1	6.97	J
Area1	MW-122	21-Apr-03	MW122-EBT-TS10-101-106	UG/L	1	142	=							1	4.14	J
Area1	MW-122	19-May-03	MW122-EBT-TS11-101-106	UG/L	1	145	=									
Area1	MW-122	23-Jun-03	MW122-EBT-TS12-101-106	UG/L	1	163	=									
Area1	MW-122	21-Jul-03	MW122-EBT-TS13-101-106	UG/L	1	170	=									
Area1	MW-123	21-May-02	MW123-EBT-B-96-101	UG/L	1	0.42	J									
Area1	MW-123	8-Jul-02	MW123-EBT-TS1-96-101	UG/L	1	0.34	J									
Area1	MW-123	29-Jul-02	MW123-EBT-TS2-96-101	UG/L	1	0.418	J									
Area1	MW-123	3-Sep-02	MW123-EBT-TS3-96-100	UG/L	1	0.326	J							1	6.2	J
Area1	MW-123	7-Oct-02	MW123-EBT-TS4-96-101	UG/L	1	0.353	J							1	6.73	J
Area1	MW-123	11-Nov-02	MW123-EBT-TS5-96-101	UG/L	1	0.422	J							1	15.6	=
Area1	MW-123	16-Dec-02	MW123-EBT-TS6-96-101	UG/L	1	0.712	J							1	7.04	J
Area1	MW-123	20-Jan-03	MW123-EBT-TS7-96-101	UG/L										1	13.4	=
Area1	MW-123	24-Feb-03	MW123-EBT-TS8-96-101	UG/L	1	0.628	J							1	43.2	=
Area1	MW-123	24-Mar-03	MW123-EBT-TS9-96-101	UG/L	1	0.646	J							1	36	=
Area1	MW-123	21-Apr-03	MW123-EBT-TS10-96-101	UG/L	1	0.582	J							1	19.8	=
Area1	MW-123	19-May-03	MW123-EBT-TS11-96-101	UG/L	1	0.473	J							1	12.8	=
Area1	MW-123	23-Jun-03	MW123-EBT-TS12-96-101	UG/L	1	1.12	=							1	16.8	=
Area1	MW-123	21-Jul-03	MW123-EBT-TS13-96-101	UG/L	1	14.5	=							1	23.8	=
Area1	MW-124	21-May-02	MW124-EBT-B-96-101	UG/L	1	0.85	J									
Area1	MW-124	8-Jul-02	MW124-EBT-TS1-96-101	UG/L	1	0.92	J									
Area1	MW-124	29-Jul-02	MW124-EBT-TS2-96-101	UG/L	1	0.779	J									
Area1	MW-124	3-Sep-02	MW124-EBT-TS3-96-100	UG/L	1	0.873	J									
Area1	MW-124	7-Oct-02	MW124-EBT-TS4-96-101	UG/L	1	1.32	=							1	4.71	J
Area1	MW-124	11-Nov-02	MW124-EBT-TS5-96-101	UG/L	1	1.57	=							1	5.69	J
Area1	MW-124	16-Dec-02	MW124-EBT-TS6-96-101	UG/L	1	1.36	=							1	7.22	J
Area1	MW-124	20-Jan-03	MW124-EBT-TS7-96-101	UG/L												
Area1	MW-124	24-Feb-03	MW124-EBT-TS8-96-101	UG/L	1	1.98	=									
Area1	MW-124	24-Mar-03	MW124-EBT-TS9-96-101	UG/L	1	14.9	=									
Area1	MW-124	21-Apr-03	MW124-EBT-TS10-96-101	UG/L	1	16	=									
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101	UG/L	1	22.2	J									
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101D	UG/L	1	7.96	J									
Area1	MW-124	23-Jun-03	MW124-EBT-TS12-96-101	UG/L	1	18.5	=									
Area1	MW-124	21-Jul-03	MW124-EBT-TS13-96-101	UG/L	1	31.8	=									
Area1	MW-125	21-May-02	MW125-EBT-B-99-104	UG/L				1	0.51	J						
Area1	MW-125	21-May-02	MW125-EBT-B-99-104D	UG/L				1	0.45	J						
Area1	MW-125	8-Jul-02	MW125-EBT-TS1-99-104	UG/L												
Area1	MW-125	29-Jul-02	MW125-EBT-TS2-99-104	UG/L												
Area1	MW-125	3-Sep-02	MW125-EBT-TS3-99-104	UG/L												
Area1	MW-125	7-Oct-02	MW125-EBT-TS4-99-104	UG/L												
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104	UG/L	1	0.389	J									
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104D	UG/L	1	0.323	J									
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104	UG/L	1	8.99	=							1	3.1	J
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104D	UG/L										1	3.34	J
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104	UG/L	1	40.8	=							1	9.51	J
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104D	UG/L	1	40.3	=							1	9.46	J
Area1	MW-125	24-Feb-03	MW125-EBT-TS8-99-104	UG/L	1	19.7	=							1	4	J
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104	UG/L	1	15.4	=									
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104D	UG/L	1	14.7	=									
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104	UG/L	1	34.9	=									
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104D	UG/L	1	32.5	=									
Area1	MW-125	19-May-03	MW125-EBT-TS11-99-104	UG/L	1	8.1	=									
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104	UG/L	1	15	=									
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104D	UG/L	1	14.6	=									
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104	UG/L	1	1.99	=									
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104D	UG/L	1	1.82	=									
Area1	MW-21	20-Mar-02	MW21-98-103BL	UG/L	1	1.9	=									
Area1	MW-21	8-Jul-02	MW21-EBT-TS1-98.5-103.5	UG/L	1	1.7	=									
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5	UG/L	1	1.27	=									
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5D	UG/L	1	1.08	=									
Area1	MW-21	3-Sep-02	MW21-EBT-TS3-98.5-103.5	UG/L	1	1.02	=									
Area1	MW-21	7-Oct-02	MW21-EBT-TS4-98.5-103.5	UG/L	1	1.63	=									
Area1	MW-21	11-Nov-02	MW21-EBT-TS5-98.5-103.5	UG/L	1	1.32	=									
Area1	MW-21	16-Dec-02	MW21-EBT-TS6-98.5-103.5	UG/L	1	1.22	=									
Area1	MW-21	20-Jan-03	MW21-EBT-TS7-98.5-103.5	UG/L	1	0.985	J									
Area1	MW-21	24-Feb-03	MW21-EBT-TS8-98.5-103.5	UG/L	1	1.68	=									
Area1	MW-21	24-Mar-03	MW21-EBT-TS9-98.5-103.5	UG/L	1	1.28	=									
Area1	MW-21	21-Apr-03	MW21-EBT-TS10-98.5-103.5	UG/L	1	1.12	=									
Area1	MW-21	19-May-03	MW21-EBT-TS11-98.5-103.5	UG/L	1	1.25	=									
Area1	MW-21	23-Jun-03	MW21-EBT-TS12-98.5-103.5	UG/L	1	1.36	=									
Area1	MW-21	21-Jul-03	MW21-EBT-TS13-98.5-103.5	UG/L	1	1.25	=									

Attachment G
Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	METHYL ISOBUTYL KETONE			PROPANE NITRILE			tert-BUTYL METHYL ETHER			TETRACHLOROETHYLENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B-105-110	UG/L							1	0.9	J	1	9	=
Area1	IW-5	20-Jan-03	IW5-EBT-TS7-102-107	UG/L							1	1.51	J			
Area1	IW-6	21-May-02	IW6-EBT-B-101-106	UG/L							1	0.82	J	1	17	=
Area1	IW-6	20-Jan-03	IW6-EBT-TS7-101-106	UG/L							1	0.693	J			
Area1	IW-7	21-May-02	IW7-EBT-B-102-107	UG/L							1	0.9	J	1	25	=
Area1	IW-7	20-Jan-03	IW7-EBT-TS7-102-107	UG/L				1	8.38	=	1	2.42	J			
Area1	MW-100	11-Dec-01	MW-100-1	UG/L										1	14	=
Area1	MW-100	11-Dec-01	MW-100-2	UG/L										10	41	=
Area1	MW-100	11-Dec-01	MW-100-3	UG/L										10	43	=
Area1	MW-100	11-Dec-01	MW-100-4	UG/L										10	83	=
Area1	MW-100	11-Dec-01	MW-100-5	UG/L										10	65	=
Area1	MW-100	11-Dec-01	MW-100-6	UG/L										10	51	=
Area1	MW-100	11-Dec-01	MW-100-7	UG/L										10	55	=
Area1	MW-100	11-Dec-01	MW-100-8	UG/L										10	61	=
Area1	MW-100	11-Dec-01	MW-100-9	UG/L										10	63	=
Area1	MW-100	11-Dec-01	MW-100-10	UG/L										10	41	=
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115	UG/L							1	1.4	J	1	49	=
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115D	UG/L							1	1.4	J	1	50	=
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2-110-115	UG/L							1	0.806	J	1	1.56	=
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3-110-115	UG/L							1	2.79	J	1	25.3	=
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115	UG/L							1	4.29	J	1	14.5	=
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115D	UG/L							1	4.22	J	1	14.4	=
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5-110-115	UG/L							1	9.98	=	1	1.77	=
Area1	MW-100B	16-Dec-02	MW100B-EBT-TS6-100-115	UG/L										1	2.35	=
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	UG/L	1	3.66	J				1	13.7	=	1	0.395	J
Area1	MW-100B	24-Feb-03	MW100B-EBT-TS8-110-115	UG/L							1	3.61	J	1	0.53	=
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9-100-115	UG/L							1	4.11	J	1	0.341	J
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10-110-115	UG/L							1	4.31	J			
Area1	MW-100B	19-May-03	MW100B-EBT-TS11-110-115	UG/L							1	4.49	J			
Area1	MW-100B	23-Jun-03	MW100B-EBT-TS12-110-115	UG/L							1	4.46	J			
Area1	MW-100B	21-Jul-03	MW100B-EBT-TS13-110-115	UG/L							1	7.04	=			
Area1	MW-115	21-May-02	MW115-EBT-B-94-99	UG/L										1	1.3	=
Area1	MW-115	8-Jul-02	MW115-EBT-TS1-94-99	UG/L										1	1.4	=
Area1	MW-115	29-Jul-02	MW115-EBT-TS2-94-99	UG/L												
Area1	MW-115	3-Sep-02	MW115-EBT-TS3-94-99	UG/L										1	0.744	=
Area1	MW-115	7-Oct-02	MW115-EBT-TS4-94-99	UG/L										1	1.35	=
Area1	MW-115	11-Nov-02	MW115-EBT-TS5-94-99	UG/L										1	1.76	=
Area1	MW-115	16-Dec-02	MW115-EBT-TS6-94-99	UG/L										1	2.11	=
Area1	MW-115	20-Jan-03	MW115-EBT-TS7-94-99	UG/L										1	1.83	=
Area1	MW-115	24-Feb-03	MW115-EBT-TS8-94-99	UG/L										1	1.89	=
Area1	MW-115	24-Mar-03	MW115-EBT-TS9-94-99	UG/L										1	1.95	=
Area1	MW-115	21-Apr-03	MW115-EBT-TS10-94-99	UG/L										1	1.52	=
Area1	MW-115	19-May-03	MW115-EBT-TS11-94-99	UG/L										1	0.367	J
Area1	MW-115	23-Jun-03	MW115-EBT-TS12-94-99	UG/L										1	0.584	=
Area1	MW-115	21-Jul-03	MW115-EBT-TS13-94-99	UG/L										1	1.85	=
Area1	MW-116	21-May-02	MW116-EBT-B-101-106	UG/L										1	16	=
Area1	MW-116	21-May-02	MW116-EBT-B-101-106D	UG/L										1	15	=
Area1	MW-116	8-Jul-02	MW116-EBT-TS1-101-106	UG/L							1	1.6	J	1	18	=
Area1	MW-116	29-Jul-02	MW116-EBT-TS2-101-106	UG/L							1	0.733	J	1	7.2	=
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106	UG/L										1	9	=
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106D	UG/L							1	0.96	J	1	9.27	=
Area1	MW-116	7-Oct-02	MW116-EBT-TS4-101-106	UG/L							1	2.36	J	1	8.28	=
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106	UG/L							1	2.88	J	1	5.39	=
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106D	UG/L							1	3.07	J	1	5.2	=
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106	UG/L							1	2.61	J	1	6.09	=
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106D	UG/L							1	2.76	J	1	6.06	=
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106	UG/L							1	6.08	=	1	11	=
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106D	UG/L							1	6.03	=	1	12	=
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106	UG/L							1	3.75	J	1	9.27	J
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106D	UG/L							1	4.01	J	1	7.43	J
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106	UG/L							1	4.04	J	1	7.72	=
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106D	UG/L							1	3.96	J	1	7.55	=
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106	UG/L							1	3.67	J	1	10.5	=
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106D	UG/L							1	3.76	J	1	9.86	=
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106	UG/L							1	3.7	J	1	8.72	=
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106D	UG/L							1	3.71	J	1	7.91	=
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106	UG/L							1	3.8	J	1	32.5	=
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106D	UG/L							1	3.95	J	1	34.4	=
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106	UG/L							1	8.09	=	1	40.9	=
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106D	UG/L							1	7.99	=	1	38.7	=
Area1	MW-117	21-May-02	MW117-EBT-B-101-106	UG/L							1	0.63	J	1	2.6	=
Area1	MW-117	8-Jul-02	MW117-EBT-TS1-101-106	UG/L												
Area1	MW-117	29-Jul-02	MW117-EBT-TS2-101-106	UG/L							1	2.72	J			
Area1	MW-117	3-Sep-02	MW117-EBT-TS3-101-106	UG/L							1	4.17	J	1	0.4	J
Area1	MW-117	7-Oct-02	MW117-EBT-TS4-101-106	UG/L							1	5.57	=	1	0.882	=
Area1	MW-117	11-Nov-02	MW117-EBT-TS5-101-106	UG/L	1	2.76	J				1	5.74	=	1	0.69	=
Area1	MW-117	16-Dec-02	MW117-EBT-TS6-101-106	UG/L	1	5.04	J				1	3.76	J	1	0.786	=
Area1	MW-117	20-Jan-03	MW117-EBT-TS7-101-106	UG/L	1	5.15	J				1	4.45	J	1	0.802	=
Area1	MW-117	24-Feb-03	MW117-EBT-TS8-101-106	UG/L							5	3.2	J			
Area1	MW-117	24-Mar-03	MW117-EBT-TS9-101-106	UG/L	1	5.25	J				1	4.06	J	1	0.61	=
Area1	MW-117	21-Apr-03	MW117-EBT-TS10-101-106	UG/L	1	4.71	J				1	3.82	J	1	0.483	J
Area1	MW-117	19-May-03	MW117-EBT-TS11-101-106	UG/L	1	4.07	J				1	3.86	J			
Area1	MW-117	23-Jun-03	MW117-EBT-TS12-101-106	UG/L	1	4.7	J				1	2.73	J			
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	UG/L	1	6.39	J				1	19.6	=	1	0.909	=
Area1	MW-118	21-May-02	MW118-EBT-B-94-99	UG/L										1	4.2	=
Area1	MW-118	8-Jul-02	MW118-EBT-TS1-94-99	UG/L										1	1	=
Area1	MW-118	29-Jul-02	MW118-EBT-TS2-94-99	UG/L												
Area1	MW-118	3-Sep-02	MW118-EBT-TS3-94-99	UG/L							1	0.681	J	1	0.794	=
Area1	MW-118	7-Oct-02	MW118-EBT-TS4-94-99	UG/L										1	1.12	=
Area1	MW-118	11-Nov-02	MW118-EBT-TS5-94-99	UG/L										1	1.53	=
Area1	MW-118	16-Dec-02	MW118-EBT-TS6-94-99	UG/L										1	0.787	=
Area1	MW-118	20-Jan-03	MW118-EBT-TS7-94-99	UG/L										1	1.37	=
Area1	MW-118	24-Feb-03	MW118-EBT-TS8-94-99	UG/L										1	0.734	=
Area1	MW-118	24-Mar-03	MW118-EBT-TS9-94-99	UG/L										1	1.52	=
Area1	MW-118	21-Apr-03	MW118-EBT-TS10-94-99	UG/L										1	1.13	=
Area1	MW-118	19-May-03	MW118-EBT-TS11-94-99	UG/L												
Area1	MW-118	23-Jun-03	MW118-EBT-TS12-94-99	UG/L												
Area1	MW-118	21-Jul-03	MW118-EBT-TS13-94-99	UG/L										1	1.08	=
Area1	MW-119	21-May-02	MW119-EBT-B-94-99	UG/L										1	1.5	=
Area1	MW-119	8-Jul-02	MW119-EBT-TS1-94-99	UG/L										1	0.93	=
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99	UG/L												
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99D	UG/L												
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99	UG/L										1	1.89	=
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99D	UG/L										1	2.03	=
Area1	MW-119	7-Oct-02	MW119-EBT-TS4-94-99	UG/L										1	2.64	=
Area1	MW-119	11-Nov-02	MW119-EBT-TS5-94-99	UG/L										1	1.27	=
Area1	MW-119	16-Dec-02	MW119-EBT-TS6-94-99	UG/L										1	2.45	=
Area1	MW-119	20-Jan-03	MW119-EBT-TS7-94-99	UG/L										1	3.08	=
Area1	MW-119	24-Feb-03	MW119-EBT-TS8-94-99	UG/L										1	2.14	=
Area1	MW-119	24-Mar-03	MW119-EBT-TS9-94-99	UG/L										1	2.69	=
Area1	MW-119	21-Apr-03	MW119-EBT-TS10-94-99	UG/L										1	1.83	=
Area1	MW-119	19-May-03	MW119-EBT-TS11-94-99	UG/L												
Area1	MW-119	23-Jun-03	MW119-EBT-TS12-94-99	UG/L												
Area1	MW-119	21-Jul-03	MW119-EBT-TS13-94-99	UG/L										1	0.961	=
Area1	MW-120	21-May-02	MW120-EBT-B-101-106	UG/L							1	0.89	J	1	32	=
Area1	MW-120	8-Jul-02	MW120-EBT-TS1-101-106	UG/L							1	1.8	J	1	25	=
Area1	MW-120	29-Jul-02	MW120-EBT-TS2-101-106	UG/L							1	1.38	J			
Area1	MW-120	3-Sep-02	MW120-EBT-TS3-101-106	UG/L							1	3.53	J	1	10.5	=
Area1	MW-120	7-Oct-02	MW120-EBT-TS4-101-106	UG/L							1	4.99	J	1	5.62	=
Area1	MW-120	11-Nov-02	MW120-EBT-TS5-101-106	UG/L							1	8.24	=	1	15.2	=
Area1	MW-120	16-Dec-02	MW120-EBT-TS6-101-106	UG/L							1	5.61	=	1	17.1	=
Area1	MW-120	20-Jan-03	MW120-EBT-TS7-101-106	UG/L							1	6.84	=	1	22.4	=
Area1	MW-120	24-Feb-03	MW120-EBT-TS8-101-106	UG/L							1	6.07	=	1	13.5	=
Area1	MW-120	24-Mar-03	MW120-EBT-TS9-101-106	UG/L							1	5.14	=	1	27.1	=
Area1	MW-120	21-Apr-03	MW120-EBT-TS10-101-106	UG/L							1	5.32	=	1	31.2	=
Area1	MW-120	19-May-03	MW120-EBT-TS11-101-106	UG/L							1	4.99	J	1	26.2	=
Area1	MW-120	23-Jun-03	MW120-EBT-TS12-101-106	UG/L							1	4.02	J	1	29.5	=
Area1	MW-120	21-Jul-03	MW120-EBT-TS13-101-106	UG/L							1	7.47	=	1	25.6	=

Attachment G
Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	METHYL ISOBUTYL KETONE			PROPANE NITRILE			tert-BUTYL METHYL ETHER			TETRACHLOROETHYLENE		
					Det. Limit	Conc.	Qualifier	Det. Limit	Conc.	Qualifier	Det. Limit	Conc.	Qualifier	Det. Limit	Conc.	Qualifier
Area1	MW-121	21-May-02	MW121-EBT-B-95-100	UG/L										1	1.9	=
Area1	MW-121	8-Jul-02	MW121-EBT-TS1-95-100	UG/L										1	1.4	=
Area1	MW-121	29-Jul-02	MW121-EBT-TS2-95-100	UG/L												
Area1	MW-121	3-Sep-02	MW121-EBT-TS3-95-100	UG/L										1	2.72	=
Area1	MW-121	7-Oct-02	MW121-EBT-TS4-95-100	UG/L										1	2.21	=
Area1	MW-121	11-Nov-02	MW121-EBT-TS5-95-100	UG/L										1	1.93	=
Area1	MW-121	16-Dec-02	MW121-EBT-TS6-95-100	UG/L										1	3.93	=
Area1	MW-121	20-Jan-03	MW121-EBT-TS7-95-100	UG/L										1	2.57	=
Area1	MW-121	24-Feb-03	MW121-EBT-TS8-95-100	UG/L										1	2.82	=
Area1	MW-121	24-Mar-03	MW121-EBT-TS9-95-100	UG/L										1	2.23	=
Area1	MW-121	21-Apr-03	MW121-EBT-TS10-95-100	UG/L										1	1.94	=
Area1	MW-121	19-May-03	MW121-EBT-TS11-95-100	UG/L												
Area1	MW-121	23-Jun-03	MW121-EBT-TS12-95-100	UG/L										1	1.8	=
Area1	MW-121	21-Jul-03	MW121-EBT-TS13-95-100	UG/L										1	3.17	=
Area1	MW-122	21-May-02	MW122-EBT-B-101-106	UG/L							1	1.7	J	1	53	=
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106	UG/L							1	3	J	1	20	=
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106D	UG/L							1	3.1	J	1	20	=
Area1	MW-122	29-Jul-02	MW122-EBT-TS2-101-106	UG/L							1	3.18	J	1	25.3	=
Area1	MW-122	3-Sep-02	MW122-EBT-TS3-101-106	UG/L							1	6.18	=	1	30.7	=
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106	UG/L							1	8.04	=	1	44	=
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106D	UG/L							1	8.01	=	1	44	=
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	UG/L							1	21	=	1	46.4	=
Area1	MW-122	16-Dec-02	MW122-EBT-TS6-101-106	UG/L							1	4.62	J	1	55.4	=
Area1	MW-122	20-Jan-03	MW122-EBT-TS7-101-106	UG/L							1	5.28	=	1	71	=
Area1	MW-122	24-Feb-03	MW122-EBT-TS8-101-106	UG/L							1	5.8	=	1	18.9	=
Area1	MW-122	24-Mar-03	MW122-EBT-TS9-101-106	UG/L							1	5.65	=	1	0.754	=
Area1	MW-122	21-Apr-03	MW122-EBT-TS10-101-106	UG/L							1	5.38	=	1	0.336	J
Area1	MW-122	19-May-03	MW122-EBT-TS11-101-106	UG/L							1	5.06	=			
Area1	MW-122	23-Jun-03	MW122-EBT-TS12-101-106	UG/L							1	4.46	J			
Area1	MW-122	21-Jul-03	MW122-EBT-TS13-101-106	UG/L							1	8.36	=			
Area1	MW-123	21-May-02	MW123-EBT-B-96-101	UG/L										1	22	=
Area1	MW-123	8-Jul-02	MW123-EBT-TS1-96-101	UG/L										1	13	=
Area1	MW-123	29-Jul-02	MW123-EBT-TS2-96-101	UG/L										1	1.01	=
Area1	MW-123	3-Sep-02	MW123-EBT-TS3-96-100	UG/L							1	0.585	J	1	3.44	=
Area1	MW-123	7-Oct-02	MW123-EBT-TS4-96-101	UG/L							1	1.16	J	1	5.41	=
Area1	MW-123	11-Nov-02	MW123-EBT-TS5-96-101	UG/L							1	1.54	J	1	2.89	=
Area1	MW-123	16-Dec-02	MW123-EBT-TS6-96-101	UG/L										1	8.55	=
Area1	MW-123	20-Jan-03	MW123-EBT-TS7-96-101	UG/L							1	1.21	J	1	11.7	=
Area1	MW-123	24-Feb-03	MW123-EBT-TS8-96-101	UG/L							1	1.46	J	1	10.8	=
Area1	MW-123	24-Mar-03	MW123-EBT-TS9-96-101	UG/L							1	1.28	J	1	13.1	=
Area1	MW-123	21-Apr-03	MW123-EBT-TS10-96-101	UG/L							1	1.45	J	1	13.2	=
Area1	MW-123	19-May-03	MW123-EBT-TS11-96-101	UG/L							1	1.35	J	1	10.7	=
Area1	MW-123	23-Jun-03	MW123-EBT-TS12-96-101	UG/L							1	1.61	J	1	13.3	=
Area1	MW-123	21-Jul-03	MW123-EBT-TS13-96-101	UG/L							1	2.41	J	1	6.26	=
Area1	MW-124	21-May-02	MW124-EBT-B-96-101	UG/L							1	1.5	J	1	46	=
Area1	MW-124	8-Jul-02	MW124-EBT-TS1-96-101	UG/L							1	2.5	J	1	46	=
Area1	MW-124	29-Jul-02	MW124-EBT-TS2-96-101	UG/L							1	2.25	J	1	30.6	=
Area1	MW-124	3-Sep-02	MW124-EBT-TS3-96-100	UG/L							1	3.95	J	1	30.8	=
Area1	MW-124	7-Oct-02	MW124-EBT-TS4-96-101	UG/L							1	5.89	=	1	30.9	=
Area1	MW-124	11-Nov-02	MW124-EBT-TS5-96-101	UG/L							1	6.36	=	1	48.1	=
Area1	MW-124	16-Dec-02	MW124-EBT-TS6-96-101	UG/L							1	4.41	J	1	57.7	=
Area1	MW-124	20-Jan-03	MW124-EBT-TS7-96-101	UG/L							1	16.3	=	1	64.9	=
Area1	MW-124	24-Feb-03	MW124-EBT-TS8-96-101	UG/L							1	5.59	=	1	55.5	=
Area1	MW-124	24-Mar-03	MW124-EBT-TS9-96-101	UG/L							1	5.59	=	1	81.6	=
Area1	MW-124	21-Apr-03	MW124-EBT-TS10-96-101	UG/L							1	4.92	J	1	51.6	=
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101	UG/L							1	5.14	=	1	63.2	J
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101D	UG/L							1	0.538	J	1	3.33	J
Area1	MW-124	23-Jun-03	MW124-EBT-TS12-96-101	UG/L							1	5.33	=	1	72.2	=
Area1	MW-124	21-Jul-03	MW124-EBT-TS13-96-101	UG/L							1	7.13	=	1	59.4	=
Area1	MW-125	21-May-02	MW125-EBT-B-99-104	UG/L										1	8.9	=
Area1	MW-125	21-May-02	MW125-EBT-B-99-104D	UG/L										1	9.9	=
Area1	MW-125	8-Jul-02	MW125-EBT-TS1-99-104	UG/L							1	0.69	J	1	8.1	=
Area1	MW-125	29-Jul-02	MW125-EBT-TS2-99-104	UG/L												
Area1	MW-125	3-Sep-02	MW125-EBT-TS3-99-104	UG/L										1	1.32	=
Area1	MW-125	7-Oct-02	MW125-EBT-TS4-99-104	UG/L										1	2.01	=
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104	UG/L										1	3.65	=
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104D	UG/L										1	3.54	=
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104	UG/L										1	7.07	=
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104D	UG/L							1	0.646	J	1	7.46	=
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104	UG/L							1	1.54	J	1	6.57	=
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104D	UG/L							1	1.52	J	1	6.68	=
Area1	MW-125	24-Feb-03	MW125-EBT-TS8-99-104	UG/L										1	7.17	=
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104	UG/L							1	0.972	J	1	5.68	=
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104D	UG/L							1	0.972	J	1	5.46	=
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104	UG/L							1	1.74	J	1	7.79	=
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104D	UG/L							1	1.63	J	1	7.76	=
Area1	MW-125	19-May-03	MW125-EBT-TS11-99-104	UG/L							1	0.527	J	1	3.24	=
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104	UG/L							1	1.06	J	1	8.85	=
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104D	UG/L							1	0.986	J	1	8.98	=
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104	UG/L										1	5.55	=
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104D	UG/L										1	6.36	=
Area1	MW-21	20-Mar-02	MW21-98-1036L	UG/L										1	90	=
Area1	MW-21	8-Jul-02	MW21-EBT-TS1-98.5-103.5	UG/L							1	0.55	J	1	110	=
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5	UG/L										1	125	=
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5D	UG/L										1	118	=
Area1	MW-21	3-Sep-02	MW21-EBT-TS3-98.5-103.5	UG/L										1	178	=
Area1	MW-21	7-Oct-02	MW21-EBT-TS4-98.5-103.5	UG/L										1	152	=
Area1	MW-21	11-Nov-02	MW21-EBT-TS5-98.5-103.5	UG/L										1	188	=
Area1	MW-21	16-Dec-02	MW21-EBT-TS6-98.5-103.5	UG/L										10	195	=
Area1	MW-21	20-Jan-03	MW21-EBT-TS7-98.5-103.5	UG/L										10	194	=
Area1	MW-21	24-Feb-03	MW21-EBT-TS8-98.5-103.5	UG/L										1	200	=
Area1	MW-21	24-Mar-03	MW21-EBT-TS9-98.5-103.5	UG/L										1	190	=
Area1	MW-21	21-Apr-03	MW21-EBT-TS10-98.5-103.5	UG/L										1	171	=
Area1	MW-21	19-May-03	MW21-EBT-TS11-98.5-103.5	UG/L										1	172	=
Area1	MW-21	23-Jun-03	MW21-EBT-TS12-98.5-103.5	UG/L										1	159	=
Area1	MW-21	21-Jul-03	MW21-EBT-TS13-98.5-103.5	UG/L										1	120	=

Attachment G
Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	TOLUENE			trans-1,2-DICHLOROETHENE			TRICHLOROETHYLENE			VINYL CHLORIDE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	IW-5	21-May-02	IW5-EBT-B-105-110	UG/L							1	27	=			
Area1	IW-5	20-Jan-03	IW5-EBT-TS7-102-107	UG/L							1	0.286	J			
Area1	IW-6	21-May-02	IW6-EBT-B-101-106	UG/L							1	34	=			
Area1	IW-6	20-Jan-03	IW6-EBT-TS7-101-106	UG/L												
Area1	IW-7	21-May-02	IW7-EBT-B-102-107	UG/L							1	21	=			
Area1	IW-7	20-Jan-03	IW7-EBT-TS7-102-107	UG/L												
Area1	MW-100	11-Dec-01	MW-100-1	UG/L				1	0.14	J	5	44	=			
Area1	MW-100	11-Dec-01	MW-100-2	UG/L				1	0.18	J	10	58	=			
Area1	MW-100	11-Dec-01	MW-100-3	UG/L				1	0.12	J	10	65	=			
Area1	MW-100	11-Dec-01	MW-100-4	UG/L				1	0.18	J	10	81	=			
Area1	MW-100	11-Dec-01	MW-100-5	UG/L				1	0.15	J	10	97	=			
Area1	MW-100	11-Dec-01	MW-100-6	UG/L				1	0.15	J	10	75	=			
Area1	MW-100	11-Dec-01	MW-100-7	UG/L				1	0.16	J	10	94	=			
Area1	MW-100	11-Dec-01	MW-100-8	UG/L				1	0.13	J	10	97	=			
Area1	MW-100	11-Dec-01	MW-100-9	UG/L				1	0.17	J	10	96	=			
Area1	MW-100	11-Dec-01	MW-100-10	UG/L				1	0.17	J	10	85	=			
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115	UG/L							1	72	=			
Area1	MW-100B	8-Jul-02	MW100B-EBT-TS1-110-115D	UG/L							1	72	=			
Area1	MW-100B	29-Jul-02	MW100B-EBT-TS2-110-115	UG/L							1	22.8	=			
Area1	MW-100B	3-Sep-02	MW100B-EBT-TS3-110-115	UG/L							1	35.1	=			
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115	UG/L				1	0.269	J	1	11.6	=			
Area1	MW-100B	7-Oct-02	MW100B-EBT-TS4-110-115D	UG/L				1	0.272	J	1	11.2	=			
Area1	MW-100B	11-Nov-02	MW100B-EBT-TS5-110-115	UG/L							1	2.27	=			
Area1	MW-100B	16-Dec-02	MW100B-EBT-TS6-100-115	UG/L				1	0.321	J	1	2.06	=			
Area1	MW-100B	20-Jan-03	MW100B-EBT-TS7	UG/L							1	0.4	J	1	2.57	=
Area1	MW-100B	24-Feb-03	MW100B-EBT-TS8-110-115	UG/L							1	0.407	J	1	0.436	J
Area1	MW-100B	24-Mar-03	MW100B-EBT-TS9-100-115	UG/L				1	0.274	J				1	0.968	J
Area1	MW-100B	21-Apr-03	MW100B-EBT-TS10-110-115	UG/L				1	0.323	J				1	0.797	J
Area1	MW-100B	19-May-03	MW100B-EBT-TS11-110-115	UG/L				1	0.333	J				1	0.819	J
Area1	MW-100B	23-Jun-03	MW100B-EBT-TS12-110-115	UG/L				1	0.356	J				1	0.846	J
Area1	MW-100B	21-Jul-03	MW100B-EBT-TS13-110-115	UG/L				1	0.312	J				1	0.66	J
Area1	MW-115	21-May-02	MW115-EBT-B-94-99	UG/L							1	59	=			
Area1	MW-115	8-Jul-02	MW115-EBT-TS1-94-99	UG/L							1	60	=			
Area1	MW-115	29-Jul-02	MW115-EBT-TS2-94-99	UG/L							10	255	=			
Area1	MW-115	3-Sep-02	MW115-EBT-TS3-94-99	UG/L							1	117	=			
Area1	MW-115	7-Oct-02	MW115-EBT-TS4-94-99	UG/L							1	49.5	=			
Area1	MW-115	11-Nov-02	MW115-EBT-TS5-94-99	UG/L							1	47	=			
Area1	MW-115	16-Dec-02	MW115-EBT-TS8-94-99	UG/L							1	36	=			
Area1	MW-115	20-Jan-03	MW115-EBT-TS7-94-99	UG/L							1	49	=			
Area1	MW-115	24-Feb-03	MW115-EBT-TS8-94-99	UG/L							1	23.6	=			
Area1	MW-115	24-Mar-03	MW115-EBT-TS9-94-99	UG/L							1	15.2	=			
Area1	MW-115	21-Apr-03	MW115-EBT-TS10-94-99	UG/L							1	12.9	=			
Area1	MW-115	19-May-03	MW115-EBT-TS11-94-99	UG/L							1	12.1	=			
Area1	MW-115	23-Jun-03	MW115-EBT-TS12-94-99	UG/L							1	12.8	=			
Area1	MW-115	21-Jul-03	MW115-EBT-TS13-94-99	UG/L							1	8.41	=			
Area1	MW-116	21-May-02	MW116-EBT-B-101-106	UG/L							1	9	=			
Area1	MW-116	21-May-02	MW116-EBT-B-101-106D	UG/L							1	8.2	=			
Area1	MW-116	8-Jul-02	MW116-EBT-TS1-101-106	UG/L							1	18	=			
Area1	MW-116	29-Jul-02	MW116-EBT-TS2-101-106	UG/L							1	7.96	=			
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106	UG/L							1	11.7	=			
Area1	MW-116	3-Sep-02	MW116-EBT-TS3-101-106D	UG/L							1	11.7	=			
Area1	MW-116	7-Oct-02	MW116-EBT-TS4-101-106	UG/L							1	19.5	=			
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106	UG/L							1	21	=			
Area1	MW-116	11-Nov-02	MW116-EBT-TS5-101-106D	UG/L							1	19.6	=			
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106	UG/L							1	26.2	=			
Area1	MW-116	16-Dec-02	MW116-EBT-TS6-101-106D	UG/L							1	24.8	=			
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106	UG/L							1	10.6	=			
Area1	MW-116	20-Jan-03	MW116-EBT-TS7-101-106D	UG/L							1	11.1	=			
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106	UG/L							1	29.7	=			
Area1	MW-116	24-Feb-03	MW116-EBT-TS8-101-106D	UG/L							1	29.5	=			
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106	UG/L							1	29.9	=			
Area1	MW-116	24-Mar-03	MW116-EBT-TS9-101-106D	UG/L							1	29.3	=			
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106	UG/L							1	30.5	=			
Area1	MW-116	21-Apr-03	MW116-EBT-TS10-101-106D	UG/L							1	31.1	=			
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106	UG/L							1	25.9	=			
Area1	MW-116	19-May-03	MW116-EBT-TS11-101-106D	UG/L							1	25.5	=			
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106	UG/L							1	32.3	=			
Area1	MW-116	23-Jun-03	MW116-EBT-TS12-101-106D	UG/L							1	34.2	=			
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106	UG/L							1	35.9	=			
Area1	MW-116	21-Jul-03	MW116-EBT-TS13-101-106D	UG/L							1	35.3	=			
Area1	MW-117	21-May-02	MW117-EBT-B-101-106	UG/L							1	9	=			
Area1	MW-117	8-Jul-02	MW117-EBT-TS1-101-106	UG/L												
Area1	MW-117	29-Jul-02	MW117-EBT-TS2-101-106	UG/L							1	6.73	=			
Area1	MW-117	3-Sep-02	MW117-EBT-TS3-101-106	UG/L							1	7.04	=			
Area1	MW-117	7-Oct-02	MW117-EBT-TS4-101-106	UG/L							1	7.36	=			
Area1	MW-117	11-Nov-02	MW117-EBT-TS5-101-106	UG/L							1	7.6	=			
Area1	MW-117	16-Dec-02	MW117-EBT-TS6-101-106	UG/L							1	8.35	=			
Area1	MW-117	20-Jan-03	MW117-EBT-TS7-101-106	UG/L							1	11.4	=			
Area1	MW-117	24-Feb-03	MW117-EBT-TS8-101-106	UG/L							5	16.7	=			
Area1	MW-117	24-Mar-03	MW117-EBT-TS9-101-106	UG/L							1	28.2	=	1	0.389	J
Area1	MW-117	21-Apr-03	MW117-EBT-TS10-101-106	UG/L							1	30.9	=	1	0.393	J
Area1	MW-117	19-May-03	MW117-EBT-TS11-101-106	UG/L				1	0.277	J	1	32.9	=	1	0.502	J
Area1	MW-117	23-Jun-03	MW117-EBT-TS12-101-106	UG/L				1	0.46	J	1	38.1	=	1	0.526	J
Area1	MW-117	21-Jul-03	MW117-EBT-TS13	UG/L				1	0.46	J	1	25.7	=	1	0.349	J
Area1	MW-118	21-May-02	MW118-EBT-B-94-99	UG/L							1	140	=			
Area1	MW-118	8-Jul-02	MW118-EBT-TS1-94-99	UG/L							1	140	=			
Area1	MW-118	29-Jul-02	MW118-EBT-TS2-94-99	UG/L							1	184	=			
Area1	MW-118	3-Sep-02	MW118-EBT-TS3-94-99	UG/L							1	104	=			
Area1	MW-118	7-Oct-02	MW118-EBT-TS4-94-99	UG/L							1	140	=			
Area1	MW-118	11-Nov-02	MW118-EBT-TS5-94-99	UG/L							1	113	=			
Area1	MW-118	16-Dec-02	MW118-EBT-TS6-94-99	UG/L							1	91	=			
Area1	MW-118	20-Jan-03	MW118-EBT-TS7-94-99	UG/L							1	65	=			
Area1	MW-118	24-Feb-03	MW118-EBT-TS8-94-99	UG/L							1	45.4	=			
Area1	MW-118	24-Mar-03	MW118-EBT-TS9-94-99	UG/L							1	51.3	=			
Area1	MW-118	21-Apr-03	MW118-EBT-TS10-94-99	UG/L							1	56.5	=			
Area1	MW-118	19-May-03	MW118-EBT-TS11-94-99	UG/L							1	51.1	=			
Area1	MW-118	23-Jun-03	MW118-EBT-TS12-94-99	UG/L							1	25.8	=			
Area1	MW-118	21-Jul-03	MW118-EBT-TS13-94-99	UG/L							1	32.8	=			
Area1	MW-119	21-May-02	MW119-EBT-B-94-99	UG/L							1	170	=			
Area1	MW-119	8-Jul-02	MW119-EBT-TS1-94-99	UG/L							1	120	=			
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99	UG/L							1	118	=			
Area1	MW-119	29-Jul-02	MW119-EBT-TS2-94-99D	UG/L							1	116	=			
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99	UG/L							1	74.1	=			
Area1	MW-119	3-Sep-02	MW119-EBT-TS3-94-99D	UG/L							1	76.9	=			
Area1	MW-119	7-Oct-02	MW119-EBT-TS4-94-99	UG/L							1	57.3	=			
Area1	MW-119	11-Nov-02	MW119-EBT-TS5-94-99	UG/L							1	142	=			
Area1	MW-119	16-Dec-02	MW119-EBT-TS6-94-99	UG/L							1	114	=			
Area1	MW-119	20-Jan-03	MW119-EBT-TS7-94-99	UG/L							1	100	=			
Area1	MW-119	24-Feb-03	MW119-EBT-TS8-94-99	UG/L							1	59	=			
Area1	MW-119	24-Mar-03	MW119-EBT-TS9-94-99	UG/L							1	61.6	=			
Area1	MW-119	21-Apr-03	MW119-EBT-TS10-94-99	UG/L							1	38.4	=			
Area1	MW-119	19-May-03	MW119-EBT-TS11-94-99	UG/L							1	42.8	=			
Area1	MW-119	23-Jun-03	MW119-EBT-TS12-94-99	UG/L							1	27.8	=			
Area1	MW-119	21-Jul-03	MW119-EBT-TS13-94-99	UG/L							1	36.3	=			
Area1	MW-120	21-May-02	MW120-EBT-B-101-106	UG/L							1	40	=			
Area1	MW-120	8-Jul-02	MW120-EBT-TS1-101-106	UG/L							1	39	=			
Area1	MW-120	29-Jul-02	MW120-EBT-TS2-101-106	UG/L							1	2.83	=			
Area1	MW-120	3-Sep-02	MW120-EBT-TS3-101-106	UG/L							1	26.3	=			
Area1	MW-120	7-Oct-02	MW120-EBT-TS4-101-106	UG/L							1	14.5	=			
Area1	MW-120	11-Nov-02	MW120-EBT-TS5-101-106	UG/L							1	41	=			
Area1	MW-120	16-Dec-02	MW120-EBT-TS6-101-106	UG/L							1	41.4	=			
Area1	MW-120	20-Jan-03	MW120-EBT-TS7-101-106	UG/L							1	59.4	=			
Area1	MW-120	24-Feb-03	MW120-EBT-TS8-101-106	UG/L							1	40.1	=	1	0.253	J
Area1	MW-120	24-Mar-03	MW120-EBT-TS9-101-106	UG/L							1	58.2	=	1	0.368	J
Area1	MW-120	21-Apr-03	MW120-EBT-TS10-101-106	UG/L							1	48.1	=	1	0.526	J
Area1	MW-120	19-May-03	MW120-EBT-TS11-101-106	UG/L							1	37.8	=	1	0.851	J
Area1	MW-120	23-Jun-03	MW120-EBT-TS12-101-106	UG/L							1	31.3	=	1	0.918	J
Area1	MW-120	21-Jul-03	MW120-EBT-TS13-101-106	UG/L							1	38.6	=	1	0.977	J

Attachment G
Study Area1: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	TOLUENE			trans-1,2-DICHLOROETHENE			TRICHLOROETHYLENE			VINYL CHLORIDE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area1	MW-121	21-May-02	MW121-EBT-B-95-100	UG/L							1	79	=			
Area1	MW-121	8-Jul-02	MW121-EBT-TS1-95-100	UG/L							1	74	=			
Area1	MW-121	29-Jul-02	MW121-EBT-TS2-95-100	UG/L							1	24	=			
Area1	MW-121	3-Sep-02	MW121-EBT-TS3-95-100	UG/L							1	78	=			
Area1	MW-121	7-Oct-02	MW121-EBT-TS4-95-100	UG/L							1	60.7	=			
Area1	MW-121	11-Nov-02	MW121-EBT-TS5-95-100	UG/L							1	70.5	=			
Area1	MW-121	16-Dec-02	MW121-EBT-TS6-95-100	UG/L							1	24.1	=			
Area1	MW-121	20-Jan-03	MW121-EBT-TS7-95-100	UG/L							1	40.1	=			
Area1	MW-121	24-Feb-03	MW121-EBT-TS8-95-100	UG/L							1	24.3	=			
Area1	MW-121	24-Mar-03	MW121-EBT-TS9-95-100	UG/L							1	20.3	=			
Area1	MW-121	21-Apr-03	MW121-EBT-TS10-95-100	UG/L							1	13.9	=			
Area1	MW-121	19-May-03	MW121-EBT-TS11-95-100	UG/L							1	12.8	=			
Area1	MW-121	23-Jun-03	MW121-EBT-TS12-95-100	UG/L							1	11.6	=			
Area1	MW-121	21-Jul-03	MW121-EBT-TS13-95-100	UG/L							1	7.03	=			
Area1	MW-122	21-May-02	MW122-EBT-B-101-106	UG/L							1	49	=			
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106	UG/L							1	32	=			
Area1	MW-122	8-Jul-02	MW122-EBT-TS1-101-106D	UG/L							1	32	=			
Area1	MW-122	29-Jul-02	MW122-EBT-TS2-101-106	UG/L							1	51.8	=			
Area1	MW-122	3-Sep-02	MW122-EBT-TS3-101-106	UG/L							1	52	=			
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106	UG/L							1	66.4	=			
Area1	MW-122	7-Oct-02	MW122-EBT-TS4-101-106D	UG/L							1	65.8	=			
Area1	MW-122	13-Nov-02	MW122-EBT-TS5	UG/L				1	0.288	J	1	68.3	=			
Area1	MW-122	16-Dec-02	MW122-EBT-TS6-101-106	UG/L				1	0.293	J	1	84.4	=			
Area1	MW-122	20-Jan-03	MW122-EBT-TS7-101-106	UG/L				1	0.276	J	1	86.5	=			
Area1	MW-122	24-Feb-03	MW122-EBT-TS8-101-106	UG/L				1	0.359	J	1	20.4	=			
Area1	MW-122	24-Mar-03	MW122-EBT-TS9-101-106	UG/L				1	0.406	J	1	0.952	J			
Area1	MW-122	21-Apr-03	MW122-EBT-TS10-101-106	UG/L				1	0.411	J	1	0.322	J			
Area1	MW-122	19-May-03	MW122-EBT-TS11-101-106	UG/L				1	0.288	J	1	0.763	J			
Area1	MW-122	23-Jun-03	MW122-EBT-TS12-101-106	UG/L				1	0.34	J						
Area1	MW-122	21-Jul-03	MW122-EBT-TS13-101-106	UG/L												
Area1	MW-123	21-May-02	MW123-EBT-B-96-101	UG/L							1	48	=			
Area1	MW-123	8-Jul-02	MW123-EBT-TS1-96-101	UG/L							1	96	=			
Area1	MW-123	29-Jul-02	MW123-EBT-TS2-96-101	UG/L							1	48.7	=			
Area1	MW-123	3-Sep-02	MW123-EBT-TS3-96-100	UG/L							1	29.8	=			
Area1	MW-123	7-Oct-02	MW123-EBT-TS4-96-101	UG/L							1	34.8	=			
Area1	MW-123	11-Nov-02	MW123-EBT-TS5-96-101	UG/L							1	48	=			
Area1	MW-123	16-Dec-02	MW123-EBT-TS6-96-101	UG/L							1	42.8	=			
Area1	MW-123	20-Jan-03	MW123-EBT-TS7-96-101	UG/L							1	64.3	=			
Area1	MW-123	24-Feb-03	MW123-EBT-TS8-96-101	UG/L							1	57.7	=			
Area1	MW-123	24-Mar-03	MW123-EBT-TS9-96-101	UG/L							1	29	=			
Area1	MW-123	21-Apr-03	MW123-EBT-TS10-96-101	UG/L							1	45	=			
Area1	MW-123	19-May-03	MW123-EBT-TS11-96-101	UG/L							1	21.7	=			
Area1	MW-123	23-Jun-03	MW123-EBT-TS12-96-101	UG/L							1	23.6	=			
Area1	MW-123	21-Jul-03	MW123-EBT-TS13-96-101	UG/L	1	0.327	J				1	7.92	=			
Area1	MW-124	21-May-02	MW124-EBT-B-96-101	UG/L							1	40	=			
Area1	MW-124	8-Jul-02	MW124-EBT-TS1-96-101	UG/L							1	48	=			
Area1	MW-124	29-Jul-02	MW124-EBT-TS2-96-101	UG/L							1	77.5	=			
Area1	MW-124	3-Sep-02	MW124-EBT-TS3-96-100	UG/L							1	73.5	=			
Area1	MW-124	7-Oct-02	MW124-EBT-TS4-96-101	UG/L							1	64.4	=			
Area1	MW-124	11-Nov-02	MW124-EBT-TS5-96-101	UG/L							1	75.3	=			
Area1	MW-124	16-Dec-02	MW124-EBT-TS6-96-101	UG/L							1	82.1	=			
Area1	MW-124	20-Jan-03	MW124-EBT-TS7-96-101	UG/L							1	96.8	=			
Area1	MW-124	24-Feb-03	MW124-EBT-TS8-96-101	UG/L							1	94.2	=			
Area1	MW-124	24-Mar-03	MW124-EBT-TS9-96-101	UG/L				1	0.348	J	1	104	=			
Area1	MW-124	21-Apr-03	MW124-EBT-TS10-96-101	UG/L				1	0.271	J	1	86.4	=			
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101	UG/L				1	0.335	J	1	88.9	J			
Area1	MW-124	19-May-03	MW124-EBT-TS11-96-101D	UG/L							1	8.08	J			
Area1	MW-124	23-Jun-03	MW124-EBT-TS12-96-101	UG/L							1	95	=			
Area1	MW-124	21-Jul-03	MW124-EBT-TS13-96-101	UG/L							1	89.6	=			
Area1	MW-125	21-May-02	MW125-EBT-B-99-104	UG/L							1	75	=			
Area1	MW-125	21-May-02	MW125-EBT-B-99-104D	UG/L							1	74	=			
Area1	MW-125	8-Jul-02	MW125-EBT-TS1-99-104	UG/L							1	40	=			
Area1	MW-125	29-Jul-02	MW125-EBT-TS2-99-104	UG/L							1	43.2	=			
Area1	MW-125	3-Sep-02	MW125-EBT-TS3-99-104	UG/L							1	36.7	=			
Area1	MW-125	7-Oct-02	MW125-EBT-TS4-99-104	UG/L							1	20.8	=			
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104	UG/L							1	19.4	=			
Area1	MW-125	11-Nov-02	MW125-EBT-TS5-99-104D	UG/L							1	18.5	=			
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104	UG/L							1	17.5	=			
Area1	MW-125	16-Dec-02	MW125-EBT-TS6-99-104D	UG/L							1	19.1	=			
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104	UG/L							1	12.4	=			
Area1	MW-125	20-Jan-03	MW125-EBT-TS7-99-104D	UG/L							1	12.1	=			
Area1	MW-125	24-Feb-03	MW125-EBT-TS8-99-104	UG/L							1	17	=			
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104	UG/L							1	19	=			
Area1	MW-125	24-Mar-03	MW125-EBT-TS9-99-104D	UG/L							1	17.9	=			
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104	UG/L							1	16.5	=			
Area1	MW-125	21-Apr-03	MW125-EBT-TS10-99-104D	UG/L							1	16.3	=			
Area1	MW-125	19-May-03	MW125-EBT-TS11-99-104	UG/L							1	8.49	=			
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104	UG/L							1	13.9	=			
Area1	MW-125	23-Jun-03	MW125-EBT-TS12-99-104D	UG/L							1	14.1	=			
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104	UG/L							1	5.53	=			
Area1	MW-125	21-Jul-03	MW125-EBT-TS13-99-104D	UG/L							1	5.23	=			
Area1	MW-21	20-Mar-02	MW21-96-103RL	UG/L							1	76	=			
Area1	MW-21	8-Jul-02	MW21-EBT-TS1-98.5-103.5	UG/L				1	0.25	J	1	66	=			
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5	UG/L				1	0.4	J	1	53.6	=			
Area1	MW-21	29-Jul-02	MW21-EBT-TS2-98.5-103.5D	UG/L				1	0.407	J	1	44.1	=			
Area1	MW-21	3-Sep-02	MW21-EBT-TS3-98.5-103.5	UG/L				1	0.516	J	1	38.1	=			
Area1	MW-21	7-Oct-02	MW21-EBT-TS4-98.5-103.5	UG/L				1	0.518	J	1	49.2	=			
Area1	MW-21	11-Nov-02	MW21-EBT-TS5-98.5-103.5	UG/L				1	0.481	J	1	37.6	=			
Area1	MW 21	16-Dec-02	MW21-EBT-TS6-98.5-103.5	UG/L				1	0.416	J	1	38.3	=			
Area1	MW-21	20-Jan-03	MW21-EBT-TS7-98.5-103.5	UG/L				1	0.403	J	1	32.4	=			
Area1	MW-21	24-Feb-03	MW21-EBT-TS8-98.5-103.5	UG/L				1	0.331	J	1	50.7	=			
Area1	MW-21	24-Mar-03	MW21-EBT-TS9-98.5-103.5	UG/L				1	0.342	J	1	38.6	=			
Area1	MW-21	21-Apr-03	MW21-EBT-TS10-98.5-103.5	UG/L				1	0.304	J	1	33.8	=			
Area1	MW-21	19-May-03	MW21-EBT-TS11-98.5-103.5	UG/L							1	38.6	=			
Area1	MW-21	23-Jun-03	MW21-EBT-TS12-98.5-103.5	UG/L							1	34	=			
Area1	MW-21	21-Jul-03	MW21-EBT-TS13-98.5-103.5	UG/L							1	33.6	=			

Attachment G
Study Area 2: Summary of Gases in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETYLENE			ETHANE			ETHENE			METHANE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	21-May-02	IW1-EBT-B	UG/L							1	0.24	=			
Area2	IW-1	23-Jan-03	IW1-EBT-TS7	UG/L				1	0.18	=	1	0.23	=	1	3400	=
Area2	IW-2	22-May-02	IW2-EBT-B	UG/L							1	0 21	=			
Area2	IW-2	23-Jan-03	IW2-EBT-TS7	UG/L				1	0 22	=	1	0.29	=			
Area2	IW-3	21-May-02	IW3-EBT-B	UG/L							1	0.89	=			
Area2	IW-3	23-Jan-03	IW3-EBT-TS7	UG/L				1	0.062	=	1	0.63	=	1	320	=
Area2	IW-4	21-May-02	IW4-EBT-B	UG/L							1	0 2	=			
Area2	IW-4	23-Jan-03	IW4-EBT-TS7	UG/L				1	0.1	=	1	0.47	=	1	1600	=
Area2	MW-105	23-May-02	MW105-EBT-B	UG/L							1	0.32	=	1	2.5	=
Area2	MW-105	10-Jul-02	MW105-EBT-TS1	UG/L				1	0.1	=	1	0.2	=	1	0 65	=
Area2	MW-105	31-Jul-02	MW105-EBT-TS2	UG/L				1	0.095	=	1	0 22	=	1	7.5	=
Area2	MW-105	5-Sep-02	MW105-EBT-TS3	UG/L				1	0.044	=	1	0.26	=	1	200	=
Area2	MW-105	9-Oct-02	MW105-EBT-TS4	UG/L				1	0.019	=				1	170	=
Area2	MW-105	13-Nov-02	MW105-EBT-TS5	UG/L							1	0 15	=	1	160	=
Area2	MW-105	18-Dec-02	MW105-EBT-TS6	UG/L							1	0.18	=	1	200	=
Area2	MW-105	22-Jan-03	MW105-EBT-TS7	UG/L				1	0 027	=	1	0.11	=	1	130	=
Area2	MW-105	26-Mar-03	MW105-EBT-TS9	UG/L				1	0.17	=	1	0 4	=	1	3400	=
Area2	MW-105	23-Apr-03	MW105-EBT-TS10	UG/L				1	0.11	=	1	0.26	=	1	1700	=
Area2	MW-105	21-May-03	MW105-EBT-TS11	UG/L				1	0.18	=	1	0.4	=	1	2000	=
Area2	MW-105	25-Jun-03	MW105-EBT-TS12	UG/L				1	0.037	=	1	0.55	=	1	5200	=
Area2	MW-105	23-Jul-03	MW105-EBT-TS13	UG/L				1	0.68	=	1	0.98	=	1	7000	=
Area2	MW-105	20-Aug-03	MW105-EBT-TS14	UG/L				1	0 18	=	1	1.1	=	1	6700	=
Area2	MW-106	21-May-02	MW106-EBT-B	UG/L							1	0.21	=			
Area2	MW-106	11-Jul-02	MW106-EBT-TS1	UG/L				1	0.034	=	1	0.15	=			
Area2	MW-106	29-Jul-02	MW106-EBT-TS2	UG/L							1	0.47	=			
Area2	MW-106	3-Sep-02	MW106-EBT-TS3	UG/L				1	0.065	=	1	0.18	=			
Area2	MW-106	7-Oct-02	MW106-EBT-TS4	UG/L				1	0.05	=						
Area2	MW-106	11-Nov-02	MW106-EBT-TS5	UG/L							1	0.13	=			
Area2	MW-106	16-Dec-02	MW106-EBT-TS6	UG/L							1	0 12	=	1	29	=
Area2	MW-106	20-Jan-03	MW106-EBT-TS7	UG/L				1	0.02	=	1	0.096	=	1	58	=
Area2	MW-106	25-Mar-03	MW106-EBT-TS9	UG/L				1	0.09	=	1	0 058	=	1	15	=
Area2	MW-106	22-Apr-03	MW106-EBT-TS10	UG/L				1	0 084	=	1	0 15	=	1	160	=
Area2	MW-106	20-May-03	MW106-EBT-TS11	UG/L				1	0.12	=	1	0 19	=	1	160	=
Area2	MW-106	24-Jun-03	MW106-EBT-TS12	UG/L				1	0.05	=	1	0.087	=	1	260	=
Area2	MW-106	22-Jul-03	MW106-EBT-TS13	UG/L				1	0.11	=	1	0.2	=	1	1600	=
Area2	MW-106	19-Aug-03	MW106-EBT-TS14	UG/L							1	0 25	=	1	4400	=
Area2	MW-109	20-May-02	MW109-EBT-B	UG/L				1	1.6	J	1	1.3	J	1	4.4	=
Area2	MW-109	8-Jul-02	MW109-EBT-TS1	UG/L				1	0.098	=	1	0.24	=	1	3.4	=
Area2	MW-109	30-Jul-02	MW109-EBT-TS2	UG/L							1	0.93	=	1	45	=
Area2	MW-109	4-Sep-02	MW109-EBT-TS3	UG/L							1	0.28	=	1	300	=
Area2	MW-109	8-Oct-02	MW109-EBT-TS4	UG/L				1	0.031	=				1	490	=
Area2	MW-109	12-Nov-02	MW109-EBT-TS5	UG/L				1	0.049	=	1	0.23	=	1	260	=
Area2	MW-109	17-Dec-02	MW109-EBT-TS6	UG/L							1	0.25	=	1	1200	=
Area2	MW-109	21-Jan-03	MW109-EBT-TS7	UG/L				1	0.02	=	1	0.16	=	1	2800	=
Area2	MW-109	25-Mar-03	MW109-EBT-TS9	UG/L				1	0.031	=	1	0.34	=	1	2900	=
Area2	MW-109	22-Apr-03	MW109-EBT-TS10	UG/L				1	0.042	=	1	0.28	=	1	6500	=
Area2	MW-109	20-May-03	MW109-EBT-TS11	UG/L				1	0 03	=	1	0.41	=	1	5200	=
Area2	MW-109	24-Jun-03	MW109-EBT-TS12	UG/L							1	0.016	=	1	10000	=
Area2	MW-109	22-Jul-03	MW109-EBT-TS13	UG/L				1	0 0071	=	1	0 091	=	1	7900	=
Area2	MW-109	19-Aug-03	MW109-EBT-TS14	UG/L							1	0.16	=	1	9600	=
Area2	MW-110	9-Jul-02	MW110-EBT-TS1	UG/L				1	0 014	=						
Area2	MW-110	9-Jul-02	MW110-EBT-TS1-D	UG/L				1	0 015	=						
Area2	MW-110	30-Jul-02	MW110-EBT-TS2	UG/L							1	0 36	=			
Area2	MW-110	30-Jul-02	MW110-EBT-TS2D	UG/L							1	0.39	=			
Area2	MW-110	8-Oct-02	MW110-EBT-TS4	UG/L				1	0 012	=						
Area2	MW-110	8-Oct-02	MW110-EBT-TS4D	UG/L				1	0.038	=						
Area2	MW-110	17-Dec-02	MW110-EBT-TS6	UG/L							1	0.016	=			
Area2	MW-110	17-Dec-02	MW110-EBT-TS6D	UG/L							1	0 02	=			
Area2	MW-110	21-Jan-03	MW110-EBT-TS7	UG/L							1	0 0083	=			
Area2	MW-110	24-Mar-03	MW110-EBT-TS9	UG/L							1	0.06	=	1	1.1	J
Area2	MW-110	24-Mar-03	MW110-EBT-TS9D	UG/L				1	0.047	J	1	0.071	=	1	0.55	J
Area2	MW-110	21-Apr-03	MW110-EBT-TS10	UG/L							1	0.016	J	1	0.32	=
Area2	MW-110	21-Apr-03	MW110-EBT-TS10D	UG/L				1	0.043	J	1	0 05	J	1	0.34	=
Area2	MW-110	19-May-03	MW110-EBT-TS11	UG/L							1	0 042	J	1	3.2	J
Area2	MW-110	19-May-03	MW110-EBT-TS11D	UG/L				1	0 01	=	1	0.059	J	1	5.7	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12	UG/L				1	0.016	=	1	0.058	=	1	20	=
Area2	MW-110	23-Jun-03	MW110-EBT-TS12D	UG/L				1	0.011	=	1	0 071	=	1	22	=
Area2	MW-110	21-Jul-03	MW110-EBT-TS13	UG/L				1	0 011	=	1	0 18	=	1	16	=
Area2	MW-110	21-Jul-03	MW110-EBT-TS13D	UG/L				1	0 017	=	1	0.19	=	1	16	=
Area2	MW-110	18-Aug-03	MW110-EBT-TS14	UG/L				1	0.0074	=	1	0.18	=	1	26	=
Area2	MW-110	18-Aug-03	MW110-EBT-TS14D	UG/L							1	0.16	=	1	42	=
Area2	MW-111	9-Jul-02	MW111-EBT-TS1	UG/L				1	0 0097	=						
Area2	MW-111	5-Sep-02	MW111-EBT-TS3	UG/L							1	0 099	=			
Area2	MW-111	9-Oct-02	MW111-EBT-TS4	UG/L				1	0 0081	=						
Area2	MW-111	18-Dec-02	MW111-EBT-TS6	UG/L							1	0.035	=			
Area2	MW-111	22-Jan-03	MW111-EBT-TS7	UG/L							1	0 029	=			
Area2	MW-111	26-Mar-03	MW111-EBT-TS9	UG/L							1	0 048	=	1	27	=
Area2	MW-111	23-Apr-03	MW111-EBT-TS10	UG/L							1	0 038	=	1	4.8	=
Area2	MW-111	21-May-03	MW111-EBT-TS11	UG/L				1	0 029	=	1	0.071	=	1	18	=
Area2	MW-111	25-Jun-03	MW111-EBT-TS12	UG/L				1	0.023	=	1	0.09	=	1	99	=
Area2	MW-111	23-Jul-03	MW111-EBT-TS13	UG/L				1	0 0094	=	1	0 06	=	1	140	=
Area2	MW-111	20-Aug-03	MW111-EBT-TS14	UG/L				1	0 0094	=	1	0 083	=	1	170	=

Attachment G
Study Area 2: Summary of Gases In Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETYLENE			ETHANE			ETHENE			METHANE		
					DF	Concentration	Qual	DF	Concentration	Qual	DF	Concentration	Qual	DF	Concentration	Qual
Area2	MW-112	20-May-02	MW112-EBT-B	UG/L				1	0.51	=	1	0.47	=			
Area2	MW-112	10-Jul-02	MW112-EBT-TS1	UG/L				1	0.069	=	1	0.13	=	1	0.98	=
Area2	MW-112	31-Jul-02	MW112-EBT-TS2	UG/L				1	0.091	=	1	0.27	=			
Area2	MW-112	5-Sep-02	MW112-EBT-TS3	UG/L				1	0.084	=	1	0.39	=			
Area2	MW-112	9-Oct-02	MW112-EBT-TS4	UG/L				1	0.025	=				1	55	=
Area2	MW-112	13-Nov-02	MW112-EBT-TS5	UG/L							1	0.27	=	1	230	=
Area2	MW-112	18-Dec-02	MW112-EBT-TS6	UG/L							1	0.21	=	1	440	=
Area2	MW-112	22-Jan-03	MW112-EBT-TS7	UG/L				1	0.015	=	1	0.2	=	1	930	=
Area2	MW-112	26-Mar-03	MW112-EBT-TS9	UG/L				1	0.057	=	1	0.29	=	1	3000	=
Area2	MW-112	23-Apr-03	MW112-EBT-TS10	UG/L				1	0.072	=	1	0.2	=	1	1600	=
Area2	MW-112	21-May-03	MW112-EBT-TS11	UG/L				1	0.1	=	1	0.26	=	1	1100	=
Area2	MW-112	25-Jun-03	MW112-EBT-TS12	UG/L				1	0.033	=	1	0.28	=	1	1200	=
Area2	MW-112	23-Jul-03	MW112-EBT-TS13	UG/L				1	0.066	=	1	0.27	=	1	5700	=
Area2	MW-112	20-Aug-03	MW112-EBT-TS14	UG/L							1	0.33	=	1	4300	=
Area2	MW-113	22-May-02	MW113-EBT-B	UG/L				1	0.55	=	1	0.48	=			
Area2	MW-113	10-Jul-02	MW113-EBT-TS1	UG/L				1	0.1	=	1	0.087	=	1	1.8	=
Area2	MW-113	31-Jul-02	MW113-EBT-TS2	UG/L										1	4.8	=
Area2	MW-113	5-Sep-02	MW113-EBT-TS3	UG/L				1	0.034	=	1	0.099	=	1	15	=
Area2	MW-113	9-Oct-02	MW113-EBT-TS4	UG/L				1	0.033	=						
Area2	MW-113	18-Dec-02	MW113-EBT-TS6	UG/L							1	0.041	=			
Area2	MW-113	22-Jan-03	MW113-EBT-TS7	UG/L				1	0.012	=	1	0.056	=			
Area2	MW-113	26-Mar-03	MW113-EBT-TS9	UG/L				1	0.01	=	1	0.035	=	1	9.9	=
Area2	MW-113	23-Apr-03	MW113-EBT-TS10	UG/L				1	0.0099	=	1	0.051	=	1	4.3	=
Area2	MW-113	21-May-03	MW113-EBT-TS11	UG/L				1	0.014	=	1	0.053	=	1	28	=
Area2	MW-113	25-Jun-03	MW113-EBT-TS12	UG/L				1	0.021	=	1	0.062	=	1	29	=
Area2	MW-113	23-Jul-03	MW113-EBT-TS13	UG/L				1	0.012	=	1	0.043	=	1	22	=
Area2	MW-113	20-Aug-03	MW113-EBT-TS14	UG/L				1	0.0092	=	1	0.061	=	1	19	=
Area2	MW-114	22-May-02	MW114-EBT-B	UG/L							1	0.22	=			
Area2	MW-114	9-Jul-02	MW114-EBT-TS1	UG/L				1	0.047	=	1	0.092	=			
Area2	MW-114	4-Sep-02	MW114-EBT-TS3	UG/L							1	0.33	=			
Area2	MW-114	8-Oct-02	MW114-EBT-TS4	UG/L				1	0.029	=				1	130	=
Area2	MW-114	17-Dec-02	MW114-EBT-TS6	UG/L							1	0.059	=			
Area2	MW-114	21-Jan-03	MW114-EBT-TS7	UG/L				1	0.008	=	1	0.065	=	1	49	=
Area2	MW-114	25-Mar-03	MW114-EBT-TS9	UG/L				1	0.11	=	1	0.11	=	1	360	=
Area2	MW-114	22-Apr-03	MW114-EBT-TS10	UG/L				1	0.061	=	1	0.11	=	1	180	=
Area2	MW-114	20-May-03	MW114-EBT-TS11	UG/L				1	0.11	=	1	0.14	=	1	1100	=
Area2	MW-114	24-Jun-03	MW114-EBT-TS12	UG/L				1	0.024	=	1	0.086	=	1	360	=
Area2	MW-114	22-Jul-03	MW114-EBT-TS13	UG/L				1	0.032	=	1	0.078	=	1	940	=
Area2	MW-114	19-Aug-03	MW114-EBT-TS14	UG/L							1	0.24	=	1	6000	=
Area2	MW-26	21-Mar-02	MW26-106-BL	UG/L	1	1000	=									
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L										1	4	=
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L				1	0.017	=	1	0.021	=	1	0.18	=
Area2	MW-86	20-Mar-02	MW86-108-BL	UG/L	1	1000	=									
Area2	MW-86	9-Jul-02	MW86-EBT-TS1	UG/L				1	0.059	=	1	0.099	=			
Area2	MW-86	30-Jul-02	MW86-EBT-TS2	UG/L				1	0.19	=						
Area2	MW-86	4-Sep-02	MW86-EBT-TS3	UG/L				1	0.3	=	1	0.17	=			
Area2	MW-86	8-Oct-02	MW86-EBT-TS4	UG/L				1	0.3	=						
Area2	MW-86	12-Nov-02	MW86-EBT-TS5	UG/L				1	0.058	=	1	0.27	=			
Area2	MW-86	17-Dec-02	MW86-EBT-TS6	UG/L							1	0.4	=			
Area2	MW-86	21-Jan-03	MW86-EBT-TS7	UG/L				1	0.038	=	1	0.44	=	1	57	=
Area2	MW-86	25-Mar-03	MW86-EBT-TS9	UG/L				1	0.16	=	1	0.54	=	1	1100	=
Area2	MW-86	22-Apr-03	MW86-EBT-TS10	UG/L				1	0.12	=	1	0.55	=	1	2700	=
Area2	MW-86	20-May-03	MW86-EBT-TS11	UG/L				1	0.057	=	1	0.43	=	1	2900	=
Area2	MW-86	24-Jun-03	MW86-EBT-TS12	UG/L				1	0.01	=	1	0.18	=	1	2200	=
Area2	MW-86	22-Jul-03	MW86-EBT-TS13	UG/L				1	0.11	=	1	0.12	=	1	1400	=
Area2	MW-86	19-Aug-03	MW86-EBT-TS14	UG/L				1	0.0094	=	1	0.26	=	1	1800	=
Area2	MW-88	21-Mar-02	MW88-BL	UG/L	1	1000	=									
Area2	MW-88	11-Jul-02	MW88-EBT-TS1	UG/L										1	1.6	=
Area2	MW-88	1-Aug-02	MW88-EBT-TS2	UG/L										1	7.7	=
Area2	MW-88	6-Sep-02	MW88-EBT-TS3	UG/L										1	11	=
Area2	MW-88	19-Dec-02	MW88-EBT-TS6	UG/L							1	0.056	=	1	64	=
Area2	MW-88	24-Jan-03	MW88-EBT-TS7	UG/L							1	0.011	=	1	58	=
Area2	MW-88	27-Mar-03	MW88-EBT-TS9	UG/L										1	59	=
Area2	MW-88	24-Apr-03	MW88-EBT-TS10	UG/L										1	51	=
Area2	MW-88	22-May-03	MW88-EBT-TS11	UG/L							1	0.0051	=	1	44	=
Area2	MW-88	26-Jun-03	MW88-EBT-TS12	UG/L							1	0.017	=	1	150	=
Area2	MW-88	24-Jul-03	MW88-EBT-TS13	UG/L										1	63	=
Area2	MW-88	21-Aug-03	MW88-EBT-TS14	UG/L							1	0.019	=	1	82	=

Attachment G
Study Area 2: Summary of Total Organic Carbon in Soil
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	TOTAL ORGANIC CARBON		
					[illegible]	Conc	Qual
Area2	IW-2	19-Apr-02	IW-2-104	MG/KG	1	680	=
Area2	IW-3	20-Apr-02	IW-3-103'	MG/KG	1	640	=
Area2	MW-112	21-Apr-02	MW-112-98	MG/KG	1	290	=

Attachment G
Study Area 2: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ALKALINITY, TOTAL			BROMIDE			CHLORIDE			FLUORIDE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	21-May-02	IW1-EBT-B	MG/L	1	47	J	1	0.19	J	4	25	=			
Area2	IW-1	23-Jan-03	IW1-EBT-TS7	MG/L	2	630	=	4	3.61	=	4	21.2	=	4	36.9	=
Area2	IW-2	22-May-02	IW2-EBT-B	MG/L	1	35	J	1	0.29	=	2	17	=			
Area2	IW-2	23-Jan-03	IW2-EBT-TS7	MG/L	1	375	=	2	2.08	=	2	12.8	=			
Area2	IW-3	21-May-02	IW3-EBT-B	MG/L	1	50	=	1	0.23	=	2	20	=			
Area2	IW-3	23-Jan-03	IW3-EBT-TS7	MG/L	5	1440	=	2	13.6	=	2	8.16	=			
Area2	IW-4	21-May-02	IW4-EBT-B	MG/L	1	49	J	1	0.18	J	2	13	=			
Area2	IW-4	23-Jan-03	IW4-EBT-TS7	MG/L	5	2360	=	2	23.6	=	1	10.7	=			
Area2	MW-105	10-Jul-02	MW105-EBT-TS1	MG/L	10	4800	=	10	110	=	10	18	=			
Area2	MW-105	31-Jul-02	MW105-EBT-TS2	MG/L	5	2280	=	5	38.5	=	5	18.1	=			
Area2	MW-105	5-Sep-02	MW105-EBT-TS3	MG/L	10	1850	=	4	22.2	=	4	19	=			
Area2	MW-105	9-Oct-02	MW105-EBT-TS4	MG/L	10	1050	=	1	10.3	=	2	15.6	=			
Area2	MW-105	13-Nov-02	MW105-EBT-TS5	MG/L	1	704	=	1	5.55	=	2	14.2	=			
Area2	MW-103	18-Dec-02	MW105-EBT-TS6	MG/L	2	463	=	1	3.07	=	2	15.6	=			
Area2	MW-105	22-Jan-03	MW105-EBT-TS7	MG/L	5	363	=	1	2.3	=	2	14.8	=			
Area2	MW-105	26-Mar-03	MW105-EBT-TS9	MG/L	25	1100	=	100	327	=	1000	387	=			
Area2	MW-105	23-Apr-03	MW105-EBT-TS10	MG/L	10	4480	=	20	97.1	=	4	11.5	=			
Area2	MW-105	21-May-03	MW105-EBT-TS11	MG/L	50	17500	=	50	400	=	10	2.09	=			
Area2	MW-105	25-Jun-03	MW105-EBT-TS12	MG/L	10	6000	=	40	365	=	10	12.9	=			
Area2	MW-105	23-Jul-03	MW105-EBT-TS13	MG/L	25	7390	=	20	105	=	5	20.6	=			
Area2	MW-105	20-Aug-03	MW105-EBT-TS14	MG/L	25	5930	=	25	235	=	5	23.1	=			
Area2	MW-106	21-May-02	MW106-EBT-B	MG/L	1	40	J	1	0.18	J	1	11	=			
Area2	MW-106	11-Jul-02	MW106-EBT-TS1	MG/L	1	490	=	1	11	=	1	11	=			
Area2	MW-106	29-Jul-02	MW106-EBT-TS2	MG/L	1	413	=	1	6.17	=	1	11.3	=			
Area2	MW-106	3-Sep-02	MW106-EBT-TS3	MG/L	1	214	=	1	2.25	=	1	11.3	=			
Area2	MW-106	11-Nov-02	MW106-EBT-TS5	MG/L	1	132	=	1	0.87	=	1	9.42	=			
Area2	MW-106	16-Dec-02	MW106-EBT-TS6	MG/L	1	99.5	=	1	0.713	=	1	9.86	=			
Area2	MW-106	20-Jan-03	MW106-EBT-TS7	MG/L	1	132	=	1	0.852	=	1	10.1	=			
Area2	MW-106	25-Mar-03	MW106-EBT-TS9	MG/L	2	1070	=	5	29.9	=	1	11.8	=			
Area2	MW-106	22-Apr-03	MW106-EBT-TS10	MG/L	4	964	=	4	16.1	=	1	11	=			
Area2	MW-106	20-May-03	MW106-EBT-TS11	MG/L	10	3970	=	50	91.1	=	10	17.7	=			
Area2	MW-106	24-Jun-03	MW106-EBT-TS12	MG/L	10	3580	=	10	57.1	=	1	4.33	=			
Area2	MW-106	22-Jul-03	MW106-EBT-TS13	MG/L	20	2380	=	10	25.7	=	10	23.7	=			
Area2	MW-106	19-Aug-03	MW106-EBT-TS14	MG/L	5	1210	=	5	46.5	=	5	22.8	=			
Area2	MW-109	20-May-02	MW-109-EBT-B	MG/L	1	55	=	1	0.26	=	2	12	=			
Area2	MW-109	8-Jul-02	MW109-EBT-TS1	MG/L	4	1400	=	4	22	=	4	12	=			
Area2	MW-109	30-Jul-02	MW109-EBT-TS2	MG/L	4	954	=	2	12	=	2	14.8	=			
Area2	MW-109	4-Sep-02	MW109-EBT-TS3	MG/L	1	395	=	1	4.72	=	2	14.4	=			
Area2	MW-109	8-Oct-02	MW109-EBT-TS4	MG/L	1	207	=	1	1.95	=	1	11.5	=			
Area2	MW-109	12-Nov-02	MW109-EBT-TS5	MG/L	1	196	=	1	1.63	=	1	11	=			
Area2	MW-109	17-Dec-02	MW109-EBT-TS6	MG/L	1	112	=	1	0.99	=	1	11.2	=			
Area2	MW-109	21-Jan-03	MW109-EBT-TS7	MG/L	1	179	=	1	1.43	=	1	11.2	=			
Area2	MW-109	25-Mar-03	MW109-EBT-TS9	MG/L	10	3870	=	5	56.7	=	5	21.2	=			
Area2	MW-109	22-Apr-03	MW109-EBT-TS10	MG/L	4	1750	=	4	31	=	4	20	=			
Area2	MW-109	20-May-03	MW109-EBT-TS11	MG/L	50	7320	=	50	88.1	=	10	24.8	=			
Area2	MW-109	24-Jun-03	MW109-EBT-TS12	MG/L	50	18000	=	10	267	J						
Area2	MW-109	22-Jul-03	MW109-EBT-TS13	MG/L	20	8560	=	10	107	=	10	33.4	=			
Area2	MW-109	19-Aug-03	MW109-EBT-TS14	MG/L	10	3700	=	20	137	=	5	35.8	=			
Area2	MW-110	20-May-02	MW-110-EBT-B	MG/L	1	43	J	1	0.11	J	2	13	J			
Area2	MW-110	20-May-02	MW-110-EBT-B-D	MG/L	1	52	=	1	0.11	J	1	14	J			
Area2	MW-110	9-Jul-02	MW110-EBT-TS1	MG/L	1	29	=	1	0.22	=	2	13	=			
Area2	MW-110	9-Jul-02	MW110-EBT-TS1-D	MG/L	1	32	=	1	0.27	=	2	13	=			
Area2	MW-110	30-Jul-02	MW110-EBT-TS2	MG/L	1	44	=	1	0.169	J	2	13.6	=			
Area2	MW-110	30-Jul-02	MW110-EBT-TS2D	MG/L	1	43.4	=	1	0.206	=	2	13.7	=			
Area2	MW-110	4-Sep-02	MW110-EBT-TS3	MG/L				1	0.166	J	2	14.7	=			
Area2	MW-110	4-Sep-02	MW110-EBT-TS3d	MG/L	1	33	=	1	0.154	J	2	14.8	=			
Area2	MW-110	8-Oct-02	MW110-EBT-TS4	MG/L				1	0.233	=	2	12.5	=			
Area2	MW-110	8-Oct-02	MW110-EBT-TS4D	MG/L				1	0.215	=	2	11.9	=			
Area2	MW-110	12-Nov-02	MW110-EBT-TS5	MG/L				1	0.222	=	2	11.8	=			
Area2	MW-110	12-Nov-02	MW110-EBT-TS5D	MG/L	1	49.9	=	1	0.203	=	2	12.6	=			
Area2	MW-110	17-Dec-02	MW110-EBT-TS6	MG/L				1	0.183	J	2	13.1	=			
Area2	MW-110	17-Dec-02	MW110-EBT-TS6D	MG/L				1	0.175	J	2	13.2	=			
Area2	MW-110	21-Jan-03	MW110-EBT-TS7	MG/L				1	0.188	J	2	13	=			
Area2	MW-110	21-Jan-03	MW110-EBT-TS7D	MG/L				1	0.169	J	2	13.3	=			
Area2	MW-110	24-Mar-03	MW110-EBT-TS9	MG/L	1	45.1	=				2	13.5	=			
Area2	MW-110	24-Mar-03	MW110-EBT-TS9D	MG/L	1	39.3	=				2	13.3	=			
Area2	MW-110	21-Apr-03	MW110-EBT-TS10	MG/L				1	0.363	=	4	12.9	=			
Area2	MW-110	21-Apr-03	MW110-EBT-TS10D	MG/L				1	0.335	=	4	12.8	=			
Area2	MW-110	19-May-03	MW110-EBT-TS11	MG/L	1	252	=	1	1.98	=	4	15.4	=			
Area2	MW-110	19-May-03	MW110-EBT-TS11D	MG/L	1	264	=	1	2.01	=	4	16.4	=			
Area2	MW-110	23-Jun-03	MW110-EBT-TS12	MG/L	1	374	J	1	3.95	=	2	17.9	=			
Area2	MW-110	23-Jun-03	MW110-EBT-TS12D	MG/L	1	411	J	1	4.15	=	2	17.7	=			
Area2	MW-110	21-Jul-03	MW110-EBT-TS13	MG/L	1	137	=	1	1.55	=	2	15.5	=			
Area2	MW-110	21-Jul-03	MW110-EBT-TS13D	MG/L	1	127	=	1	1.4	=	2	15	=			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14	MG/L	1	80	=	1	1.22	=	2	14.9	=			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14D	MG/L	1	73.6	=	1	1.16	=	2	15.4	=			
Area2	MW 111	22-May-02	MW111-EBT-B	MG/L	1	36	J	1	0.14	J	2	12	=			
Area2	MW-111	9-Jul-02	MW111-EBT-TS1	MG/L	1	28	=	1	0.25	=	2	12	=			
Area2	MW 111	31-Jul-02	MW111-EBT-TS2	MG/L	1	68.4	=	1	0.395	=	2	12.3	=			
Area2	MW-111	5-Sep-02	MW111-EBT-TS3	MG/L	1	55.2	=	1	0.317	=	2	13.6	=			
Area2	MW-111	9-Oct-02	MW111-EBT-TS4	MG/L	1	56.6	J	1	0.401	=	1	11.6	=			
Area2	MW-111	13-Nov-02	MW111-EBT-TS5	MG/L	1	59.5	=	1	0.337	=	1	11.4	=			
Area2	MW-111	18-Dec-02	MW111-EBT-TS6	MG/L				1	0.312	=	1	11.6	=			
Area2	MW-111	22-Jan-03	MW111-EBT-TS7	MG/L	1	55.4	=	1	0.267	=	1	12.2	=			
Area2	MW-111	26-Mar-03	MW111-EBT-TS9	MG/L	1	65.6	=				2	12.4	=			
Area2	MW-111	23-Apr-03	MW111-EBT-TS10	MG/L	1	59.1	=	1	0.461	=	2	12.5	=			
Area2	MW-111	21-May-03	MW111-EBT-TS11	MG/L	4	643	=	1	6.18	=	4	16.7	=			
Area2	MW-111	25-Jun-03	MW111-EBT-TS12	MG/L	10	1670	=	1	8.43	=	10	20	=			
Area2	MW-111	23-Jul-03	MW111-EBT-TS13	MG/L	2	926	=	5	20	=	5	20.3	=			
Area2	MW-111	20-Aug-03	MW111-EBT-TS14	MG/L	1	302	=	1	5.58	=	4	16.3	=			
Area2	MW-112	20-May-02	MW-112-EBT-B	MG/L	1	54	=	1	0.15	J	2	15	=			
Area2	MW-112	10-Jul-02	MW112-EBT-TS1	MG/L	10	4900	=	10	120	=	10	16	=			
Area2	MW-112	31-Jul-02	MW112-EBT-TS2	MG/L	4	1930	=	5	47.2	=	2	15	=			
Area2	MW-112	5-Sep-02	MW112-EBT-TS3	MG/L	4	1620	=	4	20.5	=	4	15.9	=			
Area2	MW-112	9-Oct-02	MW112-EBT-TS4	MG/L	4	1000	=	1	9.29	=	2	12.9	=			
Area2	MW-112	13-Nov-02	MW112-EBT-TS5	MG/L	2	725	=	1	5.92	=	2	11.9	=			
Area2	MW 112	18-Dec-02	MW112-EBT-TS6	MG/L	2	460	=	1	3.97	=	2	13.6	=			
Area2	MW 112	22-Jan-03	MW112-EBT-TS7	MG/L	4	387	=	1	3.84	=	2	13.9	=			
Area2	MW-112	26-Mar-03	MW112-EBT-TS9	MG/L	20	5370	=	40	86.3	=	40	60.7	=			
Area2	MW-112	23-Apr-03	MW112-EBT-TS10	MG/L	10	3260	=	20	48.4	=	4	12.3	=			
Area2	MW-112	21-May-03	MW112-EBT-TS11	MG/L	25	10200	=	50	214	=	10	17.7	=			
Area2	MW 112	25-Jun-03	MW112 EBT-TS12	MG/L	50	14500	=	20	212	=	1	18.1	=			
Area2	MW-112	23-Jul-03	MW112 EBT-TS13	MG/L	25	5140	=	20	120	=	5	20.7	=			
Area2	MW-112	20-Aug-03	MW112 EBT-TS14	MG/L	25	5480	=	25	228	=	5	24.4	=			
Area2	MW-113	22-May-02	MW113-EBT-B	MG/L	1	42	J	1	0.23	=	2	15	=			
Area2	MW-113	10-Jul-02	MW113-EBT-TS1	MG/L	1	47	=	1	0.31	=	2	14	=			
Area2	MW-113	31-Jul-02	MW113-EBT-TS2	MG/L	2	105	=	1	0.467	=	2	14.4	=			
Area2	MW-113	5-Sep-02	MW113-EBT-TS3	MG/L	1	82.3	=	1	0.895	=	2	16.5	=			
Area2	MW-113	9-Oct-02	MW113-EBT-TS4	MG/L	1	124	=	1	0.593	=	2	14	=			
Area2	MW-113	13-Nov-02	MW113-EBT-TS5	MG/L	1	84.2	=	1	0.441	=	2	13	=			
Area2	MW-113	18-Dec-02	MW113-EBT-TS6	MG/L				1	0.224	=	2	13.4	=			
Area2	MW-113	22-Jan-03	MW113-EBT-TS7	MG/L	1	50.9	=	1	0.246	=	2	14.4	=			
Area2	MW-113	26-Mar-03	MW113-EBT-TS9	MG/L	1	45.1	=				2	14.5	=			
Area2	MW-113	23-Apr-03	MW113-EBT-TS10	MG/L	1	65.9	=	1	0.488	=	2	15.2	=			
Area2	MW-113	21-May-03	MW113-EBT-TS11	MG/L	1	70.6	=	1	0.536	=	2	15.3	=			
Area2	MW-113	25-Jun-03	MW113-EBT-TS12	MG/L	1	91.3	=	1	0.629	=	2	15.9	=			
Area2	MW-113	23-Jul-03	MW113-EBT-TS13	MG/L	1	130	=	1	0.944	=	2	15.7	=			
Area2	MW-113	20-Aug-03	MW113-EBT-TS14	MG/L	1	76.4	=	1	0.724	=	2	15.8	=			
Area2	MW-114	22-May-02	MW114-EBT-B	MG/L	1	42	J	1	0.16	J	2	12	=			
Area2	MW-114	9-Jul-02	MW114-EBT-TS1	MG/L	4	2000	=	10	52	=	10	14	=			
Area2	MW-114	30-Jul-02	MW114-EBT-TS2	MG/L	1	801	=	1	11.7	=	1	12	=			
Area2	MW-114	4-Sep-02	MW114-EBT-TS3	MG/L	1	416	=	1	4.56	=	4	13.9	=			
Area2	MW-114	8-Oct-02	MW114-EBT TS4	MG/L	2	362	=	1	2.76	=	1	11.3	=			
Area2	MW-114	12-Nov-02	MW114-EBT-TS5	MG/L	1	223	=	1	1.69	=	1	11.7	=			
Area2	MW-114	17-Dec-02	MW114-EBT-TS6	MG/L	1	160	=	1	1.36	=	1	11.7	=			

Attachment G 794 698
Study Area 2: Sumenary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ALKALINITY, TOTAL			BROMIDE			CHLORIDE			FLUORIDE		
					DF	Conc	Qualifier	DF	Conc	Qualifier	DF	Conc	Qualifier	DF	Conc	Qualifier
Area2	MW-114	21-Jan-03	MW114-EBT-TS7	MG/L	1	153	=	1	1.2	=	1	11.9	=			
Area2	MW-114	25-Mar-03	MW114-EBT-TS9	MG/L	10	4130	=	20	75.1	=	2	16.7	=			
Area2	MW-114	22-Apr-03	MW114-EBT-TS10	MG/L	4	1310	=	4	15.2	=	4	17.8	=			
Area2	MW-114	20-May-03	MW114-EBT-TS11	MG/L	2	961	=	10	72.6	=	10	21.2	=			
Area2	MW-114	24-Jun-03	MW114-EBT-TS12	MG/L	50	13000	=	10	146	J						
Area2	MW-114	22-Jul-03	MW114-EBT-TS13	MG/L	10	3340	=	10	79.9	=	10	21.6	=			
Area2	MW-114	19-Aug-03	MW114-EBT-TS14	MG/L	10	3590	=	20	148	=	5	34	=			
Area2	MW-26	21-Mar-02	MW-26-106-BL	MG/L	1	50	=				10	51	=			
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	MG/L	1	39	=	1	0.384	=	5	48.3	=			
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	MG/L	1	60.6	=	1	0.414	=	4	47	=			
Area2	MW-86	20-Mar-02	MW-86-108-BL	MG/L						-	2	13	=			
Area2	MW-86	9-Jul-02	MW86-EBT-TS1	MG/L	1	460	=	1	7.7	=	1	8.6	=			
Area2	MW-86	30-Jul-02	MW86-EBT-TS2	MG/L	2	915	=	2	16.9	=	1	8.86	=			
Area2	MW-86	4-Sep-02	MW86-EBT-TS3	MG/L	4	1540	=	4	21.7	=	1	9.12	=			
Area2	MW-86	8-Oct-02	MW86-EBT-TS4	MG/L	10	1750	=	2	19.5	=	1	8.01	=			
Area2	MW-86	12-Nov-02	MW86-EBT-TS5	MG/L	5	1610	=	2	15.4	=	1	7.61	=			
Area2	MW-86	17-Dec-02	MW86-EBT-TS6	MG/L	4	1410	=	2	15.3	=	1	7.89	=			
Area2	MW-86	21-Jan-03	MW86-EBT-TS7	MG/L	4	1660	=	2	17	=	1	7.77	=			
Area2	MW-86	25-Mar-03	MW86-EBT-TS9	MG/L	10	4040	=	4	42.7	=	4	28.1	=			
Area2	MW-86	22-Apr-03	MW86-EBT-TS10	MG/L	10	4790	=	10	62.2	=	4	27.7	=			
Area2	MW-86	20-May-03	MW86-EBT-TS11	MG/L	20	9270	=	50	139	=	10	22.1	=			
Area2	MW-86	24-Jun-03	MW86-EBT-TS12	MG/L	50	17300	=	50	467	=	50	256	=			
Area2	MW-86	22-Jul-03	MW86-EBT-TS13	MG/L	100	19200	=	50	351	=	10	11.8	=			
Area2	MW-86	19-Aug-03	MW86-EBT-TS14	MG/L	25	12700	=	100	707	=	5	50.4	=			
Area2	MW-88	21-Mar-02	MW-88-BL	MG/L							10	48	=			
Area2	MW-88	11-Jul-02	MW88-EBT-TS1	MG/L	1	48	=	1	0.3	=	5	41	=			
Area2	MW-88	1-Aug-02	MW88-EBT-TS2	MG/L	1	54.3	=	1	0.172	J	10	39.3	=			
Area2	MW-88	6-Sep-02	MW88-EBT-TS3	MG/L	1	47.7	=	1	0.213	=	5	42.1	=			
Area2	MW-88	10-Oct-02	MW88-EBT-TS4	MG/L	1	56.4	=	1	0.145	J	4	26.6	=			
Area2	MW-88	14-Nov-02	MW88-EBT-TS5	MG/L				1	0.214	=	4	38.5	=			
Area2	MW-88	19-Dec-02	MW88-EBT-TS6	MG/L				1	0.412	=	4	27.9	=			
Area2	MW-88	24-Jan-03	MW88-EBT-TS7	MG/L	1	88.1	=	1	0.251	=	4	40.7	=			
Area2	MW-88	27-Mar-03	MW88-EBT-TS9	MG/L	1	46	=				4	39.7	=			
Area2	MW-88	24-Apr-03	MW88-EBT-TS10	MG/L	1	56.7	=	1	0.263	=	5	38.8	=			
Area2	MW-88	22-May-03	MW88-EBT-TS11	MG/L	1	53.5	=				10	43.1	=			
Area2	MW-88	24-Jul-03	MW88-EBT-TS13	MG/L	1	45.1	=				4	39.6	=			
Area2	MW-88	21-Aug-03	MW88-EBT-TS14	MG/L	1	51.7	=	1	0.352	=	5	40.2	=			

Attachment G
Study Area 2: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	NITRATE			NITRITE			TOTAL ORTHOPHOSPHATE			SULFATE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	21-May-02	IW1-EBT-B	MG/L	1	2.4	=	1	0.13	J				1	12	=
Area2	IW-1	23-Jan-03	IW1-EBT-TS7	MG/L	1	1.03	=							4	9.41	=
Area2	IW-2	22-May-02	IW2-EBT-B	MG/L	1	2.6	=							1	9.7	=
Area2	IW-2	23-Jan-03	IW2-EBT-TS7	MG/L	1	0.948	=									
Area2	IW-3	21-May-02	IW3-EBT-B	MG/L	1	2.2	=	1	0.12	J				1	11	=
Area2	IW-3	23-Jan-03	IW3-EBT-TS7	MG/L												
Area2	IW-4	21-May-02	IW4-EBT-B	MG/L	1	2.1	=	1	0.1	J				1	6.8	=
Area2	IW-4	23-Jan-03	IW4-EBT-TS7	MG/L							2	0.86	J			
Area2	MW-105	10-Jul-02	MW105-EBT-TS1	MG/L										1	9.8	=
Area2	MW-105	31-Jul-02	MW105-EBT-TS2	MG/L										1	4.78	=
Area2	MW-105	5-Sep-02	MW105-EBT-TS3	MG/L										1	1.11	=
Area2	MW-105	9-Oct-02	MW105-EBT-TS4	MG/L										1	3.29	=
Area2	MW-105	13-Nov-02	MW105-EBT-TS5	MG/L										1	3.02	=
Area2	MW-105	18-Dec-02	MW105-EBT-TS6	MG/L	1	0.15	J							1	1.71	=
Area2	MW-105	22-Jan-03	MW105-EBT-TS7	MG/L												
Area2	MW-105	26-Mar-03	MW105-EBT-TS9	MG/L										10	8.99	J
Area2	MW-105	23-Apr-03	MW105-EBT-TS10	MG/L										1	0.993	J
Area2	MW-105	21-May-03	MW105-EBT-TS11	MG/L										1	2.8	=
Area2	MW-105	25-Jun-03	MW105-EBT-TS12	MG/L										1	1.74	=
Area2	MW-105	23-Jul-03	MW105-EBT-TS13	MG/L												
Area2	MW-105	20-Aug-03	MW105-EBT-TS14	MG/L										5	47.6	=
Area2	MW-106	21-May-02	MW106-EBT-B	MG/L	1	2	=	1	0.099	J				1	6.5	=
Area2	MW-106	11-Jul-02	MW106-EBT-TS1	MG/L	1	0.41	J							1	7.1	=
Area2	MW-106	29-Jul-02	MW106-EBT-TS2	MG/L	1	0.57	J							1	5.27	=
Area2	MW-106	3-Sep-02	MW106-EBT-TS3	MG/L										1	3.99	=
Area2	MW-106	11-Nov-02	MW106-EBT-TS5	MG/L	1	0.755	=							1	4.7	=
Area2	MW-106	18-Dec-02	MW106-EBT-TS6	MG/L	1	0.869	=							1	5.09	=
Area2	MW-106	20-Jan-03	MW106-EBT-TS7	MG/L	1	0.65	=	1	0.188	J						
Area2	MW-106	25-Mar-03	MW106-EBT-TS9	MG/L										1	2.6	=
Area2	MW-106	22-Apr-03	MW106-EBT-TS10	MG/L	1	0.378	J							1	2.48	=
Area2	MW-106	20-May-03	MW106-EBT-TS11	MG/L	1	0.313	J							1	3.83	=
Area2	MW-106	24-Jun-03	MW106-EBT-TS12	MG/L	1	0.128	J							1	3.81	=
Area2	MW-106	22-Jul-03	MW106-EBT-TS13	MG/L										10	5.74	J
Area2	MW-106	19-Aug-03	MW106-EBT-TS14	MG/L	5	0.835	J							5	3.52	J
Area2	MW-109	20-May-02	MW-109-EBT-B	MG/L	1	0.54	J	1	0.25	J				1	5.1	=
Area2	MW-109	8-Jul-02	MW109-EBT-TS1	MG/L										1	6.3	=
Area2	MW-109	30-Jul-02	MW109-EBT-TS2	MG/L										1	1.52	=
Area2	MW-109	4-Sep-02	MW109-EBT-TS3	MG/L										1	1.69	=
Area2	MW-109	8-Oct-02	MW109-EBT-TS4	MG/L										1	1.92	=
Area2	MW-109	12-Nov-02	MW109-EBT-TS5	MG/L										1	2.72	=
Area2	MW-109	17-Dec-02	MW109-EBT-TS6	MG/L	1	0.231	J	1	0.17	J				1	3.74	=
Area2	MW-109	21-Jan-03	MW109-EBT-TS7	MG/L	1	0.251	J									
Area2	MW-109	25-Mar-03	MW109-EBT-TS9	MG/L										1	1.11	=
Area2	MW-109	22-Apr-03	MW109-EBT-TS10	MG/L	1	1.03	=							1	0.866	J
Area2	MW-109	20-May-03	MW109-EBT-TS11	MG/L										1	0.615	J
Area2	MW-109	24-Jun-03	MW109-EBT-TS12	MG/L										1	0.803	J
Area2	MW-109	22-Jul-03	MW109-EBT-TS13	MG/L												
Area2	MW-109	19-Aug-03	MW109-EBT-TS14	MG/L												
Area2	MW-110	20-May-02	MW-110-EBT-B	MG/L	1	2.2	=							1	6.3	=
Area2	MW-110	20-May-02	MW-110-EBT-B-D	MG/L	1	2.2	=							1	6.2	=
Area2	MW-110	9-Jul-02	MW110-EBT-TS1	MG/L	1	2.2	=							1	6.2	=
Area2	MW-110	9-Jul-02	MW110-EBT-TS1-D	MG/L	1	2.2	=							1	6.3	=
Area2	MW-110	30-Jul-02	MW110-EBT-TS2	MG/L	1	2.03	=							1	6.39	=
Area2	MW-110	30-Jul-02	MW110-EBT-TS2D	MG/L	1	2.07	=							1	6.48	=
Area2	MW-110	4-Sep-02	MW110-EBT-TS3	MG/L	1	2.28	=							1	6.85	=
Area2	MW-110	4-Sep-02	MW110-EBT-TS3d	MG/L	1	2.27	=							1	6.9	=
Area2	MW-110	8-Oct-02	MW110-EBT-TS4	MG/L	1	2.1	J							1	6.33	=
Area2	MW-110	8-Oct-02	MW110-EBT-TS4D	MG/L	1	4.26	J							1	6.42	=
Area2	MW-110	12-Nov-02	MW110-EBT-TS5	MG/L	1	2.1	=							1	6.15	=
Area2	MW-110	12-Nov-02	MW110-EBT-TS5D	MG/L	1	2.11	=							1	6.24	=
Area2	MW-110	17-Dec-02	MW110-EBT-TS6	MG/L	1	2.23	=							1	5.22	=
Area2	MW-110	17-Dec-02	MW110-EBT-TS6D	MG/L	1	2.26	=							1	5.24	=
Area2	MW-110	21-Jan-03	MW110-EBT-TS7	MG/L	1	2.25	=							1	6.27	=
Area2	MW-110	21-Jan-03	MW110-EBT-TS7D	MG/L	1	2.23	=							1	6.24	=
Area2	MW-110	24-Mar-03	MW110-EBT-TS9	MG/L	1	2.23	=							2	46.5	J
Area2	MW-110	24-Mar-03	MW110-EBT-TS9D	MG/L	1	2.21	=							1	6.02	J
Area2	MW-110	21-Apr-03	MW110-EBT-TS10	MG/L	1	2.08	=							1	5.78	=
Area2	MW-110	21-Apr-03	MW110-EBT-TS10D	MG/L	1	2.09	=							1	5.88	=
Area2	MW-110	19-May-03	MW110-EBT-TS11	MG/L	1	0.511	J							1	4.88	=
Area2	MW-110	19-May-03	MW110-EBT-TS11D	MG/L	1	0.503	J							1	4.51	=
Area2	MW-110	23-Jun-03	MW110-EBT-TS12	MG/L										1	1.56	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12D	MG/L										1	29.7	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13	MG/L	1	1.43	=							2	68.8	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13D	MG/L	1	1.33	=							1	5.64	J
Area2	MW-110	18-Aug-03	MW110-EBT-TS14	MG/L	1	2.02	=							1	6.59	=
Area2	MW-110	18-Aug-03	MW110-EBT-TS14D	MG/L	1	2.05	=							1	6.6	=
Area2	MW-111	22-May-02	MW111-EBT-B	MG/L	1	2.3	=	1	0.094	J				1	6.2	=
Area2	MW-111	9-Jul-02	MW111-EBT-TS1	MG/L	1	2.1	=							1	6.4	=
Area2	MW-111	31-Jul-02	MW111-EBT-TS2	MG/L	1	1.02	=							1	5.94	=
Area2	MW-111	5-Sep-02	MW111-EBT-TS3	MG/L	1	1.1	=	1	0.136	J				1	5.7	=
Area2	MW-111	9-Oct-02	MW111-EBT-TS4	MG/L	1	1.09	=	1	0.166	J				1	5.28	=
Area2	MW-111	13-Nov-02	MW111-EBT-TS5	MG/L	1	1.2	=	1	0.189	J				1	5.54	=
Area2	MW-111	18-Dec-02	MW111-EBT-TS6	MG/L	1	1.32	=	1	0.156	J				1	5.17	=
Area2	MW-111	22-Jan-03	MW111-EBT-TS7	MG/L	1	1.61	=	1	0.197	J				1	5.3	=
Area2	MW-111	26-Mar-03	MW111-EBT-TS9	MG/L	1	1.46	=							1	4.33	=
Area2	MW-111	23-Apr-03	MW111-EBT-TS10	MG/L	1	1.42	=							1	4.5	=
Area2	MW-111	21-May-03	MW111-EBT-TS11	MG/L										4	107	=
Area2	MW-111	25-Jun-03	MW111-EBT-TS12	MG/L												
Area2	MW-111	23-Jul-03	MW111-EBT-TS13	MG/L												
Area2	MW-111	20-Aug-03	MW111-EBT-TS14	MG/L										4	151	=
Area2	MW-112	20-May-02	MW-112-EBT-B	MG/L	1	2	=							1	9.7	=
Area2	MW-112	10-Jul-02	MW112-EBT-TS1	MG/L										1	14	=
Area2	MW-112	31-Jul-02	MW112-EBT-TS2	MG/L										1	4.28	=
Area2	MW-112	5-Sep-02	MW112-EBT-TS3	MG/L										1	1.72	=
Area2	MW-112	9-Oct-02	MW112-EBT-TS4	MG/L										1	1.67	=
Area2	MW-112	13-Nov-02	MW112-EBT-TS5	MG/L										1	2.63	=
Area2	MW-112	18-Dec-02	MW112-EBT-TS6	MG/L	1	0.177	J							1	2.8	=
Area2	MW-112	22-Jan-03	MW112-EBT-TS7	MG/L										1	33.5	=
Area2	MW-112	26-Mar-03	MW112-EBT-TS9	MG/L										40	30.8	J
Area2	MW-112	23-Apr-03	MW112-EBT-TS10	MG/L										1	1.02	=
Area2	MW-112	21-May-03	MW112-EBT-TS11	MG/L										10	149	=
Area2	MW-112	25-Jun-03	MW112-EBT-TS12	MG/L										10	217	=
Area2	MW-112	23-Jul-03	MW112-EBT-TS13	MG/L												
Area2	MW-112	20-Aug-03	MW112-EBT-TS14	MG/L	5	0.515	J									
Area2	MW-113	22-May-02	MW113-EBT-B	MG/L	1	2	=	1	0.11	J				1	6.9	=
Area2	MW-113	10-Jul-02	MW113-EBT-TS1	MG/L	1	2	=							1	6.7	=
Area2	MW-113	31-Jul-02	MW113-EBT-TS2	MG/L	1	1.29	=							1	7.65	=
Area2	MW-113	5-Sep-02	MW113-EBT-TS3	MG/L	1	1.4	=							1	6.14	=
Area2	MW-113	9-Oct-02	MW113-EBT-TS4	MG/L	1	1.15	=	1	0.183	J				1	5.5	=
Area2	MW-113	13-Nov-02	MW113-EBT-TS5	MG/L	1	1.36	=	1	0.2	J				1	5.63	=
Area2	MW-113	18-Dec-02	MW113-EBT-TS6	MG/L	1	1.72	=	1	0.171	J				1	5.77	=
Area2	MW-113	22-Jan-03	MW113-EBT-TS7	MG/L	1	1.69	=	1	0.209	J				1	6.13	=
Area2	MW-113	26-Mar-03	MW113-EBT-TS9	MG/L	1	1.74	=							1	5.93	=
Area2	MW-113	23-Apr-03	MW113-EBT-TS10	MG/L	1	1.53	=							1	5.46	=
Area2	MW-113	21-May-03	MW113-EBT-TS11	MG/L	1	1.64	=							2	46.1	=
Area2	MW-113	25-Jun-03	MW113-EBT-TS12	MG/L										1	5.28	=
Area2	MW-113	23-Jul-03	MW113-EBT-TS13	MG/L	1	1.15	J							1	5	=
Area2	MW-113	20-Aug-03	MW113-EBT-TS14	MG/L	1	1.47	=							1	5.78	=
Area2	MW-114	22-May-02	MW114-EBT-B	MG/L	1	2	=							1	6.8	=
Area2	MW-114	9-Jul-02	MW114-EBT-TS1	MG/L				1	5.9	=				1	10	=
Area2	MW-114	30-Jul-02	MW114-EBT-TS2	MG/L	1	0.165	J	1	0.103	J				1	4.03	=
Area2	MW-114	4-Sep-02	MW114-EBT-TS3	MG/L				1	0.102	J				1	2.35	=
Area2	MW-114	8-Oct-02	MW114-EBT-TS4	MG/L										1	2.79	=
Area2	MW-114	12-Nov-02	MW114-EBT-TS5	MG/L										1	3.69	=
Area2	MW-114	17-Dec-02	MW114-EBT-TS6	MG/L	1	0.683	=							1	3.76	=

794 700

Attachment G
Study Area 2: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	NITRATE			NITRITE			TOTAL ORTHOPHOSPHATE			SULFATE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	MW-114	21-Jan-03	MW114-EBT-TS7	MG/L	1	0.886	=									
Area2	MW-114	25-Mar-03	MW114-EBT-TS9	MG/L										1	2.75	=
Area2	MW-114	22-Apr-03	MW114-EBT-TS10	MG/L										1	1.28	=
Area2	MW-114	20-May-03	MW114-EBT-TS11	MG/L										1	1.22	=
Area2	MW-114	24-Jun-03	MW114-EBT-TS12	MG/L	1	0.298	J							1	0.785	J
Area2	MW-114	22-Jul-03	MW114-EBT-TS13	MG/L												
Area2	MW-114	19-Aug-03	MW114-EBT-TS14	MG/L												
Area2	MW-26	21-Mar-02	MW-26-108-BL	MG/L	1	2.6	=							1	16	=
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	MG/L	1	2.94	J							1	17.6	=
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	MG/L	1	3.08	=							1	17.3	=
Area2	MW-86	20-Mar-02	MW-86-108-BL	MG/L	1	2.2	J							1	7.8	=
Area2	MW-86	9-Jul-02	MW86-EBT-TS1	MG/L										1	30	=
Area2	MW-86	30-Jul-02	MW86-EBT-TS2	MG/L										1	16.8	=
Area2	MW-86	4-Sep-02	MW86-EBT-TS3	MG/L										1	2.97	=
Area2	MW-86	8-Oct-02	MW86-EBT-TS4	MG/L										1	10.9	=
Area2	MW-86	12-Nov-02	MW86-EBT-TS5	MG/L										1	1.54	=
Area2	MW-86	17-Dec-02	MW86-EBT-TS6	MG/L												
Area2	MW-86	21-Jan-03	MW86-EBT-TS7	MG/L												
Area2	MW-86	25-Mar-03	MW86-EBT-TS9	MG/L										1	2.8	=
Area2	MW-86	22-Apr-03	MW86-EBT-TS10	MG/L										1	0.953	J
Area2	MW-86	20-May-03	MW86-EBT-TS11	MG/L										1	1.58	=
Area2	MW-86	24-Jun-03	MW86-EBT-TS12	MG/L										1	1.87	=
Area2	MW-86	22-Jul-03	MW86-EBT-TS13	MG/L	10	1.1	J									
Area2	MW-86	19-Aug-03	MW86-EBT-TS14	MG/L										5	2.75	J
Area2	MW-88	21-Mar-02	MW-88-BL	MG/L	1	1.6	=							1	14	=
Area2	MW-88	11-Jul-02	MW88-EBT-TS1	MG/L	1	2.4	=							1	18	=
Area2	MW-88	1-Aug-02	MW88-EBT-TS2	MG/L	1	2.43	=							1	19.1	=
Area2	MW-88	6-Sep-02	MW88-EBT-TS3	MG/L	1	2.42	=							1	18.1	=
Area2	MW-88	10-Oct-02	MW88-EBT-TS4	MG/L	1	1.63	=							1	12.7	=
Area2	MW-88	14-Nov-02	MW88-EBT-TS5	MG/L	1	2.29	=							1	16.6	=
Area2	MW-88	19-Dec-02	MW88-EBT-TS6	MG/L	1	1.86	=							1	13.7	=
Area2	MW-88	24-Jan-03	MW88-EBT-TS7	MG/L	1	2.34	=							1	16.9	=
Area2	MW-88	27-Mar-03	MW88-EBT-TS9	MG/L	1	2.05	=							1	17	=
Area2	MW-88	24-Apr-03	MW88-EBT-TS10	MG/L	1	2.32	=							1	17.7	=
Area2	MW-88	22-May-03	MW88-EBT-TS11	MG/L	4	10.5	=							1	20.1	=
Area2	MW-88	24-Jul-03	MW88-EBT-TS13	MG/L	1	2.27	J							1	16.9	=
Area2	MW-88	21-Aug-03	MW88-EBT-TS14	MG/L	1	2.54	=							1	19.5	=

Attachment G
Study Area 2: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	SULFIDE			TOTAL ORGANIC CARBON		
					DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	21-May-02	IW1-EBT-B	MG/L						
Area2	IW-1	23-Jan-03	IW1-EBT-TS7	MG/L				50	267	=
Area2	IW-2	22-May-02	IW2-EBT-B	MG/L						
Area2	IW-2	23-Jan-03	IW2-EBT-TS7	MG/L				50	219	=
Area2	IW-3	21-May-02	IW3-EBT-B	MG/L	1	0.51	J			
Area2	IW-3	23-Jan-03	IW3-EBT-TS7	MG/L				200	1150	=
Area2	IW-4	21-May-02	IW4-EBT-B	MG/L						
Area2	IW-4	23-Jan-03	IW4-EBT-TS7	MG/L				200	1930	=
Area2	MW-105	10-Jul-02	MW105-EBT-TS1	MG/L				250	12000	=
Area2	MW-105	31-Jul-02	MW105-EBT-TS2	MG/L				100	2930	=
Area2	MW-105	5-Sep-02	MW105-EBT-TS3	MG/L				50	2330	=
Area2	MW-105	9-Oct-02	MW105-EBT-TS4	MG/L				20	750	=
Area2	MW-105	13-Nov-02	MW105-EBT-TS5	MG/L				25	707	=
Area2	MW-105	18-Dec-02	MW105-EBT-TS6	MG/L				10	348	=
Area2	MW-105	22-Jan-03	MW105-EBT-TS7	MG/L				25	168	=
Area2	MW-105	26-Mar-03	MW105-EBT-TS9	MG/L	1	1.1	=	2000	17100	=
Area2	MW-105	23-Apr-03	MW105-EBT-TS10	MG/L				200	4970	=
Area2	MW-105	21-May-03	MW105-EBT-TS11	MG/L				1000	26800	=
Area2	MW-105	25-Jun-03	MW105-EBT-TS12	MG/L				1000	36200	=
Area2	MW-105	23-Jul-03	MW105-EBT-TS13	MG/L				200	6320	=
Area2	MW-105	20-Aug-03	MW105-EBT-TS14	MG/L				100	4990	=
Area2	MW-106	21-May-02	MW106-EBT-B	MG/L						
Area2	MW-106	11-Jul-02	MW106-EBT-TS1	MG/L				100	810	=
Area2	MW-106	29-Jul-02	MW106-EBT-TS2	MG/L				10	312	=
Area2	MW-106	3-Sep-02	MW106-EBT-TS3	MG/L				4	151	=
Area2	MW-106	11-Nov-02	MW106-EBT-TS5	MG/L	1	5.7	=	10	47.9	=
Area2	MW-106	16-Dec-02	MW106-EBT-TS6	MG/L				1	35	=
Area2	MW-106	20-Jan-03	MW106-EBT-TS7	MG/L				10	40	=
Area2	MW-106	25-Mar-03	MW106-EBT-TS9	MG/L				500	2220	=
Area2	MW-106	22-Apr-03	MW106-EBT-TS10	MG/L				50	731	=
Area2	MW-106	20-May-03	MW106-EBT-TS11	MG/L				200	4630	=
Area2	MW-106	24-Jun-03	MW106-EBT-TS12	MG/L				200	4550	=
Area2	MW-106	22-Jul-03	MW106-EBT-TS13	MG/L				200	1890	=
Area2	MW-106	19-Aug-03	MW106-EBT-TS14	MG/L				25	715	=
Area2	MW-109	20-May-02	MW-109-EBT-B	MG/L						
Area2	MW-109	8-Jul-02	MW109-EBT-TS1	MG/L	1	1.3	=	50	1700	=
Area2	MW-109	30-Jul-02	MW109-EBT-TS2	MG/L				20	736	=
Area2	MW-109	4-Sep-02	MW109-EBT-TS3	MG/L				10	255	=
Area2	MW-109	8-Oct-02	MW109-EBT-TS4	MG/L				2	84.7	=
Area2	MW-109	12-Nov-02	MW109-EBT-TS5	MG/L	1	0.5	J	20	114	=
Area2	MW-109	17-Dec-02	MW109-EBT-TS6	MG/L				1	48.5	=
Area2	MW-109	21-Jan-03	MW109-EBT-TS7	MG/L				10	60.1	=
Area2	MW-109	25-Mar-03	MW109-EBT-TS9	MG/L				500	2590	=
Area2	MW-109	22-Apr-03	MW109-EBT-TS10	MG/L				50	1180	=
Area2	MW-109	20-May-03	MW109-EBT-TS11	MG/L				100	4170	=
Area2	MW-109	24-Jun-03	MW109-EBT-TS12	MG/L	1	3.9	=	500	8620	=
Area2	MW-109	22-Jul-03	MW109-EBT-TS13	MG/L				500	4500	J
Area2	MW-109	19-Aug-03	MW109-EBT-TS14	MG/L				100	2410	=
Area2	MW-110	20-May-02	MW-110-EBT-B	MG/L						
Area2	MW-110	20-May-02	MW-110-EBT-B-D	MG/L	1	0.53	J			
Area2	MW-110	9-Jul-02	MW110-EBT-TS1	MG/L						
Area2	MW-110	9-Jul-02	MW110-EBT-TS1-D	MG/L						
Area2	MW-110	30-Jul-02	MW110-EBT-TS2	MG/L						
Area2	MW-110	30-Jul-02	MW110-EBT-TS2D	MG/L						
Area2	MW-110	4-Sep-02	MW110-EBT-TS3	MG/L				1	1.94	=
Area2	MW-110	4-Sep-02	MW110-EBT-TS3d	MG/L				1	1.79	=
Area2	MW-110	8-Oct-02	MW110-EBT-TS4	MG/L						
Area2	MW-110	8-Oct-02	MW110-EBT-TS4D	MG/L						
Area2	MW-110	12-Nov-02	MW110-EBT-TS5	MG/L				1	4.52	=
Area2	MW-110	12-Nov-02	MW110-EBT-TS5D	MG/L	1	0.5	J	1	4.52	=
Area2	MW-110	17-Dec-02	MW110-EBT-TS6	MG/L						
Area2	MW-110	17-Dec-02	MW110-EBT-TS6D	MG/L						
Area2	MW-110	21-Jan-03	MW110-EBT-TS7	MG/L						
Area2	MW-110	21-Jan-03	MW110-EBT-TS7D	MG/L						
Area2	MW-110	24-Mar-03	MW110-EBT-TS9	MG/L						
Area2	MW-110	24-Mar-03	MW110-EBT-TS9D	MG/L						
Area2	MW-110	21-Apr-03	MW110-EBT-TS10	MG/L						
Area2	MW-110	21-Apr-03	MW110-EBT-TS10D	MG/L				1	0.97	J
Area2	MW-110	19-May-03	MW110-EBT-TS11	MG/L				5	173	=
Area2	MW-110	19-May-03	MW110-EBT-TS11D	MG/L				5	180	=
Area2	MW-110	23-Jun-03	MW110-EBT-TS12	MG/L				5	201	=
Area2	MW 110	23-Jun-03	MW110-EBT-TS12D	MG/L				5	202	=
Area2	MW-110	21-Jul-03	MW110-EBT-TS13	MG/L				4	47.2	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13D	MG/L				4	37.6	J
Area2	MW-110	18-Aug-03	MW110-EBT-TS14	MG/L				5	19.8	J
Area2	MW-110	18-Aug-03	MW110-EBT-TS14D	MG/L				5	34.8	J
Area2	MW-111	22-May-02	MW111-EBT-B	MG/L						
Area2	MW-111	9-Jul-02	MW111-EBT-TS1	MG/L						
Area2	MW-111	31-Jul-02	MW111-EBT-TS2	MG/L				1	18.1	=
Area2	MW-111	5-Sep-02	MW111-EBT-TS3	MG/L				1	6.95	=
Area2	MW-111	9-Oct-02	MW111-EBT-TS4	MG/L				1	11.2	=
Area2	MW-111	13-Nov-02	MW111-EBT-TS5	MG/L				1	7.73	=
Area2	MW-111	18-Dec-02	MW111-EBT-TS6	MG/L				1	4.63	=
Area2	MW-111	22-Jan-03	MW111-EBT-TS7	MG/L						
Area2	MW-111	26-Mar-03	MW111-EBT-TS9	MG/L				1	2.45	=
Area2	MW-111	23-Apr-03	MW111-EBT-TS10	MG/L				1	3.21	=
Area2	MW-111	21-May-03	MW111-EBT-TS11	MG/L				10	423	=
Area2	MW 111	25-Jun-03	MW111-EBT-TS12	MG/L				50	1240	=
Area2	MW-111	23-Jul-03	MW111-EBT-TS13	MG/L				25	765	J
Area2	MW 111	20-Aug-03	MW111-EBT-TS14	MG/L				5	105	=
Area2	MW-112	20-May-02	MW-112-EBT-B	MG/L						
Area2	MW-112	10-Jul-02	MW112-EBT-TS1	MG/L				250	8100	=
Area2	MW-112	31-Jul-02	MW112-EBT-TS2	MG/L				200	4620	=
Area2	MW-112	5-Sep-02	MW112-EBT-TS3	MG/L				50	2380	=
Area2	MW-112	9-Oct-02	MW112-EBT-TS4	MG/L				20	885	=
Area2	MW-112	13-Nov-02	MW112-EBT-TS5	MG/L				25	818	=
Area2	MW-112	18-Dec-02	MW112-EBT-TS6	MG/L				10	420	=
Area2	MW-112	22-Jan-03	MW112-EBT-TS7	MG/L				25	255	=
Area2	MW-112	26-Mar-03	MW112-EBT-TS9	MG/L				500	4050	=
Area2	MW-112	23-Apr-03	MW112-EBT-TS10	MG/L				100	2420	=
Area2	MW-112	21-May-03	MW112-EBT-TS11	MG/L				500	13100	=
Area2	MW-112	25-Jun-03	MW112-EBT-TS12	MG/L				500	17600	=
Area2	MW-112	23-Jul-03	MW112-EBT-TS13	MG/L				100	3730	=
Area2	MW 112	20-Aug-03	MW112-EBT-TS14	MG/L				200	4120	=
Area2	MW-113	22-May-02	MW113-EBT-B	MG/L						
Area2	MW-113	10-Jul-02	MW113-EBT-TS1	MG/L						
Area2	MW-113	31-Jul-02	MW113-EBT-TS2	MG/L				1	17.3	=
Area2	MW 113	5-Sep-02	MW113-EBT-TS3	MG/L				1	37.3	=
Area2	MW-113	9-Oct-02	MW113-EBT-TS4	MG/L				1	31.6	=
Area2	MW-113	13-Nov-02	MW113-EBT-TS5	MG/L				1	14	=
Area2	MW-113	18-Dec-02	MW113-EBT-TS6	MG/L						
Area2	MW-113	22-Jan-03	MW113-EBT-TS7	MG/L						
Area2	MW-113	26-Mar-03	MW113-EBT-TS9	MG/L						
Area2	MW-113	23-Apr-03	MW113-EBT-TS10	MG/L				1	4.74	=
Area2	MW-113	21-May-03	MW113-EBT-TS11	MG/L				1	7.88	=
Area2	MW-113	25-Jun-03	MW113-EBT-TS12	MG/L				1	15	=
Area2	MW-113	23-Jul-03	MW113-EBT-TS13	MG/L				1	20.4	=
Area2	MW 113	20-Aug-03	MW113-EBT-TS14	MG/L				1	6.64	=
Area2	MW-114	22-May-02	MW114-EBT-B	MG/L						
Area2	MW-114	9-Jul-02	MW114-EBT-TS1	MG/L				250	5400	=
Area2	MW-114	30-Jul-02	MW114-EBT-TS2	MG/L				50	803	=
Area2	MW-114	4-Sep-02	MW114-EBT-TS3	MG/L				10	376	=
Area2	MW-114	8-Oct-02	MW114-EBT-TS4	MG/L				4	180	=
Area2	MW-114	12-Nov-02	MW114-EBT-TS5	MG/L	1	0.5	J	25	167	=
Area2	MW-114	17-Dec-02	MW114-EBT-TS6	MG/L				2	96.8	=

Attachment G
Study Area 2: Summary of General Chemistry in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	SULFIDE			TOTAL ORGANIC CARBON		
					MDL	Conc	Qual	MDL	Conc	Qual
Area2	MW-114	21-Jan-03	MW114-EBT-TS7	MG/L				20	67.2	=
Area2	MW-114	25-Mar-03	MW114-EBT-TS9	MG/L				500	2700	=
Area2	MW-114	22-Apr-03	MW114-EBT-TS10	MG/L						
Area2	MW-114	20-May-03	MW114-EBT-TS11	MG/L				200	9580	=
Area2	MW-114	24-Jun-03	MW114-EBT-TS12	MG/L				500	13600	=
Area2	MW-114	22-Jul-03	MW114-EBT-TS13	MG/L				200	4550	=
Area2	MW-114	19-Aug-03	MW114-EBT-TS14	MG/L				200	1980	=
Area2	MW-26	21-Mar-02	MW-26-108-BL	MG/L						
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	MG/L				1	1.02	=
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	MG/L				1	2.91	=
Area2	MW-86	20-Mar-02	MW-86-108-BL	MG/L						
Area2	MW-86	9-Jul-02	MW86-EBT-TS1	MG/L				20	890	=
Area2	MW-86	30-Jul-02	MW86-EBT-TS2	MG/L				50	1680	=
Area2	MW-86	4-Sep-02	MW86-EBT-TS3	MG/L				100	2300	=
Area2	MW-86	8-Oct-02	MW86-EBT-TS4	MG/L				50	1590	=
Area2	MW-86	12-Nov-02	MW86-EBT-TS5	MG/L				200	1110	=
Area2	MW-86	17-Dec-02	MW86-EBT-TS6	MG/L				50	1220	=
Area2	MW-86	21-Jan-03	MW86-EBT-TS7	MG/L				200	1070	=
Area2	MW-86	25-Mar-03	MW86-EBT-TS9	MG/L				500	2500	=
Area2	MW-86	22-Apr-03	MW86-EBT-TS10	MG/L	1	1.5	=	200	3550	=
Area2	MW-86	20-May-03	MW86-EBT-TS11	MG/L				200	7360	=
Area2	MW-86	24-Jun-03	MW86-EBT-TS12	MG/L	1	2.9	=	500	12800	=
Area2	MW-86	22-Jul-03	MW86-EBT-TS13	MG/L				1000	15500	=
Area2	MW-86	19-Aug-03	MW86-EBT-TS14	MG/L				500	16200	=
Area2	MW-88	21-Mar-02	MW-88-BL	MG/L				1	4.3	=
Area2	MW-88	11-Jul-02	MW88-EBT-TS1	MG/L						
Area2	MW-88	1-Aug-02	MW88-EBT-TS2	MG/L						
Area2	MW-88	6-Sep-02	MW88-EBT-TS3	MG/L						
Area2	MW-88	10-Oct-02	MW88-EBT-TS4	MG/L						
Area2	MW-88	14-Nov-02	MW88-EBT-TS5	MG/L				1	1.03	=
Area2	MW-88	19-Dec-02	MW88-EBT-TS6	MG/L						
Area2	MW-88	24-Jan-03	MW88-EBT-TS7	MG/L						
Area2	MW-88	27-Mar-03	MW88-EBT-TS9	MG/L						
Area2	MW-88	24-Apr-03	MW88-EBT-TS10	MG/L						
Area2	MW-88	22-May-03	MW88-EBT-TS11	MG/L				1	10.7	=
Area2	MW-88	24-Jul-03	MW88-EBT-TS13	MG/L				1	1.08	=
Area2	MW-88	21-Aug-03	MW88-EBT-TS14	MG/L				1	0.545	J

Attachment G
Study Area 2: Summary of Volatile Fatty Acids in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ACETIC ACID			BUTYRIC ACID			FORMIC ACID			LACTIC ACID		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	23-Jan-03	IW1-EBT-TS7	MG/L	1	176.9	=	1	19.7	=	1	0.5	J	1	80.4	=
Area2	IW-2	23-Jan-03	IW2-EBT-TS7	MG/L	1	111.1	=	1	47	=	1	0.5	J	1	72.7	=
Area2	IW-3	23-Jan-03	IW3-EBT-TS7	MG/L	1	329.9	=	1	204	=	1	0.8	J	1	0.7	J
Area2	IW-4	23-Jan-03	IW4-EBT-TS7	MG/L	10	313.6	=	10	538.7	=	10	14	=	10	369.6	=
Area2	MW-105	10-Jul-02	MW105-EBT-TS1	MG/L	20	289.3	=							500	20460	=
Area2	MW-105	31-Jul-02	MW105-EBT-TS2	MG/L	10	650.9	=	1	75.1	=				100	3512	=
Area2	MW-105	5-Sep-02	MW105-EBT-TS3	MG/L	10	663.4	=	1	47.6	=				10	171.5	=
Area2	MW-105	9-Oct-02	MW105-EBT-TS4	MG/L	1	323.1	=	1	20.1	=	1	0.5	J			
Area2	MW-105	13-Nov-02	MW105-EBT-TS5	MG/L	1	206.9	=	1	25	=						
Area2	MW-105	16-Dec-02	MW105-EBT-TS6	MG/L	1	162.8	=	1	28.5	=						
Area2	MW-105	22-Jan-03	MW105-EBT-TS7	MG/L	1	120.4	=	1	20.3	=	1	0.5	J			
Area2	MW-105	26-Mar-03	MW105-EBT-TS9	MG/L	20	1259	=	20	278.6	=				1000	22600	=
Area2	MW-105	23-Apr-03	MW105-EBT-TS10	MG/L	20	1481	=	20	507.4	=				20	5505	=
Area2	MW-105	21-May-03	MW105-EBT-TS11	MG/L	20	881.7	=	20	577.2	=				1000	58450	=
Area2	MW-105	25-Jun-03	MW105-EBT-TS12	MG/L	50	1089	=	50	2008	=				1000	46300	=
Area2	MW-105	23-Jul-03	MW105-EBT-TS13	MG/L	20	786.1	=	20	1569	J				200	7658	=
Area2	MW-105	20-Aug-03	MW105-EBT-TS14	MG/L	20	1119	=	20	1908	=				200	4374	=
Area2	MW-106	21-May-02	MW106-EBT-B	MG/L							1	1.7	=			
Area2	MW-106	11-Jul-02	MW106-EBT-TS1	MG/L	1	58	=							20	772.4	=
Area2	MW-106	29-Jul-02	MW106-EBT-TS2	MG/L	1	91.5	=	1	2	=				10	643	=
Area2	MW-106	3-Sep-02	MW106-EBT-TS3	MG/L	1	62.5	=	1	6.1	=				1	8.6	=
Area2	MW-106	7-Oct-02	MW106-EBT-TS4	MG/L	1	49.2	=	1	0.5	J						
Area2	MW-106	11-Nov-02	MW106-EBT-TS5	MG/L	1	29.9	=	1	3.1	=						
Area2	MW-106	16-Dec-02	MW106-EBT-TS6	MG/L	1	22.8	=	1	0.7	J						
Area2	MW-106	20-Jan-03	MW106-EBT-TS7	MG/L	1	29.4	=	1	0.7	J	1	0.8	J			
Area2	MW-106	25-Mar-03	MW106-EBT-TS9	MG/L	10	337.3	=	1	48	=				200	3109	=
Area2	MW-106	22-Apr-03	MW106-EBT-TS10	MG/L	10	186.7	=	10	105.5	=				10	1126	=
Area2	MW-106	20-May-03	MW106-EBT-TS11	MG/L	10	245.4	=	10	375.1	=				200	8909	=
Area2	MW-106	24-Jun-03	MW106-EBT-TS12	MG/L	20	234.9	=	20	310.1	=				1000	8238	=
Area2	MW-106	22-Jul-03	MW106-EBT-TS13	MG/L	10	274.5	=	10	548.7	=				200	1577	=
Area2	MW-106	19-Aug-03	MW106-EBT-TS14	MG/L	20	429	=	20	739.3	=				20	459.8	=
Area2	MW-109	8-Jul-02	MW109-EBT-TS1	MG/L	10	177.9	=	10	3.6	=				50	3944	=
Area2	MW-109	30-Jul-02	MW109-EBT-TS2	MG/L	10	348.4	=	1	7.3	=				10	234.6	=
Area2	MW-109	4-Sep-02	MW109-EBT-TS3	MG/L	1	173	=	1	10	=				1	33.8	=
Area2	MW-109	8-Oct-02	MW109-EBT-TS4	MG/L	1	73.5	=	1	2.7	=						
Area2	MW-109	12-Nov-02	MW109-EBT-TS5	MG/L	1	86.5	=	1	5.1	=	1	1.8	=			
Area2	MW-109	17-Dec-02	MW109-EBT-TS6	MG/L	1	36.4	=	1	0.7	J						
Area2	MW-109	21-Jan-03	MW109-EBT-TS7	MG/L	10	59.1	=	1	2.3	=	100	0.8	J			
Area2	MW-109	25-Mar-03	MW109-EBT-TS9	MG/L	50	3285	=	10	250.5	=				50	4745	=
Area2	MW-109	22-Apr-03	MW109-EBT-TS10	MG/L	10	820.7	=	10	256.4	=				10	159.7	=
Area2	MW-109	20-May-03	MW109-EBT-TS11	MG/L	50	1638	=	50	1179	=				50	2815	=
Area2	MW-109	24-Jun-03	MW109-EBT-TS12	MG/L	50	1932	=	50	4071	=				1000	12520	=
Area2	MW-109	22-Jul-03	MW109-EBT-TS13	MG/L	20	1001	=	20	2068	=				20	1129	=
Area2	MW-109	19-Aug-03	MW-109-EBT-TS14	MG/L	20	1089	=	20	1053	=				20	160.2	=
Area2	MW-110	30-Jul-02	MW110-EBT-TS2D	MG/L										1	2.4	=
Area2	MW-110	4-Sep-02	MW110-EBT-TS3d	MG/L										1	1	J
Area2	MW-110	12-Nov-02	MW110-EBT-TS5	MG/L	1	11.2	J	1	1	=						
Area2	MW-110	12-Nov-02	MW110-EBT-TS5D	MG/L	1	2.9	J									
Area2	MW-110	19-May-03	MW110-EBT-TS11	MG/L	1	145.6	=							10	305.8	=
Area2	MW-110	19-May-03	MW110-EBT-TS11D	MG/L	1	31.3	=							5	328.5	=
Area2	MW-110	23-Jun-03	MW110-EBT-TS12	MG/L	1	146.1	=	1	26	J	1	5.8	=	1	21.7	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12D	MG/L	1	139.8	=	1	26	=	1	6.2	=	1	29.4	=
Area2	MW-110	21-Jul-03	MW110-EBT-TS13	MG/L	1	21	=	1	11.6	J						
Area2	MW-110	21-Jul-03	MW110-EBT-TS13D	MG/L	1	23.6	=	1	15.1	J						
Area2	MW-110	18-Aug-03	MW110-EBT-TS14	MG/L	1	8.5	=									
Area2	MW-110	18-Aug-03	MW110-EBT-TS14D	MG/L	1	10.1	=									
Area2	MW-111	31-Jul-02	MW111-EBT-TS2	MG/L										1	15.2	=
Area2	MW-111	5-Sep-02	MW111-EBT-TS3	MG/L	1	1.9	=							1	1.1	J
Area2	MW-111	9-Oct-02	MW111-EBT-TS4	MG/L	10	2	=									
Area2	MW-111	13-Nov-02	MW111-EBT-TS5	MG/L	1	73.4	=	1	7.1	=	1	0.5	J			
Area2	MW-111	22-Jan-03	MW111-EBT-TS7	MG/L												
Area2	MW-111	26-Mar-03	MW111-EBT-TS9	MG/L	1	1.9	=									
Area2	MW-111	23-Apr-03	MW111-EBT-TS10	MG/L	1	2	=									
Area2	MW-111	21-May-03	MW111-EBT-TS11	MG/L	10	270.4	=							10	278.5	=
Area2	MW-111	25-Jun-03	MW111-EBT-TS12	MG/L	20	530.3	=	5	41.3	=				20	1124	=
Area2	MW-111	23-Jul-03	MW111-EBT-TS13	MG/L	10	278	=	10	153.9	=				1	22.5	=
Area2	MW-111	20-Aug-03	MW111-EBT-TS14	MG/L	1	63.8	=	1	46.7	=				1	3.7	=
Area2	MW-112	10-Jul-02	MW112-EBT-TS1	MG/L	1	107	=							500	23630	=
Area2	MW-112	31-Jul-02	MW112-EBT-TS2	MG/L	10	286.4	=	1	11.2	=				100	8098	=
Area2	MW-112	5-Sep-02	MW112-EBT-TS3	MG/L	1	488.1	=	1	24.4	=				10	1046	=
Area2	MW-112	9-Oct-02	MW112-EBT-TS4	MG/L	1	321.5	=	1	53.2	=	1	19	=	10	115.4	J
Area2	MW-112	13-Nov-02	MW112-EBT-TS5	MG/L	1	208	=	1	50.2	=	1	0.6	J	1	26.7	=
Area2	MW-112	16-Dec-02	MW112-EBT-TS6	MG/L	1	166.6	=	1	35.6	=				1	18.2	=
Area2	MW-112	22-Jan-03	MW112-EBT-TS7	MG/L	1	144.8	=	1	25.1	=	1	0.5	J	1	4.8	=
Area2	MW-112	26-Mar-03	MW112-EBT-TS9	MG/L	20	1311	=	20	233.5	=				200	5112	=
Area2	MW-112	23-Apr-03	MW112-EBT-TS10	MG/L	20	911.5	=	20	414.9	=				20	1982	J
Area2	MW-112	21-May-03	MW112-EBT-TS11	MG/L	20	1178	=	20	1069	=				200	17620	=
Area2	MW-112	25-Jun-03	MW112-EBT-TS12	MG/L	20	1011	=	20	905.3	=				1000	35910	=
Area2	MW-112	23-Jul-03	MW112-EBT-TS13	MG/L	20	650.7	=	20	1016	J				200	6856	=
Area2	MW-112	20-Aug-03	MW112-EBT-TS14	MG/L	20	819.7	=	20	1934	=	20	115.4	=	200	5304	=
Area2	MW-113	31-Jul-02	MW113-EBT-TS2	MG/L										1	29	=
Area2	MW-113	5-Sep-02	MW113-EBT-TS3	MG/L	1	20	=							1	4.4	=
Area2	MW-113	9-Oct-02	MW113-EBT-TS4	MG/L	1	22.1	=							1	0.9	J
Area2	MW-113	13-Nov-02	MW113-EBT-TS5	MG/L	10	10.1	=	1	2.1	=						
Area2	MW-113	22-Jan-03	MW113-EBT-TS7	MG/L												
Area2	MW-113	23-Apr-03	MW113-EBT-TS10	MG/L	1	3.6	=									
Area2	MW-113	21-May-03	MW113-EBT-TS11	MG/L	1	16.2	=									
Area2	MW-113	25-Jun-03	MW113-EBT-TS12	MG/L	1	9.3	=									
Area2	MW-113	23-Jul-03	MW113-EBT-TS13	MG/L	1	20.2	=	1	1.5	=						
Area2	MW-113	20-Aug-03	MW113-EBT-TS14	MG/L	1	11	=	1	2.5	=						
Area2	MW-114	9-Jul-02	MW114-EEEBT-TS1	MG/L	1	60.6	=							500	9731	=
Area2	MW-114	30-Jul-02	MW114-EBT-TS2	MG/L	1	170.3	=							100	1746	=
Area2	MW-114	4-Sep-02	MW-114-EBT-TS3	MG/L	1	183.1	=	1	7.7	=				1	104	=
Area2	MW-114	8-Oct-02	MW114-EBT-TS4	MG/L	1	117.9	J	1	5.5	=	1	0.5	J			
Area2	MW-114	12-Nov-02	MW114-EBT-TS5	MG/L	1	73	=	1	7.2	=						
Area2	MW-114	17-Dec-02	MW114 EBT-TS6	MG/L	1	64.7	=	1	6.7	=						
Area2	MW-114	21-Jan-03	MW114-EBT-TS7	MG/L	1	54.6	=	1	12.4	=	1	4	=			
Area2	MW-114	25-Mar-03	MW114-EBT-TS9	MG/L	20	1217	=	1	72.1	=				1	7833	=
Area2	MW-114	22 Apr-03	MW114-EBT-TS10	MG/L	10	624.4	=	10	80	=				10	14.2	=
Area2	MW-114	20-May-03	MW114-EBT-TS11	MG/L	200	2035	=	20	423.4	=				200	4339	=
Area2	MW-114	24-Jun-03	MW114 EBT-TS12	MG/L	50	814.9	=	50	1601	=				1000	22690	=
Area2	MW-114	22-Jul-03	MW114 EBT-TS13	MG/L	20	838.8	=	20	1530	=				200	2144	=
Area2	MW-114	19-Aug-03	MW114-EBT-TS14	MG/L	20	677.6	=	20	1292	=				1	32.9	=
Area2	MW-26	21-Mar-02	MW26-106-BL	MG/L	1	0.1	J									
Area2	MW-86	9-Jul-02	MW86-EBT-TS1	MG/L	1	16	=							50	1896	=
Area2	MW-86	30-Jul-02	MW86-EBT-TS2	MG/L	1	157	=							100	3011	=
Area2	MW-86	4-Sep-02	MW86-EBT-TS3	MG/L	1	214.9	=	1	13.6	=				1	759.9	=
Area2	MW-86	8-Oct-02	MW86-EBT-TS4	MG/L	1	518.8	=	1	51.2	=	1	29.7	=	1	1076	=
Area2	MW-86	12-Nov-02	MW86-EBT-TS5	MG/L	10	480.9	=	1	87.4	=				100	245.4	=
Area2	MW-86	17-Dec-02	MW86-EBT-TS6	MG/L	10	596.1	=	1	138.6	=				100	120.9	=
Area2	MW-86	21-Jan-03	MW86-EBT-TS7	MG/L	10	528	=	1	170.5	=	100	0.7	J	100	54.8	=
Area2	MW-86	25-Mar-03	MW86-EBT-TS9	MG/L	10	1472	=	10	601.1	=				10	578.8	=
Area2	MW-86	22-Apr-03	MW86-EBT-TS10	MG/L	20	1894	=	20	1020	=				20	220.3	=
Area2	MW-86	20-May-03	MW86-EBT-TS11	MG/L	200	2734	=	20	1634	=				200	3998	=
Area2	MW-86	24-Jun-03	MW86-EBT-TS12	MG/L	50	3028	=	50	4523	=				1000	13470	=
Area2	MW-86	22-Jul-03	MW86-EBT-TS13	MG/L	20	1784	=	20	3529	=				200	22490	=
Area2	MW-86	19-Aug-03	MW86-EBT-TS14	MG/L	20	1780	=	200	4911	=				200	26800	=
Area2	MW-88	21-Mar-02	MW88-BL	MG/L	1	1.4	=				1	0.3	J	1	0.7	J
Area2	MW-88	6-Sep-02	MW88-EBT-TS3	MG/L										1	0.8	J
Area2	MW-88	22-May-03	MW88-EBT-TS11	MG/L	1	5.8	=	1	1.2	=				1	123.4	=

Attachment G
Study Area 2: Summary of Volatile Fatty Acids in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	PROPIONIC ACID			PYRUVIC ACID		
					DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	23-Jan-03	IW1-EBT-TS7	MG/L	1	279.9	=			
Area2	IW-2	23-Jan-03	IW2-EBT-TS7	MG/L	1	147.1	=	1	3.7	J
Area2	IW-3	23-Jan-03	IW3-EBT-TS7	MG/L	1	562.9	=	1	4.6	=
Area2	IW-4	23-Jan-03	IW4-EBT-TS7	MG/L	10	990.5	=			
Area2	MW-105	10-Jul-02	MW105-EBT-TS1	MG/L	20	319.6	=	1	52.2	=
Area2	MW-105	31-Jul-02	MW105-EBT-TS2	MG/L	10	854.4	=			
Area2	MW-105	5-Sep-02	MW105-EBT-TS3	MG/L	10	1106	=			
Area2	MW-105	9-Oct-02	MW105-EBT-TS4	MG/L	1	530.4	=			
Area2	MW-105	13-Nov-02	MW105-EBT-TS5	MG/L	1	322.1	=			
Area2	MW-105	18-Dec-02	MW105-EBT-TS6	MG/L	1	217.4	=	1	5.2	=
Area2	MW-105	22-Jan-03	MW105-EBT-TS7	MG/L	1	148.2	=			
Area2	MW-105	26-Mar-03	MW105-EBT-TS9	MG/L	20	2076	=			
Area2	MW-105	23-Apr-03	MW105-EBT-TS10	MG/L	20	2665	=			
Area2	MW-105	21-May-03	MW105-EBT-TS11	MG/L	20	1588	=			
Area2	MW-105	25-Jun-03	MW105-EBT-TS12	MG/L	50	2596	=			
Area2	MW-105	23-Jul-03	MW105-EBT-TS13	MG/L	20	1840	=			
Area2	MW-105	20-Aug-03	MW105-EBT-TS14	MG/L	20	2117	=	1	23.5	=
Area2	MW-106	21-May-02	MW106-EBT-B	MG/L						
Area2	MW-106	11-Jul-02	MW106-EBT-TS1	MG/L	1	56.8	=	1	0.6	J
Area2	MW-106	29-Jul-02	MW106-EBT-TS2	MG/L	1	96.5	=			
Area2	MW-106	3-Sep-02	MW106-EBT-TS3	MG/L	1	81.7	=			
Area2	MW-106	7-Oct-02	MW106-EBT-TS4	MG/L	1	30.4	=	1	5	=
Area2	MW-106	11-Nov-02	MW106-EBT-TS5	MG/L	1	28.1	=			
Area2	MW-106	18-Dec-02	MW106-EBT-TS6	MG/L	1	22.6	=	1	4.5	=
Area2	MW-106	20-Jan-03	MW106-EBT-TS7	MG/L	1	25.1	=	1	4.7	=
Area2	MW-106	25-Mar-03	MW106-EBT-TS9	MG/L	10	543.7	=	1	10.8	=
Area2	MW-106	22-Apr-03	MW106-EBT-TS10	MG/L	10	307.5	=			
Area2	MW-106	20-May-03	MW106-EBT-TS11	MG/L	10	554.6	=			
Area2	MW-106	24-Jun-03	MW106-EBT-TS12	MG/L	20	516.8	=			
Area2	MW-106	22-Jul-03	MW106-EBT-TS13	MG/L	10	787.5	=			
Area2	MW-106	19-Aug-03	MW106-EBT-TS14	MG/L	20	1135	=			
Area2	MW-109	8-Jul-02	MW109-EBT-TS1	MG/L	10	245.6	=	1	1.1	J
Area2	MW-109	30-Jul-02	MW109-EBT-TS2	MG/L	10	406.6	=			
Area2	MW-109	4-Sep-02	MW109-EBT-TS3	MG/L	1	183.3	=			
Area2	MW-109	8-Oct-02	MW109-EBT-TS4	MG/L	1	81.8	=	1	4.2	=
Area2	MW-109	12-Nov-02	MW109-EBT-TS5	MG/L	1	67.2	=			
Area2	MW-109	17-Dec-02	MW109-EBT-TS6	MG/L	1	28.8	=	1	4.5	=
Area2	MW-109	21-Jan-03	MW109-EBT-TS7	MG/L	10	46.1	=	1	5.1	=
Area2	MW-109	25-Mar-03	MW109-EBT-TS9	MG/L	50	5272	=			
Area2	MW-109	22-Apr-03	MW109-EBT-TS10	MG/L	10	1267	=			
Area2	MW-109	20-May-03	MW109-EBT-TS11	MG/L	50	3325	=			
Area2	MW-109	24-Jun-03	MW109-EBT-TS12	MG/L	50	5336	=			
Area2	MW-109	22-Jul-03	MW109-EBT-TS13	MG/L	20	2653	=			
Area2	MW-109	19-Aug-03	MW-109-EBT-TS14	MG/L	20	1646	=			
Area2	MW-110	30-Jul-02	MW110-EBT-TS2D	MG/L						
Area2	MW-110	4-Sep-02	MW110-EBT-TS3d	MG/L						
Area2	MW-110	12-Nov-02	MW110-EBT-TS5	MG/L	1	11.8	J			
Area2	MW-110	12-Nov-02	MW110-EBT-TS5D	MG/L	100	3.4	J			
Area2	MW-110	19-May-03	MW110-EBT-TS11	MG/L	1	34.2	=	1	4.4	=
Area2	MW-110	19-May-03	MW110-EBT-TS11D	MG/L	1	30.7	=	1	3.9	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12	MG/L	5	204.1	=			
Area2	MW-110	23-Jun-03	MW110-EBT-TS12D	MG/L	5	188.5	=			
Area2	MW-110	21-Jul-03	MW110-EBT-TS13	MG/L	5	22.3	=	1	3.9	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13D	MG/L	5	27.4	=	1	3.8	J
Area2	MW-110	18-Aug-03	MW110-EBT-TS14	MG/L	1	5.1	=			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14D	MG/L	1	5.6	=			
Area2	MW-111	31-Jul-02	MW111-EBT-TS2	MG/L						
Area2	MW-111	5-Sep-02	MW111-EBT-TS3	MG/L						
Area2	MW-111	9-Oct-02	MW111-EBT-TS4	MG/L						
Area2	MW-111	13-Nov-02	MW111-EBT-TS5	MG/L	1	88.4	=	1	4.1	=
Area2	MW-111	22-Jan-03	MW111-EBT-TS7	MG/L	1	2.1	=			
Area2	MW-111	26-Mar-03	MW111-EBT-TS9	MG/L	1	1.6	=			
Area2	MW-111	23-Apr-03	MW111-EBT-TS10	MG/L	1	2.4	=			
Area2	MW-111	21-May-03	MW111-EBT-TS11	MG/L	10	365.9	=			
Area2	MW-111	25-Jun-03	MW111-EBT-TS12	MG/L	20	741.7	=			
Area2	MW-111	23-Jul-03	MW111-EBT-TS13	MG/L	10	505.7	=			
Area2	MW-111	20-Aug-03	MW111-EBT-TS14	MG/L	1	99.2	=			
Area2	MW-112	10-Jul-02	MW112-EBT-TS1	MG/L	1	57.5	=	1	51.8	=
Area2	MW-112	31-Jul-02	MW112-EBT-TS2	MG/L	10	325.9	=	1	3.9	J
Area2	MW-112	5-Sep-02	MW112-EBT-TS3	MG/L	1	753.4	=	1	2.3	J
Area2	MW-112	9-Oct-02	MW112-EBT-TS4	MG/L	1	441.6	=	1	4.7	=
Area2	MW-112	13-Nov-02	MW112-EBT-TS5	MG/L	1	271	=			
Area2	MW-112	18-Dec-02	MW112-EBT-TS6	MG/L	1	192.4	=	1	4.8	=
Area2	MW-112	22-Jan-03	MW112-EBT-TS7	MG/L	1	133.9	=	1	4.1	=
Area2	MW-112	26-Mar-03	MW112-EBT-TS9	MG/L	20	2135	=	1	9.5	=
Area2	MW-112	23-Apr-03	MW112-EBT-TS10	MG/L	20	1568	=			
Area2	MW-112	21-May-03	MW112-EBT-TS11	MG/L	20	2121	=			
Area2	MW-112	25-Jun-03	MW112-EBT-TS12	MG/L	20	2005	=			
Area2	MW-112	23-Jul-03	MW112-EBT-TS13	MG/L	20	1430	=			
Area2	MW-112	20-Aug-03	MW112-EBT-TS14	MG/L	20	1858	=	1	24.5	=
Area2	MW-113	31-Jul-02	MW113-EBT-TS2	MG/L						
Area2	MW-113	5-Sep-02	MW113-EBT-TS3	MG/L	1	19	=			
Area2	MW-113	9-Oct-02	MW113-EBT-TS4	MG/L	1	21.6	=			
Area2	MW-113	13-Nov-02	MW113-EBT-TS5	MG/L	10	10.3	=			
Area2	MW-113	22-Jan-03	MW113-EBT-TS7	MG/L	1	2.3	=			
Area2	MW-113	23-Apr-03	MW113-EBT-TS10	MG/L	1	5.4	=	1	4	J
Area2	MW-113	21-May-03	MW113-EBT-TS11	MG/L	1	6.6	=			
Area2	MW-113	25-Jun-03	MW113-EBT-TS12	MG/L	1	2.1	=			
Area2	MW-113	23-Jul-03	MW113-EBT-TS13	MG/L	1	13.5	=			
Area2	MW-113	20-Aug-03	MW113-EBT-TS14	MG/L	1	7.8	=			
Area2	MW-114	9-Jul-02	MW114-EEEBT-TS1	MG/L	1	21.8	=	1	4	J
Area2	MW-114	30-Jul-02	MW114-EBT-TS2	MG/L	100	196	=			
Area2	MW-114	4-Sep-02	MW-114-EBT-TS3	MG/L	1	203.5	=			
Area2	MW-114	8-Oct-02	MW114-EBT-TS4	MG/L	1	139.9	J	1	4.4	=
Area2	MW-114	12-Nov-02	MW114-EBT-TS5	MG/L	1	83.9	=			
Area2	MW-114	17-Dec-02	MW114-EBT-TS6	MG/L	1	71.7	=			
Area2	MW-114	21-Jan-03	MW114-EBT-TS7	MG/L	1	63.1	=			
Area2	MW-114	25-Mar-03	MW114-EBT-TS9	MG/L	20	1664	=	1	26.5	=
Area2	MW-114	22-Apr-03	MW114-EBT-TS10	MG/L	10	821.7	=			
Area2	MW-114	20-May-03	MW114-EBT-TS11	MG/L	200	2868	=			
Area2	MW-114	24-Jun-03	MW114-EBT-TS12	MG/L	50	1958	=			
Area2	MW-114	22-Jul-03	MW114-EBT-TS13	MG/L	20	2145	=			
Area2	MW-114	19-Aug-03	MW114-EBT-TS14	MG/L	20	1610	=			
Area2	MW-26	21-Mar-02	MW26-106-BL	MG/L						
Area2	MW-86	9-Jul-02	MW86-EBT-TS1	MG/L						
Area2	MW-86	30-Jul-02	MW86-EBT-TS2	MG/L	1	184.8	=	1	6.3	=
Area2	MW-86	4-Sep-02	MW86-EBT-TS3	MG/L	1	294	=			
Area2	MW-86	8-Oct-02	MW86-EBT-TS4	MG/L	1	718.6	=	1	10.4	=
Area2	MW-86	12-Nov-02	MW86-EBT-TS5	MG/L	10	693	=			
Area2	MW-86	17-Dec-02	MW86-EBT-TS6	MG/L	10	859.4	=			
Area2	MW-86	21-Jan-03	MW86-EBT-TS7	MG/L	10	807.4	=			
Area2	MW-86	25-Mar-03	MW86-EBT-TS9	MG/L	50	1946	=			
Area2	MW-86	22-Apr-03	MW86-EBT-TS10	MG/L	20	2743	=			
Area2	MW-86	20-May-03	MW86-EBT-TS11	MG/L	200	4070	=			
Area2	MW-86	24-Jun-03	MW86-EBT-TS12	MG/L	50	5780	=			
Area2	MW-86	22-Jul-03	MW86-EBT-TS13	MG/L	20	4032	=			
Area2	MW-86	19-Aug-03	MW86-EBT-TS14	MG/L	200	3970	=	1	109.9	=
Area2	MW-88	21-Mar-02	MW88-BL	MG/L						
Area2	MW-88	6-Sep-02	MW88-EBT-TS3	MG/L						
Area2	MW-88	22-May-03	MW88-EBT-TS11	MG/L	1	8.8	=			

Attachment G
Study Area 2: Summary of Metals in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ARSENIC			MANGANESE			SELENIUM		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	21-May-02	IW1-EBT-B	UG/L				1	106	=			
Area2	IW-1	23-Jan-03	IW1-EBT-TS7	UG/L	1	9.22	=	1	8800	=	1	8.52	=
Area2	IW-2	22-May-02	IW2-EBT-B	UG/L				1	79.9	=			
Area2	IW-2	23-Jan-03	IW2-EBT-TS7	UG/L				1	1080	=			
Area2	IW-3	21-May-02	IW3-EBT-B	UG/L				1	135	=			
Area2	IW-3	23-Jan-03	IW3-EBT-TS7	UG/L				1	1470	=			
Area2	IW-4	21-May-02	IW4-EBT-B	UG/L				1	158	=			
Area2	IW-4	23-Jan-03	IW4-EBT-TS7	UG/L	1	24.7	=	1	7130	=	1	68.9	=
Area2	MW-105	10-Jul-02	MW105-EBT-TS1	UG/L				10	31300	=			
Area2	MW-105	31-Jul-02	MW105-EBT-TS2	UG/L				1	9190	=			
Area2	MW-105	5-Sep-02	MW105-EBT-TS3	UG/L				100	28800	=			
Area2	MW-105	9-Oct-02	MW105-EBT-TS4	UG/L				10	19800	=			
Area2	MW-105	13-Nov-02	MW105-EBT-TS5	UG/L				1	13400	=			
Area2	MW-105	18-Dec-02	MW105-EBT-TS6	UG/L				1	9690	=			
Area2	MW-105	22-Jan-03	MW105-EBT-TS7	UG/L				1	7400	=			
Area2	MW-105	26-Mar-03	MW105-EBT-TS9	UG/L				10	49600	=			
Area2	MW-105	23-Apr-03	MW105-EBT-TS10	UG/L				10	27100	=			
Area2	MW-105	21-May-03	MW105-EBT-TS11	UG/L				100	68700	=			
Area2	MW-105	25-Jun-03	MW105-EBT-TS12	UG/L				10	45400	=			
Area2	MW-105	23-Jul-03	MW105-EBT-TS13	UG/L				10	21600	=			
Area2	MW-105	20-Aug-03	MW105-EBT-TS14	UG/L				10	8970	=			
Area2	MW-106	21-May-02	MW106-EBT-B	UG/L				1	134	=			
Area2	MW-106	11-Jul-02	MW106-EBT-TS1	UG/L				1	3450	=			
Area2	MW-106	29-Jul-02	MW106-EBT-TS2	UG/L				1	2970	=			
Area2	MW-106	3-Sep-02	MW106-EBT-TS3	UG/L				1	1820	=			
Area2	MW-106	11-Nov-02	MW106-EBT-TS5	UG/L				1	879	=			
Area2	MW-106	16-Dec-02	MW106-EBT-TS6	UG/L				1	904	=			
Area2	MW-106	20-Jan-03	MW106-EBT-TS7	UG/L				1	955	=			
Area2	MW-106	25-Mar-03	MW106-EBT-TS9	UG/L				1	2200	=			
Area2	MW-106	22-Apr-03	MW106-EBT-TS10	UG/L				1	1670	=			
Area2	MW-106	20-May-03	MW106-EBT-TS11	UG/L				1	2120	=			
Area2	MW-106	24-Jun-03	MW106-EBT-TS12	UG/L				100	3500	=			
Area2	MW-106	22-Jul-03	MW106-EBT-TS13	UG/L				2	4530	=			
Area2	MW-106	19-Aug-03	MW106-EBT-TS14	UG/L				1	1970	=			
Area2	MW-109	20-May-02	MW-109-EBT-B	UG/L				1	1300	=			
Area2	MW-109	8-Jul-02	MW109-EBT-TS1	UG/L				1	2860	=			
Area2	MW-109	30-Jul-02	MW109-EBT-TS2	UG/L				1	5940	=			
Area2	MW-109	4-Sep-02	MW109-EBT-TS3	UG/L				1	4540	=			
Area2	MW-109	8-Oct-02	MW109-EBT-TS4	UG/L				1	2740	=			
Area2	MW-109	12-Nov-02	MW109-EBT-TS5	UG/L				1	1920	=			
Area2	MW-109	17-Dec-02	MW109-EBT-TS6	UG/L				1	1200	=			
Area2	MW-109	21-Jan-03	MW109-EBT-TS7	UG/L				1	982	=			
Area2	MW-109	25-Mar-03	MW109-EBT-TS9	UG/L				1	5870	=			
Area2	MW-109	22-Apr-03	MW109-EBT-TS10	UG/L				1	1660	=			
Area2	MW-109	20-May-03	MW109-EBT-TS11	UG/L				100	17400	=			
Area2	MW-109	24-Jun-03	MW109-EBT-TS12	UG/L				100	20400	=			
Area2	MW-109	22-Jul-03	MW109-EBT-TS13	UG/L				2	5000	=			
Area2	MW-109	19-Aug-03	MW109-EBT-TS14	UG/L				1	2620	=			
Area2	MW-110	20-May-02	MW-110-EBT-B	UG/L				1	79.5	=			
Area2	MW-110	20-May-02	MW-110-EBT-B-D	UG/L				1	81.7	=			
Area2	MW-110	12-Nov-02	MW110-EBT-TS5	UG/L				1	355	=			
Area2	MW-110	12-Nov-02	MW110-EBT-TS5D	UG/L				1	359	=			
Area2	MW-110	19-May-03	MW110-EBT-TS11	UG/L				1	2630	=			
Area2	MW-110	19-May-03	MW110-EBT-TS11D	UG/L				1	2730	=			
Area2	MW-110	23-Jun-03	MW110-EBT-TS12	UG/L				1	3640	J			
Area2	MW-110	23-Jun-03	MW110-EBT-TS12D	UG/L				1	3650	=			
Area2	MW-110	21-Jul-03	MW110-EBT-TS13	UG/L				1	1070	=			
Area2	MW-110	21-Jul-03	MW110-EBT-TS13D	UG/L				1	1070	=			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14	UG/L				1	585	=			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14D	UG/L				1	593	=			
Area2	MW-111	22-May-02	MW111-EBT-B	UG/L				1	10.8	=			
Area2	MW-111	9-Oct-02	MW111-EBT-TS4	UG/L				1	285	=			
Area2	MW-111	21-May-03	MW111-EBT-TS11	UG/L				1	2310	=			
Area2	MW-111	25-Jun-03	MW111-EBT-TS12	UG/L				10	12700	=			
Area2	MW-111	23-Jul-03	MW111-EBT-TS13	UG/L				1	2320	=			
Area2	MW-111	20-Aug-03	MW111-EBT-TS14	UG/L				1	859	=			
Area2	MW-112	20-May-02	MW-112-EBT-B	UG/L				1	414	=			
Area2	MW-112	10-Jul-02	MW112-EBT-TS1	UG/L				10	35300	=			
Area2	MW-112	31-Jul-02	MW112-EBT-TS2	UG/L				1	9130	=			
Area2	MW-112	5-Sep-02	MW112-EBT-TS3	UG/L				100	16400	=			
Area2	MW-112	9-Oct-02	MW112-EBT-TS4	UG/L				10	17500	=			
Area2	MW-112	13-Nov-02	MW112-EBT-TS5	UG/L				1	12800	=			
Area2	MW-112	18-Dec-02	MW112-EBT-TS6	UG/L				1	8940	=			
Area2	MW-112	22-Jan-03	MW112-EBT-TS7	UG/L				1	5380	=			
Area2	MW-112	26-Mar-03	MW112-EBT-TS9	UG/L				10	34400	=			
Area2	MW-112	23-Apr-03	MW112-EBT-TS10	UG/L				10	14200	=			
Area2	MW-112	21-May-03	MW112-EBT-TS11	UG/L				100	25700	=			
Area2	MW-112	25-Jun-03	MW112-EBT-TS12	UG/L				10	22600	=			
Area2	MW-112	23-Jul-03	MW112-EBT-TS13	UG/L				10	8660	=			
Area2	MW-112	20-Aug-03	MW112-EBT-TS14	UG/L				10	13800	=			
Area2	MW-113	22-May-02	MW113-EBT-B	UG/L				1	223	=			
Area2	MW-113	10-Jul-02	MW113-EBT-TS1	UG/L				1	109	=			
Area2	MW-113	5-Sep-02	MW113-EBT-TS3	UG/L				1	871	=			
Area2	MW-113	9-Oct-02	MW113-EBT-TS4	UG/L				1	1710	=			
Area2	MW-113	13-Nov-02	MW113-EBT-TS5	UG/L				1	1460	=			
Area2	MW-113	18-Dec-02	MW113-EBT-TS6	UG/L				1	540	=			
Area2	MW-113	22-Jan-03	MW113-EBT-TS7	UG/L				1	865	=			
Area2	MW-113	26-Mar-03	MW113-EBT-TS9	UG/L				1	494	=			
Area2	MW-113	23-Apr-03	MW113-EBT-TS10	UG/L				1	992	=			
Area2	MW-113	21-May-03	MW113-EBT-TS11	UG/L				1	1090	=			
Area2	MW-113	25-Jun-03	MW113-EBT-TS12	UG/L				1	1380	=			
Area2	MW-113	23-Jul-03	MW113-EBT-TS13	UG/L				1	1750	=			
Area2	MW-113	20-Aug-03	MW113-EBT-TS14	UG/L				1	873	=			
Area2	MW-114	22-May-02	MW114-EBT-B	UG/L				1	77.8	=			
Area2	MW-114	9-Jul-02	MW114-EBT-TS1	UG/L				1	4850	=			
Area2	MW-114	30-Jul-02	MW114-EBT-TS2	UG/L				1	1960	=			
Area2	MW-114	4-Sep-02	MW114-EBT-TS3	UG/L				1	3840	=			
Area2	MW-114	8-Oct-02	MW114-EBT-TS4	UG/L				1	3150	=			
Area2	MW-114	12-Nov-02	MW114-EBT-TS5	UG/L				1	2090	=			
Area2	MW-114	17-Dec-02	MW114-EBT-TS6	UG/L				1	2190	=			
Area2	MW-114	21-Jan-03	MW114-EBT-TS7	UG/L	1	2.66	=	1	1410	=	1	3.26	=
Area2	MW-114	25-Mar-03	MW114-EBT-TS9	UG/L				1	6940	=			
Area2	MW-114	22-Apr-03	MW114-EBT-TS10	UG/L				1	3240	=			

Attachment G
Study Area 2: Summary of Metals in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	ARSENIC			MANGANESE			SELENIUM		
					DL	Conc	Qual	DL	Conc	Qual	DL	Conc	Qual
Area2	MW-114	20-May-03	MW114-EBT-TS11	UG/L				100	16300	=			
Area2	MW-114	24-Jun-03	MW114-EBT-TS12	UG/L				100	9070	=			
Area2	MW-114	22-Jul-03	MW114-EBT-TS13	UG/L				5	2860	=			
Area2	MW-114	19-Aug-03	MW114-EBT-TS14	UG/L				1	2030	=			
Area2	MW-86	20-Mar-02	MW-86-106-BL	UG/L				1	50 6	=			
Area2	MW-86	9-Jul-02	MW86-EBT-TS1	UG/L				1	1290	=			
Area2	MW-86	30-Jul-02	MW86-EBT-TS2	UG/L				1	3210	=			
Area2	MW-86	4-Sep-02	MW86-EBT-TS3	UG/L				1	4750	=			
Area2	MW-86	8-Oct-02	MW86-EBT-TS4	UG/L				1	4740	=			
Area2	MW-86	12-Nov-02	MW86-EBT-TS5	UG/L				1	4780	=			
Area2	MW-86	17-Dec-02	MW86-EBT-TS6	UG/L				1	6310	=			
Area2	MW-86	21-Jan-03	MW86-EBT-TS7	UG/L				1	5480	=			
Area2	MW-86	25-Mar-03	MW86-EBT-TS9	UG/L				2	12400	=			
Area2	MW-86	22-Apr-03	MW86-EBT-TS10	UG/L				1	9230	=			
Area2	MW-86	20-May-03	MW86-EBT-TS11	UG/L				100	26600	=			
Area2	MW-86	24-Jun-03	MW86-EBT-TS12	UG/L				100	24600	=			
Area2	MW-86	22-Jul-03	MW86-EBT-TS13	UG/L				10	17700	=			
Area2	MW-86	19-Aug-03	MW86-EBT-TS14	UG/L				20	14800	=			
Area2	MW-88	21-Mar-02	MW-88-BL	UG/L				1	143	=			

Attachment
Study Area 2: Summary of VOCs in Soil
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,2-DICHLOROETHANE			ACETONE			BROMOFORM			CARBON TETRACHLORIDE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	MW-86	19-Sep-01	MW-86-78	UG/KG	1	1.6	J				1	0.65	J	1	8.5	=
Area2	MW-86	19-Sep-01	MW-86-86	UG/KG				1	9 2	J	1	0.77	J			
Area2	MW-88	20-Sep-01	MW-88-78	UG/KG				1	5.8	J	1	0.7	J	1	1.3	J
Area2	MW-88	20-Sep-01	MW-88-788	UG/KG				1	6.4	J	1	0.7	J	1	1.2	J

Area	StationID	DateCollected	Sample	Unit	CHLOROFORM			cis-1,2-DICHLOROETHYLENE			METHYL ETHYL KETONE			TETRACHLOROETHYLENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	MW-86	19-Sep-01	MW-86-78	UG/KG	1	3.3	J	1	0.92	J	1	3	J	1	16	=
Area2	MW-86	19-Sep-01	MW-86-86	UG/KG							1	8	J			
Area2	MW-88	20-Sep-01	MW-88-78	UG/KG	1	0.95	J	1	1.2	J				1	9	=
Area2	MW-88	20-Sep-01	MW-88-788	UG/KG	1	0.9	J	1	1.2	J				1	8.4	=

Area	StationID	DateCollected	Sample	Unit	TOLUENE			TRICHLOROETHYLENE		
					DF	Conc	Qual	DF	Conc	Qual
Area2	MW-86	19-Sep-01	MW-86-78	UG/KG	1	1 5	J	1	1.1	J
Area2	MW-86	19-Sep-01	MW-86-86	UG/KG						
Area2	MW-88	20-Sep-01	MW-88-78	UG/KG	1	0.89	J			
Area2	MW-88	20-Sep-01	MW-88-788	UG/KG	1	0.75	J			

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,1,1,2-TETRACHLOROETHANE			1,1,2,2-TETRACHLOROETHANE			1,1,2-TRICHLOROETHANE			1,1-DICHLOROETHANE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	20-May-02	IW1-EBT-B-97-99	UG/L												
Area2	IW-1	20-Jan-03	IW1-EBT-TS7-97-99	UG/L												
Area2	IW-2	20-May-02	IW2-EBT-B-98-103	UG/L												
Area2	IW-2	20-Jan-03	IW2-EBT-TS7-98-103	UG/L												
Area2	IW-3	20-May-02	IW3-EBT-B-99-101	UG/L												
Area2	IW-3	20-Jan-03	IW3-EBT-TS7-99-101	UG/L												
Area2	IW-4	20-May-02	IW4-EBT-B-99-104	UG/L												
Area2	IW-4	20-Jan-03	IW4-EBT-TS7-99-104	UG/L												
Area2	MW-105	20-May-02	MW-105-EBT-B-97.5-98.5	UG/L												
Area2	MW-105	8-Jul-02	MW105-EBT-TS1-97.5-98.5	UG/L												
Area2	MW-105	29-Jul-02	MW105-EBT-TS2-97.5-98.5	UG/L												
Area2	MW-105	3-Sep-02	MW105-EBT-TS3-97.5-98.5	UG/L												
Area2	MW-105	7-Oct-02	MW105-EBT-TS4-97.5-98.5	UG/L												
Area2	MW-105	11-Nov-02	MW105-EBT-TS5-97.5-98.5	UG/L												
Area2	MW-105	16-Dec-02	MW105-EBT-TS6-97.5-98.5	UG/L												
Area2	MW-105	20-Jan-03	MW105-EBT-TS7-97.5-98.5	UG/L												
Area2	MW-105	24-Mar-03	MW105-EBT-TS9-97.5-98.5	UG/L												
Area2	MW-105	21-Apr-03	MW105-EBT-TS10-97.5-98.5	UG/L												
Area2	MW-105	19-May-03	MW105-EBT-TS11-97.5-98.5	UG/L												
Area2	MW-105	23-Jun-03	MW105-EBT-TS12-97.5-98.5	UG/L												
Area2	MW-105	21-Jul-03	MW105-EBT-TS13-97.5-98.5	UG/L												
Area2	MW-105	18-Aug-03	MW105-EBT-TS14-97.5-98.5	UG/L												
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105	UG/L												
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105D	UG/L												
Area2	MW-106	8-Jul-02	MW106-EBT-TS1-100-105	UG/L												
Area2	MW-106	29-Jul-02	MW106-EBT-TS2-100-105	UG/L												
Area2	MW-106	3-Sep-02	MW106-EBT-TS3-100-105	UG/L												
Area2	MW-106	7-Oct-02	MW106-EBT-TS4-100-105	UG/L												
Area2	MW-106	11-Nov-02	MW106-EBT-TS5-100-105	UG/L												
Area2	MW-106	16-Dec-02	MW106-EBT-TS6-100-105	UG/L												
Area2	MW-106	20-Jan-03	MW106-EBT-TS7-100-105	UG/L												
Area2	MW-106	24-Mar-03	MW106-EBT-TS9-100-105	UG/L												
Area2	MW-106	21-Apr-03	MW106-EBT-TS10-100-105	UG/L												
Area2	MW-106	19-May-03	MW106-EBT-TS11-100-105	UG/L												
Area2	MW-106	23-Jun-03	MW106-EBT-TS12-100-105	UG/L												
Area2	MW-106	21-Jul-03	MW106-EBT-TS13-100-105	UG/L												
Area2	MW-106	18-Aug-03	MW106-EBT-TS14-100-105	UG/L												
Area2	MW-109	20-May-02	MW-109-EBT-99-101	UG/L												
Area2	MW-109	8-Jul-02	MW109-EBT-TS1-99-101	UG/L												
Area2	MW-109	29-Jul-02	MW109-EBT-TS2-99-101	UG/L												
Area2	MW-109	3-Sep-02	MW109-EBT-TS3-99-101	UG/L												
Area2	MW-109	7-Oct-02	MW109-EBT-TS4-99-101	UG/L												
Area2	MW-109	11-Nov-02	MW109-EBT-TS5-99-101	UG/L												
Area2	MW-109	16-Dec-02	MW109-EBT-TS6-99-101	UG/L												
Area2	MW-109	20-Jan-03	MW109-EBT-TS7-99-101	UG/L												
Area2	MW-109	24-Mar-03	MW109-EBT-TS9-99-101	UG/L												
Area2	MW-109	21-Apr-03	MW109-EBT-TS10-99-101	UG/L												
Area2	MW-109	19-May-03	MW109-EBT-TS11-99-101	UG/L												
Area2	MW-109	23-Jun-03	MW109-EBT-TS12-99-101	UG/L												
Area2	MW-109	21-Jul-03	MW109-EBT-TS13-99-101	UG/L												
Area2	MW-109	18-Aug-03	MW109-EBT-TS14-99-101	UG/L												
Area2	MW-110	20-May-02	MW-110-EBT-99-101	UG/L												
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101	UG/L												
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101D	UG/L												
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101	UG/L												
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101D	UG/L												
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101	UG/L												
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101D	UG/L												
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101	UG/L												
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101D	UG/L												
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101	UG/L												
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101D	UG/L												
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101	UG/L												
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101D	UG/L												
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101	UG/L												
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101D	UG/L												
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101	UG/L												
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101D	UG/L												
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101	UG/L												
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101D	UG/L												
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101	UG/L												
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101D	UG/L												
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101	UG/L												
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101D	UG/L												
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101	UG/L												
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101D	UG/L												
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101	UG/L												
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101D	UG/L												
Area2	MW-111	20-May-02	MW-111-EBT-B-97.5-98.5	UG/L												
Area2	MW-111	8-Jul-02	MW111-EBT-TS1-97.5-98.5	UG/L												
Area2	MW-111	29-Jul-02	MW111-EBT-TS2-97.5-98.5	UG/L												
Area2	MW-111	3-Sep-02	MW111-EBT-TS3-97.5-98.5	UG/L												
Area2	MW-111	7-Oct-02	MW111-EBT-TS4-97.5-98.5	UG/L												
Area2	MW-111	11-Nov-02	MW111-EBT-TS5-97.5-98.5	UG/L												
Area2	MW-111	16-Dec-02	MW111-EBT-TS6-97.5-98.5	UG/L												
Area2	MW-111	20-Jan-03	MW111-EBT-TS7-97.5-98.5	UG/L												
Area2	MW-111	24-Mar-03	MW111-EBT-TS9-97.5-98.5	UG/L												
Area2	MW-111	21-Apr-03	MW111-EBT-TS10-97.5-98.5	UG/L												
Area2	MW-111	19-May-03	MW111-EBT-TS11-97.5-98.5	UG/L												
Area2	MW-111	23-Jun-03	MW111-EBT-TS12-97.5-98.5	UG/L												
Area2	MW-111	21-Jul-03	MW111-EBT-TS13-97.5-98.5	UG/L												
Area2	MW-111	18-Aug-03	MW111-EBT-TS14-97.5-98.5	UG/L												
Area2	MW-112	20-May-02	MW-112-EBT-98-100	UG/L												
Area2	MW-112	8-Jul-02	MW112-EBT-TS1-98-100	UG/L												
Area2	MW-112	29-Jul-02	MW112-EBT-TS2-98-100	UG/L												
Area2	MW-112	3-Sep-02	MW112-EBT-TS3-98-100	UG/L												
Area2	MW-112	7-Oct-02	MW112-EBT-TS4-98-100	UG/L												
Area2	MW-112	11-Nov-02	MW112-EBT-TS5-98-100	UG/L				1	0.385	J						
Area2	MW-112	16-Dec-02	MW112-EBT-TS6-98-100	UG/L												
Area2	MW-112	20-Jan-03	MW112-EBT-TS7-98-100	UG/L												
Area2	MW-112	24-Mar-03	MW112-EBT-TS9-98-100	UG/L												
Area2	MW-112	21-Apr-03	MW112-EBT-TS10-98-100	UG/L												
Area2	MW-112	19-May-03	MW112-EBT-TS11-98-100	UG/L												
Area2	MW-112	23-Jun-03	MW112-EBT-TS12-98-100	UG/L												
Area2	MW-112	21-Jul-03	MW112-EBT-TS13-98-100	UG/L												
Area2	MW-112	18-Aug-03	MW112-EBT-TS14-98-100	UG/L												
Area2	MW-113	20-May-02	MW-113-EBT-B-99.5-104.5	UG/L												
Area2	MW-113	8-Jul-02	MW113-EBT-TS1-99.5-104.5	UG/L												
Area2	MW-113	29-Jul-02	MW113-EBT-TS2-99.5-104.5	UG/L												
Area2	MW-113	3-Sep-02	MW113-EBT-TS3-99.5-104.5	UG/L												
Area2	MW-113	7-Oct-02	MW113-EBT-TS4-99.5-104.5	UG/L												
Area2	MW-113	11-Nov-02	MW113-EBT-TS5-99.5-104.5	UG/L												
Area2	MW-113	16-Dec-02	MW113-EBT-TS6-99.5-104.5	UG/L												
Area2	MW-113	20-Jan-03	MW113-EBT-TS7-99.5-104.5	UG/L												
Area2	MW-113	24-Mar-03	MW113-EBT-TS9-99.5-104.5	UG/L												
Area2	MW-113	21-Apr-03	MW113-EBT-TS10-99.5-104.5	UG/L												
Area2	MW-113	19-May-03	MW113-EBT-TS11-99.5-104.5	UG/L												
Area2	MW-113	23-Jun-03	MW113-EBT-TS12-99.5-104.5	UG/L												
Area2	MW-113	21-Jul-03	MW113-EBT-TS13-99.5-104.5	UG/L												
Area2	MW-113	18-Aug-03	MW113-EBT-TS14-99.5-104.5	UG/L												
Area2	MW-114	20-May-02	MW-114-EBT-B-99-101	UG/L												
Area2	MW-114	8-Jul-02	MW114-EBT-TS1-99-101	UG/L	1	0.34	J									
Area2	MW-114	29-Jul-02	MW114-EBT-TS2-99-101	UG/L												
Area2	MW-114	3-Sep-02	MW114-EBT-TS3-99-101	UG/L												
Area2	MW-114	7-Oct-02	MW114-EBT-TS4-99-101	UG/L												
Area2	MW-114	11-Nov-02	MW114-EBT-TS5-99-101	UG/L												
Area2	MW-114	16-Dec-02	MW114-EBT-TS6-99-101	UG/L												
Area2	MW-114	20-Jan-03	MW114-EBT-TS7-99-101	UG/L												

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,1,1,2-TETRACHLOROETHANE			1,1,2,2-TETRACHLOROETHANE			1,1,2-TRICHLOROETHANE			1,1-DICHLOROETHANE		
					Det	Conc	Qual	Det	Conc	Qual	Det	Conc	Qual	Det	Conc	Qual
Area2	MW-114	24-Mar-03	MW114-EBT-TS9-99-101	UG/L												
Area2	MW-114	21-Apr-03	MW114-EBT-TS10-99-101	UG/L												
Area2	MW-114	19-May-03	MW114-EBT-TS11-99-101	UG/L												
Area2	MW-114	23-Jun-03	MW114-EBT-TS12-99-101	UG/L												
Area2	MW-114	21-Jul-03	MW114-EBT-TS13-99-101	UG/L												
Area2	MW-114	18-Aug-03	MW114-EBT-TS14-99-101	UG/L												
Area2	MW-26	21-Mar-02	MW 26-106-BL	UG/L												
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L												
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L												
Area2	MW-86	30-Nov-01	MW-86-1	UG/L												
Area2	MW-86	30-Nov-01	MW-86-2	UG/L												
Area2	MW-86	30-Nov-01	MW-86-3	UG/L												
Area2	MW-86	30-Nov-01	MW-86-4	UG/L												
Area2	MW-86	30-Nov-01	MW-86-5	UG/L												
Area2	MW-86	30-Nov-01	MW-86-6	UG/L												
Area2	MW-86	30-Nov-01	MW-86-7	UG/L												
Area2	MW-86	30-Nov-01	MW-86-9	UG/L												
Area2	MW-86	8-Jul-02	MW86-EBT-TS1-100-105	UG/L	1	1.3	J									
Area2	MW-86	29-Jul-02	MW86-EBT-TS2-100-105	UG/L							1	0.728	=			
Area2	MW-86	3-Sep-02	MW86-EBT-TS3-100-105	UG/L							1	0.448	J			
Area2	MW-86	7-Oct-02	MW86-EBT-TS4-100-105	UG/L							1	0.496	J			
Area2	MW-86	11-Nov-02	MW86-EBT-TS5-100-105	UG/L							1	0.471	J			
Area2	MW-86	16-Dec-02	MW86-EBT-TS6-100-105	UG/L							1	0.471	J			
Area2	MW-86	20-Jan-03	MW86-EBT-TS7-100-105	UG/L							1	0.293	J			
Area2	MW-86	24-Mar-03	MW86-EBT-TS9-100-105	UG/L												
Area2	MW-86	21-Apr-03	MW86-EBT-TS10-100-105	UG/L							1	0.268	J			
Area2	MW-86	19-May-03	MW86-EBT-TS11-100-105	UG/L										1	0.139	J
Area2	MW-86	23-Jun-03	MW86-EBT-TS12-100-105	UG/L										1	0.137	J
Area2	MW-86	21-Jul-03	MW86-EBT-TS13-100-105	UG/L												
Area2	MW-86	18-Aug-03	MW86-EBT-TS14-100-105	UG/L												
Area2	MW-88	30-Nov-01	MW-88-1	UG/L												
Area2	MW-88	30-Nov-01	MW-88-2	UG/L												
Area2	MW-88	30-Nov-01	MW-88-3	UG/L												
Area2	MW-88	30-Nov-01	MW-88-4	UG/L												
Area2	MW-88	30-Nov-01	MW-88-5	UG/L												
Area2	MW-88	30-Nov-01	MW-88-6	UG/L												
Area2	MW-88	30-Nov-01	MW-88-7	UG/L												
Area2	MW-88	30-Nov-01	MW-88-8	UG/L												
Area2	MW-88	30-Nov-01	MW-86-8	UG/L												
Area2	MW-88	8-Jul-02	MW88-EBT-TS1-90-95	UG/L												
Area2	MW-88	29-Jul-02	MW88-EBT-TS2-90-95	UG/L												
Area2	MW-88	3-Sep-02	MW88-EBT-TS3-90-95	UG/L												
Area2	MW-88	7-Oct-02	MW88-EBT-TS4-90-95	UG/L												
Area2	MW-88	11-Nov-02	MW88-EBT-TS5-90-95	UG/L												
Area2	MW-88	16-Dec-02	MW88-EBT-TS6-90-95	UG/L												
Area2	MW-88	20-Jan-03	MW88-EBT-TS7-90-95	UG/L												
Area2	MW-88	24-Mar-03	MW88-EBT-TS9-90-95	UG/L												
Area2	MW-88	21-Apr-03	MW88-EBT-TS10-90-95	UG/L												
Area2	MW-88	19-May-03	MW88-EBT-TS11-90-95	UG/L												
Area2	MW-88	23-Jun-03	MW88-EBT-TS12-90-95	UG/L												
Area2	MW-88	21-Jul-03	MW88-EBT-TS13-90-95	UG/L												
Area2	MW-88	18-Aug-03	MW88-EBT-TS14-90-95	UG/L												

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,1-DICHLOROETHENE			1,2,3-TRICHLOROBENZENE			1,2,3-TRICHLOROPROPANE			1,2-DICHLOROBENZENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	20-May-02	IW1-EBT-B-97-99	UG/L							1	1.4	J			
Area2	IW-1	20-Jan-03	IW1-EBT-TS7-97-99	UG/L							1	3.56	J			
Area2	IW-2	20-May-02	IW2-EBT-B-98-103	UG/L							1	12	=			
Area2	IW-2	20-Jan-03	IW2-EBT-TS7-98-103	UG/L							1	12.4	=			
Area2	IW-3	20-May-02	IW3-EBT-B-99-101	UG/L							1	9.7	=			
Area2	IW-3	20-Jan-03	IW3-EBT-TS7-99-101	UG/L	1	0.63	J				1	11.3	=	1	0.156	J
Area2	IW-4	20-May-02	IW4-EBT-B-99-104	UG/L							1	34	=	1	0.23	J
Area2	IW-4	20-Jan-03	IW4-EBT-TS7-99-104	UG/L							1	26.3	=	1	0.169	J
Area2	MW-105	20-May-02	MW-105-EBT-B-97.5-98.5	UG/L							1	5.3	=			
Area2	MW-105	8-Jul-02	MW105-EBT-TS1-97.5-98.5	UG/L							1	15	=			
Area2	MW-105	29-Jul-02	MW105-EBT-TS2-97.5-98.5	UG/L							1	11.6	=			
Area2	MW-105	3-Sep-02	MW105-EBT-TS3-97.5-98.5	UG/L							1	12.6	=			
Area2	MW-105	7-Oct-02	MW105-EBT-TS4-97.5-98.5	UG/L							1	9.91	=			
Area2	MW-105	11-Nov-02	MW105-EBT-TS5-97.5-98.5	UG/L							1	9.09	=			
Area2	MW-105	16-Dec-02	MW105-EBT-TS6-97.5-98.5	UG/L							1	11.5	=			
Area2	MW-105	20-Jan-03	MW105-EBT-TS7-97.5-98.5	UG/L							1	10.5	=			
Area2	MW-105	24-Mar-03	MW105-EBT-TS9-97.5-98.5	UG/L							1	11.5	=			
Area2	MW-105	21-Apr-03	MW105-EBT-TS10-97.5-98.5	UG/L							1	9.87	=			
Area2	MW-105	19-May-03	MW105-EBT-TS11-97.5-98.5	UG/L							1	12.9	=			
Area2	MW-105	23-Jun-03	MW105-EBT-TS12-97.5-98.5	UG/L							1	13.9	=			
Area2	MW-105	21-Jul-03	MW105-EBT-TS13-97.5-98.5	UG/L							1	14.5	=			
Area2	MW-105	18-Aug-03	MW105-EBT-TS14-97.5-98.5	UG/L							1	12.7	=			
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105	UG/L							1	22	=	1	0.15	J
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105D	UG/L							1	22	=	1	0.15	J
Area2	MW-106	8-Jul-02	MW106-EBT-TS1-100-105	UG/L							1	27	=	1	0.27	J
Area2	MW-106	29-Jul-02	MW106-EBT-TS2-100-105	UG/L							1	26.6	=	1	0.151	J
Area2	MW-106	3-Sep-02	MW106-EBT-TS3-100-105	UG/L							1	27.7	=	1	0.196	J
Area2	MW-106	7-Oct-02	MW106-EBT-TS4-100-105	UG/L							1	24	=	1	0.232	J
Area2	MW-106	11-Nov-02	MW106-EBT-TS5-100-105	UG/L				1	1.91	=	1	25	=	1	0.372	J
Area2	MW-106	16-Dec-02	MW106-EBT-TS6-100-105	UG/L							1	25.7	=	1	0.245	J
Area2	MW-106	20-Jan-03	MW106-EBT-TS7-100-105	UG/L				1	0.181	J	1	23.6	=	1	0.219	J
Area2	MW-106	24-Mar-03	MW106-EBT-TS9-100-105	UG/L							1	19.3	=	1	0.178	J
Area2	MW-106	21-Apr-03	MW106-EBT-TS10-100-105	UG/L							1	19.5	=	1	0.243	J
Area2	MW-106	19-May-03	MW106-EBT-TS11-100-105	UG/L							1	17.1	=	1	0.179	J
Area2	MW-106	23-Jun-03	MW106-EBT-TS12-100-105	UG/L							1	14.8	=	1	0.196	J
Area2	MW-106	21-Jul-03	MW106-EBT-TS13-100-105	UG/L							1	18.8	=	1	0.188	J
Area2	MW-106	18-Aug-03	MW106-EBT-TS14-100-105	UG/L							1	15.9	=			
Area2	MW-109	20-May-02	MW-109-EBT-99-101	UG/L							1	37	=	1	0.21	J
Area2	MW-109	8-Jul-02	MW109-EBT-TS1-99-101	UG/L				1	0.37	J	1	33	=	1	0.17	J
Area2	MW-109	29-Jul-02	MW109-EBT-TS2-99-101	UG/L							1	36	=	1	0.174	J
Area2	MW-109	3-Sep-02	MW109-EBT-TS3-99-101	UG/L							1	38.3	=	1	0.14	J
Area2	MW-109	7-Oct-02	MW109-EBT-TS4-99-101	UG/L							1	32.2	=	1	0.183	J
Area2	MW-109	11-Nov-02	MW109-EBT-TS5-99-101	UG/L	1	1.41	=				1	32.1	=	1	0.227	J
Area2	MW-109	16-Dec-02	MW109-EBT-TS6-99-101	UG/L							1	38.1	=	1	0.225	J
Area2	MW-109	20-Jan-03	MW109-EBT-TS7-99-101	UG/L							1	33.2	=	1	0.189	J
Area2	MW-109	24-Mar-03	MW109-EBT-TS9-99-101	UG/L							1	26	=	1	0.201	J
Area2	MW-109	21-Apr-03	MW109-EBT-TS10-99-101	UG/L	1	0.613	J				1	24.4	=	1	0.155	J
Area2	MW-109	19-May-03	MW109-EBT-TS11-99-101	UG/L							1	16.9	=	1	0.157	J
Area2	MW-109	23-Jun-03	MW109-EBT-TS12-99-101	UG/L							1	17.2	=	1	0.132	J
Area2	MW-109	21-Jul-03	MW109-EBT-TS13-99-101	UG/L							1	20.7	=			
Area2	MW-109	18-Aug-03	MW109-EBT-TS14-99-101	UG/L							1	18.4	=			
Area2	MW-110	20-May-02	MW-110-EBT-99-101	UG/L							1	40	=	1	0.14	J
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101	UG/L							1	46	=	1	0.27	J
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101D	UG/L							1	47	=	1	0.3	J
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101	UG/L							1	49.3	=	1	0.255	J
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101D	UG/L							1	51.5	=	1	0.304	J
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101	UG/L							1	49.2	=	1	0.258	J
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101D	UG/L							1	51.3	=	1	0.253	J
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101	UG/L							1	41.6	=	1	0.205	J
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101D	UG/L							1	43.3	=	1	0.234	J
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101	UG/L							1	38.7	=	1	0.264	J
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101D	UG/L							1	40.3	=	1	0.292	J
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101	UG/L							1	47.4	=	1	0.251	J
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101D	UG/L							1	46.8	=	1	0.268	J
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101	UG/L							1	39.8	=	1	0.226	J
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101D	UG/L							1	44.1	=	1	0.217	J
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101	UG/L							1	38.9	=	1	0.205	J
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101D	UG/L							1	40.2	=	1	0.207	J
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101	UG/L							1	35.5	=	1	0.215	J
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101D	UG/L				1	0.154	J	1	35.2	=	1	0.211	J
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101	UG/L							1	34.8	=	1	0.204	J
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101D	UG/L							1	35.7	=	1	0.33	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101	UG/L	1	0.586	J				1	29.3	=	1	0.231	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101D	UG/L	1	0.606	J				1	29.2	=	1	0.222	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101	UG/L							1	33.3	=	1	0.22	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101D	UG/L							1	32.5	=	1	0.224	J
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101	UG/L							1	32.6	=			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101D	UG/L							1	32	=			
Area2	MW-111	20-May-02	MW-111-EBT-B-97.5-98.5	UG/L							1	37	=	1	0.18	J
Area2	MW-111	8-Jul-02	MW111-EBT-TS1-97.5-98.5	UG/L							1	42	=	1	0.13	J
Area2	MW-111	29-Jul-02	MW111-EBT-TS2-97.5-98.5	UG/L							1	45.7	=	1	0.142	J
Area2	MW-111	3-Sep-02	MW111-EBT-TS3-97.5-98.5	UG/L							1	48.9	=	1	0.158	J
Area2	MW-111	7-Oct-02	MW111-EBT-TS4-97.5-98.5	UG/L							1	39.8	=	1	0.234	J
Area2	MW-111	11-Nov-02	MW111-EBT-TS5-97.5-98.5	UG/L							1	38.6	=	1	0.218	J
Area2	MW-111	16-Dec-02	MW111 EBT-TS6-97.5-98.5	UG/L							1	46.5	=	1	0.236	J
Area2	MW-111	20-Jan-03	MW111-EBT-TS7-97.5-98.5	UG/L							1	43.4	=	1	0.207	J
Area2	MW-111	24-Mar-03	MW111-EBT-TS9-97.5-98.5	UG/L							1	37.6	=	1	0.171	J
Area2	MW-111	21-Apr-03	MW111-EBT-TS10-97.5-98.5	UG/L							1	34.6	=	1	0.217	J
Area2	MW-111	19-May-03	MW111 EBT-TS11-97.5-98.5	UG/L							1	32.7	=	1	0.151	J
Area2	MW-111	23-Jun-03	MW111 EBT-TS12-97.5-98.5	UG/L							1	29.3	=	1	0.138	J
Area2	MW-111	21-Jul-03	MW111 EBT-TS13-97.5-98.5	UG/L							1	31	=	1	0.201	J
Area2	MW-111	18-Aug-03	MW111-EBT-TS14-97.5-98.5	UG/L							1	29.5	=			
Area2	MW-112	20-May-02	MW-112-EBT-98-100	UG/L				1	0.13	J	1	12	=			
Area2	MW-112	8-Jul-02	MW112-EBT-TS1-98-100	UG/L							1	9.9	=			
Area2	MW-112	29-Jul-02	MW112-EBT-TS2-98-100	UG/L							1	14.9	=			
Area2	MW-112	3-Sep-02	MW112 EBT-TS3-98-100	UG/L							1	15.4	=			
Area2	MW-112	7-Oct-02	MW112-EBT-TS4-98-100	UG/L							1	14.5	=			
Area2	MW-112	11-Nov-02	MW112-EBT-TS5-98-100	UG/L							1	15.5	=			
Area2	MW-112	16-Dec-02	MW112-EBT-TS6-98-100	UG/L							1	17.1	=			
Area2	MW-112	20-Jan-03	MW112-EBT-TS7-98-100	UG/L							1	15.9	=			
Area2	MW-112	24-Mar-03	MW112-EBT-TS9-98-100	UG/L							1	8.8	=			
Area2	MW-112	21-Apr-03	MW112-EBT-TS10-98-100	UG/L							1	11.8	=			
Area2	MW-112	19-May-03	MW112-EBT-TS11-98-100	UG/L							1	9.44	=			
Area2	MW-112	23-Jun-03	MW112-EBT-TS12-98 100	UG/L							1	11.1	=			
Area2	MW-112	21-Jul-03	MW112-EBT-TS13-98-100	UG/L							1	13.3	=			
Area2	MW-112	18-Aug-03	MW112-EBT-TS14-98-100	UG/L							1	11.9	=			
Area2	MW-113	20-May-02	MW-113-EBT-B-99.5-104.5	UG/L							1	36	=			
Area2	MW-113	8-Jul-02	MW113-EBT-TS1-99.5-104.5	UG/L							1	47	=			
Area2	MW-113	29-Jul-02	MW113-EBT-TS2-99.5-104.5	UG/L							1	49.9	=			
Area2	MW-113	3-Sep-02	MW113-EBT-TS3-99.5-104.5	UG/L							1	50.9	=			
Area2	MW-113	7-Oct-02	MW113-EBT-TS4-99.5-104.5	UG/L							1	44.3	=			
Area2	MW-113	11-Nov-02	MW113-EBT-TS5-99.5-104.5	UG/L							1	42.1	=			
Area2	MW-113	16-Dec-02	MW113-EBT-TS6-99.5-104.5	UG/L							1	49.5	=	1	0.132	J
Area2	MW-113	20-Jan-03	MW113-EBT-TS7-99.5-104.5	UG/L							1	43.9	=			
Area2	MW-113	24-Mar-03	MW113-EBT-TS9-99.5-104.5	UG/L							1	36.6	=			
Area2	MW-113	21-Apr-03	MW113-EBT-TS10-99.5-104.5	UG/L							1	33.2	=			
Area2	MW-113	19-May-03	MW113-EBT-TS11-99.5-104.5	UG/L							1	32.9	=			
Area2	MW-113	23-Jun-03	MW113-EBT-TS12-99.5-104.5	UG/L							1	33.2	=			
Area2	MW-113	21-Jul-03	MW113-EBT-TS13-99.5-104.5	UG/L							1	33.5	=			
Area2	MW-113	18-Aug-03	MW113-EBT-TS14-99.5-104.5	UG/L							1	31.5	=			
Area2	MW-114	20-May-02	MW-114-EBT-B-99-101	UG/L							1	35	=	1	0.28	J
Area2	MW-114	8-Jul-02	MW114-EBT-TS1-99-101	UG/L				1	0.49	J	1	33	=	1	0.31	J
Area2	MW-114	29-Jul-02	MW114-EBT-TS2-99-101	UG/L							1	39.6	=	1	0.273	J
Area2	MW-114	3-Sep-02	MW114-EBT-TS3-99-101	UG/L							1	41.4	=	1	0.296	J
Area2	MW-114	7-Oct-02	MW114-EBT-TS4-99-101	UG/L							1	35	=	1	0.297	J
Area2	MW-114	11-Nov-02	MW114-EBT-TS5-99-101	UG/L							1	36.3	=	1	0.284	J
Area2	MW-114	16-Dec-02	MW114-EBT-TS6-99-101	UG/L							1	36.2	=	1	0.326	J
Area2	MW-114	20-Jan-03	MW114-EBT-TS7-99-101	UG/L							1	32.2	=	1	0.198	J

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Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,1-DICHLORODETHENE			1,2,3-TRICHLOROBENZENE			1,2,3-TRICHLOROPROPANE			1,2-DICHLOROBENZENE		
					Result	Conc	Qual	Result	Conc	Qual	Result	Conc	Qual	Result	Conc	Qual
Area2	MW-114	24-Mar-03	MW114-EBT-TS9-99-101	UG/L							1	30	=	1	0.177	J
Area2	MW-114	21-Apr-03	MW114-EBT-TS10-99-101	UG/L							1	26.5	=	1	0.167	J
Area2	MW-114	19-May-03	MW114-EBT-TS11-99-101	UG/L							1	24.8	=	1	0.181	J
Area2	MW-114	23-Jun-03	MW114-EBT-TS12-99-101	UG/L							1	21.2	=	1	0.139	J
Area2	MW-114	21-Jul-03	MW114-EBT-TS13-99-101	UG/L							1	23.5	=			
Area2	MW-114	18-Aug-03	MW114-EBT-TS14-99-101	UG/L							1	21.8	=			
Area2	MW-26	21-Mar-02	MW-26-106-BL	UG/L												
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L												
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L												
Area2	MW-86	30-Nov-01	MW-86-1	UG/L												
Area2	MW-86	30-Nov-01	MW-86-2	UG/L												
Area2	MW-86	30-Nov-01	MW-86-3	UG/L												
Area2	MW-86	30-Nov-01	MW-86-4	UG/L												
Area2	MW-86	30-Nov-01	MW-86-5	UG/L												
Area2	MW-86	30-Nov-01	MW-86-6	UG/L												
Area2	MW-86	30-Nov-01	MW-86-7	UG/L												
Area2	MW-86	30-Nov-01	MW-86-9	UG/L												
Area2	MW-86	8-Jul-02	MW86-EBT-TS1-100-105	UG/L							1	11	=			
Area2	MW-86	29-Jul-02	MW86-EBT-TS2-100-105	UG/L							1	12.1	=	1	0.163	J
Area2	MW-86	3-Sep-02	MW86-EBT-TS3-100-105	UG/L							1	14.2	=	1	0.182	J
Area2	MW-86	7-Oct-02	MW86-EBT-TS4-100-105	UG/L							1	14.3	=	1	0.196	J
Area2	MW-86	11-Nov-02	MW86-EBT-TS5-100-105	UG/L							1	16	=	1	0.248	J
Area2	MW-86	16-Dec-02	MW86-EBT-TS6-100-105	UG/L							1	20.1	=			
Area2	MW-86	20-Jan-03	MW86-EBT-TS7-100-105	UG/L							1	15.8	=	1	0.208	J
Area2	MW-86	24-Mar-03	MW86-EBT-TS9-100-105	UG/L	1	0.6	J				1	15.3	=	1	0.217	J
Area2	MW-86	21-Apr-03	MW86-EBT-TS10-100-105	UG/L	1	0.567	J				1	15.5	=	1	0.238	J
Area2	MW-86	19-May-03	MW86-EBT-TS11-100-105	UG/L							1	15.7	=	1	0.248	J
Area2	MW-86	23-Jun-03	MW86-EBT-TS12-100-105	UG/L							1	13.7	=	1	0.228	J
Area2	MW-86	21-Jul-03	MW86-EBT-TS13-100-105	UG/L							1	16.5	=	1	0.218	J
Area2	MW-86	18-Aug-03	MW86-EBT-TS14-100-105	UG/L							1	14.2	=			
Area2	MW-88	30-Nov-01	MW-88-1	UG/L												
Area2	MW-88	30-Nov-01	MW-88-2	UG/L												
Area2	MW-88	30-Nov-01	MW-88-3	UG/L												
Area2	MW-88	30-Nov-01	MW-88-4	UG/L												
Area2	MW-88	30-Nov-01	MW-88-5	UG/L												
Area2	MW-88	30-Nov-01	MW-88-6	UG/L												
Area2	MW-88	30-Nov-01	MW-88-7	UG/L												
Area2	MW-88	30-Nov-01	MW-88-8	UG/L												
Area2	MW-88	30-Nov-01	MW-86-8	UG/L												
Area2	MW-88	8-Jul-02	MW88-EBT-TS1-90-95	UG/L				1	0.36	J						
Area2	MW-88	29-Jul-02	MW88-EBT-TS2-90-95	UG/L												
Area2	MW-88	3-Sep-02	MW88-EBT-TS3-90-95	UG/L												
Area2	MW-88	7-Oct-02	MW88-EBT-TS4-90-95	UG/L												
Area2	MW-88	11-Nov-02	MW88-EBT-TS5-90-95	UG/L												
Area2	MW-88	16-Dec-02	MW88-EBT-TS6-90-95	UG/L												
Area2	MW-88	20-Jan-03	MW88-EBT-TS7-90-95	UG/L												
Area2	MW-88	24-Mar-03	MW88-EBT-TS9-90-95	UG/L												
Area2	MW-88	21-Apr-03	MW88-EBT-TS10-90-95	UG/L												
Area2	MW-88	19-May-03	MW88-EBT-TS11-90-95	UG/L												
Area2	MW-88	23-Jun-03	MW88-EBT-TS12-90-95	UG/L												
Area2	MW-88	21-Jul-03	MW88-EBT-TS13-90-95	UG/L												
Area2	MW-88	18-Aug-03	MW88-EBT-TS14-90-95	UG/L												

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	1,2-DICHLOROETHANE			1,2-DICHLOROPROPANE			1,4-DICHLOROBENZENE			ACETONE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	20-May-02	IW1-EBT-B-97-99	UG/L	1	0.79	J	1	0.36	J						
Area2	IW-1	20-Jan-03	IW1-EBT-TS7-97-99	UG/L	1	1.08	=	1	0.561	J				1	118	J
Area2	IW-2	20-May-02	IW2-EBT-B-98-103	UG/L	1	1.7	=	1	0.82	J						
Area2	IW-2	20-Jan-03	IW2-EBT-TS7-98-103	UG/L	1	3.19	=	1	1.03	=				1	23.3	J
Area2	IW-3	20-May-02	IW3-EBT-B-99-101	UG/L	1	1.2	=	1	0.75	J						
Area2	IW-3	20-Jan-03	IW3-EBT-TS7-99-101	UG/L	1	13.9	=	1	2.42	=				1	17.9	J
Area2	IW-4	20-May-02	IW4-EBT-B-99-104	UG/L	1	1.8	=	1	1	=						
Area2	IW-4	20-Jan-03	IW4-EBT-TS7-99-104	UG/L	1	6.89	=	1	1.5	=				1	33.6	J
Area2	MW-105	20-May-02	MW-105-EBT-B-97.5-98.5	UG/L	1	1.2	=	1	0.61	J						
Area2	MW-105	8-Jul-02	MW105-EBT-TS1-97.5-98.5	UG/L	1	4.1	=	1	1.3	=				1	3.3	J
Area2	MW-105	29-Jul-02	MW105-EBT-TS2-97.5-98.5	UG/L	1	4.27	=	1	1.18	=				1	15.9	=
Area2	MW-105	3-Sep-02	MW105-EBT-TS3-97.5-98.5	UG/L	1	4.34	=	1	1.24	=						
Area2	MW-105	7-Oct-02	MW105-EBT-TS4-97.5-98.5	UG/L	1	3.82	=	1	1.17	=						
Area2	MW-105	11-Nov-02	MW105-EBT-TS5-97.5-98.5	UG/L	1	2.84	=	1	1.08	=				1	29.1	=
Area2	MW-105	16-Dec-02	MW105-EBT-TS6-97.5-98.5	UG/L	1	3.05	=	1	1.04	=				1	17.2	=
Area2	MW-105	20-Jan-03	MW105-EBT-TS7-97.5-98.5	UG/L	1	2.73	=	1	1.03	=				1	12.6	J
Area2	MW-105	24-Mar-03	MW105-EBT-TS9-97.5-98.5	UG/L	1	3.66	=	1	1.09	=						
Area2	MW-105	21-Apr-03	MW105-EBT-TS10-97.5-98.5	UG/L	1	4.14	=	1	1.06	=				1	8.25	J
Area2	MW-105	19-May-03	MW105-EBT-TS11-97.5-98.5	UG/L	1	6.46	=	1	1.03	=				1	6.19	J
Area2	MW-105	23-Jun-03	MW105-EBT-TS12-97.5-98.5	UG/L	1	7.65	=	1	1.45	=				1	7.2	J
Area2	MW-105	21-Jul-03	MW105-EBT-TS13-97.5-98.5	UG/L	1	9.49	=	1	1.73	=						
Area2	MW-105	18-Aug-03	MW105-EBT-TS14-97.5-98.5	UG/L	1	7.41	=	1	1.36	=				1	22.4	=
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105	UG/L	1	7.2	=	1	1.5	=						
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105D	UG/L	1	7.4	=	1	1.4	=						
Area2	MW-106	8-Jul-02	MW106-EBT-TS1-100-105	UG/L	1	6.6	=	1	1.7	=						
Area2	MW-106	29-Jul-02	MW106-EBT-TS2-100-105	UG/L	1	6.56	=	1	1.66	=				1	4.37	J
Area2	MW-106	3-Sep-02	MW106-EBT-TS3-100-105	UG/L	1	6.26	=	1	1.6	=						
Area2	MW-106	7-Oct-02	MW106-EBT-TS4-100-105	UG/L	1	6.75	=	1	1.68	=						
Area2	MW-106	11-Nov-02	MW106-EBT-TS5-100-105	UG/L	1	6.46	=	1	1.86	=				1	8.86	J
Area2	MW-106	16-Dec-02	MW106-EBT-TS6-100-105	UG/L	1	6.29	=	1	1.55	=				1	6.51	J
Area2	MW-106	20-Jan-03	MW106-EBT-TS7-100-105	UG/L	1	5.81	=	1	1.5	=				1	9.88	J
Area2	MW-106	24-Mar-03	MW106-EBT-TS9-100-105	UG/L	1	4.1	=	1	1.4	=						
Area2	MW-106	21-Apr-03	MW106-EBT-TS10-100-105	UG/L	1	5.35	=	1	1.36	=						
Area2	MW-106	19-May-03	MW106-EBT-TS11-100-105	UG/L	1	5.17	=	1	1.37	=				1	10.1	=
Area2	MW-106	23-Jun-03	MW106-EBT-TS12-100-105	UG/L	1	3.07	=	1	1.15	=				1	37.6	J
Area2	MW-106	21-Jul-03	MW106-EBT-TS13-100-105	UG/L	1	5.16	=	1	1.4	=						
Area2	MW-106	18-Aug-03	MW106-EBT-TS14-100-105	UG/L	1	5.77	=	1	1.25	=				1	7.47	J
Area2	MW-109	20-May-02	MW-109-EBT-99-101	UG/L	1	1.7	=	1	1.1	=						
Area2	MW-109	8-Jul-02	MW109-EBT-TS1-99-101	UG/L	1	3.5	=	1	1.4	=						
Area2	MW-109	29-Jul-02	MW109-EBT-TS2-99-101	UG/L	1	3.35	=	1	1.47	=						
Area2	MW-109	3-Sep-02	MW109-EBT-TS3-99-101	UG/L	1	2.86	=	1	1.37	=						
Area2	MW-109	7-Oct-02	MW109-EBT-TS4-99-101	UG/L	1	3.01	=	1	1.39	=						
Area2	MW-109	11-Nov-02	MW109-EBT-TS5-99-101	UG/L	1	2.27	=	1	1.42	=				1	8.79	J
Area2	MW-109	16-Dec-02	MW109-EBT-TS6-99-101	UG/L	1	3.2	=	1	1.33	=				1	6.97	J
Area2	MW-109	20-Jan-03	MW109-EBT-TS7-99-101	UG/L	1	3.62	=	1	1.34	=				1	13.6	J
Area2	MW-109	24-Mar-03	MW109-EBT-TS9-99-101	UG/L	1	3.4	=	1	1.6	=						
Area2	MW-109	21-Apr-03	MW109-EBT-TS10-99-101	UG/L	1	3.27	=	1	1.24	=				1	10.1	=
Area2	MW-109	19-May-03	MW109-EBT-TS11-99-101	UG/L	1	3.27	=	1	2.46	=				1	4.72	J
Area2	MW-109	23-Jun-03	MW109-EBT-TS12-99-101	UG/L	1	3.12	=	1	1.37	=				1	9.94	J
Area2	MW-109	21-Jul-03	MW109-EBT-TS13-99-101	UG/L	1	4.51	=	1	1.33	=						
Area2	MW-109	18-Aug-03	MW109-EBT-TS14-99-101	UG/L	1	3.82	=	1	1.1	=				1	19.5	=
Area2	MW-110	20-May-02	MW-110-EBT-99-101	UG/L	1	1.8	=	1	1.1	=				1	4.4	J
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101	UG/L	1	2.7	=	1	1.4	=						
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101D	UG/L	1	2.7	=	1	1.4	=						
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101	UG/L	1	2.84	=	1	1.37	=						
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101D	UG/L	1	2.81	=	1	1.41	=						
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101	UG/L	1	4.05	=	1	1.51	=						
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101D	UG/L	1	4.13	=	1	1.52	=						
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101	UG/L	1	3.53	=	1	1.4	=						
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101D	UG/L	1	3.9	=	1	1.44	=						
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101	UG/L	1	3.02	=	1	1.44	=				1	4.01	J
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101D	UG/L	1	3.21	=	1	1.42	=				1	4.39	J
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101	UG/L	1	3.49	=	1	1.4	=						
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101D	UG/L	1	3.19	=	1	1.32	=						
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101	UG/L	1	3.03	=	1	1.24	=						
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101D	UG/L	1	3.15	=	1	1.2	=						
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101	UG/L	1	3.23	=	1	1.32	=						
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101D	UG/L	1	3.45	=	1	1.39	=						
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101	UG/L	1	2.94	=	1	1.19	=						
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101D	UG/L	1	2.99	=	1	1.22	=						
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101	UG/L	1	5.54	J	1	1.33	=				1	2.8	J
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101D	UG/L	1	5.79	=	1	1.31	=				1	2.97	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101	UG/L	1	7.56	=	1	1.48	=				1	6.93	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101D	UG/L	1	7.59	=	1	1.56	=				1	6.3	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101	UG/L	1	5.27	=	1	1.41	=						
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101D	UG/L	1	5.11	=	1	1.46	=						
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101	UG/L	1	5.25	=	1	1.25	=				1	10.2	=
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101D	UG/L	1	5.35	=	1	1.32	=				1	9.22	J
Area2	MW-111	20-May-02	MW-111-EBT-B-97.5-98.5	UG/L	1	3.3	=	1	1.3	=						
Area2	MW-111	8-Jul-02	MW111-EBT-TS1-97.5-98.5	UG/L	1	3.6	=	1	1.5	=						
Area2	MW-111	29-Jul-02	MW111-EBT-TS2-97.5-98.5	UG/L	1	3.16	=	1	1.43	=						
Area2	MW-111	3-Sep-02	MW111-EBT-TS3-97.5-98.5	UG/L	1	3.17	=	1	1.48	=						
Area2	MW-111	7-Oct-02	MW111-EBT-TS4-97.5-98.5	UG/L	1	3.57	=	1	1.42	=						
Area2	MW-111	11-Nov-02	MW111-EBT-TS5-97.5-98.5	UG/L	1	2.96	=	1	1.46	=						
Area2	MW-111	16-Dec-02	MW111-EBT-TS6-97.5-98.5	UG/L	1	3.3	=	1	1.44	=						
Area2	MW-111	20-Jan-03	MW111-EBT-TS7-97.5-98.5	UG/L	1	3.03	=	1	1.24	=						
Area2	MW-111	24-Mar-03	MW111-EBT-TS9-97.5-98.5	UG/L	1	3.66	=	1	1.42	=						
Area2	MW-111	21-Apr-03	MW111-EBT-TS10-97.5-98.5	UG/L	1	2.82	=	1	1.16	=						
Area2	MW-111	19-May-03	MW111-EBT-TS11-97.5-98.5	UG/L	1	4.31	=	1	1.51	=						
Area2	MW-111	23-Jun-03	MW111-EBT-TS12-97.5-98.5	UG/L	1	5.04	=	1	1.27	=				1	5.82	J
Area2	MW-111	21-Jul-03	MW111-EBT-TS13-97.5-98.5	UG/L	1	2.9	=	1	1.17	=						
Area2	MW-111	18-Aug-03	MW111-EBT-TS14-97.5-98.5	UG/L	1	3.36	=	1	1.12	=				1	8.97	J
Area2	MW-112	20-May-02	MW-112-EBT-98-100	UG/L	1	1.8	=	1	0.8	J						
Area2	MW-112	8-Jul-02	MW112-EBT-TS1-98-100	UG/L	1	1.3	=	1	0.75	J				1	3	J
Area2	MW-112	29-Jul-02	MW112-EBT-TS2-98-100	UG/L	1	4.2	=	1	1.28	=				1	9.42	J
Area2	MW-112	3-Sep-02	MW112-EBT-TS3-98-100	UG/L	1	4.01	=	1	1.09	=						
Area2	MW-112	7-Oct-02	MW112-EBT-TS4-98-100	UG/L	1	3.32	=	1	1.13	=						
Area2	MW-112	11-Nov-02	MW112-EBT-TS5-98-100	UG/L	1	3.9	=	1	1.29	=				1	5.96	J
Area2	MW-112	16-Dec-02	MW112-EBT-TS6-98-100	UG/L	1	4.31	=	1	1.35	=				1	5.2	J
Area2	MW-112	20-Jan-03	MW112-EBT-TS7-98-100	UG/L	1	4.04	=	1	1.2	=				1	13.4	J
Area2	MW-112	24-Mar-03	MW112-EBT-TS9-98-100	UG/L	1	1.43	=	1	0.882	J						
Area2	MW-112	21-Apr-03	MW112-EBT-TS10-98-100	UG/L	1	4.22	=	1	1.14	=				1	5.85	J
Area2	MW-112	19-May-03	MW112-EBT-TS11-98-100	UG/L	1	2.72	=	1	1.02	=				1	3.61	J
Area2	MW-112	23-Jun-03	MW112-EBT-TS12-98-100	UG/L	1	3.49	=	1	1.03	=				1	6.72	J
Area2	MW-112	21-Jul-03	MW112-EBT-TS13-98-100	UG/L	1	4.79	=	1	1.3	=						
Area2	MW-112	18-Aug-03	MW112-EBT-TS14-98-100	UG/L	1	4.44	=	1	1.06	=				1	18.3	=
Area2	MW-113	20-May-02	MW-113-EBT-B-99.5-104.5	UG/L	1	2	=	1	1	=						
Area2	MW-113	8-Jul-02	MW113-EBT-TS1-99.5-104.5	UG/L	1	2.3	=	1	1.3	=						
Area2	MW-113	29-Jul-02	MW113-EBT-TS2-99.5-104.5	UG/L	1	2.53	=	1	1.35	=				1	2.7	J
Area2	MW-113	3-Sep-02	MW113-EBT-TS3-99.5-104.5	UG/L	1	2.62	=	1	1.29	=						
Area2	MW-113	7-Oct-02	MW113-EBT-TS4-99.5-104.5	UG/L	1	2.89	=	1	1.35	=						
Area2	MW-113	11-Nov-02	MW113-EBT-TS5-99.5-104.5	UG/L	1	2.21	=	1	1.32	=				1	5.84	J
Area2	MW-113	16-Dec-02	MW113-EBT-TS6-99.5-104.5	UG/L	1	2.41	=	1	1.23	=				1	6.71	J
Area2	MW-113	20-Jan-03	MW113-EBT-TS7-99.5-104.5	UG/L	1	2.22	=	1	1.22	=						
Area2	MW-113	24-Mar-03	MW113-EBT-TS9-99.5-104.5	UG/L	1	2.15	=	1	1.05	=						
Area2	MW-113	21-Apr-03	MW113-EBT-TS10-99.5-104.5	UG/L	1	1.79	=	1	0.984	J						
Area2	MW-113	19-May-03	MW113-EBT-TS11-99.5-104.5	UG/L	1	1.99	=	1	1.14	=						
Area2	MW-113	23-Jun-03	MW113-EBT-TS12-99.5-104.5	UG/L	1	2.34	=	1	1.01	=				1	5.38	J
Area2	MW-113	21-Jul-03	MW113-EBT-TS13-99.5-104.5	UG/L	1	1.97	=	1	1.1	=						
Area2	MW-113	18-Aug-03	MW113-EBT-TS14-99.5-104.5	UG/L	1	1.85	=	1	0.931	J				1	8.98	J
Area2	MW-114	20-May-02	MW-114-EBT-B-99-101	UG/L	1	4.5	=	1	1.3	=						
Area2	MW-114	8-Jul-02	MW114-EBT-TS1-99-101	UG/L	1	7.8	=	1	1.8	=						
Area2	MW-114	29-Jul-02	MW114-EBT-TS2-99-101	UG/L	1	5.13	=	1	1.61	=						
Area2	MW-114	3-Sep-02	MW114-EBT-TS3-99-101	UG/L	1	4.38	=	1	1.36	=						
Area2	MW-114	7-Oct-02	MW114-EBT-TS4-99-101	UG/L	1	5.48	=	1	1.63	=						
Area2	MW-114	11-Nov-02	MW114-EBT-TS5-99-101	UG/L	1	3.71	=	1	1.48	=						
Area2	MW-114	16-Dec-02	MW114-EBT-TS6-99-101	UG/L	1	4.06	=	1	1.43	=				1	4.84	J
Area2	MW-114	20-Jan-03	MW114-EBT-TS7-99-101	UG/L	1	4	=	1	1.29	=				1	8.71	J

Attachment G
Study Area 2: Summary of VOCs in Groundwater
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Area	StationID	DateCollected	Sample	Unit	1,2-DICHLOROETHANE			1,2-DICHLOROPROPANE			1,4-DICHLOROBENZENE			ACETONE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	MW-114	24-Mar-03	MW114-EBT-TS9-99-101	UG/L	1	2.86	=	1	1.3	=						
Area2	MW-114	21-Apr-03	MW114-EBT-TS10-99-101	UG/L	1	3.19	=	1	1.11	=				1	10.2	=
Area2	MW-114	19-May-03	MW114-EBT-TS11-99-101	UG/L	1	3.34	=	1	1.28	=				1	8.24	J
Area2	MW-114	23-Jun-03	MW114-EBT-TS12-99-101	UG/L	1	3.22	=	1	1.09	=				1	7.82	J
Area2	MW-114	21-Jul-03	MW114-EBT-TS13-99-101	UG/L	1	5.63	=	1	1.4	=						
Area2	MW-114	18-Aug-03	MW114-EBT-TS14-99-101	UG/L	1	4.54	=	1	1.1	=				1	12.1	=
Area2	MW-26	21-Mar-02	MW-26-100-BL	UG/L												
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L												
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L												
Area2	MW-86	30-Nov-01	MW-86-1	UG/L	1	7.5	=	1	1.1	=						
Area2	MW-86	30-Nov-01	MW-86-2	UG/L	1	6.7	=	1	1.5	=						
Area2	MW-86	30-Nov-01	MW-86-3	UG/L	1	2.8	=	1	1.3	=						
Area2	MW-86	30-Nov-01	MW-86-4	UG/L	1	2.5	=	1	1.3	=						
Area2	MW-86	30-Nov-01	MW-86-5	UG/L	1	2	=	1	1.2	=						
Area2	MW-86	30-Nov-01	MW-86-6	UG/L	1	2.9	=	1	1.3	=						
Area2	MW-86	30-Nov-01	MW-86-7	UG/L	1	2.9	=	1	1.3	=						
Area2	MW-86	30-Nov-01	MW-86-9	UG/L	1	2.1	=	1	0.97	J						
Area2	MW-86	8-Jul-02	MW86-EBT-TS1-100-105	UG/L	1	16	=	1	2.5	=						
Area2	MW-86	29-Jul-02	MW86-EBT-TS2-100-105	UG/L	1	19.1	=	1	2.58	=				1	7.25	J
Area2	MW-86	3-Sep-02	MW86-EBT-TS3-100-105	UG/L	1	20.8	=	1	2.58	=	1	0.156	J			
Area2	MW-86	7-Oct-02	MW86-EBT-TS4-100-105	UG/L	1	18	=	1	2.44	=						
Area2	MW-86	11-Nov-02	MW86-EBT-TS5-100-105	UG/L	1	15.1	=	1	2.41	=				1	5.73	J
Area2	MW-86	16-Dec-02	MW86-EBT-TS6-100-105	UG/L	1	16.6	=	1	2.4	=				1	8.85	J
Area2	MW-86	20-Jan-03	MW86-EBT-TS7-100-105	UG/L	1	17.1	=	1	2.3	=				1	19.8	J
Area2	MW-86	24-Mar-03	MW86-EBT-TS9-100-105	UG/L	1	14.2	=	1	2.38	=				1	54.4	=
Area2	MW-86	21-Apr-03	MW86-EBT-TS10-100-105	UG/L	1	12.8	=	1	2.06	=				1	70.1	=
Area2	MW-86	19-May-03	MW86-EBT-TS11-100-105	UG/L	1	17.5	=	1	2.02	=				1	19.2	J
Area2	MW-86	23-Jun-03	MW86-EBT-TS12-100-105	UG/L	1	12	=	1	1.88	=				1	10.5	J
Area2	MW-86	21-Jul-03	MW86-EBT-TS13-100-105	UG/L	1	10.7	=	1	2.04	=						
Area2	MW-86	18-Aug-03	MW86-EBT-TS14-100-105	UG/L	1	13.2	=	1	1.91	=				1	13.9	=
Area2	MW-88	30-Nov-01	MW-88-1	UG/L												
Area2	MW-88	30-Nov-01	MW-88-2	UG/L												
Area2	MW-88	30-Nov-01	MW-88-3	UG/L												
Area2	MW-88	30-Nov-01	MW-88-4	UG/L												
Area2	MW-88	30-Nov-01	MW-88-5	UG/L												
Area2	MW-88	30-Nov-01	MW-88-6	UG/L												
Area2	MW-88	30-Nov-01	MW-88-7	UG/L												
Area2	MW-88	30-Nov-01	MW-88-8	UG/L												
Area2	MW-88	30-Nov-01	MW-86-8	UG/L	1	2.8	=	1	1.3	=						
Area2	MW-88	8-Jul-02	MW88-EBT-TS1-90-95	UG/L												
Area2	MW-88	29-Jul-02	MW88-EBT-TS2-90-95	UG/L												
Area2	MW-88	3-Sep-02	MW88-EBT-TS3-90-95	UG/L												
Area2	MW-88	7-Oct-02	MW88-EBT-TS4-90-95	UG/L												
Area2	MW-88	11-Nov-02	MW88-EBT-TS5-90-95	UG/L												
Area2	MW-88	16-Dec-02	MW88-EBT-TS6-90-95	UG/L												
Area2	MW-88	20-Jan-03	MW88-EBT-TS7-90-95	UG/L												
Area2	MW-88	24-Mar-03	MW88-EBT-TS9-90-95	UG/L												
Area2	MW-88	21-Apr-03	MW88-EBT-TS10-90-95	UG/L												
Area2	MW-88	19-May-03	MW88-EBT-TS11-90-95	UG/L										1	4.33	J
Area2	MW-88	23-Jun-03	MW88-EBT-TS12-90-95	UG/L										1	4.66	J
Area2	MW-88	21-Jul-03	MW88-EBT-TS13-90-95	UG/L												
Area2	MW-88	18-Aug-03	MW88-EBT-TS14-90-95	UG/L										1	6.92	J

Attachment G
Study Area 2: Summary of VOCs in Groundwater
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Area	StationID	DateCollected	Sample	Unit	BENZENE			CARBON DISULFIDE			CARBON TETRACHLORIDE			CHLOROBENZENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	20-May-02	IW1-EBT-B-97-99	UG/L							1	35	=			
Area2	IW-1	20-Jan-03	IW1-EBT-TS7-97-99	UG/L							1	1.67	=			
Area2	IW-2	20-May-02	IW2-EBT-B-98-103	UG/L	1	0.14	J				1	64	=			
Area2	IW-2	20-Jan-03	IW2-EBT-TS7-98-103	UG/L	1	0.127	J	1	0.691	J						
Area2	IW-3	20-May-02	IW3-EBT-B-99-101	UG/L	1	2.3	=				1	52	=			
Area2	IW-3	20-Jan-03	IW3-EBT-TS7-99-101	UG/L	1	0.238	J							1	0.361	J
Area2	IW-4	20-May-02	IW4-EBT-B-99-104	UG/L	1	0.71	J				1	90	=			
Area2	IW-4	20-Jan-03	IW4-EBT-TS7-99-104	UG/L	1	0.234	J	1	1.1	=	1	0.753	J			
Area2	MW-105	20-May-02	MW-105-EBT-B-97.5-98.5	UG/L	1	0.85	J				1	46	=			
Area2	MW-105	8-Jul-02	MW105-EBT-TS1-97.5-98.5	UG/L	1	0.73	J	1	0.76	J	1	8.6	=			
Area2	MW-105	29-Jul-02	MW105-EBT-TS2-97.5-98.5	UG/L	1	1.08	=	1	0.947	J						
Area2	MW-105	3-Sep-02	MW105-EBT-TS3-97.5-98.5	UG/L	1	0.808	J									
Area2	MW-105	7-Oct-02	MW105-EBT-TS4-97.5-98.5	UG/L	1	0.611	J									
Area2	MW-105	11-Nov-02	MW105-EBT-TS5-97.5-98.5	UG/L	1	0.203	J				1	1.81	=	1	0.141	J
Area2	MW-105	16-Dec-02	MW105-EBT-TS6-97.5-98.5	UG/L							1	4.88	J			
Area2	MW-105	20-Jan-03	MW105-EBT-TS7-97.5-98.5	UG/L							1	4.28	=			
Area2	MW-105	24-Mar-03	MW105-EBT-TS9-97.5-98.5	UG/L	1	0.294	J									
Area2	MW-105	21-Apr-03	MW105-EBT-TS10-97.5-98.5	UG/L	1	0.248	J	1	0.649	J						
Area2	MW-105	19-May-03	MW105-EBT-TS11-97.5-98.5	UG/L	1	0.239	J									
Area2	MW-105	23-Jun-03	MW105-EBT-TS12-97.5-98.5	UG/L	1	0.325	J	1	1.36	=				1	0.202	J
Area2	MW-105	21-Jul-03	MW105-EBT-TS13-97.5-98.5	UG/L	1	0.218	J							1	0.195	J
Area2	MW-105	18-Aug-03	MW105-EBT-TS14-97.5-98.5	UG/L	1	0.177	J							1	0.173	J
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105	UG/L							1	82	=			
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105D	UG/L							1	85	=			
Area2	MW-106	8-Jul-02	MW106-EBT-TS1-100-105	UG/L				1	0.52	J	1	89	=	1	0.15	J
Area2	MW-106	29-Jul-02	MW106-EBT-TS2-100-105	UG/L				1	2.21	=	1	23.7	=	1	0.136	J
Area2	MW-106	3-Sep-02	MW106-EBT-TS3-100-105	UG/L				1	0.855	J	1	42.9	=			
Area2	MW-106	7-Oct-02	MW106-EBT-TS4-100-105	UG/L							1	39.2	=			
Area2	MW-106	11-Nov-02	MW106-EBT-TS5-100-105	UG/L				1	0.606	J	1	42	=	1	0.181	J
Area2	MW-106	16-Dec-02	MW106-EBT-TS6-100-105	UG/L							1	44.1	J			
Area2	MW-106	20-Jan-03	MW106-EBT-TS7-100-105	UG/L							1	42.4	=			
Area2	MW-106	24-Mar-03	MW106-EBT-TS9-100-105	UG/L				1	3.26	=	1	16	=			
Area2	MW-106	21-Apr-03	MW106-EBT-TS10-100-105	UG/L				1	1.36	J	1	2.16	J			
Area2	MW-106	19-May-03	MW106-EBT-TS11-100-105	UG/L	1	0.186	J	1	2.91	=	1	2.57	=			
Area2	MW-106	23-Jun-03	MW106-EBT-TS12-100-105	UG/L	1	0.174	J	1	2.92	=	1	12.4	J			
Area2	MW-106	21-Jul-03	MW106-EBT-TS13-100-105	UG/L				1	1.18	=	1	3.28	=			
Area2	MW-106	18-Aug-03	MW106-EBT-TS14-100-105	UG/L				1	1.09	=	1	5.32	=			
Area2	MW-109	20-May-02	MW-109-EBT-99-101	UG/L	1	4.7	=				1	46	=			
Area2	MW-109	8-Jul-02	MW109-EBT-TS1-99-101	UG/L	1	1.1	=	1	0.91	J	1	13	=			
Area2	MW-109	29-Jul-02	MW109-EBT-TS2-99-101	UG/L	1	0.964	J	1	1.79	=						
Area2	MW-109	3-Sep-02	MW109-EBT-TS3-99-101	UG/L	1	0.279	J									
Area2	MW-109	7-Oct-02	MW109-EBT-TS4-99-101	UG/L							1	4.45	=			
Area2	MW-109	11-Nov-02	MW109-EBT-TS5-99-101	UG/L							1	12.8	=			
Area2	MW-109	16-Dec-02	MW109-EBT-TS6-99-101	UG/L	1	0.126	J				1	11.8	J			
Area2	MW-109	20-Jan-03	MW109-EBT-TS7-99-101	UG/L	1	0.225	J				1	13.8	=			
Area2	MW-109	24-Mar-03	MW109-EBT-TS9-99-101	UG/L	1	0.42	J									
Area2	MW-109	21-Apr-03	MW109-EBT-TS10-99-101	UG/L	1	0.395	J									
Area2	MW-109	19-May-03	MW109-EBT-TS11-99-101	UG/L	1	0.432	J									
Area2	MW-109	23-Jun-03	MW109-EBT-TS12-99-101	UG/L	1	0.31	J									
Area2	MW-109	21-Jul-03	MW109-EBT-TS13-99-101	UG/L	1	0.423	J									
Area2	MW-109	18-Aug-03	MW109-EBT-TS14-99-101	UG/L	1	0.255	J									
Area2	MW-110	20-May-02	MW-110-EBT-99-101	UG/L	1	0.19	J				1	77	=			
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101	UG/L							1	110	=	1	0.14	J
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101D	UG/L							1	110	=	1	0.18	J
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101	UG/L	1	0.14	J				1	120	=	1	0.17	J
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101D	UG/L	1	0.143	J				1	117	=	1	0.183	J
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101	UG/L							1	131	=			
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101D	UG/L							1	137	=			
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101	UG/L							1	94.1	=			
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101D	UG/L							1	120	=			
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101	UG/L	1	0.131	J				1	98.3	=	1	0.173	J
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101D	UG/L	1	0.152	J				1	99	=	1	0.185	J
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101	UG/L							1	120	J	1	0.158	J
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101D	UG/L							1	120	J			
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101	UG/L							1	109	=			
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101D	UG/L							1	111	=			
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101	UG/L							1	90.5	=			
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101D	UG/L							1	94.2	=			
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101	UG/L	1	0.127	J				1	101	J	1	0.13	J
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101D	UG/L							1	95.9	J	1	0.147	J
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101	UG/L				1	0.6	J	1	77.7	=	1	0.164	J
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101D	UG/L	1	0.138	J	1	0.616	J	1	77.3	=	1	0.128	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101	UG/L							1	14.2	J	1	0.178	J
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101D	UG/L							1	13.7	J	1	0.189	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101	UG/L				1	0.997	J	1	60.8	=	1	0.126	J
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101D	UG/L				1	1.07	=	1	55.8	=			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101	UG/L				1	1.08	=	1	56.7	=	1	0.141	J
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101D	UG/L				1	1.26	=	1	56	=	1	0.149	J
Area2	MW-111	20-May-02	MW-111-EBT-B-97.5-98.5	UG/L	1	0.15	J				1	91	=			
Area2	MW-111	8-Jul-02	MW111-EBT-TS1-97.5-98.5	UG/L	1	0.14	J				1	80	=	1	0.13	J
Area2	MW-111	29-Jul-02	MW111-EBT-TS2-97.5-98.5	UG/L							1	96.1	=	1	0.144	J
Area2	MW-111	3-Sep-02	MW111-EBT-TS3-97.5-98.5	UG/L							1	111	=			
Area2	MW-111	7-Oct-02	MW111-EBT-TS4-97.5-98.5	UG/L							1	112	=			
Area2	MW-111	11-Nov-02	MW111-EBT-TS5-97.5-98.5	UG/L							1	92.8	=			
Area2	MW-111	16-Dec-02	MW111-EBT-TS6-97.5-98.5	UG/L							1	106	J			
Area2	MW-111	20-Jan-03	MW111-EBT-TS7-97.5-98.5	UG/L							1	108	=			
Area2	MW-111	24-Mar-03	MW111-EBT-TS9-97.5-98.5	UG/L							1	76.5	=			
Area2	MW-111	21-Apr-03	MW111-EBT-TS10-97.5-98.5	UG/L	1	0.139	J				1	103	J	1	0.15	J
Area2	MW-111	19-May-03	MW111-EBT-TS11-97.5-98.5	UG/L				1	0.968	J	1	34.3	=			
Area2	MW-111	23-Jun-03	MW111-EBT-TS12-97.5-98.5	UG/L				1	6.1	=				1	0.138	J
Area2	MW-111	21-Jul-03	MW111-EBT-TS13-97.5-98.5	UG/L				1	1.16	=				1	0.127	J
Area2	MW-111	18-Aug-03	MW111-EBT-TS14-97.5-98.5	UG/L							1	10.3	=			
Area2	MW-112	20-May-02	MW-112-EBT-98-100	UG/L	1	0.27	J				1	40	=			
Area2	MW-112	8-Jul-02	MW112-EBT-TS1-98-100	UG/L				1	0.57	J	1	34	=	1	51	=
Area2	MW-112	29-Jul-02	MW112-EBT-TS2-98-100	UG/L	1	0.2	J				1	0.41	J			
Area2	MW-112	3-Sep-02	MW112-EBT-TS3-98-100	UG/L	1	0.65	J	1	0.633	J						
Area2	MW-112	7-Oct-02	MW112-EBT-TS4-98-100	UG/L	1	0.274	J									
Area2	MW-112	11-Nov-02	MW112-EBT-TS5-98-100	UG/L	1	0.255	J				1	0.5	J			
Area2	MW-112	16-Dec-02	MW112-EBT-TS6-98-100	UG/L	1	0.153	J				1	1.73	J			
Area2	MW-112	20-Jan-03	MW112-EBT-TS7-98-100	UG/L							1	3.32	=			
Area2	MW-112	24-Mar-03	MW112-EBT-TS9-98-100	UG/L	1	0.159	J									
Area2	MW-112	21-Apr-03	MW112-EBT-TS10-98-100	UG/L	1	0.19	J									
Area2	MW-112	19-May-03	MW112-EBT-TS11-98-100	UG/L	1	0.154	J	1	0.629	J						
Area2	MW-112	23-Jun-03	MW112-EBT-TS12-98-100	UG/L	1	0.248	J	1	0.563	J						
Area2	MW-112	21-Jul-03	MW112-EBT-TS13-98-100	UG/L	1	0.227	J									
Area2	MW-112	18-Aug-03	MW112-EBT-TS14-98-100	UG/L												
Area2	MW-113	20-May-02	MW-113-EBT-B-99.5-104.5	UG/L	1	0.15	J				1	30	=			
Area2	MW-113	8-Jul-02	MW113-EBT-TS1-99.5-104.5	UG/L							1	50	=			
Area2	MW-113	29-Jul-02	MW113-EBT-TS2-99.5-104.5	UG/L							1	69.1	=			
Area2	MW-113	3-Sep-02	MW113-EBT-TS3-99.5-104.5	UG/L				1	0.634	J	1	60.7	=			
Area2	MW-113	7-Oct-02	MW113-EBT-TS4-99.5-104.5	UG/L							1	64.5	=			
Area2	MW-113	11-Nov-02	MW113-EBT-TS5-99.5-104.5	UG/L							1	59	=			
Area2	MW-113	16-Dec-02	MW113-EBT-TS6-99.5-104.5	UG/L				1	0.594	J	1	69.6	J			
Area2	MW-113	20-Jan-03	MW113-EBT-TS7-99.5-104.5	UG/L							1	71.6	=			
Area2	MW 113	24-Mar-03	MW113-EBT-TS9-99.5-104.5	UG/L							1	50.8	=			
Area2	MW 113	21-Apr-03	MW113-EBT-TS10-99.5-104.5	UG/L							1	53.2	J			
Area2	MW 113	19-May-03	MW113-EBT-TS11-99.5-104.5	UG/L							1	26	=			
Area2	MW 113	23-Jun-03	MW113-EBT-TS12-99.5-104.5	UG/L				1	1.25	=	1	43.6	J			
Area2	MW 113	21-Jul-03	MW113-EBT-TS13-99.5-104.5	UG/L				1	0.804	J	1	38	=			
Area2	MW 113	18-Aug-03	MW113-EBT-TS14-99.5-104.5	UG/L				1	0.817	J	1	42.7	=			
Area2	MW-114	20-May-02	MW-114-EBT-B-99-101	UG/L	1	0.15	J				1	94	=			
Area2	MW-114	8-Jul-02	MW114-EBT-TS1-99-101	UG/L							1	79	=	1	0.18	J
Area2	MW-114	29-Jul-02	MW114-EBT-TS2-99-101	UG/L	1	0.139	J	1	2.32	=	1	47.5	=	1	0.147	J
Area2	MW-114	3-Sep-02	MW114-EBT-TS3-99-101	UG/L				1	2.55	=	1	11.3	=	1	0.136	J
Area2	MW-114	7-Oct-02	MW114-EBT-TS4-99-101	UG/L							1	42.9	=			
Area2	MW-114	11-Nov-02	MW114-EBT-TS5-99-101	UG/L							1	50.8	=			
Area2	MW-114	16-Dec-02	MW114-EBT-TS6-99-101	UG/L				1	0.746	J	1	76.8	J			
Area2	MW-114	20-Jan-03	MW114-EBT-TS7-99-101	UG/L				1	0.789	J	1	65.2	=			

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	BENZENE			CARBON DISULFIDE			CARBON TETRACHLORIDE			CHLOROBENZENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	MW-114	24-Mar-03	MW114-EBT-TS9-99-101	UG/L				1	1.01	=	1	2.04	=			
Area2	MW-114	21-Apr-03	MW114-EBT-TS10-99-101	UG/L				1	0.547	J	1	2.01	J			
Area2	MW-114	19-May-03	MW114-EBT-TS11-99-101	UG/L												
Area2	MW-114	23-Jun-03	MW114-EBT-TS12-99-101	UG/L				1	1.71	=						
Area2	MW-114	21-Jul-03	MW114-EBT-TS13-99-101	UG/L	1	0.129	J	1	1.32	=						
Area2	MW-114	18-Aug-03	MW114-EBT-TS14-99-101	UG/L												
Area2	MW-26	21-Mar-02	MW-26-106-BL	UG/L							1	3.7	J			
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L							1	3.29	=			
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L							1	5.17	J			
Area2	MW-86	30-Nov-01	MW-86-1	UG/L							5	26	=			
Area2	MW-86	30-Nov-01	MW-86-2	UG/L							10	79	=	1	0.11	J
Area2	MW-86	30-Nov-01	MW-86-3	UG/L							20	94	=	1	0.12	J
Area2	MW-86	30-Nov-01	MW-86-4	UG/L							20	95	=	1	0.12	J
Area2	MW-86	30-Nov-01	MW-86-5	UG/L							20	93	=	1	0.12	J
Area2	MW-86	30-Nov-01	MW-86-6	UG/L							20	89	=	1	0.11	J
Area2	MW-86	30-Nov-01	MW-86-7	UG/L							20	90	=	1	0.11	J
Area2	MW-86	30-Nov-01	MW-86-9	UG/L							10	37	=			
Area2	MW-86	8-Jul-02	MW86-EBT-TS1-100-105	UG/L							1	65	=	1	0.17	J
Area2	MW-86	29-Jul-02	MW86-EBT-TS2-100-105	UG/L	1	0.264	J	1	3.23	=	1	1.74	=	1	0.512	J
Area2	MW-86	3-Sep-02	MW86-EBT-TS3-100-105	UG/L	1	0.282	J	1	3.59	=				1	0.532	J
Area2	MW-86	7-Oct-02	MW86-EBT-TS4-100-105	UG/L	1	0.236	J	1	1.08	J				1	0.513	J
Area2	MW-86	11-Nov-02	MW86-EBT-TS5-100-105	UG/L	1	0.257	J							1	0.449	J
Area2	MW-86	16-Dec-02	MW86-EBT-TS6-100-105	UG/L	1	0.193	J							1	0.491	J
Area2	MW-86	20-Jan-03	MW86-EBT-TS7-100-105	UG/L	1	0.221	J							1	0.413	J
Area2	MW-86	24-Mar-03	MW86-EBT-TS9-100-105	UG/L	1	0.255	J							1	0.547	J
Area2	MW-86	21-Apr-03	MW86-EBT-TS10-100-105	UG/L	1	0.184	J							1	0.463	J
Area2	MW-86	19-May-03	MW86-EBT-TS11-100-105	UG/L	1	0.148	J							1	0.347	J
Area2	MW-86	23-Jun-03	MW86-EBT-TS12-100-105	UG/L	1	0.154	J							1	0.313	J
Area2	MW-86	21-Jul-03	MW86-EBT-TS13-100-105	UG/L	1	0.183	J							1	0.264	J
Area2	MW-86	18-Aug-03	MW86-EBT-TS14-100-105	UG/L	1	0.167	J							1	0.26	J
Area2	MW-88	30-Nov-01	MW-88-1	UG/L							1	3.2	=			
Area2	MW-88	30-Nov-01	MW-88-2	UG/L							1	2.9	=			
Area2	MW-88	30-Nov-01	MW-88-3	UG/L							1	1.8	=			
Area2	MW-88	30-Nov-01	MW-88-4	UG/L							1	1.3	=			
Area2	MW-88	30-Nov-01	MW-88-5	UG/L							1	1	=			
Area2	MW-88	30-Nov-01	MW-88-6	UG/L							1	3.1	=			
Area2	MW-88	30-Nov-01	MW-88-7	UG/L							1	5.2	=			
Area2	MW-88	30-Nov-01	MW-88-8	UG/L							1	5.6	=			
Area2	MW-88	30-Nov-01	MW-88-9	UG/L							20	89	=			
Area2	MW-88	8-Jul-02	MW88-EBT-TS1-90-95	UG/L							1	4.7	=			
Area2	MW-88	29-Jul-02	MW88-EBT-TS2-90-95	UG/L							1	5.54	=			
Area2	MW-88	3-Sep-02	MW88-EBT-TS3-90-95	UG/L							1	6.61	=			
Area2	MW-88	7-Oct-02	MW88-EBT-TS4-90-95	UG/L							1	5.3	=			
Area2	MW-88	11-Nov-02	MW88-EBT-TS5-90-95	UG/L							1	5.79	=			
Area2	MW-88	16-Dec-02	MW88-EBT-TS6-90-95	UG/L							1	6.76	J			
Area2	MW-88	20-Jan-03	MW88-EBT-TS7-90-95	UG/L							1	6.96	=			
Area2	MW-88	24-Mar-03	MW88-EBT-TS9-90-95	UG/L							1	4.63	=			
Area2	MW-88	21-Apr-03	MW88-EBT-TS10-90-95	UG/L							1	5.61	J			
Area2	MW-88	19-May-03	MW88-EBT-TS11-90-95	UG/L							1	5.06	=			
Area2	MW-88	23-Jun-03	MW88-EBT-TS12-90-95	UG/L							1	6.17	J			
Area2	MW-88	21-Jul-03	MW88-EBT-TS13-90-95	UG/L							1	8.17	=			
Area2	MW-88	18-Aug-03	MW88-EBT-TS14-90-95	UG/L							1	7.31	=			

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	CHLOROFORM			CHLOROMETHANE			cis-1,2-DICHLOROETHYLENE			ETHYLBENZENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	20-May-02	IW1-EBT-B-97-99	UG/L	1	30	=				1	26	=			
Area2	IW-1	20-Jan-03	IW1-EBT-TS7-97-99	UG/L	1	5.3	=				10	248	=			
Area2	IW-2	20-May-02	IW2-EBT-B-98-103	UG/L	1	67	=				1	53	=			
Area2	IW-2	20-Jan-03	IW2-EBT-TS7-98-103	UG/L	1	78.1	=				1	40.5	=			
Area2	IW-3	20-May-02	IW3-EBT-B-99-101	UG/L	1	61	=				1	47	=			
Area2	IW-3	20-Jan-03	IW3-EBT-TS7-99-101	UG/L	1	45.6	=				10	368	=			
Area2	IW-4	20-May-02	IW4-EBT-B-99-104	UG/L	1	85	=				1	63	=			
Area2	IW-4	20-Jan-03	IW4-EBT-TS7-99-104	UG/L	1	75.8	=				1	54.4	=			
Area2	MW-105	20-May-02	MW-105-EBT-B-97.5-98.5	UG/L	1	52	=				1	43	=			
Area2	MW-105	8-Jul-02	MW105-EBT-TS1-97.5-98.5	UG/L	1	90	=				1	47	=			
Area2	MW-105	29-Jul-02	MW105-EBT-TS2-97.5-98.5	UG/L	1	100	=				1	48.9	=			
Area2	MW-105	3-Sep-02	MW105-EBT-TS3-97.5-98.5	UG/L	1	73.3	=				1	54.5	=			
Area2	MW-105	7-Oct-02	MW105-EBT-TS4-97.5-98.5	UG/L	1	56.4	=				1	48.4	=			
Area2	MW-105	11-Nov-02	MW105-EBT-TS5-97.5-98.5	UG/L	1	59.5	=				1	49	=			
Area2	MW-105	16-Dec-02	MW105-EBT-TS6-97.5-98.5	UG/L	1	85.4	=									
Area2	MW-105	20-Jan-03	MW105-EBT-TS7-97.5-98.5	UG/L	1	97	=				1	51.2	=			
Area2	MW-105	24-Mar-03	MW105-EBT-TS9-97.5-98.5	UG/L	1	41.6	=				1	172	=			
Area2	MW-105	21-Apr-03	MW105-EBT-TS10-97.5-98.5	UG/L	1	37.4	=				1	193	=			
Area2	MW-105	19-May-03	MW105-EBT-TS11-97.5-98.5	UG/L	1	29.7	=				1	190	=			
Area2	MW-105	23-Jun-03	MW105-EBT-TS12-97.5-98.5	UG/L	1	48.8	=				1	84.7	=			
Area2	MW-105	21-Jul-03	MW105-EBT-TS13-97.5-98.5	UG/L	1	12	=				1	128	=			
Area2	MW-105	18-Aug-03	MW105-EBT-TS14-97.5-98.5	UG/L	1	9.72	=				10	237	=			
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105	UG/L	1	76	=				1	51	=			
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105D	UG/L	1	78	=				1	52	=			
Area2	MW-106	8-Jul-02	MW106-EBT-TS1-100-105	UG/L	1	87	=				1	52	=	1	0.31	J
Area2	MW-106	29-Jul-02	MW106-EBT-TS2-100-105	UG/L	1	130	=				1	51.6	=			
Area2	MW-106	3-Sep-02	MW106-EBT-TS3-100-105	UG/L	1	71.3	=				1	55	=			
Area2	MW-106	7-Oct-02	MW106-EBT-TS4-100-105	UG/L	1	75.7	=				1	53.4	=			
Area2	MW-106	11-Nov-02	MW106-EBT-TS5-100-105	UG/L	1	78.7	=				1	55.8	=			
Area2	MW-106	16-Dec-02	MW106-EBT-TS6-100-105	UG/L	1	90.3	=				1	53.5	=			
Area2	MW-106	20-Jan-03	MW106-EBT-TS7-100-105	UG/L	1	95.9	=				1	62.2	=			
Area2	MW-106	24-Mar-03	MW106-EBT-TS9-100-105	UG/L	1	83.7	=				1	54.6	=			
Area2	MW-106	21-Apr-03	MW106-EBT-TS10-100-105	UG/L	1	90.1	=				1	52.7	=			
Area2	MW-106	19-May-03	MW106-EBT-TS11-100-105	UG/L	1	83.4	=				1	65.2	=			
Area2	MW-106	23-Jun-03	MW106-EBT-TS12-100-105	UG/L	1	63.9	=				1	51.2	=			
Area2	MW-106	21-Jul-03	MW106-EBT-TS13-100-105	UG/L	1	85.8	=				1	173	J			
Area2	MW-106	18-Aug-03	MW106-EBT-TS14-100-105	UG/L	1	72.5	=				10	190	=			
Area2	MW-109	20-May-02	MW-109-EBT-99-101	UG/L	1	91	=				1	60	=			
Area2	MW-109	8-Jul-02	MW109-EBT-TS1-99-101	UG/L	1	90	=				1	53	=			
Area2	MW-109	29-Jul-02	MW109-EBT-TS2-99-101	UG/L	1	9.26	=				1	58.4	=			
Area2	MW-109	3-Sep-02	MW109-EBT-TS3-99-101	UG/L	1	7.83	=				1	68.6	=			
Area2	MW-109	7-Oct-02	MW109-EBT-TS4-99-101	UG/L	1	34.1	=				1	52.6	=			
Area2	MW-109	11-Nov-02	MW109-EBT-TS5-99-101	UG/L	1	53.5	=				10	448	=			
Area2	MW-109	16-Dec-02	MW109-EBT-TS6-99-101	UG/L	1	98.7	=				1	179	=			
Area2	MW-109	20-Jan-03	MW109-EBT-TS7-99-101	UG/L	1	105	=				1	196	=			
Area2	MW-109	24-Mar-03	MW109-EBT-TS9-99-101	UG/L	1	55.5	=				1	187	=			
Area2	MW-109	21-Apr-03	MW109-EBT-TS10-99-101	UG/L	1	69	=				5	259	=			
Area2	MW-109	19-May-03	MW109-EBT-TS11-99-101	UG/L	1	17.5	=	1	0.339	J	10	199	=			
Area2	MW-109	23-Jun-03	MW109-EBT-TS12-99-101	UG/L	1	4.8	=				1	164	=			
Area2	MW-109	21-Jul-03	MW109-EBT-TS13-99-101	UG/L	1	6.81	=				1	196	=			
Area2	MW-109	18-Aug-03	MW109-EBT-TS14-99-101	UG/L	1	3.69	=				10	225	=			
Area2	MW-110	20-May-02	MW-110-EBT-99-101	UG/L	1	83	=				1	63	=			
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101	UG/L	1	85	=				1	70	=			
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101D	UG/L	1	85	=				1	68	=			
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101	UG/L	1	99.9	=				1	69.3	=			
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101D	UG/L	1	98.7	=				1	69	=			
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101	UG/L	1	103	=				1	68.4	=			
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101D	UG/L	1	105	=				1	69.7	=			
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101	UG/L	1	89	=				1	62.9	=			
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101D	UG/L	1	94.2	=				1	63.5	=			
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101	UG/L	1	78.1	=				1	67.2	=			
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101D	UG/L	1	80.5	=				1	68.1	=			
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101	UG/L	1	85.4	=				1	67	=			
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101D	UG/L	1	84.6	=				1	64.9	=			
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101	UG/L	1	84.2	=				1	76.3	=			
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101D	UG/L	1	85.8	=				1	76.9	=			
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101	UG/L	1	71.8	=				1	62.6	=			
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101D	UG/L	1	70.9	=				1	62.2	=			
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101	UG/L	1	78.3	=				1	55.6	=			
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101D	UG/L	1	75.4	=				1	55.2	=			
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101	UG/L	1	86.4	=				1	67.9	=			
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101D	UG/L	1	87.8	=				1	70.5	=			
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101	UG/L	1	91.3	=				10	246	=			
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101D	UG/L	1	91.8	=				10	249	=			
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101	UG/L	1	78.3	=				1	127	J			
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101D	UG/L	1	76.2	=				1	126	J			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101	UG/L	1	54.8	=				1	133	=			
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101D	UG/L	1	54.5	=				1	133	=			
Area2	MW-111	20-May-02	MW-111-EBT-B-97.5-98.5	UG/L	1	85	=				1	64	=			
Area2	MW 111	8-Jul-02	MW111-EBT-TS1-97.5-98.5	UG/L	1	85	=				1	68	=			
Area2	MW-111	29-Jul-02	MW111-EBT-TS2-97.5-98.5	UG/L	1	96.8	=				1	63.9	=			
Area2	MW 111	3-Sep-02	MW111-EBT-TS3-97.5-98.5	UG/L	1	116	=				1	61.5	=			
Area2	MW-111	7-Oct-02	MW111-EBT-TS4-97.5-98.5	UG/L	1	103	=				1	53.9	=			
Area2	MW 111	11-Nov-02	MW111-EBT-TS5-97.5-98.5	UG/L	1	86.3	=				1	54.8	=			
Area2	MW-111	16-Dec-02	MW111-EBT-TS6-97.5-98.5	UG/L	1	93.4	=				1	56.1	=			
Area2	MW-111	20-Jan-03	MW111-EBT-TS7-97.5-98.5	UG/L	1	96.2	=				1	68.9	=			
Area2	MW-111	24-Mar-03	MW111-EBT-TS9-97.5-98.5	UG/L	1	79.9	=				1	63.6	=			
Area2	MW-111	21-Apr-03	MW111-EBT-TS10-97.5-98.5	UG/L	1	82.2	=				1	56.8	=			
Area2	MW-111	19-May-03	MW111-EBT-TS11-97.5-98.5	UG/L	1	120	=				1	176	=			
Area2	MW-111	23-Jun-03	MW111-EBT-TS12-97.5-98.5	UG/L	1	109	=				10	249	=			
Area2	MW-111	21-Jul-03	MW111-EBT-TS13-97.5-98.5	UG/L	1	106	=				10	277	=			
Area2	MW-111	18-Aug-03	MW111-EBT-TS14-97.5-98.5	UG/L	1	97.5	=				10	233	=			
Area2	MW-112	20-May-02	MW-112-EBT-98-100	UG/L	1	83	=				1	48	=			
Area2	MW-112	8-Jul-02	MW112-EBT-TS1-98-100	UG/L	1	56	=				1	46	=			
Area2	MW-112	29-Jul-02	MW112-EBT-TS2-98-100	UG/L	1	127	=				1	54.4	=			
Area2	MW-112	3-Sep-02	MW112-EBT-TS3-98-100	UG/L	1	94	=				1	61.2	=			
Area2	MW-112	7-Oct-02	MW112-EBT-TS4-98-100	UG/L	1	18	=				1	45.8	=			
Area2	MW-112	11-Nov-02	MW112-EBT-TS5-98-100	UG/L	1	17	=				1	48.9	=			
Area2	MW-112	16-Dec-02	MW112-EBT-TS6-98-100	UG/L	1	17.6	=				1	48.8	=			
Area2	MW-112	20-Jan-03	MW112-EBT-TS7-98-100	UG/L	1	24.7	=				1	72.7	=			
Area2	MW-112	24-Mar-03	MW112-EBT-TS9-98-100	UG/L	1	16.1	=				10	204	=			
Area2	MW-112	21-Apr-03	MW112-EBT-TS10-98-100	UG/L	1	47.5	=				1	166	=			
Area2	MW-112	19-May-03	MW112-EBT-TS11-98-100	UG/L	1	36	=	1	0.4	J	1	173	=			
Area2	MW-112	23-Jun-03	MW112-EBT-TS12-98-100	UG/L	1	46.7	=				10	216	=			
Area2	MW-112	21-Jul-03	MW112-EBT-TS13-98-100	UG/L	1	11.4	=				10	233	=			
Area2	MW-112	18-Aug-03	MW112-EBT-TS14-98-100	UG/L	1	5.47	=				10	236	=			
Area2	MW-113	20-May-02	MW-113-EBT-B-99.5-104.5	UG/L	1	76	=				1	44	=			
Area2	MW-113	8-Jul-02	MW113-EBT-TS1-99.5-104.5	UG/L	1	79	=				1	48	=			
Area2	MW-113	29-Jul-02	MW113-EBT-TS2-99.5-104.5	UG/L	1	98	=				1	55.5	=			
Area2	MW-113	3-Sep-02	MW113-EBT-TS3-99.5-104.5	UG/L	1	90.6	=				1	59.9	=			
Area2	MW-113	7-Oct-02	MW113-EBT-TS4-99.5-104.5	UG/L	1	83.2	=				1	92.4	=			
Area2	MW-113	11-Nov-02	MW113-EBT-TS5-99.5-104.5	UG/L	1	78.2	=				1	77.3	=			
Area2	MW-113	16-Dec-02	MW113-EBT-TS6-99.5-104.5	UG/L	1	87.6	=				1	83.4	=			
Area2	MW-113	20-Jan-03	MW113-EBT-TS7-99.5-104.5	UG/L	1	93.8	=				1	94.1	=			
Area2	MW-113	24-Mar-03	MW113-EBT-TS9-99.5-104.5	UG/L	1	70.8	=				1	69.7	=			
Area2	MW-113	21-Apr-03	MW113-EBT-TS10-99.5-104.5	UG/L	1	81	=				1	71.2	=			
Area2	MW-113	19-May-03	MW113-EBT-TS11-99.5-104.5	UG/L	1	84.4	=				1	71.6	=			
Area2	MW-113	23-Jun-03	MW113-EBT-TS12-99.5-104.5	UG/L	1	89.8	=				1	93.9	=			
Area2	MW-113	21-Jul-03	MW113-EBT-TS13-99.5-104.5	UG/L	1	89.7	=				1	102	J			
Area2	MW-113	18-Aug-03	MW113-EBT-TS14-99.5-104.5	UG/L	1	80.4	=				1	109	=			
Area2	MW-114	20-May-02	MW-114-EBT-B-99-101	UG/L	1	84	=				1	61	=			
Area2	MW-114	8-Jul-02	MW114-EBT-TS1-99-101	UG/L	1	75	=				1	53	=			
Area2	MW-114	29-Jul-02	MW114-EBT-TS2-99-101	UG/L	1	129	=				1	60.8	=			
Area2	MW-114	3-Sep-02	MW114-EBT-TS3-99-101	UG/L	1	137	=				1	64.8	=			
Area2	MW-114	7-Oct-02	MW114-EBT-TS4-99-101	UG/L	1	112	=				1	53.1	=			
Area2	MW-114	11-Nov-02	MW114-EBT-TS5-99-101	UG/L	1	92.6	=				1	57.4	=			
Area2	MW-114	16-Dec-02	MW114-EBT-TS6-99-101	UG/L	1	92.3	=				1	53.5	=			
Area2	MW-114	20-Jan-03	MW114-EBT-TS7-99-101	UG/L	1	75.9	=				1	53.7	=			

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	CHLOROFORM			CHLOROMETHANE			cis-1,2-DICHLOROETHYLENE			ETHYLBENZENE		
					DF	Conc.	Qual.	DF	Conc.	Qual.	DF	Conc.	Qual.	DF	Conc.	Qual.
Area2	MW-114	24-Mar-03	MW114-EBT-TS9-99-101	UG/L	1	107	=				10	179	=			
Area2	MW-114	21-Apr-03	MW114-EBT-TS10-99-101	UG/L	1	72	=				5	231	=			
Area2	MW-114	19-May-03	MW114-EBT-TS11-99-101	UG/L	1	95.6	=				10	209	=			
Area2	MW-114	23-Jun-03	MW114-EBT-TS12-99-101	UG/L	1	64.2	=				1	100	=			
Area2	MW-114	21-Jul-03	MW114-EBT-TS13-99-101	UG/L	1	64.9	=				1	180	J			
Area2	MW-114	18-Aug-03	MW114-EBT-TS14-99-101	UG/L	1	29.4	=				10	254	=			
Area2	MW-26	21-Mar-02	MW-26-106-BL	UG/L												
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L	1	1.11	=									
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L	1	1.28	=									
Area2	MW-86	30-Nov-01	MW-86-1	UG/L	5	34	=				1	18	=	1	0.22	J
Area2	MW-86	30-Nov-01	MW-86-2	UG/L	10	73	=				10	47	=			
Area2	MW-86	30-Nov-01	MW-86-3	UG/L	20	84	=				20	58	=			
Area2	MW-86	30-Nov-01	MW-86-4	UG/L	20	81	=				20	59	=			
Area2	MW-86	30-Nov-01	MW-86-5	UG/L	20	80	=				20	57	=			
Area2	MW-86	30-Nov-01	MW-86-6	UG/L	20	80	=				20	55	=			
Area2	MW-86	30-Nov-01	MW-86-7	UG/L	20	78	=				20	53	=			
Area2	MW-86	30-Nov-01	MW-86-9	UG/L	10	98	=				10	76	=	1	0.22	J
Area2	MW-86	8-Jul-02	MW86-EBT-TS1-100-105	UG/L	1	57	=				1	27	=			
Area2	MW-86	29-Jul-02	MW86-EBT-TS2-100-105	UG/L	1	88.1	=				1	29	=			
Area2	MW-86	3-Sep-02	MW86-EBT-TS3-100-105	UG/L	1	94.4	=				1	33.1	=			
Area2	MW-86	7-Oct-02	MW86-EBT-TS4-100-105	UG/L	1	85	=				1	29.3	=			
Area2	MW-86	11-Nov-02	MW86-EBT-TS5-100-105	UG/L	1	70.1	=				1	63.3	=			
Area2	MW-86	16-Dec-02	MW86-EBT-TS6-100-105	UG/L	1	46.8	=				1	201	=			
Area2	MW-86	20-Jan-03	MW86-EBT-TS7-100-105	UG/L	1	19.7	=				10	196	=			
Area2	MW-86	24-Mar-03	MW86-EBT-TS9-100-105	UG/L	1	13.1	=				10	177	=			
Area2	MW-86	21-Apr-03	MW86-EBT-TS10-100-105	UG/L	1	17.1	=				1	173	=			
Area2	MW-86	19-May-03	MW86-EBT-TS11-100-105	UG/L	1	11.9	=				1	144	=			
Area2	MW-86	23-Jun-03	MW86-EBT-TS12-100-105	UG/L	1	6.72	=				1	127	=			
Area2	MW-86	21-Jul-03	MW86-EBT-TS13-100-105	UG/L	1	11	=				1	137	J			
Area2	MW-86	18-Aug-03	MW86-EBT-TS14-100-105	UG/L	1	12.1	=				1	120	=			
Area2	MW-88	30-Nov-01	MW-88-1	UG/L	1	1.1	=				1	2.1	=	1	0.48	J
Area2	MW-88	30-Nov-01	MW-88-2	UG/L	1	1	=				1	1.8	=	1	0.42	J
Area2	MW-88	30-Nov-01	MW-88-3	UG/L	1	0.64	J				1	1.1	=	1	0.26	J
Area2	MW-88	30-Nov-01	MW-88-4	UG/L	1	0.51	J				1	0.81	J	1	0.46	J
Area2	MW-88	30-Nov-01	MW-88-5	UG/L	1	0.42	J				1	0.63	J	1	0.31	J
Area2	MW-88	30-Nov-01	MW-88-6	UG/L	1	1.2	=				1	0.94	J	1	0.18	J
Area2	MW-88	30-Nov-01	MW-88-7	UG/L	1	1.9	=				1	1.4	=			
Area2	MW-88	30-Nov-01	MW-88-8	UG/L	1	1.9	=				1	1.5	=			
Area2	MW-88	30-Nov-01	MW-86-8	UG/L	20	83	=				20	56	=			
Area2	MW-88	8-Jul-02	MW88-EBT-TS1-90-95	UG/L	1	1.9	=				1	1.5	=			
Area2	MW-88	29-Jul-02	MW88-EBT-TS2-90-95	UG/L	1	2.1	=				1	1.37	=			
Area2	MW-88	3-Sep-02	MW88-EBT-TS3-90-95	UG/L	1	1.86	=				1	0.93	J			
Area2	MW-88	7-Oct-02	MW88-EBT-TS4-90-95	UG/L	1	1.81	=				1	1.23	=			
Area2	MW-88	11-Nov-02	MW88-EBT-TS5-90-95	UG/L	1	1.89	=				1	1.66	=			
Area2	MW-88	16-Dec-02	MW88-EBT-TS6-90-95	UG/L	1	1.88	=				1	1.22	=			
Area2	MW-88	20-Jan-03	MW88-EBT-TS7-90-95	UG/L	1	1.64	=				1	0.99	J			
Area2	MW-88	24-Mar-03	MW88-EBT-TS9-90-95	UG/L	1	1.23	=				1	0.793	J			
Area2	MW-88	21-Apr-03	MW88-EBT-TS10-90-95	UG/L	1	1.43	=				1	0.869	J			
Area2	MW-88	19-May-03	MW88-EBT-TS11-90-95	UG/L	1	1.71	=				1	1.1	=			
Area2	MW-88	23-Jun-03	MW88-EBT-TS12-90-95	UG/L	1	1.93	=				1	1.32	=			
Area2	MW-88	21-Jul-03	MW88-EBT-TS13-90-95	UG/L	1	2.06	=				1	1.41	J			
Area2	MW-88	18-Aug-03	MW88-EBT-TS14-90-95	UG/L	1	1.51	=				1	1.34	=			

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	IODOMETHANE (METHYL IODIDE)			M,P-XYLENE (SUM OF ISOMERS)			ETHYL ETHYL KETONE (2-BUTANONE)			METHYLENE CHLORIDE		
					DNDF	Conc	Qual	DNDF	Conc	Qual	DNDF	Conc	Qual	DNDF	Conc	Qual
Area2	MW-1	20-May-02	MW1-EBT-B-97-99	UG/L												
Area2	MW-1	20-Jan-03	MW1-EBT-TS7-97-99	UG/L							1	9.5	J			
Area2	MW-2	20-May-02	MW2-EBT-B-98-103	UG/L												
Area2	MW-2	20-Jan-03	MW2-EBT-TS7-98-103	UG/L							1	26.4	=	1	8.5	=
Area2	MW-3	20-May-02	MW3-EBT-B-99-101	UG/L												
Area2	MW-3	20-Jan-03	MW3-EBT-TS7-99-101	UG/L							1	8.78	J	1	10.9	=
Area2	MW-4	20-May-02	MW4-EBT-B-99-104	UG/L												
Area2	MW-4	20-Jan-03	MW4-EBT-TS7-99-104	UG/L										1	5.65	=
Area2	MW-105	20-May-02	MW-105-EBT-B-97.5-98.5	UG/L												
Area2	MW-105	8-Jul-02	MW105-EBT-TS1-97.5-98.5	UG/L												
Area2	MW-105	29-Jul-02	MW105-EBT-TS2-97.5-98.5	UG/L							1	11.7	=	1	7.8	=
Area2	MW-105	3-Sep-02	MW105-EBT-TS3-97.5-98.5	UG/L							1	13.9	=	1	36.3	=
Area2	MW-105	7-Oct-02	MW105-EBT-TS4-97.5-98.5	UG/L							1	71.1	=			
Area2	MW-105	11-Nov-02	MW105-EBT-TS5-97.5-98.5	UG/L							1	55.2	=			
Area2	MW-105	16-Dec-02	MW105-EBT-TS6-97.5-98.5	UG/L							1	27.2	=			
Area2	MW-105	20-Jan-03	MW105-EBT-TS7-97.5-98.5	UG/L							1	18.7	=	1	1.59	=
Area2	MW-105	24-Mar-03	MW105-EBT-TS9-97.5-98.5	UG/L							1	20.4	=	1	5.12	=
Area2	MW-105	21-Apr-03	MW105-EBT-TS10-97.5-98.5	UG/L							1	8.96	J			
Area2	MW-105	19-May-03	MW105-EBT-TS11-97.5-98.5	UG/L							1	5.62	J			
Area2	MW-105	23-Jun-03	MW105-EBT-TS12-97.5-98.5	UG/L										1	21.5	=
Area2	MW-105	21-Jul-03	MW105-EBT-TS13-97.5-98.5	UG/L							1	20	=	1	41.4	=
Area2	MW-105	18-Aug-03	MW105-EBT-TS14-97.5-98.5	UG/L							1	16.1	=	1	30.8	=
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105	UG/L												
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105D	UG/L												
Area2	MW-106	8-Jul-02	MW106-EBT-TS1-100-105	UG/L												
Area2	MW-106	29-Jul-02	MW106-EBT-TS2-100-105	UG/L										1	0.43	J
Area2	MW-106	3-Sep-02	MW106-EBT-TS3-100-105	UG/L										1	34.5	=
Area2	MW-106	7-Oct-02	MW106-EBT-TS4-100-105	UG/L							1	13.2	=			
Area2	MW-106	11-Nov-02	MW106-EBT-TS5-100-105	UG/L	1	0.691	J				1	16.9	=			
Area2	MW-106	16-Dec-02	MW106-EBT-TS6-100-105	UG/L							1	9.76	J			
Area2	MW-106	20-Jan-03	MW106-EBT-TS7-100-105	UG/L							1	5.3	J	1	0.659	J
Area2	MW-106	24-Mar-03	MW106-EBT-TS9-100-105	UG/L							1	29	=			
Area2	MW-106	21-Apr-03	MW106-EBT-TS10-100-105	UG/L							1	4.34	J			
Area2	MW-106	19-May-03	MW106-EBT-TS11-100-105	UG/L							1	16.3	=			
Area2	MW-106	23-Jun-03	MW106-EBT-TS12-100-105	UG/L							1	29	=	1	1.25	=
Area2	MW-106	21-Jul-03	MW106-EBT-TS13-100-105	UG/L										1	5.08	=
Area2	MW-106	18-Aug-03	MW106-EBT-TS14-100-105	UG/L												
Area2	MW-109	20-May-02	MW-109-EBT-99-101	UG/L										1	1.5	=
Area2	MW-109	8-Jul-02	MW109-EBT-TS1-99-101	UG/L										1	1.5	=
Area2	MW-109	29-Jul-02	MW109-EBT-TS2-99-101	UG/L										1	68.1	=
Area2	MW-109	3-Sep-02	MW109-EBT-TS3-99-101	UG/L							1	5.79	J	1	2.17	=
Area2	MW-109	7-Oct-02	MW109-EBT-TS4-99-101	UG/L							1	8.07	J			
Area2	MW-109	11-Nov-02	MW109-EBT-TS5-99-101	UG/L							1	4.32	J			
Area2	MW-109	16-Dec-02	MW109-EBT-TS6-99-101	UG/L												
Area2	MW-109	20-Jan-03	MW109-EBT-TS7-99-101	UG/L												
Area2	MW-109	24-Mar-03	MW109-EBT-TS9-99-101	UG/L							1	18.8	=			
Area2	MW-109	21-Apr-03	MW109-EBT-TS10-99-101	UG/L							1	10.2	=			
Area2	MW-109	19-May-03	MW109-EBT-TS11-99-101	UG/L							1	2.98	J	1	26	=
Area2	MW-109	23-Jun-03	MW109-EBT-TS12-99-101	UG/L							1	5.17	J	1	27	=
Area2	MW-109	21-Jul-03	MW109-EBT-TS13-99-101	UG/L							1	21.2	=	1	32.8	=
Area2	MW-109	18-Aug-03	MW109-EBT-TS14-99-101	UG/L							1	18.8	=			
Area2	MW-110	20-May-02	MW-110-EBT-99-101	UG/L												
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101	UG/L												
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101D	UG/L												
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101	UG/L												
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101D	UG/L												
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101	UG/L										1	0.801	J
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101D	UG/L										1	0.582	J
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101	UG/L												
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101D	UG/L												
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101	UG/L												
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101D	UG/L												
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101	UG/L												
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101D	UG/L												
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101	UG/L												
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101D	UG/L												
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101	UG/L												
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101D	UG/L												
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101	UG/L												
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101D	UG/L												
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101	UG/L												
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101D	UG/L												
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101	UG/L										1	10.9	=
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101D	UG/L										1	11	=
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101	UG/L												
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101D	UG/L												
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101	UG/L												
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101D	UG/L												
Area2	MW-111	20-May-02	MW 111-EBT-B-97.5-98.5	UG/L												
Area2	MW-111	8-Jul-02	MW111 EBT-TS1-97.5-98.5	UG/L												
Area2	MW 111	29-Jul-02	MW111-EBT-TS2-97.5-98.5	UG/L												
Area2	MW-111	3-Sep-02	MW111-EBT-TS3-97.5-98.5	UG/L												
Area2	MW-111	7-Oct-02	MW111-EBT-TS4-97.5-98.5	UG/L												
Area2	MW-111	11-Nov-02	MW111-EBT-TS5-97.5-98.5	UG/L												
Area2	MW-111	16-Dec-02	MW111-EBT-TS6-97.5-98.5	UG/L												
Area2	MW-111	20-Jan-03	MW111-EBT-TS7-97.5-98.5	UG/L												
Area2	MW-111	24-Mar-03	MW111-EBT-TS9-97.5-98.5	UG/L												
Area2	MW-111	21-Apr-03	MW111-EBT-TS10-97.5-98.5	UG/L												
Area2	MW-111	19-May-03	MW111-EBT-TS11-97.5-98.5	UG/L												
Area2	MW-111	23-Jun-03	MW111-EBT-TS12-97.5-98.5	UG/L												
Area2	MW-111	21-Jul-03	MW111-EBT-TS13-97.5-98.5	UG/L												
Area2	MW-111	18-Aug-03	MW111-EBT-TS14-97.5-98.5	UG/L												
Area2	MW-112	20-May-02	MW-112-EBT-98-100	UG/L												
Area2	MW-112	8-Jul-02	MW112 EBT-TS1-98-100	UG/L												
Area2	MW-112	29-Jul-02	MW112-EBT-TS2-98-100	UG/L										1	3.03	=
Area2	MW-112	3-Sep-02	MW112-EBT-TS3-98-100	UG/L							1	6.93	J	1	3.79	=
Area2	MW-112	7-Oct-02	MW112-EBT-TS4-98-100	UG/L							1	4.73	J			
Area2	MW-112	11-Nov-02	MW112-EBT-TS5-98-100	UG/L							1	6.7	J			
Area2	MW-112	16-Dec-02	MW112-EBT-TS6-98-100	UG/L							1	3.67	J			
Area2	MW-112	20-Jan-03	MW112-EBT-TS7-98-100	UG/L							1	3.05	J	1	0.299	J
Area2	MW-112	24-Mar-03	MW112-EBT-TS9-98-100	UG/L							1	3.21	J			
Area2	MW-112	21-Apr-03	MW112-EBT-TS10-98-100	UG/L							1	5.06	J			
Area2	MW-112	19-May-03	MW112-EBT-TS11-98-100	UG/L							1	4.37	J	1	11.9	=
Area2	MW-112	23-Jun-03	MW112-EBT-TS12-98-100	UG/L										1	4.63	=
Area2	MW-112	21-Jul-03	MW112-EBT-TS13-98-100	UG/L							1	11.7	=			
Area2	MW-112	18-Aug-03	MW112-EBT-TS14-98-100	UG/L							1	23.8	=			
Area2	MW-113	20-May-02	MW-113-EBT-B-99.5-104.5	UG/L										1	1.4	=
Area2	MW-113	8-Jul-02	MW113-EBT-TS1-99.5-104.5	UG/L												
Area2	MW-113	29-Jul-02	MW113-EBT-TS2-99.5-104.5	UG/L										1	0.489	J
Area2	MW-113	3-Sep-02	MW113-EBT-TS3-99.5-104.5	UG/L										1	9.17	=
Area2	MW-113	7-Oct-02	MW113-EBT-TS4-99.5-104.5	UG/L												
Area2	MW-113	11-Nov-02	MW113-EBT-TS5-99.5-104.5	UG/L												
Area2	MW-113	16-Dec-02	MW113-EBT-TS6-99.5-104.5	UG/L												
Area2	MW-113	20-Jan-03	MW113-EBT-TS7-99.5-104.5	UG/L										1	0.424	J
Area2	MW-113	24-Mar-03	MW113-EBT-TS9-99.5-104.5	UG/L												
Area2	MW-113	21-Apr-03	MW113-EBT-TS10-99.5-104.5	UG/L												
Area2	MW-113	19-May-03	MW113-EBT-TS11-99.5-104.5	UG/L												
Area2	MW-113	23-Jun-03	MW113-EBT-TS12-99.5-104.5	UG/L												
Area2	MW-113	21-Jul-03	MW113-EBT-TS13-99.5-104.5	UG/L												
Area2	MW-113	18-Aug-03	MW113-EBT-TS14-99.5-104.5	UG/L												
Area2	MW-114	20-May-02	MW-114-EBT-B-99-101	UG/L												
Area2	MW-114	8-Jul-02	MW114-EBT-TS1-99-101	UG/L												
Area2	MW-114	29-Jul-02	MW114-EBT-TS2-99-101	UG/L										1	0.263	J
Area2	MW-114	3-Sep-02	MW114-EBT-TS3-99-101	UG/L										1	1.21	=
Area2	MW-114	7-Oct-02	MW114-EBT-TS4-99-101	UG/L												
Area2	MW-114	11-Nov-02	MW114-EBT-TS5-99-101	UG/L												
Area2	MW-114	16-Dec-02	MW114-EBT-TS6-99-101	UG/L												
Area2	MW-114	20-Jan-03	MW114-EBT-TS7-99-101	UG/L												

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	IODOMETHANE (METHYL IODIDE)			M,P-XYLENE (SUM OF ISOMERS)			ETHYL ETHYL KETONE (2-BUTANON			METHYLENE CHLORIDE		
Area2	MW-114	24-Mar-03	MW114-EBT-TS9-99-101	UG/L							1	37.8	=			
Area2	MW-114	21-Apr-03	MW114-EBT-TS10-99-101	UG/L							1	16	=			
Area2	MW-114	19-May-03	MW114-EBT-TS11-99-101	UG/L							1	14.9	=			
Area2	MW-114	23-Jun-03	MW114-EBT-TS12-99-101	UG/L							1	9.07	J	1	9.24	=
Area2	MW-114	21-Jul-03	MW114-EBT-TS13-99-101	UG/L							1	9.13	J	1	12.8	=
Area2	MW-114	18-Aug-03	MW114-EBT-TS14-99-101	UG/L										1	17	=
Area2	MW-26	21-Mar-02	MW-26-106-BL	UG/L												
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L												
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L												
Area2	MW-86	30-Nov-01	MW-86-1	UG/L				1	0.86	J						
Area2	MW-86	30-Nov-01	MW-86-2	UG/L												
Area2	MW-86	30-Nov-01	MW-86-3	UG/L												
Area2	MW-86	30-Nov-01	MW-86-4	UG/L												
Area2	MW-86	30-Nov-01	MW-86-5	UG/L												
Area2	MW-86	30-Nov-01	MW-86-6	UG/L												
Area2	MW-86	30-Nov-01	MW-86-7	UG/L												
Area2	MW-86	30-Nov-01	MW-86-9	UG/L				1	0.56	J				1	7.9	=
Area2	MW-86	8-Jul-02	MW86-EBT-TS1-100-105	UG/L												
Area2	MW-86	29-Jul-02	MW86-EBT-TS2-100-105	UG/L										1	4.55	=
Area2	MW-86	3-Sep-02	MW86-EBT-TS3-100-105	UG/L										1	2.61	=
Area2	MW-86	7-Oct-02	MW86-EBT-TS4-100-105	UG/L							1	3.71	J			
Area2	MW-86	11-Nov-02	MW86-EBT-TS5-100-105	UG/L							1	5.53	J			
Area2	MW-86	16-Dec-02	MW86-EBT-TS6-100-105	UG/L							1	7.85	J	1	28.5	=
Area2	MW-86	20-Jan-03	MW86-EBT-TS7-100-105	UG/L							1	13.4	=	1	26.2	=
Area2	MW-86	24-Mar-03	MW86-EBT-TS9-100-105	UG/L							1	36.2	=	1	6.53	=
Area2	MW-86	21-Apr-03	MW86-EBT-TS10-100-105	UG/L							1	62.1	=			
Area2	MW-86	19-May-03	MW86-EBT-TS11-100-105	UG/L							1	21.4	=	1	25.2	=
Area2	MW-86	23-Jun-03	MW86-EBT-TS12-100-105	UG/L							1	7.28	J	1	30.6	=
Area2	MW-86	21-Jul-03	MW86-EBT-TS13-100-105	UG/L							1	9.64	J	1	35.2	=
Area2	MW-86	18-Aug-03	MW86-EBT-TS14-100-105	UG/L							1	23.3	=	1	29.5	=
Area2	MW-88	30-Nov-01	MW-88-1	UG/L				1	1.3	J						
Area2	MW-88	30-Nov-01	MW-88-2	UG/L				1	0.7	J						
Area2	MW-88	30-Nov-01	MW-88-3	UG/L				1	0.26	J						
Area2	MW-88	30-Nov-01	MW-88-4	UG/L				1	0.82	J						
Area2	MW-88	30-Nov-01	MW-88-5	UG/L				1	0.61	J						
Area2	MW-88	30-Nov-01	MW-88-6	UG/L				1	0.28	J						
Area2	MW-88	30-Nov-01	MW-88-7	UG/L												
Area2	MW-88	30-Nov-01	MW-88-8	UG/L												
Area2	MW-88	30-Nov-01	MW-86-8	UG/L												
Area2	MW-88	8-Jul-02	MW88-EBT-TS1-90-95	UG/L												
Area2	MW-88	29-Jul-02	MW88-EBT-TS2-90-95	UG/L												
Area2	MW-88	3-Sep-02	MW88-EBT-TS3-90-95	UG/L												
Area2	MW-88	7-Oct-02	MW88-EBT-TS4-90-95	UG/L												
Area2	MW-88	11-Nov-02	MW88-EBT-TS5-90-95	UG/L												
Area2	MW-88	16-Dec-02	MW88-EBT-TS6-90-95	UG/L												
Area2	MW-88	20-Jan-03	MW88-EBT-TS7-90-95	UG/L												
Area2	MW-88	24-Mar-03	MW88-EBT-TS9-90-95	UG/L												
Area2	MW-88	21-Apr-03	MW88-EBT-TS10-90-95	UG/L												
Area2	MW-88	19-May-03	MW88-EBT-TS11-90-95	UG/L												
Area2	MW-88	23-Jun-03	MW88-EBT-TS12-90-95	UG/L												
Area2	MW-88	21-Jul-03	MW88-EBT-TS13-90-95	UG/L												
Area2	MW-88	18-Aug-03	MW88-EBT-TS14-90-95	UG/L												

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	O-XYLENE (1,2-DIMETHYLBENZENE)			TETRACHLOROETHYLENE(PCE)			TOLUENE			trans-1,2-DICHLOROETHENE		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	20-May-02	IW1-EBT-B-97-99	UG/L				1	120	=						
Area2	IW-1	20-Jan-03	IW1-EBT-TS7-97-99	UG/L				1	3.68	=						
Area2	IW-2	20-May-02	IW2-EBT-B-98-103	UG/L				1	110	=						
Area2	IW-2	20-Jan-03	IW2-EBT-TS7-98-103	UG/L				1	90.5	=						
Area2	IW-3	20-May-02	IW3-EBT-B-99-101	UG/L				1	100	=						
Area2	IW-3	20-Jan-03	IW3-EBT-TS7-99-101	UG/L				1	147	=				1	0.252	J
Area2	IW-4	20-May-02	IW4-EBT-B-99-104	UG/L				1	190	=						
Area2	IW-4	20-Jan-03	IW4-EBT-TS7-99-104	UG/L				1	161	=						
Area2	MW-105	20-May-02	MW-105-EBT-B-97.5-98.5	UG/L				1	130	=						
Area2	MW-105	8-Jul-02	MW105-EBT-TS1-97.5-98.5	UG/L				1	55	=						
Area2	MW-105	29-Jul-02	MW105-EBT-TS2-97.5-98.5	UG/L				1	131	=						
Area2	MW-105	3-Sep-02	MW105-EBT-TS3-97.5-98.5	UG/L				1	136	=						
Area2	MW-105	7-Oct-02	MW105-EBT-TS4-97.5-98.5	UG/L				1	133	=						
Area2	MW-105	11-Nov-02	MW105-EBT-TS5-97.5-98.5	UG/L				1	163	=						
Area2	MW-105	16-Dec-02	MW105-EBT-TS6-97.5-98.5	UG/L				1	187	=						
Area2	MW-105	20-Jan-03	MW105-EBT-TS7-97.5-98.5	UG/L				10	203	=						
Area2	MW-105	24-Mar-03	MW105-EBT-TS9-97.5-98.5	UG/L				1	57.7	=						
Area2	MW-106	21-Apr-03	MW105-EBT-TS10-97.5-98.5	UG/L				1	22	=						
Area2	MW-105	19-May-03	MW105-EBT-TS11-97.5-98.5	UG/L				1	5.39	=						
Area2	MW-105	23-Jun-03	MW105-EBT-TS12-97.5-98.5	UG/L				1	57.7	=						
Area2	MW-105	21-Jul-03	MW105-EBT-TS13-97.5-98.5	UG/L				1	92.3	=						
Area2	MW-105	18-Aug-03	MW105-EBT-TS14-97.5-98.5	UG/L				1	9.54	=						
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105	UG/L				1	170	=						
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105D	UG/L				1	170	=						
Area2	MW-106	8-Jul-02	MW106-EBT-TS1-100-105	UG/L				10	220	=						
Area2	MW-106	29-Jul-02	MW106-EBT-TS2-100-105	UG/L				1	162	=						
Area2	MW-106	3-Sep-02	MW106-EBT-TS3-100-105	UG/L				10	232	=						
Area2	MW-106	7-Oct-02	MW106-EBT-TS4-100-105	UG/L				10	208	=						
Area2	MW-106	11-Nov-02	MW106-EBT-TS5-100-105	UG/L				10	207	=						
Area2	MW-106	16-Dec-02	MW106-EBT-TS6-100-105	UG/L				1	176	=						
Area2	MW-106	20-Jan-03	MW106-EBT-TS7-100-105	UG/L				10	219	=						
Area2	MW-106	24-Mar-03	MW106-EBT-TS9-100-105	UG/L				10	181	=						
Area2	MW-106	21-Apr-03	MW106-EBT-TS10-100-105	UG/L				5	249	=						
Area2	MW-106	19-May-03	MW106-EBT-TS11-100-105	UG/L				10	197	=						
Area2	MW-106	23-Jun-03	MW106-EBT-TS12-100-105	UG/L				10	241	=						
Area2	MW-106	21-Jul-03	MW106-EBT-TS13-100-105	UG/L				1	103	=						
Area2	MW-106	18-Aug-03	MW106-EBT-TS14-100-105	UG/L				1	43.1	=						
Area2	MW-109	20-May-02	MW-109-EBT-99-101	UG/L				1	160	=						
Area2	MW-109	8-Jul-02	MW109-EBT-TS1-99-101	UG/L				1	130	=						
Area2	MW-109	29-Jul-02	MW109-EBT-TS2-99-101	UG/L				1	164	=						
Area2	MW-109	3-Sep-02	MW109-EBT-TS3-99-101	UG/L				1	148	=						
Area2	MW-109	7-Oct-02	MW109-EBT-TS4-99-101	UG/L				1	170	=						
Area2	MW-109	11-Nov-02	MW109-EBT-TS5-99-101	UG/L				1	34.1	=				1	0.253	J
Area2	MW-109	16-Dec-02	MW109-EBT-TS6-99-101	UG/L				1	86.8	=						
Area2	MW-109	20-Jan-03	MW109-EBT-TS7-99-101	UG/L				1	96.8	=						
Area2	MW-109	24-Mar-03	MW109-EBT-TS9-99-101	UG/L				1	35.4	=						
Area2	MW-109	21-Apr-03	MW109-EBT-TS10-99-101	UG/L				1	15.3	=						
Area2	MW-109	19-May-03	MW109-EBT-TS11-99-101	UG/L				1	4.97	=				1	0.251	J
Area2	MW-109	23-Jun-03	MW109-EBT-TS12-99-101	UG/L				1	23.9	=						
Area2	MW-109	21-Jul-03	MW109-EBT-TS13-99-101	UG/L				1	28.3	=						
Area2	MW-109	18-Aug-03	MW109-EBT-TS14-99-101	UG/L				1	4.02	=						
Area2	MW-110	20-May-02	MW-110-EBT-99-101	UG/L				1	120	=						
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101	UG/L				1	200	=						
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101D	UG/L				10	220	=						
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101	UG/L				10	202	=						
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101D	UG/L				10	123	=						
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101	UG/L				10	223	=						
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101D	UG/L				10	219	=						
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101	UG/L				1	169	=						
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101D	UG/L				1	195	=						
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101	UG/L				1	182	=						
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101D	UG/L				10	215	=						
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101	UG/L				10	201	=						
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101D	UG/L				10	199	=						
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101	UG/L				10	199	=						
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101D	UG/L				10	203	=						
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101	UG/L				1	154	=						
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101D	UG/L				1	163	=						
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101	UG/L				1	171	=				1	0.254	J
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101D	UG/L				1	149	=						
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101	UG/L				1	151	J						
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101D	UG/L				1	119	J						
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101	UG/L				1	18.5	=						
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101D	UG/L				1	18.2	=						
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101	UG/L				1	96.7	=						
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101D	UG/L				1	80.2	=						
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101	UG/L				1	122	=						
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101D	UG/L				1	120	=						
Area2	MW-111	20-May-02	MW-111-EBT-B-97.5-98.5	UG/L				1	170	=						
Area2	MW-111	8-Jul-02	MW111-EBT-TS1-97.5-98.5	UG/L				1	100	=						
Area2	MW-111	29-Jul-02	MW111-EBT-TS2-97.5-98.5	UG/L				1	135	=						
Area2	MW-111	3-Sep-02	MW111-EBT-TS3-97.5-98.5	UG/L				1	187	=						
Area2	MW-111	7-Oct-02	MW111-EBT-TS4-97.5-98.5	UG/L				10	182	=						
Area2	MW-111	11-Nov-02	MW111-EBT-TS5-97.5-98.5	UG/L				1	177	=						
Area2	MW-111	16-Dec-02	MW111-EBT-TS6-97.5-98.5	UG/L				1	189	=						
Area2	MW-111	20-Jan-03	MW111-EBT-TS7-97.5-98.5	UG/L				10	192	=						
Area2	MW-111	24-Mar-03	MW111-EBT-TS9-97.5-98.5	UG/L				1	145	=						
Area2	MW-111	21-Apr-03	MW111-EBT-TS10-97.5-98.5	UG/L				1	188	=				1	0.29	J
Area2	MW-111	19-May-03	MW111-EBT-TS11-97.5-98.5	UG/L				1	113	=				1	0.294	J
Area2	MW-111	23-Jun-03	MW111-EBT-TS12-97.5-98.5	UG/L				1	37.8	=				1	0.547	J
Area2	MW-111	21-Jul-03	MW111-EBT-TS13-97.5-98.5	UG/L				1	8.46	=						
Area2	MW-111	18-Aug-03	MW111-EBT-TS14-97.5-98.5	UG/L				1	6.35	=						
Area2	MW-112	20-May-02	MW-112-EBT-98-100	UG/L				1	74	=						
Area2	MW-112	8-Jul-02	MW112-EBT-TS1-98-100	UG/L				1	94	=						
Area2	MW-112	29-Jul-02	MW112-EBT-TS2-98-100	UG/L				1	83	=						
Area2	MW-112	3-Sep-02	MW112-EBT-TS3-98-100	UG/L				1	63.4	=				1	0.281	J
Area2	MW-112	7-Oct-02	MW112-EBT-TS4-98-100	UG/L				1	87.6	=						
Area2	MW-112	11-Nov-02	MW112-EBT-TS5-98-100	UG/L				1	133	=						
Area2	MW-112	16-Dec-02	MW112-EBT-TS6-98-100	UG/L				1	121	=						
Area2	MW-112	20-Jan-03	MW112-EBT-TS7-98-100	UG/L				1	85	=						
Area2	MW-112	24-Mar-03	MW112-EBT-TS9-98-100	UG/L				1	8.11	=				1	0.265	J
Area2	MW-112	21-Apr-03	MW112-EBT-TS10-98-100	UG/L				1	28.7	=						
Area2	MW-112	19-May-03	MW112-EBT-TS11-98-100	UG/L				1	8.86	=						
Area2	MW-112	23-Jun-03	MW112-EBT-TS12-98-100	UG/L				1	22	=						
Area2	MW-112	21-Jul-03	MW112-EBT-TS13-98-100	UG/L				1	7.22	=						
Area2	MW-112	18-Aug-03	MW112-EBT-TS14-98-100	UG/L				1	1.88	=						
Area2	MW-113	20-May-02	MW-113-EBT-B-99.5-104.5	UG/L				1	30	=	1	0.35	J			
Area2	MW-113	8-Jul-02	MW113-EBT-TS1-99.5-104.5	UG/L				1	45	=						
Area2	MW-113	29-Jul-02	MW113-EBT-TS2-99.5-104.5	UG/L				1	59.3	=						
Area2	MW-113	3-Sep-02	MW113-EBT-TS3-99.5-104.5	UG/L				1	112	=						
Area2	MW-113	7-Oct-02	MW113-EBT-TS4-99.5-104.5	UG/L				1	80.4	=						
Area2	MW-113	11-Nov-02	MW113-EBT-TS5-99.5-104.5	UG/L				1	97	=						
Area2	MW-113	16-Dec-02	MW113-EBT-TS6-99.5-104.5	UG/L				1	96.9	=						
Area2	MW-113	20-Jan-03	MW113-EBT-TS7-99.5-104.5	UG/L				1	91.1	=						
Area2	MW-113	24-Mar-03	MW113-EBT-TS9-99.5-104.5	UG/L				1	48.7	=						
Area2	MW-113	21-Apr-03	MW113-EBT-TS10-99.5-104.5	UG/L				1	49.4	=				1	0.266	J
Area2	MW-113	19-May-03	MW113-EBT-TS11-99.5-104.5	UG/L				1	27.5	=						
Area2	MW-113	23-Jun-03	MW113-EBT-TS12-99.5-104.5	UG/L				1	54.5	=						
Area2	MW-113	21-Jul-03	MW113-EBT-TS13-99.5-104.5	UG/L				1	56.1	=						
Area2	MW-113	18-Aug-03	MW113-EBT-TS14-99.5-104.5	UG/L				1	63.6	=						
Area2	MW-114	20-May-02	MW-114-EBT-B-99-101	UG/L				10	220	=						
Area2	MW-114	8-Jul-02	MW114-EBT-TS1-99-101	UG/L				1	190	=						
Area2	MW-114	29-Jul-02	MW114-EBT-TS2-99-101	UG/L				10	258	=				1	0.567	J
Area2	MW-114	3-Sep-02	MW114-EBT-TS3-99-101	UG/L				10	290	=						
Area2	MW-114	7-Oct-02	MW114-EBT-TS4-99-101	UG/L				10	221	=						
Area2	MW-114	11-Nov-02	MW114-EBT-TS5-99-101	UG/L				10	270	=						
Area2	MW-114	16-Dec-02	MW114-EBT-TS6-99-101	UG/L				10	268	=						
Area2	MW-114	20-Jan-03	MW114-EBT-TS7-99-101	UG/L				10	240	=						

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Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	O-XYLENE (1,2-DIMETHYLBENZENE)			TETRACHLOROETHYLENE(PCE)			TOLUENE			trans-1,2-DICHLOROETHENE		
					Det Flag	Conc	Qualifier	Det Flag	Conc	Qualifier	Det Flag	Conc	Qualifier	Det Flag	Conc	Qualifier
Area2	MW-114	24-Mar-03	MW114-EBT-TS9-99-101	UG/L				1	38.2	=						
Area2	MW-114	21-Apr-03	MW114-EBT-TS10-99-101	UG/L				1	7.57	=				1	0.253	J
Area2	MW-114	19-May-03	MW114-EBT-TS11-99-101	UG/L				1	6.19	=						
Area2	MW-114	23-Jun-03	MW114-EBT-TS12-99-101	UG/L				1	73.2	=						
Area2	MW-114	21-Jul-03	MW114-EBT-TS13-99-101	UG/L				1	66.5	=						
Area2	MW-114	18-Aug-03	MW114-EBT-TS14-99-101	UG/L				1	6.5	=						
Area2	MW-26	21-Mar-02	MW-26-106-BL	UG/L				1	8.1	=						
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L				1	7.92	=						
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L				1	13.8	=						
Area2	MW-86	30-Nov-01	MW-86-1	UG/L	1	0.23	J	1	16	=	1	0.52	J	1	0.28	J
Area2	MW-86	30-Nov-01	MW-86-2	UG/L				10	190	=				1	0.39	J
Area2	MW-86	30-Nov-01	MW-86-3	UG/L				20	280	=				1	0.92	J
Area2	MW-86	30-Nov-01	MW-86-4	UG/L				20	280	=				1	1.7	=
Area2	MW-86	30-Nov-01	MW-86-5	UG/L				20	280	=				1	1	=
Area2	MW-86	30-Nov-01	MW-86-6	UG/L				20	230	=				1	1.1	=
Area2	MW-86	30-Nov-01	MW-86-7	UG/L				20	240	=				1	0.69	J
Area2	MW-86	30-Nov-01	MW-86-9	UG/L	1	0.16	J	10	60	=	1	0.22	J			
Area2	MW-86	8-Jul-02	MW86-EBT-TS1-100-105	UG/L				1	180	=						
Area2	MW-86	29-Jul-02	MW86-EBT-TS2-100-105	UG/L				10	182	=						
Area2	MW-86	3-Sep-02	MW86-EBT-TS3-100-105	UG/L				10	197	=						
Area2	MW-86	7-Oct-02	MW86-EBT-TS4-100-105	UG/L				10	205	=						
Area2	MW-86	11-Nov-02	MW86-EBT-TS5-100-105	UG/L				1	180	=						
Area2	MW-86	16-Dec-02	MW86-EBT-TS6-100-105	UG/L				1	21.4	=						
Area2	MW-86	20-Jan-03	MW86-EBT-TS7-100-105	UG/L				1	5.06	=						
Area2	MW-86	24-Mar-03	MW86-EBT-TS9-100-105	UG/L				1	2.99	=						
Area2	MW-86	21-Apr-03	MW86-EBT-TS10-100-105	UG/L				1	14.4	=						
Area2	MW-86	19-May-03	MW86-EBT-TS11-100-105	UG/L				1	28.9	=						
Area2	MW-86	23-Jun-03	MW86-EBT-TS12-100-105	UG/L				1	60.4	=						
Area2	MW-86	21-Jul-03	MW86-EBT-TS13-100-105	UG/L				1	73.4	=						
Area2	MW-86	18-Aug-03	MW86-EBT-TS14-100-105	UG/L				1	89.8	=						
Area2	MW-88	30-Nov-01	MW-88-1	UG/L	1	0.41	J	1	6.1	=	1	0.68	J			
Area2	MW-88	30-Nov-01	MW-88-2	UG/L	1	0.22	J	1	5.3	=	1	0.64	J			
Area2	MW-88	30-Nov-01	MW-88-3	UG/L				1	2.5	=	1	0.53	J			
Area2	MW-88	30-Nov-01	MW-88-4	UG/L	1	0.29	J	1	2.3	=	1	0.57	J			
Area2	MW-88	30-Nov-01	MW-88-5	UG/L	1	0.18	J	1	2.2	=	1	0.29	J			
Area2	MW-88	30-Nov-01	MW-88-6	UG/L				1	8.8	=						
Area2	MW-88	30-Nov-01	MW-88-7	UG/L				2	29	=						
Area2	MW-88	30-Nov-01	MW-88-8	UG/L				2	27	=						
Area2	MW-88	30-Nov-01	MW-88-9	UG/L				20	200	=				1	0.63	J
Area2	MW-88	8-Jul-02	MW88-EBT-TS1-90-95	UG/L				1	17	=						
Area2	MW-88	29-Jul-02	MW88-EBT-TS2-90-95	UG/L				1	17.2	=						
Area2	MW-88	3-Sep-02	MW88-EBT-TS3-90-95	UG/L				1	21.8	=						
Area2	MW-88	7-Oct-02	MW88-EBT-TS4-90-95	UG/L				1	18.1	=						
Area2	MW-88	11-Nov-02	MW88-EBT-TS5-90-95	UG/L				1	23.8	=						
Area2	MW-88	16-Dec-02	MW88-EBT-TS6-90-95	UG/L				1	22.2	=						
Area2	MW-88	20-Jan-03	MW88-EBT-TS7-90-95	UG/L				1	19.8	=						
Area2	MW-88	24-Mar-03	MW88-EBT-TS9-90-95	UG/L				1	13.4	=						
Area2	MW-88	21-Apr-03	MW88-EBT-TS10-90-95	UG/L				1	18.2	=						
Area2	MW-88	19-May-03	MW88-EBT-TS11-90-95	UG/L				1	14.5	=						
Area2	MW-88	23-Jun-03	MW88-EBT-TS12-90-95	UG/L				1	19.9	=						
Area2	MW-88	21-Jul-03	MW88-EBT-TS13-90-95	UG/L				1	21.8	=						
Area2	MW-88	18-Aug-03	MW88-EBT-TS14-90-95	UG/L				1	21	=						

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	TRICHLOROETHYLENE (TCE)			VINYL CHLORIDE			XYLENES, TOTAL		
					DF	Conc	Qual	DF	Conc	Qual	DF	Conc	Qual
Area2	IW-1	20-May-02	IW1-EBT-B-97-99	UG/L	1	13	=						
Area2	IW-1	20-Jan-03	IW1-EBT-TS7-97-99	UG/L	1	1.19	=						
Area2	IW-2	20-May-02	IW2-EBT-B-98-103	UG/L	1	22	=						
Area2	IW-2	20-Jan-03	IW2-EBT-TS7-98-103	UG/L	1	18.8	=				1	1.38	=
Area2	IW-3	20-May-02	IW3-EBT-B-99-101	UG/L	1	20	=						
Area2	IW-3	20-Jan-03	IW3-EBT-TS7-99-101	UG/L	1	65.1	=						
Area2	IW-4	20-May-02	IW4-EBT-B-99-104	UG/L	1	28	=						
Area2	IW-4	20-Jan-03	IW4-EBT-TS7-99-104	UG/L	1	27.3	=						
Area2	MW-105	20-May-02	MW-105-EBT-B-97.5-98.5	UG/L	1	19	=						
Area2	MW-105	8-Jul-02	MW105-EBT-TS1-97.5-98.5	UG/L	1	15	=						
Area2	MW-105	29-Jul-02	MW105-EBT-TS2-97.5-98.5	UG/L	1	22.7	=						
Area2	MW-105	3-Sep-02	MW105-EBT-TS3-97.5-98.5	UG/L	1	23.6	=						
Area2	MW-105	7-Oct-02	MW105-EBT-TS4-97.5-98.5	UG/L	1	22.6	=						
Area2	MW-105	11-Nov-02	MW105-EBT-TS5-97.5-98.5	UG/L	1	24.2	=						
Area2	MW-105	16-Dec-02	MW105-EBT-TS6-97.5-98.5	UG/L	1	23.5	=						
Area2	MW-105	20-Jan-03	MW105-EBT-TS7-97.5-98.5	UG/L	1	26.9	=						
Area2	MW-105	24-Mar-03	MW105-EBT-TS9-97.5-98.5	UG/L	1	19.5	=						
Area2	MW-105	21-Apr-03	MW105-EBT-TS10-97.5-98.5	UG/L	1	6.69	=						
Area2	MW-105	19-May-03	MW105-EBT-TS11-97.5-98.5	UG/L	1	6.46	=						
Area2	MW-105	23-Jun-03	MW105-EBT-TS12-97.5-98.5	UG/L	1	26.5	=						
Area2	MW-105	21-Jul-03	MW105-EBT-TS13-97.5-98.5	UG/L	1	27.6	=						
Area2	MW-105	18-Aug-03	MW105-EBT-TS14-97.5-98.5	UG/L	1	4.2	=						
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105	UG/L	1	25	=						
Area2	MW-106	20-May-02	MW-106-EBT-B-100-105D	UG/L	1	26	=						
Area2	MW-106	8-Jul-02	MW106-EBT-TS1-100-105	UG/L	1	28	=				1	2.8	=
Area2	MW-106	29-Jul-02	MW106-EBT-TS2-100-105	UG/L	1	27.9	=						
Area2	MW-106	3-Sep-02	MW106-EBT-TS3-100-105	UG/L	1	29.9	=						
Area2	MW-106	7-Oct-02	MW106-EBT-TS4-100-105	UG/L	1	28.5	=						
Area2	MW-106	11-Nov-02	MW106-EBT-TS5-100-105	UG/L	1	31	=						
Area2	MW-106	16-Dec-02	MW106-EBT-TS6-100-105	UG/L	1	27.5	=						
Area2	MW-106	20-Jan-03	MW106-EBT-TS7-100-105	UG/L	1	31.2	=						
Area2	MW-106	24-Mar-03	MW106-EBT-TS9-100-105	UG/L	1	28.2	=						
Area2	MW-106	21-Apr-03	MW106-EBT-TS10-100-105	UG/L	1	32.2	=						
Area2	MW-106	19-May-03	MW106-EBT-TS11-100-105	UG/L	1	26.6	=						
Area2	MW-106	23-Jun-03	MW106-EBT-TS12-100-105	UG/L	1	28.5	=						
Area2	MW-106	21-Jul-03	MW106-EBT-TS13-100-105	UG/L	1	30	=						
Area2	MW-106	18-Aug-03	MW106-EBT-TS14-100-105	UG/L	1	12.4	=						
Area2	MW-109	20-May-02	MW-109-EBT-99-101	UG/L	1	27	=						
Area2	MW-109	8-Jul-02	MW109-EBT-TS1-99-101	UG/L	1	23	=				1	1.4	=
Area2	MW-109	29-Jul-02	MW109-EBT-TS2-99-101	UG/L	1	30.2	=						
Area2	MW-109	3-Sep-02	MW109-EBT-TS3-99-101	UG/L	1	35.1	=						
Area2	MW-109	7-Oct-02	MW109-EBT-TS4-99-101	UG/L	1	34.4	=						
Area2	MW-109	11-Nov-02	MW109-EBT-TS5-99-101	UG/L	1	12.3	=						
Area2	MW-109	16-Dec-02	MW109-EBT-TS6-99-101	UG/L	1	20.8	=						
Area2	MW-109	20-Jan-03	MW109-EBT-TS7-99-101	UG/L	1	21.3	=						
Area2	MW-109	24-Mar-03	MW109-EBT-TS9-99-101	UG/L	1	15.6	=						
Area2	MW-109	21-Apr-03	MW109-EBT-TS10-99-101	UG/L	1	7.3	=						
Area2	MW-109	19-May-03	MW109-EBT-TS11-99-101	UG/L	1	5.1	=						
Area2	MW-109	23-Jun-03	MW109-EBT-TS12-99-101	UG/L	1	11.9	=						
Area2	MW-109	21-Jul-03	MW109-EBT-TS13-99-101	UG/L	1	11.7	=						
Area2	MW-109	18-Aug-03	MW109-EBT-TS14-99-101	UG/L	1	2.18	=						
Area2	MW-110	20-May-02	MW-110-EBT-99-101	UG/L	1	28	=						
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101	UG/L	1	31	=						
Area2	MW-110	8-Jul-02	MW110-EBT-TS1-99-101D	UG/L	1	30	=						
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101	UG/L	1	34.9	=						
Area2	MW-110	29-Jul-02	MW110-EBT-TS2-99-101D	UG/L	1	34.2	=						
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101	UG/L	1	34	=						
Area2	MW-110	3-Sep-02	MW110-EBT-TS3-99-101D	UG/L	1	34.5	=						
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101	UG/L	1	30.2	=						
Area2	MW-110	7-Oct-02	MW110-EBT-TS4-99-101D	UG/L	1	32.5	=						
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101	UG/L	1	33	=						
Area2	MW-110	11-Nov-02	MW110-EBT-TS5-99-101D	UG/L	1	33.9	=						
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101	UG/L	1	33	=						
Area2	MW-110	16-Dec-02	MW110-EBT-TS6-99-101D	UG/L	1	32.5	=						
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101	UG/L	1	33.3	=						
Area2	MW-110	20-Jan-03	MW110-EBT-TS7-99-101D	UG/L	1	32.9	=						
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101	UG/L	1	31.2	=						
Area2	MW-110	24-Mar-03	MW110-EBT-TS9-99-101D	UG/L	1	31	=						
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101	UG/L	1	31.1	=						
Area2	MW-110	21-Apr-03	MW110-EBT-TS10-99-101D	UG/L	1	30.7	=						
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101	UG/L	1	25.8	=						
Area2	MW-110	19-May-03	MW110-EBT-TS11-99-101D	UG/L	1	24.6	=						
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101	UG/L	1	6.88	=						
Area2	MW-110	23-Jun-03	MW110-EBT-TS12-99-101D	UG/L	1	6.62	=						
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101	UG/L	1	18.8	=						
Area2	MW-110	21-Jul-03	MW110-EBT-TS13-99-101D	UG/L	1	18.3	=						
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101	UG/L	1	17.8	=						
Area2	MW-110	18-Aug-03	MW110-EBT-TS14-99-101D	UG/L	1	17.9	=						
Area2	MW-111	20-May-02	MW-111-EBT-B-97.5-98.5	UG/L	1	28	=						
Area2	MW-111	8-Jul-02	MW111-EBT-TS1-97.5-98.5	UG/L	1	28	=						
Area2	MW-111	29-Jul-02	MW111-EBT-TS2-97.5-98.5	UG/L	1	30.8	=						
Area2	MW-111	3-Sep-02	MW111-EBT-TS3-97.5-98.5	UG/L	1	33.1	=						
Area2	MW-111	7-Oct-02	MW111-EBT-TS4-97.5-98.5	UG/L	1	29.1	=						
Area2	MW-111	11-Nov-02	MW111-EBT-TS5-97.5-98.5	UG/L	1	30.5	=						
Area2	MW-111	16-Dec-02	MW111-EBT-TS6-97.5-98.5	UG/L	1	31.3	=						
Area2	MW-111	20-Jan-03	MW111-EBT-TS7-97.5-98.5	UG/L	1	33.3	=						
Area2	MW-111	24-Mar-03	MW111-EBT-TS9-97.5-98.5	UG/L	1	27.9	=						
Area2	MW-111	21-Apr-03	MW111-EBT-TS10-97.5-98.5	UG/L	1	31.8	=						
Area2	MW-111	19-May-03	MW111-EBT-TS11-97.5-98.5	UG/L	1	33.9	=						
Area2	MW-111	23-Jun-03	MW111-EBT-TS12-97.5-98.5	UG/L	1	25	=						
Area2	MW-111	21-Jul-03	MW111-EBT-TS13-97.5-98.5	UG/L	1	6.83	=						
Area2	MW-111	18-Aug-03	MW111-EBT-TS14-97.5-98.5	UG/L	1	6.43	=						
Area2	MW-112	20-May-02	MW-112-EBT-98-100	UG/L	1	18	=						
Area2	MW-112	8-Jul-02	MW112-EBT-TS1-98-100	UG/L	1	17	=						
Area2	MW-112	29-Jul-02	MW112-EBT-TS2-98-100	UG/L	1	22.2	=						
Area2	MW-112	3-Sep-02	MW112-EBT-TS3-98-100	UG/L	1	19.4	=						
Area2	MW-112	7-Oct-02	MW112-EBT-TS4-98-100	UG/L	1	20.4	=						
Area2	MW-112	11-Nov-02	MW112-EBT-TS5-98-100	UG/L	1	25.3	=						
Area2	MW-112	16-Dec-02	MW112-EBT-TS6-98-100	UG/L	1	24.4	=						
Area2	MW-112	20-Jan-03	MW112-EBT-TS7-98-100	UG/L	1	25.3	=						
Area2	MW-112	24-Mar-03	MW112-EBT-TS9-98-100	UG/L	1	7.19	=						
Area2	MW-112	21-Apr-03	MW112-EBT-TS10-98-100	UG/L	1	12.9	=						
Area2	MW-112	19-May-03	MW112-EBT-TS11-98-100	UG/L	1	14.1	=						
Area2	MW-112	23-Jun-03	MW112-EBT-TS12-98-100	UG/L	1	11	=						
Area2	MW-112	21-Jul-03	MW112-EBT-TS13-98-100	UG/L	1	3.39	=	1	0.263	J			
Area2	MW-112	18-Aug-03	MW112-EBT-TS14-98-100	UG/L	1	0.711	J						
Area2	MW-113	20-May-02	MW-113-EBT-B-99.5-104.5	UG/L	1	15	=						
Area2	MW-113	8-Jul-02	MW113-EBT-TS1-99.5-104.5	UG/L	1	20	=						
Area2	MW-113	29-Jul-02	MW113-EBT-TS2-99.5-104.5	UG/L	1	26.7	=						
Area2	MW-113	3-Sep-02	MW113-EBT-TS3-99.5-104.5	UG/L	1	29.4	=						
Area2	MW-113	7-Oct-02	MW113-EBT-TS4-99.5-104.5	UG/L	1	28	=						
Area2	MW-113	11-Nov-02	MW113-EBT-TS5-99.5-104.5	UG/L	1	31.6	=						
Area2	MW-113	16-Dec-02	MW113-EBT-TS6-99.5-104.5	UG/L	1	32.7	=						
Area2	MW-113	20-Jan-03	MW113-EBT-TS7-99.5-104.5	UG/L	1	30.4	=						
Area2	MW-113	24-Mar-03	MW113-EBT-TS9-99.5-104.5	UG/L	1	23.3	=						
Area2	MW-113	21-Apr-03	MW113-EBT-TS10-99.5-104.5	UG/L	1	21.1	=						
Area2	MW-113	19-May-03	MW113-EBT-TS11-99.5-104.5	UG/L	1	15.3	=						
Area2	MW-113	23-Jun-03	MW113-EBT-TS12-99.5-104.5	UG/L	1	19.7	=						
Area2	MW-113	21-Jul-03	MW113-EBT-TS13-99.5-104.5	UG/L	1	19.3	=						
Area2	MW-113	18-Aug-03	MW113-EBT-TS14-99.5-104.5	UG/L	1	18.5	=						
Area2	MW-114	20-May-02	MW-114-EBT-B-99-101	UG/L	1	29	=						
Area2	MW-114	8-Jul-02	MW114-EBT-TS1-99-101	UG/L	1	24	=						
Area2	MW-114	29-Jul-02	MW114-EBT-TS2-99-101	UG/L	1	33	=						
Area2	MW-114	3-Sep-02	MW114-EBT-TS3-99-101	UG/L	1	32.5	=						
Area2	MW-114	7-Oct-02	MW114-EBT-TS4-99-101	UG/L	1	31.1	=						
Area2	MW-114	11-Nov-02	MW114-EBT-TS5-99-101	UG/L	1	31.3	=						
Area2	MW-114	16-Dec-02	MW114-EBT-TS6-99-101	UG/L	1	31.2	=						
Area2	MW-114	20-Jan-03	MW114-EBT-TS7-99-101	UG/L	1	29.7	=						

Attachment G
Study Area 2: Summary of VOCs in Groundwater
Main Installation, Memphis Depot

Area	StationID	DateCollected	Sample	Unit	TRICHLOROETHYLENE (TCE)			VINYL CHLORIDE			XYLENES, TOTAL		
					Result	Concentration	Qualifier	Result	Concentration	Qualifier	Result	Concentration	Qualifier
Area2	MW-114	24-Mar-03	MW114-EBT-TS9-99-101	UG/L	1	30.9	=						
Area2	MW-114	21-Apr-00	MW114-EBT-TS10-99-101	UG/L	1	6.62	=						
Area2	MW-114	19-May-03	MW114-EBT-TS11-99-101	UG/L	1	9.79	=						
Area2	MW-114	23-Jun-03	MW114-EBT-TS12-99-101	UG/L	1	37.8	=						
Area2	MW-114	21-Jul-03	MW114-EBT-TS13-99-101	UG/L	1	28.5	=						
Area2	MW-114	18-Aug-03	MW114-EBT-TS14-99-101	UG/L	1	4.48	=						
Area2	MW-26	21-Mar-02	MW-26-106-BL	UG/L	1	1.6	J						
Area2	MW-26	24-Jul-03	MW26-EBT-TS13	UG/L	1	1.72	=						
Area2	MW-26	18-Aug-03	MW26-EBT-TS14	UG/L	1	1.9	=						
Area2	MW-86	30-Nov-01	MW-86-1	UG/L	1	5.2	=						
Area2	MW-86	30-Nov-01	MW-86-2	UG/L	10	21	=						
Area2	MW-86	30-Nov-01	MW-86-3	UG/L	20	25	=						
Area2	MW-86	30-Nov-01	MW-86-4	UG/L	20	25	=						
Area2	MW-86	30-Nov-01	MW-86-5	UG/L	20	25	=						
Area2	MW-86	30-Nov-01	MW-86-6	UG/L	20	23	=						
Area2	MW-86	30-Nov-01	MW-86-7	UG/L	20	24	=						
Area2	MW-86	30-Nov-01	MW-86-9	UG/L	1	12	=						
Area2	MW-86	8-Jul-02	MW86-EBT-TS1-100-105	UG/L	1	18	=						
Area2	MW-86	29-Jul-02	MW86-EBT-TS2-100-105	UG/L	1	21.1	=						
Area2	MW-86	3-Sep-02	MW86-EBT-TS3-100-105	UG/L	1	22.7	=						
Area2	MW-86	7-Oct-02	MW86-EBT-TS4-100-105	UG/L	1	20.7	=						
Area2	MW-86	11-Nov-02	MW86-EBT-TS5-100-105	UG/L	1	25	=						
Area2	MW-86	16-Dec-02	MW86-EBT-TS6-100-105	UG/L	1	10.2	=						
Area2	MW-86	20-Jan-03	MW86-EBT-TS7-100-105	UG/L	1	3.25	=						
Area2	MW-86	24-Mar-03	MW86-EBT-TS9-100-105	UG/L	1	2.37	=						
Area2	MW-86	21-Apr-03	MW86-EBT-TS10-100-105	UG/L	1	7.83	=						
Area2	MW-86	19-May-03	MW86-EBT-TS11-100-105	UG/L	1	16.7	=						
Area2	MW-86	23-Jun-03	MW86-EBT-TS12-100-105	UG/L	1	25.8	=						
Area2	MW-86	21-Jul-03	MW86-EBT-TS13-100-105	UG/L	1	28.7	=						
Area2	MW-86	18-Aug-03	MW86-EBT-TS14-100-105	UG/L	1	26.7	=						
Area2	MW-88	30-Nov-01	MW-88-1	UG/L	1	1.1	=						
Area2	MW-88	30-Nov-01	MW-88-2	UG/L	1	0.97	J						
Area2	MW-88	30-Nov-01	MW-88-3	UG/L	1	0.71	J						
Area2	MW-88	30-Nov-01	MW-88-4	UG/L	1	0.58	J						
Area2	MW-88	30-Nov-01	MW-88-5	UG/L	1	0.52	J						
Area2	MW-88	30-Nov-01	MW-88-6	UG/L	1	3.8	=						
Area2	MW-88	30-Nov-01	MW-88-7	UG/L	1	5.6	=						
Area2	MW-88	30-Nov-01	MW-88-8	UG/L	1	6.1	=						
Area2	MW-88	30-Nov-01	MW-86-8	UG/L	20	24	=						
Area2	MW-88	8-Jul-02	MW88-EBT-TS1-90-95	UG/L	1	7.1	=						
Area2	MW-88	29-Jul-02	MW88-EBT-TS2-90-95	UG/L	1	7.55	=						
Area2	MW-88	3-Sep-02	MW88-EBT-TS3-90-95	UG/L	1	7.72	=						
Area2	MW-88	7-Oct-02	MW88-EBT-TS4-90-95	UG/L	1	6.9	=						
Area2	MW-88	11-Nov-02	MW88-EBT-TS5-90-95	UG/L	1	7.66	=						
Area2	MW-88	16-Dec-02	MW88-EBT-TS6-90-95	UG/L	1	7.41	=						
Area2	MW-88	20-Jan-03	MW88-EBT-TS7-90-95	UG/L	1	7.24	=						
Area2	MW-88	24-Mar-03	MW88-EBT-TS9-90-95	UG/L	1	6.49	=						
Area2	MW-88	21-Apr-03	MW88-EBT-TS10-90-95	UG/L	1	6.65	=						
Area2	MW-88	19-May-03	MW88-EBT-TS11-90-95	UG/L	1	5.34	=						
Area2	MW-88	23-Jun-03	MW88-EBT-TS12-90-95	UG/L	1	5.96	=						
Area2	MW-88	21-Jul-03	MW88-EBT-TS13-90-95	UG/L	1	6.26	=						
Area2	MW-88	18-Aug-03	MW88-EBT-TS14-90-95	UG/L	1	5.37	=						

ATTACHMENT H

Data Quality Evaluation Reports

Attachment H: Data Quality Evaluation (April 2002 through January 2003)

The purpose of the data quality evaluation (DQE) process is to assess the effect of the overall analytical process on the usability of the data. The two major categories of data evaluation are laboratory performance and matrix interference. Evaluation of laboratory performance is a check for compliance with the method requirements; either the laboratory did, or did not, analyze the samples within the limits of the analytical method. Evaluation of matrix interference is subtler and involves the analysis of several areas of results including surrogate spike recoveries, matrix spike recoveries, and duplicate sample results.

Introduction

Groundwater and soil samples included in this DQE were collected during two separate baseline studies, one soil drilling activity, and 7 subsequent performance monitoring evaluation studies between April 2002 and January 2003. The studies samples were collected over a 4 to 5 day period and soil samples from drilling were collected during a one month period of time. Each activity was initiated on the following dates: soil drilling (4/18/02); Main Installation Baseline (3/18/02); EBT Baseline (5/20/02); EBT Event 1 (7/8/2002); EBT Event 2 (7/29/2002); EBT Event 3 (9/3/2002); EBT Event 4 (10/7/2002); EBT Event 5 (11/11/02); EBT Event 6 (12/16/02); and EBT Event 7 (1/20/2003).

Field QC samples included duplicates, field blanks, trip blanks (analyzed for VOCs only), equipment rinsate blanks, and matrix spikes. The number of each type of sample is listed by analytical method and matrix in Tables 5-1. The samples were analyzed for the following analytical fractions:

- Alkalinity by EPA Method 310.2;
- Anions by SW-846 Method 9056;
- Metals by SW-846 Methods 6010B and 6020;
- Methane, Ethane, and Ethane (MEEs) by Microseep SOP AM20GAX, AM18 or R.S.Kerr Laboratory SOP RSK175;
- Oil and Grease by EPA Methods 1664 and 413.1;
- Semivolatile organic compounds (SVOCs) by SW-846 Method 8270;
- Sulfide by EPA Method E376.1;
- TOC by EPA Methods E415.1 and Lloyd Kahn;
- Volatile Fatty Acids by modified SW-846 Method 8115B; and
- Volatile Organic Compounds (VOCs) by SW-846 Method 8260B.

Project chemists using the process outlined in the EPA guidance document USEPA CLP National Functional Guidelines for Inorganic (Organic) Data Review (1994a, revised October 1999) reviewed the hardcopy data packages for this DQE. A summary of all raw analytical data for all samples in this report including copies of the chain-of-custody forms and data validation checklists can be found as Appendix A – Summary of Raw Analytical Data.

Areas of review included (when applicable to the method) holding time compliance, calibration verification, blank results, matrix spike precision and accuracy, method accuracy as demonstrated by laboratory control samples (LCSs), field duplicate results, surrogate recoveries, and internal standard performance. A data review worksheet was completed for each of these data packages

and any non-conformance documented. The data review and validation process is independent of the laboratory's checks and focuses on the usability of the data to support the project data interpretation and decision-making processes.

Data that were not within the acceptance limits were appended with a primary qualifying flag, which consists of a single- or double-letter abbreviation that reflects an uncertainty or problem with the data. Although the qualifying flags originate during the database query process, they are included in the final data summary table deliverables so that the data will be used only for the intended purpose and with the qualifiers known. The qualifiers also include secondary, or two-digit sub-qualifier flags which are entered into the comments field of the database. The secondary qualifiers provide the reasoning behind the assignment of a qualifier to the data. The sub-qualifiers are presented and defined in Table 5-2. The following primary flags were used in this text:

- [=] **Detected.** Analyte was analyzed for and detected at the reported concentration;
- [U] **Undetected.** Analyte was analyzed for but not detected above the method detection limit (MDL);
- [UJ] **Detection limit estimated.** Analyte was analyzed for and qualified as not detected. The result is estimated;
- [J] **Estimated.** The analyte was present, but the reported value may not be accurate or precise; and
- [R] **Rejected.** The data are unusable. (NOTE: Analyte/compound may or may not be present.).

Inorganic and organic numerical sample results that are greater than the MDL but less than the laboratory reporting limit (RL) are qualified with a "J" for estimated as required by the *EPA Functional Guidelines for Evaluating Data Quality.*

Once the data review and validation process was completed, the entire data set was reviewed for chemical compound frequencies of detection, dilution factors that might affect data usability, and patterns of target compound distribution. The data set was also evaluated to identify potential data limitations, uncertainties, or both in the analytical results. Appendix B – Summary of Qualified Sample Results lists the changes in data qualifiers due to the validation process.

The data contained many dilutions due to the linear range of the calibration curve being exceeded. As a result, there were two valid values in the database for several samples. Project chemists compared the dilution with the original results and selected the proper record from the two results available. The other value was rejected, as there can be only a single valid record per compound, per sample.

Where data were qualified as estimated, a "J" flag was applied to positive hits. The entire database was also queried for frequency of detection in blanks and samples, detailed listing of blank detects, matrix spike/matrix spike duplicate (MS/MSD) results, field duplicate precision, surrogate recoveries, preparation, and analysis dates pertaining to holding times.

Holding Times, Calibration, and Internal Standards

Holding Times and Preservatives

For the project data, four records were qualified as estimated (J) and three records were qualified as rejected (R) due to holding time deficiencies. The estimated records consisted of one lactic

acid and three nitrate results. The rejected records consisted of three nitrite results. No other records were qualified from holding time and preservative criteria.

Calibration

For the project data, thirty-nine records were quantified as detects were qualified as estimated (J) due to continuing calibration deficiencies. These records consisted of ten carbon tetrachloride, twelve acetone, and seventeen acrolein results. No other records were qualified from calibration criteria.

Internal Standards

For the project data, no records were qualified from internal standard deficiencies.

Potential Field Sampling and Laboratory Contamination

Four types of blank samples were used to monitor potential contamination introduced during field sampling, sample handling, and shipping activities, as well as sample preparation and analysis.

- **Trip Blank (TB)**: A sample of ASTM Type II water that is prepared in the laboratory prior to the sampling event. The water is stored in VOC sample containers, which are not opened in the field, and travels back to the laboratory with the other samples for VOC analysis. This blank is used to monitor the potential for sample contamination during the sample container trip. One trip blank should be included in each sample cooler that contained samples for VOC analysis. A total of 18 trip blanks for VOC and 5 trip blanks for MEEs were submitted to the laboratory with the samples in this DQE report;
- **Equipment Rinsate Blank (EB)**: A sample of the analyte-free water used for the final rinse during the equipment decontamination process. This blank sample is collected by rinsing the sampling equipment after decontamination and is analyzed for the same analytical parameters as the corresponding samples. This blank is used to monitor potential contamination caused by incomplete equipment decontamination. One equipment rinsate blank should be collected per day of sampling, per type of sampling equipment. Depending on the analysis, up to six equipment rinsate blanks were submitted to the laboratory for analysis;
- **Source Blank or Ambient Blank (SB or AB)**: The field blank is an aliquot of the source water used for equipment decontamination. This blank monitors contamination that may be introduced from the water used for decontamination. One field blank was collected from each source of decontamination water and analyzed for the same parameters as the associated samples. Six source blanks were submitted to the laboratory for VOC analysis
- **Laboratory Method Blank or Method Blank (MB)**: A laboratory method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process. One method blank was prepared and analyzed for every 20 samples or per analytical batch whichever was more frequent.

According to the EPA Functional Guidelines, concentrations of common organic contaminants detected in samples at less than 10 times the concentration of the associated blanks can be attributed to field sampling and laboratory contamination rather than environmental contamination from site activities. Common organic contaminants include acetone, methylene chloride, 2-butanone, and the phthalates. For other general chemistry, inorganic, and organic contaminants, 5 times the concentration detected in the associated blanks rather than 10 is used to qualify results as potential field and/or laboratory contamination rather than environmental

contamination.
A number of metals and general chemistry parameters were detected in various instrument calibration blanks. This data is not stored in the project database and is not summarized in the DQE report. Concentrations detected in the calibration blanks can be attributed to instrument noise at or near the MDL. Associated field sample results less than 5 times the maximum concentration found in the calibration blanks were attributed to field sampling or laboratory contamination and are not considered to be indicative of environmental contamination.

Contaminants were found in various equipment, source, and trip blanks for the project data as listed in the following tabulation.

Parameter	Sample Type	Number of Detections
Acetone	Equipment Blank	1
Alkalinity, total (as CaCO3)	Equipment Blank	1
Alkalinity, total (as CaCO3)	Laboratory Blank	1
Chloroform	Equipment Blank	2
Chloroform	Source Blank	1
Ethene	Equipment Blank	1
Formic Acid	Equipment Blank	1
Manganese	Equipment Blank	3
Methylene Chloride	Trip Blank	5
Nitrogen, Nitrate (as N)	Equipment Blank	3
Propionic Acid	Equipment Blank	1
Total Organic Carbon	Equipment Blank	3
Xylenes, Total	Equipment Blank	1
Xylenes, Total	Source Blank	1

The parameters that were qualified as not detected and indicated with a "U" qualifier are listed in the following tabulation.

Parameter	Sample Type	Number of Detections
Methane	Normal or Field Duplicate	103
Total Organic Carbon	Normal or Field Duplicate	84
Manganese	Normal or Field Duplicate	73
Ethane	Normal or Field Duplicate	67
Formic Acid	Normal or Field Duplicate	61
Ethene	Normal or Field Duplicate	58
Acetone	Normal or Field Duplicate	41
Acetic Acid	Normal or Field Duplicate	34
Nitrogen, Nitrate (as N)	Normal or Field Duplicate	22
Methylene Chloride	Normal or Field Duplicate	21
Sulfate (as SO4)	Normal or Field Duplicate	14
Selenium	Normal or Field Duplicate	13
Alkalinity, Total (as CaCo3)	Normal or Field Duplicate	12
Propionic Acid	Normal or Field Duplicate	8
Chloroform	Normal or Field Duplicate	7
1,2,3-Trichlorobenzene	Normal or Field Duplicate	4
Alkalinity	Normal or Field Duplicate	4
Hexachlorobutadiene	Normal or Field Duplicate	2
Naphthalene	Normal or Field Duplicate	2
1,2,4-Trichlorobenzene	Normal or Field Duplicate	1
1,4-Dichlorobenzene	Normal or Field Duplicate	1
Arsenic	Normal or Field Duplicate	1

Methyl ethyl ketone	Normal or Field Duplicate	1

Matrix Effects

Surrogate Spike Recovery

Surrogate spike compounds were added to every sample analyzed for the organic parameters, including field and laboratory blanks as well as field environmental samples. Surrogate spikes consist of organic compounds, which are similar to the method analytes in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.

Surrogate spike recoveries were used to monitor both laboratory performance and matrix interferences. Surrogate spike recoveries from field and laboratory blanks were used to evaluate laboratory performance because the blanks should represent an "ideal" sample matrix. Surrogate spike recoveries for field samples were used to evaluate the potential for matrix interference. According to *EPA (1999),* data are not qualified with respect to surrogate recoveries unless multiple surrogates are out of specifications.

Table 5-2 summarizes the project VOC, SVOC, and MEE average surrogate recovery and the number of results flagged based on surrogate recovery exceptions.

The surrogate recovery values for all organic analytical fractions generally recovered well. No samples were qualified as rejected due to poor surrogate recoveries. These recoveries indicate that the specific sample matrix did not interfere with the analytical process.

Matrix Spike Recoveries

Matrix spikes are prepared in order to document the accuracy and precision bias of a method in a given sample matrix. For inorganic matrix spikes, three aliquots of a single sample were analyzed; one native sample, one native duplicate, and one sample spiked with analytes. Spike recovery is used to evaluate potential matrix interference as well as analytical accuracy. Precision is evaluated by comparing the native sample and native duplicate results for each analyte. Three aliquots of a single sample are also analyzed for organic compounds, however, using one native and two spiked aliquots. Unlike the surrogate spike compounds, organic matrix spike compounds are found on the method TCL. The duplicate results, consisting of MS/MSD or native/duplicate), are compared to evaluate precision.

Organic results are not qualified based on MS/MSD results alone. The results are evaluated in conjunction with surrogate and internal standard (if applicable) results. In instances when the native levels of the target compounds were greater than the amount added to the matrix spike samples the recovery results are considered to be inconclusive and are not used to assess matrix accuracy and precision.

The GC/MS volatile and semivolatile MS/MSD recovery and precision data all fell within method control limits, except for 2-chloroethyl vinyl ether. The recovery results for 2-chloroethyl vinyl ether were reported as zero percent in all samples preserved with HCl (pH less than 2). All results for 2-chloroethyl vinyl ether have been qualified as rejected and flagged "R."

The GC methane, ethane, and ethane MS/MSD recovery and precision data all fell within method control limits. The GC volatile fatty acid MS/MSD recovery and precision data all fell within method control limits for most analyses.

Number of Samples Flagged due to MS/MSD QC Results

Element	Number Samples Flagged	Flag Assigned
Acetic Acid	1	"J" hits / "UJ" non-detects
Butyric Acid	2	"J" hits / "UJ" non-detects
Propionic Acid	1	"J" hits / "UJ" non-detects

Inorganic results are qualified based solely on the results of the MS/MSD precision and accuracy. All of ICP and ICP-MS metals accuracy and precision results were well within established criteria, indicating that the specific sample matrix did not influence the overall analytical process or the final numerical result. General chemisty parameters including anions, alkalinity, oil and grease, sulfide, and TOC were within established criteria with few exceptions indicating an effective analytical process and accurate and precise final numerical results.

Number of Samples Flagged due to MS/MSD QC Results

Element	Number Samples Flagged	Flag Assigned
Alkalinity, total (as CaCO3)	1	"J" hits
Chloride (as Cl)	1	"J" hits
Oil & Grease, total recoverable	2	"J" hits / "UJ" non-detects
Total Organic Carbon	1	"J" hits

Field Duplicate Sample Results

Field duplicate analyses measure both field and laboratory precision and can also be affected by the homogeneity of the samples. Therefore, the results may have more variability than lab duplicates, which measure only lab performance. According to the EPA Functional Guidelines, there are no qualification criteria for field duplicate precision.

A control limit of ± 35 percent (soil) and ±20 percent (water) for the RPD was used for original and duplicate sample values greater than or equal to five times the RL. A control limit of ± two times the RL (soil) and ± one times the RL (water) was used if either the sample or the duplicate value was less than five times the RL.

Precision criteria were met for greater than 95 percent of all parameters, demonstrating minimal matrix heterogeneity.

Number of Samples Flagged due to Field Duplicate QC Results

Element	Number Samples Flagged	Flag Assigned
Ethane	5	"J" hits / "UJ" non-detects
Ethene	2	"J" hits
Oil & Grease	2	"J" hits
Alkalinity, Total (as CaCO3)	5	"J" hits
Total Organic Carbon	5	"J" hits
Acetic Acid	3	"J" hits
Butyric Acid	1	"J" hits
Propionic Acid	3	"J" hits
Nitrogen, Nitrate (as N)	2	"J" hits

In one instance the field duplicate precision results for the volatile fatty acid analyses for the native and field duplicate pair resulted in qualifying the field duplicate results as rejected. The results for acetic acid, butyric acid, and propionic acid produced analytically significant measurements in the native sample; whereas the associated field duplicate measurements were all non-detected.

Inductively Coupled Plasma (ICP) Serial Dilution

The serial dilution of samples quantified by ICP determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high, the serial dilution analysis must agree within a 10 percent difference of the original determination after correction for dilution. All serial dilutions were acceptable.

Samples Requiring Dilution

During sample analysis, a dilution may be required for various reasons. Diluting a sample is usually performed to provide more accurate quantification of the target compounds and to protect the analytical instrumentation. If the concentrations of the target compounds are above the calibration range of the instrument, the sample extract must be diluted in order to obtain an accurate quantification. Laboratories typically dilute the sample extracts such that the responses of the target compounds are in the upper part of the calibration range. This is done in order to give a clear, strong signal from the detector while providing the lowest possible reporting limits.

Another reason for diluting samples is the presence of non-target compounds and chemical interferences, or matrix effects. Matrix effects can be produced from a variety of sources, including conductivity, pH, organic content, and biota (oils and lipids). Laboratories often perform a clean-up procedures on the sample extract prior to analysis. Standard clean-up procedures are designed to recover the analytes, while minimizing or removing interfering non-analytes; however, interferences can still persist, even after the clean-up procedures have been completed.

Some organic and inorganic samples were diluted for selected parameters in order to prevent concentrations from exceeding the instrument linear ranges or when excessive interference was present. Many GC/MS VOC samples had to be diluted due to levels of analytes present in the samples. In all cases the VOC analyses were also analyzed without a dilution. Both results were reported. The analyses providing the lowest non-detected reporting limit or the measurement calculated from a test performed within the instrument linear range is maintained while the alternate measurement is qualified as rejected so that a single result is tagged as valid. Some of these were diluted to a level at which surrogate and spike recoveries could not be determined.

Precision, Accuracy, Representativeness, Completeness, and Comparability (PARCC)

Precision--is defined as the agreement between duplicate results, and was estimated by comparing duplicate matrix spike recoveries, sample duplicates, as well as the field duplicate sample results. Other than the documented exceptions, the precision between native and field duplicate sample results were within acceptable criteria for 90 percent of the measurements, indicating that sample matrix did not significantly interfere with the overall analytical process.

Accuracy--is a measure of the agreement between an experimental determination and the true value of the parameter being measured. For the organic analyses, each of the samples was spiked with a surrogate compound; for organic analyses, an MS, MSD, and laboratory control standard

(LCS) were spiked with a known reference material before preparation; and for inorganic analyses an MS and LCS were spiked with target analytes before preparation. Each of these approaches provides a measure of the matrix effects on the analytical accuracy. The LCS results demonstrate the accuracy of the method and the laboratory's ability to meet the method criteria. MS and MSD results establish precision and accuracy of the matrix. Accuracy can be estimated from the analytical data and was not measured directly. Spike recoveries were within the method acceptance limits in greater than 95 percent of the measurements and surrogate recoveries were within acceptance limits in greater than 95 percent of the measurements; therefore, other than the documented exceptions, there was no evidence of significant matrix interference that would affect the usability of the data.

Representativeness--a qualitative measure of the degree to which sample data accurately and precisely represent a characteristic environmental condition. Representativeness is a subjective parameter and is used to evaluate the efficacy of the sampling plan design. For all data, representativeness was demonstrated by providing full descriptions in the project scoping documents of the sampling techniques and the rationale used for selecting sampling locations.

Completeness--is defined as the percentage of measurements that are judged to be valid compared to the total number of measurements. Of a total of 19,183 validated results in the more than 99 percent of the data were determined to be valid.

Comparability--is another qualitative measure designed to express the confidence with which one data set may be compared to another. Factors that affect comparability are sample collection and handling techniques, sample matrix type, and analytical method. Comparability is limited by the other PARCC parameters because data sets can be compared with confidence only when precision and accuracy are known. Data from these investigations are comparable with other data collected at the site because only EPA methods were used to analyze the sample and standard EPA Level III QC data are available to support the quality of the data.

Summary and Conclusion

The laboratory analyzed the samples according to the EPA methods stated in the project plan as demonstrated by the deliverable summaries and analytical run sequences. The project objectives or PARCCs were met, and the data can be used in the project decision-making process as qualified by the DQE process, except data qualified as rejected and flagged with an "R.".

Table 5-1
Analysis Totals by Method and Matrix
Memphis Depot

Method	Analysis	Matrix	EB	FD	MS	N	SB	SD	TB
AM20GAX\AM18\RSK175	MEEs	WG	6	11	12	232	0	12	5
E1664/E413.1	Oil&Grease	WG	5	5	5	69	0	5	0
E310.2	Alkalinity	WG	6	13	16	219	0	16	0
E376.1	Sulfide	WG	6	13	16	219	0	16	0
E415.1	TOC	WG	6	13	16	219	0	16	0
LYDKHN	TOC	SO	0	0	0	17	0	0	0
SW6010B	Metals	WG	6	13	16	212	0	16	0
SW6020	Metals	WG	1	2	3	18	0	3	0
SW8015M	VFA	WG	6	13	17	219	0	17	0
SW8260B	VOCs	LO	0	0	0	10	0	0	0
SW8260B	VOCs	SO	0	0	0	4	0	0	0
SW8260B	VOCs	WG	5	13	16	254	6	16	18
SW8270C	SVOCs	WG	0	0	0	5	0	0	0
SW9056	Anions	WG	6	13	16	218	0	16	0

EB, equipment blank; **FD**, field duplicate; **MS**, matrix spike; **N**, normal; **SB**, source blank; **SD**, matrix spike duplicate; **TB**, trip blank.

Table 5-2
Surrogate Recovery Performance
Memphis Depot

Method	Analyte	Average Surrogate Recovery	Number of Results Qualified for Surrogate Deficiencies
Oil Matrix			
SW8260B	1,2-Dichloroethane-d4	91.8	0
SW8260B	4-Bromofluorobenzene	92.4	
SW8260B	Dibromofluoromethane	90.8	
SW8260B	Toluene-D8	84.2	
Soil Matrix			
SW8260B	1,2-Dichloroethane-d4	98.5	0
SW8260B	4-Bromofluorobenzene	105	
SW8260B	Dibromofluoromethane	96.9	
SW8260B	Toluene-D8	89.0	
Water Matrix			
RSK175M	Acetylene	95.0	0
SW8260B	1,2-Dichloroethane-D4	106	0
SW8260B	Dibromofluoromethane	104	
SW8260B	4-Bromofluorobenzene	109	
SW8260B	Toluene-D8	101	
SW8270C	2,4,6-Tribromophenol	80.8	0
SW8270C	2-Fluorobiphenyl	63.2	
SW8270C	2-Fluorophenol	30.2	
SW8270C	Nitrobenzene-D5	56.2	
SW8270C	Phenol-D5	21.0	
SW8270C	p-Terphenyl-d14	64.2	

Table 5-3
Matrix Spike Accuracy and Precision Performance
Memphis Depot

Analyte	Count	Recovery (%)		%RPD	Control Limits	
		MS	MSD	Precision	LCL	UCL
Method EPA 1664						
Oil & Grease, hexane extractable	5	90	89.7	0.3	64	109
Method EPA 310.2						
Alkalinity, total (as CaCO3)	16	51.6	52.9	2.5	80	120
Method EPA 376.1						
Sulfide	16	34.8	34.8	0.0	80	120
Method EPA 415.1						
Total organic carbon	16	80.4	82.9	3.1	80	111
Method SW9056						
Bromide	16	101	100	1.1	80	120
Chloride (as Cl)	16	105	105	0.48	80	120
Nitrogen, Nitrate (as N)	16	103	102	0.43	80	120
Nitrogen, Nitrite (as N)	16	102	102	0.43	80	120
Sulfate (as SO4)	16	99.1	98.6	0.51	80	120
Methods SW6010B and SW6020						
Manganese	16	96.2	95.6	0.65	75	125
Arsenic	3	94	96.7	2.8	75	125
Selenium	3	81.7	83.7	2.4	75	125
Methods AM18, AM20GAX, and RSK175						
Ethane	6	90.5	92.7	2.4	70	130
Ethene	6	88.7	90.2	1.7	70	130
Methane	6	90.3	93	2.9	70	130
Method SW8015M (VFA)						
Acetic Acid	14	709	186	120	70	130
Butyric Acid	14	107	128	17	70	130
Formic Acid	14	92	113	21	70	130
Lactic Acid	14	104	128	21	70	130
Propionic Acid	14	212	254	18	70	130
Pyruvic Acid	14	117	106	9.9	70	130
Method SW8260B						
1,1,1,2-Tetrachloroethane	16	116	117	0.96	80	130
1,1,2,2-Tetrachloroethane	16	97.4	99.2	1.8	79	125
1,1,2-Trichloroethane	16	105	105	0.54	80	125
1,1-Dichloroethane	16	106	105	0.77	80	125
1,1-Dichloroethene	16	104	103	1.1	80	132
1,2,3-Trichlorobenzene	16	97.2	99.5	2.4	62	140
1,2,3-Trichloropropane	16	95.8	97.6	1.9	80	126
1,2,4-Trimethylbenzene	16	105	106	0.3	80	125
1,2-Dibromo-3-chloropropane	16	96	97.8	1.8	65	129
Method SW8260B						
1,2-Dibromoethane	16	105	106	1.2	80	125
1,2-Dichlorobenzene	16	102	103	0.79	80	125

Table 5-3
Matrix Spike Accuracy and Precision Performance
Memphis Depot

Analyte	Count	Recovery (%)		%RPD	Control Limits	
		MS	MSD	Precision	LCL	UCL
1,2-Dichloroethane	16	112	112	0.5	80	129
1,2-Dichloropropane	16	102	102	0.18	80	120
1,3,5-Trimethylbenzene	16	106	106	0.059	80	127
1,3-Dichlorobenzene	16	104	105	0.3	80	120
1,4-Dichlorobenzene	16	100	101	0.75	80	120
2-Chloroethyl vinyl ether	16	0	0	n/c	10	211
2-Hexanone	16	91.1	92.4	1.4	56	136
Acetone	16	93.9	95.5	1.7	40	142
Benzene	16	104	104	0.18	80	121
Bromodichloromethane	16	113	114	0.88	80	131
Bromoform	16	98.1	98.6	0.57	74	130
Bromomethane	16	93.2	89	4.6	61	151
Carbon disulfide	16	83	82.2	0.98	58	138
Carbon tetrachloride	16	65.9	77.3	16	80	137
Chlorobenzene	16	104	104	0.3	80	120
Chloroethane	16	101	99.6	1.8	77	133
Chloroform	16	90.1	90.6	0.55	80	125
Chloromethane	16	94.8	92.5	2.5	60	130
cis-1,2-Dichloroethylene	16	87.6	90.6	3.3	80	121
cis-1,3-Dichloropropene	16	110	111	0.73	80	132
Dibromochloromethane	16	111	112	0.62	80	127
Dibromomethane	16	109	110	0.29	80	126
Dichlorodifluoromethane	16	82.6	79	4.4	50	133
Ethylbenzene	16	105	105	0.24	80	122
Iodomethane	16	120	122	1.1	10	308
Isopropylbenzene	16	107	105	1.9	80	122
Methyl ethyl ketone	16	94	96.8	2.9	58	149
Methyl isobutyl ketone	16	88.8	90.3	1.6	64	140
Methylene Chloride	16	100	100	0.062	80	123
n-Butylbenzene	16	103	101	1.2	80	131
n-Propylbenzene	16	104	104	0.3	80	129
p-Cymene	16	101	99.6	0.94	80	122
sec-Butylbenzene	16	102	102	0.43	80	127
Styrene	16	110	110	0	80	123
tert-Butyl methyl ether	16	99.1	101	2.2	77	138
Tetrachloroethylene	16	n/c	n/c	n/c	80	124
Toluene	16	105	104	0.3	80	124
Method SW8260B						
trans-1,2-Dichloroethene	16	105	106	0.36	80	127
trans-1,3-Dichloropropene	16	109	110	0.91	80	130
Trichloroethylene	16	91.6	86.7	5.5	80	122
Trichlorofluoromethane	16	97.6	93.9	3.8	62	151
Vinyl acetate	16	79.6	81.1	1.9	10	285

Table 5-3
Matrix Spike Accuracy and Precision Performance
Memphis Depot

Analyte	Count	Recovery (%)		%RPD	Control Limits	
		MS	MSD	Precision	LCL	UCL
Vinyl chloride	16	105	96.3	9.1	65	140
Xylenes, total	16	108	107	0.41	80	121

Definations:
n/c is not calculated
n/a is not applicable

Attachment H continued: Data Quality Evaluation (February 2003 through August 2003)

The purpose of the data quality evaluation (DQE) process is to assess the effect of the overall analytical process on the usability of the data. The two major categories of data evaluation are laboratory performance and matrix interference. Evaluation of laboratory performance is a check for compliance with the method requirements; either the laboratory did, or did not, analyze the samples within the limits of the analytical method. Evaluation of matrix interference is subtler and involves the analysis of several areas of results including surrogate spike recoveries, matrix spike recoveries, and duplicate sample results.

Introduction

Groundwater and soil samples included in this DQE were collected during seven performance monitoring evaluation studies between February 2003 and August 2003. The studies samples were collected over a 4 to 5 day period. Each activity was initiated on the following dates: EBT Event 8 (2/24/2003); EBT Event 9 (3/24/2003); EBT Event 10 (4/21/2003); EBT Event 11 (5/19/2003); EBT Event 12 (6/23/2003); EBT Event 13 (7/21/2003); and EBT Event 14 (8/18/2003).

Field QC samples included duplicates, field blanks, trip blanks (analyzed for VOCs only), equipment rinsate blanks, and matrix spikes. The number of each type of sample is listed by analytical method and matrix in Tables 5-1. The samples were analyzed for the following analytical fractions:

- Alkalinity by EPA Method 310.2;
- Anions by SW-846 Method 9056;
- Metals by SW-846 Methods 6010B;
- Methane, Ethane, and Ethane (MEEs) by Microseep SOP AM20GAX, AM18;
- Oil and Grease by EPA Methods 1664;
- Sulfide by EPA Method E376.1;
- TOC by EPA Methods E415.1;
- Volatile Fatty Acids by modified SW-846 Method 8015B; and
- Volatile Organic Compounds (VOCs) by SW-846 Method 8260B.

Project chemists using the process outlined in the EPA guidance document USEPA CLP National Functional Guidelines for Inorganic (Organic) Data Review (1994a, revised October 1999) reviewed the hardcopy data packages for this DQE. A summary of all raw analytical data for all samples in this report including copies of the chain-of-custody forms and data validation checklists can be found as Appendix A – Summary of Raw Analytical Data.

Areas of review included (when applicable to the method) holding time compliance, calibration verification, blank results, matrix spike precision and accuracy, method accuracy as demonstrated by laboratory control samples (LCSs), field duplicate results, surrogate recoveries, and internal standard performance. A data review worksheet was completed for each of these data packages and any non-conformance documented. The data review and validation process is independent of the laboratory's checks and focuses on the usability of the data to support the project data interpretation and decision-making processes.

Data that were not within the acceptance limits were appended with a primary qualifying flag, which consists of a single- or double-letter abbreviation that reflects an uncertainty or problem with the data. Although the qualifying flags originate during the database query process, they are included in the final data summary table deliverables so that the data will be used only for the intended purpose and with the qualifiers known. The qualifiers also include secondary, or two-digit sub-qualifier flags which are entered into the comments field of the database. The secondary qualifiers provide the reasoning behind the assignment of a qualifier to the data. The sub-qualifiers are presented and defined in Table 5-2. The following primary flags were used in this text:

- [=] **Detected.** Analyte was analyzed for and detected at the reported concentration;
- [U] **Undetected.** Analyte was analyzed for but not detected above the method detection limit (MDL);
- [UJ] **Detection limit estimated.** Analyte was analyzed for and qualified as not detected. The result is estimated;
- [J] **Estimated.** The analyte was present, but the reported value may not be accurate or precise; and
- [R] **Rejected.** The data are unusable. (NOTE: Analyte/compound may or may not be present.).

Inorganic and organic numerical sample results that are greater than the MDL but less than the laboratory reporting limit (RL) are qualified with a "J" for estimated as required by the *EPA Functional Guidelines for Evaluating Data Quality.*

Once the data review and validation process was completed, the entire data set was reviewed for chemical compound frequencies of detection, dilution factors that might affect data usability, and patterns of target compound distribution. The data set was also evaluated to identify potential data limitations, uncertainties, or both in the analytical results. Appendix B – Summary of Qualified Sample Results lists the changes in data qualifiers due to the validation process.

The data contained many dilutions due to the linear range of the calibration curve being exceeded. As a result, there were two valid values in the database for several samples. Project chemists compared the dilution with the original results and selected the proper record from the two results available. The other value was rejected, as there can be only a single valid record per compound, per sample.

Where data were qualified as estimated, a "J" flag was applied to positive hits. The entire database was also queried for frequency of detection in blanks and samples, detailed listing of blank detects, matrix spike/matrix spike duplicate (MS/MSD) results, field duplicate precision, surrogate recoveries, preparation, and analysis dates pertaining to holding times.

Holding Times, Calibration, and Internal Standards

Holding Times and Preservatives

For the project data, 36 records were qualified as estimated (J or UJ) and two records were qualified as rejected (R) due to holding time deficiencies. The qualifiers were applied to nitrate and nitrate results. No other records were qualified from holding time and preservative criteria.

Calibration

For the project data, twenty-five records were quantified as detects were qualified as estimated (J)

due to continuing calibration deficiencies. These records consisted of two butyric acid, three acetone, seven cis-1,2-dichloroethylene, and 13 carbon tetrachloride results. No other records were qualified from calibration criteria.

Internal Standards

For the project data, no records were qualified from internal standard deficiencies.

Potential Field Sampling and Laboratory Contamination

Four types of blank samples were used to monitor potential contamination introduced during field sampling, sample handling, and shipping activities, as well as sample preparation and analysis.

- **Trip Blank (TB)**: A sample of ASTM Type II water that is prepared in the laboratory prior to the sampling event. The water is stored in VOC sample containers, which are not opened in the field, and travels back to the laboratory with the other samples for VOC analysis. This blank is used to monitor the potential for sample contamination during the sample container trip. One trip blank should be included in each sample cooler that contained samples for VOC analysis. A total of 12 trip blanks for VOC analyses were submitted to the laboratory with the samples in this DQE report. Trip blanks were not submitted for MEEs analyses;
- **Equipment Rinsate Blank (EB)**: A sample of the analyte-free water used for the final rinse during the equipment decontamination process. This blank sample is collected by rinsing the sampling equipment after decontamination and is analyzed for the same analytical parameters as the corresponding samples. This blank is used to monitor potential contamination caused by incomplete equipment decontamination. One equipment rinsate blank should be collected per day of sampling, per type of sampling equipment. Depending on the analysis, up to eight equipment rinsate blanks were submitted to the laboratory for analysis;
- **Source Blank or Ambient Blank (SB or AB)**: The field blank is an aliquot of the source water used for equipment decontamination. This blank monitors contamination that may be introduced from the water used for decontamination. One field blank was collected from each source of decontamination water and analyzed for the same parameters as the associated samples. Six source blanks were submitted to the laboratory for VOC analysis
- **Laboratory Method Blank or Method Blank (MB)**: A laboratory method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process. One method blank was prepared and analyzed for every 20 samples or per analytical batch whichever was more frequent.

According to the EPA Functional Guidelines, concentrations of common organic contaminants detected in samples at less than 10 times the concentration of the associated blanks can be attributed to field sampling and laboratory contamination rather than environmental contamination from site activities. Common organic contaminants include acetone, methylene chloride, 2-butanone, and the phthalates. For other general chemistry, inorganic, and organic contaminants, 5 times the concentration detected in the associated blanks rather than 10 is used to qualify results as potential field and/or laboratory contamination rather than environmental contamination.

A number of metals and general chemistry parameters were detected in various instrument calibration blanks. Instrument blank data is not stored in the project database and is not

summarized in the DQE report. Concentrations detected in the calibration blanks can be attributed to instrument noise at or near the MDL. Associated field sample results less than 5 times the maximum concentration found in the calibration blanks were attributed to field sampling or laboratory contamination and are not considered to be indicative of environmental contamination.

Contaminants were found in various equipment, source, and trip blanks for the project data as listed in the following tabulation.

Parameter	Sample Type	Number of Detections
1,2,3-Trichlorobenzene	Laboratory Blank	4
Acetone	Source Blank	1
Acetone	Equipment Blank	1
Acetone	Trip Blank	1
Alkalinity	Equipment Blank	1
Alkalinity	Laboratory Blank	7
Chloride	Equipment Blank	1
Chloroform	Source Blank	1
Chloroform	Equipment Blank	1
Manganese	Laboratory Blank	3
Manganese	Equipment Blank	2
Manganese	Laboratory Blank	1
Methylene chloride	Trip Blank	6
Nitrate	Equipment Blank	3
Sulfate	Equipment Blank	1
Toluene	Source Blank	1
Toluene	Equipment Blank	1
Toluene	Trip Blank	2
TOC	Equipment Blank	4
Xylenes	Source Blank	2
Xylenes	Equipment Blank	2

The parameters that were qualified as not detected and indicated with a "U" qualifier are listed in the following tabulation.

Parameter	Sample Type	Number of Detections
1,2,3-Trichlorobenzene	Normal or Field Duplicate	1
Acetone	Normal or Field Duplicate	21
Alkalinity	Normal or Field Duplicate	3
Chloroform	Normal or Field Duplicate	2
Manganese	Normal or Field Duplicate	38
Methylene chloride	Normal or Field Duplicate	21
Nitrate	Normal or Field Duplicate	8
Sulfate	Normal or Field Duplicate	6
TOC	Normal or Field Duplicate	17

Matrix Effects

Surrogate Spike Recovery

Surrogate spike compounds were added to every sample analyzed for the organic parameters, including field and laboratory blanks as well as field environmental samples. Surrogate spikes consist of organic compounds, which are similar to the method analytes in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.

Surrogate spike recoveries were used to monitor both laboratory performance and matrix interferences. Surrogate spike recoveries from field and laboratory blanks were used to evaluate laboratory performance because the blanks should represent an "ideal" sample matrix. Surrogate spike recoveries for field samples were used to evaluate the potential for matrix interference. According to *EPA (1999),* data are not qualified with respect to surrogate recoveries unless multiple surrogates are out of specifications.

Table 5-2 summarizes the project VOC average surrogate recovery and the number of results flagged based on surrogate recovery exceptions.

The surrogate recovery values for all organic analytical fractions generally recovered well. No samples were qualified as rejected due to poor surrogate recoveries. These recoveries indicate that the specific sample matrix did not interfere with the analytical process.

Matrix Spike Recoveries

Matrix spikes are prepared in order to document the accuracy and precision bias of a method in a given sample matrix. For inorganic matrix spikes, three aliquots of a single sample were analyzed; one native sample, one native duplicate, and one sample spiked with analytes. Spike recovery is used to evaluate potential matrix interference as well as analytical accuracy. Precision is evaluated by comparing the native sample and native duplicate results for each analyte. Three aliquots of a single sample are also analyzed for organic compounds, however, using one native and two spiked aliquots. Unlike the surrogate spike compounds, organic matrix spike compounds are found on the method TCL. The duplicate results, consisting of MS/MSD or native/duplicate), are compared to evaluate precision.

Organic results are not qualified based on MS/MSD results alone. The results are evaluated in conjunction with surrogate and internal standard (if applicable) results. In instances when the native levels of the target compounds were greater than the amount added to the matrix spike samples the recovery results are considered to be inconclusive and are not used to assess matrix accuracy and precision.

The GC/MS volatile MS/MSD recovery and precision data all fell within method control limits, except for 2-chloroethyl vinyl ether. The recovery results for 2-chloroethyl vinyl ether were reported as zero percent in all samples preserved with HCl (pH less than 2). All results for 2-chloroethyl vinyl ether have been qualified as rejected and flagged "R."

Number of Samples Flagged due to MS/MSD QC Results

Element	Number Samples Flagged	Flag Assigned
1,2-Dichloroethane	1	"J" hits
2-Chloroethyl vinyl ether	158	"R" all data

The GC methane, ethane, and ethane MS/MSD recovery and precision data all fell within method control limits. The GC volatile fatty acid MS/MSD recovery and precision data all fell within method control limits for most analyses.

Number of Samples Flagged due to MS/MSD QC Results

Element	Number Samples Flagged	Flag Assigned
Butyric Acid	1	"J" hits
Lactic Acid	2	"J" hits

Inorganic results are qualified based solely on the results of the MS/MSD precision and accuracy. Inorganic metals including manganese and general chemistry parameters including anions, alkalinity, oil and grease, sulfide, and TOC were within established criteria with few exceptions indicating an effective analytical process and accurate and precise final numerical results.

Number of Samples Flagged due to MS/MSD QC Results

Element	Number Samples Flagged	Flag Assigned
Alkalinity, Total	2	"J" hits
Manganese	1	"J" hits

Field Duplicate Sample Results

Field duplicate analyses measure both field and laboratory precision and can also be affected by the homogeneity of the samples. Therefore, the results may have more variability than lab duplicates, which measure only lab performance. According to the EPA Functional Guidelines, there are no qualification criteria for field duplicate precision.

A control limit of ± 35 percent (soil) and ±20 percent (water) for the RPD was used for original and duplicate sample values greater than or equal to five times the RL. A control limit of ± two times the RL (soil) and ± one times the RL (water) was used if either the sample or the duplicate value was less than five times the RL.

Precision criteria were met for greater than 95 percent of all parameters, demonstrating minimal matrix heterogeneity.

Number of Samples Flagged due to Field Duplicate QC Results

Element	Number Samples Flagged	Flag Assigned
Butyric acid	1	"J" hits
cis-1,2-Dichloroethylene	1	"J" hits
Ethane	2	"J" hits / "UJ" non-detects
Ethene	3	"J" hits
Methane	1	"J" hits
Sulfate	2	"J" hits
Tetrachloroethylene	3	"J" hits
Total Organic Carbon	7	"J" hits
Trichloroethylene	1	"J" hits

Inductively Coupled Plasma (ICP) Serial Dilution

The serial dilution of samples quantified by ICP determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high, the serial dilution analysis must agree within a 10 percent difference of the original determination after correction for dilution. All serial dilutions were acceptable.

Samples Requiring Dilution

During sample analysis, a dilution may be required for various reasons. Diluting a sample is usually performed to provide more accurate quantification of the target compounds and to protect the analytical instrumentation. If the concentrations of the target compounds are above the calibration range of the instrument, the sample extract must be diluted in order to obtain an accurate quantification. Laboratories typically dilute the sample extracts such that the responses of the target compounds are in the upper part of the calibration range. This is done in order to give a clear, strong signal from the detector while providing the lowest possible reporting limits.

Another reason for diluting samples is the presence of non-target compounds and chemical interferences, or matrix effects. Matrix effects can be produced from a variety of sources, including conductivity, pH, organic content, and biota (oils and lipids). Laboratories often perform a clean-up procedures on the sample extract prior to analysis. Standard clean-up procedures are designed to recover the analytes, while minimizing or removing interfering non-analytes; however, interferences can still persist, even after the clean-up procedures have been completed.

Some organic and inorganic samples were diluted for selected parameters in order to prevent concentrations from exceeding the instrument linear ranges or when excessive interference was present. Many GC/MS VOC samples had to be diluted due to levels of analytes present in the samples. In all cases the VOC analyses were also analyzed without a dilution. Both results were reported. The analyses providing the lowest non-detected reporting limit or the measurement calculated from a test performed within the instrument linear range is maintained while the alternate measurement is qualified as rejected so that a single result is tagged as valid. Some of these were diluted to a level at which surrogate and spike recoveries could not be determined.

Precision, Accuracy, Representativeness, Completeness, and Comparability (PARCC)

Precision--is defined as the agreement between duplicate results, and was estimated by comparing duplicate matrix spike recoveries, sample duplicates, as well as the field duplicate sample results. Other than the documented exceptions, the precision between native and field duplicate sample results were within acceptable criteria for greater than 99 percent of the measurements, indicating that sample matrix did not significantly interfere with the overall analytical process.

Accuracy--is a measure of the agreement between an experimental determination and the true value of the parameter being measured. For the organic analyses, each of the samples was spiked with a surrogate compound; for organic analyses, an MS, MSD, and laboratory control standard (LCS) were spiked with a known reference material before preparation; and for inorganic analyses an MS and LCS were spiked with target analytes before preparation. Each of these approaches provides a measure of the matrix effects on the analytical accuracy. The LCS results

demonstrate the accuracy of the method and the laboratory's ability to meet the method criteria. MS and MSD results establish precision and accuracy of the matrix. Accuracy can be estimated from the analytical data and was not measured directly. Spike recoveries were within the method acceptance limits in greater than 99 percent of the measurements and surrogate recoveries were within acceptance limits in greater than 95 percent of the measurements; therefore, other than the documented exceptions, there was no evidence of significant matrix interference that would affect the usability of the data.

Representativeness--a qualitative measure of the degree to which sample data accurately and precisely represent a characteristic environmental condition. Representativeness is a subjective parameter and is used to evaluate the efficacy of the sampling plan design. For all data, representativeness was demonstrated by providing full descriptions in the project scoping documents of the sampling techniques and the rationale used for selecting sampling locations.

Completeness--is defined as the percentage of measurements that are judged to be valid compared to the total number of measurements. Of a total of 14,116 validated normal and field duplicate results in the more than 99 percent of the data were determined to be valid.

Comparability--is another qualitative measure designed to express the confidence with which one data set may be compared to another. Factors that affect comparability are sample collection and handling techniques, sample matrix type, and analytical method. Comparability is limited by the other PARCC parameters because data sets can be compared with confidence only when precision and accuracy are known. Data from these investigations are comparable with other data collected at the site because only EPA methods were used to analyze the sample and standard EPA Level III QC data are available to support the quality of the data.

Summary and Conclusion

The laboratory analyzed the samples according to the EPA methods stated in the project plan as demonstrated by the deliverable summaries and analytical run sequences. The project objectives or PARCCs were met, and the data can be used in the project decision-making process as qualified by the DQE process, except data qualified as rejected and flagged with an "R.".

Table 5-1
Analysis Totals by Method and Matrix
Memphis Depot

Method	Analysis	Matrix	SB	EB	FD	MS	N	SD	TB
AM18\AM20GAX	MEEs	WG	0	0	12	12	140	12	0
E1664	Oil&Grease	WG	0	6	6	6	72	1	0
E310.2	Alkalinity	WG	0	8	12	12	139	12	0
E376.1	Sulfide	WG	0	8	12	12	139	12	0
E415.1	TOC	WG	0	8	12	12	139	12	0
QDHC	Plate Count	WG	0	0	0	0	3	0	0
SW6010B	Metals	WG	0	8	12	12	139	12	0
SW8015M	VFA	WG	0	0	12	12	140	12	0
830-MBA	VFA	WG	0	0	0	0	4	0	0
SW8260B	VOCs	WA	0	0	0	0	4	0	0
SW8260B	VOCs	WG	6	6	15	12	145	12	12
SW9056	Anions	WG	0	8	12	12	139	12	0

EB, equipment blank; **FD**, field duplicate; **MS**, matrix spike; **N**, normal; **SB**, source blank; **SD**, matrix spike duplicate; **TB**, trip blank.

Table 5-2
Surrogate Recovery Performance
Memphis Depot

Method	Analyte	Surrogate Percent Recovery			Number of Results Qualified for Surrogate Deficiencies
		Min	Max	Average	
Water Matrix					
SW8260B	1,2-Dichloroethane-D4	84	137	103	0
SW8260B	Dibromofluoromethane	90	117	102	
SW8260B	4-Bromofluorobenzene	92	112	102	
SW8260B	Toluene-D8	94	112	102	

Table 5-3
Matrix Spike Accuracy and Precision Performance
Memphis Depot

Analyte	Count	Recovery (%)		Control Limits	
		MS	MSD	LCL	UCL
AM18\AM20GAX					
Ethane	8	90.5	91.9	70	130
Ethene	8	89.1	90.4	70	130
Methane	8	111.1	110.8	70	130
Method EPA 1664					
Oil & Grease, Total REC	5	94.2	90	65	114
Method EPA 310.2					
Alkalinity	10	93.7	96.6	85	115
Method EPA 376.1					
Sulfide	10	68.3	67.5	86	109
Method EPA 415.1					
Total Organic Carbon	10	162.7	154	74	119
Method EPA SW9056					
Bromide	10	96.7	95.5	80	120
Chloride	10	95.8	96.4	80	120
Nitrate	10	99.5	99.4	80	120
Nitrite	10	102.1	102.4	80	120
Sulfate	10	98.9	98.7	80	120
Method EPA SW6010B					
Manganese	10	91.2	93.2	75	125
Method EPA SW8015 modified					
Acetic acid	9	178	181	70	130
Butyric acid	9	131	107	70	130
Formic acid	9	70.8	72.8	70	130
Lactic acid	9	96.6	93.1	70	130
Propionic acid	9	213	255	70	130
Pyruvic acid	9	71.8	72.3	70	130
Method EPA SW8260B					
1,1,1,2-Tetrachloroethane	10	115.1	115.4	80	130
1,1,1-Trichloroethane	10	114.8	113.4	80	134
1,1,2,2-Tetrachloroethane	10	103.3	105.3	79	125
1,1,2-Trichloroethane	10	105.9	107.1	80	125
1,1-Dichloroethane	10	108.7	108.9	80	125
1,1-Dichloroethene	10	108.6	109	80	132
1,2,3-Trichlorobenzene	10	99.8	101.1	62	140
1,2,3-Trichloropropane	10	99.5	100.8	80	126
1,2,4-Trimethylbenzene	10	106.8	106.3	80	125
1,2-Dibromo-3-chloropropane	10	93.8	96.9	65	129
1,2-Dibromoethane	10	108.1	108.8	80	125
1,2-Dichlorobenzene	10	105.6	106.6	80	125
1,2-Dichloroethane	10	113.9	114.2	80	129
1,2-Dichloropropane	10	102.8	103.6	80	120

Table 5-3
Matrix Spike Accuracy and Precision Performance
Memphis Depot

Analyte	Count	Recovery (%)		Control Limits	
		MS	MSD	LCL	UCL
Method EPA SW8260B					
1,3,5-Trimethylbenzene	10	108.5	108.5	80	127
1,3-Dichlorobenzene	10	103.4	103.6	80	120
1,4-Dichlorobenzene	10	103.9	104.2	80	120
2-Chloroethyl vinyl ether	10	0	0	10	211
2-Hexanone	10	94.7	98.1	56	136
Acetone	10	82.6	85.4	40	142
Benzene	10	105.6	105.7	80	121
Bromodichloromethane	10	117	117.1	80	131
Bromoform	10	96.4	97.7	74	130
Bromomethane	10	94.8	96.2	61	151
Carbon disulfide	10	83.3	81.4	58	138
Carbon tetrachloride	10	85.7	82.7	80	137
Chlorobenzene	10	106.7	106.3	80	120
Chloroethane	10	99.5	101.1	77	133
Chloroform	10	90.7	90.7	80	125
Chloromethane	10	93.9	93.9	60	130
cis-1,2-Dichloroethylene	10	70.3	69.4	80	121
cis-1,3-Dichloropropene	10	105	105.2	80	132
Dibromochloromethane	10	110.9	111.9	80	127
Dibromomethane	10	108.5	109.5	80	126
Dichlorodifluoromethane	10	86	85.5	50	133
Ethylbenzene	10	107.8	108	80	122
Iodomethane	10	129.7	146.7	10	308
Isopropylbenzene	10	107.2	106.5	80	122
Methyl ethyl ketone	10	99.6	103.3	58	149
Methyl isobutyl ketone	10	92.9	94.3	64	140
Methylene chloride	10	103.4	105.3	80	123
n-Butylbenzene	10	108.7	108.5	80	131
n-Propylbenzene	10	108.9	108.8	80	129
p-Cymene	10	106.3	106.2	80	122
sec-Butylbenzene	10	107	107	80	127
Styrene	10	109	109.1	80	123
tert-Butyl methyl ether	10	103	104	77	138
Tetrachloroethylene	10	-44.5	-42.3	80	124
Toluene	10	107.4	107.2	80	124
trans-1,2-Dichloroethene	10	111.3	110.9	80	127
trans-1,3-Dichloropropene	10	107.6	106.5	80	130
Trichloroethylene	10	81.5	84.6	80	122
Trichlorofluoromethane	10	106.2	104	62	151
Vinyl acetate	10	110.7	111.9	10	285
Vinyl chloride	10	110.3	105	65	140
Xylenes, Total	10	108.9	108.6	80	121

ATTACHMENT I

MI Baseline Sampling Technical Memorandum

TECHNICAL MEMORANDUM SA.03 CH2MHILL

Analysis of Groundwater Data Collected During the Main Installation (MI)-Wide Baseline Groundwater Sampling Event

TO: U.S. Army Engineering and Support Center, Huntsville

COPIES: Defense Distribution Center (Memphis)

U.S. Environmental Protection Agency (USEPA), Region 4

Tennessee Department of Environment and Conservation (TDEC)

FROM: CH2M HILL

DATE: September 17, 2003

Introduction

The Technical Memorandum, *Baseline Groundwater Sampling Plan for Monitoring Wells Associated with the Main Installation, Memphis Depot* (CH2M HILL, January 2002), which can be found as Appendix A to the *Enhanced Bioremediation Treatment Treatability Study Workplan* (CH2M HILL, May 2002), was prepared to describe groundwater sampling activities needed in preparation for the Enhanced Bioremediation Treatment (EBT) Treatability Study for the MI. This sampling was necessary because the Remedial Design (RD) phase for the MI, which includes the EBT Treatability Study, began with completion of the MI Record of Decision (ROD) in September 2001 (CH2M HILL, September 2001) and no complete, site-wide groundwater study had been performed within the MI since October 1998; more recent groundwater sampling events have only focused on individual sites within the MI. All available onsite and offsite monitoring wells (MW) and piezometers (PZ) associated with the MI were sampled to complete this study and to develop recent groundwater contaminant plume configuration information.

Objectives of the MI-Wide Baseline Groundwater Sampling Event

The primary objective of the baseline groundwater sampling event was to collect groundwater samples from available monitoring well and piezometer locations associated with the MI and analyze these samples for volatile organic compound (VOC) and various geochemical parameters. Figure 1 presents the location of existing monitoring wells and piezometers at the MI during this March 2002 baseline sampling event. Several monitoring wells at the site had been sampled previously during the November/December 2001 Long Term Operational Area (LTOA) investigation (CH2M HILL, July 2002) and were, therefore, not re-sampled during the baseline event. The data resulting from the LTOA event is repeated here only in the context of being part of this site-wide event.

In addition to the objective described above, the groundwater data achieved from this baseline study has been used to: (1) define the chlorinated VOC (CVOC) groundwater contaminant plume configuration, which was used as a basis for locating monitoring and injection wells for the EBT study (Figure 1); (2) define groundwater contaminant concentrations to formulate the final quantity of electron donor substrate material injected into the aquifer for the EBT study; and, (3) provide a baseline geochemical measurement for upgradient and downgradient locations of the EBT Treatability Study areas. Also, the groundwater contaminant plume configuration data will be used within the RD to demarcate the area of the aquifer underlying the MI that requires remediation.

Data Quality Objectives

The data quality objectives (DQOs) found below were established to achieve the objective and data needs outlined above.

Data Quality Objectives for MI-Wide Baseline Groundwater Sampling Event

Sampling Activity	Data Quality Objective Category	Sampling Purpose
Groundwater samples for volatile organic compounds (VOCs)	Definitive	Define areas of groundwater contamination within the MI and use the data to optimize the EBT study.
Groundwater samples for geochemical parameters	Definitive	Use data to optimize the EBT study and serve as a baseline for the MI RD.

Twenty-eight (28) monitoring wells and seven piezometers were selected for sampling of VOCs during the baseline sampling event (Table 1). Eighteen (18) monitoring wells were also sampled for various geochemical parameters, as presented below. Five (5) monitoring wells located on the MI were not included in either the LTOA or this baseline event because of dry conditions (MW-27), sample repetition (MW-18), and well obstructions (MW-17, -25, and 48). In addition, the analytical data from samples of monitoring well MW-63 may be suspect because the ground surface completion of the well casing was repaired prior to sampling using PVC cleaner and glue. The upper portion of the water column was removed by pumping soon after the repair was completed and before the well was sampled.

MW-63 and MW-25 were abandoned in summer 2002 and were reinstalled in September 2002. Two new wells were installed at MW-63 to screen across the thickness of the aquifer at that location. All three wells were recently sampled and the results of that sampling will be reported under separate cover.

All baseline groundwater samples were analyzed for:

Laboratory	Field
• VOCs (EPA 8260B)	• Ferrous Iron (Hach Method 8146)
• Manganese (EPA 6010B)	• Carbon Dioxide (Hach Method 8205)
• Total Organic Carbon (EPA 9060)	• Dissolved Oxygen (DO)
• Metabolic Acids (Ion Chromatography based on SW846 Method)	• pH
• Methane, Ethane, and Ethene (RSK175M)	• Temperature
• Alkalinity (Method 310.1)	• Specific Conductivity (SC)
• Nitrate/Nitrite (EPA 9056)	• Oxidation-Reduction Potential (ORP)
• Sulfate/Sulfide (EPA 9056/376.2)	• Turbidity
• Chloride (EPA 9056)	

In addition to analyzing groundwater for VOCs and geochemical parameters, two monitoring wells, MW-89 and 90, were sa mpled for semi-volatile organic compounds (SVOCs). These wells were sampled as a result of questions raised by the Memphis Depot BRAC Cleanup Team (BCT) pertaining to a portion of the LTOA groundwater data. Specifically, the question concerned whether contaminants, particularly pentachlorophenol (PCP), in soil at the former PCP Dip Vat on the MI had leached into groundwater beneath that LTOA location. Collection and analysis of groundwater for SVOCs was not part of the original, approved scope for the baseline event.

Investigative Methodology

Groundwater Sampling

Groundwater samples were collected from each monitoring well as described in the January 2002 Technical Memorandum, with variances described below. Monitoring wells were sampled for VOCs using polytethylene diffusion bag samplers (PDBs). Lengths of one, two, or five feet were used in each well depending on the thickness of the aquifer within the screened interval (Table 1). PDB samplers allow for collection of discrete water samples and consist of polyethylene bags filled with distilled water. The concentration gradient between the VOCs in the groundwater in the well screen and the water-filled bag results in diffusion of contaminants into the sampler. With the exception of MW-89 and 90, which had two diffusion bags each because of the long screen lengths, one diffusion bag sampler was installed in each well and positioned in the center of the aquifer within the screened zone. Construction, installation, and sampling of PDB samplers followed guidelines established in the *User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations In Wells, Part 1: Deployment, Recovery, Data Interpretation, and Quality Control and Assurance*, (EGS, 2001).

The semi-permeable membrane used for the PDB samplers is engineered for VOC collection only. Therefore, diffusion bag samplers were not used for collection of SVOCs or geochemical parameters. Collection of groundwater samples for these analyses occurred using low-flow techniques, as described in Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures from the *Environmental Investigations Standard Operating Procedures Quality Assurance Manual* (EISOPQAM), Sections 7.2.2 and 7.3.3, (EPA, November 2001) and Puls and Barcelona (1996). Before sampling, each well was purged using a bladder pump in order to minimize agitation of the groundwater and sample turbidity. Field measurements of dissolved oxygen (DO), oxidation-reduction potential (ORP), turbidity, pH temperature, and specific conductance we re recorded periodically. These parameters were measured using an airtight flow-through cell. Purging continued until field measurements were stable according to the following standards: plus or minus 0.1 pH plus or minus ten millivolts ORP, plus or minus 3 percent for specific conductance, and plus or minus 10 percent for turbidity and DO. Samples were then collected via the bladder pump.

Collection of groundwater samples from piezometers differed from monitoring wells. The small diameter (0.5 inches) of the casing necessitated the use of a small diameter bailer instead of a bladder pump. Before sampling, each piezometer had at least three well volumes purged using a small-diameter bailer. Field measurements of DO, ORP, turbidity, pH temperature, and specific conductanc e were made during the purging process.

Piezometers were sampled using the small-diameter bailers, which were discarded after each use.

All samples were preserved as required in the January, 2002, Technical Memorandum and delivered to the fixed-base laboratory within the appropriate holding period.

In addition to the geochemical samples collected for laboratory analysis, water collected during the monitoring well purge process was also analyzed in the field for carbon dioxide and ferrous iron using Hach ™ kits.

In addition to groundwater samples, quality assurance/quality control (QA/QC) samples were collected during the field effort. The QA/QC samples included field duplicates, matrix spike/matrix spike duplicates, ambient blanks, equipment blanks, and trip blanks. The quantity of QA/QC samples collected at the site were in accordance with guidelines in Section 5.13.11 and 5.13.12 of the EISOPQAM.

Variances from the Groundwater Sampling Plan

As stated in the previous section, groundwater samples were collected according to the January 2002 Technical Memorandum; however, several samples collected during the March 2002 effort had to be recollected as a result of violation of sample holding times. The samples effected included the EPA Method 9056 sample from MW-85 and the sulfate samples from monitoring wells MW-93, -100B, and 101. MW-85 was resampled approximately 24 hours after the original sample whereas MW-93, -100B, and 101 were resampled approximately two weeks after the original baseline sampled was collected. For each well the re-sampling effort was conducted using a bailer instead of the bladder pump. The bailer was slowly lowered into the well to the same depth that had been used for the pump in an effort to avoid mixing water within the water column. Four full bailers were slowly removed from each well prior to sampling. A new, disposable bailer was used for each sample.

Investigation-Derived Waste (IDW)

Development and purge water were containerized in a 55-gallon drum during field activities. Analytical results from the sampling event were within discharge permit requirements for the Dunn Field recovery system; therefore, approximately 50 gallons of IDW were pumped into the Dunn Field disposal system.

Sample Analysis Results

Groundwater samples were collected as described in the previous section. Field parameters collected from the monitoring wells during the low-flow purge process are shown in Table 2. All concentrations of VOCs and SVOCs detected above laboratory reporting limits from both the MI baseline and LTOA sampling events are located in Tables 3 and 4, respectively. Geochemical parameter analysis results are found in Table 5. Detected concentrations of VOCs and SVOCs are spatially shown on Figure 2. Isoconcentration contours are depicted on Figures 3 and 5 through 8 for tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), carbon tetrachloride, and chloroform, respectively.

It is important to note that with installation of new monitoring wells during the LTOA investigation, a limited to no-flow boundary of the fluvial aquifer has been defined in the northwest corner of the MI. The boundary demarcates the intersection of the water table in the fluvial aquifer with the clay that directly underlies the fluvial deposits leaving fluvial deposits unsaturated. As shown in Figure 4, the boundary also demarcates a window into an intermediate aquifer that underlies the fluvial aquifer. This limited to no-flow boundary may also act as a restriction to the flow and migration of contaminant plumes in groundwater of the fluvial aquifer.

Volatile Organic Compounds

Although several VOCs (Tables 3 and 4) were detected within the groundwater samples collected during the baseline and LTOA sampling events, only those that are typically considered biodegradation ("daughter") products of PCE and TCE are discussed in this section. These daughter products include cis-1,2-DCE and vinyl chloride. In addition, carbon tetrachloride and chloroform, which had not been detected at the higher levels revealed during the baseline sampling event, are also discussed below.

PCE

Data from the baseline sampling event indicate five PCE plumes within the MI above the groundwater maximum concentration limit (MCL) of 5 µg/L, with interconnection between two of these plumes (Figure 3). These plumes originate in the vicinity of MW-21/-101 (southwest corner), MW-86/-92 (southeast corner), MW-64 (southeast central), PZ03 (south central), and MW-63 (north central).

The southwest corner plume had the highest PCE concentrations of 480 µg/L (MW-101) and 90 µg/L (MW-21), and, based on configuration of the plume and the average direction of groundwater flow, as shown in Figure 4, the plume appears to be migrating from the southwest towards the northeast.

The southeastern plume had concentrations of 198 µg/L (MW-86) and 150 µg/L (MW-92), and, based on configuration of the plume and the average direction of groundwater flow, appears to be migrating in a fan-like pattern, southwest and south-southwest away from the source area. The southeast central plume surrounding MW-64 is closely associated with this plume, although these plumes do not appear to have a common source area.

The other central plumes have PCE concentrations slightly above the MCL: 7.1 µg/L (PZ03) and 9.7 µg/L (MW-63).

A possible sixth plume is located in the vicinity of the monitoring well cluster MW-89/-90, where the southwest and north central plumes converge. Samples for VOCs were collected at two different intervals within monitoring wells MW-89 and 90 because each of these wells has a 30-foot screen interval and the aquifer is approximately 57 feet thick in this area. MW-89 is screened in the lower portion of the aquifer while MW-90 is screened in the upper portion, thereby screening the entire watertable. Of the four samples collected from these two wells, PCE was detected only in MW-90 at concentrations of 8.8 µg/L from 125 to 130 feet below top-of-casing [TOC] and 60 µg/L from 135 to 140 feet BTOC. Based on a review of soil boring logs for each well, as found in the MI Remedial Investigation Report

(CH2M HILL, January 2000), no low permeability layers exist between the top and bottom of each screened interval.

TCE

Data from the baseline sampling event indicate five TCE plumes within the MI and one outside of the MI are present in the aquifer at levels above the groundwater MCL of 5 µg/L (Figure 5). These plumes originate in the vicinity of MW-21/-100B (southwest corner), MW-85/-86 (southeast corner), MW-64 (southeast central), PZ05 (southeast corner outside the MI), MW-63 (north central), and MW-104 (northeast corner).

The southwest corner plume had the highest TCE concentrations of 79 µg/L (MW-100B) and 76 µg/L (MW-21), and, based on configuration of the plume and the average direction of groundwater flow, as shown in Figure 4, the plume appears to be migrating in a southwest to northeast direction.

The southeastern plume within the MI revealed TCE concentrations of 20 µg/L (MW-86) and 23 µg/L (MW-85), and, based on configuration of the plume and the average direction of groundwater flow, the plume appears to be migrating to the southwest away from the source area. Another plume, centered around MW-64, contained even higher concentrations of TCE at 45 µg/L.

The northeastern plume within the MI had a high concentration of 11 µg/L (MW-104), and, based on configuration of the plume and the average direction of groundwater flow, this plume appears to be migrating from the northeast to southwest.

The offsite southeastern plume had a high concentration of 46 µg/L (PZ05). The potential migration pattern of this plume can not be defined due to limited data in this area; however, its origin appears to be from an offsite source.

TCE plumes located in the southwest and northeast, centered around MW-63, appear to converge in the central portion of the MI near the MW-89/-90 well cluster.

cis-1,2-DCE

Data from the baseline sampling event indicates a cis-1,2-DCE plume in the vicinity of MW-62 (northeast area) with a cis-1,2-DCE concentration of 190 µg/L (Figure 6). This concentration is above the groundwater MCL of 70 µg/L. The movement of this plume can not be determined due to limited contaminant and hydrogeologic data in this area.

This compound also appeared in samples from wells MW-85, -86, and 88 albeit at levels below the MCL. The presence of cis-1,2-DCE could be indicative of degradation of the PCE and TCE in the same area.

Vinyl Chloride

Data from the baseline sampling event revealed the presence of one vinyl chloride plume within the MI above the groundwater MCL of 2 µg/L, also in the vicinity of MW-62 (northeast area). A concentration of 28 µg/L was reported in MW-62. The movement of this plume can not be determined due to contaminant and hydrogeologic limited data in this area. The presence of vinyl chloride in this one particular area indicates that degradation of other "predecessor" VOCs may be occurring.

Carbon Tetrachloride

Baseline sample results indicates one carbon tetrachloride plume is present within the MI above the groundwater MCL of 5 µg/L (Figure 7). The primary plume can be found surrounding the vicinity of MW-85/-86 (southeast corner). The highest average value of carbon tetrachloride to be found in MW-85 and MW-86 is 122 µg/L and 75 µg/L, respectively. Assuming that this plume is migrating along with the predominant groundwater flow direction of this area, then the movement of this plume will be towards the southwest. There may also be two other potential plumes albeit at concentrations below the MCL present around MW-64 (southeast central) and MW-90 and -107.

Chloroform

Data from the baseline sampling event indicate three chloroform plumes within the MI above the groundwater MCL of 80 µg/L, although it is noted that this MCL is currently under review by EPA (EPA, 2002). These plumes originate in the vicinity of MW-85/-86 (southeast corner), MW-63 (north central), and MW-103/-104 (northeast corner) (Figure 8).

The southeastern plume revealed the highest chloroform concentrations of 77 µg/L (MW-86) and 64 µg/L (MW-85), and, based on configuration of the plume and the average direction of groundwater flow for this area, the plume appears to be migrating from the source area toward the west and south. This plume also mirrors the carbon tetrachloride plume at the same location and may be a product from the degradation of carbon tetrachloride.

Samples collected from monitoring wells MW-103 and MW-104 revealed chloroform concentrations of 12 µg/L in MW-103 and 13 µg/L in MW104 and, based on configuration of the plume and the average direction of groundwater flow for this area, the plume appears to be migrating from the northeast to the southwest.

The third plume can be found surrounding MW-63 and MW-108 in the north central portion of the MI. The highest concentration of chloroform detected in this plume is 12 µg/L in well MW-63.

The plume surrounding monitoring wells MW-85 and MW-86 may have originated from the breakdown of carbon tetrachloride in the same area. The origin of the other two plumes may have been from other unknown previous disposal activities.

Semi-volatile Organic Compounds

SVOCs were collected from monitoring wells MW89 and 90 only as part of a follow-up action to the LTOA effort. These wells were sampled because of potential concerns over leaching of contaminants from soil to groundwater at the former PCP Dip Vat on the MI. None of the four samples collected from these two monitoring wells contained PCP above the reporting limit of 2.66 µg/L. Within MW-89, bis(2-ethylhexl)phthalate was detected at 152 feet BTOC (4.23J µg/L) and 162 feet BTOC (6.59 µg/L). No other SVOCs were detected.

Geochemical Parameters

Geochemical parameter analysis results are presented in Table 5. Carbon dioxide and ferrous iron field measurements are found in Table 1. Samples were collected from existing monitoring wells located upgradient, within, and downgradient of both of the EBT

Treatability Study areas. The samples were analyzed for a variety of geochemical analytes, as described previously. Based on a review of Table 5, the most common analytes detected (not necessarily in order) include: alkalinity, chloride, nitrate, and sulfate. These analytes are also discussed below along with carbon dioxide and ferrous iron.

A review of Table 5 indicates that, in addition to the analytes mentioned in the previous paragraph, total organic carbon (TOC) was detected in 5 of 18 samples and usually at levels less than 5 milligrams per liter (mg/L), attesting to the fact that TOC levels are low throughout the aquifer. Metabolic acids, such as formic, acetic, and lactic acid, were also detected in almost all samples, albeit always with a J qualifier, indicating an estimated detection.

Alkalinity

According to Wiedemeier, et al. (1999), "biologically active portions of a dissolved contaminant plume typically can be identified by an increase in alkalinity" as a result of an increase of carbon dioxide during biodegradation of organic carbon. As shown on Figure 9, alkalinity measurements were collected from monitoring wells located across the EBT treatability study sites with values ranging from not detectable above the laboratory reporting limit of 1 mg/L to 160 mg/L. The data revealed that levels of alkalinity in monitoring wells upgradient to the sites appear to be higher than those within and downgradient of the study areas. This difference can be interpreted in several ways: (1) Microbially mediated reactions that would typically cause a higher than normal carbon dioxide content and, subsequently, increased alkalinity level, are suppressed because of the lack of respiration by microorganisms during anaerobic degradation; (2) Differences in the geologic characteristics of the fluvial aquifer with regards to elemental calcium, magnesium, sodium, potassium, or ammonia; and, (3) Low transfer of carbon dioxide from the atmosphere to the aquifer.

CDM HILL compared alkalinity levels found in the site monitoring wells to values reported for trace inorganic constituents from the fluvial aquifer in the Memphis area by the US Geological Survey (USGS, 1988). The USGS sampled 28 points located in the Memphis area and screened within water-table aquifers for sampling of inorganic constituents. One well, located in the City of Memphis' Allen Well Field that is approximately one mile from the MI, was found to have alkalinity levels at 139 mg/L (as $CaCO_3$). In comparison, the alkalinity levels found in wells at the MI appear to be, on average, much lower.

Chloride

Chloride measurements collected in groundwater samples are shown in Figure 10 with values ranging from 5.1 mg/L to 230 mg/L. The results indicate no distinct pattern, although chloride content appears to be higher upgradient of the treatability study sites than within or downgradient of each site. Chloride is typically released into the surrounding groundwater when chlorinated hydrocarbons are biodegraded. The results found during this sampling event may indicate that there is little biodegradation of the chlorinated hydrocarbons occurring within the outline of the contaminant plumes. The USGS (1988) reported a chloride level of 19 mg /L in a well located very near the MI. This level is comparable to levels detected in wells considered background to the MI EBT Treatability Study sites, but still higher than the level found in wells within the treatability study sites. When compared to the average value for each treatability study site, the USGS

reported value is slightly lower than the average 21 mg/L value for Treatability Study Area 1, and is much lower than the 61 mg/L for Treatability Study Area 2.

Nitrate

Nitrate is used by microorganisms as an electron acceptor during biodegradation of organic carbon after dissolved oxygen has been depleted, in a process referred to as denitrification. During the denitrification process, nitrate levels tend to decrease. As Wiedemeier, et al. (1999), state "...nitrate concentrations below background in areas with dissolved contamination provide evidence for denitrification." Figure 11 reveals that nitrate levels are the same or higher than background (upgradient) in both of the study areas. The denitrification process in these areas appears to be limited.

Sulfate

According to Wiedemeier, et al. (1999), "after dissolved oxygen, nitrate, and biologically available Mn(IV) and Fe(III) have been depleted in the microbiological treatment zone, sulfate may be used as an electron acceptor for anaerobic degradation via sulfate reduction." During this process, sulfate levels compared to background should decrease. Importantly, according to Wiedemeier, et al. (1999), sulfate levels greater than 20 mg/L "may cause competitive exclusion of dechlorinating bacteria...". The data collected during the baseline sampling effort revealed that sulfate levels within the treatability study areas are, in some cases, significantly less than background (Figure 12). Also, several locations upgradient to the treatability study areas have levels of sulfate much higher than 20 mg/L. The SGS (1988) reported a sulfate level of 25 mg/L in a well located near the MI, a value higher than levels found in wells within the treatability study sites.

Carbon Dioxide

Microbiologic degradation of chlorinated compounds can lead to the production of carbon dioxide, therefore, increased levels relative to background indicate microbially mediated reactions are occurring. A review of Table 1 indicates that carbon dioxide levels within Treatability Study Area 1 are higher relative to surrounding upgradient and downgradient monitoring wells. This is the opposite case for Study Area 2 where the wells within the study area contained less carbon dioxide than surrounding wells. Carbon dioxide levels detected during the sampling effort range from 63 to 235 mg/L. The SGS (1988) reported a level of 68 mg/L in a well near the MI. This level is very similar to carbon dioxide levels reported in wells outside (both upgradient and downgradient) of the treatability study sites.

Ferrous Iron

Wiedemeier, et al. (1999), state that "When [ferric iron] is used as an electron acceptor during anaerobic biodegradation of organic carbon, it is reduced to [ferrous iron] which is soluble in water." Groundwater samples were not analyzed for ferric iron, however increased concentrations of ferrous iron relative to background indicates degradation of organic carbon has occurred. At Study Area 1, ferrous iron levels in wells in the study area are less than upgradient and downgradient wells, whereas Study Area 2, the opposite is true. However, none of the levels are above 1 mg/L, except at MW-96, indicating that what ferrous iron is present may be a result of little biodegradation activity.

Comparison of PCE and TCE Plume Configuration Maps to Historical Data

The MI ROD presents two figures (Figures 2-11 and 2-13) that depict the configuration of contaminant plumes of PCE and TCE as of October/November 1998. The plume configurations were based upon comprehensive groundwater sampling efforts from monitoring wells, temporary monitoring wells, and piezometers that existed on- and offsite of the MI. In general, as depicted in Figure 2-11, two PCE plumes were found in the aquifer underlying the site. The plume located under the southwest corner of the MI was shown to have a southwest to northeast to east trend. The semicircular PCE plume located under the southeast corner of the MI has no particular trend but the larger portion of that plume appears to be along the western half. The highest concentration of PCE detected in either of these plumes was 120 µg/L at MW-21.

Figure 2-13 from the MI ROD depicts three TCE plumes at the MI, although one plume appears to be located immediately off the southeast corner of the site. A plume located under the southwest corner of the site has a southwest to northeast trend but also has northwest vector along the northern edge of the plume. The highest concentration of TCE in this plume was also found to be 37 µg/L at MW-62. The third plume underlying the site was depicted in a semicircular pattern and radiating outward from MW-64. The TCE concentration in this plume was reported at 28 µg/L.

Since completion of the MI ROD, several new wells have been installed within the footprint of the previously known configuration of the plume, as part of the November/December 2001 LTOA effort. In addition, the March 2002 baseline groundwater sampling effort was conducted to provide recent comprehensive data on the configuration of the contaminant plumes. Figures 13 and 14 present comparisons between the PCE and TCE plume configuration maps, respectively, from the MI ROD and the results of the baseline sampling effort. As noted previously, with the installation of new wells during the LTOA investigation, a limited to no-flow boundary of the fluvial aquifer has been defined in the northwest corner of the MI. The boundary demarcates the intersection of the water table in the fluvial aquifer with the clay that directly underlies the fluvial deposits leaving fluvial deposits unsaturated. This feature, which was not well defined when the plume maps for the MI ROD was developed, may act as a restriction to the flow and migration of contaminant plumes in groundwater of the fluvial aquifer, and importantly, has changed the mapping of the contaminant plumes.

Figure 13 reveals that the PCE plume in the southwest corner of the MI appears to be longer in length than presented in the MI ROD, and the plume trends southwest to northeast from PZ04 to MW-63. The greatest concentratio n of PCE detected has also increased from 120 µg/L to 480 µg/L. The plume in the southeast corner of the site appears to centered around MW-86 and 92 rather than MW-26 as or iginally depicted. Concentrations in this plume are also higher at 198 µg/L. In addition, two other separate PCE plumes are shown and appear to be centered around MW-64 and PZ03.

Figure 14 reveals that the TCE plume in the southwest corner of the site is much more linear and thinner than previously conceived while trending from MW-21 to MW-63. There is also a northern vector that appears to be centered around MW-62. In addition, the large plume

that was shown in the MI ROD within the southeast corner is now configured as two separate plumes centered around monitoring wells MW-85 and 86 as well as MW-64. The highest concentration of TCE within these two plumes ranges from 23 µg/L to 45 µg/L.

As described within the LTOA Technical Memorandum (CH2M HILL, July 2002), several of the monitoring wells installed during the LTOA investigation were located at points anticipated to be within the fluvial aquifer, which underlies the entire MI. Instead, these wells, including MW-98, -99, -101, and 108 were installed within a window into a lower intermediate/confined aquifer. Geologic cross-sections within the LTOA report show that the fluvial aquifer shares water with the intermediate aquifer where there is connection. The MI RI and ROD did not depict this window to the lower aquifer to be as extensive as is now known. In addition, the geologic description of the material from the LTOA wells has revealed the presence of a trough from MW-101 northeast towards MW-108 and extending northwest towards monitoring wells MW-89 and -90. The trough is composed of a mixture of the fluvial and intermediate aquifers, and has been found to have a relatively thick saturated zone along the length of the trough. As a result, the contaminant plumes present in the southwest part of the MI, trending from southwest to the northeast, are most likely more extensive vertically than previously thought and, as revealed in this and the LTOA technical memorandum, are present within another, separate aquifer.

Summary and Conclusions

- Twenty-eight monitoring wells and seven piezometers associated with the MI were selected for the baseline sampling event. Seventeen monitoring wells had been sampled earlier during the November/December 2001 LTOA investigation and were included as part of this comprehensive event.
- Twenty-eight monitoring wells and 7 piezometers were sampled for VOCs, eighteen monitoring wells were sampled for geochemical parameters, and 2 monitoring wells were sampled for SVOCs.
- Data from the baseline sampling event indicates five PCE plumes are present in the aquifer underlying the MI above the groundwater MCL of 5 µg/L. These plumes originate in the vicinity of MW-21/-101 (southwest corner), MW-86/-92 (southeast corner), PZ03 (south central), MW-63 (north central), and MW-64 (southeast central).
- Data from the baseline sampling event indicates five TCE plumes are present in the aquifer underlying the MI and one TCE plume outside above the groundwater MCL of 5 µg/L. These plumes originate in the vicinity of MW-21/-100B (southwest corner), MW-85/-86 (southeast corner), MW-104 (northeast corner), MW-63 (north central), MW-64 (southeast central), and PZ05 (southeast corner outside the MI).
- Data from the baseline sampling event indicates a cis-1,2-DCE plume is present in the aquifer underlying the MI above the groundwater MCL of 70 µg/L. This plume originates in the vicinity of MW-62 (northeast area).
- Groundwater samples collected during the baseline sampling event have revealed a vinyl chloride plume within the MI above the groundwater MCL of 2 µg/L. This plume originates in the vicinity of MW-62 (northeast area).

- Data from the baseline sampling event indicates that a carbon tetrachloride plume above the groundwater MCL of 5 µg/L is present in the vicinity of MW-85/-86 (southeast corner).
- Groundwater samples collected during the baseline sampling event have revealed that there are three chloroform plumes within the MI; however, none of these plumes contain concentrations above the groundwater MCL of 80 µg/L. These plumes originate in the vicinity of MW-85/-86 (southeast corner), MW-103/-104 (northeast corner), and MW-63 (north central).
- Bis(2-ethylhexl)phthalate was detected in MW-89; no other SVOCs were detected.
- Although groundwater samples collected during this event have shown presence of PCE degradation daughter products, analytes collected from geochemical samples have shown limited evidence of microbiologic degradation activity. Various analytes, especially sulfate, have shown evidence that this activity may be occurring without enhancement.
- The configuration of the PCE and TCE plumes that were depicted in figures presented in the MI RI and ROD have changed primarily as result of the installation of additional monitoring wells during the LTOA investigation. Although these plumes have changed configuration, they are still in similar locations as previously recognized. One important difference is that the plumes are now believed to be thicker than previously understood as a result of the discovery of a trough that is composed of an intermediate aquifer underlying the fluvial aquifer.

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TABLES

Table 1

Sampling Details for Baseline Monitoring Points

Main Installation Baseline Groundwater Sampling Event

#	Identification	Total Depth (ft BTOC)	Depth to Water - 11/01/2001 (ft BTOC)	ters Distance of Pump Above Bottom of Well (Ft)
1	**MW-16**	75.00	58 42	9 5
2	**MW-19**	95 50	89 65	
3	**MW-20**	100.50	85 91	
4	**MW-21**	109 50	95 05	8 4
5	**MW-22**	107 80	98 01	6 1
6	**MW-23**	113 60	100 42	
7	**MW-24**	114.70	108 89	
8	**MW-26**	110 00	100 66	
9	**MW-34**	156 70	143 31	
10	**MW-36**	209.40	158 71	
11	**MW-38**	155 00	137.48	
12	**MW-39**	115 60	104 39	
13	**MW-47**	120.00	102 50	5 0
14	**MW-50**	125 00	86 61	5.0
15	**MW-52**	104 00	82.01	
16	**MW-53**	82 50	73 71	
17	**MW-55**	74 00	71.00	
18	**MW-62**	96 00	93 94	
19	**MW-63**[2]	134 50	108 60	
20	**MW-64**	112 00	107 38	
21	**MW-66**	112 50	80 06	
22	**MW-72**	121 20	89 20	5 5
23	**MW-81**	211 00	144 95	
24	**MW-82**	200.00	140 27	
25	**MW-83**	187 00	146.73	6 0
26	**MW-84**	89 50	82 70	
27	**MW-85****	110 90	99 97	5 5
28	**MW-86****	117 50	98 27	9 6
29	**MW-88****	97.00	80 98	7.5
30	**MW-89**	177 50	120 41	
31	**MW-90**	145.50	120.25	
32	**MW-92****	108 00	96 75	5 6
33	**MW-93****	107 00	102 45	2 3
34	**MW-94****	110 50	107 07	
35	**MW-96****	95 50	83 02	6 2
36	**MW-97****	117 50	101 25	8 1
37	**MW-98****	147 00	102.00	5 0
38	**MW-99****	111 50	89 60	
39	**MW-100B**[1]	127 50	92 95	10 0
40	**MW-101****	134 00	93 32	0 5 (middle screen int)
	Middle Interval			
	Lower Interval			
41	**MW-102B**[1]	140 50	110 66	10 0
42	**MW-103****	90 00	69 43	
43	**MW-104****	90 50	63 01	
44	**MW-107****	158 00	114 43	
	Lower Interval			
45	**MW-108****	170 00	113 21	
1	**PZ-01**	113 70	105 02	
2	**PZ-03**	118 90	107 04	
3	**PZ-04**	108 30	98 34	
4	**PZ-05**	78 10	59 50	
5	**PZ-06**	99 40	73 52	
6	**PZ-07**	111 30	98.98	
7	**PZ-08**	108 20	84 49	

Notes.

Five monitoring wells were not sampled during this event, including MW-1

[1] = Replacement Monitoring Wells for MW-100 and MW-102 Depth-to-wa

[2]= MW-63 was sampled after the top of the casing at ground surface had b

** = Monitoring wells sampled during the LTOA event.

Depth-to-water measurement for MW-66 is from the November 12, 1998 g

NA = Not Applicable

Table 2

Field Parameters Collected from Monitoring Wells - March 2002

Main Installation Baseline Groundwater Sampling Event

Well ID	Turbidity (NTU)	pH	Conductivity (uS/cm)	Temperature (°C)	ORP (mV)	Dissolved Oxygen: Flow Cell (mg/L)	Carbon Dioxide (mg/L)	Ferrous Iron (mg/L)
MW-16	0	6 40	0.48	19 40	33	2 30	193	NA
MW-21	3.8	5.94	0 223	14 65	162	5 54	68.2	0.08
MW-22	8.5	6.26	0.418	16.28	171	6.59	63.2	0 13
MW-26	0	6.30	0 31	17 40	128	5.30	164	0.01
MW-47	9 2	5 95	0.186	17.37	171	3.21	76.2	0
MW-50	5.5	6.20	0.79	19.60	128	3.70	213	0
MW-72	9.6	6.34	0.334	18.09	260	6.31	74 6	0 03
MW-85	8.8	6.00	0 19	20 60	90	3.40	114.2	0 09
MW-86	63 8	6.10	0 16	20 10	122	9 00	102 4	0 14
MW-88	>999	7.00	0.28	19.80	125	9.90	196	0
MW-89 (152 ft BTOC)	>999	6.00	0 23	18.20	109	3.50	NA	NA
MW-89 (162 ft BTOC)	456	6 00	0 23	18.20	118	3.50	NA	NA
MW-89 (172 ft BTOC)	375	6.00	0.24	17.70	103	3.60	NA	NA
MW-90	203	5.90	0 44	17.50	170	4 40	NA	NA
MW-92	8.3	6.00	0.24	19 20	184	7.40	140 6	0 2
MW-93	8.6	5 80	0.178	11.96	160	6.91	64 4	0 14
MW-96	8.5	6.40	0.55	18.60	-19	2.10	235	3 16
MW-97	9.4	6 09	0.269	16.77	139	4.11	113 6	0 11
MW-98	18.1	6.30	0.24	18.20	180	3.90	139	0 05
MW-100B	5.7	6.30	0.26	18.70	144	2.70	233	0.05
MW-101	0	6.40	0.36	18.30	132	6 60	221	0.01
MW-102B	9.6	6 27	0 472	17 71	226	5.81	78	0 19
PZ-01	>999	6.16	0.189	18.60	103	8 45	NA	NA
PZ-03	>999	6.42	0 25	16 50	120	6.23	NA	NA
PZ-04	>999	6.21	0 253	16.18	157	8 55	NA	NA
PZ-05	>999	6.08	0.379	16.34	202	7.11	NA	NA
PZ-06	468	6 38	0.348	18.40	45	5 35	NA	NA
PZ-07	155	6 51	0.235	16.42	22	6.11	NA	NA
PZ-08	29 7	6.05	0 173	17 87	140	7 58	NA	NA

Notes.
NTU = Nephelometric Turbidity Units
uS/cm = microseconds per centimeter
C = Celcius
mV = millivolts
mg/L = milligrams per liter
MW Monitoring Well
PZ Piezometer
ft BTOC Feet Below Top-of-Casing
NA Parameter not analyzed for

Table 3

VOC and SVOC PDB and Low-Flow Sample Result Summary - March 2002

Main Installation Baseline Groundwater Sampling Event

Sample Identification	Date of Sample Collection	Parameter	Result	Laboratory Qualifier	Adjusted Minimum Detection Limit	Adjusted Reporting Limit	Dilution
MW20-105-110BL	03/18/2002	CHLOROFORM	0.27	J	0.125	1	1
MW21-98-103BL	03/20/2002	CIS-1,2-DICHLOROETHENE	1.9	=	0.25	1	1
		TETRACHLOROETHENE	90	=	0.25	1	1
		TRICHLOROETHENE	76	=	0.25	1	1
MW22-99-104BL	03/18/2002	2-BUTANONE	2.5	J	2.5	10	1
		TETRACHLOROETHENE	0.27	J	0.25	1	
MW23-95-100BL	03/18/2002	ACETONE	7.5	J	2.5	10	1
MW-26-106-BL	03/21/2002	TETRACHLOROETHENE	8.1	=	0.25	5	1
		CARBON TETRACHLORIDE	3.7		0.25	5	1
		TRICHLOROETHENE	1.6		0.25	5	1
MW34-147-152BL	03/18/2002	CHLOROFORM	3	=	0.125	1	1
		CARBON TETRACHLORIDE	0.7		0.25	1	1
		TRICHLOROETHENE	0.93		0.25	1	1
MW38-145-150BL	03/18/2002	TOLUENE	0.33	J	0.25	1	1
MW39-107-112BL	03/18/2002	TETRACHLOROETHENE	8.2	=	0.25	1	1
		TRICHLOROETHENE	3.8		0.25	1	1
		1,2-DICHLOROETHANE	0.27	J	0.25	1	1
		CHLOROFORM	0.18	J	0.125	1	1
		CIS-1,2-DICHLOROETHENE	0.48	J	0.25	1	
MW50-117.5-122.5BL	03/19/2002	TRICHLOROETHENE	1.2		0.25	1	1
		CHLOROFORM	0.25	J	0.125	1	1
		CIS-1,2-DICHLOROETHENE	0.48	J	0.25	1	
MW52-96.5-101.5BL	03/19/2002	TETRACHLOROETHENE	6.4	=	0.25	1	1
		CHLOROFORM	0.35	J	0.125	1	1
		CIS-1,2-DICHLOROETHENE	0.53	J	0.25	1	
		TRICHLOROETHENE	0.59		0.25	1	1
MW53-75-80BL	03/18/2002	2-BUTANONE	2.7	J	2.5	10	1
		TETRACHLOROETHENE	0.6	J	0.25	1	
MW62-94-95BL	03/18/2002	1,1-DICHLOROETHENE	3	=	0.5	1	1
		CIS-1,2-DICHLOROETHENE	190	=	0.25	1	1
		TRICHLOROETHENE	6.5	=	0.25	1	1
		VINYL CHLORIDE	28	=	0.25	1	1
		CHLOROFORM	0.18	J	0.125	1	1
		TOLUENE	0.65	J	0.25	1	1
MW63-128-133BL	03/18/2002	CHLOROFORM	12	=	0.125	1	1
		TETRACHLOROETHENE	9.7	=	0.25	1	1
		TRICHLOROETHENE	15	=	0.25	1	1
		1,1-DICHLOROETHANE	0.65	J	0.125	1	1
		1,1-DICHLOROETHENE	0.7	J	0.5	1	1
		CIS-1,2-DICHLOROETHENE	0.36	J	0.25	1	
MW64-108-110BL	03/18/2002	1,1,2,2-TETRACHLOROETHANE	3.5	=	0.125	1	
		CARBON TETRACHLORIDE	3.8		0.25	1	1
		TETRACHLOROETHENE	10	=	0.25	1	1
		TRICHLOROETHENE	45	=	0.25	1	1
		1,2-DICHLOROETHANE	0.51	J	0.25	1	1
		CHLOROFORM	0.85	J	0.125	1	1
		CIS-1,2-DICHLOROETHENE	0.45	J	0.25	1	
MW83-178.5-183.5BL	03/20/2002	CHLOROMETHANE	1	=	0.25	1	1
		TOLUENE	0.47	J	0.25	1	1
MW84-83-88BL	03/18/2002	1,2-DICHLOROETHANE	3.4	=	0.25	1	1
		CARBON TETRACHLORIDE	3.8		0.25	1	1
		CHLOROFORM	0.52	J	0.125	1	1
		TETRACHLOROETHENE	0.37	J	0.25	1	
MW89-150-155BL	03/19/2002	TOLUENE	0.27	J	0.25	1	1
MW-89-152-BL**		BIS(2-ETHYLHEXYL)PHTHALATE	4.23	J	2.66	5.32	1
MW-89-152-BLD**		BIS(2-ETHYLHEXYL)PHTHALATE	3.97	J	2.66	5.32	1
MW-89-162-BL**		BIS(2-ETHYLHEXYL)PHTHALATE	6.59	=	2.66	5.32	1
MW89-167-172BL		TRICHLOROETHENE	0.69		0.25	1	1
MW89-167-172BLD		TRICHLOROETHENE	0.64		0.25	1	1
MW90-125-130BL	03/19/2002	CHLOROFORM	3.5	=	0.125	1	1
		TETRACHLOROETHENE	8.8	=	0.25	1	1
		TRICHLOROETHENE	2.7	=	0.25	1	1
		1,2-DICHLOROPROPANE	0.37	J	0.125	1	1
		CARBON TETRACHLORIDE	0.32		0.25	1	1
MW90-135-140BL	03/19/2002	CHLOROFORM	8.9	=	0.125	1	1
		TETRACHLOROETHENE	58	=	0.25	1	1
		TRICHLOROETHENE	10	=	0.25	1	1
		1,1-DICHLOROETHANE	0.4	J	0.125	1	1
		CARBON TETRACHLORIDE	0.65		0.25	1	1
		CIS-1,2-DICHLOROETHENE	0.44	J	0.25	1	

Table 3

VOC and SVOC PDB and Low-Flow Sample Result Summary - March 2002

Main Installation Baseline Groundwater Sampling Event

Sample Identification	Date of Sample Collection	Parameter	Result	Laboratory Qualifier	Adjusted Minimum Detection Limit	Adjusted Reporting Limit	Dilution
MW90-135-140BLD	03/19/2002	CHLOROFORM	9	=	0.125	1	1
		TETRACHLOROETHENE	60	=	0.25	1	1
		TRICHLOROETHENE	10	=	0.25	1	1
		1,1-DICHLOROETHANE	0.4	J	0.125	1	1
		CARBON TETRACHLORIDE	0.69	U	0.25	1	1
		CIS-1,2-DICHLOROETHENE	0.41	J	0.25	1	1
PZ03-110-112BL	03/20/2002	TETRACHLOROETHENE	7.1	=	0.25	1	1
		CIS-1,2-DICHLOROETHENE	0.55	J	0.25	1	1
		TRICHLOROETHENE	0.66	U	0.25	1	1
PZ04-102-104BL	03/20/2002	TETRACHLOROETHENE	2.7	=	0.25	1	1
		BENZENE	0.3	J	0.125	1	1
PZ04-102-104BLD1		ACETONE	1600	=	25	100	10
PZ05-74-76BL	03/20/2002	TRICHLOROETHENE	46	=	0.25	1	1
PZ06-96-98BL	03/20/2002	ACETONE	4	J	2.5	10	1
		TOLUENE	0.37	J	0.25	1	1
		TRICHLOROETHENE	0.31	U	0.25	1	1
PZ07-106-108BL	03/19/2002	CIS-1,2-DICHLOROETHENE	1.9	=	0.25	1	1
		TRICHLOROETHENE	2.4	=	0.25	1	1

All results reported in micrograms per liter

Only detected parameters presented in this table

All samples were analyzed according to EPA Method SW846 8260B, unless otherwise noted

**Samples analyzed according to EPA Method SW846 8270

Shading and bold value indicates parameter exceedance of Federal Drinking Water Maximum Contaminant Levels (MCLs) or Maximum Contaminant Level Goal (MCLG)

MW Monitoring Well

PZ Piezometer

J = Evidence of parameter present. Parameter detected at or below laboratory detection limit.

D = Same sample as predecessor sample with similar sample number, however sample diluted to define the concentration of the parameter in the sample

Table 4
VOC and SVOC PDB and Low-Flow Sample Result Summary - November/December 2001
Main Installation LTOA Sampling Event

Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-100-1	12/11/01	1,1,2,2-Tetrachloroethane	1 7	=	0 09	1
		1,1-Dichloroethene	0 13	J	0 11	1
		1,2-Dichloroethane	0 15	J	0.11	1
		Acetone	49	J	1 1	5
		cis-1,2-Dichloroethene	1 1	=	0 12	1
		Tetrachloroethene	14	=	0 12	1
		trans-1,2-Dichloroethene	0 14	J	0.11	1
MW-100-1DL	12/11/01	Trichloroethene	44	=	0 65	5
MW-100-2	12/11/01	1,1,2,2-Tetrachloroethane	0 38	J	0 09	1
		1,1-Dichloroethene	0 12	J	0 11	1
		1,2-Dichloroethane	0 15	J	0 11	1
		cis-1,2-Dichloroethene	1 1	=	0 12	1
		trans-1,2-Dichloroethene	0 18	J	0 11	1
MW-100-2DL	12/11/01	Tetrachloroethene	41	=	1 2	10
		Trichloroethene	58	=	1 3	10
MW-100-3	12/11/01	1,1,2,2-Tetrachloroethane	0 42	J	0 09	1
		1,1-Dichloroethene	0 14	J	0.11	1
		1,2-Dichloroethane	0 21	J	0 11	1
		cis-1,2-Dichloroethene	1 2	=	0 12	1
		trans-1,2-Dichloroethene	0 12	J	0 11	1
MW-100-3DL	12/11/01	Tetrachloroethene	43	=	1 2	10
		Trichloroethene	65	=	1 3	10
MW-100-4	12/11/01	1,1-Dichloroethene	0 28	J	0 11	1
		1,2-Dichloroethane	0 18	J	0 11	1
		Bromomethane	0 2	J	0 18	1
		cis-1,2-Dichloroethene	1 2	=	0 12	1
		trans-1,2-Dichloroethene	0 18	J	0 11	1
MW-100-4DL	12/11/01	Tetrachloroethene	63	=	1 2	10
		Trichloroethene	81	=	1 3	10
MW-100-5	12/11/01	1,1,2,2-Tetrachloroethane	0 59	J	0 09	1
		1,1-Dichloroethene	0 29	J	0 11	1
		1,2-Dichloroethane	0 17	J	0 11	1
		cis-1,2-Dichloroethene	1 3	=	0 12	1
		trans-1,2-Dichloroethene	0 15	J	0 11	1
MW-100-5DL	12/11/01	Tetrachloroethene	65	=	1 2	10
		Trichloroethene	97	=	1 3	10
MW-100-6	12/11/01	1,1,2,2-Tetrachloroethane	0 12	J	0 09	1
		1,2-Dichloroethane	0 11	J	0 11	1
		cis-1,2-Dichloroethene	1 2	=	0 12	1
		trans-1,2-Dichloroethene	0 15	J	0 11	1
MW-100-6DL	12/11/01	Tetrachloroethene	51	=	1 2	10
		Trichloroethene	75	=	1 3	10
MW-100-7	12/11/01	1,1,2,2-Tetrachloroethane	0 15	J	0 09	1
		1,1-Dichloroethene	0 2	J	0 11	1
		1,2-Dichloroethane	0 16	J	0 11	1
		cis-1,2-Dichloroethene	1 2	=	0.12	1
		trans-1,2-Dichloroethene	0 16	J	0 11	1
MW-100-7DL	12/11/01	Tetrachloroethene	55	=	1 2	10
		Trichloroethene	94	=	1 3	10
MW-100-8	12/11/01	1,1,2,2-Tetrachloroethane	0 23	J	0.09	1
		1,1-Dichloroethene	0.21	J	0 11	1
		1,2-Dichloroethane	0 17	J	0 11	1
		cis-1,2-Dichloroethene	1 2	=	0 12	1
		trans-1,2-Dichloroethene	0 13	J	0 11	1
MW-100-8DL	12/11/01	Tetrachloroethene	61	=	1 2	10
		Trichloroethene	97	=	1 3	10
MW-100-9	12/11/01	1,1,2,2-Tetrachloroethane	0 13	J	0 09	1
		1,1-Dichloroethene	0 18	J	0 11	1
		1,2-Dichloroethane	0 14	J	0 11	1
		cis-1,2-Dichloroethene	1.2	=	0 12	1
		trans-1,2-Dichloroethene	0 17	J	0 11	1
MW-100-9DL	12/11/01	Tetrachloroethene	63	=	1 2	10
		Trichloroethene	98	=	1 3	10

Table 4
VOC and SVOC PDB and Low-Flow Sample Result Summary - November/December 2001
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Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-101-109	12/21/01	cis-1,2-Dichloroethene	0 27	J	0 12	1
		Trichloroethene	0.87	J	0.13	1
MW-101-109DL	12/21/01	Tetrachloroethene	450	=	4 8	40
MW-101-124	12/21/01	Chloroform	0.42	J	0 12	1
		cis-1,2-Dichloroethene	0 39	J	0 12	1
		Trichloroethene	0 84	J	0 13	1
MW-101-124DL	12/21/01	Tetrachloroethene	460	=	4 8	40
MW-101-89	12/21/01	Chloroform	0.38	J	0 12	1
		cis-1,2-Dichloroethene	0 34	J	0 12	1
		Trichloroethene	0.95	J	0 13	1
MW-101-89DL	12/21/01	Tetrachloroethene	530	=	4 8	40
MW-102-1	12/11/01	1,1,2,2-Tetrachloroethane	0 23	J	0 09	1
		Carbon disulfide	0 33	J	0 14	1
		Trichloroethene	0 9	J	0 13	1
MW-102-2	12/11/01	1,1,2,2-Tetrachloroethane	0 44	J	0 09	1
		Carbon disulfide	0 28	J	0 14	1
		Trichloroethene	0 33	J	0 13	1
MW-102-3	12/11/01	1,1,2,2-Tetrachloroethane	0 35	J	0 09	1
		Carbon disulfide	0 21	J	0 14	1
		Trichloroethene	0 25	J	0 13	1
MW-102-4	12/11/01	1,1,2,2-Tetrachloroethane	0 3	J	0 09	1
		Trichloroethene	0 22	J	0 13	1
MW-102-5	12/11/01	1,1,2,2-Tetrachloroethane	0 23	J	0 09	1
		Trichloroethene	0 18	J	0 13	1
MW-102-6	12/11/01	1,1,2,2-Tetrachloroethane	0 13	J	0.09	1
MW-103-1	11/30/01	1,1-Dichloroethane	0 21	J	0 14	1
		Acetone	1.5	J	1 4	5
		Chloroform	1 9	=	0 14	1
		Ethylbenzene	0 14	J	0 12	1
		m-,p-Xylene	0 45	J	0 23	2
		o-Xylene	0 13	J	0 13	1
		Toluene	0 18	J	0 11	1
		Trichloroethene	0.3	J	0 12	1
MW-103-2	11/30/01	1,1-Dichloroethane	0 42	J	0 14	1
		Chloroform	4 3	=	0 14	1
		m-,p-Xylene	0 28	J	0 23	2
		Trichloroethene	0 69	J	0.12	1
MW-103-3	11/30/01	1,1-Dichloroethane	1 7	=	0 14	1
		1,1-Dichloroethene	1 4	=	0 23	1
		1,2-Dichloroethane	0 18	J	0 1	1
		Chloroform	16	=	0 14	1
		cis-1,2-Dichloroethene	0 39	J	0 12	1
		Ethylbenzene	0 13	J	0 12	1
		m-,p-Xylene	0 38	J	0 23	2
		Trichloroethene	4 8	=	0 12	1
MW-103-4	11/30/01	1,1-Dichloroethane	1 4	=	0 14	1
		1,1-Dichloroethene	1.1	=	0 23	1
		1,2-Dichloroethane	0 18	J	0 1	1
		Chloroform	14	=	0 14	1
		cis-1,2-Dichloroethene	0 33	J	0 12	1
		Trichloroethene	3 9	=	0.12	1
MW-103-5	11/30/01	1,1-Dichloroethane	1 6	=	0 14	1
		1,1-Dichloroethene	1 5	=	0 23	1
		1,2-Dichloroethane	0.16	J	0 1	1
		Chloroform	15	=	0 14	1
		cis-1,2-Dichloroethene	0.34	J	0.12	1
		Ethylbenzene	0 15	J	0 12	1
		m-,p-Xylene	0 44	J	0 23	2
		Trichloroethene	4.4	=	0 12	1
MW-103-6	11/30/01	1,1-Dichloroethane	1 7	=	0 14	1
		1,1-Dichloroethene	1.2	=	0 23	1
		1,2-Dichloroethane	0 17	J	0 1	1
		Chloroform	16	=	0 14	1
		cis-1,2-Dichloroethene	0 36	J	0 12	1
		Trichloroethene	4 6	=	0.12	1

Table 4
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Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-103-7	11/30/01	1,1-Dichloroethane	1 8	=	0 14	1
		1,1-Dichloroethene	1 4	=	0 23	1
		1,2-Dichloroethane	0 18	J	0 1	1
		Chloroform	17	=	0 14	1
		cis-1,2-Dichloroethene	0 39	J	0 12	1
		Trichloroethene	4 9	=	0 12	1
MW-103-8	11/30/01	1,1-Dichloroethane	1 7	=	0 14	1
		1,1-Dichloroethene	1 2	=	0 23	1
		1,2-Dichloroethane	0 18	J	0 1	1
		Chloroform	16	=	0 14	1
		cis-1,2-Dichloroethene	0 38	J	0 12	1
		Trichloroethene	4 9	=	0 12	1
MW-103-9	11/30/01	1,1-Dichloroethane	1 5	=	0 14	1
		1,1-Dichloroethene	1 1	=	0 23	1
		1,2-Dichloroethane	0 15	J	0 1	1
		Chloroform	17	=	0 14	1
		cis-1,2-Dichloroethene	0 37	J	0 12	1
		m-,p-Xylene	0 27	J	0 23	2
		Trichloroethene	5.6	=	0 12	1
MW-104-1	11/30/01	1,1-Dichloroethane	0 16	J	0 14	1
		Acetone	17	J	1 4	5
		Carbon disulfide	1.3	=	0 22	1
		Chloroform	4	=	0 14	1
		Ethylbenzene	0.61	J	0 12	1
		m-,p-Xylene	1 8	J	0 23	2
		o-Xylene	0 57	J	0 13	1
		Toluene	0.45	J	0 11	1
		Trichloroethene	0.89	J	0 12	1
MW-104-2	11/30/01	Acetone	16	J	1 1	5
		Carbon disulfide	1 7	=	0 14	1
		Chloroform	4 6	=	0 12	1
		Ethylbenzene	0 69	J	0 11	1
		m-,p-Xylene	2 2	=	0 2	2
		Methylene chloride	0 13	J	0 06	1
		o-Xylene	0 69	J	0 1	1
		Trichloroethene	1 1	=	0 13	1
MW-104-3	11/30/01	1,1-Dichloroethane	0 16	J	0 12	1
		Acetone	14	J	1.1	5
		Carbon disulfide	1 5	=	0 14	1
		Chloroform	4 8	=	0 12	1
		Ethylbenzene	0 73	J	0 11	1
		m-,p-Xylene	2 4	=	0 2	2
		o-Xylene	0 74	J	0 1	1
		Trichloroethene	1 1	=	0 13	1
MW-104-4	11/30/01	1,1-Dichloroethane	0 16	J	0 12	1
		Carbon disulfide	1 4	=	0 14	1
		Chloroform	5	=	0 12	1
		Ethylbenzene	0 7	J	0 11	1
		m-,p-Xylene	2 2	=	0 2	2
		o-Xylene	0 68	J	0 1	1
		Trichloroethene	1 3	=	0 13	1
MW-104-5	11/30/01	1,1-Dichloroethane	0 37	J	0 12	1
		1,1-Dichloroethene	0 48	J	0 11	1
		Acetone	3 1	J	1 1	5
		Carbon disulfide	0 94	J	0 14	1
		Chloroform	10	=	0 12	1
		cis-1,2-Dichloroethene	0 22	J	0 12	1
		Ethylbenzene	0 55	J	0 11	1
		m-,p-Xylene	1.6	J	0 2	2
		Methylene chloride	0 21	J	0 06	1
		o-Xylene	0 44	J	0 1	1
		Trichloroethene	6.4	=	0 13	1

Table 4
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Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-104-6	11/30/01	1,1-Dichloroethane	0 55	J	0 12	1
		1,1-Dichloroethene	1 1	=	0 11	1
		Acetone	2.2	J	1 1	5
		Chloroform	17	=	0 12	1
		cis-1,2-Dichloroethene	0 4	J	0 12	1
		Ethylbenzene	0 36	J	0 11	1
		m-,p-Xylene	1 3	J	0 2	2
		Methylene chloride	0 12	J	0 06	1
		o-Xylene	0 3	J	0 1	1
		Trichloroethene	16	=	0 13	1
MW-104-7	11/30/01	1,1-Dichloroethane	0 65	J	0 12	1
		1,1-Dichloroethene	1 4	=	0 11	1
		Chloroform	18	=	0 12	1
		cis-1,2-Dichloroethene	0 47	J	0 12	1
		Ethylbenzene	0 14	J	0 11	1
		m-,p-Xylene	0 39	J	0 2	2
		Trichloroethene	19	=	0 13	1
MW-104-8	11/30/01	1,1-Dichloroethane	0.49	J	0.12	1
		1,1-Dichloroethene	1 2	=	0 11	1
		Bromomethane	1 5	=	0.18	1
		Chloroform	14	=	0.12	1
		cis-1,2-Dichloroethene	0 36	J	0 12	1
		Ethylbenzene	0.18	J	0.11	1
		m-,p-Xylene	0.48	J	0 2	2
		Trichloroethene	19	=	0 13	1
MW-104-9	11/30/01	1,1-Dichloroethane	0.56	J	0 12	1
		1,1-Dichloroethene	1 3	=	0 11	1
		Acetone	2 2	J	1 1	5
		Chloroform	19	=	0 12	1
		cis-1,2-Dichloroethene	0.45	J	0 12	1
		Trichloroethene	20	=	0 13	1
MW-107-125B	12/21/01	Carbon tetrachloride	0.52	J	0 1	1
		Chloroform	0.14	J	0 12	1
		cis-1,2-Dichloroethene	0 34	J	0 12	1
		Tetrachloroethene	0.95	J	0 12	1
		Trichloroethene	2 8	=	0 13	1
MW-107-147	12/21/01	Carbon tetrachloride	0 6	J	0 1	1
		Chloroform	0 16	J	0 12	1
		cis-1,2-Dichloroethene	0 29	J	0 12	1
		Tetrachloroethene	0 67	J	0 12	1
		Trichloroethene	2 6	=	0 13	1
MW-108**	12/21/01	bis(2-Ethylhexyl)phthalate	9	J	0 59	10
		Carbon disulfide	0 28	J	0 14	1
		Chloroform	6 4	=	0 12	1
		cis-1,2-Dichloroethene	0 18	J	0 12	1
		Methylene chloride	0 34	J	0 06	1
		Tetrachloroethene	2 6	=	0.12	1
		Toluene	0 23	J	0.12	1
		Trichloroethene	6.4	=	0 13	1
MW-63	09/27/01	1,1-Dichloroethane	0 5	J	0.28	1
		Chloroform	5.69	=	0 26	1
		cis-1,2-Dichloroethene	0.46	J	0 13	1
		Tetrachloroethene	2.4	=	0 4	1
		Trichloroethene	4.48	=	0 35	1
MW-85-2	11/30/01	1,2-Dichloroethane	1 3	=	0 11	1
		1,2-Dichloropropane	0.45	J	0 11	1
		Bromomethane	0 33	J	0 18	1
		Chlorobenzene	0.27	J	0 1	1
		Chloromethane	0 2	J	0 13	1
		Ethylbenzene	0.15	J	0.11	1
		m-,p-Xylene	0 55	J	0.2	2
		Methylene chloride	0.59	J	0 06	1
		o-Xylene	0.11	J	0 1	1
		trans-1,2-Dichloroethene	0.49	J	0 11	1

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Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-85-2DL	11/30/01	Carbon tetrachloride	110	=	2	20
		Chloroform	61	=	2 4	20
		cis-1,2-Dichloroethene	25	=	2.4	20
		Tetrachloroethene	45	=	2 4	20
		Trichloroethene	21	=	2 6	20
MW-85-3	11/30/01	1,2-Dichloroethane	1 4	=	0 11	1
		1,2-Dichloropropane	0 58	J	0 11	1
		Benzene	0 12	J	0 12	1
		Chlorobenzene	0 29	J	0 1	1
		Methylene chloride	0 23	J	0 06	1
		trans-1,2-Dichloroethene	0 74	J	0 11	1
MW-85-3DL	11/30/01	Carbon tetrachloride	140	=	2	20
		Chloroform	66	=	2 4	20
		cis-1,2-Dichloroethene	30	=	2 4	20
		Tetrachloroethene	67	=	2 4	20
		Trichloroethene	26	=	2 6	20
MW-85-4	11/30/01	1,2-Dichloroethane	1.3	=	0 11	1
		1,2-Dichloropropane	0 48	J	0 11	1
		Chlorobenzene	0 26	J	0 1	1
		m-,p-Xylene	0 43	J	0 2	2
		trans-1,2-Dichloroethene	0 62	J	0 11	1
MW-85-4DL	11/30/01	Carbon tetrachloride	130	=	2	20
		Chloroform	67	=	2 4	20
		cis-1,2-Dichloroethene	30	=	2 4	20
		Tetrachloroethene	54	=	2 4	20
		Trichloroethene	23	=	2 6	20
MW-85-5	11/30/01	1,2-Dichloroethane	1 3	=	0 11	1
		1,2-Dichloropropane	0 57	J	0 11	1
		Chlorobenzene	0 28	J	0 1	1
		m-,p-Xylene	0 34	J	0 2	2
		Methylene chloride	0 61	J	0 06	1
		trans-1,2-Dichloroethene	0 96	J	0.11	1
MW-85-5DL	11/30/01	Carbon tetrachloride	120	=	2	20
		Chloroform	63	=	2 4	20
		cis-1,2-Dichloroethene	28	=	2 4	20
		Tetrachloroethene	49	=	2 4	20
		Trichloroethene	25	=	2 6	20
MW-85-6	11/30/01	1,2-Dichloroethane	1 2	=	0 11	1
		1,2-Dichloropropane	0 4	J	0 11	1
		Acetone	4 3	J	1 1	5
		Chlorobenzene	0 24	J	0 1	1
		Chloromethane	0 14	J	0 13	1
		Ethylbenzene	0 25	J	0 11	1
		m-,p-Xylene	0 89	J	0.2	2
		Methylene chloride	0 55	J	0 06	1
		o-Xylene	0 21	J	0 1	1
		trans-1,2-Dichloroethene	0 58	J	0 11	1
MW-85-6DL	11/30/01	Carbon tetrachloride	110	=	2	20
		Chloroform	64	=	2 4	20
		cis-1,2-Dichloroethene	28	=	2.4	20
		Tetrachloroethene	31	=	2 4	20
		Trichloroethene	21	=	2 6	20
MW-86-1	11/30/01	1,2-Dichloroethane	7 5	=	0 1	1
		1,2-Dichloropropane	1.1	=	0 08	1
		cis-1,2-Dichloroethene	18	=	0.12	1
		Ethylbenzene	0.22	J	0 12	1
		m-,p-Xylene	0.66	J	0 23	2
		o-Xylene	0.23	J	0 13	1
		Tetrachloroethene	18	=	0 12	1
		Toluene	0.52	J	0 11	1
		trans-1,2-Dichloroethene	0.28	J	0 15	1
		Trichloroethene	5.2	=	0 12	1
MW-86-1DL	11/30/01	Carbon tetrachloride	26	=	0 7	5
		Chloroform	34	=	0 7	5

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Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-86-2	11/30/01	1,2-Dichloroethane	6 7	=	0 1	1
		1,2-Dichloropropane	1 5	=	0 08	1
		Chlorobenzene	0 11	J	0.1	1
		trans-1,2-Dichloroethene	0 39	J	0 15	1
MW-86-2DL	11/30/01	Carbon tetrachloride	79	=	1 4	10
		Chloroform	73	=	1 4	10
		cis-1,2-Dichloroethene	47	=	1 2	10
		Tetrachloroethene	190	=	1 2	10
		Trichloroethene	21	=	1 2	10
MW-86-3	11/30/01	1,2-Dichloroethane	2 8	=	0 1	1
		1,2-Dichloropropane	1 3	=	0 08	1
		Chlorobenzene	0.12	J	0 1	1
		trans-1,2-Dichloroethene	0.92	J	0 15	1
MW-86-3DL	11/30/01	Carbon tetrachloride	94	=	2 8	20
		Chloroform	84	=	2 8	20
		cis-1,2-Dichloroethene	58	=	2 4	20
		Tetrachloroethene	280	=	2 4	20
		Trichloroethene	25	=	2 4	20
MW-86-4	11/30/01	1,2-Dichloroethane	2 5	=	0 1	1
		1,2-Dichloropropane	1 3	=	0 08	1
		Chlorobenzene	0.12	J	0 1	1
		trans-1,2-Dichloroethene	1 7	=	0 15	1
MW-86-4DL	11/30/01	Carbon tetrachloride	95	=	2 8	20
		Chloroform	81	=	2 8	20
		cis-1,2-Dichloroethene	59	=	2 4	20
		Tetrachloroethene	280	=	2 4	20
		Trichloroethene	25	=	2 4	20
MW-86-5	11/30/01	1,2-Dichloroethane	2	=	0.1	1
		1,2-Dichloropropane	1 2	=	0 08	1
		Chlorobenzene	0.12	J	0 1	1
		trans-1,2-Dichloroethene	1	=	0 15	1
MW-86-5DL	11/30/01	Carbon tetrachloride	93	=	2 8	20
		Chloroform	80	=	2 8	20
		cis-1,2-Dichloroethene	57	=	2 4	20
		Tetrachloroethene	280	=	2 4	20
		Trichloroethene	25	=	2 4	20
MW-86-6	11/30/01	1,2-Dichloroethane	2 9	=	0 1	1
		1,2-Dichloropropane	1 3	=	0 08	1
		Chlorobenzene	0.11	J	0 1	1
		trans-1,2-Dichloroethene	1 1	=	0 15	1
MW-86-6DL	11/30/01	Carbon tetrachloride	89	=	2 8	20
		Chloroform	80	=	2 8	20
		cis-1,2-Dichloroethene	55	=	2 4	20
		Tetrachloroethene	230	=	2 4	20
		Trichloroethene	23	=	2 4	20
MW-86-7	11/30/01	1,2-Dichloroethane	2 9	=	0 1	1
		1,2-Dichloropropane	1 3	=	0 08	1
		Chlorobenzene	0.11	J	0 1	1
		trans-1,2-Dichloroethene	0.69	J	0 15	1
MW-86-7DL	11/30/01	Carbon tetrachloride	90	=	2 8	20
		Chloroform	78	=	2 8	20
		cis-1,2-Dichloroethene	53	=	2 4	20
		Tetrachloroethene	240	=	2 4	20
		Trichloroethene	24	=	2 4	20
MW-86-8	11/30/01	1,2-Dichloroethane	2 8	=	0 1	1
		1,2-Dichloropropane	1 3	=	0 08	1
		trans-1,2-Dichloroethene	0 63	J	0 15	1
MW-86-8DL	11/30/01	Carbon tetrachloride	89	=	2 8	20
		Chloroform	83	=	2 8	20
		cis-1,2-Dichloroethene	56	=	2 4	20
		Tetrachloroethene	200	=	2 4	20
		Trichloroethene	24	=	2 4	20

Table 4
VOC and SVOC PDB and Low-Flow Sample Result Summary - November/December 2001
Main Installation LTOA Sampling Event

Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-86-9	11/30/01	1,2-Dichloroethane	2 1	=	0 11	1
		1,2-Dichloropropane	0 97	J	0 11	1
		Ethylbenzene	0 22	J	0.11	1
		m-,p-Xylene	0 56	J	0 2	2
		Methylene chloride	7.9	=	0 06	1
		o-Xylene	0 16	J	0 1	1
		Toluene	0 22	J	0 12	1
		Trichloroethene	12	=	0 13	1
MW-86-9DL	11/30/01	Carbon tetrachloride	37	=	1	10
		Chloroform	98	=	1 2	10
		cis-1,2-Dichloroethene	76	=	1 2	10
		Tetrachloroethene	60	=	1 2	10
MW-88-1	11/30/01	Carbon tetrachloride	3 2	=	0 14	1
		Chloroform	1 1	=	0.14	1
		cis-1,2-Dichloroethene	2 1	=	0 12	1
		Ethylbenzene	0.48	J	0 12	1
		m-,p-Xylene	1 3	J	0 23	2
		o-Xylene	0.41	J	0 13	1
		Tetrachloroethene	8 1	=	0 12	1
		Toluene	0.68	J	0 11	1
		Trichloroethene	1 1	=	0 12	1
MW-88-2	11/30/01	Carbon tetrachloride	2.9	=	0 14	1
		Chloroform	1	=	0 14	1
		cis-1,2-Dichloroethene	1 8	=	0 12	1
		Ethylbenzene	0 42	J	0 12	1
		m-,p-Xylene	0 7	J	0 23	2
		o-Xylene	0 22	J	0.13	1
		Tetrachloroethene	5 3	=	0 12	1
		Toluene	0 64	J	0 11	1
		Trichloroethene	0 97	J	0 12	1
MW-88-3	11/30/01	Carbon tetrachloride	1.8	=	0.14	1
		Chloroform	0 64	J	0 14	1
		cis-1,2-Dichloroethene	1 1	=	0 12	1
		Ethylbenzene	0 26	J	0.12	1
		m-,p-Xylene	0.26	J	0 23	2
		Tetrachloroethene	2 5	=	0 12	1
		Toluene	0 53	J	0.11	1
		Trichloroethene	0.71	J	0 12	1
MW-88-4	11/30/01	Carbon tetrachloride	1.3	=	0.14	1
		Chloroform	0 51	J	0 14	1
		cis-1,2-Dichloroethene	0.81	J	0 12	1
		Ethylbenzene	0 46	J	0 12	1
		m-,p-Xylene	0.82	J	0 23	2
		o-Xylene	0.29	J	0 13	1
		Tetrachloroethene	2 3	=	0 12	1
		Toluene	0 57	J	0 11	1
		Trichloroethene	0 58	J	0 12	1
MW-88-5	11/30/01	Carbon tetrachloride	1	=	0 14	1
		Chloroform	0 42	J	0 14	1
		cis-1,2-Dichloroethene	0 63	J	0 12	1
		Ethylbenzene	0 31	J	0 12	1
		m-,p-Xylene	0 61	J	0 23	2
		o-Xylene	0 18	J	0 13	1
		Tetrachloroethene	2 2	=	0 12	1
		Toluene	0 29	J	0 11	1
		Trichloroethene	0 52	J	0 12	1
MW-88-6	11/30/01	Carbon tetrachloride	3 1	=	0 14	1
		Chloroform	1 2	=	0 14	1
		cis-1,2-Dichloroethene	0 94	J	0 12	1
		Ethylbenzene	0 16	J	0 12	1
		m-,p-Xylene	0 28	J	0 23	2
		Tetrachloroethene	8 8	=	0 12	1
		Trichloroethene	3 8	=	0 12	1
MW-88-7	11/30/01	Carbon tetrachloride	5.2	=	0 14	1
		Chloroform	1.9	=	0.14	1
		cis-1,2-Dichloroethene	1 4	=	0 12	1
		Trichloroethene	5.6	=	0 12	1
MW-88-7DL	11/30/01	Tetrachloroethene	29	=	0 24	2

Table 4
VOC and SVOC PDB and Low-Flow Sample Result Summary - November/December 2001
Main Installation LTOA Sampling Event

Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-88-8	11/30/01	Carbon tetrachloride	5.6	=	0 14	1
		Chloroform	1 9	=	0 14	1
		cis-1,2-Dichloroethene	1 5	=	0 12	1
		Trichloroethene	6.1	=	0 12	1
MW-88-8DL	11/30/01	Tetrachloroethene	27	=	0 24	2
MW-92-2	11/30/01	1,2-Dichloroethane	0 14	J	0 1	1
		1,2-Dichloropropane	0 095	J	0 08	1
		Carbon tetrachloride	20	=	0 14	1
		Chloroform	6 9	=	0 14	1
		cis-1,2-Dichloroethene	7	=	0 12	1
		Trichloroethene	4 5	=	0 12	1
MW-92-2DL	11/30/01	Tetrachloroethene	150	=	1 2	10
MW-92-3	11/30/01	1,2-Dichloroethane	0.14	J	0 1	1
		1,2-Dichloropropane	0 087	J	0 08	1
		Carbon tetrachloride	20	=	0 14	1
		Chloroform	6 7	=	0 14	1
		cis-1,2-Dichloroethene	7	=	0 12	1
		Trichloroethene	4 5	=	0.12	1
MW-92-3DL	11/30/01	Tetrachloroethene	160	=	1 2	10
MW-92-4	11/30/01	1,2-Dichloroethane	0 12	J	0 1	1
		Carbon tetrachloride	18	=	0.14	1
		Chloroform	6 1	=	0 14	1
		cis-1,2-Dichloroethene	6.2	=	0 12	1
		Trichloroethene	4 2	=	0 12	1
MW-92-4DL	11/30/01	Tetrachloroethene	150	=	1 2	10
MW-92-5	11/30/01	1,2-Dichloroethane	0 11	J	0 1	1
		1,2-Dichloropropane	0 082	J	0 08	1
		Carbon tetrachloride	19	=	0 14	1
		Chloroform	6 5	=	0 14	1
		cis-1,2-Dichloroethene	6 6	=	0 12	1
		trans-1,2-Dichloroethene	0 19	J	0.15	1
		Trichloroethene	4 5	=	0 12	1
MW-92-5DL	11/30/01	Tetrachloroethene	160	=	1 2	10
MW-92-6	11/30/01	1,2-Dichloroethane	0 14	J	0.1	1
		1,2-Dichloropropane	0 089	J	0 08	1
		Carbon tetrachloride	18	=	0 14	1
		Chloroform	6 2	=	0 14	1
		cis-1,2-Dichloroethene	6 1	=	0 12	1
		Toluene	0 12	J	0 11	1
		trans-1,2-Dichloroethene	0 21	J	0 15	1
		Trichloroethene	4 3	=	0 12	1
MW-92-6DL	11/30/01	Tetrachloroethene	130	=	1 2	10
MW-93-6	11/30/01	Acetone	8	J	1.1	5
MW-93-7	11/30/01	Carbon disulfide	0 45	J	0 14	1
		Chloroform	0 69	J	0 12	1
		Ethylbenzene	0 36	J	0 11	1
		m-,p-Xylene	1 2	J	0 2	2
		o-Xylene	0 29	J	0 1	1
		Toluene	0.3	J	0 12	1
MW-93-7DL	11/30/01	Acetone	220	J	4 4	20
MW-94-2	12/11/01	Carbon disulfide	0.21	J	0.14	1
		Ethylbenzene	0.2	J	0 11	1
		m-,p-Xylene	0 48	J	0 2	2
		o-Xylene	0 13	J	0 1	1
MW-94-2DL	12/11/01	Acetone	2700	=	44	200
MW-96-1	11/30/01	Carbon tetrachloride	1 8	=	0 1	1
		Chloroform	2	=	0 12	1
		cis-1,2-Dichloroethene	0 23	J	0 12	1
		Ethylbenzene	0 3	J	0 11	1
		m-,p-Xylene	0 82	J	0 2	2
		Methylene chloride	0 31	J	0 06	1
		o-Xylene	0 23	J	0.1	1
		Tetrachloroethene	19	=	0 12	1
		Toluene	0 18	J	0 12	1
		Trichloroethene	0 19	J	0 13	1
MW-96-1DL	11/30/01	Acetone	2200	J	44	200

Table 4
VOC and SVOC PDB and Low-Flow Sample Result Summary - November/December 2001
Main Installation LTOA Sampling Event

Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-96-2	11/30/01	Chloroform	2 7	=	0 12	1
		Ethylbenzene	0.71	J	0 11	1
		m-,p-Xylene	2.1	=	0 2	2
		Methylene chloride	0.49	J	0 06	1
		o-Xylene	0 6	J	0 1	1
		Tetrachloroethene	0 88	J	0 12	1
		Toluene	0 57	J	0.12	1
MW-96-2DL	11/30/01	Acetone	2500	J	44	200
MW-96-3	11/30/01	Chloroform	3 8	=	0.12	1
		Chloromethane	0 13	J	0 13	1
		Ethylbenzene	0 7	J	0 11	1
		m-,p-Xylene	2	=	0 2	2
		Methylene chloride	1.2	=	0 06	1
		o-Xylene	0 56	J	0 1	1
		Tetrachloroethene	0 21	J	0.12	1
		Toluene	0 76	J	0 12	1
MW-96-3DL	11/30/01	Acetone	1900	J	44	200
MW-96-4	11/30/01	Carbon disulfide	0 17	J	0 14	1
		Chloroform	5 6	=	0 12	1
		Chloromethane	0 15	J	0 13	1
		Ethylbenzene	0 59	J	0 11	1
		m-,p-Xylene	1 7	J	0 2	2
		Methylene chloride	1 8	=	0 06	1
		o-Xylene	0 42	J	0 1	1
		Tetrachloroethene	0 3	J	0 12	1
		Toluene	0 83	J	0 12	1
MW-96-4DL	11/30/01	Acetone	1300	J	44	200
MW-96-5	11/30/01	Chloroform	6 3	=	0 12	1
		Ethylbenzene	0 81	J	0 11	1
		m-,p-Xylene	2 7	=	0 2	2
		Methylene chloride	1.9	=	0 06	1
		o-Xylene	0 75	J	0 1	1
		Tetrachloroethene	0 13	J	0 12	1
		Toluene	0 6	J	0 12	1
MW-96-5DL	11/30/01	Acetone	1200	J	44	200
MW-96-6	11/30/01	Chloroform	5 9	=	0 12	1
		Ethylbenzene	0 78	J	0.11	1
		m-,p-Xylene	2 5	=	0 2	2
		Methylene chloride	1.6	=	0 06	1
		o-Xylene	0.76	J	0 1	1
		Tetrachloroethene	0 14	J	0 12	1
		Toluene	0 49	J	0 12	1
MW-96-6DL	11/30/01	Acetone	840	J	44	200
MW-97-1	11/30/01	Acetone	4 6	J	1 1	5
		Carbon disulfide	0.31	J	0 14	1
		Chloromethane	0 13	J	0 13	1
		Trichloroethene	0 14	J	0 13	1
MW-97-2	11/30/01	Acetone	4 8	J	1 1	5
		Chloromethane	0 18	J	0 13	1
MW-97-3	11/30/01	Acetone	7.2	J	1 4	5
MW-97-4	11/30/01	Acetone	6 2	J	1.4	5
MW-97-5	11/30/01	Acetone	10	J	1 4	5
MW-97-6	11/30/01	Acetone	13	J	1 4	5
		Methylene chloride	0 12	J	0 11	1
MW-97-7	11/30/01	Acetone	12	J	1 4	5
MW-97-8	11/30/01	Ethylbenzene	0 19	J	0 12	1
		m-,p-Xylene	0 42	J	0 23	2
		Methylene chloride	0 15	J	0 11	1
		o-Xylene	0 14	J	0 13	1
MW-97-8DL	11/30/01	Acetone	73	J	2 7	10
MW-98-1	11/30/01	2-Butanone	2 2	J	0.77	5
		Chloroform	0 24	J	0 14	1
		Ethylbenzene	0 37	J	0 12	1
		m-,p-Xylene	1 2	J	0 23	2
		o-Xylene	0 38	J	0 13	1
		Tetrachloroethene	4 4	=	0 12	1
		Toluene	0 26	J	0 11	1
		Trichloroethene	0 83	J	0 12	1

Table 4
VOC and SVOC PDB and Low-Flow Sample Result Summary - November/December 2001
Main Installation LTOA Sampling Event

Field Identification	Date of Sample Collection	Analyte	Result	Laboratory Qualifier	Detection Limit	Reporting Limit
MW-98-1DL	11/30/01	Acetone	150	J	2 7	10
MW-98-2	11/30/01	2-Butanone	1 4	J	0 77	5
		Chloroform	0 26	J	0 14	1
		Ethylbenzene	0 32	J	0 12	1
		m-,p-Xylene	1 2	J	0 23	2
		o-Xylene	0 34	J	0 13	1
		Tetrachloroethene	5 5	=	0 12	1
		Toluene	0 24	J	0 11	1
		Trichloroethene	0 89	J	0 12	1
MW-98-2DL	11/30/01	Acetone	100	J	2 7	10
MW-98-3	11/30/01	2-Butanone	1 7	J	0 77	5
		Acetone	98	J	1 4	5
		Carbon disulfide	0 24	J	0 22	1
		Chloroform	0 24	J	0 14	1
		Ethylbenzene	0 21	J	0.12	1
		m-,p-Xylene	0 97	J	0 23	2
		o-Xylene	0 28	J	0 13	1
		Tetrachloroethene	7.7	=	0 12	1
		Toluene	0 15	J	0 11	1
		Trichloroethene	0 88	J	0 12	1
MW-98-4	11/30/01	2-Butanone	1.7	J	0 77	5
		Acetone	98	J	1 4	5
		Chloroform	0.26	J	0 14	1
		Ethylbenzene	0 4	J	0 12	1
		m-,p-Xylene	1 3	J	0 23	2
		o-Xylene	0 39	J	0 13	1
		Tetrachloroethene	3 7	=	0 12	1
		Toluene	0.19	J	0 11	1
		Trichloroethene	0 9	J	0 12	1
MW-98-5	11/30/01	2-Butanone	2 5	J	0 77	5
		Chloroform	0.23	J	0 14	1
		Ethylbenzene	0 41	J	0 12	1
		m-,p-Xylene	1 1	J	0 23	2
		o-Xylene	0 32	J	0 13	1
		Tetrachloroethene	1 5	=	0 12	1
		Toluene	0 71	J	0 11	1
		Trichloroethene	0 46	J	0.12	1
MW-98-5DL	11/30/01	Acetone	100	J	2 7	10
MW-99-1	11/30/01	Acetone	4	J	1 1	5
		Carbon disulfide	0.25	J	0 14	1
		m-,p-Xylene	0 38	J	0 2	2
		Trichloroethene	0 58	J	0 13	1
MW-99-2	11/30/01	Trichloroethene	0 38	J	0.13	1
MW-99-3	11/30/01	Trichloroethene	0 28	J	0 13	1
MW-99-4	11/30/01	Chloroform	0 13	J	0 12	1
MW-99-5	11/30/01	Chloroform	0 15	J	0 12	1
		Trichloroethene	0 14	J	0 13	1
MW-99-7	11/30/01	Chloroform	0 15	J	0 12	1
MW-99-8	11/30/01	Chloroform	0 13	J	0 12	1
MW-99-9	11/30/01	Chloroform	0 14	J	0 12	1

NOTES

All results reported in micrograms per liter

Only detected parameters presented in this table

All samples were analyzed according to EPA Method SW846 8260B, unless otherwise noted

**Samples analyzed according to EPA Method SW846 8270

Shading and bold value indicates parameter value at or above Federal Drinking Water Maximum Contaminant Levels (MCLs) or Max Contaminant Level Goal (MCLG)

Current MCL for Chloroform is 80 ug/L, however this level is under review by EPA (EPA, 2002).

MW Monitoring Well

PZ Piezometer

J = Estimated detection Parameter detected at or below laboratory detection limit

DL = Same sample as predecessor sample with similar sample number, however sample diluted to define the concentration of the parameter in the sample

Example Sample No - MW-96-6, where 6 represents the 6th diffusion bag sample from the top of the water column.

Table 5
Geochemical Parameters Low-Flow Sampling Summary - March 2002
Main Installation Baseline Groundwater Sampling Event

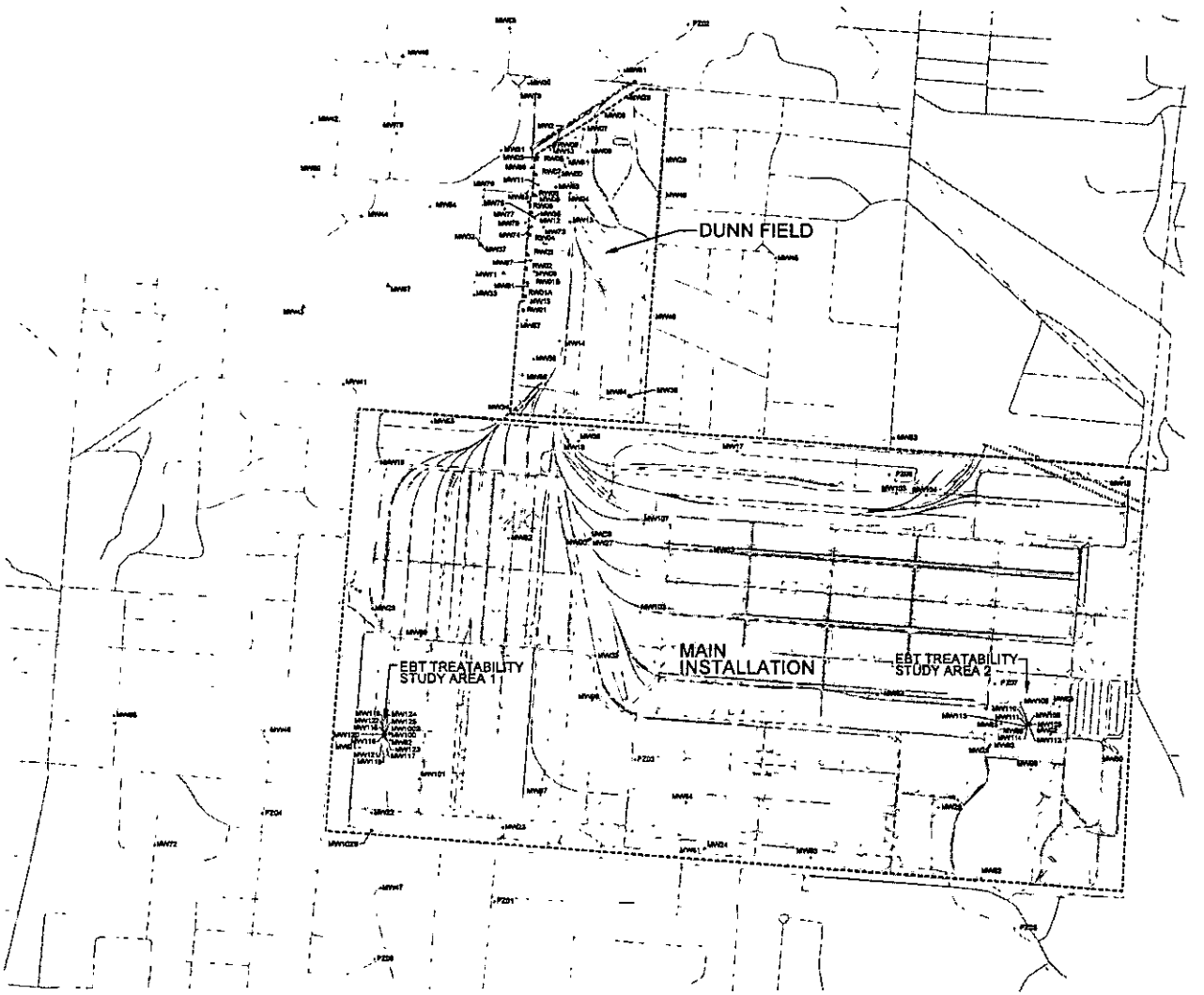
Well Identification	Location to EBT Treatability Study Area	Sample Identification	Analysis Method	Sample Date	Analyte	Result	Laboratory Qualifier	Adjusted Minimum Detection Limit	Adjusted Reporting Limit	Dilution Factor
MW-72	Upgradient to Study Area 1	MW72-BL	IC	03/21/2002	Acetic Acid	0.9	J	0.08	1	1
			IC		Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.5	J	0.06	1	1
			E310.2		Alkalinity	120	=	5	10	1
			SW9056		Nitrate	3.2	=	0.067	0.6	1
			SW9056		Sulfate	24	=	0.5	1	1
		MW72-BLD	IC	03/21/2002	Acetic Acid	1	=	0.08	1	1
			IC		Formic Acid	0.4	J	0.05	1	1
			IC		Lactic Acid	0.6	J	0.06	1	1
			E310.2		Alkalinity	120	=	5	10	1
			SW9056		Nitrate	3.2	=	0.067	0.6	1
			SW9056		Sulfate	24	=	0.5	1	1
		MW-72-BLDDL1	SW9056	03/21/2002	Chloride	14	=	0.2	0.4	2
		MW-72-BLDL1	SW9056	03/21/2002	Chloride	13	=	0.2	0.4	2
MW-47	Upgradient to Study Area 1	MW47-BL	IC	03/21/2002	Acetic Acid	0.9	J	0.08	1	1
			IC		Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.6	J	0.06	1	1
			E310.2		Alkalinity	83	=	5	10	1
			SW9056		Nitrate	1.5	=	0.067	0.6	1
			SW9056		Sulfate	14	=	0.5	1	1
		MW-47-BLDL1	SW9056	03/21/2002	Chloride	18	=	0.2	0.4	2
MW-102B	Upgradient to Study Area 1	MW102B-BL	IC	03/21/2002	Acetic Acid	0.8	J	0.08	1	1
			IC		Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.5	J	0.06	1	1
			E310.2		Alkalinity	140	=	5	10	1
			SW9056		Nitrate	5.6	=	0.067	0.6	1
			SW9056		Sulfate	53	=	0.5	1	1
		MW-102B-BLDL1	SW9056	03/21/2002	Chloride	35	=	0.5	1	5
MW-22	Upgradient to Study Area 1	MW22-BL	IC	03/21/2002	Acetic Acid	1.1	=	0.08	1	1
			IC		Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.6	J	0.06	1	1
			E310.2		Alkalinity	160	=	5	10	1
			SW9056		Nitrate	4.9	=	0.067	0.6	1
			SW9056		Sulfate	26	=	0.5	1	1
		MW-22-BLDL1	SW9056	03/21/2002	Chloride	38	=	0.5	1	5
MW-21	Upgradient to Study Area 1	MW21-BL	IC	03/21/2002	Acetic Acid	0.6	J	0.08	1	1
			IC		Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.5	J	0.06	1	1
			E310.2		Alkalinity	70	=	5	10	1
			SW9056		Nitrate	3.5	=	0.067	0.6	1
			SW9056		Sulfate	8.1	=	0.5	1	1
		MW-21-BLDL1	SW9056	03/21/2002	Chloride	13	=	0.2	0.4	2
MW-100B	Within Study Area 1	MW100B-117-BL	E310.2	03/22/2002	Alkalinity	85	=	5	10	1
			IC		Acetic Acid	0.8	J	0.08	1	1
			IC		Formic Acid	0.5	J	0.05	1	1
			IC		Lactic Acid	0.7	J	0.06	1	1
			SW9056		Bromide*	0.58	=	0.1	0.2	1
			SW9056		Chloride*	5.1	=	0.1	0.2	1
			SW9056		Sulfate*	6.4	=	0.5	1	1
			E415.1		Total Organic Carbon	0.79	J	0.5	1	1
MW-101	Lateral Gradient to Study Area 1	MW101-117-BL	E310.2	03/22/2002	Alkalinity	110	=	5	10	1
			E415.1		Total Organic Carbon	1.2	=	0.5	1	1
			IC		Acetic Acid	0.1	J	0.08	1	1
			IC		Lactic Acid	0.1	J	0.06	1	1
			SW9056		Bromide*	0.28	=	0.1	0.2	1
			SW9056		Nitrate*	4.3	=	0.067	0.6	1
			SW9056		Sulfate*	19	=	0.5	1	1
			SW9056		Chloride*	21	=	0.2	0.4	2
MW-97	Downgradient to Study Area 1	MW97-BL	IC	03/20/2002	Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.7	J	0.06	1	1
			E310.2		Alkalinity	90	=	5	10	1
			SW6010B		Manganese	0.14	=	0.001	0.01	1
			SW9056		Nitrate	3	=	0.067	0.6	1
			SW9056		Sulfate	8.8	=	0.5	1	1
		MW-97-BLDL1	SW9056	03/20/2002	Chloride	19	=	0.2	0.4	2
MW-98	Downgradient to Study Area 1	MW98-140-BL	IC	03/20/2002	Lactic Acid	0.1	J	0.06	1	1
			E310.2		Alkalinity	58	=	5	10	1
			SW6010B		Manganese	0.0447	=	0.001	0.01	1
			SW9056		Sulfate	5.9	=	0.5	1	1
			SW9056		Nitrate	3.5	J	0.067	0.6	1
		MW-98-140-BLDL1	SW9056	03/20/2002	Chloride	24	=	0.5	1	5

Table 5
Geochemical Parameters Low-Flow Sampling Summary - March 2002
Main Installation Baseline Groundwater Sampling Event

Well Identification	Location to EBT Treatability Study Area	Sample Identification	Analysis Method	Sample Date	Analyte	Result	Laboratory Qualifier	Adjusted Minimum Detection Limit	Adjusted Reporting Limit	Dilution Factor
MW-16	Upgradient to Study Area 2	MW16-64-BL	IC	03/21/2002	Acetic Acid	1.1	=	0.08	1	1
			IC		Formic Acid	0.5	J	0.05	1	1
			IC		Lactic Acid	0.8	J	0.06	1	1
			E310.2		Alkalinity	100	=	5	10	1
			SW6010B		Manganese	0.322	=	0.001	0.01	1
			SW9056		Nitrate	1.7	=	0.067	0.6	1
		MW-16-64-BLDL1	SW9056	03/21/2002	Chloride	49	=	1	2	10
			SW9056		Sulfate	67	=	5	10	10
MW-88	Upgradient to Study Area 2	MW88-BL	IC	03/21/2002	Acetic Acid	1.4	=	0.08	1	1
			IC		Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.7	J	0.06	1	1
			E415.1		Total Organic Carbon	4.3	=	0.5	1	1
			SW6010B		Manganese	0.143	=	0.001	0.01	1
			SW9056		Nitrate	1.6	=	0.067	0.6	1
			SW9056		Sulfate	14	=	0.5	1	1
		MW-88-BLDL1	SW9056	03/21/2002	Chloride	48	=	1	2	10
MW-50	Upgradient to Study Area 2	MW50-119-BL	IC	03/21/2002	Acetic Acid	0.6	J	0.08	1	1
			IC		Formic Acid	0.2	J	0.05	1	1
			IC		Lactic Acid	0.5	J	0.06	1	1
			E310.2		Alkalinity	62	=	5	10	1
			SW9056		Nitrate	3	=	0.067	0.6	1
			SW9056		Sulfate	29	=	0.5	1	1
		MW-50-119-BLDL1	SW9056	03/21/2002	Chloride	230	=	5	10	50
MW-92	Within Study Area 2	MW92-99-BL	IC	03/20/2002	Acetic Acid	0.8	J	0.08	1	1
			IC		Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.6	J	0.06	1	1
			SW9056		Sulfate	9.3	=	0.5	1	1
			SW9056		Nitrate	3	J	0.067	0.6	1
		MW-92-99-BLDL1	SW9056	03/20/2002	Chloride	33	=	0.5	1	5
MW-85	Within Study Area 2	MW85-102-BL	IC	03/19/2002	Acetic Acid	0.8	J	0.08	1	1
			IC		Formic Acid	0.4	J	0.05	1	1
			IC		Lactic Acid	0.7	J	0.06	1	1
		MW-85-105-BL	SW6010B	03/19/2002	Manganese	0.439	=	0.001	0.01	1
		MW-85-BAIL-BL	SW9056	03/21/2002	Nitrate	2.5	=	0.067	0.6	1
			SW9056		Sulfate	16	=	0.5	1	1
		MW-85-BAIL-BLDL1	SW9056	03/21/2002	Chloride	27	=	0.5	1	5
MW-86	Within Study Area 1	MW86-108-BL	SW6010B	03/21/2002	Manganese	0.0508	=	0.001	0.01	1
			SW9056		Sulfate	7.8	=	0.5	1	1
			SW9056		Nitrate	2.2	J	0.067	0.6	1
		MW-86-108-BLDL1	SW9056	03/20/2002	Chloride	13	=	0.2	0.4	2
MW-96	Lateral Gradient to Study Area 2	MW96-92-BL	IC	03/21/2002	Acetic Acid	17.2	=	0.08	1	
			IC		Formic Acid	0.3	J	0.05	1	1
			IC		Lactic Acid	0.6	J	0.06	1	1
			E310.2		Alkalinity	110	=	5	10	1
			E415.1		Total Organic Carbon	20	=	2	4	4
			SW6010B		Manganese	0.536	=	0.001	0.01	1
			SW9056		Nitrate	2.8	=	0.067	0.6	1
			SW9056		Sulfate	25	=	0.5	1	1
		MW-96-92-BLDL1	SW9056	03/21/2002	Chloride	83	=	1	2	10
MW-26	Downgradient to Study Area 2	MW26-106-BL	IC	03/21/2002	Acetic Acid	0.1	J	0.08	1	1
			E310.2		Alkalinity	50	=	5	10	1
			SW9056		Nitrate	2.6	=	0.067	0.6	1
			SW9056		Sulfate	16	=	0.5	1	1
		MW-26-106-BLDL1	SW9056	03/21/2002	Chloride	51	=	1	2	10
MW-93	Downgradient to Study Area 2	MW93-BL	E310.2	03/22/2002	Alkalinity	61	=	5	10	1
			E415.1		Total Organic Carbon	1.5	=	0.5	1	1
			IC		Acetic Acid	0.9	J	0.08	1	1
			IC		Formic Acid	0.4	J	0.05	1	1
			IC		Lactic Acid	0.7	J	0.06	1	1
			SW9056		Bromide*	0.23	=	0.1	0.2	1
			SW9056		Chloride*	12	=	0.1	0.2	1
			SW9056		Nitrate*	1.1	=	0.067	0.6	1
			SW9056		Sulfate*	7.8	=	0.5	1	1

Notes:
* sample collected on April 15, 2002.
All concentrations reported in micrograms per liter (mg/L)
EBT : Enhanced Bioremediation Treatment
BL Baseline Sampling Event
MW : Monitoring Well
= Detected concentration
J : Estimated detection. Contaminant detected at or below laboratory detection limit.
D Same sample as predecessor sample with similar sample number, however sample diluted to define the concentration of the parameter in the sample.
IC = Ion Chromatography based on SW846 Method

FIGURES



N

0 500 1000

SCALE IN FEET

LEGEND

- RW03 RECOVERY WELL
- MW63 FLUVIAL AQUIFER MONITORING WELL
- MW63 INTERMEDIATE AQUIFER MONITORING WELL
- PZ08 PIEZOMETER
- MEMPHIS DEPOT BOUNDARY

NOTE:

(1) MONITORING WELLS 106, 108, 109, 110, 111, 112, 113, 114, 116, 116, 117, 118, 119, 120, 121, 122, 123, 124, AND 125 WERE INSTALLED AFTER THE DATE OF THE MI BASELINE GROUNDWATER SAMPLING EVENT, AS PART OF THE MI EBT TREATABILITY STUDY

(2) FIVE MONITORING WELLS WERE NOT SAMPLED DURING THIS EVENT, INCLUDING: MW-18 DUE TO SAMPLE REPETITION; MW-27 DUE TO LACK OF WATER; AND, MW-17, MW-25, AND MW-48 DUE TO WELL OBSTRUCTIONS.

(3) MONITORING WELLS MW-29 AND MW-63 WERE ABANDONED AFTER THE MI BASELINE GROUNDWATER SAMPLING EVENT. THE PREVIOUS LOCATIONS ARE SHOWN

FIGURE 1
MEMPHIS DEPOT - MONITORING WELL, RECOVERY WELL, AND PIEZOMETER LOCATIONS
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071/DGMT/DUNN FIELD MI 2002 11-NOVEMBER-2002 60715g1.dgn

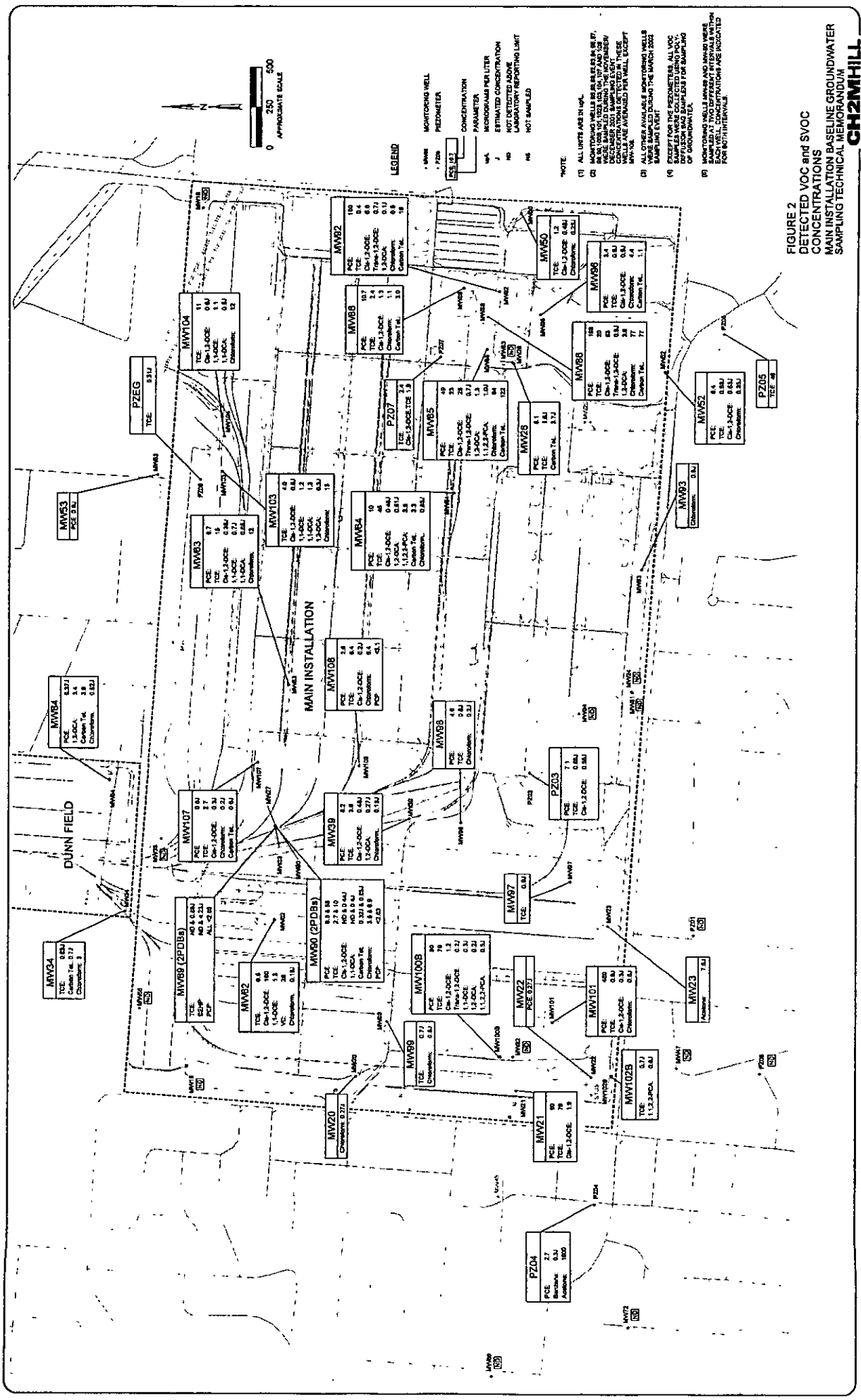


FIGURE 2
DETECTED VOC and SVOC CONCENTRATIONS
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD/PROJECTS/142714/DUNN FIELD M2 2002 11-NOV-2002 dd71qd.dgn

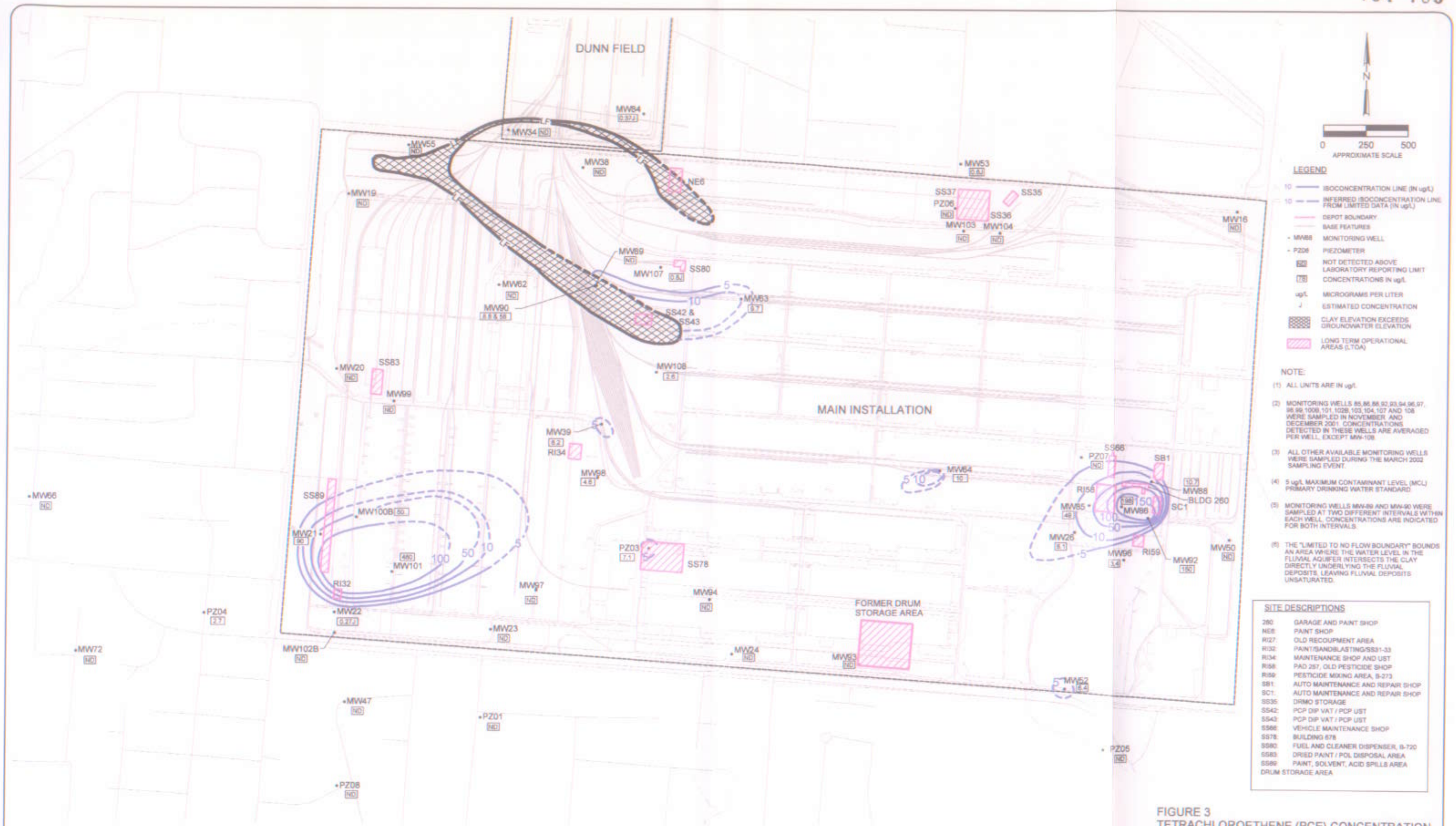


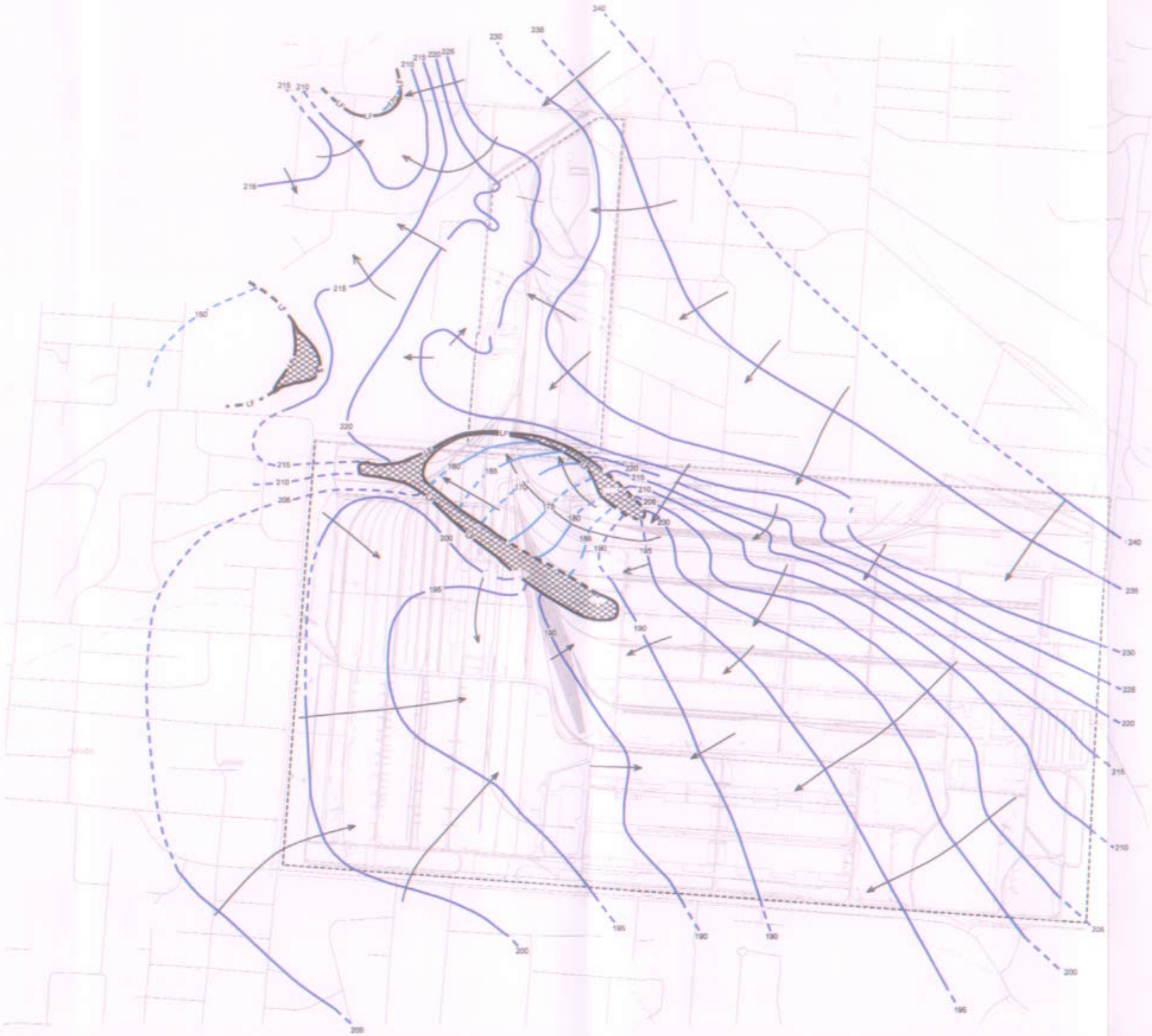
FIGURE 3
TETRACHLOROETHENE (PCE) CONCENTRATION IN GROUNDWATER - MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071 DOMT/EM-61_2004 25-FEB-2004 8071fig3new.dgn

Well ID	Water Level Elevation (feet MSL)
MW03	221.66
MW04	224.84
MW06	224.00
MW07	226.71
MW08	228.86
MW09	226.43
MW10	223.18
MW11	222.66
MW12	224.11
MW13	224.81
MW14	227.22
MW15	224.49
MW16	241.44
MW18	175.20
MW19	200.92
MW20	199.30
MW21	199.95
MW22	200.03
MW23	198.57
MW24	190.62
MW26	203.03
MW27	DRY
MW28	233.86
MW29	233.52
MW30	226.59
MW31	218.34
MW32	221.41
MW33	224.18
MW34	156.66
MW35	222.34
MW36	151.53
MW37	151.12
MW38	169.97
MW39	191.89
MW40	171.05
MW41	217.86
MW42	217.70
MW43	152.75
MW44	212.97
MW45	236.86
MW46	232.05
MW47	203.89
MW49	230.56
MW50	212.21
MW51	234.62
MW52	197.25
MW53	232.67
MW54	213.60
MW55	221.05
MW56	225.61
MW57	224.97
MW58	226.29
MW59	223.92
MW60	224.15
MW61	224.73
MW62	199.71
MW63	197.46

Well ID	Water Level Elevation (feet MSL)
MW64	196.83
MW65	252.65
MW67	151.59
MW68	221.79
MW69	222.44
MW70	223.06
MW71	222.43
MW72	205.91
MW73	223.87
MW74	223.36
MW75	222.99
MW76	217.04
MW77	221.42
MW78	225.11
MW79	212.63
MW80	212.64
MW81	154.67
MW82	151.50
MW83	157.48
MW84	228.46
MW85	204.16
MW86	206.08
MW87	223.70
MW88	224.17
MW89	183.57
MW90	183.94
MW91	223.76
MW92	207.66
MW93	191.63
MW94	189.87
MW95	228.82
MW96	206.00
MW97	196.19
MW98	192.43
MW99	195.73
MW100	198.21
MW101	198.38
MW102	200.68
MW103	231.92
MW104	232.75
MW107	190.49
MW108	189.86
PZ01	202.74
PZ02	241.91
PZ03	191.47
PZ04	203.96
PZ05	196.54
PZ06	229.22
PZ07	205.74
PZ08	204.86
RW04	223.38
RW06	220.82
RW08	219.24
RW09	221.89
SB105	DRY
SB106	DRY



NOTE:

(1) THE "LIMITED TO NO FLOW BOUNDARY" BOUNDS AN AREA WHERE THE WATER LEVEL IN THE FLUVIAL AQUIFER INTERSECTS THE CLAY DIRECTLY UNDERLYING THE FLUVIAL DEPOSITS, LEAVING FLUVIAL DEPOSITS UNSATURATED.

(2) MW18, 34, 36, 37, 38, 40, 43, 81, 82, 83, 89, AND 90 ARE WELLS SCREENED WITHIN THE INTERMEDIATE AQUIFER.

(3) MW107 AND 108 ARE LOCATED IN A TRANSITION ZONE BETWEEN THE FLUVIAL AQUIFER AND THE INTERMEDIATE AQUIFER.

(4) MW18, 36, 37, 81, 82, 83, 89 AND 90 ARE NOT INCLUDED IN THIS POTENTIOMETRIC SURFACE MAP.

(5) MW67 IS SCREENED IN THE MEMPHIS AQUIFER AND THEREFORE NOT INCLUDED IN THIS POTENTIOMETRIC SURFACE MAP.

(6) NO MEASUREABLE WATER LEVELS WERE RECORDED IN MW2, 5, 17, AND 27.

(7) DEPTH TO WATER MEASUREMENTS WERE NOT COLLECTED IN MW25, 48 AND 66.

(8) SB-105 AND 106 WERE MEASURED ON OCTOBER 16, 2001 AND OCTOBER 17, 2001, RESPECTIVELY.

(9) EXCLUDES MW-88 GROUNDWATER ELEVATION DATA.

FIGURE 4
Potentiometric Surface Map of the Fluvial Aquifer, Including Intermediate Aquifer November 01, 2001
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071 DDMT/DUNN FIELD MI 2002 11-NOV-2002 8071fg4.dgn

DUNN FIELD

MAIN INSTALLATION

FORMER DRUM STORAGE AREA

MW34 0.95J · MW84* ND · MW55 ND · MW38 ND · MW19 ND · NE6 · MW53 ND · SS37 · PZ06 ND · SS35 · SS36 · MW103 4.0 · MW104 11 · MW16 ND · MW89 · MW107 2.7 · SS80 · MW62 6.1 · MW90 2.7 & 19/10 · MW63 15 · SS42 & SS43 · MW108 6.4 · MW20 ND · SS83 · MW99 0.7J · MW39 3.6 · RI34 · MW98 0.8J · MW64 45 · SS66 · PZ07 0.51J · SB1 2.4 · MW85 · BLDG 260 · RI58 · MW65 25 · MW86 · SC1 · MW66 ND · SS89 78 · MW100B · MW101 0.9J · PZ03 0.86 · SS78 · MW26 1.6J · RI59 · MW96 0.9J · MW92 0.4 · MW50 1.3 · MW21 76 · RI32 · MW97 0.9J · PZ04 ND · MW22 ND · MW23 ND · MW94 ND · MW24 ND · MW72 ND · MW102B 0.7J · MW93 ND · MW52 0.58J · MW47 ND · PZ01 ND · PZ05 46 · PZ08 2.4

N

0 250 500
APPROXIMATE SCALE

LEGEND

- 100 ISOCONCENTRATION LINE (IN ug/L)
- 100 INFERRED ISOCONCENTRATION LINE FROM LIMITED DATA (IN ug/L)
- DEPOT BOUNDARY
- BASE FEATURES
- MW88 MONITORING WELL
- PZ06 PIEZOMETER
- ND NOT DETECTED ABOVE LABORATORY REPORTING LIMIT
- 78 CONCENTRATIONS IN ug/L
- ug/L MICROGRAMS PER LITER
- J ESTIMATED CONCENTRATION
- CLAY ELEVATION EXCEEDS GROUNDWATER ELEVATION
- LONG TERM OPERATIONAL AREAS (LTOA)

NOTE:

(1) ALL UNITS ARE IN ug/L

(2) MONITORING WELLS 85,86,88,92,93,94,96,97, 98,99,100B,101,102B,103,104,107 AND 108 WERE SAMPLED IN NOVEMBER AND DECEMBER 2001. CONCENTRATIONS DETECTED IN THESE WELLS ARE AVERAGED PER WELL, EXCEPT MW-108.

(3) ALL OTHER AVAILABLE MONITORING WELLS WERE SAMPLED DURING THE MARCH 2002 SAMPLING EVENT.

(4) 5 ug/L MAXIMUM CONTAMINANT LEVEL (MCL) PRIMARY DRINKING WATER STANDARD.

(5) MONITORING WELLS MW-89 AND MW-90 WERE SAMPLED AT TWO DIFFERENT INTERVALS WITHIN EACH WELL. CONCENTRATIONS ARE INDICATED FOR BOTH INTERVALS.

(6) THE "LIMITED TO NO FLOW BOUNDARY" BOUNDS AN AREA WHERE THE WATER LEVEL IN THE FLUVIAL AQUIFER INTERSECTS THE CLAY DIRECTLY UNDERLYING THE FLUVIAL DEPOSITS, LEAVING FLUVIAL DEPOSITS UNSATURATED.

FIGURE 5
TRICHLOROETHENE (TCE) CONCENTRATION IN GROUNDWATER-MARCH 2002
MAIN INSTALLATION DEPOT BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071/DOMT/DUNN FIELD MI 2002 04-FEB-2004 8071fg5new.dgn

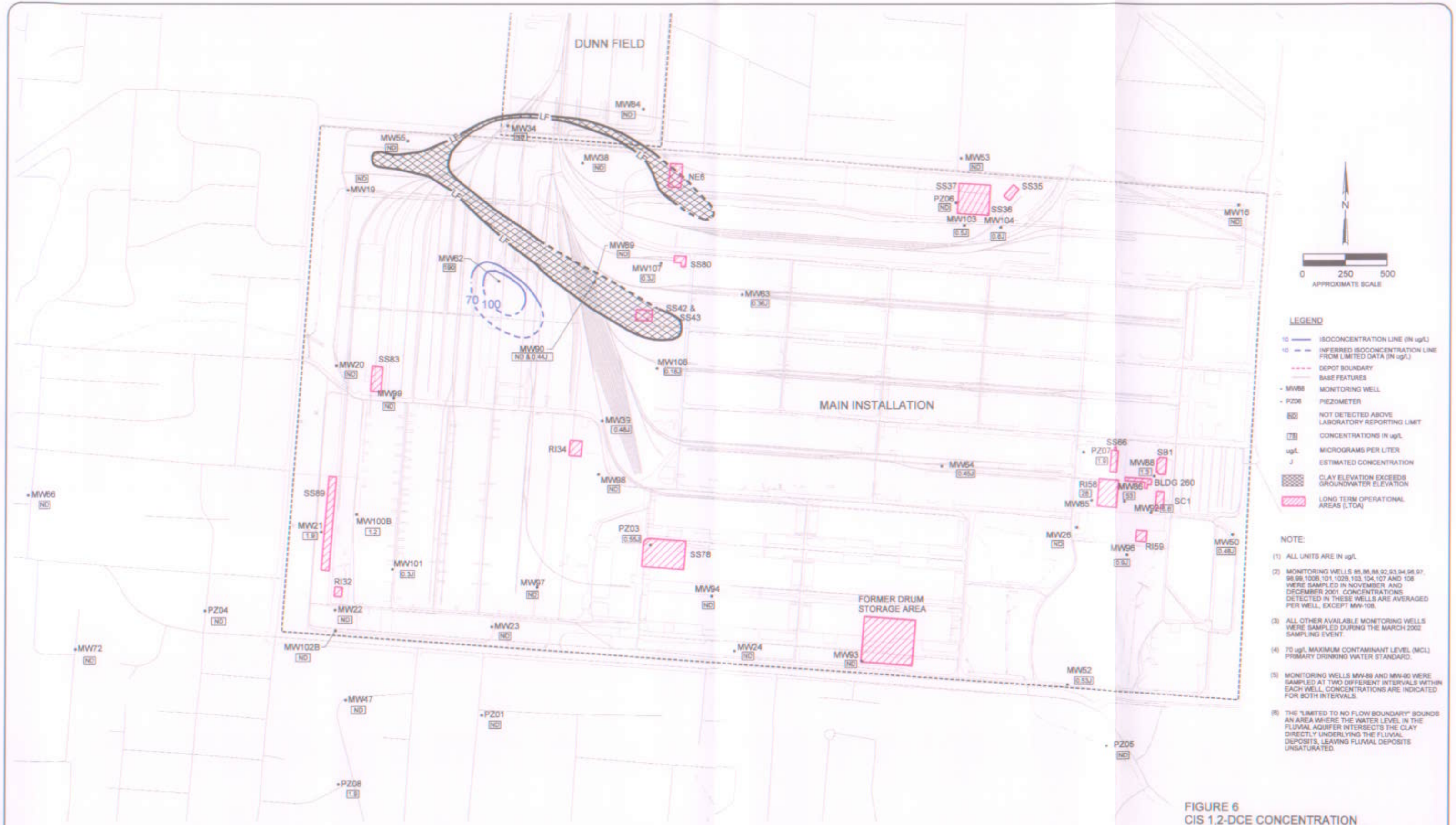


FIGURE 6
CIS 1,2-DCE CONCENTRATION
IN GROUNDWATER-MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER
SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071/DGMT/DUNN FIELD MI 2002 11-NOV-2002 80715g6.dgn

DUNN FIELD

MAIN INSTALLATION

FORMER DRUM STORAGE AREA

MW84 (1.8)
MW34 (520)
MW55 (ND)
MW38 (ND)
MW19 (ND)
NE6
MW53 (ND)
SS37
SS35
PZ06 (ND)
SS36
MW103 (ND)
MW104 (ND)
MW16 (ND)
MW89 (ND)
SS80
MW107 (0.6J)
MW62 (ND)
MW63 (ND)
MW90 (0.92J & 0.66J)
SS42 & SS43
MW20 (ND)
SS83
MW99 (ND)
MW108 (ND)
MW39 (ND)
RI34
MW98 (ND)
MW64 (3.3)
PZ07 (ND)
SS86
MW88 (5)
SB1 (3)
BLDG 260
RI58
SC1
MW66 (ND)
SS89
MW21 (ND)
MW100B (ND)
PZ03 (ND)
SS78
MW85 (12.2)
MW26 (3.7J)
MW92 (19)
MW50 (ND)
RI59
MW86 (7)
MW96 (1.1)
MW101 (ND)
RI32
MW97 (ND)
MW94 (ND)
PZ04 (ND)
MW22 (ND)
MW23 (ND)
MW72 (ND)
MW102B (ND)
MW24 (ND)
MW93 (ND)
MW52 (ND)
MW47 (ND)
PZ01 (ND)
PZ05 (ND)
PZ08 (ND)

100
50
10
5

0 250 500
APPROXIMATE SCALE

LEGEND

- 10 ISOCONCENTRATION LINE (IN ug/L)
- 10 INFERRED ISOCONCENTRATION LINE FROM LIMITED DATA (IN ug/L)
- DEPOT BOUNDARY
- BASE FEATURES
- MW88 MONITORING WELL
- PZ06 PIEZOMETER
- ND NOT DETECTED ABOVE LABORATORY REPORTING LIMIT
- 7.8 CONCENTRATIONS IN ug/L
- ug/L MICROGRAMS PER LITER
- J ESTIMATED CONCENTRATION
- CLAY ELEVATION EXCEEDS GROUNDWATER ELEVATION
- LONG TERM OPERATIONAL AREAS (LTOA)

NOTE:

(1) ALL UNITS ARE IN ug/L

(2) MONITORING WELLS 85,86,88,92,93,94,96,97, 98,99,100B,101,102B,103, 104, 107 AND 108 WERE SAMPLED IN NOVEMBER AND DECEMBER 2001. CONCENTRATIONS DETECTED IN THESE WELLS ARE AVERAGED PER WELL, EXCEPT MW-108.

(3) ALL OTHER AVAILABLE MONITORING WELLS WERE SAMPLED DURING THE MARCH 2002 SAMPLING EVENT.

(4) 5 ug/L MAXIMUM CONTAMINANT LEVEL (MCL) PRIMARY DRINKING WATER STANDARD.

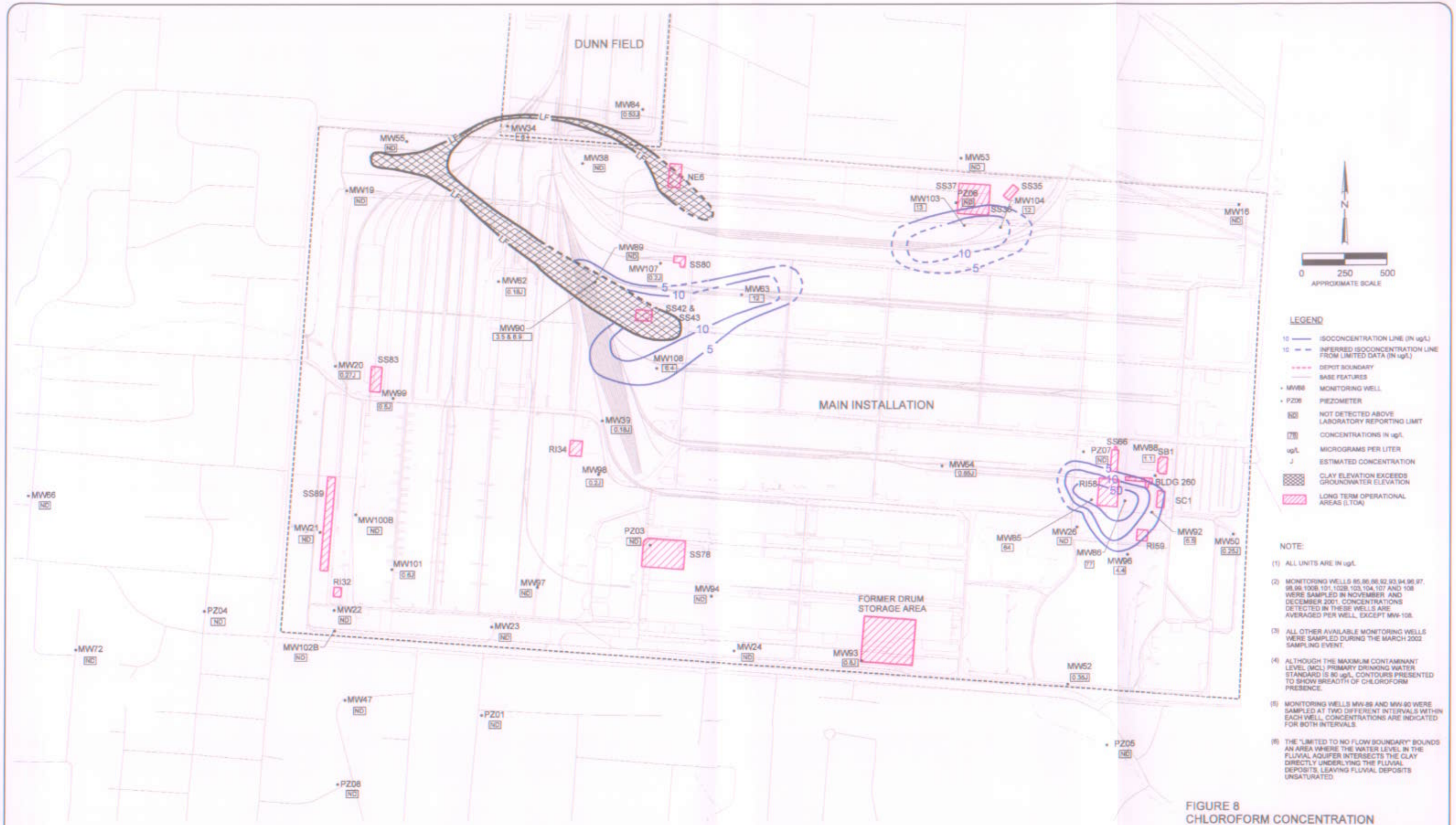
(5) MONITORING WELLS MW-89 AND MW-90 WERE SAMPLED AT TWO DIFFERENT INTERVALS WITHIN EACH WELL. CONCENTRATIONS ARE INDICATED FOR BOTH INTERVALS.

(6) THE "LIMITED TO NO FLOW BOUNDARY" BOUNDS AN AREA WHERE THE WATER LEVEL IN THE FLUVIAL AQUIFER INTERSECTS THE CLAY DIRECTLY UNDERLYING THE FLUVIAL DEPOSITS, LEAVING FLUVIAL DEPOSITS UNSATURATED.

FIGURE 7
CARBON TETRACHLORIDE CONCENTRATION IN GROUNDWATER-MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071/DGMT/DUNN FIELD MI 2002 11-NOV-2002 80718g7.dgn



NOTE:

(1) ALL UNITS ARE IN ug/L.

(2) MONITORING WELLS 85,86,88,92,93,94,96,97, 98,99,100B,101,102B,103,104,107 AND 108 WERE SAMPLED IN NOVEMBER, AND DECEMBER 2001. CONCENTRATIONS DETECTED IN THESE WELLS ARE AVERAGED PER WELL, EXCEPT MW-108.

(3) ALL OTHER AVAILABLE MONITORING WELLS WERE SAMPLED DURING THE MARCH 2002 SAMPLING EVENT.

(4) ALTHOUGH THE MAXIMUM CONTAMINANT LEVEL (MCL) PRIMARY DRINKING WATER STANDARD IS 80 ug/L, CONTOURS PRESENTED TO SHOW BREADTH OF CHLOROFORM PRESENCE.

(5) MONITORING WELLS MW-89 AND MW-90 WERE SAMPLED AT TWO DIFFERENT INTERVALS WITHIN EACH WELL. CONCENTRATIONS ARE INDICATED FOR BOTH INTERVALS.

(6) THE "LIMITED TO NO FLOW BOUNDARY" BOUNDS AN AREA WHERE THE WATER LEVEL IN THE FLUVIAL AQUIFER INTERSECTS THE CLAY DIRECTLY UNDERLYING THE FLUVIAL DEPOSITS, LEAVING FLUVIAL DEPOSITS UNSATURATED.

FIGURE 8
CHLOROFORM CONCENTRATION IN GROUNDWATER-MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071/DOMT/DUNN FIELD MI 2002 11-NOV-2002 80716g8.dgn



FIGURE 9
ALKALINITY LEVELS IN
AREAS SURROUNDING EBT
TREATABILITY STUDY AREAS-MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER
SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/114071/DOMT/DUNN FIELD MI 2002 31-OCT-2002 8071fig8.dgn

794 789

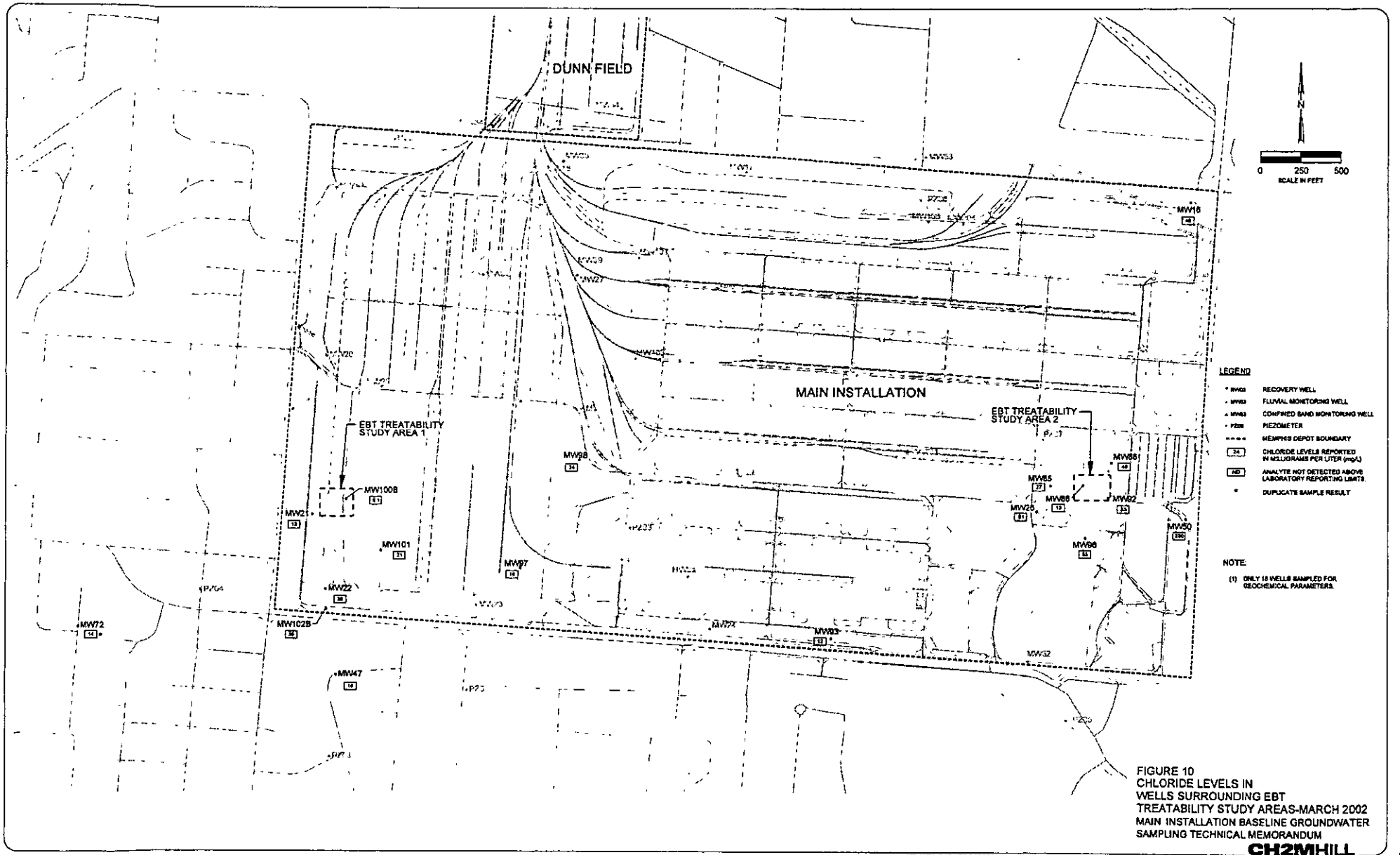


FIGURE 10
CHLORIDE LEVELS IN
WELLS SURROUNDING EBT
TREATABILITY STUDY AREAS-MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER
SAMPLING TECHNICAL MEMORANDUM

CH2MHILL

ATLANTA/CAD1/PROJECTS/142071/DDMT/DUNN FIELD MI 2002 11-NOV-2002 80711fg10.dgn



FIGURE 11
NITRATE LEVELS IN WELLS SURROUNDING EBT TREATABILITY STUDY AREAS-MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

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ATLANTA/CAD/PROJECTS/148071/DDMT/DUNN FIELD MI 2002 11-NOV-2002 80718g11.dgn

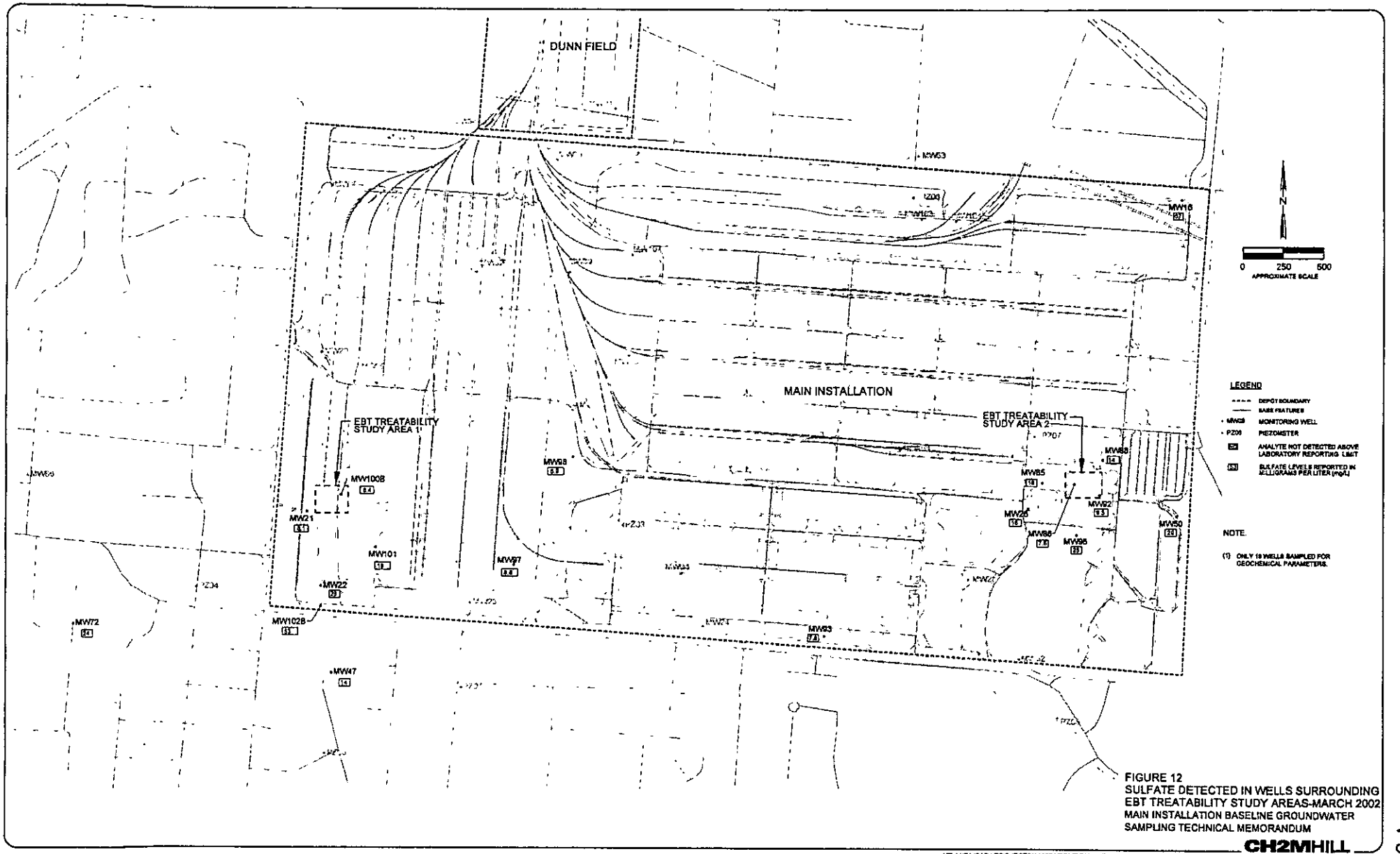


FIGURE 12
SULFATE DETECTED IN WELLS SURROUNDING EBT TREATABILITY STUDY AREAS-MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

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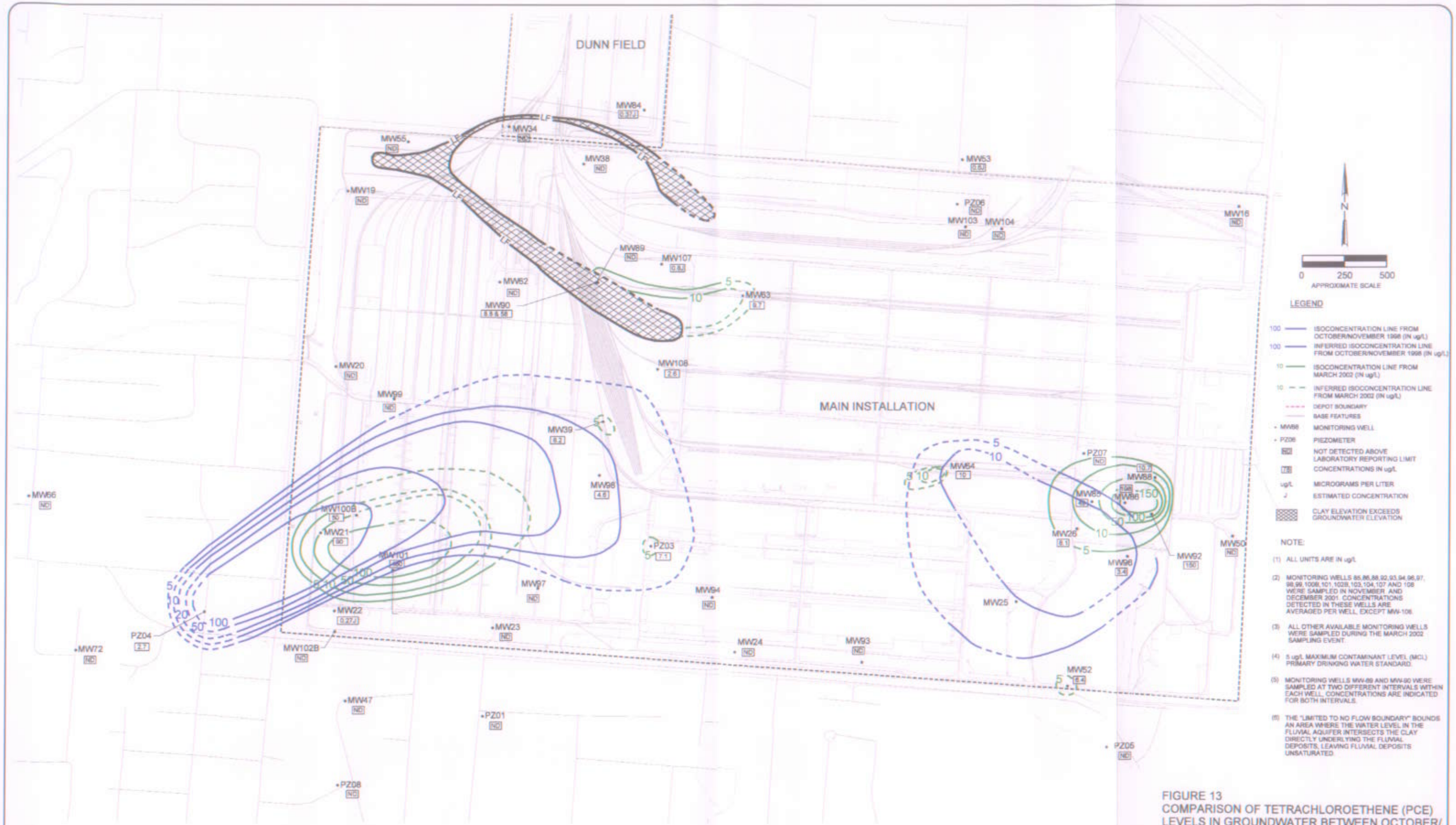


FIGURE 13
COMPARISON OF TETRACHLOROETHENE (PCE) LEVELS IN GROUNDWATER BETWEEN OCTOBER/ NOVEMBER 1998 AND MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

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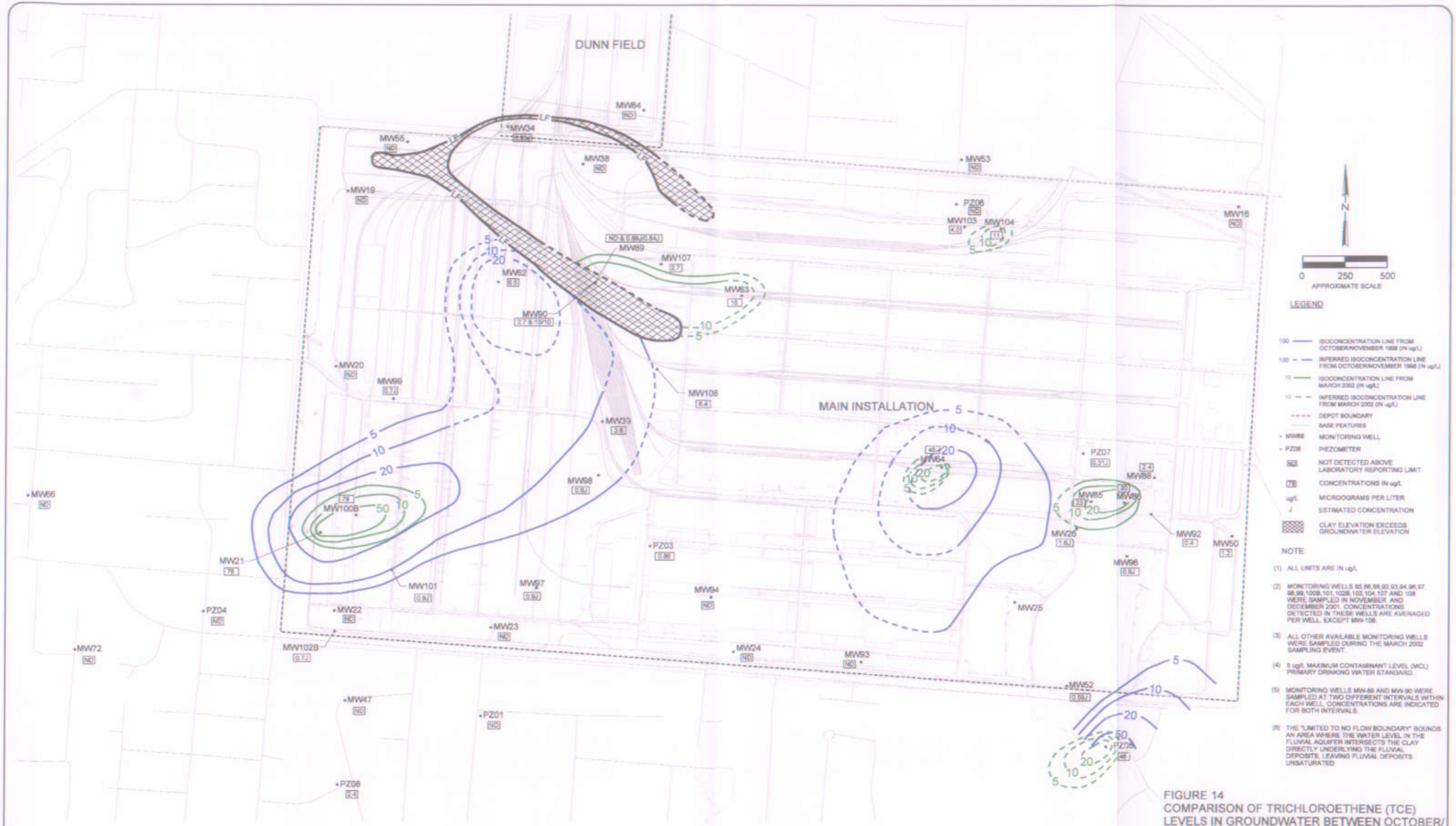


FIGURE 14
COMPARISON OF TRICHLOROETHENE (TCE) LEVELS IN GROUNDWATER BETWEEN OCTOBER/ NOVEMBER 1998 AND MARCH 2002
MAIN INSTALLATION BASELINE GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

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ATTACHMENT J

Injection Substrate Data Specification Sheets

WILCLEAR™
Sodium Lactate
For Bioremediation Applications

Description

JRW Technologies' WILCLEAR™ Sodium Lactate for bioremediation is a clear, slightly viscous liquid that is 60% solids by weight in USP purified water. WILCLEAR™ Sodium Lactate provides the lowest metals content, as measured by a nationally recognized analytical laboratory, of any sodium lactate available and exceeds US Pharmacopoeia standards. It is the only sodium lactate that meets all primary MCL's (maximum contaminant levels) for drinking water in a 60% form, thus minimizing concern for underground injection.

Specifications

	Specification	Typical
Sodium Lactate, % by wt.	60 ± 1.2	60 ± 0.5
H_2O	40 ± 1.2	40 ± 0.5
pH	7.0 ± 0.5	6.8 - 7.2
Color, APHA	25 max.	10
Iron, ppm	2 max	<5
Specific Gravity	1.3100-1.3400	
Citrate, Oxalate, Phosphate, Tartrate	none detected	
Sulfate	none detected	
Sugars	none detected	
Sodium, %	12.3 ± 0.2	
Odor	Practically odorless	

Applications

WILCLEAR™ Sodium Lactate is used to enhance the microbial activity in situ for biodegradation and reduction of chlorinated solvents. Technical support for bioremediation applications is provided through an exclusive agreement with SRP Technologies, developers of Bioavailability Enhancement Technology (B.E.T.™), patent pending).

Packaging

55 gallon (600 lbs. Net) Polyethylene Drums; 2.850 lb IBC's

Storage

Store unopened under dry conditions at ambient temperatures.

794 797

CENTRAL SOYA
Lecithin Division

MODIFIED
MATERIAL SAFETY DATA SHEET
for Central Soya Company, Inc.
SECTION I

TRADE PRODUCT NAME: **CENTROMIX® BR**	ISSUE/LATEST REVISION DATE: **09/14/01**
CHEMICAL NAME: **Soy Lecithin (with added surfactant)**	COMMON NAME:**Special Soy Lecithin**
CHEMICAL FAMILY:**Emulsifier/surfactant (Food Grade)**	FORMULA: **Complex** CAS #. **8002-43-5; 68153-76-4; 57-55-6**
MANUFACTURER'S NAME:**Central Soya Company, Inc**	TELEPHONE NO.:**(219)425-5100**
ADDRESS:**P O Box 1400, Fort Wayne IN 46801-1400**	
It is our opinion that the above named product does not meet the definition of "Hazardous Chemical" as defined in the OSHA "Hazard Communication Standard" regulation 29 CFR 1910.1200. This Material Safety Data Sheet is provided as general information for health and safety guidance. **NA = not applicable ND = not determined**	

SECTION II - INGREDIENTS - THRESHOLD LIMIT VALUES

NO.	INGREDIENT	%	OSHA PEL (PERMISSIBLE EXPOSURE LIMITS)	ACGIH TLV-TWA UNITS (TIME WEIGHTED AVERAGE)	ACGIH TLV-STEL UNITS (SHORT TERM EXPOSURE)
	Ethoxylated mono-diglycerides	**NA**	**NA**	**NA**	**NA**
	Propylene glycol	**NA**	**NA**	**NA**	**NA**

SECTION III - PHYSICAL AND CHEMICAL CHARACTERISTICS

☒ PRODUCT ☐ INGREDIENT NO.		SOLUBILITY IN WATER	**Dispersible**
BOILING POINT (°F.)	**ND**	SPECIFIC GRAVITY (H_2O=1)	**0.9071**
VAPOR PRESSURE (mm Hg.)	**ND**	PERCENT, VOLATILE BY VOLUME (%)	**ND**
VAPOR DENSITY (AIR=1)	**ND**	MELTING POINT	**ND**
APPEARANCE AND ODOR	**Viscous amber-colored liquid; fatty/oily odor.**		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

☒ PRODUCT ☐ INGREDIENT NO.			LEL	UEL
FLASH POINT: (Method Used)	**ND**	FLAMMABLE LIMITS:	**ND**	**ND**

EXTINGUISHING MEDIA: **Dry chemical or CO_2 preferable; water may cause spattering or spreading.**
SPECIAL FIRE FIGHTING PROCEDURES: **NA**
UNUSUAL FIRE AND EXPLOSION HAZARDS: **NA**

SECTION V - HEALTH HAZARD DATA

PROBABLE ROUTE OF EXPOSURE: **Ingestion (food additive); contact with skin or eyes.**

EFFECTS OF OVEREXPOSURE: **None known (perhaps mild irritation to eyes).**
EMERGENCY AND FIRST AID PROCEDURES: **As with any foreign liquid in eyes, flush with water; seek medical help if irritation occurs.**

SECTION VI - REACTIVITY DATA

STABILITY: ● Stable ○ Unstable
CONDITIONS TO AVOID: **NA**
INCOMPATABILITY: (Materials to avoid) **NA**
HAZARDOUS DECOMPOSITION PRODUCTS:
HAZARDOUS POLYMERIZATION: ○ May Occur ● Will Not Occur
CONDITIONS TO AVOID: **NA**

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: **Small spills - use absorbent material to collect/contain. Large spills - contain and pump into suitable tank.**
WASTE DISPOSAL METHOD: **Check with local, state, federal authorities for proper disposal of large spills.**

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTIVE (Specify Type): **Disposable dust/mist type mask recommended if product is atomized.**		
VENTILATION	LOCAL EXHAUST: **NA**	SPECIAL: **NA**
Normal	MECHANICAL (General): **Recommended**	OTHER:
PROTECTIVE GLOVES: **Optional**		EYE PROTECTION: **Safety glasses/goggles rcommended.**
OTHER PROTECTIVE EQUIPMENT: **NA**		

SECTION IX - SPECIAL PRECAUTIONS AND COMMENTS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: **NA**
OTHER: **NA**
Trade Product Name: **CENTROMIX® BR**

All information provided herein is offered in good faith and with the belief it is accurate. In the event of an adverse incident associated with this product, consult with appropriately trained personnel.

APPENDIX B

Long-term Groundwater Monitoring Plan

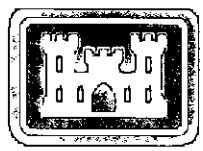
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Defense Distribution Center (Memphis)
Main Installation

Long-Term Groundwater Monitoring Plan

Rev. 3

PREPARED FOR



U.S. Army Engineering and Support Center, Huntsville
4820 University Square
Huntsville, AL 35816

July 2004

PREPARED BY

CH2M HILL
115 Perimeter Center Place NE, Suite 700
Atlanta, GA 30346

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Attachments

A Time Versus Concentration Plots
B Description of Decision Points on Decision Tree
C Example Standard Detection Limits for VOCs and Other Parameters
D Information on EDMS

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Acronyms

AFCEE	Air Force Center for Environmental Excellence
ASTM	American Society for Testing and Materials
BCT	BRAC Cleanup Team
bgs	Below ground surface
BRAC	Base Realignment and Closure
BCT	BRAC Cleanup Team
COC	Chemical of concern
DCE	Dichloroethene
DLA	Defense Logistics Agency
DO	Delivery Order
DP	Decision point
DQO	Data Quality Objective
EBT	Enhanced Bioremediation Treatment
EPA	U.S. Environmental Protection Agency
FID	Flame ionization detector
ft	Feet
FTL	Field Team Leader
I.D.	Inside diameter
IDW	Investigation derived waste
LTM	Long-term monitoring
MCL	Maximum contaminant level
MI	Main Installation
MW	Monitoring well
µg/L	Micrograms per liter
OU	Operable unit
OVA	Organic vapor analyzer
PCE	Tetrachloroethene
PDB	polyethylene diffusion bag
ppm	Parts per million
PVC	Polyvinyl chloride
QA/QC	Quality assurance and quality control
RA	Remedial action
RA-O	Remedial action operations
RAO	Remedial action objective
RD	Remedial design
RI	Remedial investigation
ROD	Record of Decision
RPO	Remedial Process Optimization
SVOCs	Semi-volatile organic compounds
TCA	Trichloroethane
TCE	Trichloroethene
TDEC	Tennessee Department of Environment and Conservation

USAESCH	United States Army Engineering and Support Center, Huntsville
USCS	Unified Soil Classification System
VOC	Volatile organic compound

1.0 Introduction

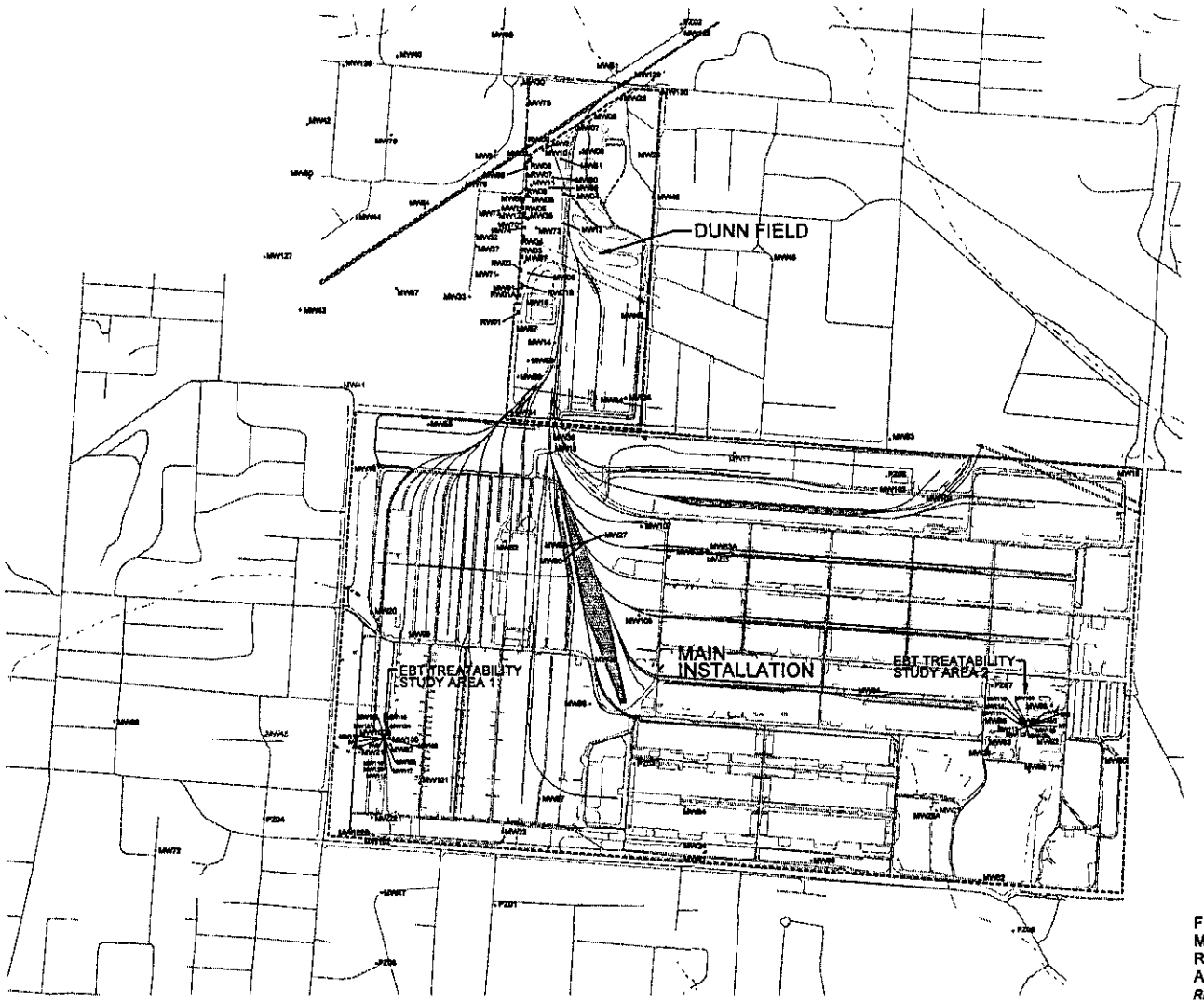
As part of the Remedial Design (RD) for the Main Installation (MI) of the Defense Distribution Center (Memphis), also referred to (and hereafter) as the Memphis Depot, this Long-Term Groundwater Monitoring Plan has been developed to satisfy monitoring requirements described within the September 2001 MI Record of Decision (ROD). This document is in compliance with requirements specified in Delivery Order 13 of Contract No. DACA87-94-D-0009. Under this delivery order, CH2M HILL provides architectural/engineering services for the United States Army Engineering and Support Center, Huntsville (USAESCH). CH2M HILL is the contractor responsible for the delivery and execution of the RD for the MI of the Memphis Depot.

This document has been reviewed and approved by the Base Realignment and Closure Act (BRAC) Cleanup Team (BCT). The BCT for the Memphis Depot consists of representatives from the Defense Logistics Agency (DLA), the U.S. Environmental Protection Agency (EPA), and the Tennessee Department of Environment and Conservation (TDEC). **This LTM plan may be revised with approval of the BCT as the remedial action progresses and more data on plume conditions are available.**

The activities necessary to develop this LTM plan included:

- Reviewing historical groundwater analytical data, geologic and hydrogeologic data, potentiometric surface data, and contaminant plume maps
- Conducting a statistical review of the data

This plan presents the initial monitoring frequencies and a list of analytes for the monitoring wells (Figure 1-1) to be included as part of the Remedial Action (RA) for the MI. For most LTM programs, the length of the monitoring period is generally not defined in terms of time. Instead, the length of the monitoring period is defined by performance objectives. Thus, this LTM program may be modified or terminated in the future in response to changed conditions determined by the LTM data, changes in remedial objectives, or achievement of the remedial action objectives (RAOs). Since the U.S. Army deems LTM programs as starting once active remedial action operations (RA-O) at a site are complete, this document is meant to be dynamic and reviewable for changes or optimization of the LTM program. As a result, the monitoring network can be designed and installed, as necessary, and the monitoring begun as part of the site restoration.



N

0 500 1000
SCALE IN FEET

LEGEND

- RW03 RECOVERY WELL
- MW68 FLUVIAL AQUIFER MONITORING WELL
- MW63 INTERMEDIATE AQUIFER MONITORING WELL
- PZ08 PIEZOMETER
- MEMPHIS DEPOT BOUNDARY

NOTE:

(1) MONITORING WELLS 105, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, AND 126 WERE INSTALLED AFTER THE DATE OF THE MI BASELINE GROUNDWATER SAMPLING EVENT, AS PART OF THE MI EBT TREATABILITY STUDY

(2) FIVE MONITORING WELLS WERE NOT SAMPLED DURING THIS EVENT, INCLUDING: MW-16 DUE TO SAMPLE REPETITION; MW-27 DUE TO LACK OF WATER; AND, MW-17, MW-25, AND MW-48 DUE TO WELL OBSTRUCTIONS.

(3) MONITORING WELLS MW-36 AND MW-63 WERE ABANDONED AFTER THE MI BASELINE GROUNDWATER SAMPLING EVENT. THE PREVIOUS LOCATIONS ARE SHOWN.

FIGURE 1.1
MEMPHIS DEPOT - MONITORING WELL, RECOVERY WELL, PIEZOMETER, AND SOIL BORING LOCATIONS
REV. 0 LONG-TERM GROUNDWATER MONITORING PLAN MAIN INSTALLATION, MEMPHIS DEPOT

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071 DDMT/DUNNFIELD_RD 2003 21-OCT-2003 figure1 1.dgn

2.0 Objectives of the LTM Plan

The objectives of this plan include:

- Presentation of the sampling history at the MI and discussion of the sampling results leading to development of the list of volatile organic compound (VOC) and biogeochemical parameters for the LTM program.
- Review of the current understanding of the VOC plume location within the fluvial aquifer (horizontal and vertical extent) and the potentiometric surface therein. This information is used to develop the list of wells to include within the LTM and the frequency of sampling.
- Development of the LTM program. The number of wells sampled may vary year to year. Sampling frequency will also vary as a result of program optimization.
- Completion of temporal and spatial analyses of existing data for the chemicals of concern (COCs). These analyses are useful in optimizing the LTM program.
- Development of a sampling frequency decision tree and LTM decision rules that will be used to develop the optimal frequency and sampling location list for the LTM program.
- Development of the list of parameters that will be analyzed for during the LTM program. This list is restricted to the COCs for the site, specifically VOCs, and natural attenuation parameters.
- Presentation of a list of potential optimization elements for consideration after the LTM program has begun to generate additional data. If implemented correctly, these optimization elements will help reduce costs associated with the LTM program and may reduce the time required for site closure.

3.0 Historical Groundwater Monitoring at the MI

Groundwater monitoring at the MI has been primarily associated with environmental investigations, either for the Remedial Investigation (RI) or subsequent events. Except for the MI Enhanced Bioremediation Treatment (EBT) Treatability Study, monitoring wells have not been sampled on a consistent basis for an extended period of time. Samples collected for the MI EBT Treatability Study were focused on a group of wells in two particular areas of the site. Table 3-1 presents a list of historical groundwater monitoring events at the MI. This section presents information about groundwater sampling and analytical results from each major groundwater sampling effort from the RI conducted by CH2M HILL through the March 2002 MI baseline groundwater sampling event.

Construction details for the 84 monitoring wells, injection wells, and piezometers considered part of the MI groundwater monitoring system are provided in Table 3-2. The original purpose of each monitoring well, injection well, and piezometer located on the MI and the current monitoring status are provided in Table 3-3.

3.1 Remedial Investigation (RI) Data

The *Memphis Depot Main Installation Remedial Investigation Report* (CH2M HILL, 2000) provides details regarding the MI RI. The groundwater sampling program included five sampling events conducted between January 1996 and November 1998. The purpose of the RI was to collect additional data to characterize the nature and extent of the groundwater contamination resulting from past operations. A total of 289 groundwater samples were collected from 8 piezometers, 9 hydropunch borings, 10 stratigraphic test borings, and 59 monitoring wells. The groundwater samples were analyzed for VOCs, semi-volatile organic compounds (SVOCs), metals (total), pesticides/polychlorinated biphenyls) PCBs, and herbicides. Of these groups of chemicals, a total of 20 VOCs, 5 SVOCs, and 22 metals (total) were detected. Herbicides and pesticides/PCBs were not detected in the groundwater samples.

Of the 20 VOCs detected (Table 3-4), only 6 were defined as persistent and were determined to warrant detailed discussion based on the frequency and concentration of detected concentrations per well and spatial occurrence: carbon tetrachloride (CCl4), total 1,2-dichloroethene (total 1,2-DCE), tetrachloroethene (PCE), trichlorothene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), and chloroform. PCE and TCE were the most frequently detected VOCs. The PCE concentrations at the MI during the RI sampling events from January 1996 to November 1998 ranged from 1J to 120 µg/L, TCE concentrations ranged from 1J to 58 µg/L, total 1,2-DCE concentrations ranged from 1J to 9J µg/L, 1,1,1-TCA concentrations ranged from 1J to 14 µg/L, CCl4 concentrations ranged from 1J to 4J µg/L, and chloroform concentrations ranged from 1J to 5J milligrams per liter (mg/L).

Based on review of data and plume maps provided in the RI report, PCE and TCE were detected in 40 and 37 percent of the samples, respectively. CCl4 and chloroform were

detected in 12 percent of the samples analyzed. Total 1,2-DCE, a reductive dechlorination product of PCE, was found in 8 percent of the RI samples. 1,1,1-TCA was found in 6 percent of RI groundwater samples. There were 14 other contaminants detected less frequently in groundwater samples during the RI. These contaminants are either common degradation products of PCE, TCE, or CCl4 or common laboratory and decontamination products. Except for acetone, all were tentatively identified at or below laboratory detection limits.

3.2 Long-Term Operational Area Investigation

The *Evaluation of Soil and Groundwater Data Collected from Long-Term Operational Areas (LTOAs), Main Installation, Memphis Depot,* presented in Appendix A of the RD Workplan (CH2M HILL, July 2002), presents information on groundwater contaminant extent in the fluvial aquifer, as defined by additional monitoring wells installed subsequent to the RI. The LTOA investigation was conducted from September through December 2001. The purpose of the LTOA investigation was to evaluate groundwater downgradient of known or suspected historical LTOAs on the MI where hazardous materials were used/stored, as identified by TDEC. The LTOAs were selected by TDEC for further testing because groundwater monitoring wells were not installed downgradient of these sites during the MI RI.

During the LTOA investigation, 132 groundwater samples (including quality assurance and quality control [QA/QC] samples) were collected from 17 monitoring wells. Table 3-5 presents the detection frequency for VOC contaminants regarded as persistent and sporadic[1]. Persistent VOCs include compounds similar to those detected during the RI: CCl4, chloroform, *cis*-1,2-DCE, PCE, and TCE. In addition, methylene chloride, an anaerobic degradation product of CCl4, was also regarded as persistent. However, the range of detected concentrations (maximum detected concentration is 8 µg/L) , aerobic nature of the fluvial aquifer, and the relatively low frequency of detection indicate that methylene chloride could be a laboratory contaminant. Sporadic VOCs tended to have reported concentrations no greater than 10 µg/L, except for acetone. In general, concentrations of these sporadic VOCs are near or at laboratory detection limits.

The results of the LTOA investigation showed that the potentiometric surface of the fluvial aquifer and groundwater flow directions did not significantly change from previous conceptual models. Groundwater flow directions were presented as being primarily to the southwest, northeast, and east. However, based on the data from this investigation, flow directions within the fluvial aquifer in the center portion of the MI changed and appear to be influenced by the connection between the fluvial and intermediate aquifers located in the northwest quadrant of the MI. Additionally, the areal extent of the vertical window to the lower intermediate/confined aquifers appeared to be larger than previously hypothesized (in the vicinity of MW63 and MW108) (see Figure 3B of the LTOA technical memorandum (TM) in the MI RD Workplan). The LTOA investigation also showed that the 'no flow to limited flow' boundary (i.e., clay confining layer) extended further to the southeast and that the trough underlain by the clay confining layer present throughout the MI subsurface will

[1] Persistent chemicals are those that were detected relatively frequently and in a discernable pattern. VOCs classified as sporadic were detected relatively infrequently and in no discernable pattern around the MI.

have to be further defined. Figure 3-1 presents the July 2003 and latest interpretation of the potentiometric surface underlying the MI.

In addition, the groundwater sample analysis results revealed that the groundwater contaminant extent is slightly larger than presented within the MI RI. VOCs detected in samples from MW103 and MW104 in the north-central portion of the MI had not previously been detected; the concentrations were not significantly higher than detection limits. Groundwater samples from other wells, including MW98, MW101, and MW108, revealed higher concentrations of VOCs in the plume in the southwestern part of the MI. Similarly, samples from MW85, MW86, MW88, MW92, and MW96 have shown that VOC contamination in the southeast corner of the site (near the present day Memphis Police Precinct) is higher than previously believed and contains levels of carbon tetrachloride and chloroform previously unrecorded in this area. Figure 3B of the LTOA TM in the MI RD Workplan presents the VOC levels detected in groundwater during the LTOA.

One other important change noted in the LTOA TM for this event was that the plumes are now believed to be thicker than previously understood. This information is based on:

- The discovery of a trough in the clay layer that underlies the fluvial aquifer. The trough originates in the vicinity of MW101 and is oriented northeast-southwest, with the deepest portion near MW108. At the terminus, the absence of the clay confining layer allows vertical connectivity between the intermediate and fluvial aquifer sands.
- The use of polyethylene diffusion bag (PDB) samplers to sample VOCs from wells. The PDBs were deployed continuously throughout the screened zone of the wells installed during the LTOA effort. The analytical results from these samples indicated that contamination was not restricted to a particular zone, but was found throughout the saturated portion of the aquifer.

3.3 Baseline Sampling Event

The *Analysis of Groundwater Data Collected During the Main Installation (MI)-Wide Baseline Groundwater Sampling Event TM* (CH2M HILL, 2003) provides details regarding the baseline groundwater sampling event at the MI. This sampling was part of the RD phase for the MI, and was a precursor of the EBT Treatability Study. Prior to this event, a complete, site-wide groundwater study had not been performed within the MI since October 1998. Seventeen monitoring wells had been sampled earlier during the November/December 2001 LTOA investigation and were considered to be contemporaneous with this comprehensive event (Table 3-5).

The baseline sampling event was conducted in March 2002 to collect groundwater samples from 36 monitoring wells and 7 piezometers associated with the MI for VOC analysis and various geochemical parameters. As shown in Table 3-6, only 5 of the 15 VOCs detected are regarded as persistent. These include TCE, PCE, chloroform, *cis*-1,2-DCE, and CCl4. Except for a detection of vinyl chloride at 28 ug/L, all the other compounds were detected at below maximum contaminant levels (MCLs). The groundwater data from this baseline study represent the current, site-wide configuration of the chlorinated VOC groundwater contaminant plumes.

TABLE 3-1

Historical Groundwater Monitoring at Main Installation Memphis Depot

Rev. 2 MI Long-Term Groundwater Monitoring Plan

Groundwater Sampling Event	Month/Year Sampled	Number of Wells Sampled	Contractor
Remedial Investigation	November-93	13	Law Environmental
Remedial Investigation	February-96	18	CH2M HILL
Remedial Investigation	June-97	18	CH2M HILL
Remedial Investigation	September-97	17	CH2M HILL
Remedial Investigation	March-98	16	CH2M HILL
Remedial Investigation	April-98	1	CH2M HILL
Remedial Investigation	October-98	22	CH2M HILL
Remedial Investigation	November-98	5	CH2M HILL
Operation and Maintenance*	February-99	1	Parsons
Operation and Maintenance*	May-99	1	Parsons
Operation and Maintenance*	August-99	1	Parsons
Remedial Investigation	October-99	1	CH2M HILL
Operation and Maintenance*	November-99	1	Parsons
Operation and Maintenance*	February-00	1	Parsons
Monitored Natural Attenuation Study	March-00	9	CH2M HILL
Operation and Maintenance*	May-00	1	Parsons
Operation and Maintenance*	August-00	1	Parsons
Operation and Maintenance*	November-00	1	Parsons
Supplemental Sampling	March-01	1	CH2M HILL
Long-Term Operational Area Investigation	September-01	1	CH2M HILL
Long-Term Operational Area Investigation	November-01	11	CH2M HILL
Long-Term Operational Area Investigation	December-01	6	CH2M HILL
EBT Baseline	March-02	45	CH2M HILL
EBT Evaluation	April-02	2	CH2M HILL
EBT Evaluation	May-02	30	CH2M HILL
EBT Evaluation	July-02	23	CH2M HILL
EBT Evaluation	August-02	1	CH2M HILL
EBT Evaluation	September-02	23	CH2M HILL
EBT Evaluation	October-02	23	CH2M HILL
EBT Evaluation	November-02	23	CH2M HILL
EBT Evaluation	December-02	23	CH2M HILL
EBT Evaluation	January-03	30	CH2M HILL
EBT Evaluation	February-03	13	CH2M HILL
EBT Evaluation	March-03	23	CH2M HILL
EBT Evaluation	April-03	23	CH2M HILL
EBT Evaluation	May-03	23	CH2M HILL
EBT Evaluation	June-03	23	CH2M HILL
EBT Evaluation	July-03	25	CH2M HILL
EBT Evaluation	August-03	11	CH2M HILL

*Dunn Field Groundwater Operation and Maintenace Program

TABLE 3-2
MI Monitoring Well, Injection Well, and Piezometer Construction Details
Rev 2 MI Long-Term Groundwater Monitoring Plan

Identification	Onsite or Offsite	NORTHING	EASTING	TYPE	Ground Elev. (ft msl)	TOC (ft msl)	Identification	Well Finish	TOC vs. Ground Elev. (ft)	Length of Riser (ft)	Length of Screen (ft)	Elev. Of Top of Screen (ft msl)	Elev. Of Bottom of Screen (ft msl)	Depth of Boring (ft bls)	Elev. of Bottom of Boring (ft msl)
Monitoring Wells:															
MW-16	On	278837.83	807099.66	MW	300.19	299.86	MW16	FL	-0.33	57.6	15	242.6	227.6	85.0	215.2
MW-18	On	279136.41	802448.08	MW	308.34	308.04	MW18	FL	-0.30	122.6	15	185.7	170.7	140.0	168.3
MW-19	On	278945.87	800782.26	MW	290.86	290.57	MW19	FL	-0.29	83.1	10	207.8	197.8	95.0	195.9
MW-20	On	277677.06	800705.19	MW	285.71	285.21	MW20	FL	-0.50	83.1	15	202.6	187.6	100.0	185.7
MW-21	On	276473.39	800602.39	MW	295.21	295.00	MW21	FL	-0.21	92.1	15	203.1	188.1	109.5	185.7
MW-22	On	275912.38	800702.16	MW	298.49	298.04	MW22	FL	-0.45	95.4	10	203.1	193.1	115.0	183.5
MW-23	On	275791.02	801817.13	MW	299.24	298.99	MW23	FL	-0.25	101.2	10	198.0	188.0	115.0	184.2
MW-24	On	275616.05	803538.81	MW	299.81	299.51	MW24	FL	-0.30	97.3	15	202.5	187.5	115.0	184.8
MW-25A	On	275975.11	805521.27	MW	270.13	269.88	MW-25A	FL	-0.25	73	10	196 9	186.9	85.0	185.1
MW-26	On	276508.16	805962.09	MW	303.89	303.69	MW26	FL	-0.20	97.6	10	206.3	196.3	115.0	188.9
MW-27	On	278285.47	802547.09	MW	304.28	303.98	MW27	FL	-0.30	76.2	15	228.1	213.1	100.0	204.3
MW-34	On DF	279411.21	801917.96	MW	300.80	299.97	MW34	FL	-0.83	136.6	20	164.2	144.2	158.5	142.3
MW-36	On DF	279531.02	802887.01	MW	311.15	310.24	MW36	FL	-0.91	192.3	15	118.9	103 9	212.0	99.2
MW-38	On	279141.38	802450.43	MW	308.45	307 45	MW38	FL	-1.01	139.9	15	168.6	153 6	158.5	150.0
MW-39	On	277280.67	802598.11	MW	296 58	296.28	MW39	FL	-0.30	95.5	20	201.1	181.1	116.0	180.6
MW-47	Off (S)	275261.64	800780.89	MW	292.15	306.39	MW47	FL	14.24	110	10	196 4	186.4	125.0	167.2
MW-50	On	276455.81	807065.28	MW	299.32	298.82	MW50	FL	-0.50	115	10	183.8	173.8	136 0	163.3
MW-52	On	275371.97	805897.36	MW	279.71	279.26	MW52	FL	-0 45	94	10	185.3	175.3	105.0	174 7
MW-53	Off (N)	279178 66	805136 05	MW	305.58	306.38	MW53	FL	0.80	72.5	10	233.9	223.9	85.0	220.6
MW-55	On MI	279301.05	801204 62	MW	292.48	292.08	MW55	FL	-0.40	64	10	228.1	218.1	85.5	207.0
MW-62	On	278289.89	801858.16	MW	294.10	293 65	MW62	FL	-0.45	86	10	207.6	197.6	107.0	187.1
MW-63A	On	278200.31	803572.83	MW	306 33	305 96	MW-63A	FL	-0.37	140	10	166.0	156.0	145 0	161.3
MW-63B	On	278201.32	803557.77	MW	306.22	305.78	MW-63B	FL	-0.44	115	10	190.8	180 8	125 0	181.2
MW-64	On	276951.52	805005.97	MW	304.46	304.21	MW64	FL	-0.25	102	10	202.2	192.2	115.0	189.5
MW-66	Off (W)	276742.50	798517.42	MW	289.00	288.7	MW66	FL	-0 30	102.5	10	186.2	176.2	125.0	164.0
MW-72	Off (SW)	275626.27	798864.75	MW	295.41	295.11	MW72	FL	-0 30	110.7	10	184.4	174.4	128.0	167.4
MW-81	On	275608.42	803527.67	MW	299.97	299.62	MW81	FL	-0.35	190	20	109.6	89 6	230.0	70.0
MW-82	On	276539.89	800862.13	MW	292.17	291.77	MW82	FL	-0.40	179	20	112.8	92 8	210.0	82.2
MW-83	On	276521.38	805969.16	MW	304.56	304.21	MW83	FL	-0.35	178	10	128.2	118.2	190 0	114.6
MW-84	On DF	279531.09	802878.65	MW	311.27	311.15	MW-84	FL	-0.12	69	20	242.2	222.2	93.0	218.3
MW-85	On	276704.14	806064.51	MW	304.50	304.13	MW-85	FL	-0.37	95.9	15	208.6	193.6	115	189.5
MW-86	On	276696.65	806301.24	MW	304.89	304.35	MW-86	FL	-0 54	97.5	20	207.4	187.4	118	186.9
MW-88	On	276879.05	806512.88	MW	305.47	305.15	MW-88	FL	-0.32	82	15	223.5	208.5	102.5	203.0
MW-89	On	278286.97	802555.25	MW	304.38	303.98	MW89	FL	-0.40	147	30	157.0	127.0	185.0	119.4
MW-90	On	278283.60	802539.51	MW	304.64	304 19	MW90	FL	-0.45	115	30	189.2	159.2	145.0	159.6
MW-92	On	276614.20	806489.66	MW	304.78	304.41	MW-92	FL	-0.37	93	15	211.8	196.8	113	191.8
MW-93	On	275542.22	804440.10	MW	294 31	294.08	MW-93	FL	-0.23	92	15	202.3	187.3	113 5	180.8
MW-94	On	276009 92	803375.23	MW	296.95	296.94	MW-94	FL	-0.01	100.5	10	196.5	186.5	118	179.0
MW-96	On	276310.14	806320.24	MW	289 67	289.02	MW-96	FL	-0.65	75 5	20	214.2	194.2	103 0	186.7
MW-97	On	276074.23	802139.23	MW	297.70	297.44	MW-97	FL	-0.26	97.5	20	200.2	180.2	123.0	174.7
MW-98	On	276891.37	802572.77	MW	294.93	294.43	MW-98	FL	-0.50	137	10	157.9	147.9	148.0	146.9
MW-99	On	277443.37	801114.53	MW	285.69	285.33	MW-99	FL	-0 36	91.5	20	194.2	174.2	118.0	167.7
MW-100	On	276590.49	800852.83	MW	291.54	291.16	MW-100	FL	-0.38	107.5	20	184.0	164.0	132.5	159 0
MW-100B*	On	276600.65	800854.43	MW	291 60	291.06	MW-100B*	FL	-0.54	107.5	20	184.1	164.1	132.5	159.1
MW-101	On	276204.27	801110.38	MW	291.99	291.70	MW-101 (first interval)	FL	-0.29	89	15	203.0	188.0	142.0	150.0
MW-101	(Three screened intervals in the same monitoring well)						MW-101 (second interval)			5	10	183.0	173 0		
MW-101	(Three screened intervals in the same monitoring well)						MW-101 (third interval)			5	10	168.0	158.0		
MW-102	On	275760.10	800716.10	MW	311.70	311.34	MW-102	FL	-0.36	120.5	20	191.2	171.2	143.0	168.7
MW-102B*	On	275760.59	800707.72	MW	312.07	311.40	MW-102B*	FL	-0.67	120.5	20	191.6	171.6	143.0	169.1
MW-103	On	278691.92	805160.79	MW	301.90	301.35	MW-103	FL	-0.55	70	20	231.9	211.9	93.0	208.9
MW-104	On	278677.45	805417.72	MW	296 13	295.76	MW-104	FL	-0.37	70.5	20	225.6	205.6	93 0	203.1
MW-105	On	276698.44	806316.91	MW	304.42	304.25	MW-105	FL	-0.17	89	10	215.4	205 4	105	199.4
MW-106	On	276708.07	806309.98	MW	304.65	304.44	MW-106	FL	-0.21	97	10	207.7	197.7	110	194.7
MW-107	On	278419.07	803009.93	MW	305.18	304.92	MW-107 (first interval)	FL	-0.26	128	15	177.2	162.2	167.0	138.2
MW-107	(Two screened intervals in the same monitoring well)						MW-107 (second interval)			5	10	157.2	147.2		
MW-108	On	277658.02	802985.53	MW	303.25	303 07	MW-108	FL	-0.18	160	10	143.3	133.3	187.0	116.3
MW-109	On	276707.71	806302.56	MW	304.75	304 57	MW-109	FL	-0.18	93	10	211.8	201.8	105	199 8
MW-110	On	276707.51	806294.48	MW	304 82	304.64	MW-110	FL	-0.18	92	10	212.8	202.8	105	199.8
MW-111	On	276690.51	806287.67	MW	304.87	304.68	MW-111	FL	-0.21	89	10	215.9	205.9	105	199.9
MW-112	On	276690.57	806305.80	MW	304 77	304.57	MW-112	FL	-0.20	90	10	214.8	204.8	105	199.8
MW-113	On	276685.34	806279.10	MW	304.92	304.81	MW-113	FL	-0.11	96	10	208.9	198.9	115	189.9
MW-114	On	276695.47	806296.33	MW	304.84	304.66	MW-114	FL	-0.18	92	10	212.8	202.8	105	199.8
MW-115	On	276588.14	800805.19	MW	291.92	291.67	MW-115	FL	-0.25	89.5	10	202.4	192.4	182.4	109.5

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TABLE 3-2
MI Monitoring Well, Injection Well, and Piezometer Construction Details
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Identification	Onsite or Offsite	NORTHING	EASTING	TYPE	Ground Elev. (ft msl)	TOC (ft msl)	Identification	Well Finish	TOC vs. Ground Elev. (ft)	Length of Riser (ft)	Length of Screen (ft)	Elev. Of Top of Screen (ft msl)	Elev. Of Bottom of Screen (ft msl)	Depth of Boring (ft bls)	Elev. of Bottom of Boring (ft msl)
MW-116	On	276593.32	800803.79	MW	291.92	291.67	MW-116	FL	-0.25	98.5	10	193.4	183.4	173.4	118.5
MW-117	On	276582.76	800816.22	MW	291.57	291.38	MW-117	FL	-0.19	99	10	192.6	182.6	172.6	119.0
MW-118	On	276587.70	800815.05	MW	291.58	291.17	MW-118	FL	-0.41	90	10	201.6	191.6	181.6	110.0
MW-119	On	276599.18	800812.21	MW	291.74	291.50	MW-119	FL	-0.24	90	10	201.7	191.7	181.7	110.0
MW-120	On	276589.30	800809.53	MW	291.72	291.56	MW-120	FL	-0.16	98	10	193.7	183.7	173.7	118.0
MW-121	On	276594.20	800808.20	MW	291.83	291.63	MW-121	FL	-0.20	92	10	199.8	189.8	179.8	112.0
MW-122	On	276604.07	800810.28	MW	291.76	291.62	MW-122	FL	-0.14	98.5	10	193.3	183.3	173.3	118.5
MW-123	On	276586.10	800820.53	MW	291.36	291.09	MW-123	FL	-0.27	90	15	201.4	186.4	171.4	120.0
MW-124	On	276603.07	800816.13	MW	291.58	291.39	MW-124	FL	-0.19	90	15	201.6	186.6	171.6	120.0
MW-125	On	276594.62	800818.74	MW	291.47	291.35	MW-125	FL	-0.12	94	15	197.5	182.5	167.5	124.0
Injection Wells:							**Injection wells:**								
IW-1	On	276705.58	806329.97	IW	304.29	304.03	IW-1	FL	-0.26	89	10	215.3	205.3	107	197.3
IW-2	On	276714.75	806324.06	IW	304.49	304.21	IW-2	FL	-0.28	90	15	214.5	199.5	105.5	199.0
IW-3	On	276706.78	806317.92	IW	304.47	304.21	IW-3	FL	-0.26	88	15	216.5	201.5	105	199.5
IW-4	On	276705.54	806311.11	IW	304.68	304.53	IW-4	FL	-0.13	90	15	214.7	199.7	115	189.7
IW-5	On	276585.57	800787.32	IW	292.43	292.12	IW-5	FL	-0.31	103	10	189.4	179.4	130	162.4
IW-6	On	276580.44	800795.75	IW	292.27	291.94	IW-6	FL	-0.33	99	10	193.3	183.3	115	177.3
IW-7	On	276593.69	800791.35	IW	292.26	292.00	IW-7	FL	-0.26	99.5	10	192.8	182.8	115	177.3
Piezometers:							**Piezometers:**								
PZ-01	Off (S)	275150.00	801750.00	PZ	308.00	307.76	PZ01	FL	-0.24	103.7	10	204.3	194.3	115.0	193.0
PZ-03	On	276379.33	802941.05	PZ	298.98	298.51	PZ03	FL	-0.47	108.9	10	190.1	180.1	120.0	179.0
PZ-04	Off (SW)	275905.40	799780.49	PZ	303.00	302.30	PZ04	FL	-0.70	98.3	10	204.7	194.7	109.0	194.0
PZ-05	Off (S)	274934.56	806177.53	PZ	257.00	256.04	PZ05	FL	-0.96	68.1	10	188.9	178.9	79.0	178.0
PZ-06	On	278855.88	805100.13	PZ	303.00	302.74	PZ06	FL	-0.26	89.4	10	213.6	203.6	101.6	201.4
PZ-07	On	277053.25	806006.75	PZ	305.22	304.72	PZ07	FL	-0.50	101.3	10	203.9	193.9	112.0	193.2
PZ-08	Off (S)	274652.33	800732.76	PZ	290.00	289.35	PZ08	FL	-0.65	98.2	10	191.8	181.8	111.2	178.8

* : Replacement wells for MW-100 and MW-102. MW-100 and -102 will be abandoned at a later date.

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TABLE 3-3
Location and Current Monitoring Status of Monitoring Wells
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Identification	On- or Offsite	Screened Aquifer	Well Type	Location of Well on Main Installation	Purpose of Location	Current Status of Monitoring
Monitoring Wells:						
MW-16	On	Fluvial	Background	NE corner of MI	Installed into the fluvial aquifer as background well in NE corner of MI during RI by Law Engineering in 1990, upgradient location for NE portion of site	Well not currently part of routine sampling program, only sampled periodically
MW-17*	On	Fluvial	NA	Northern perimeter of MI	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Well was abandoned in the 2003 as a result of obstruction in well.	Well not currently part of routine sampling program, only sampled periodically
MW-18	On	Fluvial	NA	Beside MW-38; northern perimeter of MI	Installed into capillary fringe of the fluvial aquifer during RI by Law Engineering in 1990.	Well not currently part of routine sampling program, only sampled periodically
MW-19	On	Fluvial	Background	NW corner of MI	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is in a background position.	Well not currently part of routine sampling program, only sampled periodically
MW-20	On	Fluvial	Background	Western perimeter of MI	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is in background position, upgradient of Building 949.	Well not currently part of routine sampling program, only sampled periodically
MW-21	On	Fluvial	Performance	SW corner of MI; along western perimeter also.	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is in upgradient location to MI ST Treatability Study Area 1. Also, according to PCE plots maps of March 2002, well monitors offsite plume migrating onto MI.	Well not currently part of routine sampling program, only sampled periodically
MW-23	On	Fluvial	Boundary	SW corner of MI	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is located in an upgradient position. Contaminants have been detected in this well possibly from offsite sources.	Well not currently part of routine sampling program, only sampled periodically
MW-24	On	Fluvial	Boundary	SW quadrant of MI; along southern perimeter also	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is located in an upgradient position on the southern edge of the MI.	Well not currently part of routine sampling program, only sampled periodically
MW-34	On	Fluvial	Boundary	Along southern perimeter; beside MW-81, along former N Street	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is located in an upgradient position on the southern edge of the MI.	Well not currently part of routine sampling program, only sampled periodically
MW-25	On	Fluvial	Performance	South of Lab Danielson, in golf course	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Well was abandoned in October 2002 and replaced by MW25A.	Well not currently part of routine sampling program, only sampled periodically
MW-25A	On	Fluvial	Performance	South of Lab Danielson, in golf course	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is laterally downgradient of plume in area MI ST Treatability Study Area 2. During MI RI, this well contained low levels of PCE possibly associated with upgradient plume.	Well not currently part of routine sampling program, only sampled periodically
MW-26	On	Fluvial	Performance	At corner of J Street and 2nd Avenue	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is located at the distal end of the plume associated with MI ST Treatability Study Area 2.	Well not currently part of routine sampling program, only sampled periodically
MW-27	On	Fluvial	Performance	NW center of site, beside MW-83 and MW-90	Installed into saturated portion of the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well was installed in an area of no significant saturated thickness.	Well not currently part of routine sampling program, only sampled periodically although the well is commonly dry
MW-34	On DF	Fluvial	Sentinel	SW corner of Don Field	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well was installed within the intermediate aquifer detailing the fluvial aquifer of the MI and Don Field.	This well is currently part of the semi-annual monitoring plan conducted by Acme Engineering for the recovery well system on Don Field.
MW-36	On DF	Fluvial	Background	SE corner of Don Field; beside MW-84	Installed into the Action Formation Upper Osborne Clay during RI by Law Engineering in 1990 to determine if any contamination was migrating through clayey of the Action Formation Upper Osborne Clay. Based on current potentiometric surface map for the MI (November 01,2001), this well is in an upgradient location adjacent to the perimeter of the MI.	Well not currently part of routine sampling program, only sampled periodically
MW-38	On	Intermediate	Sentinel	Along northern border, beside MW-18	Installed during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is set within the intermediate aquifer along the northern portion of the MI.	Well not currently part of routine sampling program, only sampled periodically
MW-39	On	Fluvial	Performance	Along former 9th street	Installed into the fluvial aquifer during RI by Law Engineering in 1990. Based on current potentiometric surface map for the MI (November 01,2001), this well is set within the center of the MI, and near the center of the fluvial aquifer as the aquifer drains toward the intermediate aquifer.	Well not currently part of routine sampling program, only sampled periodically
MW-41	Off (NW)	NA	NA	Former location along Don Ave, NW of the MI	Well was abandoned in the 2003 as a result of damaged casing.	Well not currently part of routine sampling program. This location has been abandoned.
MW-47	Off (S)	Fluvial	Boundary	SW of the MI, off of Bell Road	Installed as part of the MI RI by BM IEL. Based on current potentiometric surface map for the MI (November 01,2001), this well is an upgradient location to the SW corner of the MI. Reportedly installed as part of an investigation into potential offsite sources.	Well not currently part of routine sampling program, only sampled periodically
MW-48	Off (W)	Fluvial		W of the SW portion of the MI	Installed as part of the MI RI by BM IEL. Well was abandoned in the 2003 as a result of damaged or missing casing.	Well not currently part of routine sampling program. Well has been abandoned.
MW-49	On	Fluvial	Boundary	Along eastern perimeter of the MI, along former J Street	Installed as part of the MI RI by BM IEL. Based on current potentiometric surface map for the MI (November 01,2001), this well is located laterally upgradient to the plume located at MI ST Treatability Study Area 2.	Well not currently part of routine sampling program, only sampled periodically
MW-82	On	Fluvial	Boundary	SE corner of MI, along former N Street, in southern end of golf course.	Installed as part of the MI RI by BM IEL. Based on current potentiometric surface map for the MI (November 01,2001), this well is located downgradient to the site along the SE portion of the site.	Well not currently part of routine sampling program, only sampled periodically
MW-83	Off (N)	Fluvial	Background	North of the MI, off of Don Ave.	Installed as part of the MI RI by BM IEL. Based on current potentiometric surface map for the MI (November 01,2001), this well is located upgradient to the northern perimeter of the site and is also upgradient to the spatially small plume located around the Building 308 and 309 area.	Well not currently part of routine sampling program, only sampled periodically
MW-85	On MI	Fluvial	Background	Northwest corner of MI; in property currently leased by Barnhart Crane and Rigging, Inc., along Perimeter Road of the MI.	Installed as part of the MI RI by BM IEL. Based on current potentiometric surface map for the MI (November 01,2001), this well appears to be located downgradient to the southwest corner of Don Field, even though the well is located on the MI.	Well not currently part of routine sampling program, only sampled periodically
MW-87	On	Fluvial	Performance	NW quadrant of the MI, along former 15th Street	Installed as part of the MI RI by BM IEL. Based on current potentiometric surface map for the MI (November 01,2001), this location is slightly upgradient to the NW corner of the site and upgradient of former building 635 location.	Well not currently part of routine sampling program, only sampled periodically
MW-93	On	na	Sentinel	NW quadrant of the MI, along former D Street	Installed as part of the MI RI by BM IEL. Well was abandoned in October 2002 and replaced by MW93A and 93B.	Well not currently part of routine sampling program, only sampled periodically
MW93A	On	Intermediate	Sentinel	NW quadrant of the MI, along former D Street	Replacement well for MW-93. Installed in October 2002. Based on current potentiometric surface map for the MI (November 01,2001), this well is located at the head of the window into the intermediate aquifer, which identifies the NW corner of the MI.	Well not currently part of routine sampling program, only sampled periodically

TABLE 3-3
Location and Current Monitoring Status of Monitoring Wells
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Identification	On- or Offsite	Screened Aquifer	Well Type	Location of Well on Main Installation	Purpose of Location	Current Status of Monitoring
MW83B	On	Intermediate	Sentinel	NW qdrant of the MI,along former D Street	Replacement well for MW-83. Installed in October 2002. Based on crent potentiometric sdace map for the MI (November 01,2001),this well is located at the head of the window into the Intermediate aljer, which aderlies the NW corner of the MI.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-84	On	Fluial	Performance	SEqdrant of the MI,along former tStreet	Installed as part of the MI RI byBM IEL. Based on crent potentiometric sdace map for the MI (November 01,2001),this well is located downgradient of the former Bilding 359 location. Plme maps presented in the Baseline Godwater Technical Memorandm for the MI indicate that this wal is within a previoslydetected plme.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-85	Off (W)	Fluial	Boodary	West of the MI,off of Sail Road	Installed as part of the MI RI byBM IEL. Based on crent potentiometric sdace map for the MI (November 01,2001),this well is located pgradient of the SW corner of the MI is pgradient to a plme food within MW21,east of the MW66 location.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-72	Off (SW)	Fluial	Boodary	SW of the MI,in Baptist Bich parteg lot	Installed as part of the MI RI byBM IEL. Based on crent potentiometric sdace map for the MI (November 01,2001),this well is located pgradient of the SW corner of the MI is pgradient to a plme food within MW21,east of the MW66 location.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-81	On	Intermediate	Sentinel	Beside MW-24,sothern perimeter of MI,along former N Street	Installed in 2000 as part of the MI conceptal site model development. This well is screened within the intermediate aljer oderlying the fluial aljer	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-82	On	Intermediate	Sentinel	SW qdrant of the MI, adjacent soth of MW-100B location	Installed in 2000 as part of the MI conceptal site model development. This well is screened within the intermediate aljer oderlying the fluial aljer	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-83	On	Intermediate	Sentinel	SEqdrant of the MI, adjacent to MW26	Installed in 2000 as part of the MI conceptal site model development. This well is screened within the intermediate aljer oderlying the fluial aljer	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-84	On DF	Intermediate	Sentinel	North of the MI,in SEcorner of Don Field,adjacent to MW36.	Installed as part of a conceptal site model plan and for boodarycontrol for Don Field and the MI. Base on crent potentiometric sdace map for the MI (November 01,2001),this well is located pgradient to the northern perimeter of the MI and is the ane of no signifi cant saturated thickness.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-85	On	Fluial	Performance	SEqdrant of the MI,along former JStreet,in parteglot o the Memphis Police Departmenl	Installed as part of the MI Long Term Operational Area investigation stdyof 2001. Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located downgradient of the MI B TreatabilityStdyArea 2 as well as LTOA Site RI58. Plme maps developed for the November 2002 Baseline Godwater Sampling Technical Memorandm indicate that this well is within chlorinated solvent plme centered in this area.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-86	On	Fluial	Performance	SEqdrant of the MI,along former JStreet,in parteglot o the Memphis Police Departmenl	Installed as part of the MI Long Term Operational Area investigation stdyof 2001. Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located downgradient of the MI B TreatabilityStdyArea 2 as well as LTOA Site B280, SB1,and S4. Plme maps developed for the November 2002 Baseline Godwater Sampling Technical Memorandm indicate that this well is within chlorinated solvent plme centered in this area.	Well has been sampled on monthlybasis for a approximate one yar period,fr2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-88	On	Fluial	Performance	SEqdrant of the MI,along former JStreet,in parteglot o the Memphis Police Departmenl	Installed as part of the MI Long Term Operational Area investigation stdyof 2001. Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located downgradient of the MI B TreatabilityStdyArea 2 as well as LTOA Site B280, SB1,and S4. Plme maps developed for the November 2002 Baseline Godwater Sampling Technical Memorandm indicate that this well is pgradient of plme centered aroad monitoring wells MW85 and MW86 and downgradient of LTOA Site SB1	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-89	On	Intermediate	Sentinel	NW qdrant of the MI, adjacent to monitoring wells MW27 and MW90	Installed as part of the conceptal site model stdyin October 2000. Based on crent potentiometric sdace map for the MI (November 01,2001),this we is located in the intermediate aljer oderlying the NW corner of the MI.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-90	On	Intermediate	Boodary	NW qdrant of the MI, adjacent to monitoring wells MW27 and MW89	Installed as part of the conceptal site model stdyin October 2000. Based on crent potentiometric sdace map for the MI (November 01,2001),this we is located in the intermediate aljer oderlying the NW corner of the MI.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-92	On	Fluial	Performance	SEqdrant of the MI,along former JStreet,in parteg lot of the Memphis Police Departmenl	Installed as part of the MI Long Term Operational Area investigation stdyof 2001. Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located downgradient of LTOA Site S4. Plme maps developed for the November 2002 Baseline Godwater Sampling Technical Memorandm indicate that this well is pgradient of plme centered aroad monitoring wells MW85 and MW86.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-93	On	Fluial	Boodary	Along sothern perimeter and along former N Street	Installed as part of the MI Long Term Operational Area investigation stdyof 2001 and downgradient of a former dre stroage area located along the sothern boodaryof the MI.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-94	On	Fluial	Performance	Within SW qdrant of the MI, along former L Street and nort of Bldg 690	Installed as part of the MI Long Term Operational Area investigation stdyof 2001 and istarallygradient to LTOA site SS78 as well as Bilding 678.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-96	On	Fluial	Performance	SEqdrant of the MI,jst soth of former tStreet and in northern edge of golf cose	Installed as part of the MI Long Term Operational Area investigation stdyof 2001 Based on crent potentiometric sdace map for the MI (November 01 2001),this well is located downgradient of LTOA Site RI59. Plme maps developed for the November 2002 Baseline Godwater Sampling Technical Memorandm indicate that this well is part of plme centered aroad monitoring wells MW85 and MW86.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-97	On	Fluial	Performance	SW qdrant of the MI,along sothern end of former 11th Street	Installed as part of the MI Long Term Operational Area investigation stdyof 2001. Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located downgradient of LTOA Site RI27.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-98	On	Fluial	Performance	SW qdrant of the MI,west of 9th Street and soth of Bldg 770.	Installed as part of the MI Long Term Operational Area investigation stdyof 2001. Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located laterallydowngradient of LTOA Site RI34.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-99	On	Fluial	Performance	SW qdrant of the MI,along western end of 9th Street and SEof Bldg 949	Installed as part of the MI Long Term Operational Area investigation stdyof 2001. Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located pgradient of a majorityof the flow across the western edge of the MI. This well is also downgradient to LTOA Site SS83 and Bilding 949.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-100	On	Fluial	Performance	SW qdrant of the MI and along former 25th Street,	Installed as part of the MI Long Term Operational Area investigation stdyof 2001	Well has never been sampled. Bing warped dding grobccing processes phase of installation.

TABLE 3-3
Location and Current Monitoring Status of Monitoring WCs
Rev. 2 Mi Long-Term Groundwater Monitoring Plan

Identification	On- or Offsite	Screened Aquifer	Well Type	Location of Well on Main Installation	Purpose of Location	Current Status of Monitoring
MW-1005	On	Fluvial	Performance	SW qdrant of the MI and along former 25th Street,	Installed as part of the MI Long Term Operational Area Investigation stdyof 2001 Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located downgradient of LTOA Site SS39 and the MI BT TreatabilityStdyArea 1. Plow maps developed for the November 2002 Baseline Sodwater Sampling Technical Memorandm indicate that this well is part of plow centered close to MW-1005.	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-101	On	Fluvial	Performance	SW qdrant of the MI and along former 21st Street,	Installed as part of the MI Long Term Operational Area Investigation stdyof 2001 Based on crent potentiometric sdace map for the MI (November 01, 2001),this well is located downgradient of LTOA Site SS39 and is laterallydowngradient to the MI BT TreatabilityStdyArea 1 Plow maps developed for the November 2002 Baseline Sodwater Sampling Technical Memorandm indicate that this well is part of plow centered close to MW-1005.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-102	On	Fluvial	Boodary	SW qdrant of the MI along sothern end of former Perimeter Road,	Installed as part of the MI Long Term Operational Area Investigation stdyof 2001	Well has never been sampled. Boing warped dding grobizing processes phase of installation.
MW-102D	On	Fluvial	Boodary	SW qdrant of the MI along sothern end of former Perimeter Road.	Installed as part of the MI Long Term Operational Area Investigation stdyof 2001 and,based on the crent potentiometric sdace map for the MI (November 01,2001),this well is located pgradient of the SW corner of the MI. This well is also downgradient of offsite monitoring well MW47,which formerly,contained relativelyhigher levels of chlorinated solvents.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-103	On	Fluvial	Performance	Northeast qdrant of MI alon former B Street,sodh of Bldg 309	Installed as part of the MI Long Term Operational Area investigation stdyof 2001 Based on the crent potentiometric sdace map for the MI (November 01,2001),this well is located downgradient of LTOA Sites SS35,SS36,and SS37 Plow maps developed for the November 2002 Baseline Sodwater Sampling Technical Memorandm indicate that this well is part of a slight contaminant plow centered aroud these LTOA sites.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-104	On	Fluvial	Performance	Northeast qdrant of MI alon former B Street,sodh of Bldg 309	Installed as part of the MI Long Term Operational Area investigation stdyof 2001 Based on the crent potentiometric sdace map for the MI (November 01,2001),this well is located downgradient of LTOA Sites SS35,SS36,and SS37 Plow maps developed for the November 2002 Baseline Sodwater Sampling Technical Memorandm indicate that this well is part of a slight contaminant plow centered aroud these LTOA sites.	Well not crentlypart of rotine sampling program,onlysampled periodically
MW-105	On	Fluvial	Performance	MI BT Area 2 TreatabDty StdyWell,SEjdrant of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-106	On	Fluvial	Performance	MI BT Area 2 TreatabDty StdyWell,SEjdrant of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-107	On	Intermediate	Sentinel	MI BT Area 2 TreatabDty StdyWell,NW qdrant of MI	Installed as part of the MI LTOA investigation of 2001	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-108	On	Fluvial	Boodary	MI BT Area 2 TreatabDty StdyWell,NW qdrant of MI	Installed as part of the MI LTOA investigation of 2001	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-109	On	Fluvial	Performance	MI BT Area 2 TreatabDty StdyWell,SEjdrant of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-110	On	Fluvial	Performance	MI BT Area 2 TreatabDty StdyWell,SEjdrant of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-111	On	Fluvial	Performance	MI BT Area 2 TreatabDty StdyWell,SEjdrant of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-112	On	Fluvial	Performance	MI BT Area 2 TreatabDty StdyWell,SEjdrant of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-113	On	Fluvial	Performance	MI BT Area 2 TreatabDty StdyWell,SEjdrant of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-114	On	Fluvial	Performance	MI BT Area 2 TreatabDty StdyWell,SEjdrant of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - Agst 2003 as part of the MI BT Treatability Stdy
MW-115	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-116	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-117	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-118	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-119	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-120	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-121	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-122	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-123	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-124	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
MW-125	On	Fluvial	Performance	MI BT Area 1 TreatabDty StdyWell,SW corner of MI	Slection of groodwater samples as part of treatabDtystdy	Well has been sampled on monthlybasis for a approimate one yar period,ljl2002 - ly 2003 as part of the MI BT TreatabDtyStdy
Piezometers						

TABLE 3-3

Location and Current Monitoring Status of Monitoring Wells

Rev. 2 MI Long-Term Groundwater Monitoring Plan

Identification	On- or Offsite	Screened Aquifer	Well Type	Location of Well on Main Installation	Purpose of Location	Current Status of Monitoring
PZ-01	Off (S)	Fluvial	Boudary	Soth of Dan Field,off of Ball Rd	Installed as part of the MI RI byBM IEL	Piezometer not crentlypart of rotine sampling program,onlysampled periodically
PZ-03	On	Fluvial	Performance	SW qdrant of MI,at corner of former Mnd 6th Streets	Installed as part of the MI RI byBM IEL	Piezometer not crentlypart of rotine sampling program,onlysampled periodically
PZ-04	Off (SW)	Fluvial	Boudary	SW of the MI,and north of Bal Road	Installed as part of the MI RI byBM IEL	Piezometer not crentlypart of rotine sampling program,onlysampled periodically
PZ-05	Off (S)	Fluvial	Boudary	SE of the MI,and soth of Ball Road	Installed as part of the MI RI byBM IEL	Piezometer not crentlypart of rotine sampling program,onlysampled periodically
PZ-06	On	Fluvial	Performance	Northeast qdrant of MI alon former B Street,west of Bldg 309	Installed as part of the MI RI byBM IEL	Piezometer not crentlypart of rotine sampling program,onlysampled periodically
PZ-07	On	Fluvial	Performance	SEqdrant of the MI, within roadwayof former Street now central avene of Memphis Depot Belmess Park)	Installed as part of the MI RI byBM IEL	Piezometer not crentlypart of rotine sampling program,onlysampled periodically
PZ-09	Off (S)	Fluvial	Boudary	SW of the MI,off of Ball Road	Installed as part of the MI RI byBM IEL	Piezometer not crentlypart of rotine sampling program,onlysampled periodically
Injection Wells:						
IW-1	On	Fluvial	Performance	MI BT Area 2 Treatability StdyWell,SEqdrant of MI	Installed for injection of sodim lactate as part of MI BT TreatabilityStdyin 2002 - 2003..	Well sampled onlyperiodicallyding MI TreatabilityStdy
IW-2	On	Fluvial	Performance	MI BT Area 2 Treatability StdyWell,SEqdrant of MI	Installed for injection of sodim lactate as part of MI BT TreatabilityStdyin 2002 - 2003..	Well sampled onlyperiodicallyding MI TreatabilityStdy
IW-3	On	Fluvial	Performance	MI BT Area 2 Treatability StdyWell,SEqdrant of MI	Installed for injection of sodim lactate as part of MI BT TreatabilityStdyin 2002 - 2003..	Well sampled onlyperiodicallyding MI TreatabilityStdy
IW-4	On	Fluvial	Performance	MI BT Area 2 Treatability StdyWell,SEqdrant of MI	Installed for injection of sodim lactate as part of MI BT TreatabilityStdyin 2002 - 2003..	Well sampled onlyperiodicallyding MI TreatabilityStdy
IW-5	On	Fluvial	Performance	MI BT Area 1 Treatability StdyWell,SW corner of MI	Installed for injection of EmulsiBR (vegetable oil) as part of MI BT TreatabilityStdyin 2002 - 2003..	Well sampled onlyperiodicallyding MI TreatabilityStdy
IW-6	On	Fluvial	Performance	MI BT Area 1 Treatability StdyWell,SW corner of MI	Installed for injection of EmulsiBR (vegetable oil) as part of MI BT TreatabilityStdyin 2002 - 2003..	Well sampled onlyperiodicallyding MI TreatabilityStdy
IW-7	On	Fluvial	Performance	MI BT Area 1 Treatability StdyWell,SW corner of MI	Installed for injection of EmulsiBR (vegetable oil) as part of MI BT TreatabilityStdyin 2002 - 2003.	Well sampled onlyperiodicallyding MI TreatabilityStdy

NOTE:

MW monitoring well

PZ piezometer

IW injection well

LA Location abandoned

MI Main Installation

LTOA Long-Term Operational Area

TDEC Tennessee Department of Environment and Conservation

CSM Conceptual Site Model

BT Enhanced BioPerformance Treatment

NA not applicable

1 Sampling frequencydetermined byStandard Sampling FrequncyDecision Tree,Figure 5-1

TABLE 3-4*

Frequency of VOC Detections in Groundwater during the MI RI

Rev. 2 MI Long-Term Groundwater Monitoring Plan

Parameter	Number Analyzed	Number Detected	Percent of Detection	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units
Persistent VOCs								
TETRACHLOROETHYLENE(PCE)	83	33	40%	0.0010	J	0.1200	=	mg/L
TRICHLOROETHYLENE (TCE)	83	31	37%	0.0010	J	0.0580	=	
TOTAL 1,2-DICHLOROETHENE	83	7	8%	0.0010	J	0.0090	J	
1,1,1-TRICHLOROETHANE	83	5	6%	0.0010	J	0.0140	=	
CARBON TETRACHLORIDE	83	10	12%	0.0010	J	0.0040	J	
CHLOROFORM	83	10	12%	0.0010	J	0.0050	J	
Sporadic VOCs								
ACETONE	83	3	4%	0.0140	=	0.1900	=	mg/L
BROMODICHLOROMETHANE	83	2	2%	0.0010	J	0.0020	J	
BROMOFORM	83	1	1%	0.0010	J	0.0010	J	
CARBON DISULFIDE	83	2	2%	0.0010	J	0.0010	J	
BENZENE	84	1	1%	0.0030	J	0.0030	J	
CHLOROBENZENE	83	2	2%	0.0010	J	0.0040	J	
CHLOROETHANE	83	1	1%	0.0010	J	0.0010	J	
CHLOROMETHANE	83	2	2%	0.0010	J	0.0020	J	
DIBROMOCHLOROMETHANE	83	2	2%	0.0010	J	0.0020	J	
METHYL ETHYL KETONE (2-BUTANONE)	83	4	5%	0.0040	J	0.0090	J	
1,1,2,2-TETRACHLOROETHANE	83	2	2%	0.0020	J	0.0040	J	
TOLUENE	84	1	1%	0.0020	J	0.0020	J	
2-HEXANONE	83	1	1%	0.0050	J	0.0050	J	
1,2-DICHLOROETHANE	83	1	1%	0.0010	J	0.0010	J	

Notes:

"J" - Indicates an estimated value.

"=" - Indicates a detection.

ug/L = micrograms per liter

* This table is an excerpt from the MI Baseline Risk Assessment.

TABLE 3-5

Frequency of VOC Detections in Groundwater During the LTOA Investigation

Rev. 2 MI Long-Term Groundwater Monitoring Plan

VOCs	Number Analyzed*	Number Detected	Percent Detected	Minimum Detection Value	Minimum Detection Qualifier	Maximum Detection Value	Maximum Detection Qualifier	Units
Persistent VOCs								
CARBON TETRACHLORIDE	113	32	28%	0.52	J	140	=	ug/L
CHLOROFORM	113	73	65%	0.13	J	98	=	
cis-1,2-DICHLOROETHYLENE	113	60	53%	0.18	J	76	=	
TETRACHLOROETHYLENE(PCE)	113	61	54%	0.13	J	530	=	
TRICHLOROETHYLENE (TCE)	113	86	76%	0.14	J	98	=	
METHYLENE CHLORIDE	113	17	15%	0.12	J	7.9	=	
Sporadic VOCs								
1,1,2,2-TETRACHLOROETHANE	113	16	14%	0.1	J	1.7	=	ug/L
1,1-DICHLOROETHANE	113	19	17%	0.16	J	1.8	=	
1,1-DICHLOROETHENE	113	23	20%	0.12	J	1.5	=	
1,2-DICHLOROETHANE	113	39	35%	0.11	J	7.5	=	
1,2-DICHLOROPROPANE	113	19	17%	0.082	J	1.5	=	
ACETONE	113	36	32%	1.4	J	2700	=	
BENZENE	113	1	1%	0.12	J	0.12	J	
BROMOMETHANE	113	3	3%	0.2	J	1.5	=	
CARBON DISULFIDE	113	17	15%	0.17	J	1.7	=	
CHLOROBENZENE	113	11	10%	0.11	J	0.29	J	
CHLOROMETHANE	113	9	8%	0.13	J	0.22	J	
ETHYLBENZENE	113	36	32%	0.13	J	0.81	J	
M,P-XYLENE (SUM OF ISOMERS)	113	42	37%	0.26	J	2.7	=	
METHYL ETHYL KETONE (2-BUTANONE)	113	5	4%	1.4	J	2.5	J	
O-XYLENE (1,2-DIMETHYLBENZENE)	113	30	27%	0.11	J	0.76	J	
TOLUENE	113	23	20%	0.12	J	0.83	J	
trans-1,2-DICHLOROETHENE	113	25	22%	0.12	J	1.7	=	

Notes

"J" - Indicates an estimated value.

"=" - Indicates a detection.

ug/L = micrograms per liter

* This table does not include QA/QC sample results

LTOA sampling was conducted from September to December 2001.

TABLE 3-6

Frequency of VOC Detections in Groundwater During the MI Baseline Event*

Rev. 2 MI Long-Term Groundwater Monitoring Plan

Parameter	Number Analyzed	Number Detected	Percent Detected	Minimum Detection Value	Minimum Detection Qualifier	Maximum Detection Value	Maximum Detection Qualifier	Units
Persistent VOCs								
CARBON TETRACHLORIDE	36	6	17%	0.32	J	3.8	=	ug/L
CHLOROFORM	36	11	31%	0.18	J	12	=	
cis-1,2-DICHLOROETHYLENE	36	10	28%	0.36	J	190	=	
TETRACHLOROETHYLENE(PCE)	36	13	36%	0.27	J	90	=	
TRICHLOROETHYLENE (TCE)	36	16	44%	0.31	J	76	=	
Sporadic VOCs								
1,1,2,2-TETRACHLOROETHANE	36	1	3%	3.5	=	3.5	=	ug/L
1,1-DICHLOROETHANE	36	2	6%	0.4	J	0.65	J	
1,1-DICHLOROETHENE	36	2	6%	0.7	J	1.3	=	
1,2-DICHLOROETHANE	36	3	8%	0.27	J	3.4	=	
1,2-DICHLOROPROPANE	36	1	3%	0.37	J	0.37	J	
ACETONE	35	2	6%	4	J	7.5	J	
BENZENE	36	1	3%	0.3	J	0.3	J	
METHYL ETHYL KETONE (2-BUTANONE)	36	2	6%	2.5	J	2.7	J	
TOLUENE	36	4	11%	0.27	J	0.65	J	
VINYL CHLORIDE	36	1	3%	28	=	28	=	

Notes:

"J" - Indicates an estimated value.

"=" - Indicates a detection.

ug/L= Micrograms per Liter

* Only detected compounds reported.

Well ID	Water Level Elevation (feet MSL)
MW-02	264.74
MW-03	223.96
MW-04	224.84
MW-05	DRY
MW-06	224.99
MW-07	Not measured
MW-08	231.59
MW-09	229.05
MW-10	225.84
MW-11	224.36
MW-12	224 6
MW-13	224.81
MW-14	227 96
MW-15	228.2
MW-16	243.04
MW-17	Abandoned
MW-18	174.631
MW-19	202.66
MW-20	200.046
MW-21	200.995
MW-22	201.239
MW-23	199.809
MW-24	193.183
MW-25	Abandoned
MW-25A	198.15
MW-26	204.321
MW-27	DRY
MW-28	237.46
MW-29	236.26
MW-30	229.22
MW-31	220.59
MW-32	221 91
MW-33	224 68
MW-34	161.63
MW-35	224.62
MW-36	166.16
MW-37	165.88
MW-38	174.785
MW-39	Not measured
MW-40	179 93
MW-41	Abandoned
MW-42	220 76
MW-43	167.61
MW-44	215.15
MW-45	236.68
MW-46	235.34
MW-47	204 18
MW-48	Abandoned
MW-49	232 89
MW-50	213.768
MW-51	256.27
MW-52	199 806
MW-53	233 82
MW-54	216.69
MW-55	221.08
MW-56	228.6
MW-57	226.21
MW-58	227.31
MW-59	225 9
MW-60	226.33
MW-61	227 14
MW-62	199 716
MW-63	Abandoned
MW-63A	201.1
MW-63B	201.03
MW-64	198.643
MW-65	255.55
MW-66	207.34
MW-67	156 39
MW-68	223.55
MW-69	223 74
MW-70	224.06
MW-71	224 11
MW-72	208.15
MW-73	225.29

Well ID	Water Level Elevation (feet MSL)
MW-74	224.49
MW-75	224.33
MW-76	216.92
MW-77	222.51
MW-78	227.62
MW-79	214.59
MW-80	215.08
MW-81	159.949
MW-82	156.251
MW-83	161.298
MW-84	228.48
MW-85	205.58
MW-86	208.24
MW-87	224 73
MW-88	225.41
MW-89	187.295
MW-90	187.42
MW-91	224.42
MW-92	209.34
MW-93	193.25
MW-94	192.59
MW-95	232.47
MW-96	207 5
MW-97	197.52
MW-98	194.29
MW-99	198 78
MW-100	199.31
MW-100B	199.4
MW-101	199.53
MW-102	201.99
MW-102B	201 97
MW-103	232.59
MW-104	233 71
MW-105	208.691
MW-106	208.91
MW-107	195.13
MW-108	192.76
MW-109	208.07
MW-110	208.69
MW-111	208.31
MW-112	208.6
MW-113	207.93
MW-114	208.48
MW-115	199.87
MW-116	199.92
MW-117	199.87
MW-118	199.92
MW-119	199.88
MW-120	199.86
MW-121	199.91
MW-122	199.88
MW-123	199.84
MW-124	199.87
MW-125	199.86
MW-126	234.48
MW-127	210.87
MW-128	246.22
MW-129	239.36
MW-130	240.6
PZ-01	205.94
PZ-02	246.46
PZ-03	195.48
PZ-04	205.12
PZ-05	199.48
PZ-06	251.22
PZ-07	208.194
PZ-08	208 3



0 400 800
SCALE IN FEET

LEGEND

- DEPOT BOUNDARY
- BASE FEATURES
- 215 WATER TABLE ELEVATION IN THE FLUVIAL AQUIFER (FEET MSL)
- 215 INFERRED WATER TABLE ELEVATION IN THE FLUVIAL AQUIFER FROM LIMITED DATA (FEET MSL).
- 185 WATER TABLE ELEVATION IN THE INTERMEDIATE AQUIFER (FEET MSL)
- 185 INFERRED WATER TABLE ELEVATION IN THE INTERMEDIATE AQUIFER FROM LIMITED DATA (FEET MSL)
- LF LIMITED TO NO FLOW BOUNDARY (SEE NOTE)
- LF INFERRED LIMITED TO NO FLOW BOUNDARY (SEE NOTE)
- MW85 MONITORING WELL
- PZ06 PIEZOMETER
- GROUNDWATER FLOW DIRECTION
- CLAY ELEVATION EXCEEDS GROUNDWATER ELEVATION

NOTES

- THE "LIMITED TO NO FLOW BOUNDARY" BOUNDS AN AREA WHERE THE WATER LEVEL IN THE FLUVIAL AQUIFER INTERSECTS THE CLAY DIRECTLY UNDERLYING THE FLUVIAL DEPOSITS, LEAVING FLUVIAL DEPOSITS UNSATURATED.
- MW16, 34, 35, 37, 38, 40, 43, 81, 82, 83, 89, AND 90 ARE WELLS SCREENED WITHIN THE INTERMEDIATE AQUIFER.
- MW107 AND 108 ARE LOCATED IN A TRANSITION ZONE BETWEEN THE FLUVIAL AQUIFER AND THE INTERMEDIATE AQUIFER.
- MW16, 36, 37, 81, 82, 83, 89, 90, 108 AND 125 ARE NOT INCLUDED IN THIS POTENTIOMETRIC SURFACE MAP
- MW87 IS SCREENED IN THE MEMPHIS AQUIFER AND THEREFORE NOT INCLUDED IN THIS POTENTIOMETRIC SURFACE MAP.
- NO MEASUREABLE WATER LEVELS WERE RECORDED IN MW6 AND 27
- DEPTH TO WATER MEASUREMENTS WERE NOT COLLECTED IN MW39.
- MW17, 26, 41, 48 AND 63 WERE ABANDONED.
- EXCLUDES MW-86 GROUNDWATER ELEVATION DATA.

FIGURE 3-1
Potentiometric Surface Map of the Fluvial Aquifer, Including Intermediate Aquifer
July 23, 2003
REV. 1 MI LONG-TERM GROUNDWATER MONITORING PLAN

CH2MHILL

ATLANTA/CAD1/PROJECTS/146071 DOMT/DUNNFIELD_RD 2003 25-FEB-2004 0492/d3-1.dgn

794 823

4.0 Temporal and Statistical Analysis of Groundwater Data

4.1 Introduction

Temporal and statistical analyses of the existing groundwater analytical data were conducted using visual and statistical methods to identify trends within the data. Temporal analysis included scanning graphical and tabulated VOC and geochemical data to define any potential trends. Statistical analysis of data was conducted using a Mann-Kendall test. The occurrence of a trend, or lack thereof, affects monitoring frequency, constituents to be monitored, and location of any additional wells needed during the RA. Before the MI groundwater data were analyzed, monitoring wells were divided into several categories to help define future monitoring objectives.

4.2 Categorization of Monitoring Well Locations

There are 84 monitoring wells, injection wells, and piezometers located on- or offsite of the MI that are part of the monitoring system for this site. To accomplish the purposes of tracking plume conditions and performance monitoring within the active treatment areas, the wells are divided into four groups based upon spatial, geologic/hydrogeologic, and chemical characteristics. Table 4-1 presents the category name, category characteristics, and wells in each category. The groupings are carried forward within the temporal analysis and the characteristics are used in part to determine the frequency of monitoring at each well.

4.3 Time Versus Concentration Plots

Time versus concentration plots (Attachment A) were developed for monitoring wells with at least four sampling events. Plots of VOCs and natural attenuation parameters[2] were constructed for all categories of monitoring wells presented in Table 4-1. A visual evaluation of the plots was conducted for each monitoring well to identify trends in the data. Four categories were used to classify trends:

- Generally increasing with time
- Generally decreasing with time
- No visible trend present
- Not applicable as a result of only one or no sample results

The results of the analysis (Table 4-2) were used with existing plume maps to confirm the initial categorization in Table 4-1. The information was also used to define the initial sampling frequency.

[2] Alkalinity,chlorides,manganese,nitrate,sulfate,and,sulfide.

4.3.1 Background Monitoring Wells

Upgradient wells were identified as potential background wells in Table 4-1. The time versus concentration plots for the background monitoring wells (MW16, MW19, MW20, MW36, MW53, and MW55) include only those constituents that have been detected on more than one occasion. The plots indicate that very few VOC and natural attenuation parameters have been detected in these monitoring wells; therefore, no trends are established. TCE has been detected in three wells, MW16, MW20, and MW53, but at concentrations less than 1.5 µg/L. PCE was also detected in MW53, though the concentration was at or below the laboratory detection limit. In summary, these wells will serve as background locations for the MI because of their upgradient locations and low to non-detect levels of site contaminants.

4.3.2 Boundary Monitoring Wells

In general, boundary wells (Table 4-1) are those along the perimeter of the MI. The time versus concentration plots for the boundary monitoring wells include only those constituents that have been detected on more than one occasion. For all boundary wells, there were either no discernible trends in VOC concentrations or an insufficient number of results (usually only 2 results) to identify a trend. The concentration data caused no changes to the designation of these wells.

4.3.3 Sentinel Monitoring Wells

Sentinel wells (Table 4-1) are used to detect migration of contaminants from the fluvial aquifer into the intermediate aquifer. The time versus concentration plots for the sentinel monitoring wells include only those constituents that have been detected on more than one occasion. VOCs (including PCE, TCE, *cis*-1,2-DCE, and CCl_4) have been detected in MW34 and MW38, although no trends can be discerned. Most of the other sentinel wells have been sampled only once. The presence of VOCs in samples from these wells, the locations of these wells, and the lack of analytical data indicate the need for additional monitoring.

4.3.4 Performance Monitoring Wells

Performance monitoring wells (Table 4-1) will be used to assess the effectiveness of the remedial actions. The time versus concentration plots for the performance monitoring wells include only those constituents that have been detected on more than one occasion. Some of the performance monitoring wells are associated with the MI EBT Treatability Study (Appendix A). The plots for these wells show trends within the VOC and natural attenuation parameter results. These trends and their significance are discussed in the MI EBT Treatability Study report (Appendix A).

Twelve of the performance monitoring wells have been sampled only once. Additional sampling efforts to identify trends in VOCs or natural attenuation parameters are required for the LTM program.

4.4 Trend Analysis in Groundwater Data

Statistical evaluation of trends in data can be performed in a number of ways. One of the most commonly used trend analysis methods for environmental data is the Mann-Kendall

test (Gilbert, 1987; Gibbons, 1994). This is a non-parametric method, so there are no distributional assumptions. Missing data values (nondetects) are easily handled by assigning a common value. The exact value does not affect the computations as long as it is less than the detected values. Irregularly spaced sampling intervals are permitted as well. This technique can be viewed as a non-parametric test for a zero slope in the linear regression of time-ordered data versus time.

Data for the Mann-Kendall test were gathered from the monitoring wells that are described as being within or surrounded by a VOC plume. These wells were selected for analysis because the test results will affect future analytical frequency of each well and decisions regarding location of future monitoring well installation.

The results for the Mann-Kendall test for intrawell trends in the groundwater data are shown in Tables 4-3 and 4-4 for PCE and TCE only. These two parameters were selected because they are more prevalent than other contaminants in groundwater and are principal risk assessment contaminants for the site. In addition, other VOC contaminants will be affected by increases or decreases in these contaminants. The wells that that may have been influenced by the EBT study thereby affecting the trend analysis are noted in Tables 4-3 and 4-4.

The p-value for the test, which represents the calculated probability that any observed trend would occur purely by chance (given the variability and sample size of the data set) is provided in Tables 4-3 and 4-4. A significance level of 0.05 was used for comparisons with the p-value and the resulting decision is reported. This could be a significantly increasing or decreasing trend or no significant change (over time). The test statistic, S, is also provided in this table. A positive S is associated with increasing trends, while a negative S is associated with decreasing trends.

The results of the Mann-Kendall tests will be re-evaluated as new LTM data are collected.

TABLE 4-1
Monitoring Well Categories for MI Monitoring Wells
Rev. 3 MI Long-Term Groundwater Monitoring Plan

Category Name	Category Characteristics	Wells in Category
Background Well	Monitoring wells or piezometers screened in the fluvial or Memphis aquifer; located along or outside of the MI boundary; located upgradient to or at a distance from contaminant plumes on the MI and Dunn Field; no (or only low-level) previous detections of site contaminants in well samples. Example: MW16 is a background well because of upgradient location and there has been only one low-level VOC detection in the well to date.	MW16, MW19, MW20, MW36, MW53, MW55
Boundary Well	Monitoring wells or piezometers screened in the fluvial aquifer located along or outside the MI boundary. They are designed to monitor intrusion of contaminants from offsite sources. Example: MW102B located in the southwestern corner of the site is considered a boundary well because of the well location.	MW22, MW23, MW24, MW47, MW50, MW52, MW66, MW72, MW90, MW93, MW102, MW102B, PZ01, PZ04, PZ05, PZ08
Sentinel Well	Monitoring wells or piezometers screened within the fluvial and intermediate (interpreted to be within the Jackson Formation/Upper Claiborne Group) aquifers; located adjacent to or within a window to the intermediate aquifer. Example: MW38 is screened within the intermediate aquifer and is located within a window to the intermediate aquifer.	MW34, MW38, MW63A, MW63B, MW81, MW82, MW83, MW84, MW89, MW107, MW108
Performance Monitoring Well	Monitoring wells or piezometers screened in the fluvial aquifer; located within the limits of known contaminant plumes; or repeatedly have contaminants in samples from location located in areas targeted for treatment during the RA. Example: MW86 is located in the VOC contaminant plume in southeastern corner.	IW1, IW2, IW3, IW4, IW5, IW6, IW7, MW21, MW25A, MW26, MW27, MW39, MW62, MW64, MW85, MW86, MW88, MW92, MW94, MW96, MW97, MW98, MW99, MW100, MW100B, MW101, MW103, MW104, MW105, MW106, MW109, MW110, MW111, MW112, MW113, MW114, MW115, MW116, MW117, MW118, MW119, MW120, MW121, MW122, MW123, MW124, MW125, PZ03, PZ06, PZ07

Table 4-2
Summary of Results for Visual Analysis of Concentration Versus Time Plots
Rev 0 MI Long-Term Groundwater Monitoring Plan

StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
MW-16	Background	VOC, Non-Detect Result				X
		Geochem	X			
		Mn		X		
MW-19	Background	VOC, Non-Detect Result				X
		Geochem	X			
		Mn			X	
MW-20	Background	VOC, Non-Detect Result				X
		GeoChem	X			
		Chlorform		X		
		Mn			X	
MW-36	Background	VOC, Non-Detect Result				X
		GeoChem	X			
		Chloride			X	
		Mn				Has detections
		Sulfate		X		
MW-53	Background	VOC, Non-Detect Result				X
		GeoChem	X			
		Mn				X
MW-55	Background	VOC, Non-Detect Result				X
		GeoChem	X			
		Chloride				Has detections
		Mn		X		
		Nitrate			X	
		Sulfate		X		
MW-22	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		Chloride		X		
		Cis-1,2 DCE			X	
		Methane			X	
		Nitrate-Nitrite				Has detections
		Sulfate				Has detections
		PCE			X	
		TCE			X	
		Mn			X	
MW-23	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		Chloride			X	
		Mn			X	
		Methane		X		
		Nitrate-Nitrite			X	
		Sulfate			X	
MW-24	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		Mn			X	
MW-47	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		Chloride			X	
		Mn			X	
		Nitrate-Nitrite			X	
		Sulfate			X	
		PCE				Has detections
		Total 1,2-DCE				Has detections
		TCE			X	
MW-50	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		Mn			X	
MW-52	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		TCE				Has detections
		Mn			X	
		PCE		X		
		Total 1,2-DCE				Has detections
MW-66	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		Mn	X			
MW-72	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		Chloroform			X	
		PCE			X	
		Mn	X			
MW-93	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
MW-102B	Boundary	VOC, Non-Detect Result	X			
		Geochem	X			
PZ-01	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		Mn	X			

Table 4-2
Summary of Results for Visual Analysis of Concentration Versus Time Plots
Rev. 0 MI Long-Term Groundwater Monitoring Plan

StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
PZ-04	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		PCE		X		
		Mn	X			
PZ-05	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		TCE			X	
PZ-08	Boundary	VOC, Non-Detect Result				X
		Geochem	X			
		TCE		X		
		Mn	X			
IW-1	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride			X	
		Chloroform			X	
		Cis-1,2 DCE		X		
		Ethane		X		
		Ethene			X	
		Formic Acid		X		
		Lactic Acid		X		
		Mn		X		
		Methane		X		
		Nitrate			X	
		Nitrite			X	
		Propionic Acid		X		
		Sulfate			X	
		PCE			X	
		TCE			X	
IW-2	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride			X	
		Chloroform		X		
		Cis-1,2 DCE			X	
		Ethane		X		
		Ethene		X		
		Formic Acid		X		
		Lactic Acid		X		
		Mn		X		
		Nitrate			X	
		Propionic Acid		X		
		Pyruvic Acid		X		
		Sulfate			X	
		PCE			X	
		TCE			X	
IW-3	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		1,1-DCE		X		
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride			X	
		Chloroform			X	
		Cis-1,2 DCE		X		
		Ethane		X		
		Ethene			X	
		Formic Acid		X		
		Lactic Acid		X		
		Mn		X		
		Methane		X		
		Nitrate			X	
		Nitrite			X	
		Propionic Acid		X		
		Pyruvic Acid		X		
		Sulfate			X	
		Sulfide			X	
		PCE		X		
		Trans,-1,2-DCE		X		
		TCE		X		

Table 4-2
Summary of Results for Visual Analysis of Concentration Versus Time Plots
Rev. 0 MI Long-Term Groundwater Monitoring Plan

StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
IW-4	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride			X	
		Chloroform			X	
		Cis-1,2 DCE			X	
		Ethane		X		
		Ethene		X		
		Formic Acid		X		
		Lactic Acid		X		
		Mn		X		
		Methane		X		
		Nitrate			X	
		Nitrite			X	
		Propionic Acid		X		
		Sulfate			X	
		PCE			X	
		TCE			X	
IW-5	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Chloride			X	
		Chloroform			X	
		Cis-1,2 DCE			X	
		Ethane			X	
		Ethene		X		
		Mn		X		
		Methane		X		
		Nitrate			X	
		Nitrite			X	
		Propionic Acid		X		
		Sulfate			X	
		PCE			X	
		TCE			X	
IW-6	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Chloride		X		
		Cis-1,2 DCE			X	
		Ethane			X	
		Ethene		X		
		Mn		X		
		Methane		X		
		Nitrate			X	
		Nitrite		X		
		Propionic Acid		X		
		Sulfate			X	
		Sulfide		X		
		PCE			X	
		TCE			X	
IW-7	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Chloride			X	
		Cis-1,2 DCE			X	
		Ethane		X		
		Ethene		X		
		Mn		X		
		Methane		X		
		Nitrate			X	
		Nitrite			X	
		Propionic Acid		X		
		Sulfate			X	
		PCE			X	
		TCE			X	

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StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
MW-21	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Alkalinity, Total				Has detections
		Bromide				Has detections
		Chloride				Has detections
		Cis-1,2 DCE				Has detections
		Ethane				Has detections
		Ethene				Has detections
		Formic Acid				Has detections
		Mn			X	
		Methane		X		
		Nitrate				Has detections
		Nitrite				Has detections
		Sulfate		X		
		PCE		X		
		Trans,-1,2-DCE				Has detections
		TCE		X		
MW-25A	Remediation	VOC, Non-Detect Result	X			
		Geochem, Non-Detect Result	X			
MW-26	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid			X	
		Alkalinity, Total		X		
		Bromide		X		
		Carbon Tetrachloride				Has detections
		Chloride				Has detections
		Chloroform			X	
		Mn			X	
		Methane			X	
		Nitrate		X		
		Sulfate		X		
		PCE		X		
		TCE				Has detections
MW-39	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Cis-1,2 DCE		X		
		Mn			X	
		PCE		X		
		TCE			X	
MW-62	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Chlorform		X		
		Cis-1,2 DCE		X		
		TCE			X	
		Vinyl Chloride		X		
MW-64	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Carbon Tetrachloride		X		
		Chloroform			X	
		PCE				Has detections
		TCE		X		
MW-85	Remediation	VOC	X			
		Geochem	X			
MW-86	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		1,1-DCE				Has detections
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride				Has detections
		Chloroform			X	
		Cis-1,2 DCE			X	
		Ethane			X	
		Ethene			X	
		Lactic Acid		X		
		Mn		X		
		Methane		X		
		Nitrate				Has detections
		Propionic Acid		X		
		Pyruvic Acid		X		
		Sulfate			X	
		Sulfide				Has detections
		PCE		X		
		TCE		X		

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StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
MW-88	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid				Has detections
		Alkalinity, Total				Has detections
		Bromide				Has detections
		Carbon Tetrachloride				Has detections
		Chloride				Has detections
		Chloroform				Has detections
		Cis-1,2 DCE				Has detections
		Ethene			X	
		Methane		X		
		Nitrate				Has detections
		Sulfate				Has detections
		PCE				Has detections
		TCE				Has detections
MW-92	Remediation	VOC	X			
		Geochem	X			
MW-94	Remediation	VOC	X			
		Geochem	X			
MW-96	Remediation	VOC	X			
		Geochem	X			
MW-97	Remediation	VOC	X			
		Geochem	X			
MW-98	Remediation	VOC	X			
		Geochem	X			
MW-99	Remediation	VOC	X			
		Geochem	X			
MW-100B	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid				Has detections
		Alkalinity, Total			X	
		Bromide			X	
		Butyric Acid			X	
		Chloride				Has detections
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene			X	
		Formic Acid				Has detections
		Lactic acid				Has detections
		Mn		X		
		Methane		X		
		Nitrate			X	
		Propionic Acid			X	
		Sulfate			X	
		PCE			X	
		Trans-1,2-DCE				Has detections
		TCE			X	
		Vinyl Chloride				Has detections
MW-101	Remediation	VOC, Non-Detect Result	X			
		Geochem, Non-Detect Result	X			
MW-103	Remediation	VOC, Non-Detect Result	X			
		Geochem, Non-Detect Result	X			
MW-104	Remediation	VOC, Non-Detect Result	X			
		Geochem, Non-Detect Result	X			
MW-105	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride				Has detections
		Chloroform			X	
		Cis-1,2-DCE		X		
		Ethane		X		
		Ethene		X		
		Formic Acid				Has detections
		Lactic acid				Has detections
		Mn				Has detections
		Methane		X		
		Propionic Acid		X		
		Pyruvic Acid				Has detections
		Sulfate		X		
		PCE			X	
		TCE			X	

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StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
MW-106	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride		X		
		Chloroform				Has detections
		Cis-1,2-DCE		X		
		Ethane				Has detections
		Ethene				Has detections
		Formic Acid				Has detections
		Lactic acid			X	
		Mn		X		
		Methane			X	
		Nitrate				Has detections
		Nitrite				Has detections
		Propionic Acid		X		
		Pyruvic Acid				Has detections
		Sulfate				Has detections
		PCE			X	
		TCE			X	
MW-109	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid			X	
		Carbon Tetrachloride			X	
		Chloride		X		
		Chloroform			X	
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene			X	
		Lactic acid				Has detections
		Mn				Has detections
		Methane		X		
		Nitrate				Has detections
		Nitrite				Has detections
		Propionic Acid		X		
		Pyruvic Acid			X	
		Sulfate			X	
		Sulfide				Has detections
		PCE			X	
		TCE			X	
MW-110	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				Has detections
		Acetic Acid				
		Alkalinity, Total		X		
		Bromide		X		
		Carbon Tetrachloride			X	
		Chloride				Has detections
		Chloroform			X	
		Cis-1,2-DCE		X		
		Ethane				Has detections
		Ethene		X		
		Lactic acid				Has detections
		Mn			X	
		Methane		X		
		Nitrate				Has detections
		Propionic Acid				Has detections
		Pyruvic Acid				Has detections
		Sulfate				Has detections
		PCE			X	
		TCE			X	

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StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
MW-111	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				Has detections
		Acetic Acid				Has detections
		Alkalinity, Total				Has detections
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride		X		
		Chloroform				Has detections
		Cis-1,2-DCE		X		
		Ethane		X		
		Ethene		X		
		Lactic acid				Has detections
		Mn		X		
		Methane		X		
		Nitrate			X	
		Nitrite			X	
		Propionic Acid				Has detections
		Sulfate			X	
		PCE			X	
		Trans-1,2-DCE				Has detections
		TCE			X	
MW-112	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride				Has detections
		Chloroform			X	
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene				Has detections
		Formic Acid				Has detections
		Lactic acid				Has detections
		Mn				Has detections
		Methane			X	
		Nitrate				Has detections
		Propionic Acid		X		
		Pyruvic Acid				Has detections
		Sulfate			X	
		PCE			X	
		TCE			X	
MW-113	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride				Has detections
		Chloroform				Has detections
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene			X	
		Lactic acid			X	
		Mn				Has detections
		Methane		X		
		Nitrate				Has detections
		Nitrite				Has detections
		Propionic Acid			X	
		Sulfate				Has detections
		PCE			X	
		TCE			X	

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StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
MW-114	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid		X		
		Alkalinity, Total		X		
		Bromide		X		
		Butyric Acid		X		
		Carbon Tetrachloride			X	
		Chloride		X		
		Chloroform			X	
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene				Has detections
		Formic Acid				Has detections
		Lactic acid				Has detections
		Mn				Has detections
		Methane		X		
		Nitrate				Has detections
		Propionic Acid		X		
		Pyruvic Acid				Has detections
		Sulfate			X	
		PCE			X	
		Trans-1,2-DCE				Has detections
		TCE			X	
MW-115	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid			X	
		Alkalinity, Total				Has detections
		Bromide			X	
		Butyric Acid			X	
		Chloride				Has detections
		Ethane			X	
		Ethene			X	
		Formic Acid			X	
		Mn			X	
		Methane		X		
		Nitrate				Has detections
		Nitrite				Has detections
		Propionic Acid			X	
		Sulfate				Has detections
		PCE				Has detections
		TCE			X	
MW-116	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid				Has detections
		Alkalinity, Total				Has detections
		Bromide			X	
		Chloride				Has detections
		Cis-1,2-DCE			X	
		Ethane			X	
		Ethene			X	
		Formic Acid				Has detections
		Mn			X	
		Methane			X	
		Nitrate		X		
		Nitrite				Has detections
		Propionic Acid				Has detections
		Sulfate		X		
		PCE		X		
		TCE		X		
MW-117	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		1,1-DCE				Has detections
		Acetic Acid			X	
		Alkalinity, Total		X		
		Bromide			X	
		Butyric Acid		X		
		Chloride				Has detections
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene			X	
		Formic Acid				Has detections
		Lactic acid				Has detections
		Mn		X		
		Methane		X		
		Nitrate				Has detections
		Nitrite				Has detections
		Propionic Acid			X	
		Sulfate			X	
		Sulfide				Has detections
		PCE				Has detections
		Trans-1,2-DCE		X		
		TCE		X		
		Vinyl Chloride		X		

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StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
MW-118	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result			X	
		Acetic Acid			X	
		Alkalinity, Total			X	
		Bromide			X	
		Butyric Acid			X	
		Chloride				Has detections
		Cis-1,2-DCE				Has detections
		Ethane			X	
		Ethene			X	
		Formic Acid			X	
		Lactic acid			X	
		Mn			X	
		Methane		X		
		Nitrate			X	
		Nitrite				Has detections
		Propionic Acid			X	
		Pyruvic Acid				Has detections
		Sulfate				Has detections
		PCE			X	
		TCE			X	
MW-119	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid				Has detections
		Alkalinity, Total				Has detections
		Bromide				Has detections
		Chloride				Has detections
		Ethane			X	
		Ethene			X	
		Mn				Has detections
		Methane			X	
		Nitrate				Has detections
		Sulfate				Has detections
		PCE				Has detections
		TCE			X	
MW-120	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid			X	
		Alkalinity, Total				Has detections
		Bromide			X	
		Butyric Acid			X	
		Chloride				Has detections
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene			X	
		Formic Acid				Has detections
		Mn			X	
		Methane		X		
		Nitrate			X	
		Nitrite				Has detections
		Propionic Acid			X	
		Pyruvic Acid				Has detections
		Sulfate			X	
		Sulfide			X	
		PCE		X		
		TCE				Has detections
		Vinyl Chloride		X		
MW-121	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid				Has detections
		Alkalinity, Total				Has detections
		Chloride				Has detections
		Ethane			X	
		Ethene			X	
		Mn			X	
		Methane		X		
		Nitrate				Has detections
		Nitrite		X		Has detections
		Sulfate				Has detections
		PCE			X	
		TCE			X	

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StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally Increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
MW-122	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid			X	
		Alkalinity, Total		X		
		Bromide			X	
		Butyric Acid			X	
		Chloride				Has detections
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene			X	
		Formic Acid				Has detections
		Lactic acid			X	
		Mn			X	
		Methane		X		
		Nitrate			X	
		Nitrite				Has detections
		Propionic Acid			X	
		Pyruvic Acid				Has detections
		Sulfate			X	
		PCE			X	
		Trans-1,2-DCE				Has detections
		TCE			X	
MW-123	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid			X	
		Alkalinity, Total				Has detections
		Bromide			X	
		Butyric Acid			X	
		Chloride				Has detections
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene			X	
		Formic Acid				Has detections
		Lactic acid			X	
		Mn		X		
		Methane		X		
		Nitrate			X	
		Nitrite				Has detections
		Propionic Acid			X	
		Pyruvic Acid				Has detections
		Sulfate			X	
		Sulfide			X	
		PCE			X	
		TCE			X	
MW-124	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid				Has detections
		Alkalinity, Total				X
		Bromide			X	
		Chloride		X		
		Cis-1,2-DCE		X		
		Ethane			X	
		Ethene			X	
		Mn			X	
		Methane		X		
		Nitrate				Has detections
		Nitrite				Has detections
		Propionic Acid				Has detections
		Sulfate				Has detections
		PCE				Has detections
		Trans-1,2-DCE		X		
		TCE		X		
MW-125	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Acetic Acid			X	
		Alkalinity, Total				Has detections
		Bromide			X	
		Butyric Acid			X	
		Chloride				Has detections
		Cis-1,2-DCE			X	
		Ethane			X	
		Ethene			X	
		Mn			X	
		Methane		X		
		Nitrate				Has detections
		Nitrite				Has detections
		Propionic Acid			X	
		Sulfate				Has detections
		PCE				Has detections
		TCE			X	

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StationID	Grouping	Analyte[1]	Not Applicable, one or no sample result	Generally increasing with Time	Generally Decreasing with Time	No Observable Change through Time[2]
PZ-03	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		PCE				Has detections
		TCE				Has detections
PZ-06	Remediation	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
PZ-07	Remediation	VOC	X			
		Geochem	X			
MW-34	Sentinel	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Carbon Tetrachloride				Has detections
		Chloride		X		
		Chloroform				Has detections
		Mn		X		
		Nitrate				Has detections
		Sulfate		X		
		PCE				Has detections
		TCE				Has detections
MW-38	Sentinel	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Chloride			X	
		Mn			X	
		Nitrate			X	
		Sulfate		X		
		TCE				Has detections
MW-63*	Sentinel	VOC, Non-Detect Result				X
		Geochem, Non-Detect Result				X
		Chloroform		X		
		Cis-1,2-DCE				Has detections
		PCE		X		
		TCE		X		
MW-63A	Sentinel	VOC	X			
		Geochem	X			
MW-63B	Sentinel	VOC	X			
		Geochem	X			
MW-81	Sentinel	VOC	X			
		Geochem	X			
MW-82	Sentinel	VOC	X			
		Geochem	X			
MW-83	Sentinel	VOC	X			
		Geochem	X			
MW-84	Sentinel	VOC	X			
		Geochem	X			
MW-89	Sentinel	VOC	X			
		Geochem	X			
MW-90	Sentinel	VOC	X			
		Geochem	X			
MW-107	Sentinel	VOC	X			
		Geochem	X			
MW-108	Sentinel	VOC	X			
		Geochem	X			

Notes:

1 **Geochem** = Geochemical parameters detected (including ethene, ethane, methane, chloroform; dissolved organic carbon; nitrate; nitrite, sulfate; sulfide, carbon dioxide; bromide; chloride; ferrous iron; manganese; alkalinity; metabolic fatty acids.)
VOC = Volatile Organic Compounds detected from SW8260 analysis.
VOC, Non-Detect result = Any VOC result reported but less than laboratory detection limit
Geochem, Non-Detect result = Any geochemical result reported but less than laboratory detection limit
2 **Has detections** = The analyte was detected but an increasing or decreasing trend was not discernible from the data.

Mn = Manganese
TCE = Trichloroethylene
PCE = Tetrachloroethylene
trans-1,2-DCE = Trans-1,2-dichloroethene
cis-1,2-DCE = cis-1,2-dichloroethylene
1,1-DCE = 1,1-dichloroethene
MW63* = This well was abandoned in late 2002and replaced by MW63A and MW63B

TABLE 4-3
Mann-Kendall Trend Test Conclusions for PCE
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Location	Well Type	EBT Study Well[a]	Number of Sample Rounds	p-value[b]	Decision	S[φ]
MW16	**Background**		7	-	**All Non-Detects**	**0**
MW19	**Background**		7	-	**All Non-Detects**	**0**
MW20	**Background**		8	-	**All Non-Detects**	**0**
MW21	**Performance**		21	**0.000**	**Significantly Increasing**	**132**
MW22	**Boundary**		8	**0.500**	**No Significant Change**	**1**
MW23	**Boundary**		8	**0.191**	**No Significant Change**	**-5**
MW24	**Boundary**		8	-	**All Non-Detects**	**0**
MW25A	Performance		1	-	<4 sample rounds	-
MW26	**Performance**		9	**0.500**	**No Significant Change**	**-1**
MW34	**Sentinel**		15	**0.102**	**No Significant Change**	**-12**
MW36	**Background**		5	-	**All Non-Detects**	**0**
MW38	**Sentinel**		7	-	**All Non-Detects**	**0**
MW39	**Performance**		8	**0.012**	**Significantly Increasing**	**19**
MW47	**Boundary**		8	**0.083**	**No Significant Change**	**-12**
MW50	**Boundary**		6	-	**All Non-Detects**	**0**
MW52	**Boundary**		6	**0.235**	**No Significant Change**	**5**
MW53	**Background**		6	**0.235**	**No Significant Change**	**5**
MW55	**Background**		6	-	**All Non-Detects**	**0**
MW62	Performance		3	-	<4 sample rounds	-
MW63A	Sentinel		1	-	<4 sample rounds	-
MW63B	Sentinel		1	-	<4 sample rounds	-
MW64	Performance		2	-	<4 sample rounds	-
MW66	Boundary		3	-	<4 sample rounds	-
MW72	Boundary		4	-	<4 sample rounds	-
MW81	Sentinel		1	-	<4 sample rounds	-
MW82	Sentinel		1	-	<4 sample rounds	-
MW83	Sentinel		1	-	<4 sample rounds	-
MW84	Sentinel		1	-	<4 sample rounds	-
MW85	Performance		1	-	<4 sample rounds	-
MW86	**Performance**	**Area 2**	14	**0.062**	**No Significant Change**	**-29**
MW88	**Performance**		14	**0.104**	**No Significant Change**	**21**
MW89	Sentinel		1	-	<4 sample rounds	-
MW90	Boundary		1	-	<4 sample rounds	-
MW92	Performance		1	-	<4 sample rounds	-
MW93	Boundary		1	-	<4 sample rounds	-
MW94	Performance		1	-	<4 sample rounds	-
MW96	Performance		1	-	<4 sample rounds	-
MW97	Performance		1	-	<4 sample rounds	-
MW98	Performance		1	-	<4 sample rounds	-
MW99	Performance		1	-	<4 sample rounds	-
MW100	Performance		1	-	<4 sample rounds	-
MW100B	**Performance**	**Area 1**	13	**0.000**	**Significantly Decreasing**	**-60**
MW101	Performance		1	-	<4 sample rounds	-
MW102	Boundary		1	-	<4 sample rounds	-
MW102B	Boundary		1	-	<4 sample rounds	-
MW103	Performance		1	-	<4 sample rounds	-

TABLE 4-3
Mann-Kendall Trend Test Conclusions for PCE
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Location	Well Type	EBT Study Well[a]	Number of Sample Rounds	p-value[b]	Decision	S^{φ}
MW104	Performance		1	-	<4 sample rounds	-
MW105	**Performance**	**Area 2**	**14**	**0.090**	**No Significant Change**	**-25**
MW106	**Performance**	**Area 2**	**14**	**0.350**	**No Significant Change**	**-8**
MW107	Sentinel		1	-	<4 sample rounds	-
MW108	Boundary		1	-	<4 sample rounds	-
MW109	**Performance**	**Area 2**	**14**	**0.000**	**Significantly Decreasing**	**-62**
MW110	**Performance**	**Area 2**	**14**	**0.023**	**Significantly Decreasing**	**-37**
MW111	**Performance**	**Area 2**	**14**	**0.067**	**No Significant Change**	**-28**
MW112	**Performance**	**Area 2**	**14**	**0.006**	**Significantly Decreasing**	**-47**
MW113	**Performance**	**Area 2**	**14**	**0.500**	**No Significant Change**	**0**
MW114	**Performance**	**Area 2**	**14**	**0.012**	**Significantly Decreasing**	**-42**
MW115	**Performance**	**Area 1**	**14**	**0.838**	**No Significant Change**	**19**
MW116	**Performance**	**Area 1**	**14**	**0.134**	**No Significant Change**	**21**
MW117	**Performance**	**Area 1**	**14**	**0.327**	**No Significant Change**	**-9**
MW118	**Performance**	**Area 1**	**14**	**0.175**	**No Significant Change**	**-18**
MW119	**Performance**	**Area 1**	**14**	**0.434**	**No Significant Change**	**-4**
MW120	**Performance**	**Area 1**	**14**	**0.100**	**No Significant Change**	**23**
MW121	**Performance**	**Area 1**	**14**	**0.727**	**No Significant Change**	**12**
MW122	**Performance**	**Area 1**	**14**	**0.007**	**Significantly Decreasing**	**-45**
MW123	**Performance**	**Area 1**	**14**	**0.778**	**No Significant Change**	**14**
MW124	**Performance**	**Area 1**	**14**	**0.004**	**Significantly Increasing**	**48**
MW125	**Performance**	**Area 1**	**14**	**0.744**	**No Significant Change**	**13**
PZ01	Boundary		1	-	<4 sample rounds	-
PZ03	Performance		1	-	<4 sample rounds	-
PZ04	Boundary		1	-	<4 sample rounds	-
PZ05	Boundary		1	-	<4 sample rounds	-
PZ06	Performance		1	-	<4 sample rounds	-
PZ07	Performance		1	-	<4 sample rounds	-
PZ08	Boundary		1	-	<4 sample rounds	-

Notes

(a) – Trend analysis results may be influenced by enhanced reductive dechlorination during EBT study. Area designation indicates the specific study area (Area 1: soybean oil injection; Area 2: sodium lactate)

(b) - p-value: is the probability that observed patterns in data appear to agree with an assumption that there are no trends in the data over time.

$S\varphi$ - Mann-Kendall Test Statistic

TABLE 4-4
Mann-Kendall Trend Test Conclusions for TCE
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Location	Well Type	EBT Study Well[a]	Number of Sample Rounds	p-value[b]	Decision	S[φ]
MW16	**Background**		**7**	**0.106**	**No Significant Change**	**-6**
MW19	**Background**		**7**	**-**	**All Non-Detects**	**0**
MW20	**Background**		**8**	**0.317**	**No Significant Change**	**5**
MW21	**Performance**		**21**	**0.038**	**Significantly Increasing**	**55**
MW22	**Boundary**		**8**	**0.064**	**No Significant Change**	**-13**
MW23	**Boundary**		**8**	**-**	**All Non-Detects**	**0**
MW24	**Boundary**		**8**	**-**	**All Non-Detects**	**0**
MW25A	Performance		1	-	<4 sample rounds	-
MW26	**Performance**		**9**	**0.365**	**No Significant Change**	**-4**
MW34	**Sentinel**		**15**	**0.068**	**No Significant Change**	**30**
MW36	**Background**		**5**	**-**	**All Non-Detects**	**0**
MW38	**Sentinel**		**7**	**0.198**	**No Significant Change**	**-6**
MW39	**Performance**		**8**	**0.360**	**No Significant Change**	**4**
MW47	**Boundary**		**8**	**0.172**	**No Significant Change**	**-8**
MW50	**Boundary**		**6**	**0.235**	**No Significant Change**	**5**
MW52	**Boundary**		**6**	**0.235**	**No Significant Change**	**5**
MW53	**Background**		**6**	**0.121**	**No Significant Change**	**-5**
MW55	**Background**		**6**	**-**	**All Non-Detects**	**0**
MW62	Performance		3	-	<4 sample rounds	-
MW63A	Sentinel		1	-	<4 sample rounds	-
MW63B	Sentinel		1	-	<4 sample rounds	-
MW64	Performance		2	-	<4 sample rounds	-
MW66	Boundary		3	-	<4 sample rounds	-
MW72	Boundary		4	-	<4 sample rounds	-
MW81	Sentinel		1	-	<4 sample rounds	-
MW82	Sentinel		1	-	<4 sample rounds	-
MW83	Sentinel		1	-	<4 sample rounds	-
MW84	Sentinel		1	-	<4 sample rounds	-
MW85	Performance		1	-	<4 sample rounds	-
MW86	**Performance**	**Area 2**	**14**	**0.379**	**No Significant Change**	**-6**
MW88	**Performance**		**14**	**0.031**	**Significantly Decreasing**	**-35**
MW89	Sentinel		1	-	<4 sample rounds	-
MW90	Boundary		1	-	<4 sample rounds	-
MW92	Performance		1	-	<4 sample rounds	-
MW93	Boundary		1	-	<4 sample rounds	-
MW94	Performance		1	-	<4 sample rounds	-
MW96	Performance		1	-	<4 sample rounds	-
MW97	Performance		1	-	<4 sample rounds	-
MW98	Performance		1	-	<4 sample rounds	-
MW99	Performance		1	-	<4 sample rounds	-
MW100	Performance		1	-	<4 sample rounds	-
MW100B	**Performance**	**Area 1**	**13**	**0.000**	**Significantly Decreasing**	**-64**
MW101	Performance		1	-	<4 sample rounds	-
MW102	Boundary		1	-	<4 sample rounds	-
MW102B	Boundary		1	-	<4 sample rounds	-
MW103	Performance		1	-	<4 sample rounds	-

TABLE 4-4
Mann-Kendall Trend Test Conclusions for TCE
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Location	Well Type	EBT Study Well[(a)]	Number of Sample Rounds	p-value[(b)]	Decision	S^{φ}
MW104	Performance		1	-	<4 sample rounds	-
MW105	**Performance**	**Area 2**	**14**	**0.178**	**No Significant Change**	**-16**
MW106	**Performance**	**Area 2**	**14**	**0.603**	**No Significant Change**	**5**
MW107	Sentinel		1	-	<4 sample rounds	-
MW108	Boundary		1	-	<4 sample rounds	-
MW109	**Performance**	**Area 2**	**14**	**0.002**	**Significantly Decreasing**	**-52**
MW110	**Performance**	**Area 2**	**14**	**0.026**	**Significantly Decreasing**	**-31**
MW111	**Performance**	**Area 2**	**14**	**0.152**	**No Significant Change**	**-18**
MW112	**Performance**	**Area 2**	**14**	**0.034**	**Significantly Decreasing**	**-32**
MW113	**Performance**	**Area 2**	**14**	**0.118**	**No Significant Change**	**-21**
MW114	**Performance**	**Area 2**	**14**	**0.105**	**No Significant Change**	**-22**
MW115	**Performance**	**Area 1**	**14**	**0.000**	**Significantly Decreasing**	**-70**
MW116	**Performance**	**Area 1**	**14**	**0.000**	**Significantly Increasing**	**62**
MW117	**Performance**	**Area 1**	**14**	**0.000**	**Significantly Increasing**	**70**
MW118	**Performance**	**Area 1**	**14**	**0.000**	**Significantly Decreasing**	**-72**
MW119	**Performance**	**Area 1**	**14**	**0.000**	**Significantly Decreasing**	**-64**
MW120	**Performance**	**Area 1**	**14**	**0.696**	**No Significant Change**	**10**
MW121	**Performance**	**Area 1**	**14**	**0.000**	**Significantly Decreasing**	**-64**
MW122	**Performance**	**Area 1**	**14**	**0.027**	**Significantly Decreasing**	**-36**
MW123	**Performance**	**Area 1**	**14**	**0.034**	**Significantly Decreasing**	**-33**
MW124	**Performance**	**Area 1**	**14**	**0.002**	**Significantly Increasing**	**52**
MW125	**Performance**	**Area 1**	**14**	**0.000**	**Significantly Decreasing**	**-67**
PZ01	Boundary		1	-	<4 sample rounds	-
PZ03	Performance		1	-	<4 sample rounds	-
PZ04	Boundary		1	-	<4 sample rounds	-
PZ05	Boundary		1	-	<4 sample rounds	-
PZ06	Performance		1	-	<4 sample rounds	-
PZ07	Performance		1	-	<4 sample rounds	-
PZ08	Boundary		1	-	<4 sample rounds	-

Notes

(a) – Trend analysis results may be influenced by enhanced reductive dechlorination during EBT study. Area designation indicates the specific study area (Area 1: soybean oil injection; Area 2: sodium lactate)

(b) - p-value: is the probability that observed patterns in data appear to agree with an assumption that there are no trends in the data over time.

$S\varphi$ - Mann-Kendall Test Statistic

5.0 Monitoring Frequency

This section presents a decision tree for defining well sampling frequency and the results of using this tree in concert with information developed in Section 4 to define the sampling frequency of the monitoring wells at the MI. The wells proposed for long-term groundwater monitoring are then identified. Wells recommended for abandonment are also identified, and the rationale for the selection is provided. Installation of additional monitoring wells is also considered part of the LTM plan at the MI, and the rationale for these locations is discussed in this section. Finally, this section also presents the close-out procedures for demonstrating compliance with the RAOs.

5.1 Sampling Frequency Decision Tree

One of the most important tools required to optimize an LTM program is a sampling frequency decision tree. This is a logic flow diagram made up of a series of interconnected decision points (DPs). Figure 5-1 presents a sampling decision tree to determine sampling frequency at the MI. This decision tree is derived from the *Final Long-Term Monitoring Optimization Guide,* prepared by the Air Force Center for Environmental Excellence (AFCEE, 1997). At each point within the decision tree in Figure 5-1, a "Yes" or "No" answer leads either to another DP or to a recommendation. A narrative describing each DP is presented in Attachment B.

5.2 Decision Rules for Sampling Frequency

Decision rules are important within the optimization process for a site because they can promote consistent actions and acceptance for the program. Decision rules for defining sampling frequency are typically "if-then" statements that specify the conditions under which a specific action will be taken or a decision will be made. This section presents several decision rules that to be used to define the sampling frequency during the LTM program.

5.2.1 Decision Rules for Treatment Areas

The following decision rules apply to wells within treatment areas or wells considered essential to the optimization of the treatment system:

- Wells within the designated treatment areas are automatically considered for quarterly sampling to monitor (1) the effectiveness of the electron donor injections (i.e., assess organic carbon distribution) and (2) the progress of the enhanced reductive dechlorination process. Verification of treatment system effectiveness will allow for more rapid decisions regarding future remedial activities at the site.

  Bi-weekly dissolved oxygen (DO), oxygen-reduction potential (ORP), temperature, pH, conductivity measurements will be collected in the performance monitoring wells (PMWs) starting one month after the initial injection event to assess the degree to which groundwater quality is responding to the injection . These geochemical parameters were selected because they are commonly used to evaluate anaerobic conditions and can be

obtained from direct-reading field instruments resulting in real-time adjustments in injection strategy. Groundwater elevation measurements will also be collected as part of the secondary performance monitoring events. This initial monitoring period will be re-evaluated after six months to define the frequency of further monitoring events.

- Sampling of the wells immediately downgradient or cross-gradient of the defined treatment or injection area will coincide with the first sampling event for primary parameters in the PMWs. Thereafter, the wells will be sampled semiannually for three consecutive events before the sampling frequency is re-evaluated using recent and historical data. Information from these wells will typically be used to verify that natural attenuation processes are resulting in reduction of the plume size. Though not as significant as the treatment area wells, this group of wells is expected to have measurable COC and geochemical concentration changes relative to baseline conditions.

- Wells with limited historical data that are immediately upgradient of the treatment area will be sampled for four consecutive quarters before the sampling frequency is re-evaluated. Information from these wells will be used to provide background information for each treatment area and will alert stakeholders to changes in the contaminant status of a comparison location, as the situation arises.

- If samples from **all** wells within a designated treatment area indicate that the maximum concentration of contaminants is below MCLs for four consecutive sampling events, then the treatment area warrants no further monitoring until the close-out monitoring period begins. See Section 5.2.7 for further details on close-out monitoring.

5.2.2 Decision Rules for Background Wells

All background monitoring wells have been in place since the 1990's and have been sampled at least four times, although the sampling frequency has varied. As discussed in Section 4.3.1, COC concentrations have been near or below detection limits in these wells. The following decision rules for these wells are based upon review of existing data and the purpose of background wells:

- If a background well has shown no contaminants above MCLs for the last four consecutive sampling events, then the well will be sampled biannually to provide an ongoing record of background conditions.

- If a sample from a background well reveals contamination above the MCLs for three consecutive sampling events during the LTM program, then the well will be sampled for four consecutive quarters to establish a revised trend for that location.

- If a new monitoring well is installed in a location considered to represent background conditions, then the well will be sampled for four consecutive quarters to establish a reliable data set for that location.

- If the treatment area nearest to the background well location is considered closed by reason of reduction of contaminants to less than MCLs at the end of the compliance monitoring period, then the associated background well warrants no further monitoring. Section 5.2.7 presents additional information on the compliance monitoring for close-out.

5.2.3 Decision Rules for Boundary Wells

In this project, boundary wells are those along the boundary or perimeter of the MI and are designed to monitor intrusion of contaminants from offsite sources. These wells can typically be adjacent to or significantly up- or cross-gradient from a treatment area. Decision rules regarding boundary wells are as follows:

- If a well has shown no contaminants above MCLs for the last four consecutive sampling events, then the well will be sampled annually to provide an ongoing record of background conditions.
- If a boundary well has been sampled fewer than four times since installation, then the well may be sampled quarterly until four total samples have been collected to establish a trend.
- If data from a boundary well indicate contamination above MCLs for two consecutive sampling events during the LTM program, then a revised trend will be established for that location.
- If a new monitoring well is installed as a boundary well, then the well will be sampled for four consecutive quarters to establish reliable trend data for that location.
- If groundwater concentrations exceed MCLs for four consecutive sampling events at the boundary wells, then contingency provisions will be established for implementation of more active plume control measures.
- If the treatment area nearest to a boundary well is considered closed after completion of the compliance monitoring period and there is no evidence (using historical data and trend analysis) that contaminants are migrating from offsite, then the boundary well warrants no further monitoring.

5.2.4 Decision Rules for Sentinel Wells

Sentinel wells are screened within or adjacent to a geologic window to the intermediate aquifer. Decision rules regarding the sentinel wells are as follows:

- If a well has shown no contaminants above MCLs for the last four consecutive sampling events, then four annual samples will be collected from the sentinel well to retain measurement of groundwater quality and before re-evaluating the sampling frequency.
- If a sentinel well has been sampled fewer than four times since installation, then the well will be sampled semiannually until four total samples have been collected to establish a trend.
- New sentinel monitoring well will be sampled for four consecutive quarters to collect reliable trend data for that location.
- If groundwater concentrations exceed MCLs for two consecutive sampling events at the sentinel wells not scheduled for abandonment, then the following will occur:

    1. A revised trend analysis will be conducted for that location.

2. The BCT will consider another sampling frequency based upon review of historical groundwater analytical data and site geological/hydrogeological characteristics. The well may also be reclassified as a remediation or boundary well.

3. As discussed in the Final MI RD, contingency provisions will be established for implementation of more active plume control measures.

- If the plume(s) upgradient of the sentinel well has met the RAOs after the compliance monitoring period is complete, then the sentinel well may be removed from monitoring. Section 5.2.7 presents additional information on the compliance monitoring for close-out.

5.2.5 Decision Rules for Well Abandonment

Wells will typically be selected for abandonment for one or more of the following reasons, as shown in Figure 5-1:

1. The well is redundant, which is defined as:
   - Wells that duplicate information.
   - Wells that have been used to monitor a plume that has met cleanup criteria.
   - Wells outside of plumes that are not in the flow pathway of on-coming plumes and not required to establish background.
   - Wells with analytical data that will have no clear, reasonable use in future decision making such as consideration of when to implement a contingency.
2. The well has sustained damage and cannot be repaired, or an object that cannot be removed has become lodged in the well. A replacement well will be installed as needed.
3. Water quality is poor (e.g, very high turbidity). A replacement well may be installed as needed.
4. The well may provide a path for contamination of groundwater because of substandard construction. A replacement well may be installed as needed.
5. The well is permanently dry.
6. The well is not screened at an elevation that makes it usable for the LTM program.
7. The well was installed for a specific reason that no longer applies (e.g., the investigation is complete). The well and location are no longer necessary for continued monitoring based upon review of hydrogeological and chemical data.
8. If the treatment area nearest to the well location is considered closed because contaminants are below MCLs, there is no evidence (using historical data and trend analysis) that rebound of contaminant levels is occurring, and the BCT has determined that the well warrants no further monitoring.

5.2.6 Decision Rules for Future Sampling Efforts

Data trends will be used to establish the frequency of ongoing monitoring. The Groundwater Monitoring Annual Report, as described in Section 9, will provide an opportunity to review the data and establish the monitoring frequency for the coming year. The monitoring frequency will be established using the following guidelines:

1. *Trend of statistically increasing concentration of a COC over four or more sampling events:* Sample the well each quarter as long as the trend continues. Subsequent annual sampling frequency reassessments and possible remedial response will consider well type (i.e., treatment area, boundary, or sentinel well), contaminants, consultations with regulatory agencies, and historical data, at a minimum.

2. *No trend or stable concentrations:* Continue to sample the well at the rate specified in the decision tree and decision rules. Reassess annually.

3. *Trend of decreasing concentrations or non-detections*: Annually evaluate whether to decrease the sampling frequency.

Analytical results in wells downgradient of treatment areas may be used to trigger a contingency response action, as necessary; however, the concentrations should be considered in light of the remedial method being used in the treatment areas. For example, an increase in *cis*-1,2-DCE may be a result of the degradation of PCE and TCE and may be temporary as the contaminants degrade to ethene.

5.2.7 RAO Compliance for Groundwater Plumes

As a result of multiple contaminant plumes in the fluvial aquifer beneath the MI, a strategy was developed for demonstrating compliance with the RAOs for all plumes. This strategy will use the existing monitoring well network within each plume for sample collection and to provide the required data. There are three parts to the strategy and each is defined as follows:

1. No later than 18 months after initial electron donor injections are started, the RA contractor will identify in a technical memorandum a subset of monitoring wells for each plume that are representative of the entire plume at that time, both in area and concentration. The subset should include wells that define the down-gradient boundary of the plume (i.e., clean wells), wells within the treatment areas, and wells within the areas subject to natural attenuation. Once approved by EPA and TDEC, this subset of wells for each plume will be considered the compliance well network (CWN) for purposes of demonstrating compliance with the RAOs.

2. When for any individual plume, the LTM results indicate that the plume is at or close to MCLs in all locations, compliance monitoring will be initiated in the CWN.

3. Four consecutive rounds with all samples from CWN wells revealing contaminants less than MCLs will be deemed as demonstrating compliance with the ROD for that plume. Groundwater monitoring in that plume may cease, and wells unique to the plume's LTM network, including the CWN wells, may be proposed for abandonment, with approval from EPA and TDEC.

5.3 Recommended Sampling Frequencies

The sampling frequencies recommended in this LTM plan are based upon review of available data, decision rules for the sampling frequency, and review of each well in comparison to the sampling frequency decision tree. The results of this analysis are shown in Table 5-1 and summarized in Table 5-2. Figure 5-2 presents a color-coded map of each location and the recommended sampling frequency. Sampling frequencies of monitoring wells to be installed to address data gaps or to complete portions of the LTOA investigation are discussed in Section 5.3.1. Abandonment was also recommended for 37 wells and piezometers as discussed in Section 5.3.2.

5.3.1 Monitoring Wells to be Installed

As shown in Table 5-1 and on Figure 3-1 of the Final RD document, 26 new wells are to be installed as part of the design-related investigation and up to an additional 20 more wells as part of the performance monitoring for the MI RA. Data gaps exist in the southwestern VOC plume location and concentration, specifically in the area surrounded by MW39, MW89, MW90, MW97, MW98, MW99, MW100B, and MW101. The aquifer in this area may range up to 50 feet in thickness, therefore, well pairs may need to be installed to provide complete coverage of the aquifer. Up to 16 design-related investigation wells will be installed in TTA 1 by the RA Contractor to characterize the plume. In addition, data from these wells will allow further refinement of TTA 1 and associated treatment system. In TTA 2, approximately 8 design-related investigation wells will be installed to refine the treatment system layout. All of the design-related investigation wells will be sampled immediately after installation and development to provide critical water quality information for the additional proposed well locations. If the data indicate that the plume can be reliably contoured, the additional wells may not be necessary.

In addition to the design-related investigation wells, up to 20 wells are recommended for performance monitoring during the RA (Section 4 of MI RD). These wells will be divided amongst the two treatment areas and will be installed during the mobilization for the injection well installation. All available groundwater sample analysis data for VOCs will be reviewed to optimize the locations of these performance monitoring wells.

Four other wells were installed during the design-related investigation from April through June 2004 as part of the closure process for the LTOA. These reasons for installation of each well and the location are as follows:

- As stated within the LTOA technical memorandum (CH2M HILL, July 2002), MW94 did not meet the primary objective of being downgradient of LTOA Site SS-78. To meet this objective, the BCT agreed to install a monitoring well approximately 500 to 700 feet northeast of Site SS-78. This well is labeled as MW-94A.
- A well was installed within the "window" to the intermediate aquifer as part of the closure of the LTOA program and to develop groundwater quality measurements within a downgradient location in the intermediate aquifer. The location is at the northwest boundary of the MI. Since contaminant concentrations have been detected

within two wells, MW-34 and MW89, that are considered to be installed within the upgradient portions of the "window," the downgradient location will be used to establish a water quality baseline for the boundary location. This well is labeled as MW-140.

- During the LTOA effort, a monitoring well (MW-98) was installed in an inferred downgradient position of LTOA site RI34, based on available groundwater flow data. However, with the installation and collection of potentiometric surface data from the LTOA monitoring wells, groundwater appears to be flowing northeast instead of southeast. Therefore, MW-98 does not meet the primary objective of being downgradient of LTOA Site RI34. To meet the objective, an additional monitoring well was installed adjacent to MW-39 and is labeled as MW-39A

Upon review of the hydrogeologic data derived from the LTOA investigation, MW-108 does not appear to be downgradient of Sites SS-42/43. Therefore, the primary objective of installing a monitoring well downgradient of the LTOA sites was not met. A sentry well was completed in the intermediate aquifer west of LTOA Site SS-42/43 as part of the design-related investigation. This well was labeled as MW-141.. A decision tree for developing the optimal location for sentry (or sentinel) wells has been developed and is included as Figure 5-3. Installation of additional sentinel wells will require knowledge of the chemical, hydrogeological, and geological characteristics of the area surrounding the window into the intermediate aquifer within the northwest corner of the MI.

5.3.2 Wells Recommended for Abandonment

Thirty-seven wells and piezometers are recommended for abandonment, based upon review of location with respect, potential future use, and chemical and hydrogeological importance. The principal reasons for recommending abandonment included redundancy of the well and completion of sampling requirements during treatability studies. Table 5-3 presents the rationale for each well.

Table 5-1

Proposed Sampling Feqency for Monitoring Wells

Rev. 3 MI Long-Term Groundwater Monitoring Plan

Well Identification	Proposed Sample Feqency [1]						New Wells	Rationale for Sampling Feqency Decision
	Multiyear Sampling Intervals or Evaluate Abandonment	Annually	Semiannually	Quarterly	Evaluate Sampling Frequency	Abandon		
Monitoring Wells:								
MW-16	Biennial							Although this well has not been sampled continuously for 4 consecutive quarters, time plots show that this upgradient well location has been free of contaminants on a consistent basis. In addition, data provided by this well is up to date.
MW-17*						Already abandoned		
MW-18						X		This well is primarily screened above the top of the water table in the fluvial/intermediate aquifer window. The well is often dry as a result. Based upon construction of this well and decision points in decision tree, this well is recommended for abandonment. In addition, well MW-38 makes this well redundant.
MW-19	Biennial							Although this well has not been sampled continuously for 4 consecutive quarters, time plots show that this upgradient well location has been free of contaminants on a consistent basis. In addition, data provided by this well is up to date.
MW-20						X		The well was installed across the vadose zone-saturated aquifer interface. As such, the water being extracted from this well is not representative of the entire aquifer and does not provide true background characteristics.
MW-21				X				This well location is part of Treatment Area 1 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW-22		X						This well location is adjacent to Treatment Area 1 and is proposed for semiannual sampling as part of the initial phase of remedial action.
MW-23	Biennial							This well location is considered a boundary location and time series plots of VOC data reveal no recent detections. Well has been sampled in at least four events without detection of VOCs. Recommended that this well be considered for Biennial sampling instead of annual.
MW-24	Biennial							This well location is considered a boundary location and time series plots of VOC data reveal no recent detections. Well has been sampled in at least four events without detection of VOCs. Recommended that this well be considered for annual sampling instead of quarterly.
MW-25						Already abandoned		
MW-25A			X					Only one sample event has occurred at this downgradient well location since being installed in late 2002. Additional sampling events are necessary for further evaluation.
MW-26				X				This well location is part of Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW-27						X		Water level data for the MI indicates that this well has been dry on a consistent basis. Review of potentiometric surface map from July 23, 2003, indicates that this well was installed into the area of no or low potentiometric flow.
MW-34				X				This sentinel well is part of the Dunn Field and MI groundwater monitoring system and has been sampled nine times since the beginning of the Dunn Field RI in 1998. Review of data indicates that this since this well is a sentinel well and does not contain COCs, quarterly monitoring should be enacted to provide additional data and a basis for future decisions regarding potential remedial action.
MW-35	Biennial							Although this well has not been sampled continuously for 4 consecutive quarters, time plots show that this upgradient well location has been free of contaminants on a consistent basis. This location is regarded as upgradient for both Dunn Field and the MI despite being screened within the intermediate aquifer.
MW-38		X						Previous sampling events have shown detection of TCE but none since 1998 at this well screened within the intermediate aquifer. Annual sampling is recommended for continued monitoring of any intrusion of contaminants within the intermediate aquifer.
MW-39				X				This well location is downgradient of plume within Treatment Area 1but outside of remediation area. Well has been sampled several times with PCE and TCE being detected within each sample. Well is proposed for semi-annual sampling as part of the initial phase of remedial action.
MW-39A					X (Quarterly)		X	This well is to be installed as part of the completion of the LTOA activities during the remedial design for LTOA Group 4. After installation, quarterly sampling is recommended before making further decisions regarding continued sampling.
MW-41						Already abandoned		
MW-47						X		This well location was installed for investigation into potential offsite sources. Installation of well MW-102B has made this well redundant. Abdandonment is recommended unless TDEC would like to maintain the well for further use.
MW-48						Already abandoned		

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Table 5-1

Proposed Sampling Feqency for Monitoring Wells

Rev. 3 MI Long-Term Groundwater Monitoring Plan

Well Identification	Proposed Sample Feqency [1]						NetWells	Rationale for Sampling Feqency Decision
	Multiyear Sampling Intervals or Evaluate Abandonment	Annually	Semiannually	Quarterly	Evaluate Sampling Frequency	Abandon		
MW-50	Biennial							This boundary well location is upgradient to Treatment Area 2 and time plots sho a recent, low level detection of TCE. Recommend Biennial sampling before evaluation for future course of action.
MW-52			X					This boundary well location is side-gradient to off site plume that affects groundwater within piezometer PZ05 as well. Time plots show recent, low level detections of VOCs. Mann-Kendall test indicates no significant change in contaminant level trend. Recommend semi-annual sampling before evaluation fo future course of action.
MW-53	Biennial							Time series plots of groundwater sample analytical data for this upgradient well indicates that only sporadic, very low level detection of TCE and PCE has occurred. Recent sample data indicates no change in trend for this well.
MW-55	Biennial							Although this well has not been sampled continuously for 4 consecutive quarters, time plots show that this upgradient well location has been free of contaminants on a consistent basis. This location is regarded as downgradient for southwest corner of Dunn Field and upgradient to northwest corner of the MI.
MW-62				X				Only 3 sampling events have occurred within this well. Recommend that the well be sampled on a consistant basis before determining future sampling frequency.
MW-63						Already abandoned		
MW63A			X					Only one sample event has occurred at this sentinel well location since being installed in late 2002. Additional sampling events are necessary for further evaluation.
MW63B			X					Only one sample event has occurred at this sentinel well location since being installed in late 2002. Additional sampling events are necessary for further evaluation.
MW-64			X					Only 2 sampling events have occurred within this well. Recommend that the well be sampled on a consistent basis before determining future sampling frequency.
MW-66						X		This well location was installed for investigation into potential offsite sources. Recently, a pump was reportedly lodged within well casing. Abdandonment and replacement with well MW-66A is recommended unless TDEC would like to maintain the well for further use.
MW-66A					X (Quarterly)		X	Installation of this well near former MW48 location is recommended because of increasing trend of VOC contamination within nearest downgradient location MW21
MW-72						X		This well location was installed for investigation into potential offsite sources. Data reveals only two, very low (less than MCL) detections of PCE out of three sampling events. No other contaminants detected. Abdandonment is recommended unless TDEC would like to maintain the well for further use.
MW-81						X		This intermediate aquifer well was installed to satisfy conceptual site model requirements for the MI Feasibility Study and ROD. This task has been complete and the wells are no longer required for monitoring of the intermediate aquifer at these locations.
MW-82						X		This intermediate aquifer well was installed to satisfy conceptual site model requirements for the MI Feasibility Study and ROD. This task has been complete and the wells are no longer required for monitoring of the intermediate aquifer at these locations.
MW-83						X		This intermediate aquifer well was installed to satisfy conceptual site model requirements for the MI Feasibility Study and ROD. This task has been complete and the wells are no longer required for monitoring of the intermediate aquifer at these locations.
MW-84		X						This well is screened within the intermediate aquifer and is upgradient to the MI and Dunn Field. Only one data point recorded for this well. Therefore, additional sampling on a semianual basis is recommended before further evaluation.
MW-85				X				This well location is part of Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW-86				X				This well location is part of Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW-88				X				This well location is part of Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW-89			X					Mann-Kendall tests indicate that this well has not been sampled more than 4 times. PCE plume is upgradient of location, therefore, additional sampling is necessary to define future sampling requirements.
MW-90			X					Mann-Kendall tests indicate that this well has not been sampled more than 4 times. PCE plume is upgradient of location, therefore, additional sampling is necessary to define future sampling requirements.
MW-92				X				This well location is part of Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW-93		X						This well location is considered a boundary location and time series plots of VOC data reveal recent low level detection of TCE and PCE. Well has only been sampled twice. Recommended that this well be considered for semiannually sampling before re-evaluation.
MW-94						X		The well was installed to be a monitoring well downgradient of the suspected are of-concern in the LTOA 3. However, recent groundwater potentiometric surface maps indicate the monitoring well is not downgradient in the LTOA 3 site. Therefore, MW94 will be bandoned and replacement well MW94A will be installe in a downgradient position of the suspected area-of-concern in LTOA 3. After installation, quarterly sampling is recommended before making further decisions regarding continued sampling.

Table 5-1

Proposed Sampling Regency for Monitoring Wells

Rev. 3 MI Long-Term Groundwater Monitoring Plan

[redacted] Identification	Proposed Sample Regency [1]						NewWells	Rationale for Sampling Regency Decision
	Multiyear Sampling Intervals or Evaluate Abandonment	Annually	Semiannually	Quarterly	Evaluate Sampling Frequency	Abandon		
MW-94A					X (Quarterly)		x	Replacement well for MW94 as part of closure of the LTOA effort.
MW-96				X				This well location is cross- to downgradient of Treatment Area 2 but has only bee sampled twice. Well is proposed for quarterly sampling as part of the initial phas of remedial action.
MW-97			X					This well location is downgradient of Treatment Area 1, has only been sampled twice and is outside of remediation area. Well is proposed for semiannual sampling as part of the initial phase of remedial action.
MW-98				X				This well location is downgradient of Treatment Area 1, has only been sampled twice, and is outside of remediation area. Well is proposed for semiannual sampling as part of the initial phase of remedial action.
MW-99		X						This well was installed as part of LTOA investigation effort. Single sampling even did not reveal any contaminants above laboratory detection limit. This well will no act as a background well since MW20 is proposed for abandonment. To define any trends, recommend sampling annual before reevaluation.
MW-100						X		Well is damaged but due to proximity of replacement well MW-100B, it is not recommended to abandon at this time.
MW-100D				X				This well location is part of Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW-101				X				This well location is part of Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW-102						X		Well is damaged but due to proximity of replacement well MW-102B, it is not recommended to abandon at this time.
MW-102D	Biennial							This well location is considered a boundary location and time series plots of VOC data reveal no detection in single event. Well has not been sampled in at least four consecutive events however, plume maps indicate that this well is upgradient of plume in southwest corner of MI. Recommended that this well be considered for Biennial sampling instead of higher frequency
MW-103			X					This well was installed as part of LTOA investigation effort. Single sampling even has revealed VOCs contaminants above laboratory detection limit. This location requires additional sampling prior to conclusions regarding future sampling frequency.
[redacted]W-104			X					This well was installed as part of LTOA investigation effort. Single sampling even has revealed VOCs contaminants above laboratory detection limit. This location requires additional sampling prior to conclusions regarding future sampling frequency
MW-105						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 2.
MW-106						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 2.
MW-107			X					This well was installed as part of LTOA investigation effort. Single sampling even has revealed VOCs contaminants above laboratory detection limit. This location requires additional sampling prior to conclusions regarding future sampling frequency.
MW-108			X					This well was installed as part of LTOA investigation effort. Single sampling even has revealed VOCs contaminants above laboratory detection limit. This location requires additional sampling prior to conclusions regarding future sampling frequency
MW-109						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 2.
MW-110						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 2.
MW-111						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 2.
MW-112						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 2.
MW-113				X				This well has been retained within the proposed design for Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
[redacted]W-114						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
MW-115				X				This well has been retained within the proposed design for Treatment Area 1 and is proposed for quarterly sampling as part of the initial phase of remedial action.

Table 5-1

Proposed Sampling Fequency for Monitoring Wells

Rev. 3 MI Long-Term Groundwater Monitoring Plan

Well Identification	Proposed Sample Fequency [1]						New Wells	Rationale for Sampling Fequency Decision
	Multiyear Sampling Intervals or Evaluate Abandonment	Annually	Semiannually	Quarterly	Evaluate Sampling Frequency	Abandon		
MW-116						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1.
MW-117						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
MW-118						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
MW-119						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
MW-120						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
MW-121						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1.
MW-122						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1.
MW-123						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
MW-124						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
MW-125				X				This well has been retained within the proposed design for Treatment Area 1 and is proposed for quarterly sampling as part of the initial phase of remedial action.
MW140*					X (Quarterly)		X	This well is to be installed in the furthest downgradient position within the window to the intermediate aquifer in the northwest corner of the MI as part of the completion of the LTOA activities. After installation, quarterly sampling is recommended before making further decisions regarding continued sampling.
MW141*					X (Quarterly)		X	As part of the completion of the LTOA effort at the MI, a well shall be installed downgradient of LTOA Sites SS-42/43. Quarterly sampling is recommended once the well has been installed.
MW- ?					X (Quarterly)		X	Approximately 40 wells will be installed as part of the design-related investigation and performance monitoring system for the MI RA. These wells are proposed for quarterly sampling until data can be evaluated for different frequency.

Table 5-1

Proposed Sampling Regency for Monitoring Wells

Rev. 3 MI Long-Term Groundwater Monitoring Plan

Well Identification	Proposed Sample Regency [1]						New Wells	Rationale for Sampling Regency Decision
	Multiyear Sampling Intervals or Evaluate Abandonment	Annually	Semiannually	Quarterly	Evaluate Sampling Frequency	Abandon		
Piezometers:								
PZ01						X		Piezometer installed as part of offsite conceptual model review and for detection of possible off site sources or plumes. This well has bcome obsolete with designation of boundary locations.
PZ03			X					Time series plots show only two sampling events have occurred within this piezometer and both have revealed TCE and PCE contaminants. Semiannual sampling is proposed prior to additional review of sampling frequency.
PZ04						X		Piezometer installed as part of offsite conceptual model review and for detection of possible off site sources or plumes. This well has bcome obsolete with designation of boundary locations.
PZ05						X		Piezometer installed as part of offsite conceptual model review and for detection of possible off site sources or plumes. This well has bcome obsolete with designation of boundary locations.
PZ06			X					Time series plots show only two sampling events have occurred within this piezometer and neither have revealed contaminants. However, location is immediately upgradient to contaminants detected within LTOA wells MW103 and MW104. Semiannual sampling is proposed prior to additional review of sampling frequency.
PZ07				X				Time series plots show only two sampling events have occurred within this piezometer and neither have revealed contaminants. However, location is immediately upgradient to contaminants detected within Treatment Area 2. Quarterly sampling is proposed prior to additional review of sampling frequency
PZ08						X		Piezometer installed as part of offsite conceptual model review and for detection of possible off site sources or plumes. This well has bcome obsolete with designation of boundary locations.
Injection Wells:								
IW-1				X				This well has been retained within the proposed design for Treatment Area 2 and is proposed for quarterly sampling as part of the initial phase of remedial action.
IW-2						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
IW-3						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
IW-4						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1.
IW-5						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1
IW-6				X				This well has been retained within the proposed design for Treatment Area 1 and is proposed for quarterly sampling as part of the initial phase of remedial action.
IW-7						X		This well was installed for Enhanced Bioremediation Treatment Treatability Study at the MI. This well is no longer required within proposed remedial action for Treatment Area 1.

NOTES:
MW = monitoring well
PZ = piezometer
IW = injection well
LA = Location abandoned
MI = Main Installation
LTOA = Long-Term Operational Area
TDEC = Tennessee Department of Environment and Conservation
CSM = Conceptual Site Model
EBT = Enhanced Bioremediation Treatment
NA = not applicable
MW136* = Proposed well number. This number may change depending upon when well is installed
1. Sampling frequency determined by Standard Sampling Frequency Decision Tree, Figure 5-1

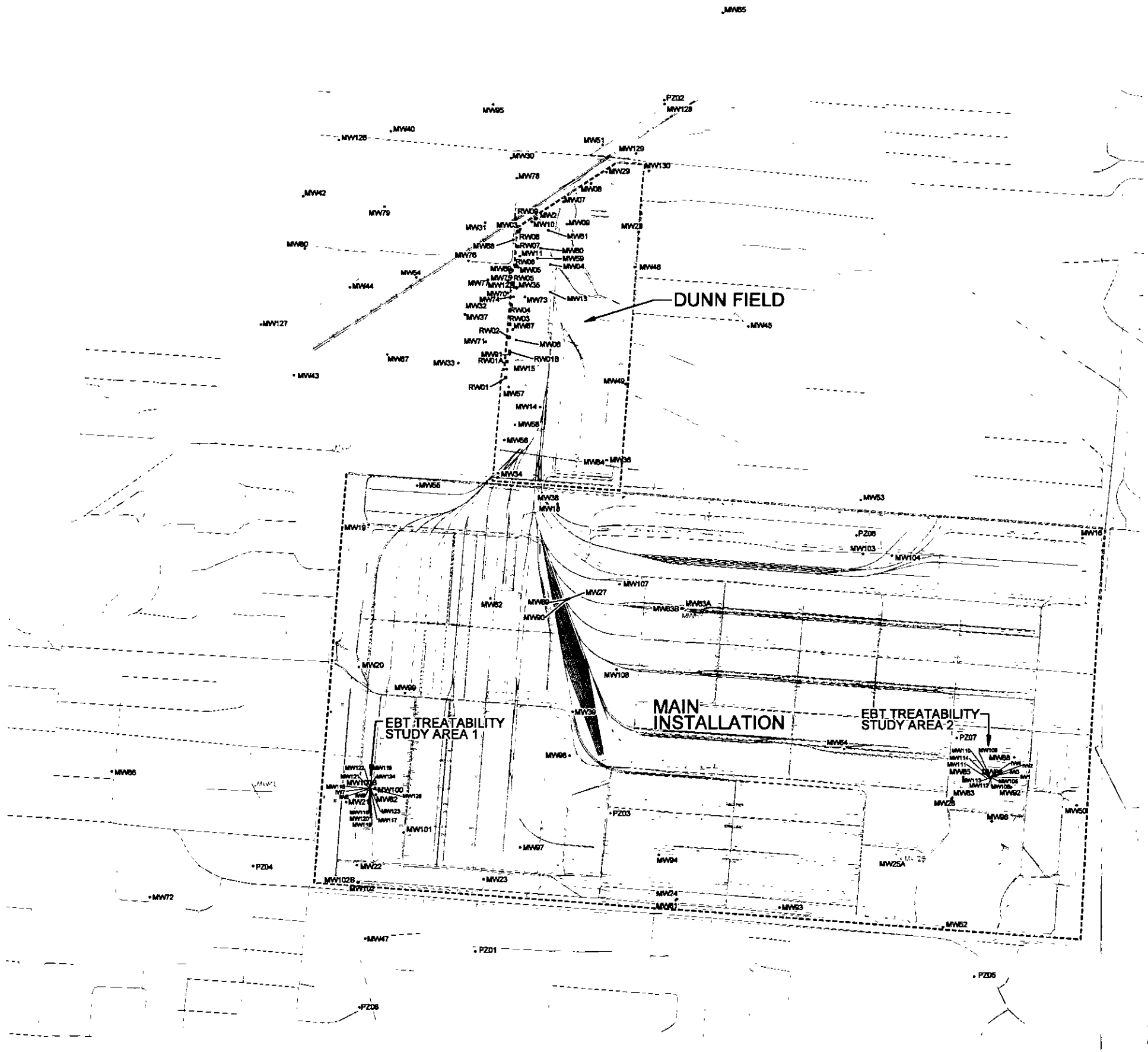
TABLE 5-2
Summary of Sampling Frequency Analysis
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Frequency	Well Number
Multiyear (biennial)	MW16, MW19, MW23, MW24, MW36, MW50, MW53, MW55,
Annual	MW22, MW38, MW84, MW93, MW99, MW102B
Semiannual	MW25A, MW52, MW63A, MW63B, MW64, MW89, MW90, MW97, MW103, MW104, MW107, MW108, PZ03, PZ06
Quarterly	MW21, MW26, MW34, MW39, MW62, MW85, MW86, MW88, MW92, MW94A (new), MW96, MW98, MW100B, MW101, MW113, MW115, MW125, MW140 to MW142 (new), PZ07, IW1, IW6 (Also includes approximately 38 wells to be installed as part of design-related investigation and RA performance effort)

TABLE 5-3
Rationale for Wells Recommended to be Abandoned
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Well Number(s)	Reason Number[(a)]	Rationale
MW18	5	The well has not had enough groundwater to collect a sample.
MW20	5	The well was installed across the vadose zone-saturated aquifer interface and does not produce representative sample data.
MW22	1	The well is redundant due to its proximity to MW102B.
MW27	4 and 5	The well has been dry and has not had enough groundwater to collect a sample or be gauged.
MW47	1	The well is redundant due to its proximity to MW102B.
MW66	2	A bladder pump is stuck in the well casing. MW66 will be replaced with a well close to former monitoring well MW48.
MW72	1	The well was installed to detect an offsite plume, but 1999, 2000, and 2002 groundwater VOC analytical results from MW72 have been below reporting limits and therefore the well is not serving its original purpose or the RD objectives.
MW81, MW82, and MW83	5	The wells were installed to clarify the conceptual site model and orientation of the clay confining unit. The three wells satisfied the conceptual site model's requirements and are not screened at the correct elevation for the RD objectives. In addition, MW82 and MW83 are not located within a window to the intermediate aquifer as other wells are (e.g., MW34) and >70 feet of a clay aquitard exists between the fluvial and underlying intermediate aquifers at each of these locations.
MW94	Not applicable.	The well was installed to be a monitoring well downgradient of the suspected area-of-concern in the LTOA 3. However, recent groundwater potentiometric surface maps indicate the monitoring well is not downgradient in the LTOA 3 site. Therefore, replacement well MW94A will be installed in a downgradient position of the suspected area-of-concern in LTOA 3.
MW100, MW102	2	These wells are damaged but due to proximity of replacement well MW100B and MW102B (they could be affected by the abandonment process), abandonment is not recommended at this time.
MW105, MW106, MW109, MW110, MW111, MW112, MW114, MW116, MW117, MW118, MW119, MW120, MW121, MW122, MW123, MW124, IW2, IW3, IW4, IW5, IW7	1, 6	These wells were installed for the EBT Treatability Study at the MI. The wells are no longer required for the proposed RA for Treatment Areas 1 and 2 because of redundancy.
PZ01, PZ04, PZ05, PZ08	1	The piezometers are redundant due to their proximity to MW23, MW66, MW52, and MW102B. respectively. It is recommended that TDEC evaluate the usefulness of these piezometers for their offsite investigations.

Note
(a) - from the Decision Rules



LEGEND

- RW03 RECOVERY WELL
- MW53 FLUVIAL AQUIFER MONITORING WELL
- MW53 INTERMEDIATE AQUIFER MONITORING WELL
- PZ06 PIEZOMETER
- MEMPHIS DEPOT BOUNDARY

NOTE:

(1) MONITORING WELLS 105, 106, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, AND 125 WERE INSTALLED AFTER THE DATE OF THE MI BASELINE GROUNDWATER SAMPLING EVENT, AS PART OF THE MI EBT TREATABILITY STUDY

(2) FIVE MONITORING WELLS WERE NOT SAMPLED DURING THIS EVENT, INCLUDING: MW-18 DUE TO SAMPLE REPETITION; MW-27 DUE TO LACK OF WATER, AND, MW-17, MW-25, AND MW-48 DUE TO WELL OBSTRUCTIONS.

(3) MONITORING WELLS MW-25 AND MW-83 WERE ABANDONED AFTER THE MI BASELINE GROUNDWATER SAMPLING EVENT THE PREVIOUS LOCATIONS ARE SHOWN.

FIGURE 1.1
MEMPHIS DEPOT - MONITORING WELL, RECOVERY WELL, PIEZOMETER, AND SOIL BORING LOCATIONS
REV. 0 LONG-TERM GROUNDWATER MONITORING PLAN MAIN INSTALLATION, MEMPHIS DEPOT

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ATLANTA/CAD1/PROJECTS/148071 DDMT/DUNNFIELD_RD 2003 21-OCT-2003 figure1 1.dgn



Scale: 1" = 800'

Note: *Does not include well locations for design-related investigation or RA performance monitoring wells.*

Figure 5-2
Proposed Sampling Frequency and Proposed Additional Wells
Groundwater Monitoring Plan, Main Installation Remedial Design
Memphis Depot, Tennessee

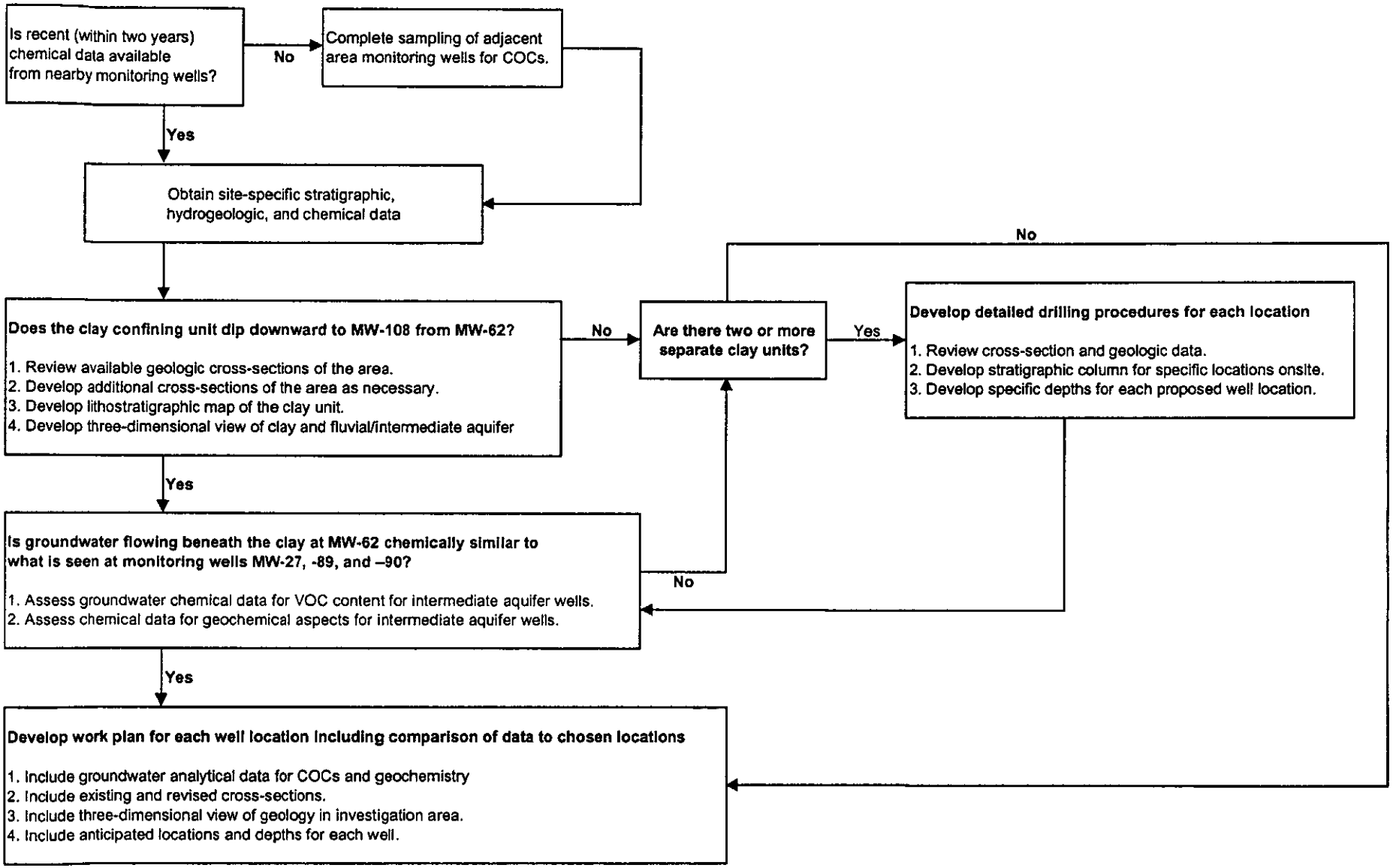


FIGURE 5-3
Decision Tree Analysis for Sentry Wells Near LTOA Sites SS-42/43
Rev. 1 MI Long-Term Monitoring Plan

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6.0 Field Procedures

The sampling and analysis procedures presented below outline required activities associated with the LTM at the MI. All sampling procedures presented herein will adhere as closely as possible to procedures described in the EPA Region 4 Science and Ecosystems Services Division *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual* (EISOPQAM), dated November 2001, USACE's Engineer Manual (EM) 200-1-3, dated February 2001, and the AFCEE *Final LTM Optimization Guide* (October 1997).

6.1 Data Quality Objectives

The data quality objectives (DQOs) presented in Table 6-1 are established to achieve the objectives of the LTM.

6.2 Well Installation

According to Table 5-1 and the MI RD, additional monitoring wells will be installed to meet the LTOA objectives, as part of a design-related investigation, and for performance monitoring during the RA. Each well will be installed using a drilling method selected by the RA contractor. Well screen intervals typically will be positioned at different depths within the fluvial aquifer. The estimated depth of the wells ranges from 110 to 135 ft bgs. Wells will also be installed in the intermediate aquifer as needed.

6.2.1 Standard Well Installation Procedures

Monitoring and injection well installation will be performed in accordance with Shelby County Rules and Regulations of Wells and Rules of the TDEC, Division of Water Supply, Chapter 1200-4-10, Well Construction and Abandonment Standards. Where appropriate, methods described in the 2003 American Society for Testing and Materials (ASTM) D5092-02, *Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers,* US Army Corps of Engineers OE EM 1110-1-4000, and EPA Region 4, Science and Ecosystems Services Division EISOPQAM (2001) will also be used. All drilling and well installation activities will be conducted under the supervision of a professional geologist or engineer registered in the State of Tennessee. Borehole diameters should be a minimum of 7 inches for a 2-inch ID monitoring well.

New monitoring wells will be constructed of 2-inch inside diameter (I.D.) polyvinyl chloride (PVC) casing and screens. Injection wells will also be constructed of PVC, but will have a 4-inch I.D. Each well will have a filter pack around the screen and extending above the top of the screen a minimum of 1 foot, a 2-foot thick bentonite seal above the filter pack, and cement grout to ground surface installed through the drill casing. The wells will be straight and plumb to allow passage of pumps or sampling devices.

The documentation record and forms will document the following information for each boring:

- Boring or well identification
- Purpose of the boring (e.g., soil sampling, monitoring well)
- Location in relation to an easily identifiable landmark
- Names of drilling subcontractor and logger
- Start and finish dates and times
- Drilling method
- Types of drilling fluids and depths at which they were used, if applicable
- Diameters of surface casing, casing type, and methods of installation
- Depth at which saturated conditions were first encountered
- Lithologic descriptions and depths of lithologic boundaries
- Sampling-interval depths
- Zones of caving or heaving
- Depth at which drilling fluid was lost and the amount lost
- Changes in drilling fluid properties
- Drilling rate
- Drilling rig reactions (e.g., chatter, rod drops, and bouncing)

Prior to drilling activities and between each well location, all drilling equipment and the rig will be decontaminated using a high pressure steam cleaning wash as described in the Section 6.7.

6.2.1.1 Logging of Boreholes

Lithologic samples will be collected continuously in 10-foot intervals beginning at the ground surface. Lithology of unconsolidated materials encountered in the boreholes will generally be described in accordance with the 1990 ASTM D-2488-90, *Standard Practice for Description and Identification of Soils* (Visual-Manual Procedure). A boring log will include:

- The Unified Soil Classification System (USCS) group symbol
- Identification of the predominant particle size and range of particle sizes
- Percent of gravel, sand, fines, or all three
- Description of grading and sorting of coarse particles
- Particle angularity and shape
- Maximum particle size or dimension
- Color using Munsell Color System
- Moisture (dry, wet, or moist)
- Consistency of fine grained soils
- Structure of consolidated materials
- Cementation (weak, moderate, or strong)

Additional information to be recorded in the log includes: depth to the water table, caving or sloughing of the borehole, changes in drilling rate, depths of laboratory sample collection, presence of organic materials, presence of fractures or voids in consolidated materials, and other noteworthy observations or conditions, such as the locations of geologic boundaries.

The headspace of soil samples will be screened with a flame ionization detector-organic vapor analyzer (FID-OVA). The headspace samples will be brought (if necessary) to a temperature of between 20°C (68°F) and 32°C (90°F), and the reading will be obtained 5 minutes thereafter. The soil sample will be split into two jars and readings will be made with the FID (unfiltered) on one jar. If the FID reading is greater than 10 parts per million (ppm), a reading will be made on the second jar with an activated charcoal filter on the FID. A total corrected hydrocarbon measurement of the sample will be calculated by subtracting the filtered reading from the unfiltered reading. Analytical instruments must be calibrated in accordance with the manufacturer's instructions. The headspace samples will be collected and analyzed using the following procedure:

1. From the sampling location, remove the top 1 to 2 inches of soil using a decontaminated stainless steel spoon.
2. Fill ½ of two decontaminated 16-ounce containers with soil from the resulting hole using the stainless steel spoon.
3. Cover the jars immediately with aluminum foil and fasten the jar lids.
4. Allow the sample vapors to equilibrate in the jars (approximately 5 minutes).
5. Punch a hole in the aluminum foil with the tip of a calibrated FID.
6. Record the highest reading.
7. If the FID reading is > 10 ppm, repeat Steps 5 and 6 with the activated charcoal filter on the calibrated FID for the second jar.

All measurements will be recorded on the logging form at the corresponding depths. The samples will be handled in such a way as to minimize the loss of volatile compounds. Soil cuttings will be examined for their hazardous characteristics. If suspect samples are encountered, they will be noted on the boring log form for reference during investigative derived waste (IDW) sampling.

6.2.1.2 Casing Requirements

The casing requirements that will be followed include:

- All casing will be new, unused, decontaminated, 2-inch inside diameter, schedule 40 PVC with internal flush joined threaded joints.
- The PVC will conform to the ASTM Standard F-480-88A or the National Sanitation Foundation Standard 14 (Plastic Pipe System).
- Glue or solvent-welded joints will not be used to join casing.

6.2.1.3 Well Screen Requirements

Well screen requirements are as follows:

- All requirements that apply to casing will also apply to well screen, except for strength requirements.
- Monitoring wells will not be screened across more than one water-bearing unit.

- The screen sections will be factory-slotted or wire-wrapped with 0.010-inch openings, no less than 10-ft in length, and no greater than 20 feet in length.
- A threaded PVC cap or point will be placed at the bottom of the screen.

6.2.1.4 Filter Pack Requirements

The filter pack material will be clean, bagged, sieve sized, silica sand, inert, hard, well rounded (less than 2 percent flat particles), and free from roots, trash, and other deleterious material. The sand will be certified free of contaminants by the vendor or contractor. The filter pack will extend from the bottom of the hole to at least 2 ft above the top of the well screen.

The filter pack will be installed with a bottom-discharge tremie pipe. The tremie pipe will be lifted from the bottom of the hole at the same rate the filter pack is set. The contractor will record the volume of the filter pack emplaced in the well. Potable water may be used, with the approval of the field team leader (FTL), to emplace the filter pack so long as no contaminants are introduced.

6.2.1.5 Bentonite Seal Requirements

Following filter pack placement, a minimum 2-foot-thick bentonite seal will be placed above the filter pack. The 100 percent sodium bentonite seal will consist of 1/4-inch or 3/8-inch diameter coated (for slow dissolving) bentonite pellets. The bentonite seal will be installed by gravity methods. The bentonite seal will be allowed to hydrate for a minimum of 4 hours prior to the installation of the cement grout.

6.2.1.6 Casing Grout Requirements

Cement grout will be placed in the annular space above the bentonite seal to ground surface. The grout will be pumped through a side-discharge tremie pipe and the length will be no more than 5 feet from the top of the grout at all times. The pumping will continue until grout has returned to the surface. No method will be permitted that does not force grout from the bottom of the borehole to the surface. The grout seal will be Type II Portland cement or American Petroleum Institute Class A cement with no more than 4 percent bentonite. The grout will be mixed in the following proportions: 94 lbs. of neat cement, not more than 4 lb. of 100 percent sodium bentonite powder, and not more than 8 gallons of potable water. The grout will have a mixed minimum specific density of 9.4 pounds per gallon (lb/gal) or the manufacturer's recommended density. A mud balance will be used to ensure the density of the mixture conforms to the manufacturer's standards. Prior to the well completions, the boreholes will be topped off with grout to approximately 1 to 2 feet bgs.

6.2.1.7 Surface Completion Requirements

Wells will be set as flush-mounted completions. The casing will be cut approximately 3 inches bgs and a watertight casing cap will be placed on the well. A small diameter (e.g., 1/4-inch) vent hole will be placed in the upper portion of the casing, or a ventilated well cap will be used. A small notch will be cut in the top of the casing to be used as a measuring point for water levels.

A freely draining 10-inch I.D. manhole cover with a locking lid will be placed over the casing. The top of the casing will be at least 6 inches above the bottom of the box. The manhole will be centered in a 3-foot-diameter, 4-inch-thick concrete pad that slopes away from the manhole at ¼-inch per foot. The identity of the well will be permanently marked on the concrete pad. Where heavy traffic may pass over the well or for other reasons, the concrete pad and valve box/lid assembly will be constructed to meet the strength requirements of surrounding surfaces.

When a well is not installed in a concrete or asphalt drive or parking area, four 3-inch-diameter concrete-filled steel guard posts will be installed. The guard posts will be 5 feet in total length and installed at the corners of the well pad. The guard posts will be recessed approximately 2 feet into the ground and set in concrete. The guard posts will not be installed in the concrete pad placed at the well base. The protective sleeve and guard posts will be painted a high-visibility yellow.

Wells will be secured with corrosion-resistant locks as soon as possible after drilling. The locks will either have identical keys or be keyed for opening with one master key.

A well completion diagram will be submitted for each monitoring well or injection well installed. It will include the following information:

- Well identification (this will be identical to the boring identification described)
- Drilling method
- Installation date(s)
- Elevations of ground surface and the measuring point notch
- Total boring depth
- Lengths and descriptions of the screen and casing
- Lengths and descriptions of the filter pack, bentonite seal, casing grout, and any back-filled material
- Elevation of water surface before and immediately after development
- Summary of the material penetrated by the boring

The locations and elevations of the monitoring and injection wells will be surveyed by Allen & Hoshall using benchmarks consistent with previous MI surveys.

6.3 Well Abandonment

After receiving approval from the BCT that specific wells are no longer needed, the project team will abandon wells following the procedures described in the Rules of TDEC, Division of Water Supply, Chapter 1200-4-10, Well Construction and Abandonment Standards. In general, procedures should include grouting of the well in place. Grout should be brought to the surface and replaced as the grout cures. Surface completion of the abandoned location should be commensurate with the expected use. Additional procedures for well abandonment are described in Section 6.9 of the EISOPQAM.

6.4 Well Development

Well development is essential for restoration of physical and hydraulic properties of the aquifer after new installation or, possibly, for existing well locations. Poorly developed

wells can contain suspended solids that bias chemical analyses so that groundwater samples do not represent subsurface conditions. Development will be carried out on well locations according to procedures described in Section 6.8 of the EISOPQAM and Model Field Sampling Plan (AFCEE, 1997). Wells will not be developed for at least 24 hours after the surface pad and outer protective casing are installed. All newly installed (and existing, as necessary) wells will be developed until the column of water in the well is free of visible sediment, and the pH, temperature, turbidity, and specific conductance have stabilized. In general, field parameters are stable when nephelometric turbidity units (NTUs) are less than 10, pH is within 0.1 on consecutive readings, and temperature and specific conductance are within 10 percent of previous readings. Records of well development will be kept within the approved, site-specific field logbook.

6.5 Well Maintenance

Inspection of the monitoring wells in and around the MI will be conducted annually, in addition to the site-wide groundwater monitoring activities. The inspections will be conducted to evaluate the integrity of the monitoring wells and to perform repairs, as necessary.

Before the inspections, geographic information system (GIS) maps showing the monitoring well locations for the MI will be generated for field use. The following information will be recorded on Table 6-2 for each monitoring well:

- Date of inspection
- Depth to water and total depth of well
- Condition of protective casing/manhole cover
- Presence of well lock/well tag
- Condition of surface pad
- Condition of well cap
- Comments on other observations made during the well inspection

During the well inspections, simple repairs (replacing well caps, locks, etc.) will be made when a deficiency is observed. Once the well inspection is complete for the MI, Table 6-2 will be reviewed and repair recommendations will be forwarded to the BCT within the 30 days for their consideration and approval. Well repairs will then be scheduled and completed as necessary.

A well will be abandoned in accordance with Section 6.3 if it has sustained damage and cannot be repaired, or an object that cannot be removed has become lodged in the well. A replacement well will be installed as needed.

6.6 Groundwater Elevation Surveying

Groundwater elevation surveys will be performed site-wide twice each year, once during the season of high groundwater elevations (May) and once during the season of low groundwater elevations (November). These site-wide groundwater elevation surveys will be performed just prior to quarterly sampling events (to minimize mobilization costs). Groundwater elevations will be measured in all monitoring wells and piezometers at the

MI. Results will be used to prepare groundwater contour maps, derive the groundwater flow direction, assess hydraulic gradients, and monitor changes in groundwater elevations.

6.7 Groundwater Sampling

Sampling methods and equipment have been chosen to minimize decontamination requirements, purge-water handling requirements, and the possibility of cross-contamination, and are consistent with EPA EISOPQAM (2001). Prior to sampling, sufficient water must be removed (purged) from the well to ensure that the water being analyzed is representative of the aquifer conditions.

6.7.1 Monitoring Technology

This section describes the three methods to be used for collecting groundwater samples:

1. Modified low-flow purging/sampling using Teflon®-lined tubing with either a submersible pump, bladder pump, or peristaltic pump. This is the default method for all wells.
2. Sampling using a polyethylene diffusion bag sampler (PDBs), which requires no purging.
3. Use of a disposable Teflon® bailer.

The method selected for each well will depend on:

- The ability of the aquifer to provide sufficient recharge to support the low-flow purging/sampling method.
- Presence of vertical flow conditions within the aquifer at the well.
- The diameter of the well.
- The need to minimize effects on static aquifer conditions due to aquifer tests and other studies being performed in the immediate area.
- The need to sample discrete sample intervals simultaneously.

If the monitoring well does not have a sufficient volume of water for the modified low-flow sampling method, that well will be purged and sampled using a new disposable bailer. If the diameter of the well is too small for a pump or the well is too deep for a peristaltic pump, then the well will be purged and sampled using a new disposable bailer. If another monitoring well located in the study area may be negatively affected by the withdrawal of groundwater in the area, then diffusion samplers will be used. If it is necessary to gain an assessment of the vertical distribution of VOCs at a particular location, then multiple diffusion bags will be used to collect the samples.

6.7.2 Standard Sampling Procedures

The procedures described in this section are primarily for sampling groundwater using low-flow techniques. The methods and procedures used in the field will adhere to procedures described in the EPA EISOPQAM (2001). Where appropriate the sampling and purging procedures presented in *Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures*

(Puls and Barcelona, 1996), Sections 7.2.2 and 7.3.3 will be followed. Construction, installation, and sampling of the diffusion bag samplers will follow guidance developed by the U.S. Geological Survey (2001) in *User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentration in Wells.*

Groundwater levels will be measured in monitoring wells prior to and during each sampling event. Water levels will be measured using an electronic sensor with tape graduated in 0.01-foot increments. Measurements will be recorded as depth to water from the mark on the top of the well casing. Well number, date and time of measurement, and depth to water will be recorded in the field logbook.

Before sampling, each well will be purged using low-flow methods to minimize both agitation of the groundwater and sample turbidity. The following methods are consistent with Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures (EPA, 1996). The intent of these procedures is to remove stagnant water from the well and introduce fresh groundwater into the well at a rate that does not produce significant drawdown of the water level in the well being sampled. This procedure reduces both the time it takes to purge the wells and the quantity of water removed (IDW). The field team should keep the pumping rate as low as possible, being careful not to lower the water level in the well. The anticipated pumping rate is 0.15 to 0.25 gallon per minute (gpm) so that water levels do not decline more than 1.2 inches (0.1 foot). Water level measurements should be made concurrently with the water quality parameter measurements. Field measurements of DO, ORP, turbidity, pH, temperature, and specific conductance will be made at the beginning and at 5-minute intervals during purging. The water quality parameters should be measured using an airtight flow-through cell. Measurement data will be recorded in the field logbook, other appropriate field form. Purging will continue until field measurements are stable to within +/- 10 percent over three successive measurements. The above parameters will be documented and the wells will then be sampled using the same low-flow pump rate.

Samples will be collected from monitoring wells using the low-flow bladder pump and Teflon® tubing once the field parameters have stabilized. Headspace in the volatiles sample container must be minimized by filling the sample jar until a positive meniscus is present.

Containers will be quickly and adequately sealed; container rims and threads will be clean before tightening lids; unless otherwise specified, Teflon®-lined screw lids will be used to seal the jar. Sample containers will be properly labeled and will be immediately cooled to 4°C plus or minus 2°C, and this temperature will be maintained through delivery to the laboratory until the samples are analyzed. New tubing will be used and the pump decontaminated for each well.

In addition to groundwater samples, QA/QC samples will be collected during the field effort. The QA/QC samples include field duplicates, matrix spike/matrix spike duplicate (MS/MSD), ambient blanks, equipment blanks, and trip blanks. The quantity of QA/QC samples collected at the site will be in accordance with guidelines in Section 8.

Proper documentation will be maintained throughout the sample collection effort, which includes the maintenance of the field logbook, electronic capture of data using a hand-held datalogger (optional), chain-of-custody records, and notation of monitoring well conditions. Any unnecessary agitation of the groundwater during sample collection will be avoided to

prevent loss of the volatile constituents during the sample collection process. The use of proper sampling containers is important to ensure that no chemical alteration occurs between the time of field sampling and field analysis or laboratory analysis of the samples. The sample containers and preservatives for each analysis are discussed in Section 7.

6.8 Decontamination Procedures

Decontamination procedures will vary according to the equipment being decontaminated; however, all procedures will be according to the EISPOQAM. All downhole drilling equipment as well as other equipment will be decontaminated according to procedures presented in Appendix B of the EISOPQAM. Decontamination of the drill rig, drilling tools, pipes, and bits, and all downhole equipment will be conducted between each well installation. Decontamination of development equipment will be performed between each well developed. Decontamination will consist of the following:

- Perform high pressure, low volume steam-cleaning.
- Wash and scrub with non-phosphate detergent (Liquinox) and potable water.
- Rinse with tap water.
- Rinse with deionized (or analyte-free) water.
- Rinse with laboratory grade isopropyl alcohol (PVC or plastic material will not be rinsed with solvent).
- Rinse with organic-free water.
- Air dry to the extent practical.
- Wrap in plastic sheeting or aluminum foil.

Decontamination activities will be conducted on a concrete decontamination pad at the site.

Standard procedures for field equipment are described below.

Well Sounders and Groundwater Measurement Tapes: Decontamination procedures for Teflon®, PVC, stainless-steel, and glass tubing used for groundwater sampling are listed below.

- Wash with laboratory detergent and tap water.
- Rinse with tap water.
- Rinse with analyte-free (deionized) water.
- Wrap equipment in aluminum foil.

Field Parameter Measurement Probes: Field parameter measurement probes, (e.g., pH or specific ion electrodes, geophysical probes, or thermometers) that come in direct contact with the sample will be decontaminated using the procedures listed below, unless manufacturer's instructions indicate otherwise. Probes that make no direct contact (e.g., OVA equipment) will be wiped with clean paper towels.

- Rinse with tap water.
- Rinse with analyte-free (deionized) water.
- Solvent rinse if obvious contamination remains after rinsing and if solvent will not damage probe.
- Rinse with analyte-free (deionized) water.

Sampling Equipment for Organic and Metal Analysis: Teflon®, stainless-steel, glass, or metal sampling equipment used to collect samples for organic and metal analysis will be cleaned between sample locations as listed below.

- Wash and scrub equipment thoroughly with laboratory detergent and tap water.
- Rinse thoroughly with tap water.
- Rinse thoroughly with deionized, analyte-free water.
- Rinse with solvent (reagent-grade isopropanol). Note: Do not rinse PVC or plastic materials with solvent.
- Rinse with organic-free water and allow to air dry as long as possible.
- Wrap with aluminum foil to prevent contamination.

6.9 Residuals Management

Waste handling will be dealt with during the field activities. Waste may be classified as non-investigative waste or investigative/field-generated waste. Non-investigative waste, such as litter and household garbage, will be collected on an as-needed basis to maintain the site in a clean and orderly manner. This waste will be containerized and transported to the designated sanitary landfill or collection bin. Acceptable containers will be sealed containers or plastic garbage bags.

Investigative/field-generated waste will be properly containerized and temporarily stored at each site, prior to offsite disposal. The number of containers will be estimated on an as-needed basis. Acceptable containers will be sealed, U.S. Department of Transportation-approved steel 55-gallon drums or roll-off box-type containers. The containers will be transported in a manner to prevent spillage or particulate loss to the atmosphere.

The field-generated waste will be segregated at the site according to the matrix (solid, including soil, sediment, and PPE, or liquid, such as wastewater and development and/or purge water) and means of derivation (drill cuttings and decontamination fluids). Each container will be properly labeled with site identification, sampling point, depth, matrix, COC, and other pertinent information for handling.

Soil cuttings generated from monitoring point installation procedures will be placed in drums or other appropriate storage devices and stored at the site. The soil will be sampled for final disposal purposes according to methods and analyses required by the accepting transportation/storage/disposal facility (TSDF). Once the soil analytical data have been obtained, the soil will either be removed from the MI within 60 days or if analytical results for soil cuttings compare favorably with Region 9 PRGs for industrial exposure, the soil cuttings can be disposed of by spreading on-site.

Wastewater generated from well development, purging, sampling, and equipment decontamination activities must also be stored at the site prior to removal from the MI. Once analytical data have been obtained, the water will be removed from the site within 60 days.

During past investigation activities at the MI and Dunn Field, IDW water was disposed of in the City of Memphis sewer system after a temporary permit had been obtained from the City of Memphis Public Works Department. The permit provided an explanation that the

water contained concentrations of contaminants similar to the effluent from the operating Dunn Field groundwater extraction system, which discharges into the city's sewer system. The same procedure will be followed during LTM activities.

6.10 Health and Safety

A Health and Safety Plans (HASP) has been prepared by CH2M HILL for the MI and Dunn Field at the Memphis Depot (CH2M HILL, April 2002; last updated in August 2003). The HASP includes company safety goals, objectives, and procedures. This HASP meets the requirements specified in the USACE Safety and Health Requirements Manual, EM 385-1-1 (USACE, September 1996) The HASP can be modified to include the tasks presented herein. A brief overview of the primary topics for the LTM program is presented in the following sections.

6.10.1 Groundwater Sampling: Use of Pumping Equipment

The equipment used to obtain samples includes air-operated bladder-type pumps, electrical generators, tubing, diffusion bags, and portable direct-reading instruments. The field activities will include potentially hazardous environments and will require controls on ambient air hazards.

6.10.2 Monitoring and Injection Well Installation

The installation of wells will require the use of rotasonic drill rigs, or other drilling equipment selected by the RA contractor. The use of this equipment has inherent hazards, including rotating mechanical equipment, potential hazardous atmospheres, high noise levels, and potential slip, trip, and fall hazards.

6.10.3 Ambient Air Monitoring Action Levels

The existing HASP provides action levels for upgrading personal protective equipment (PPE) from Level D/modified Level D to Level C and Level B. However, using engineering controls to prevent VOC emissions is preferable to using PPE. If the action levels for Level D/modified Level D are exceeded during this project, the study work efforts will be revised for corrective actions. Actions may include changing ambient air measurement locations or bringing in equipment to reduce the hazards.

6.10.4 Contingency Procedures

6.10.4.1 Initial Response

Evacuation routes will be established by the site safety and health officer (SSHO). Personnel will be notified of evacuation with intervals of three short blasts on an air horn or vehicle horn, or by direct verbal communication. An air horn will be kept in the Support Zone at all times during site activities. If evacuation is necessary, all personnel are to:

- Decontaminate to the maximum extent practical.
- Evacuate to the pre-determined evacuation point specified by the SSHO.

The SSHO will account for all personnel and notify the FTL. Procedures have been established in the HASP to protect human health and the environment both onsite and offsite in the event of an accident or emergency during site activities.

6.10.4.2 Personnel and Lines of Authority

The SSHO is responsible for the overall direction and implementation of the contingency plan and for overall coordination of any emergency response actions. Specific responsibilities of the SSHO include, but are not limited to, the following:

- Notifying the local police, fire department, and other offsite emergency units, as required
- Notifying the project manager and providing updates as conditions change
- Establishing emergency decontamination protocols and providing emergency first aid
- Site control
- Preventing further injury and contamination of personnel
- Directing offsite emergency response personnel to the scene and providing assistance
- Ensuring that onsite emergency response personnel don the proper PPE, if needed
- Providing medical background information about the sick and/or injured and applicable site health and safety information to the offsite emergency medical responders
- Accounting for all personnel, subcontractors, and visitors
- Assign individual(s) to accompany sick and/or injured personnel to hospital
- Completing any follow-up reports

In the event that the SSHO is unable to perform any of these duties, the site manager will assume the responsibilities.

6.10.4.3 Subcontractor and Visitor Responsibilities

All site personnel, subcontractor personnel, and visitors will be responsible for:

- Reporting any site emergencies to the SSHO
- Knowing the exit location and evacuation route within the exclusion zone
- Knowing the pre-planned assembly point and going there in the event of an emergency
- Decontaminating to the fullest extent possible before leaving any containment area
- Preventing the spread of further contamination by leaving all contaminated PPE and equipment at the work site
- Assisting emergency response personnel as requested

TABLE 6-1
Data Quality Objectives
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Qualitative DQO	Quantitative DQO	Method to Obtain DQO
Assess temporal and spatial distribution of COCs to evaluate possible offsite migration to receptor exposure points	Collect groundwater samples from monitoring wells, injection wells, and piezometers during LTM events. Results will be compared temporally and spatially.	Analyze groundwater samples collected during LTM events. Analyze all by SW846 Method 8260B.
Assess temporal and spatial distribution of natural attenuation parameters to evaluate its occurrence and effectiveness.	Collect groundwater samples from monitoring wells, injection wells, and piezometers during LTM events. Also includes field measurements of temperature, pH, turbidity, color, visible particulate, water level, redox potential, dissolved oxygen, Hach Kit for ferrous/total iron, and carbon dioxide Hach digital titrator test.	Analyze groundwater samples collected during LTM events by various methods including AM19A, EPA 415.1, E300.0, E310, E325.2 E354.1, E374, E375, SW846 9056, SW846 6010B.
Develop vertical profile of VOC distribution within fluvial aquifer to help evaluate overall performance of the remedial systems and long-term migration of COCs.	Collect groundwater samples from monitoring wells, injection wells, and piezometers during LTM events. Results will be compared temporally and spatially.	Analyze groundwater samples collected during LTM events. Analyze all by SW846 Method 8260B.
Assess spatial and temporal impact of electron donor injection on CVOC concentrations and aquifer geochemistry.	Compare results of groundwater sample analysis for CVOC and natural attenuation parameters for pre- and post-injection samples. Statistical trends will be developed and analyzed to evaluate treatment system effect.	Collect groundwater samples from monitoring wells in pre- and post-injection events and analyze according to SW-846 Method 8260B and for natural attenuation parameters.
Assess CVOC, tracer, and geochemical concentration changes and flow patterns within aquifer to evaluate transport of reductive dechlorination enhancement materials within the aquifer (i.e., radius of influence).	Analyze downgradient groundwater sampling for CVOCs, natural attenuation parameters, and groundwater tracer. Statistical trends will be developed and analyzed to evaluate treatment system effect.	Inject groundwater tracer prior to injection of electron donor substrate. Install monitoring wells and collect groundwater samples according to SW-846 Method 8260B and analyze for spatial and temporal patterns of results in each downgradient well.
Calculate rate of reduction of CVOC concentrations and estimate time required to meet regulatory levels	Use baseline and post-test CVOC concentrations, time elapsed, and groundwater flow rate from tracer test to estimate the time required to reduce entire plume to regulatory levels. Calculate changes in CVOC mass over time.	Install injection wells. Install monitoring wells and collect baseline groundwater samples according to SW-846 Method 8260B. Inject groundwater tracer prior to injection of electron donor substrate. Collect groundwater samples from monitoring wells and analyze for patterns of results in each downgradient well.

TABLE 6-1
Data Quality Objectives
Rev. 2 MI Long-Term Groundwater Monitoring Plan

Qualitative DQO	Quantitative DQO	Method to Obtain DQO
Evaluate persistence or depletion of electron donor substrate in aquifer.	Analyze downgradient groundwater samples for CVOCs and natural attenuation parameters. Compare concentrations after end of test to baseline levels considering the time elapsed. Also, determine if substrate continues to appear in monitoring wells as product. Calculate changes in electron donor mass over time.	Install injection wells. Install monitoring wells and collect baseline groundwater samples according to SW-846 Method 8260B. Also analyze for substrate content. Inject electron donor substrate. Collect groundwater samples from monitoring wells and analyze for patterns of results in each downgradient well.
Verify that cleanup goals have been met at points of compliance using a rebound study.	As part of the site closeout process (Section 11), a rebound study involves terminating enhanced bioremediation treatment and allowing the groundwater system to reach steady-state. Groundwater sampling (CVOCs and natural attenuation parameters) and trench analysis is then used to verify that remediation goals have been attained.	Collect groundwater samples from monitoring wells following the last anticipated injection event and analyze according to SW-846 Method 8260B and for natural attenuation parameters.
Characterize solid and aqueous waste for appropriate offsite disposal.	Collect water and soil samples from disposal containers according to sampling plan and compare results to disposal criteria.	Analyze water samples from aqueous waste according to Methods SW846 8260B, 6010B, and 8270C. Analyze soil samples from solid waste by Methods SW1311 8260B, 8270C, 8081A, 8151A, and 7470A, and 1030, 9045A, and Chapter 7.3

Table 6-2
O&M Well Inspection Sheet
Rev. 0 MI Long-Term Groundwater Monitoring Plan

Location ID	Date of Inspection (mm/dd/yr)	Depth to Water (ft btoc)	Total Depth of Well (ft btoc)	Condition of Protective Casing/Manhole Cover	Presence of well lock/well tag (Y/N)	Condition of Surface Pad[a]	Condition of Well Cap[b]	Other Comments

Notes:
a = Condition of surface pad should be reported as good, fair, or poor. Poor indicates replacement required immediately to protect integrity of location.
b = Condition of well cap should be reported as present and functioning (PF), present but not functioning (PNF), or not present (NP).

Signature of Inspector: _____ Date:_____

7.0 Analytical Protocols

7.1 Analytical Parameters

Water samples will be normally be analyzed for VOCs and natural attenuation parameters. Samples will also be analyzed for arsenic, selenium, iron, and manganese to assess groundwater geochemistry within the treatment areas.

Based upon review of VOC frequency of detection (Tables 3-4, 3-5, and 3-6) a revised, shorter list of VOCs is planned. Table 7-1 presents the short list of VOCs. Table 7-1 also presents the proposed list of parameters to assess the extent to which natural attenuation is occurring. For VOC analysis, US EPA Method SW8260B will be used for the first four consecutive rounds for new monitoring points. Method SW8021B may be used for performance monitoring after the initial four events. Method SW8260B will also be used for the RAO compliance monitoring samples. Bi-weekly dissolved oxygen (DO), oxygen-reduction potential (ORP), temperature, pH, conductivity measurements will be used to assess the degree to which groundwater quality is responding to the injection (Section 3 and 5.2.1 of MI RD). Table 7-2 presents a summary of the sampling and analyses proposed for the initial LTM program.

7.2 Detection Limits

Detection limits achieved by the laboratory performing the analyses must be sufficient to achieve the DQOs of the sampling program. The analytical methods listed in Table 7-2 are recommended for use during the LTM program because they typically have low detection limits. Recommended detection limits are provided in Attachment C.

TABLE 7-1
Proposed List of Analytical Suites and Parameters
Rev. 3 MI Long-Term Groundwater Monitoring Plan

Parameters		Analytical Method
Volatile Organics *(Short List)*		
1,1,2,2-Tetrachloroethane	*cis*-1,2-Dichlroroethene	SW8021B or SW8260B (Note: Method 8260B will be used for the first four consecutive rounds for new monitoring points. 8021B may be used for performance monitoring after the initial four events. 8260B will also be used for the RAO compliance monitoring samples.)
1,1-Dichlroroethane	Ethylbenzene	
1,1-Dichlroroethene	m,p-Xylene (sum of isomers)	
1,1,1-Trichloroethene	Methylene chloride	
1,2-Dichlroroethane	Methyl ethyl ketone (2-Butanone)	
2-Hexanone	o-Xylene (1,2-Dimethylbenzene)	
Acetone	MTBE	
Benzene	Tetrachloroethene	
Carbon disulfide	Toluene	
Carbon tetrachloride	*trans*-1,2-Dichlroroethene	
Chloroform	Trichloroethene	
Chloromethane	Vinyl chloride	
Chloroethane		
Natural Attenuation Parameters		
Dissolved Gases (ethane, ethene, and methane)		ASTM 1945, AM19A, or RSK175
Total and dissolved organic carbon		EPA 415.1 or 415.2
Nitrate, nitrite		E300.0 or E354.1
Sulfate		E300.0 or 375
Sulfide		E374
Carbon Dioxide [a]		CHEMetrics Method 4500
Carbon Dioxide [b]		Hach Kit
Bromide		SW-846 9056
Chloride		E325.2
Ferrous Iron [b]		Hach Kits
Alkalinity		E310
Metabolic Fatty Acids		Ion Chromatography or Lab will specify
Metals		
Arsenic		SW6010B/7471A
Manganese		
Selenium		
Total iron		

Notes

a) 10% of samples will be analyzed for carbon dioxide in the laboratory to calibrate field results.

b) Conducted in the field with a test kit

Table 7-2

Sample and Analysis Summary

Rev. 3 MI Long-Term Groundwater Monitoring Plan

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Methods	Holding Time	Sample Preserva-tion	Containers
Groundwater Sampling													
Groundwater Monitoring (Field parameters)	All monitoring wells in LTM system	Water	Dependent upon location. See Table 5-1 in MI LTM Plan	Dependent upon number of wells to be sampled	Grab; Low flow technique	Flow-thru cell, bladder pump, Teflon-lined tubing	ASAP	DQO Level II+I13, Screening	Oxidation Reduction Potential (ORP)	Direct Read Meter/Flow-thru cell	ASAP	N/A	N/A
									Dissolved oxygen (DO)	Direct Read Meter/Flow-thru cell	ASAP	N/A	N/A
									Temperature	Direct Read Meter/Flow-thru cell	ASAP	N/A	N/A
									Color	Field Visual	ASAP	N/A	N/A
									pH	Direct Read Meter/Flow-thru cell	ASAP	N/A	N/A
									Tubidity	Direct Read Meter/Flow-thru cell	ASAP	N/A	N/A
									Visual Particulate	Field Visual	ASAP	N/A	N/A
									Carbon Dioxide	Field Read - Hach Digital Titrator Kit	ASAP	N/A	N/A
									Ferrous Iron	Field Read - Hach Colormetric Meter	ASAP	N/A	N/A
Groundwater Monitoring	All monitoring wells in LTM system	Water	Quarter, Semiannual, Annual, Biennial event	Quarterly= 60 + 6 dup + 6 MS/1 MSD Total = 72 samples per event (+ EQB and TB) Semiannual = 61 + 6 dup + 6 MS/1 MSD Total = 73 samples per event (+ EQB and TB)	Grab; Low flow technique	Flow-thru cell, bladder pump, Teflon-lined tubing	14 days	DQO Level III,	Volatiles	8021B/8260B	14 days	HCl pH<2; Cool to 4°C	(2) 40 ml vial
									Alkalinity	EPA 310.1	14 days	Cool to 4°C	(1) 200 mL
									Nitrate/Nitrite	SW9056	48 hours	Cool to 4°C	(1) 500 mL HDPE
									Bromine				
									Chloride		28 days	Cool to 4°C	(1) 500 mL HDPE
									Sulfate				

Table 7-2

Sample and Analysis Summary

Rev. 3 MI Long-Term Groundwater Monitoring Plan

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Methods	Holding Time	Sample Preserva-tion	Containers
Groundwater Monitoring	All monitoring wells in LTM system	Water	Quarter, Semiannual, Annual, Biennial event	Annual = 63 + 6 dup + 6 MS/1 MSD Total = 75 samples per event (+ EQB and TB)	Grab; Low flow technique	Flow-thru cell, bladder pump, Teflon-lined tubing	14 days	DQO Level III,	Suflide	EPA 376.1	7 days	Cool to 4°C NaOH, ZnAC	(1) 500 mL glass
									TOC	EPA 415.1	28 days	H3PO4 pH<2; Cool to 4°C	(1) 125 mL glass
				Biennial = 67 + 6 dup + 6 MS/1 MSD Total = 79 samples per event (+ EQB and TB)					Total Manganese	6010B	6 months	HNO_3 pH<2; Cool to 4°C	(1) 500 mL HDPE
									Methane, Ethane, Ethene	AM 19A	14 days	Cool to 4°C	
				All samples collected at same time = 71 + 7 dup + 7 MS/1 MSD Total = 85 samples per event (+ EQB and TB)									
	Equipment Rinsate Blank	Water	1 per 10 samples (10%)	1 per event	Prepared in Field	Analyte-free water, SS funnel	14 days	DQO Level III,	Volatiles	8260B	14 days	HCl pH<2; Cool to 4°C	(2) 40 ml vial
									Alkalinity	EPA 310.1	14 days	Cool to 4°C	(1) 200 mL
									Nitrate/Nitrite	SW9056	48 hours	Cool to 4°C	(1) 500 mL HDPE
									Chloride	SW9056	28 days	Cool to 4°C	(1) 500 mL HDPE
									Sulfate	SW9056			
									Suflide	EPA 376.1	7 days	Cool to 4°C NaOH, ZnAC	(1) 500 mL glass
									TOC	EPA 415.1	28 days	H3PO4 pH<2; Cool to 4°C	(1) 125 mL glass
									Total Manganese	6010B	6 months; Hg = 28 days	HNO_3 pH<2; Cool to 4°C	(1) 500 mL HDPE
	Trip Blank	Water	1 per cooler containing volatile samples	Avg 2 per event	Prepared by Lab	N/A	14 days	DQO Level III, CCI Level C	Volatiles	8260B	14 days	HCl pH<2; Cool to 4°C	(2) 40 ml vial

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Table 7-2

Sample and Analysis Summary

Rev. 3 MI Long-Term Groundwater Monitoring Plan

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Methods	Holding Time	Sample Preserva-tion	Containers
IDW Disposal Characterization Sampling													
Disposal in the Groundwater Extraction System	Well Development, Purge Water and Decon Fluids	Water	One Representative Sample to comply with the Memphis Depot Industrial Discharge Agreement with the City of Memphis	One	Grab	Drum thief or dip jar	14 days	DQO Level III	TCL Volatiles	8260B	14 days	HCl pH<2; Cool to 4°C	(3) 40 ml vial
									TAL Metals	6010B/7470A	6 months; Hg = 28 days	HNO_3 pH<2; Cool to 4°C	(1) 500 mL HDPE
									TCL Semi-Volatiles	8270C	7 day extr; 40 day analysis	Cool to 4°C	(1) Amber Liter Glass Jar
Soil Disposal Character-ization Sampling	Drill cuttings in roll-offs	Soil	2	1 per roll-off	Auger down to various depths	SS Auger, SS Spoons, SS Bowl	14 days	DQO Level III	TCLP Volatiles	1311/8260B	14 day TCLP extr; 14 day analysis	Cool to 4°C	(1) 4 oz glass
									TCLP Semi-Volatiles	1311/8270C	14 day TCLP extr; 7 day extr; 40 day analysis	Cool to 4°C	(2) 8 oz glass
									TCLP Pesticides	1311/8081A	14 day TCLP extr; 7 day extr; 40 day analysis		
									TCLP Herbicides	1311/8151A	14 day TCLP extr; 7 day extr; 40 day analysis		
									TCLP Metals	1311/6010B, 7470A	6 month TCLP extr; 6 month analysis Hg. 28 day TCLP extr; 28 day analysis	Cool to 4°C	(2) 8 oz glass
									Ignitability	1030	ASAP		
									Corrosivity	9045A	ASAP		
									Reactivity	Chapter 7.3	ASAP		

NA- Not Applicable

Notes. 1 - Wells will be purged with QED or equivalent low-flow device. Samples will be collected using teflon tubing and pump

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8.0 Data Management, Analysis, and Interpretation

8.1 Data Management

Data management for this LTM program will match the requirements of the DQOs presented in Section 6.0. Data will include field data from direct-reading instruments and laboratory analysis of samples. The information presented in this section is considered supplemental to the *Final Generic QAPP* for the Memphis Depot activities.

8.1.1 Sample Numbering System

During sampling events conducted during the field effort, nomenclature will be used to distinguish between categories of sampling events, sample locations, and, where appropriate, depth of sample collection. Sample numbering protocol will be as shown in Table 8-1.

8.1.2 Screening Data Management

Field screening efforts will include ambient air screening around monitoring wells; monitoring well borings; confirmation borings using an OVA-FID; screening of groundwater during purging procedures with portable direct-reading instruments; and field analysis of various parameters using Hach field test kits. During field measurements, the data collected from instruments will require the full attention of the operator to ensure that reported values are not misinterpreted or misunderstood. Data that will be recorded with each measurement include the following:

- Date and time
- Elapsed time since test began, as necessary
- Location of measurement and/or location where the sample was collected, as necessary
- Instrument measurement

Each measurement will be handwritten into a field logbook and the data will be transferred into an electronic file.

Other field notes to be collected and written in the field logbook include: weather information; personnel present during onsite activities; subcontractor names and activities; sketches of the site; and all other pertinent information that may affect study results. Also recorded in the field notes will be Hach field test kit calibration procedures, Hach test results, and observations made during the field analysis process. This information will be included in the Annual Groundwater Monitoring Report, as necessary.

Laboratory screening data will be collected using standard laboratory methods. The data quality will be limited by the level of QA/QC procedures applied. All results of screening tests conducted by laboratories will be qualified in the reports of the treatability tests to assure appropriate use.

8.1.3 Analytical Laboratory Data Management

Multiple samples will be submitted to an analytical laboratory for VOC and natural attenuation analysis and reporting. During collection of groundwater and soil samples, the date, time, location of sample collection, and sample number will be recorded in the field logbook. This information will be transferred, as required, to the chain-of-custody documents. Copies of the chain-of-custody documents will be kept at the site until the project is over and will be transferred to the site files for record keeping.

After the analytical data have been received from the laboratory, the data will be stored electronically, summarized, and reproduced for the Annual Groundwater Monitoring Reports, described in Section 9. All data will be reviewed by a project chemist for QA prior to finalization. If there are any differences between the chemist's and the laboratory's review of the data, a letter report will be issued describing the differences and any potential results from the study. An electronic deliverable (EDD) will be submitted according to parameters set forth in the SEM Environmental Data Management System tool set (EDMS).

Data management tasks for CH2M HILL Memphis Depot projects have been accomplished through the use of the EDMS. The current tool set being utilized is EDMS97_Generic. This CH2M HILL tool set is proprietary software, and was developed to support a variety of needs and site management projects. The EDMS tool set is Microsoft Access 97 based, with associated project data tables residing in either an Access 97 database or in a Microsoft SQL Server database. Through the use of menu-driven screens, the various EDMS components can provide both field and analytical support for a project.

Field data support includes the management of field data such as location survey information, field sampling information, well construction information, lithology and stratigraphic data, water level data, in situ field measurements, downhole measurements, and vapor data. In addition, field support includes the ability to generate sample container labels, chain-of-custody documentation, and various reports to assist with the scheduling and login functions.

Analytical data support includes automated QC checks of the laboratory EDDs, support for the data validation and data quality evaluation functions, and the generation of both electronic and hard copy data deliverables. EDDs include data exports for risk assessment support, CAD support, GIS support, as well as client-specified EDDs. In addition, standardized and custom data tables or reports can be generated to support the project report development process.

The laboratory EDDs are submitted by the laboratory in a comma separated variable (CSV) format that is directly importable by EDMS. The EDD consists of 47 fields of data per row, which represents one record. Each record in the EDD is one analytical result, and all the information required to evaluate that record or link it to its associated laboratory QC is contained in that record. Additional information on the EDMS system can be found in Attachment D.

All analytical fractions are reviewed, data are validated for compliance with the analytical method requirements, and findings documented. This process also includes a review of the data to assess the accuracy, precision, and completeness following procedures modeled on the following:

- *Chemical Quality Assurance for Hazardous, Toxic and Radioactive Projects* (EM-200-1-6) (U.S. Army Corps of Engineers, 1997)
- *National Functional Guidelines for Organic Data Review* (USEPA Contract Laboratory Program, October 1999)
- *National Functional Guidelines for Inorganic Data Review* (USEPA Contract Laboratory Program, July 2002)

QA/QC summary forms and data reports are reviewed.

8.2 Data Analysis and Interpretation

Laboratory analytical and field natural attenuation data for all sampling efforts will be summarized (tabulated) and graphed in Annual Groundwater Monitoring Reports. Data collected at each monitoring location during LTM will be compiled to compare changes/trends in the natural attenuation and target groundwater analytical parameters during sequential sampling events. Additional information on the annual report contents can be found in Section 9.

Analytical data will also be routinely contoured by an experienced investigator using Surfer 8.0 (or similar software) to view changes within each natural attenuation parameter as well as VOCs and degradation products. Radial concentration plots of natural attenuation parameters will also be developed for each well and sampling event and placed on a map to identify site-wide patterns. All Surfer 8.0 and radial concentration maps will be presented within the Annual Groundwater Monitoring Report. As data sets are developed from sampling, the data will be analyzed using the Mann-Kendall test, as described in Section 4.4, to identify possible trends and assess potential required changes in sampling frequency.

Groundwater modeling of the natural attenuation process may be performed to optimize the LTM program. The groundwater model will use the available analytical results and groundwater parameters. The results of the modeling may be used to reassess the rates of natural attenuation of the contaminant plumes.

TABLE 8-1
Sample Numbering Protocol
Rev. 2 MI Groundwater Monitoring Plan

Sampling Event	Type of Sample(s) and Location	Sample Number Description	Example Sample Number
Treatment Area Baseline Sampling of Monitoring and Injection Wells	MI Groundwater	All samples will be designated "TTA1--B" to reflect this baseline event at Area 1 and "TTA2-B" to reflect the baseline event at Area 2. Sample numbers will reflect monitoring well locations.	MW148-TTA1-B
MI Wide Baseline Sampling of Monitoring Wells	MI Groundwater	All samples will be designated with a "-B" to reflect this baseline event. Sample numbers will reflect monitoring well locations.	MW141-B
Treatment Area and MI wide Quarterly Sampling of Monitoring and Injection Wells	MI Groundwater	Samples will be designated "QE" to reflect the quarterly event. A number (beginning with 1) will be posted at the end of "QE" reflecting the sequential sampling events. Sample numbers will reflect monitoring well locations	MW92-QE-1
Treatment Area and MI-wide Biannual, Annual, or Semiannual Sampling of Monitoring and Injection Wells	MI Groundwater	All samples will be designated with either "BA", "A", or "SA" followed by a number (beginning with 1) reflecting the sequential sampling events. Sample numbers will reflect monitoring well locations.	MW16-BA-1 or MW23-A-1 or MW63A-SA-1

Notes

For duplicate samples, a "false" well number will be used in order to create a double-blind duplicate. Matrix spike/matrix spike duplicates will be denoted with an "MS/MSD" at the end of the sample number. Equipment, field, and trip blanks will be designated with "EB", "FB", and "TB", respectively.

If groundwater samples are collected with PDBs, each sample number must reflect the top and bottom depth of the diffusion bag in the well.

9.0 Program Review Plan

This section presents information on the contents of the Annual Groundwater Monitoring Report, as well as information on potential optimization aspects of the LTM program.

9.1 Reporting Requirements

Quarterly monitoring reports will be reduced to searchable databases that will be posted on the worldwide web or given to stakeholders on a compact disc (CD). The validated data will typically be available 2 months after the end of each sampling event. The Annual Groundwater Monitoring Report will be a much more comprehensive document, and will include:

- Summary of the scope of activities to date within the time period that the report covers
- Summaries and description of field and analytical data collected to date
- Basewide well location maps for all monitoring and injection wells
- Any deviations that occurred from the approved sampling and analytical standard operating protocols during the previous year.
- Maps showing plumes, COCs, contaminant concentration and mass, and potentiometric surfaces
- Description of wells installed or abandoned within the monitoring period
- Review of geology and hydrogeology, including cross-sections, of the site A cumulative presentation of data (and trend analyses as appropriate) indicating the progress of the remedy toward achieving the RAOs.
- Data Quality Evaluation reports
- Effectiveness summary of the enhanced bioremediation treatment system and of the entire remedy in comparison to RAOs (see Section 9.1.1 below)
- Optimization efforts within the LTM program
- Evaluation of possible new exposure pathways and receptors (i.e., risk assessment re-evaluation)

The annual Groundwater Monitoring Program report will be 60 days after receipt of data from the annual or fourth quarter sampling events. Annual Groundwater Monitoring Reports will be made available electronically and on the worldwide web. Paper copies of final documents will be sent to the information repositories and one paper copy of all primary documents will be sent to EPA.

9.1.1 Remedial Process Review

In parallel with the development of the Annual Groundwater Monitoring Report, annual performance assessments are required under the Defense Environmental Restoration Program (DERP) guidance. These assessments consist of reviewing the remedy for effectiveness and advancement toward achieving RAOs. Figure 9-1 presents a flow chart for the annual evaluation process. If the remedy has not achieved the RAOs, the following process review points may be addressed:

- Is the remedy performing as intended against established performance metrics?
- Are there methods for optimization to improve the performance of the remedy?
- Are other remedies available that can achieve better performance?

If all of the answers are positive, the remedy may undergo a review for optimization or a contingency remedy may be identified and implemented. If the process review indicates that all of the responses are "no," then the remediation may undergo evaluation of technical impracticability. This review may ultimately lead to continuing with the selected remedy and LTM of performance. If the groundwater data indicate that COCs are migrating off-site or into underlying aquifers at levels greater than MCLs, the BCT will evaluate changes to the remedial action plan as discussed in Section 3.4 of the Final RD.

9.2 Optimization Elements of the LTM

This section presents several possible aspects of optimization to be considered after data are accumulated from the monitoring events. The optimization process focuses on collecting relevant data and optimizing the LTM process in order to most efficiently achieve the objectives of the LTM program and eventually enabling it to be terminated. To promote efficiency of an existing LTM program, the optimization process should be reviewed and updated periodically using the LTM optimization guidance principles developed by AFCEE (1997).

9.2.1 Groundwater Analysis

Data analysis will be performed on a consistent basis as outlined in Section 8.3. As data packages are developed, software can be used to make the LTM program more efficient and effective. For example, the Monitoring and Remediation Optimization software (MAROS)[3] is a decision support tool based on statistical methods applied to site-specific data that accounts for relevant current and historical site data as well as hydrogeologic factors (e.g. groundwater velocity) and the location of potential receptors (e.g., wells, discharge points, or compliance boundaries). Based on this site-specific information, the software helps identify monitoring wells that are: (1) sampled too frequently, or (2) redundant because the well provides little additional information about the plume. The software is intended to serve as a combined data management/data analysis system for those involved in monitoring groundwater plumes but who are not statistical experts.

9.2.2 Optimization of Groundwater Monitoring

The role of groundwater monitoring has changed over the past decade, from tracking the basewide distribution of indicator chemicals, to tracking COCs during the individual site remedial investigations, to the current program of monitoring the performance of RAs and assessment of natural attenuation. Groundwater RAs and associated monitoring are long-term activities because of the slow dissolution of non-aqueous liquids, the gradual desorption of contaminants from the soil matrix to the groundwater, the large variability of groundwater flow velocities, and the slow diffusion of contamination from low-permeability zones within the aquifer.

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[3] MARO is a public-domain software developed by Groundwater Services, Inc. for the AFC to assist in implementation of the AFCEE Optimization Guide (AFCEE 1997). Additional information and guidance on how to use MARO can be found in Aziz et al, 2000.

The main objective of natural attenuation assessments is to verify plume control using measurements of naturally occurring physical, chemical, and biological processes. This is primarily accomplished through groundwater quality sampling downgradient from the plume to show that the plume is not migrating.

Groundwater monitoring during LTM is also conducted to gather data to support periodic modeling updates, to support the 5-year reviews, to support the selection of permanent remedies as part of the *MI ROD*, to support potential technical impracticability waivers, and to support site closeout decisions. To help optimize the groundwater monitoring process towards site closeout, the following processes should be considered:

- The frequency with which individual monitoring wells will be sampled will be determined by the location of the well with respect to the plume—a decision tree (see Figure 5-1) summarizes the rules governing sampling frequency.
- Samples collected during all sampling events for VOCs will be analyzed for an abbreviated list of 27 chemicals instead of the entire suite of EPA Method SW8260 analytes. Using this approach will not result in cost savings for analyses. However, there will be savings in the labor costs for sample management, data validation, database management, and EDMS submittals to the BCT. Queries will be run much faster, and the size of the database will lend itself more easily to web-based applications. EDMS submittals will be reduced by thousands of data points, which will significantly reduce the labor time involved.
- Computer applications will be increasingly utilized for data validation of samples collected at locations with a long historical record.
- Modified low-flow sampling with peristaltic pumps, bladder pumps, and dedicated Teflon® tubing will be the default groundwater sampling technique.
- Sampling events should be timed so that biannual, annual, semiannual, and quarterly events are performed during the same mobilization, as much as possible.
- Quarterly Groundwater Monitoring Reports will consist of the electronic data summaries provided on a CD or made available on the internet. A brief technical memorandum will summarize the key findings of these events. The Annual Groundwater Monitoring Report will include data summaries and will also provide interpretations of the data.

9.2.3 Reducing Quality Assurance/Quality Control Requirements

The Memphis Depot *Final Generic Quality Assurance Project Plan* (CH2M HILL, 1995) [QAPP] is a flexible document, and may be changed as the needs of the LTM program change. The RA contractor will be developing the new QAPP for the MI and Dunn Field. Currently, the QAPP requires one field duplicate is taken for every 10 samples, and 1 MS/MSD is taken for every 20 samples. The MS/MSD is actually two analyses (both the MS and the MSD are analyzed), so although it appears less frequently than field duplicates, the costs are equivalent. Trip blanks accompany samples to the lab, one trip blank per cooler.

The frequency of collecting field duplicates and MS/MSDs may be reduced without jeopardizing data quality. Several years of high-quality data have been collected to support

RD activities at the MI. Site COCs have been established, as have baseline concentrations. Most monitoring wells (excluding newly installed wells) have a long history of monitoring data to which future sample results can be compared, reducing the need for field duplicates and MS/MSDs. Not only will the reduction in QA/QC sampling result in a reduced laboratory cost, but the number of sampling result data points may also be reduced. The consequence of this reduction in data points is a significant reduction in data management, data validation, and EDMS submittal costs. As these are possible optimization steps, the RA contractor will need to propose any changes to the LTM and the BCT must approve any changes.

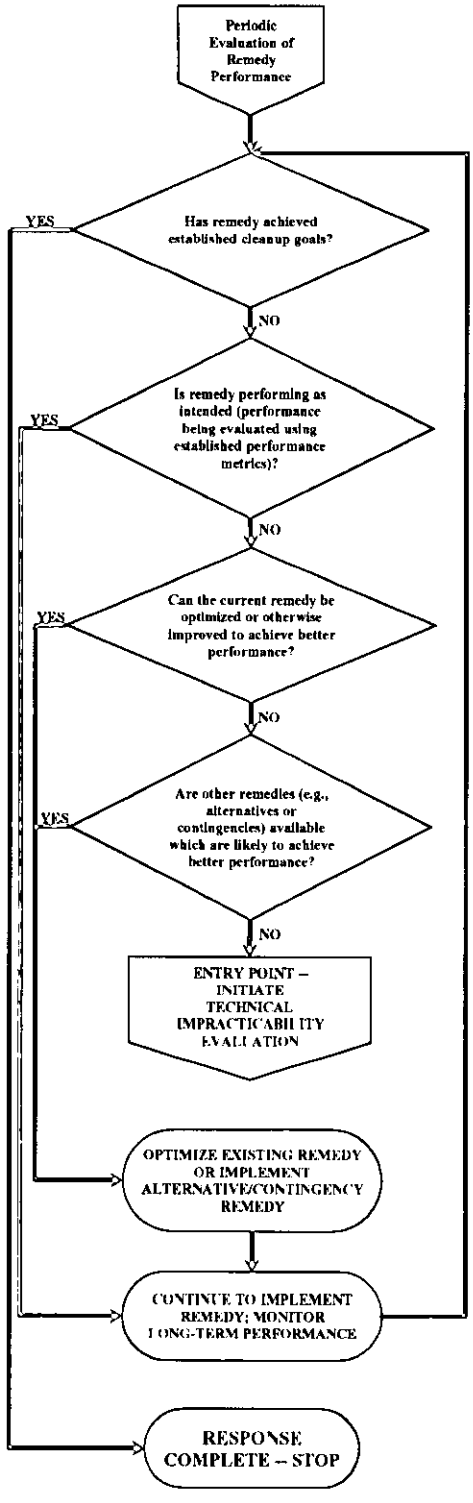
9.2.4 Data Management

Data validation is an area that can be streamlined to reduce the level of effort and labor costs. For locations with sufficient historical data, computer applications will be used to make all of the comparisons against the parameter detection limits. This will include data flagging for method blanks, equipment blanks, trip blanks, ambient blanks, laboratory control samples, matrix spike samples, surrogate recoveries, and reconciliation of dilutions and re-extractions. Locations that have insufficient historical data will be treated as at present until enough data are collected to move the location into the "well-defined" category. Automatic comparisons to historical data mean that statistical methods will be performed by the data validation application. New data will be compared against two standard deviations of the mean. Results falling outside of this limit will undergo further review.

As with the reduction in QA/QC samples, this shift in data validation procedures will occur gradually. Data package case narratives will continue to be reviewed for analytical issues. Data packages will continue to be reviewed for exception and corrective action reports. The data quality assessment reduction process will be reviewed to determine its effectiveness and how it could be improved.

Through reduction in data points (requesting a shorter list of chemical analyses and reducing QA/QC samples) and further automating data validation, much of the labor spent on data validation and database management will be eliminated. This will represent a significant optimization for the Groundwater Monitoring Program and will not jeopardize data quality.

Figure 9-1
Process Review Options for Remedial Actions
Rev. 0 MI Pre-final RD



10.0 Schedule of Activities

The wells to be sampled and analyses to be performed in Year 1 are presented in Table 10-1. The decision tree in Figure 5-1 will be applied for monitoring beyond Year 1. The Year 1 annual report will present the sampling schedule for Year 2 and any recommendations for optimizing the LTM plan. An annual review of the sampling evènts will continue until the site achieves closure status. The 5-year review report will summarize the past 5 years of the LTM. The Master MI Schedule is presented in Section 3 of the MI RD.

TABLE 10-1

Wells Scheduled for Year 1 Groundwater Monitoring Program Event

Rev. 3 MI Long-Term Groundwater Monitoring Plan

Well Number	Screened Aquifer	Well Type	VOC Short List (SW8260)				MNA Paramaters			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
MW-16	Fluvial	Background	X				X			
MW-19	Fluvial	Background	X				X			
MW-21	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-22	Fluvial	Boundary	X				X			
MW-23	Fluvial	Boundary	X				X			
MW-24	Fluvial	Boundary	X				X			
MW-25A	Fluvial	Performance	X		X		X		X	
MW-26	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-34	Fluvial	Sentinel	X	X	X	X	X	X	X	X
MW-36	Fluvial	Background	X				X			
MW-38	Intermediate	Sentinel	X				X			
MW-39	Fluvial	Performance	X				X			
MW-39A	***proposed***	Performance	X	X	X	X	X	X	X	X
MW-50	Fluvial	Boundary	X				X			
MW-52	Fluvial	Boundary	X		X		X		X	
MW-53	Fluvial	Background	X				X			
MW-55	Fluvial	Background	X				X			
MW-62	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-63A	Intermediate	Sentinel	X		X		X		X	
MW-63B	Intermediate	Sentinel	X		X		X		X	
MW-64	Fluvial	Performance	X		X		X		X	
MW-84	Intermediate	Sentinel	X				X			
MW-85	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-86	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-88	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-89	Intermediate	Sentinel	X		X		X		X	
MW-90	Intermediate	Boundary	X		X		X		X	
MW-92	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-93	Fluvial	Boundary	X				X			
MW-94A	***proposed***	Performance	X	X	X	X	X	X	X	X
MW-96	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-97	Fluvial	Performance	X		X		X		X	
MW-98	Fluvial	Performance	X		X		X		X	
MW-99	Fluvial	Performance	X				X			
MW-100B	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-101	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-102B	Fluvial	Boundary	X				X			
MW-103	Fluvial	Performance	X		X		X		X	
MW-104	Fluvial	Performance	X		X		X		X	
MW-107	Intermediate	Sentinel	X		X		X		X	
MW-108	Fluvial	Sentinel	X		X		X		X	
MW-113	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-115	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-125	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-140	***proposed***	Performance	X	X	X	X	X	X	X	X
MW-141	***proposed***	Performance	X	X	X	X	X	X	X	X
MW-142	***proposed***	Performance	X	X	X	X	X	X	X	X
PZ-03	Fluvial	Performance	X		X		X		X	
PZ-06	Fluvial	Performance	X		X		X		X	
PZ-07	Fluvial	Performance	X	X	X	X	X	X	X	X
IW-1	Fluvial	Performance	X	X	X	X	X	X	X	X
IW-6	Fluvial	Performance	X	X	X	X	X	X	X	X
MW-?	***proposed***	Performance	X	X	X	X	X	X	X	X
Total Wells			53	23	38	23	53	23	38	23

MNA Parameters

Dissolved Gases (ethane, ethene, and methane)	Bromide
Dissolved organic carbon	Chloride
Nitrate, nitrite	Ferrous Iron
Sulfate	Manganese
Sulfide	Alkalinity
Carbon Dioxide	Metabolic Fatty Acids

Legend

Background wells
Performance wells
Sentinel wells
Boundary wells

MW- Proposed performance monitoring wells and other monitoring wells, including design-related investigation wells

11.0 Site Closeout

Section 5.2.7 presents the process by which the groundwater plumes underlying the MI will achieve compliance with the RAOs. The process will include selection of wells representing each plume and will be referred to as the CWN for that plume. Groundwater quality data collected as part of the LTM program will be used to verify that the compliance monitoring stage within each CWN can begin.

If for four consecutive sampling events, the analytical results indicate that each contaminant is below the MCL in the CWN wells, then the CWN will be deemed as demonstrating compliance. Groundwater monitoring in that plume may cease, and wells unique to the plume's LTM network, including the CWN wells, may be proposed for abandonment, with approval from EPA and TDEC.

When the sampling ceases for all CWNs and all performance monitoring data indicate RAOs are attained, the MI will be eligible for closure. However, under CERCLA the Memphis Depot will not be recognized as closed until RAOs for Dunn Field have been satisfied as well. Under CERCLA, this milestone is marked by a Final Closeout Report for the Memphis Depot as a whole. Following site closure, the Memphis Depot will pursue de-listing from the NPL under the terms of the Federal Facilities Agreement (FFA).

12.0 References

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Attachment A

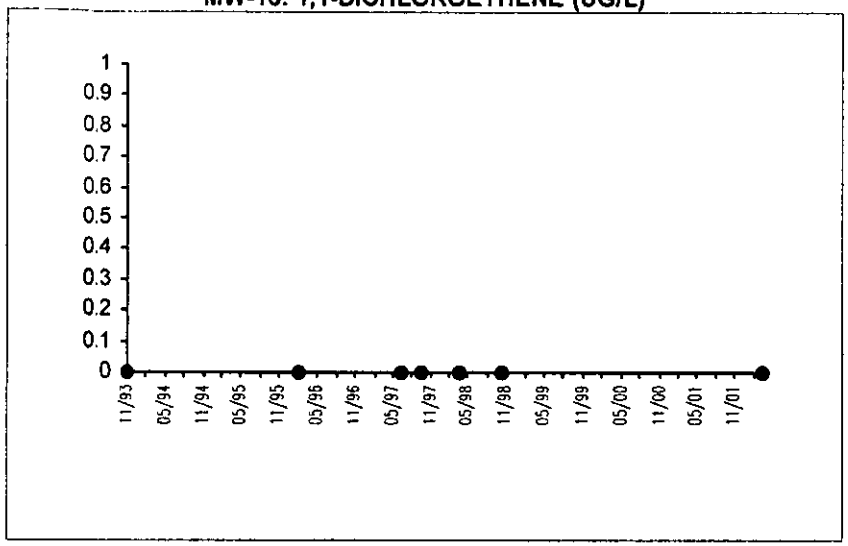
Time Versus Concentration Plots

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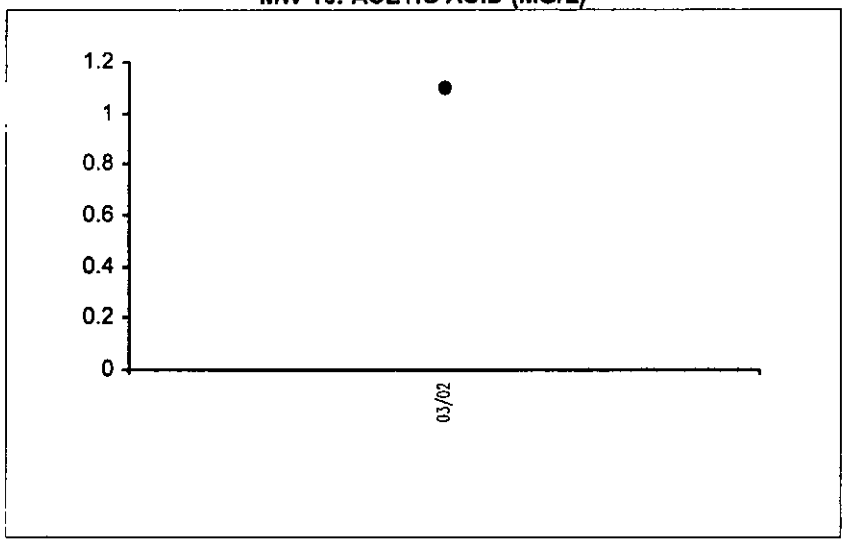
Background MW-16

Concentration vs Time

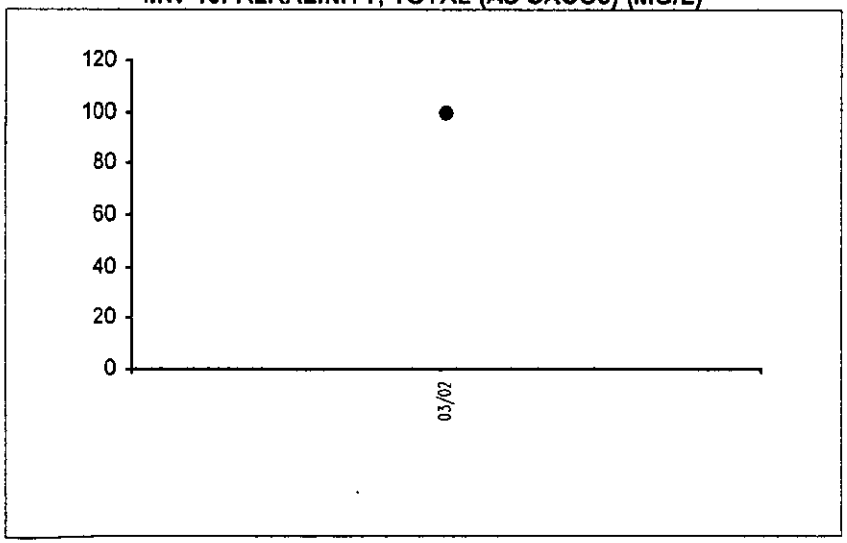
MW-16: 1,1-DICHLOROETHENE (UG/L)



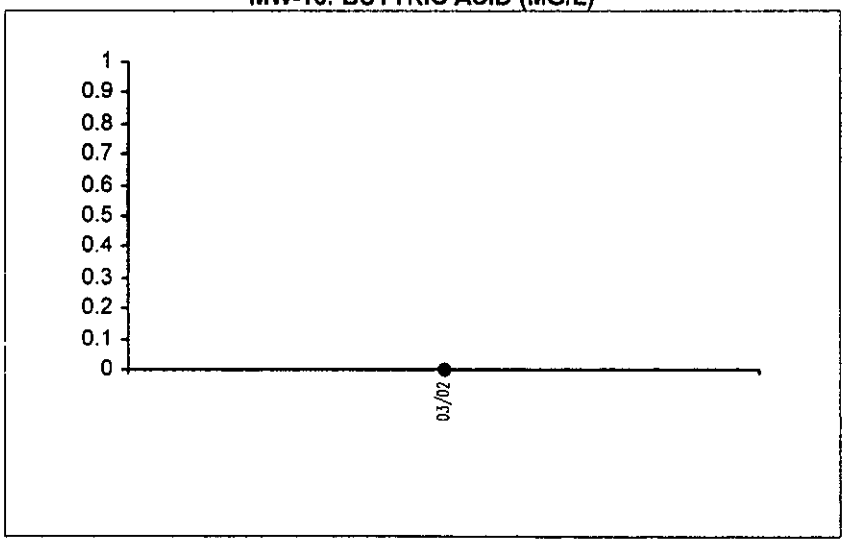
MW-16: ACETIC ACID (MG/L)



MW-16: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-16: BUTYRIC ACID (MG/L)



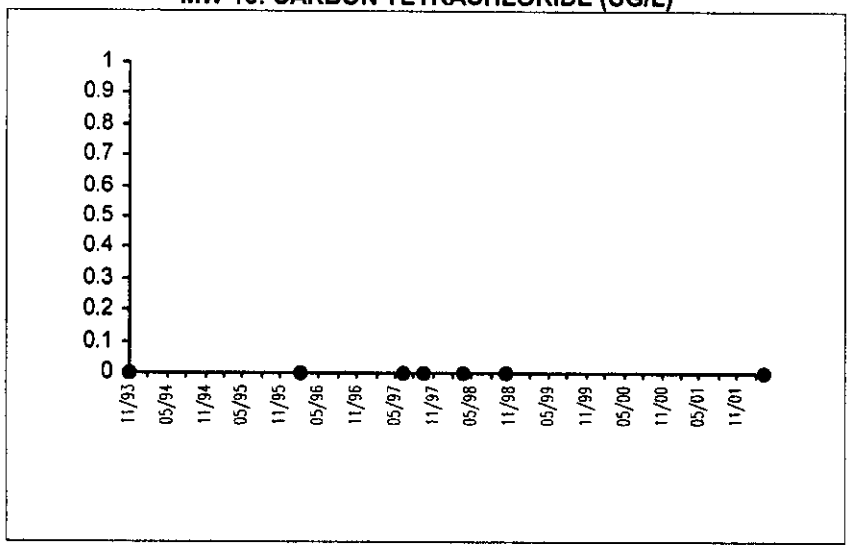
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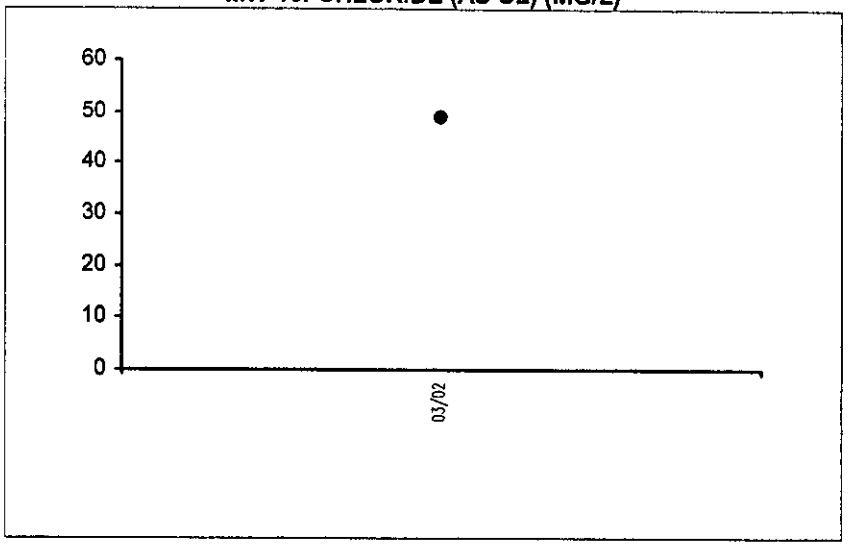
Background MW-16

Concentration vs Time

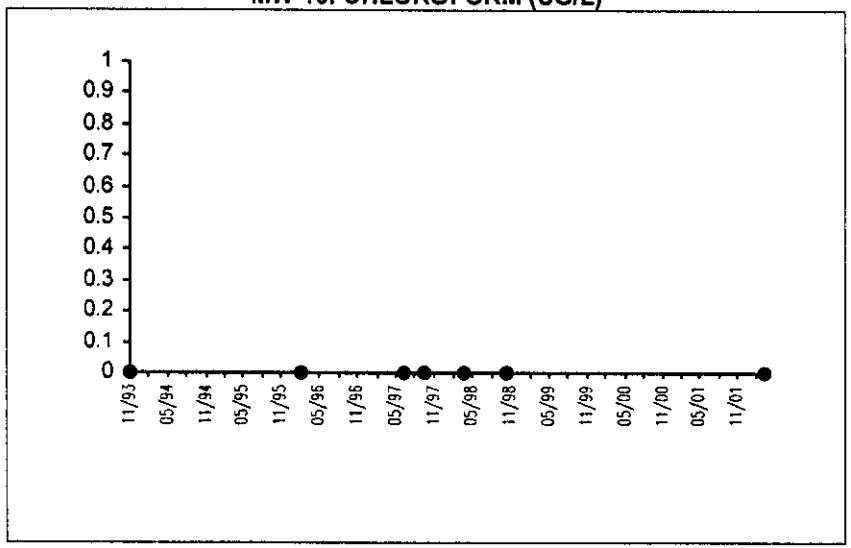
MW-16: CARBON TETRACHLORIDE (UG/L)



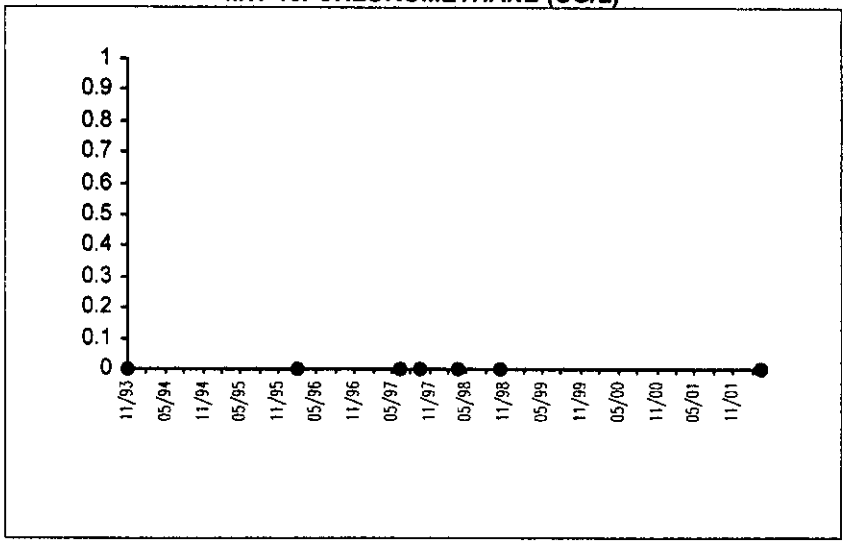
MW-16: CHLORIDE (AS CL) (MG/L)



MW-16: CHLOROFORM (UG/L)



MW-16: CHLOROMETHANE (UG/L)



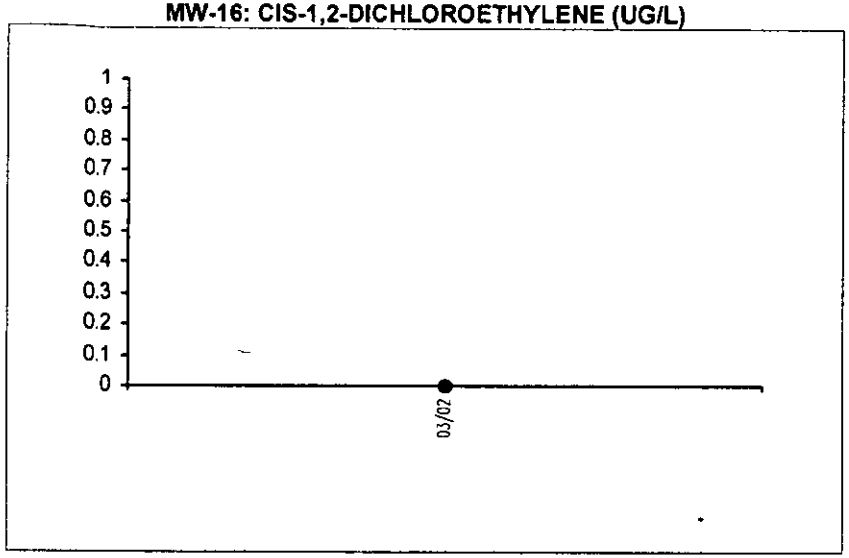
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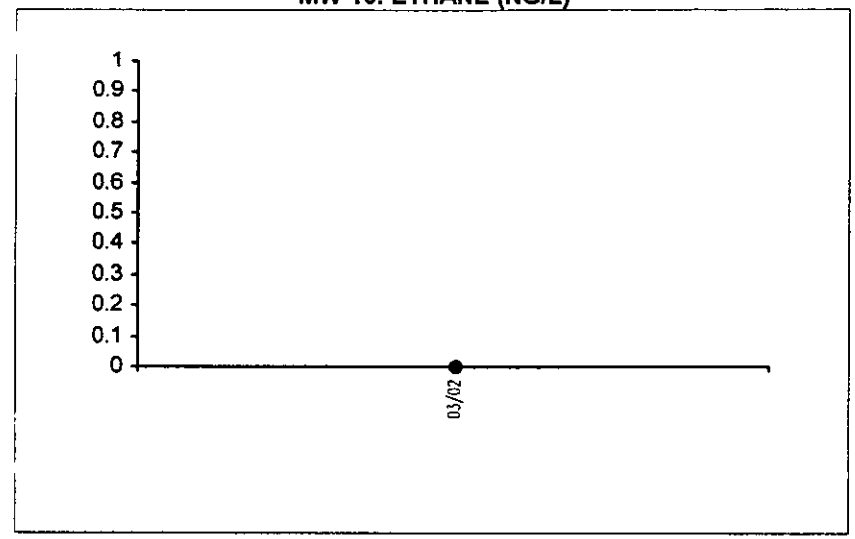
Background MW-16

Concentration vs Time

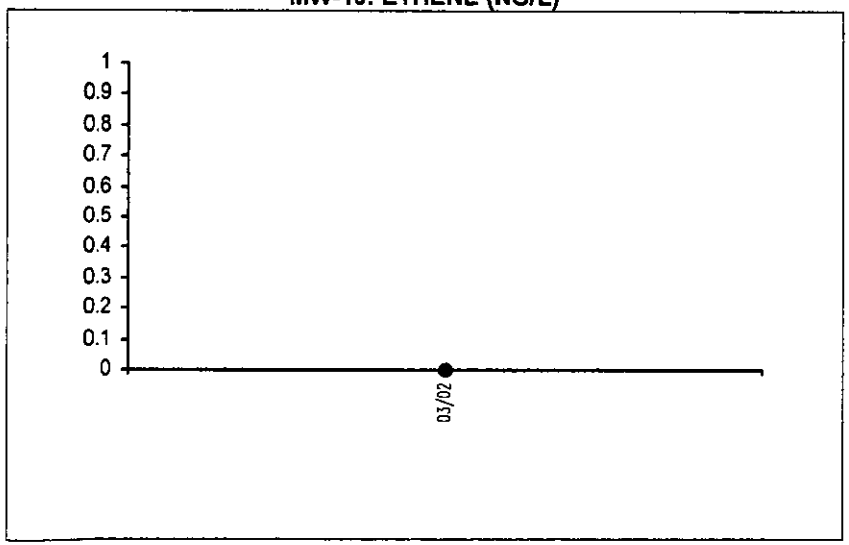
MW-16: CIS-1,2-DICHLOROETHYLENE (UG/L)



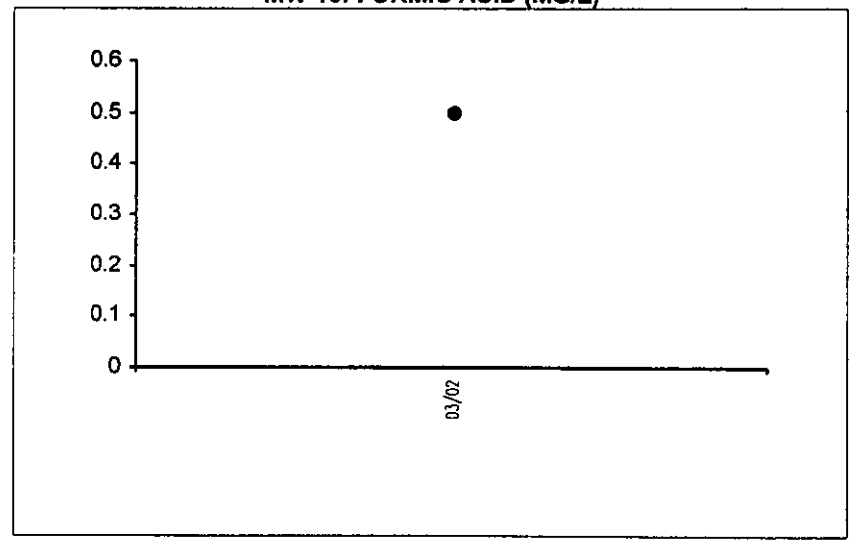
MW-16: ETHANE (NG/L)



MW-16: ETHENE (NG/L)



MW-16: FORMIC ACID (MG/L)



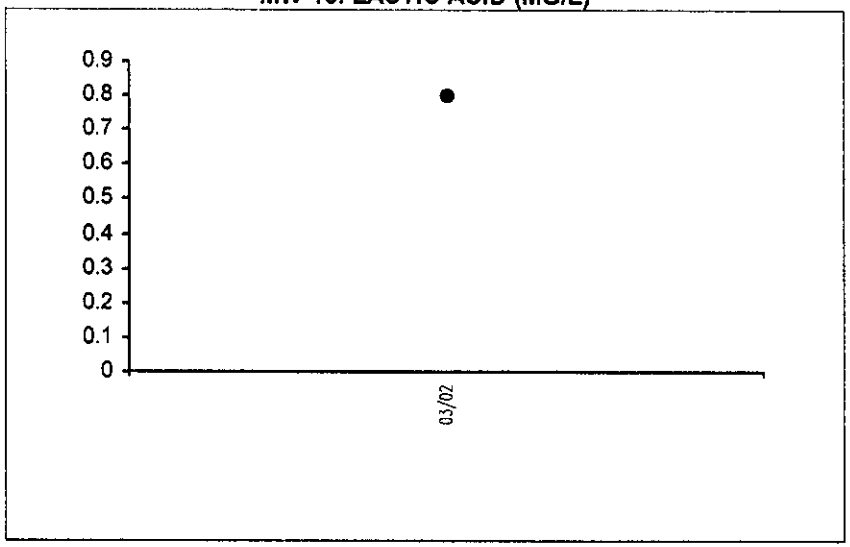
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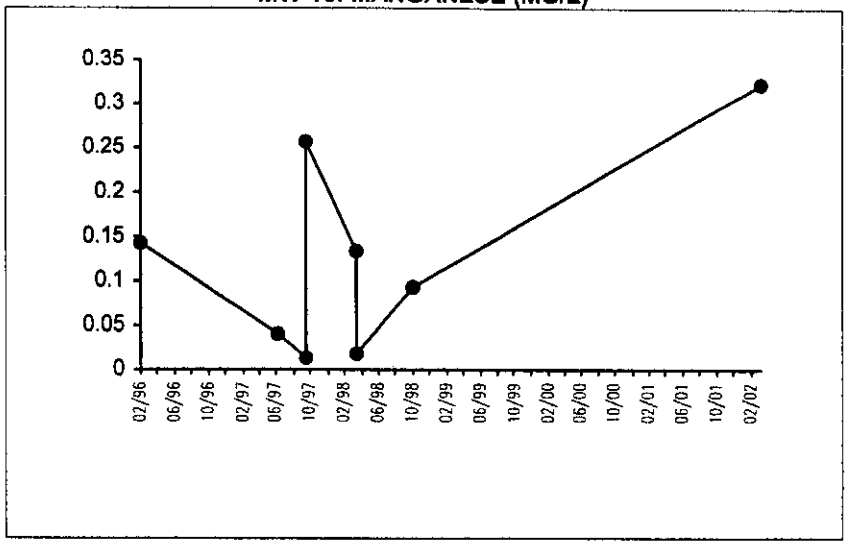
Background MW-16

Concentration vs Time

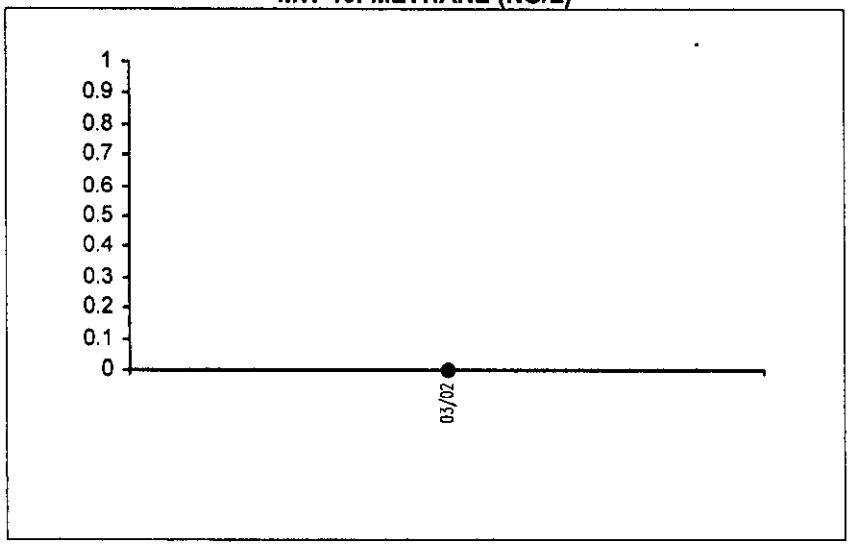
MW-16: LACTIC ACID (MG/L)



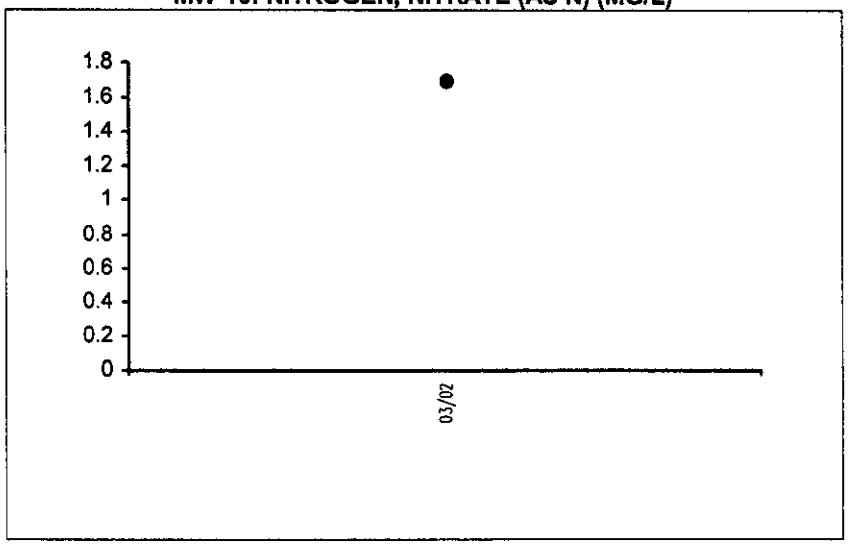
MW-16: MANGANESE (MG/L)



MW-16: METHANE (NG/L)



MW-16: NITROGEN, NITRATE (AS N) (MG/L)



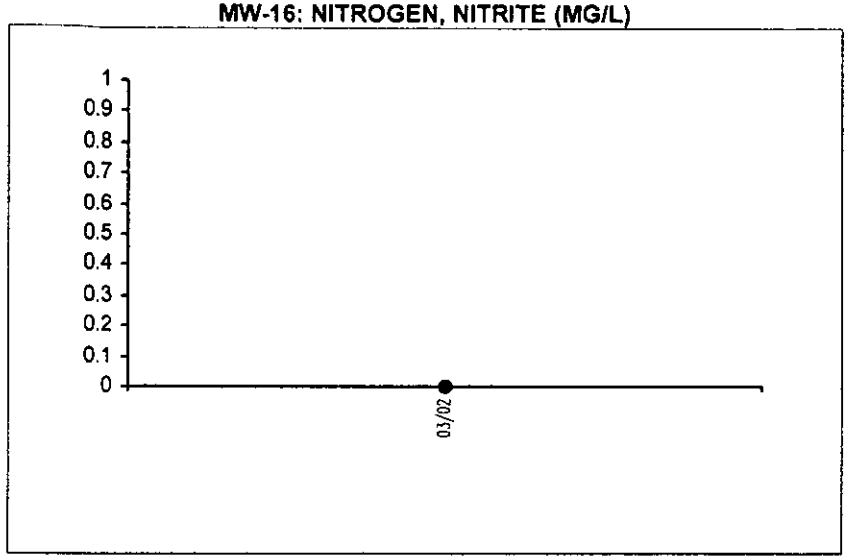
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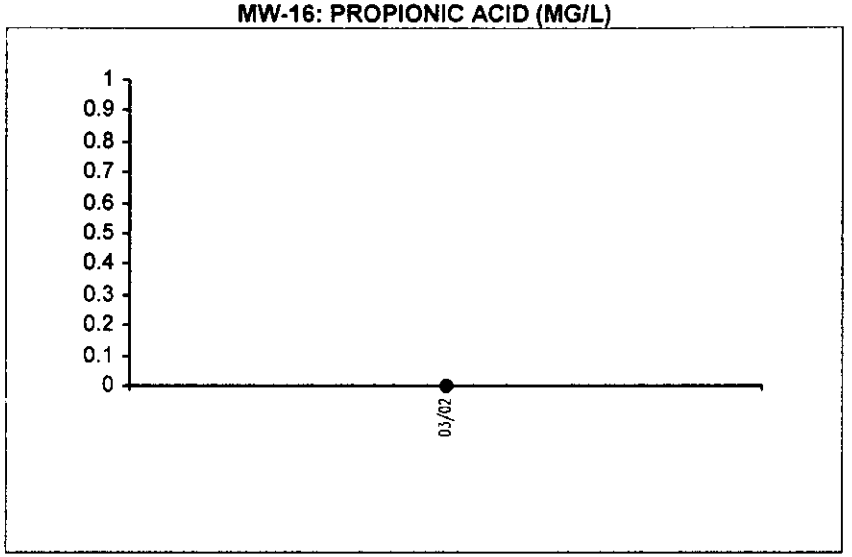
Background MW-16

Concentration vs Time

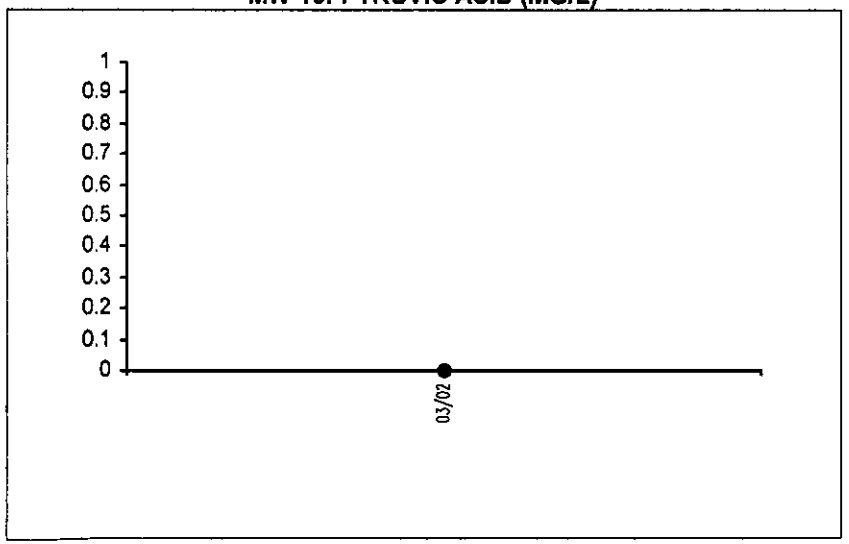
MW-16: NITROGEN, NITRITE (MG/L)



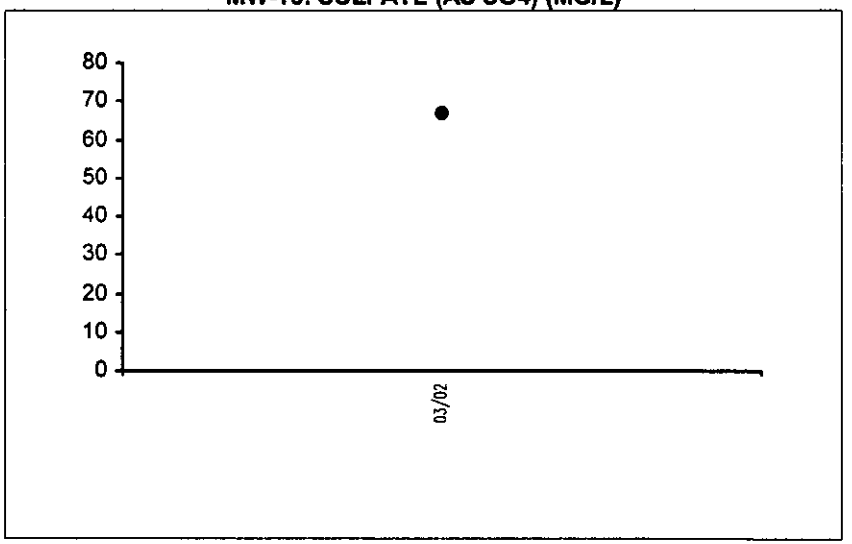
MW-16: PROPIONIC ACID (MG/L)



MW-16: PYRUVIC ACID (MG/L)



MW-16: SULFATE (AS SO4) (MG/L)



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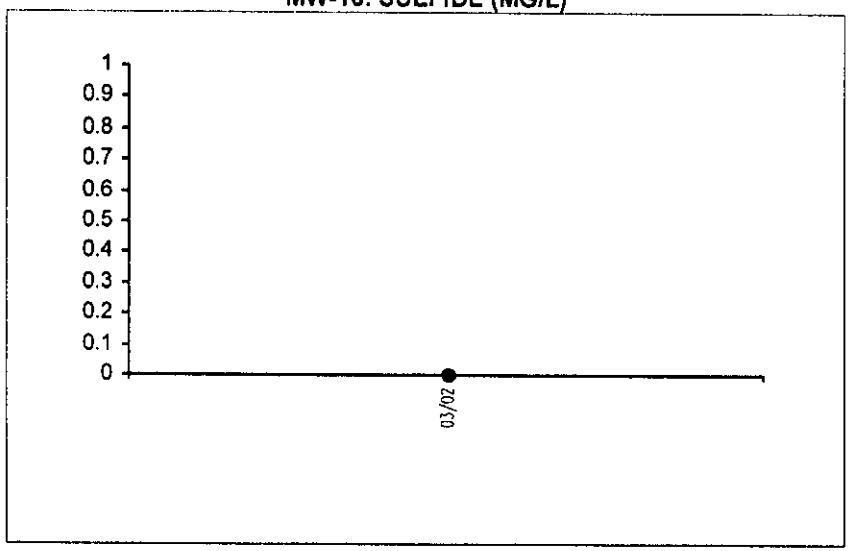
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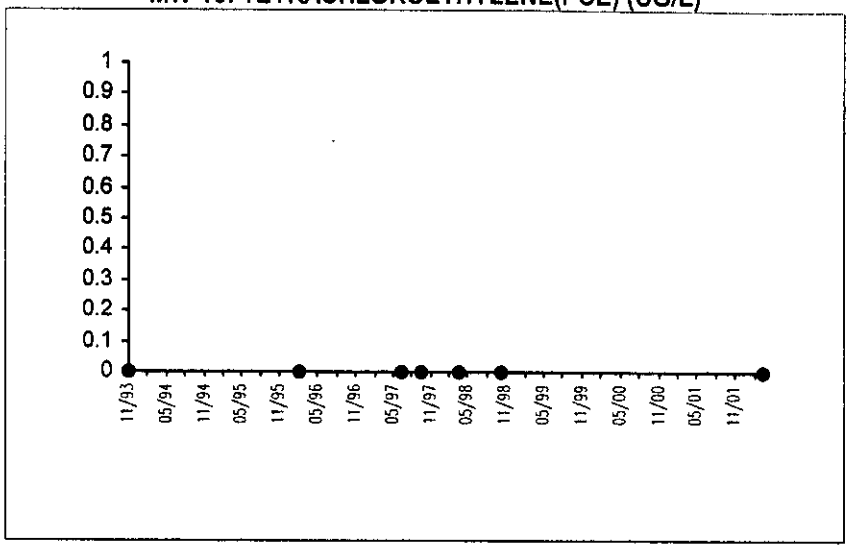
Background MW-16

Concentration vs Time

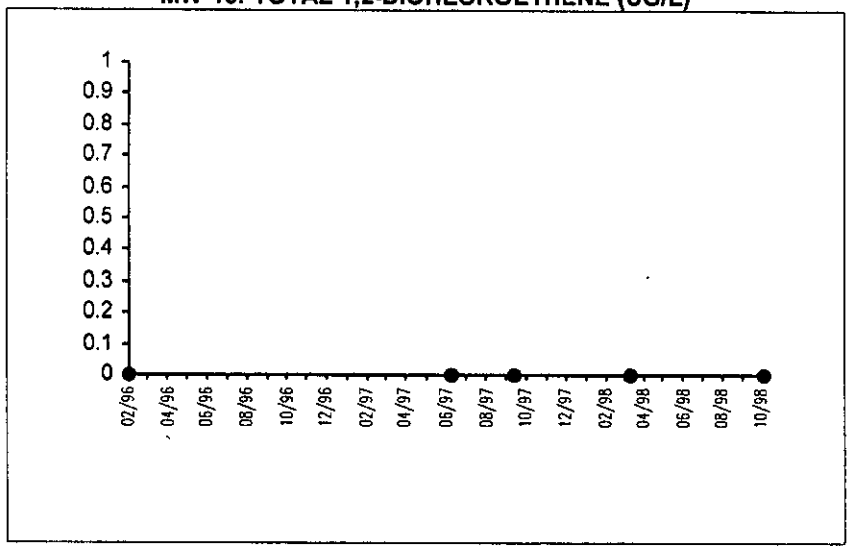
MW-16: SULFIDE (MG/L)



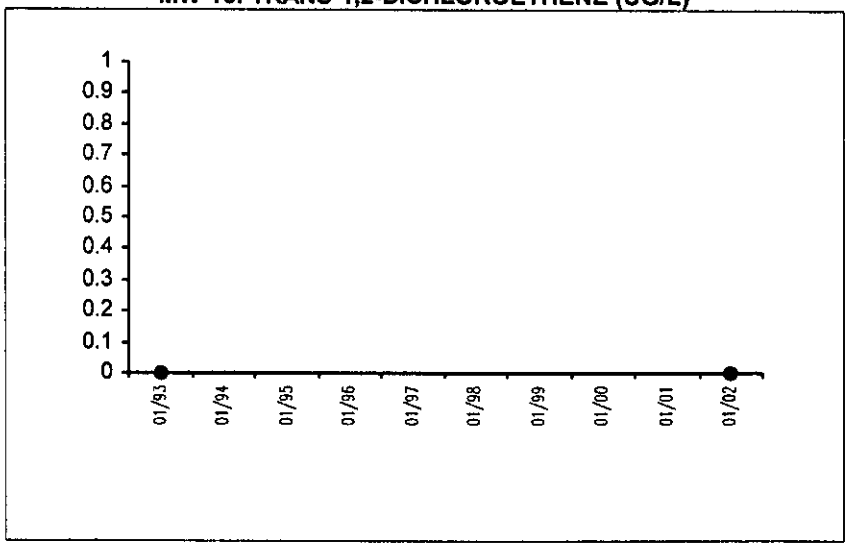
MW-16: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-16: TOTAL 1,2-DICHLOROETHENE (UG/L)



MW-16: TRANS-1,2-DICHLOROETHENE (UG/L)



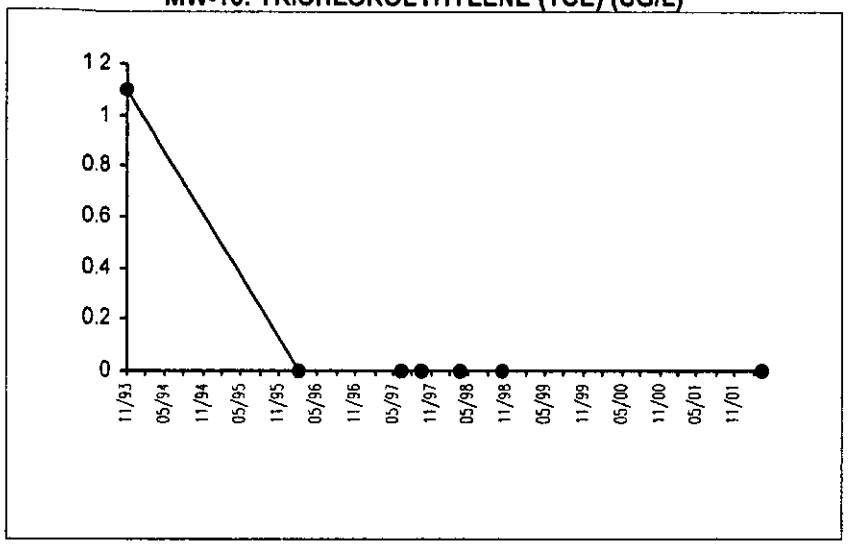
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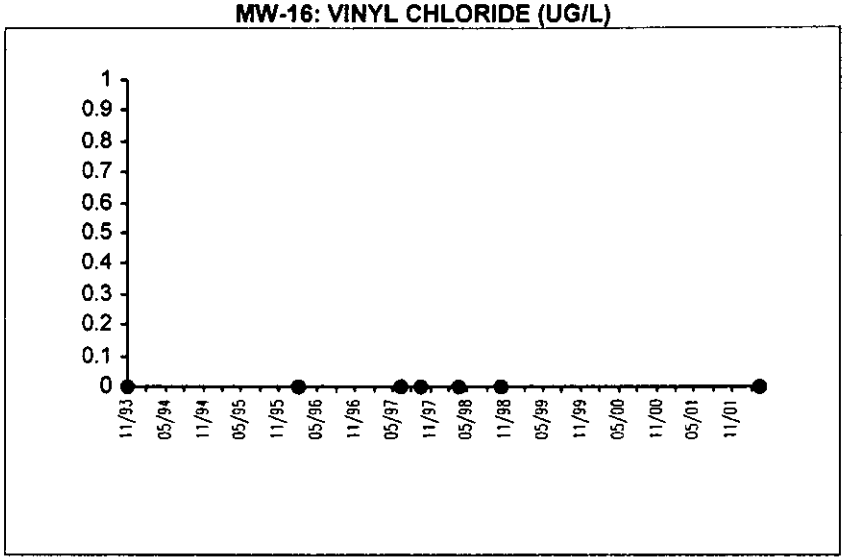
Background MW-16

Concentration vs Time

MW-16: TRICHLOROETHYLENE (TCE) (UG/L)



MW-16: VINYL CHLORIDE (UG/L)



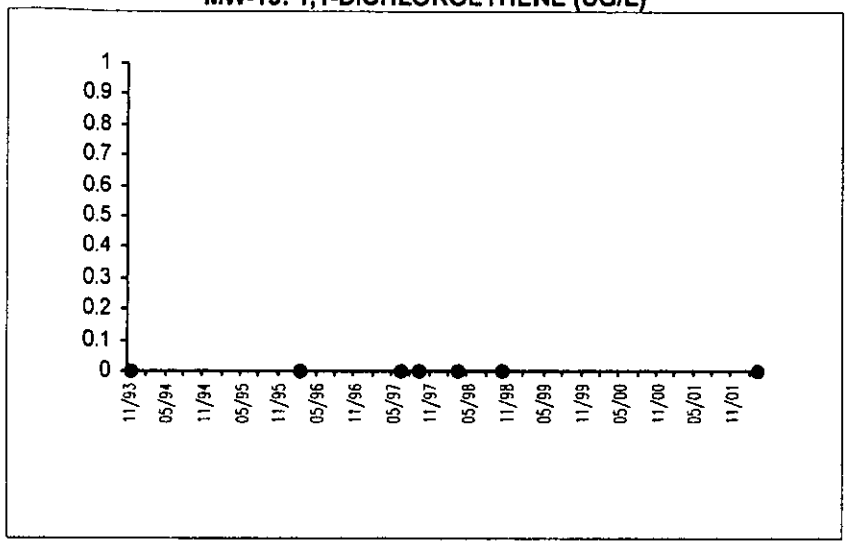
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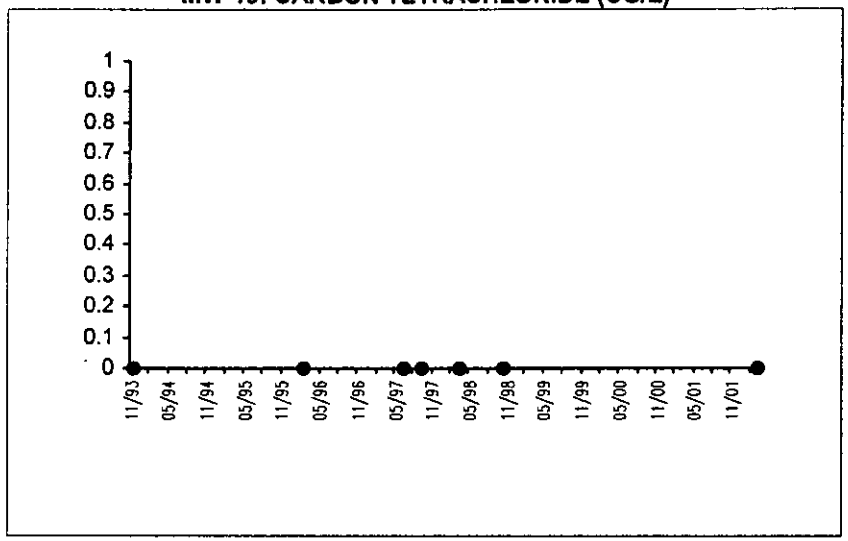
Background MW-19

Concentration vs Time

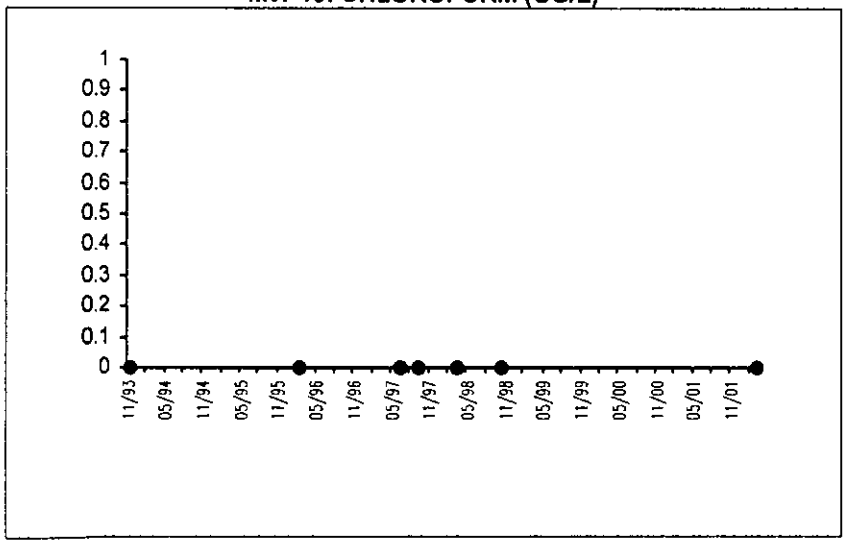
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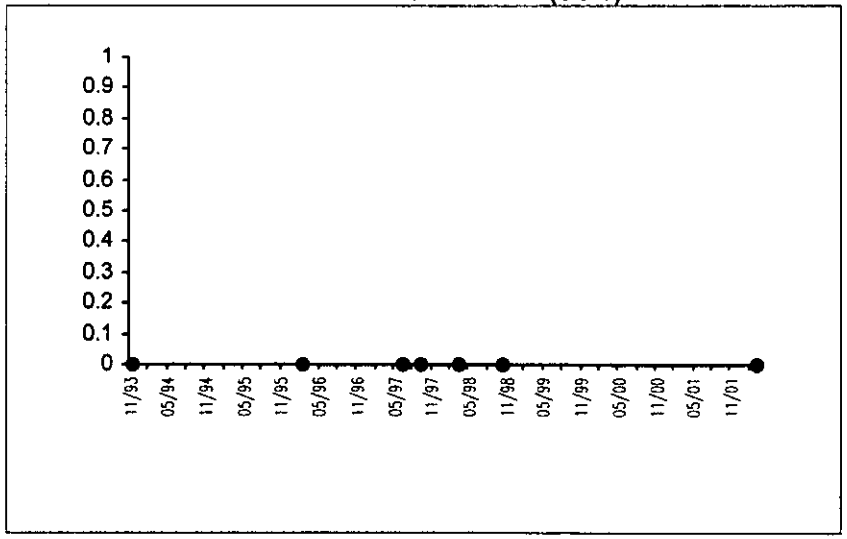
MW-19: CARBON TETRACHLORIDE (UG/L)



MW-19: CHLOROFORM (UG/L)



MW-19: CHLOROMETHANE (UG/L)



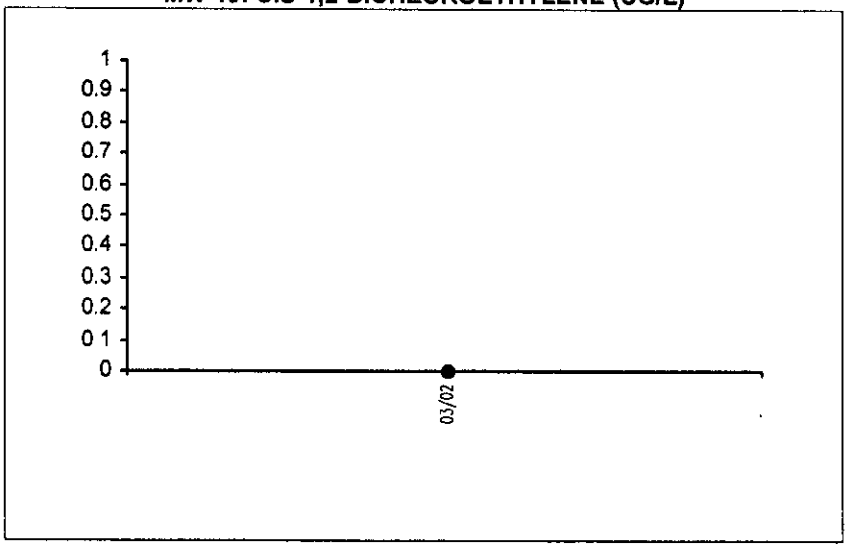
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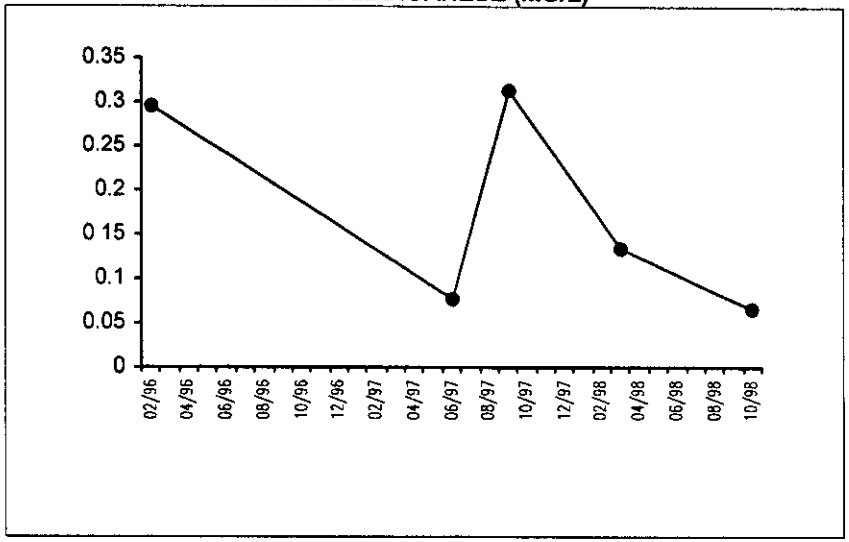
Background MW-19

Concentration vs Time

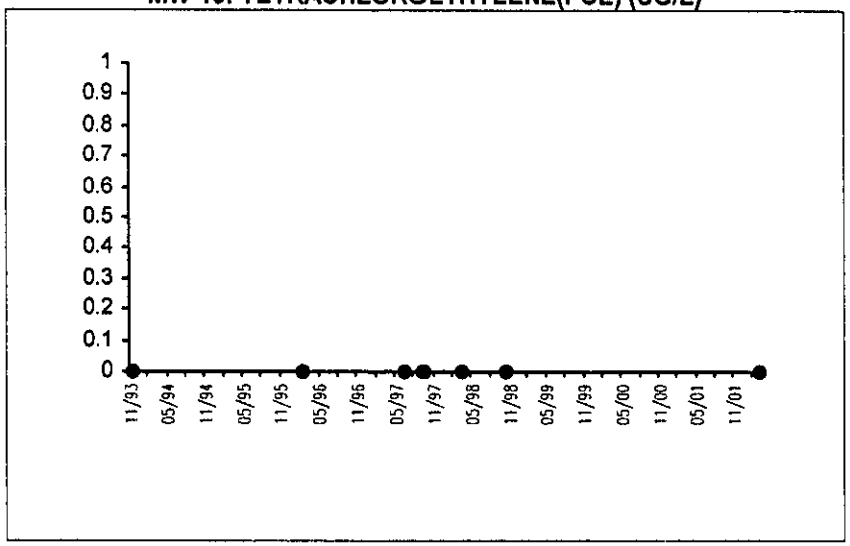
MW-19: CIS-1,2-DICHLOROETHYLENE (UG/L)



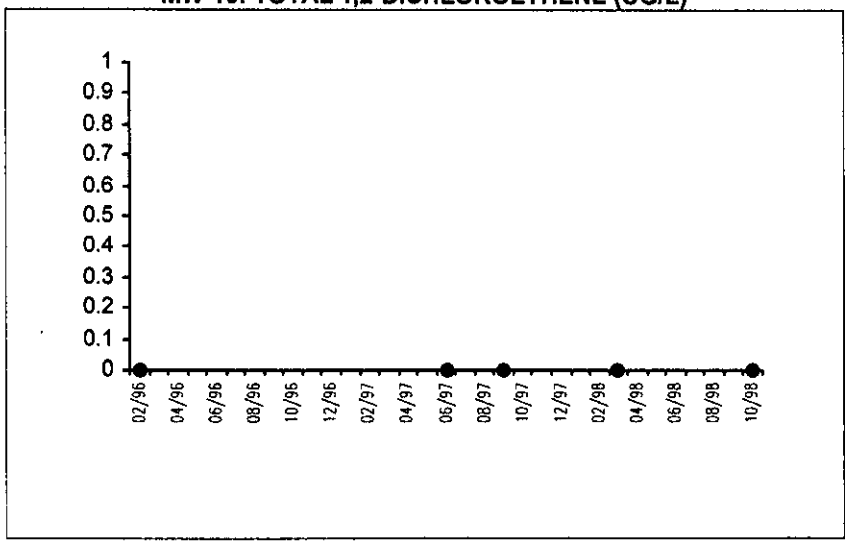
MW-19: MANGANESE (MG/L)



MW-19: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-19: TOTAL 1,2-DICHLOROETHENE (UG/L)



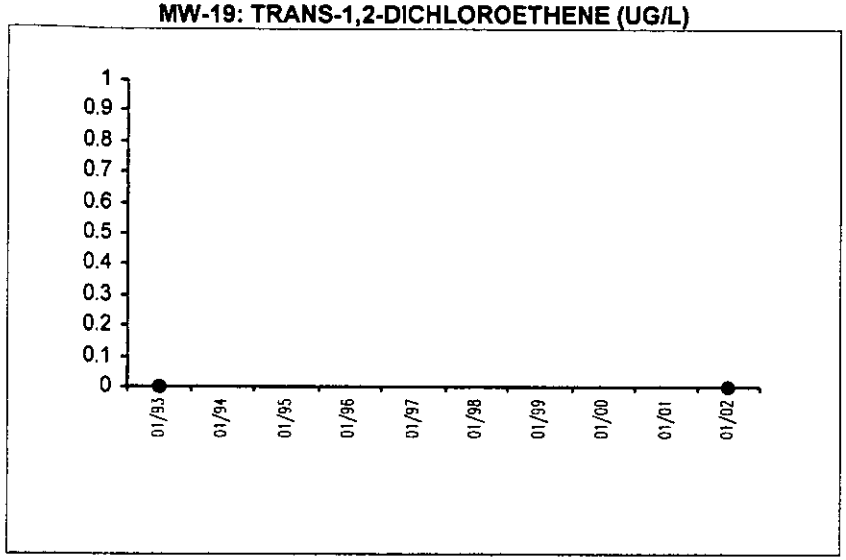
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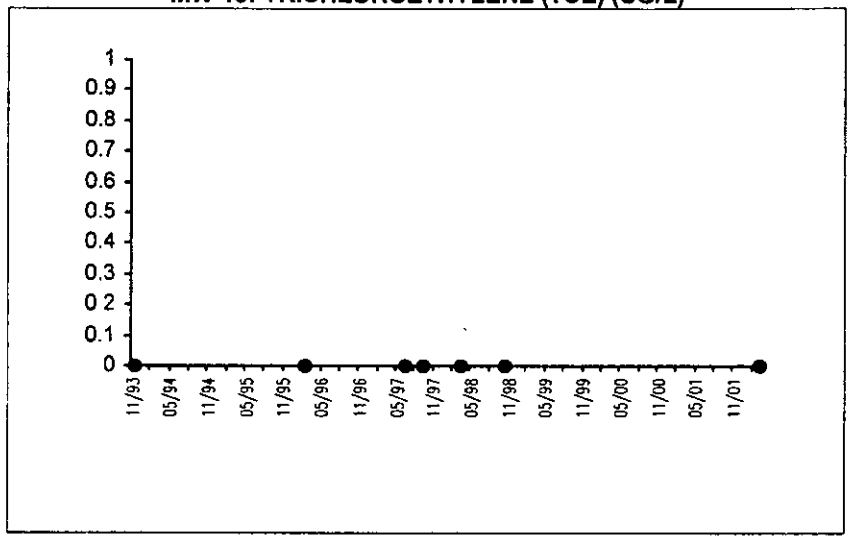
Background MW-19

Concentration vs Time

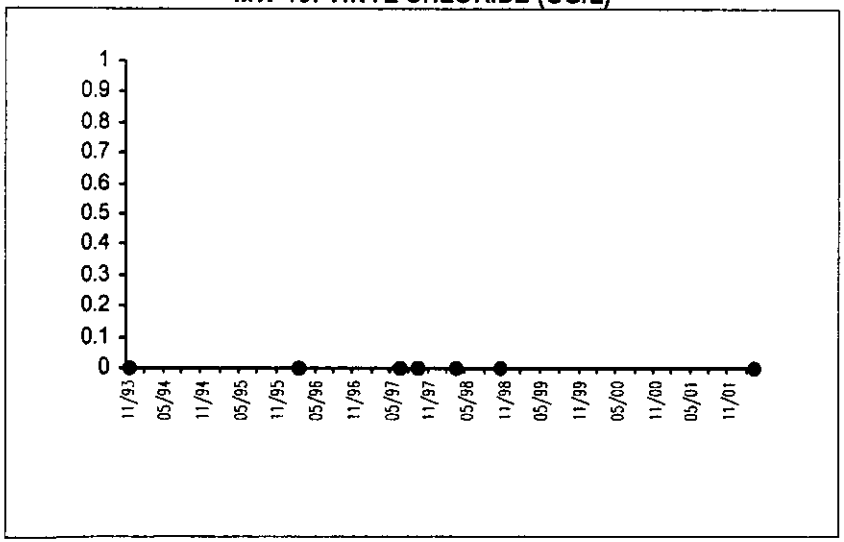
MW-19: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-19: TRICHLOROETHYLENE (TCE) (UG/L)



MW-19: VINYL CHLORIDE (UG/L)



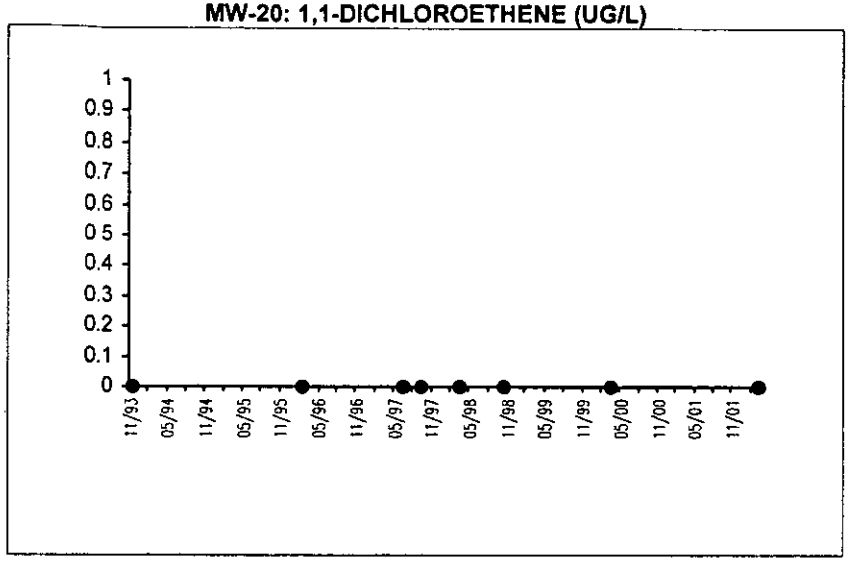
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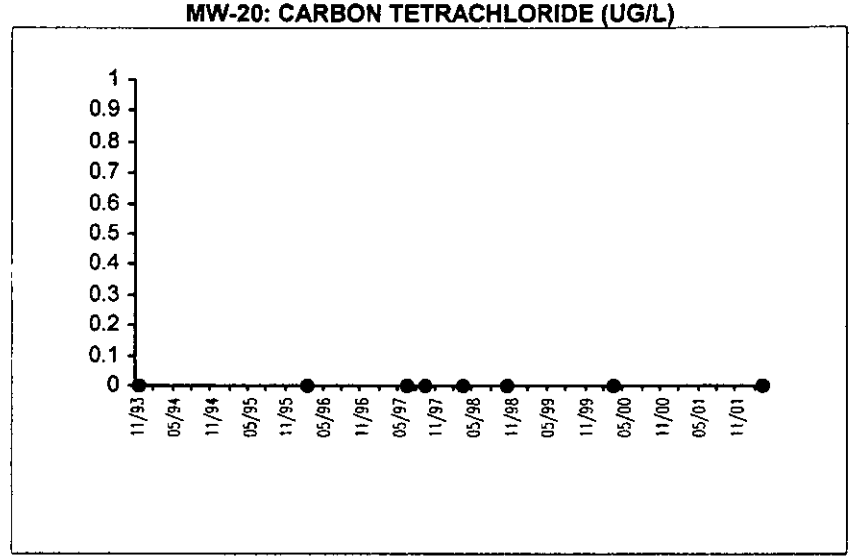
Background MW-20

Concentration vs Time

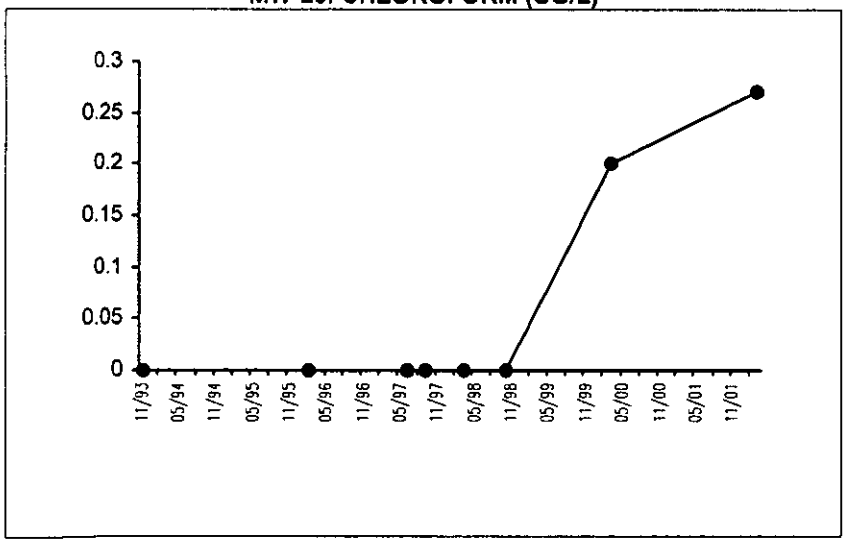
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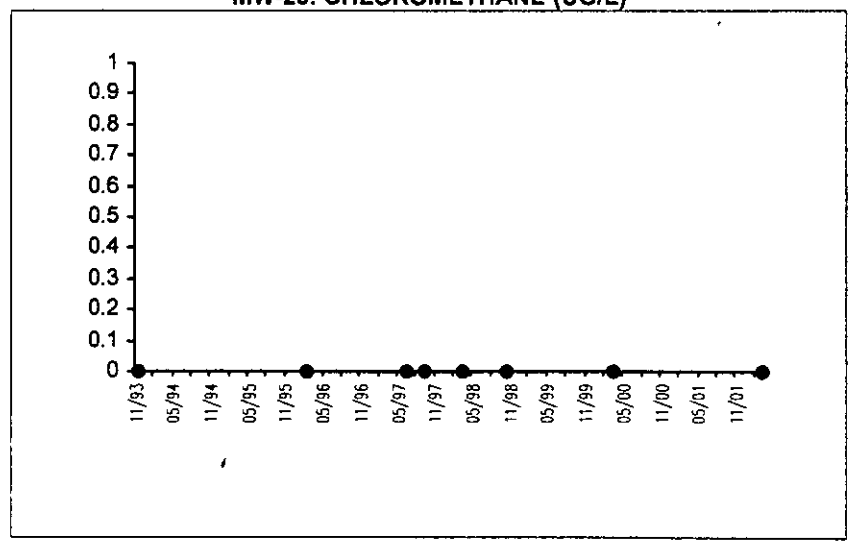
MW-20: CARBON TETRACHLORIDE (UG/L)



MW-20: CHLOROFORM (UG/L)



MW-20: CHLOROMETHANE (UG/L)



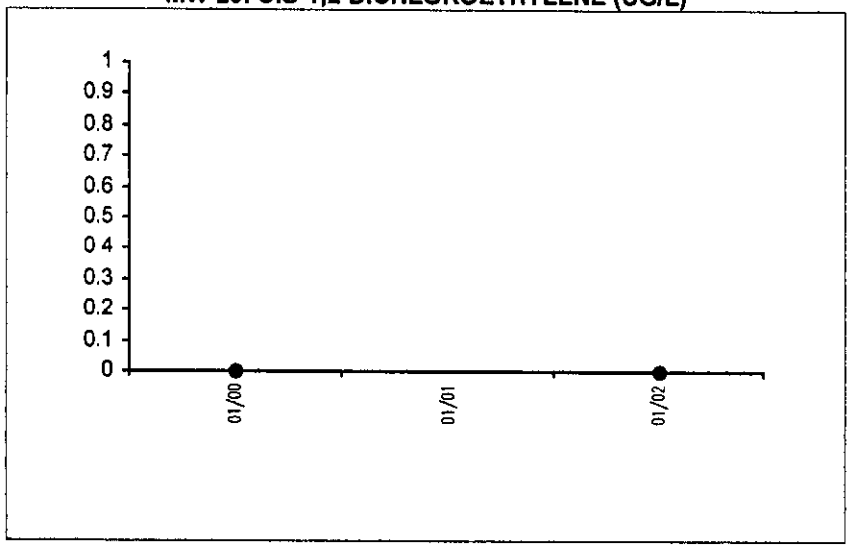
* Nondetects shown as 0.

Location Purpose : Background

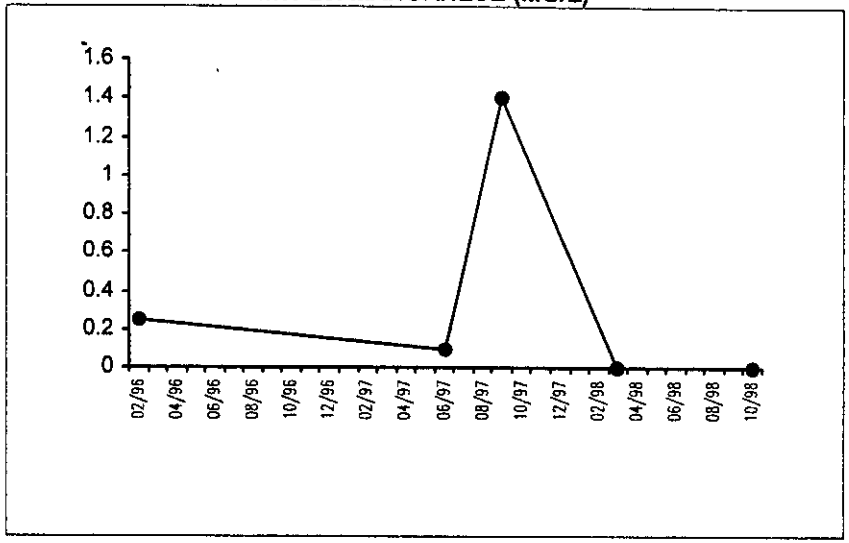
Background MW-20

Concentration vs Time

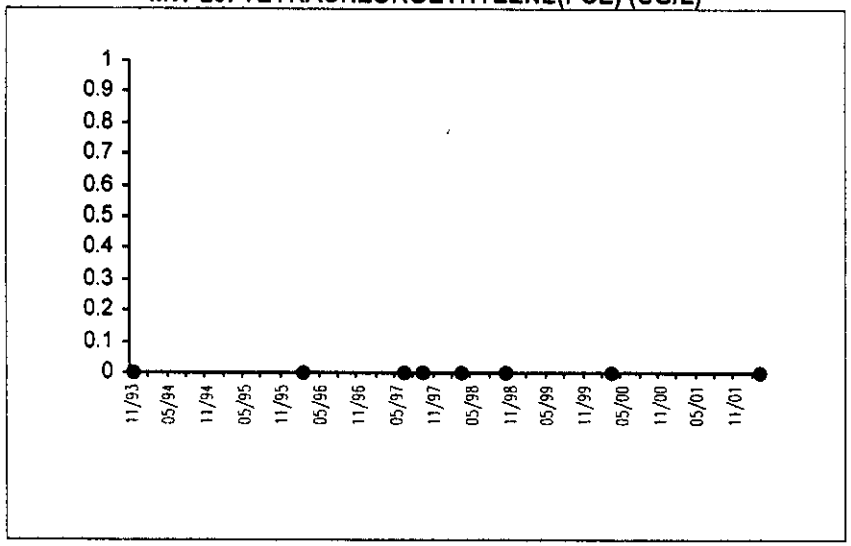
MW-20: CIS-1,2-DICHLOROETHYLENE (UG/L)



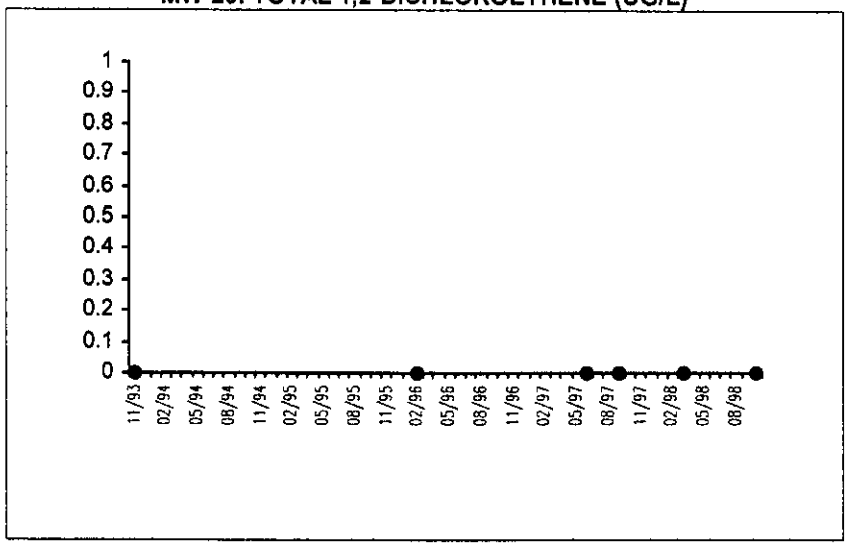
MW-20: MANGANESE (MG/L)



MW-20: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-20: TOTAL 1,2-DICHLOROETHENE (UG/L)



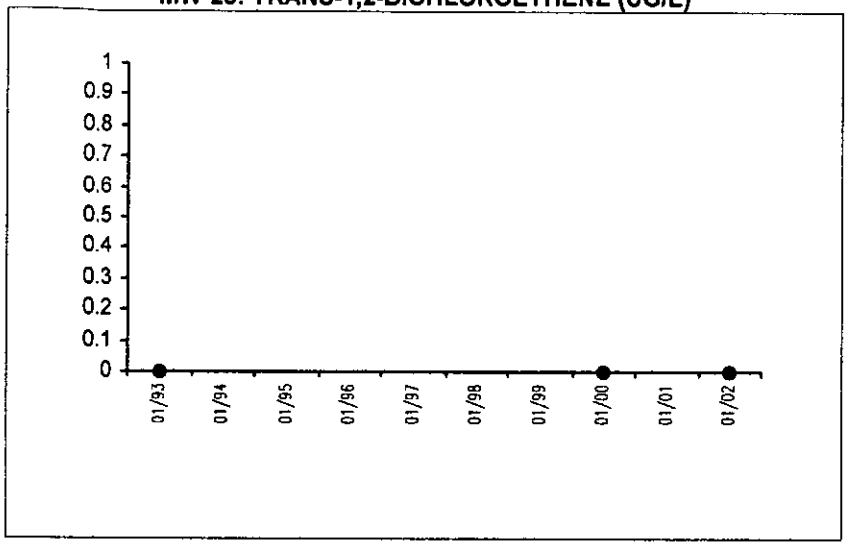
* N[redacted]ects shown as 0.

Location Purpose : Background

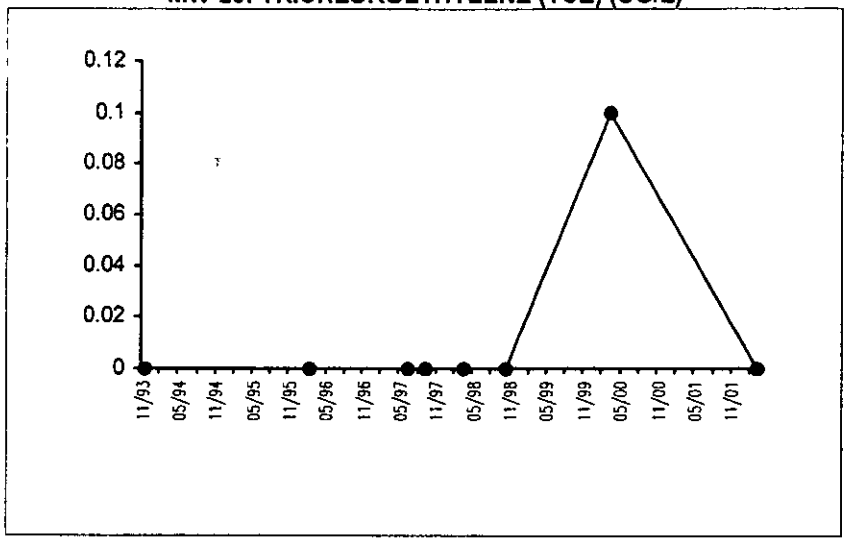
Background MW-20

Concentration vs Time

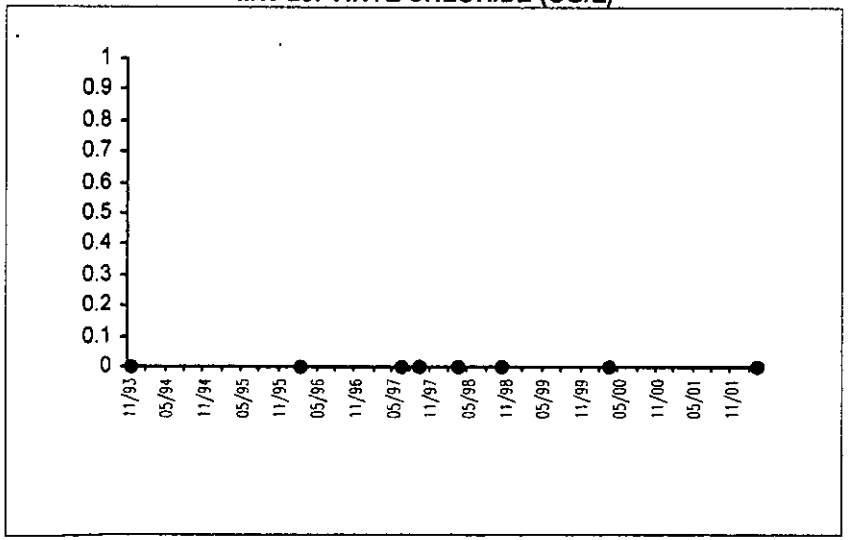
MW-20: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-20: TRICHLOROETHYLENE (TCE) (UG/L)



MW-20: VINYL CHLORIDE (UG/L)



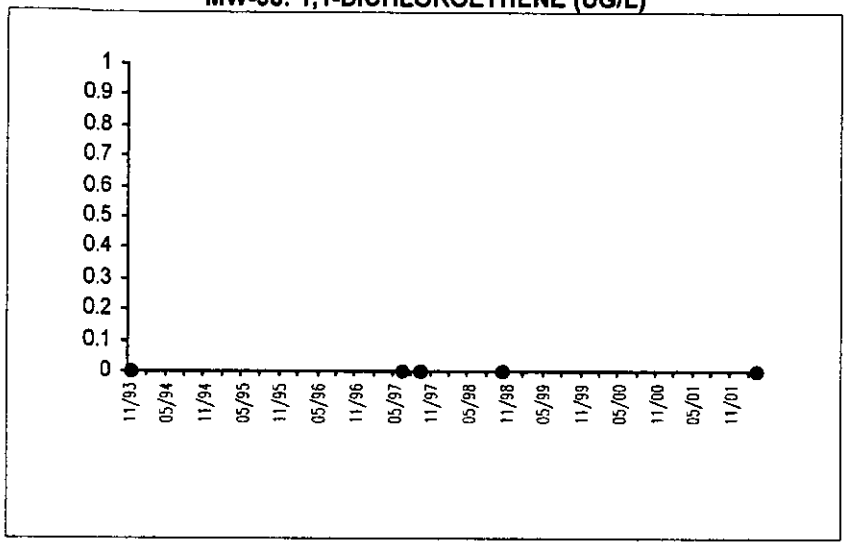
* Nondetects shown as 0.

Location Purpose : Background

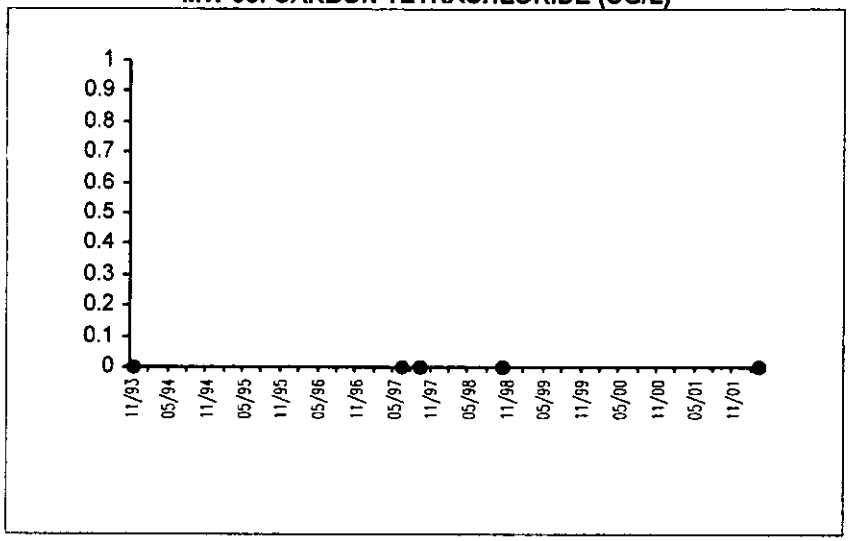
Background MW-36

Concentration vs Time

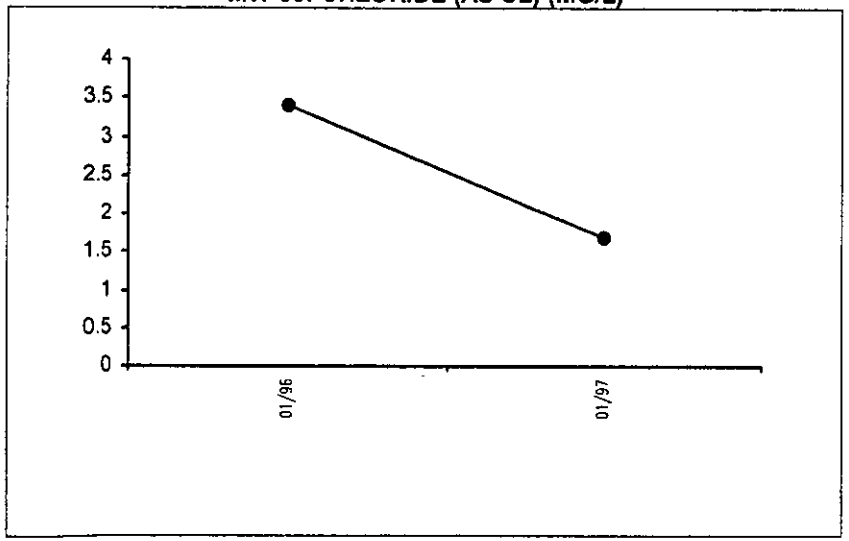
MW-36: 1,1-DICHLOROETHENE (UG/L)



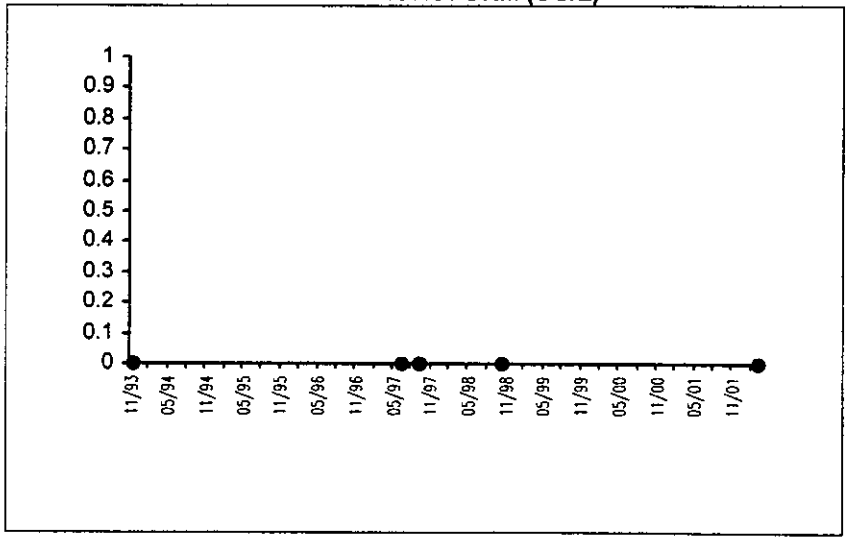
MW-36: CARBON TETRACHLORIDE (UG/L)



MW-36: CHLORIDE (AS CL) (MG/L)



MW-36: CHLOROFORM (UG/L)



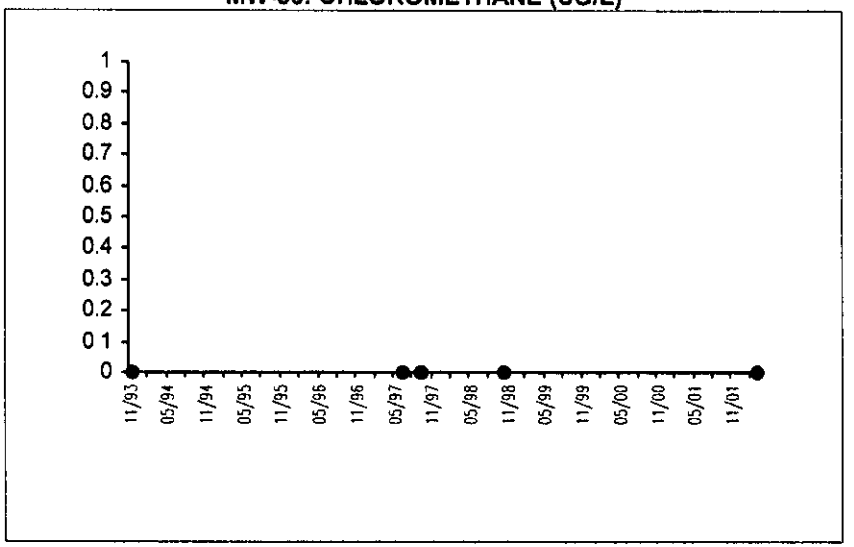
* Nondetects shown as 0.

Location Purpose : Background

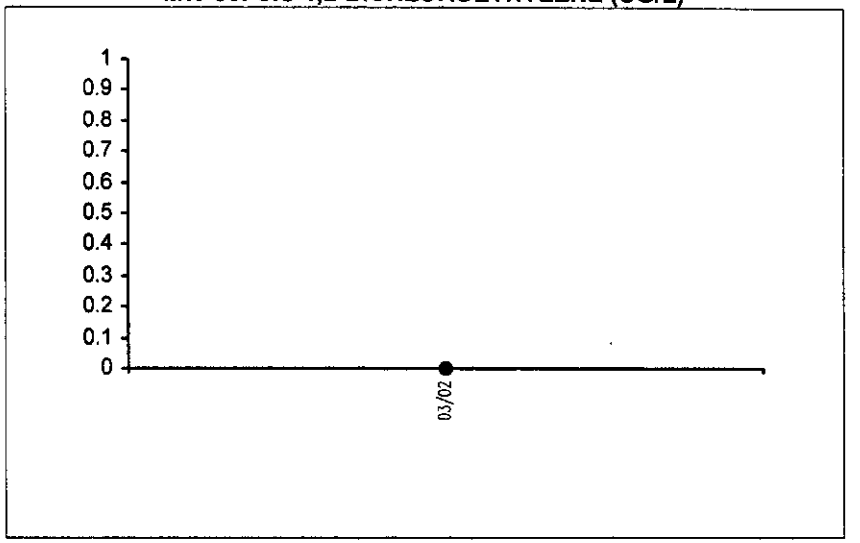
Background MW-36

Concentration vs Time

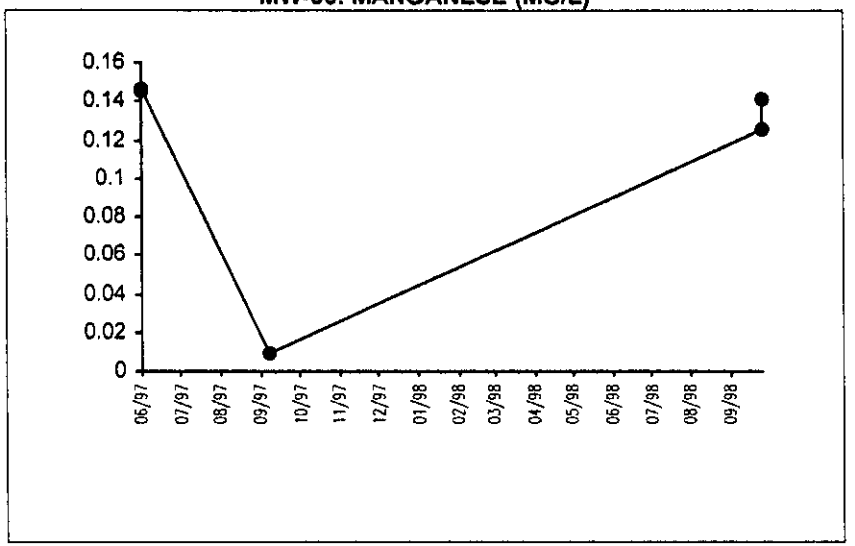
MW-36: CHLOROMETHANE (UG/L)



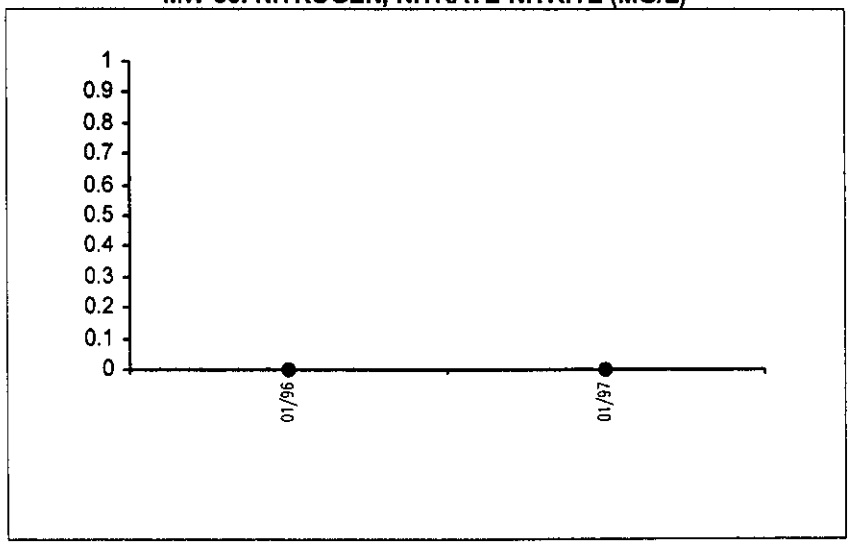
MW-36: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-36: MANGANESE (MG/L)



MW-36: NITROGEN, NITRATE-NITRITE (MG/L)



* N[redacted]ects shown as 0.

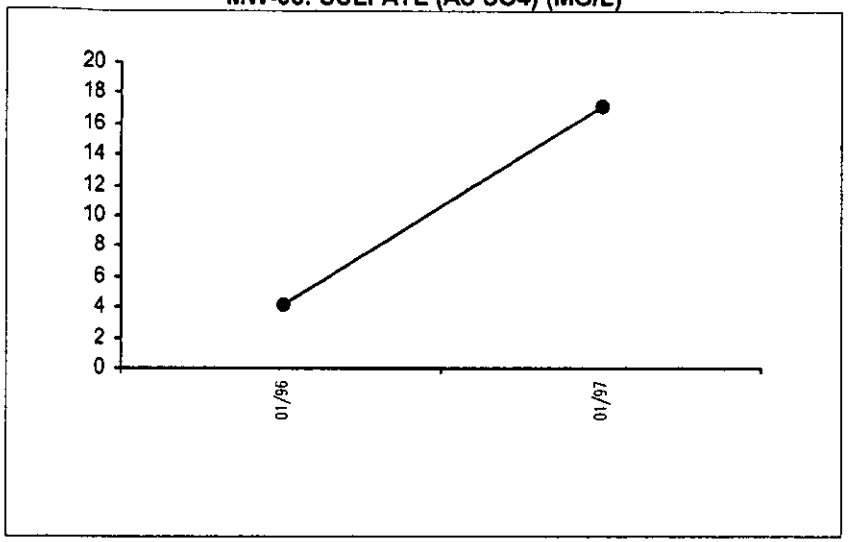
794 909

Location Purpose : Background

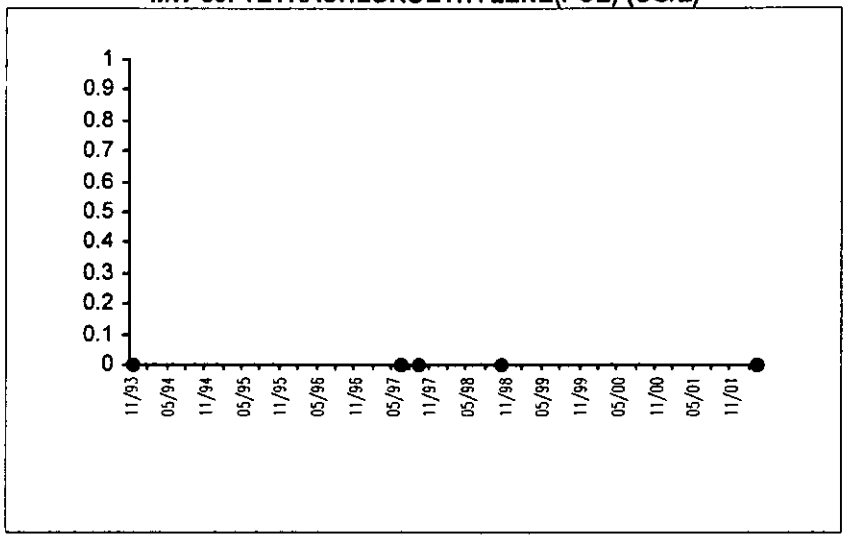
Background MW-36

Concentration vs Time

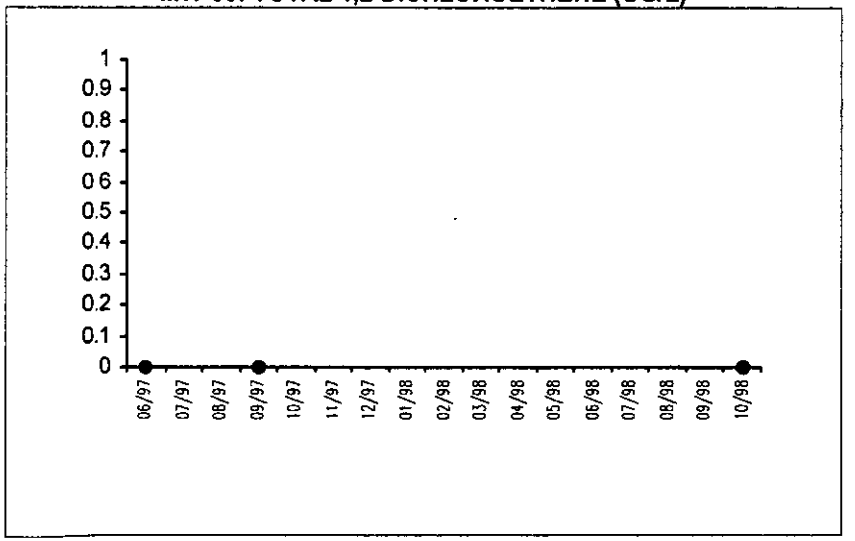
MW-36: SULFATE (AS SO4) (MG/L)



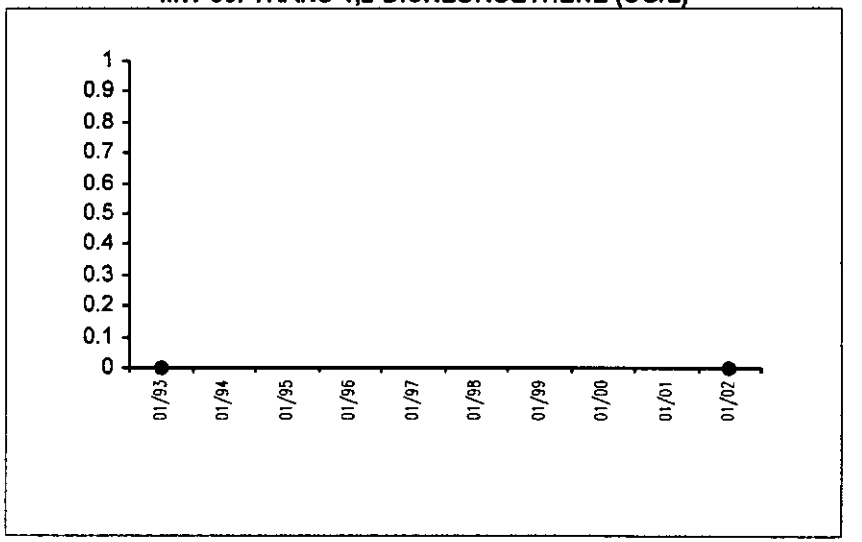
MW-36: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-36: TOTAL 1,2-DICHLOROETHENE (UG/L)



MW-36: TRANS-1,2-DICHLOROETHENE (UG/L)



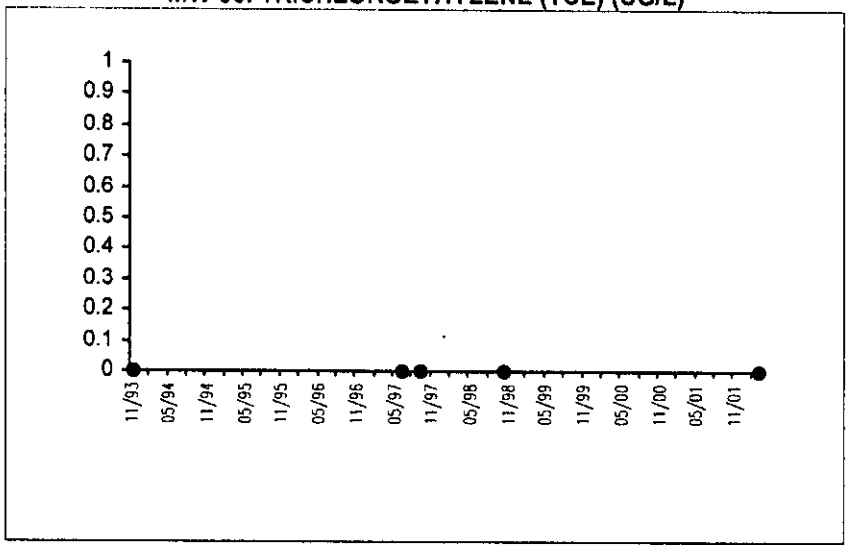
* Nondetects shown as 0.

Location Purpose : Background

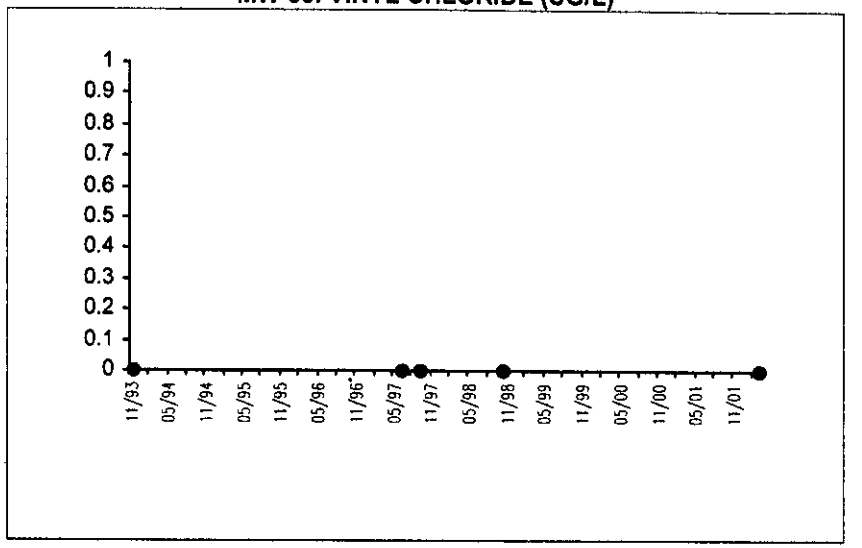
Background MW-36

Concentration vs Time

MW-36: TRICHLOROETHYLENE (TCE) (UG/L)



MW-36: VINYL CHLORIDE (UG/L)



794 911

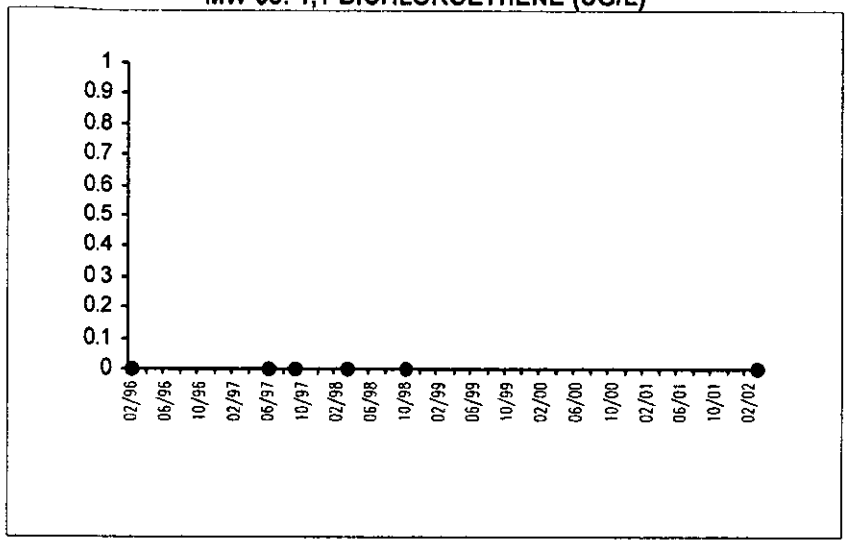
* N[redacted]ects shown as 0.

Location Purpose : Background

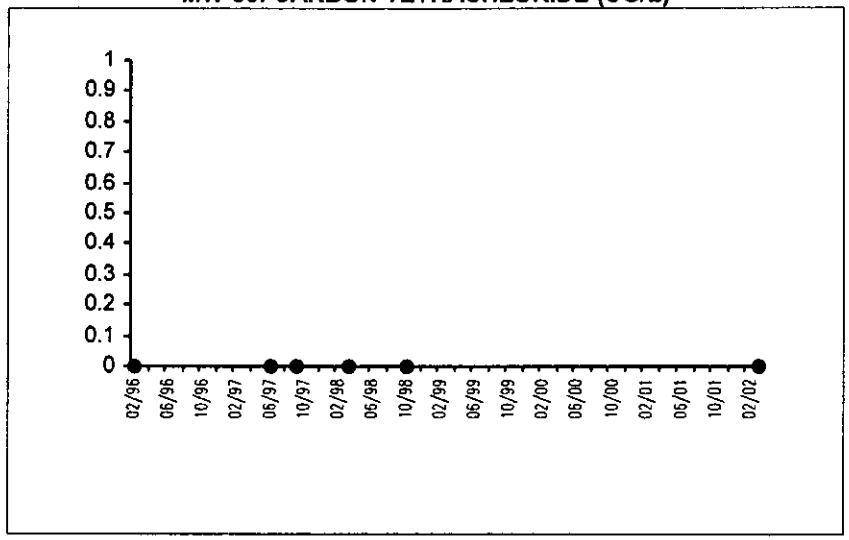
Background MW-53

Concentration vs Time

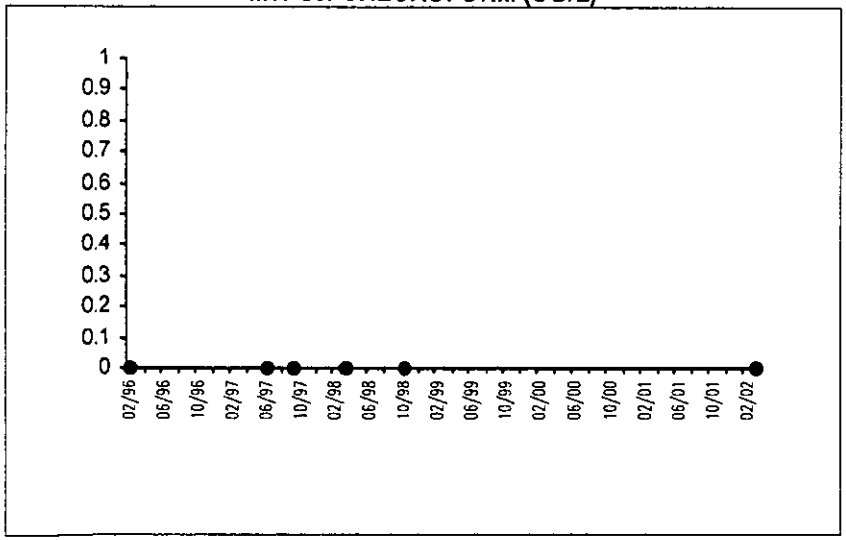
MW-53: 1,1-DICHLOROETHENE (UG/L)



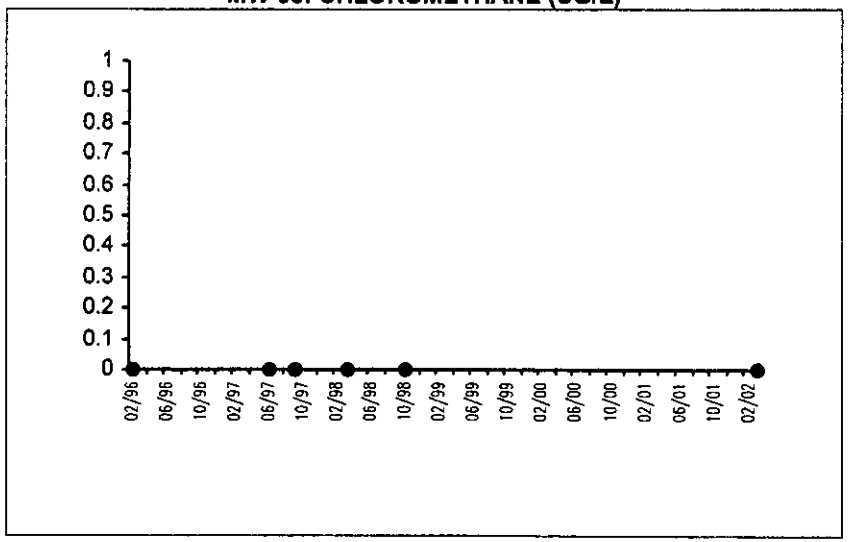
MW-53: CARBON TETRACHLORIDE (UG/L)



MW-53: CHLOROFORM (UG/L)



MW-53: CHLOROMETHANE (UG/L)



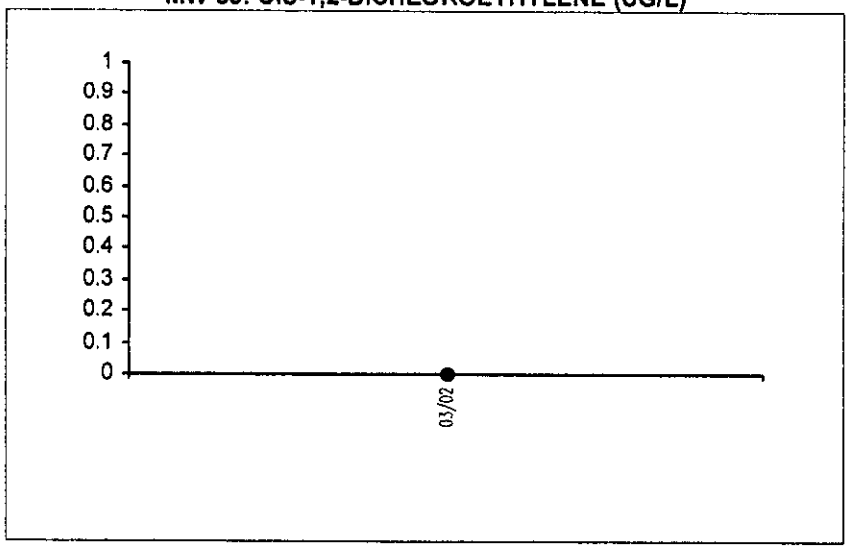
* Nondetects shown as 0.

Location Purpose : Background

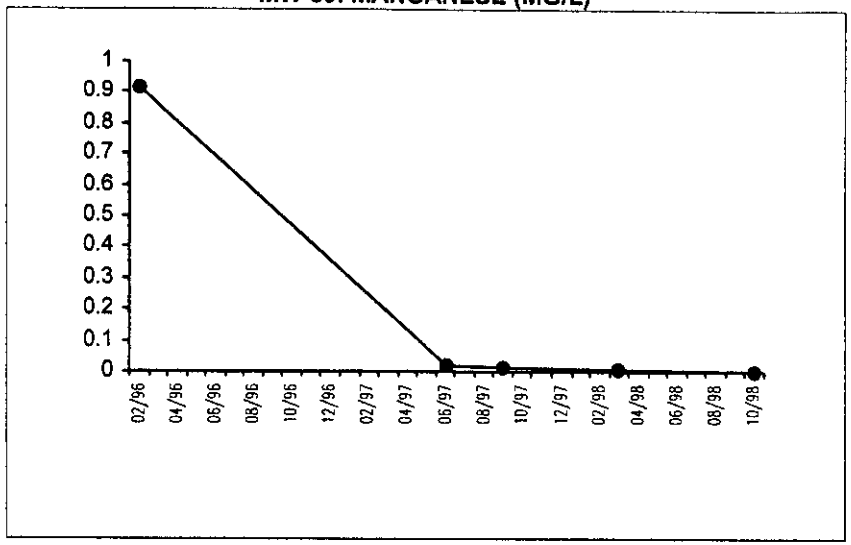
Background MW-53

Concentration vs Time

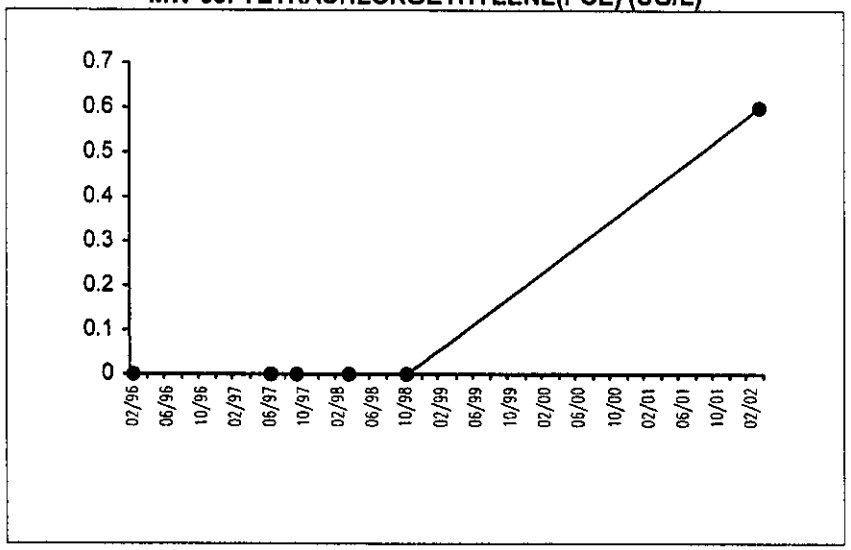
MW-53: CIS-1,2-DICHLOROETHYLENE (UG/L)



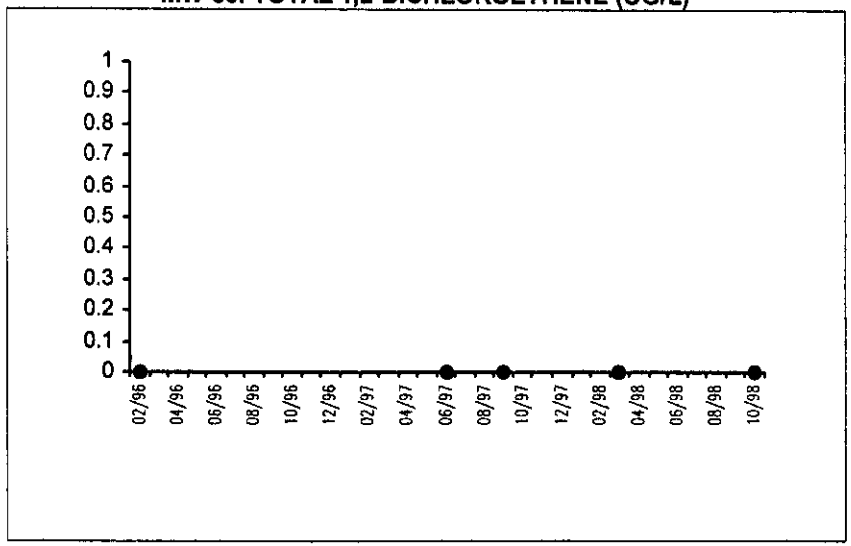
MW-53: MANGANESE (MG/L)



MW-53: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-53: TOTAL 1,2-DICHLOROETHENE (UG/L)



* N[redacted]ects shown as 0.

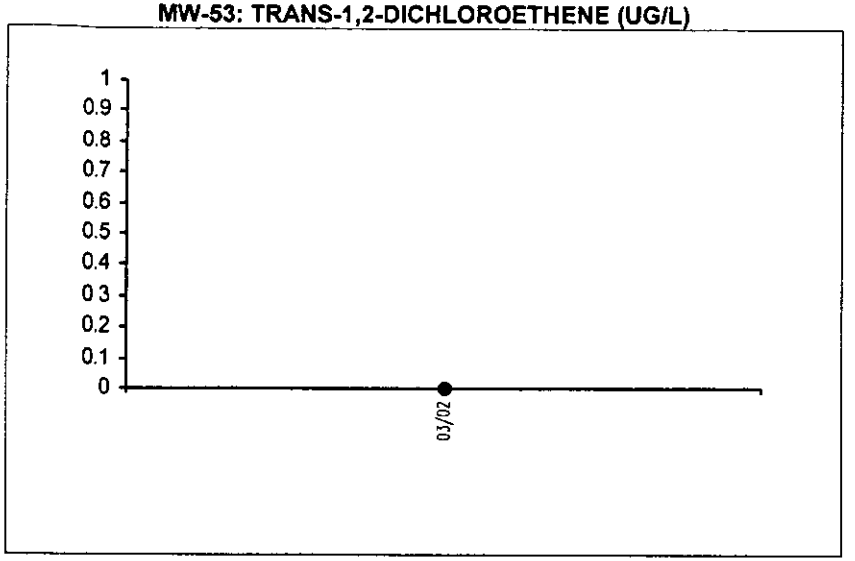
794 913

Location Purpose : Background

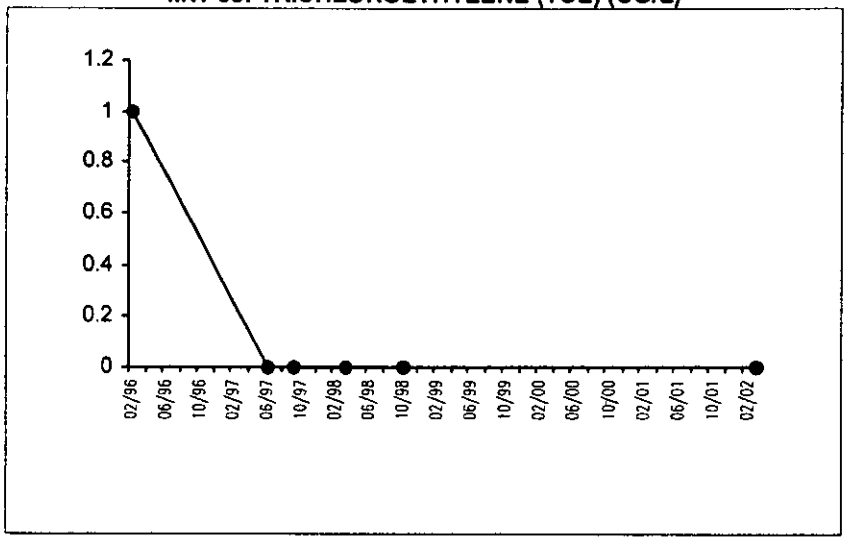
Background MW-53

Concentration vs Time

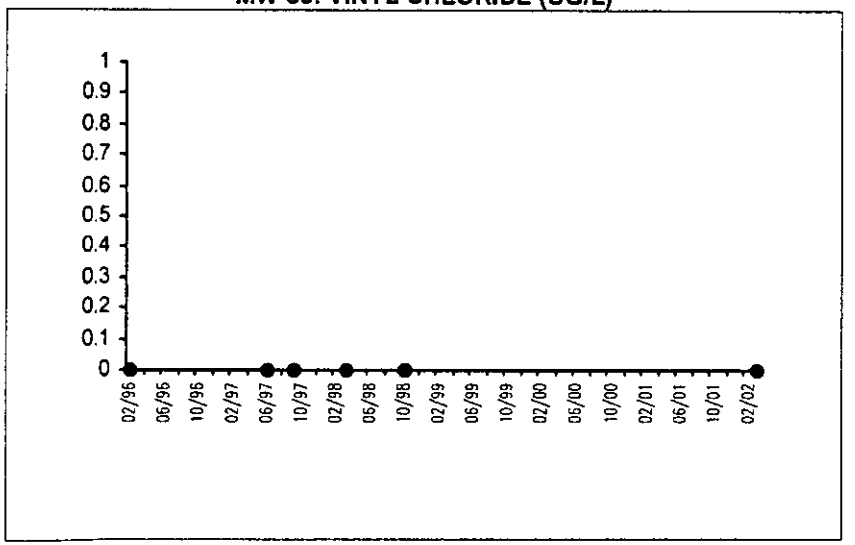
MW-53: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-53: TRICHLOROETHYLENE (TCE) (UG/L)



MW-53: VINYL CHLORIDE (UG/L)



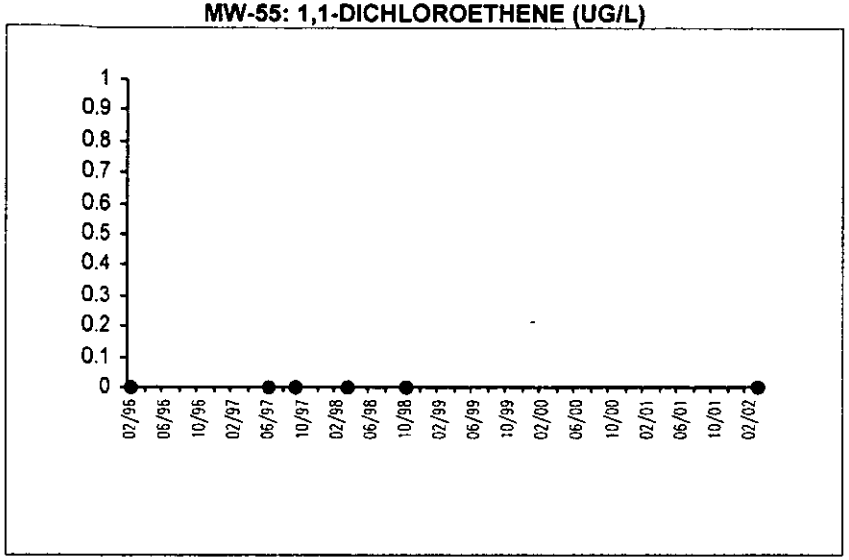
* Nondetects shown as 0.

Location Purpose : Background

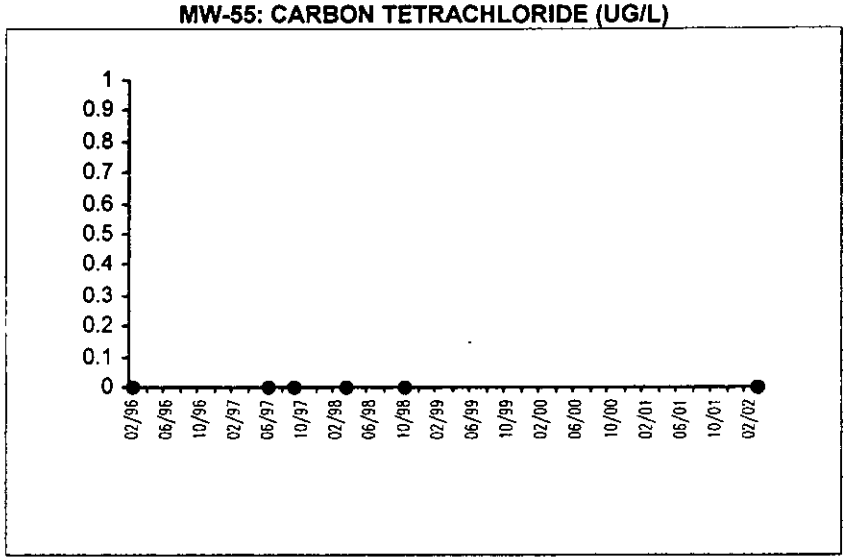
Background MW-55

Concentration vs Time

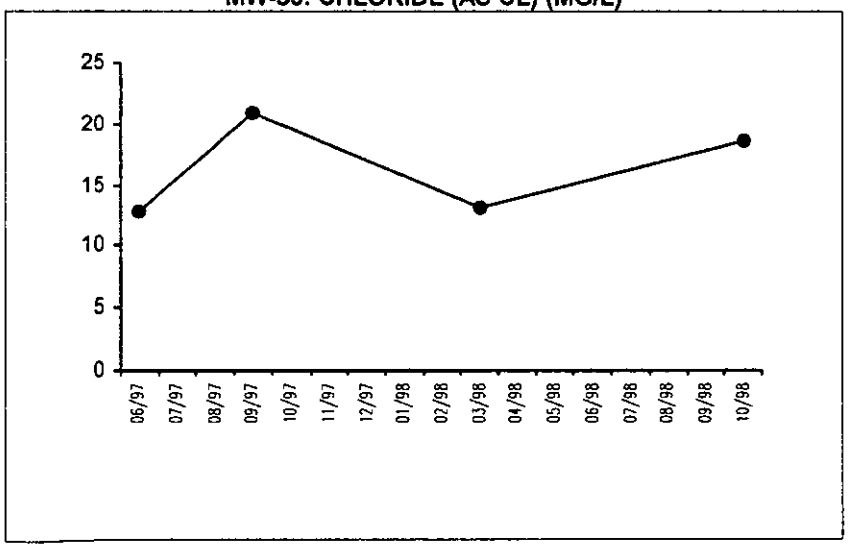
MW-55: 1,1-DICHLOROETHENE (UG/L)



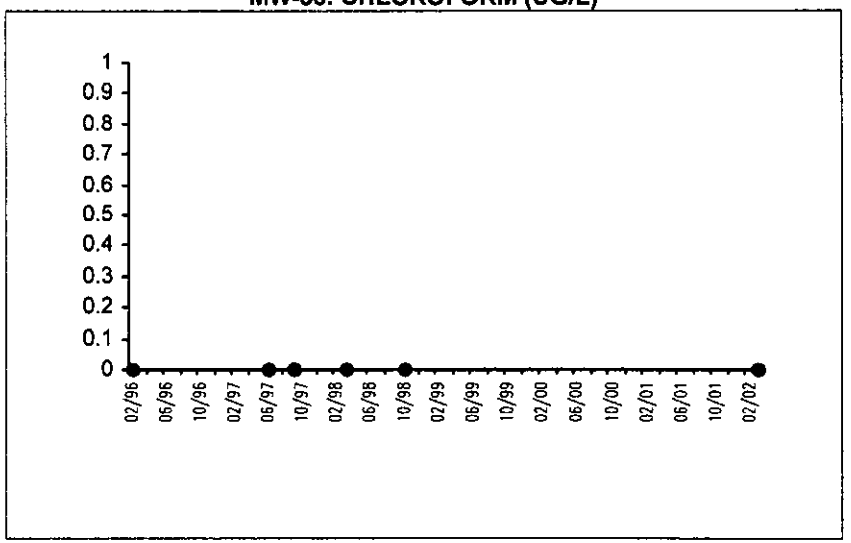
MW-55: CARBON TETRACHLORIDE (UG/L)



MW-55: CHLORIDE (AS CL) (MG/L)



MW-55: CHLOROFORM (UG/L)



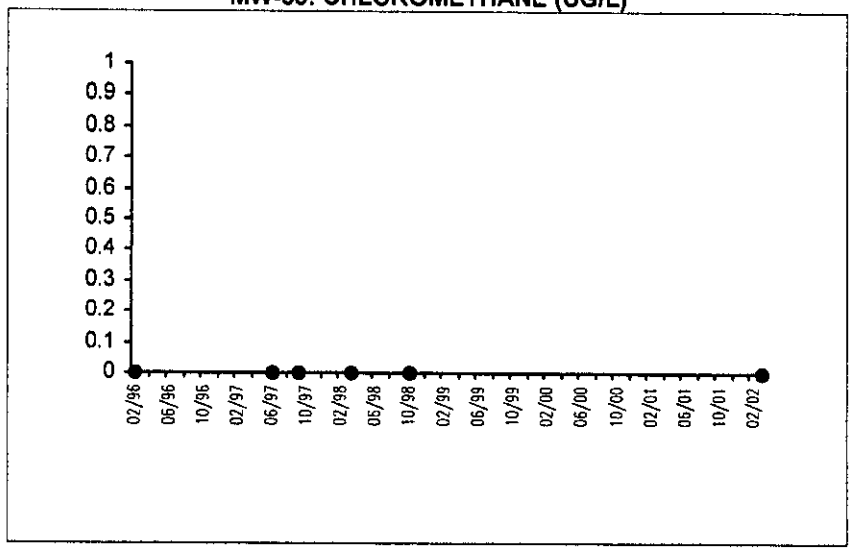
* Nondetects shown as 0.

Location Purpose : Background

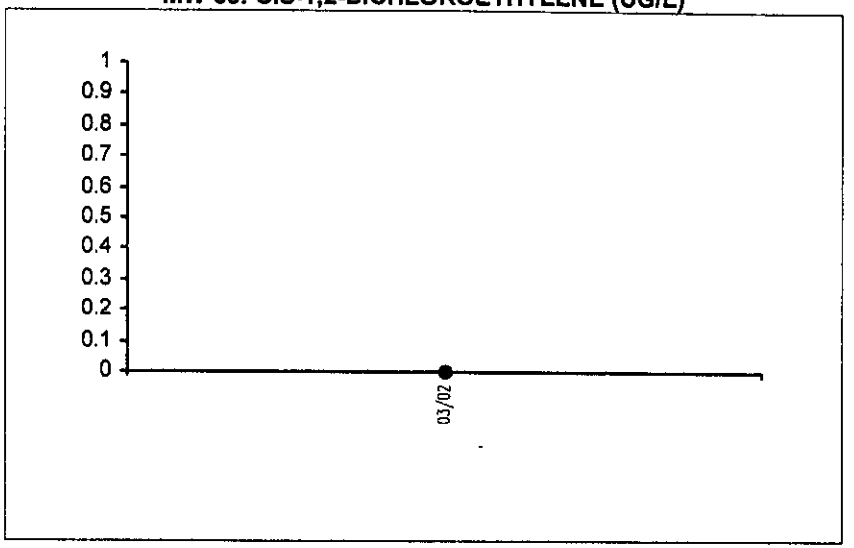
Background MW-55

Concentration vs Time

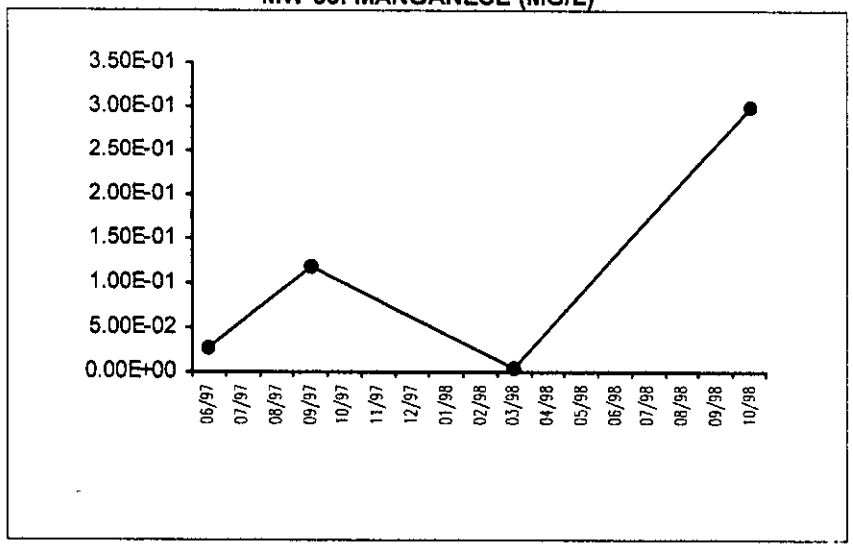
MW-55: CHLOROMETHANE (UG/L)



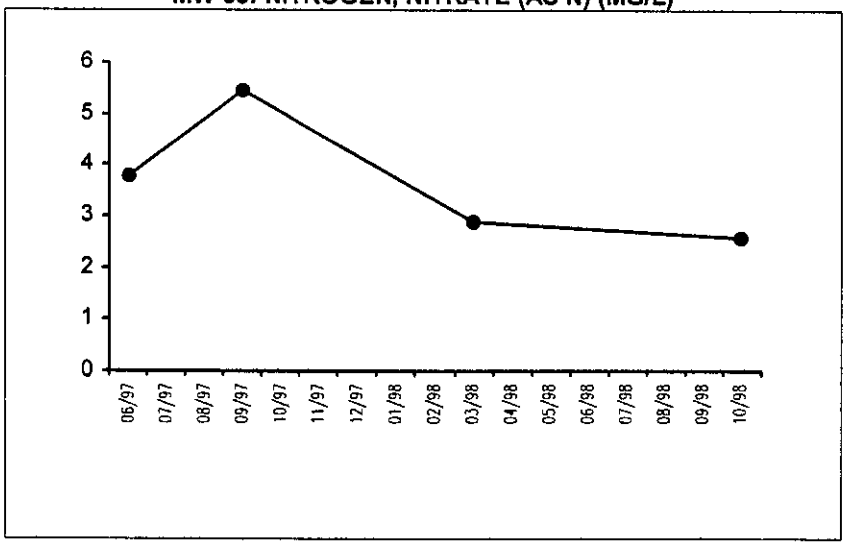
MW-55: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-55: MANGANESE (MG/L)



MW-55: NITROGEN, NITRATE (AS N) (MG/L)



* N[redacted]ects shown as 0.

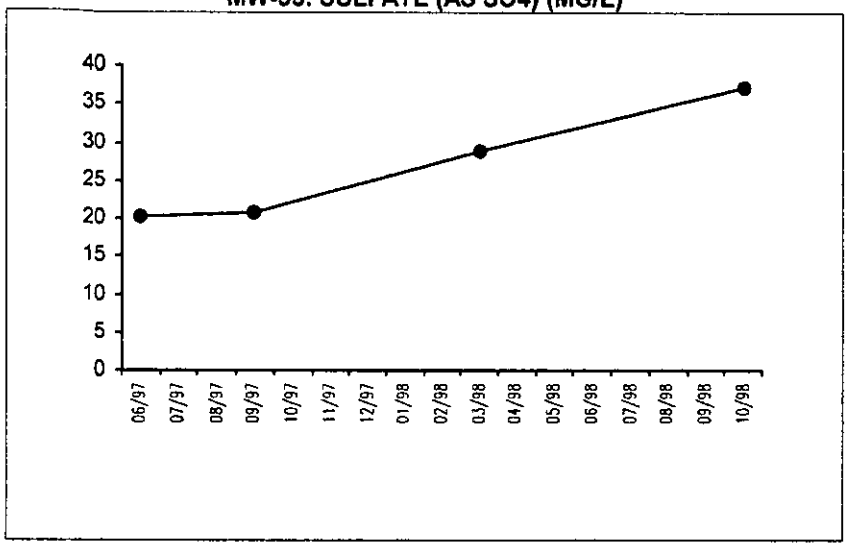
794 916

Location Purpose : Background

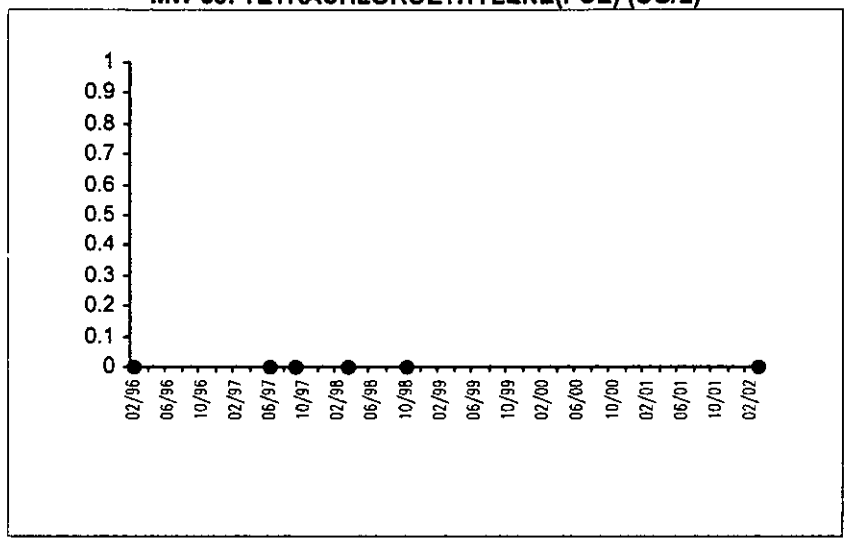
Background MW-55

Concentration vs Time

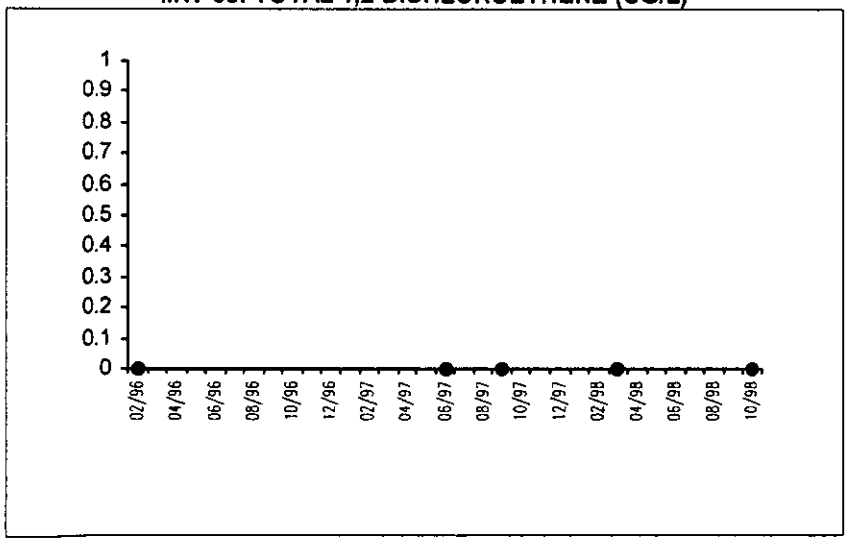
MW-55: SULFATE (AS SO4) (MG/L)



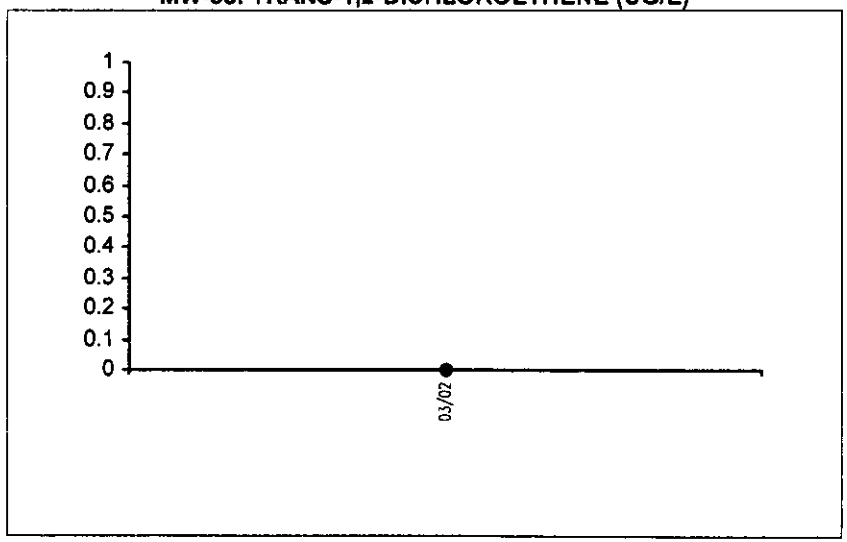
MW-55: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-55: TOTAL 1,2-DICHLOROETHENE (UG/L)



MW-55: TRANS-1,2-DICHLOROETHENE (UG/L)



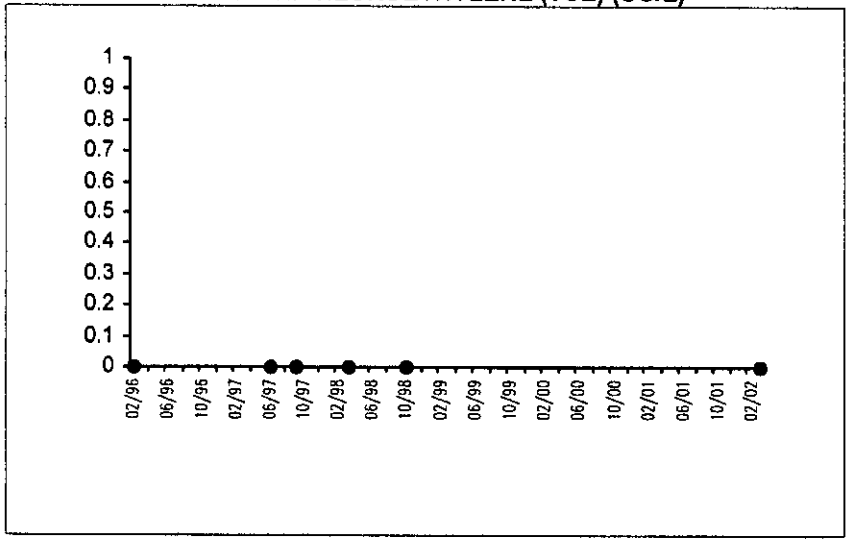
* Nondetects shown as 0.

Location Purpose : Background

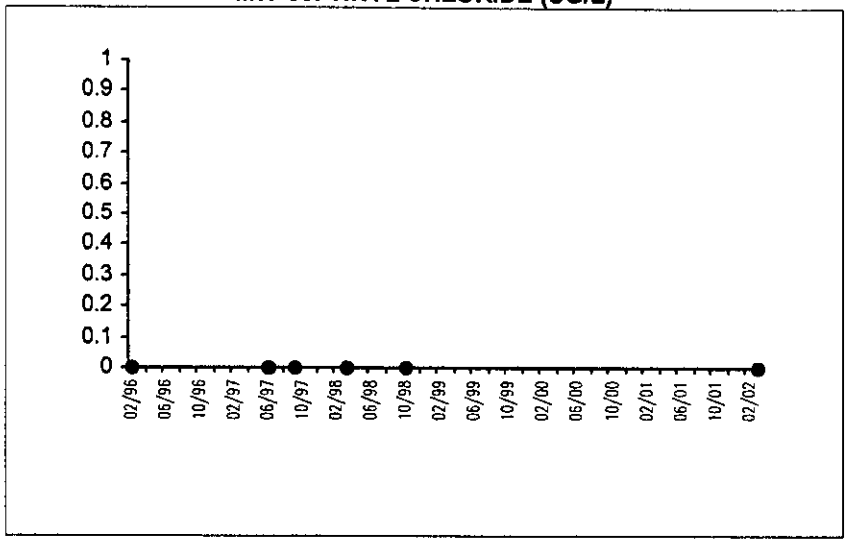
Background MW-55

Concentration vs Time

MW-55: TRICHLOROETHYLENE (TCE) (UG/L)



MW-55: VINYL CHLORIDE (UG/L)



794 918

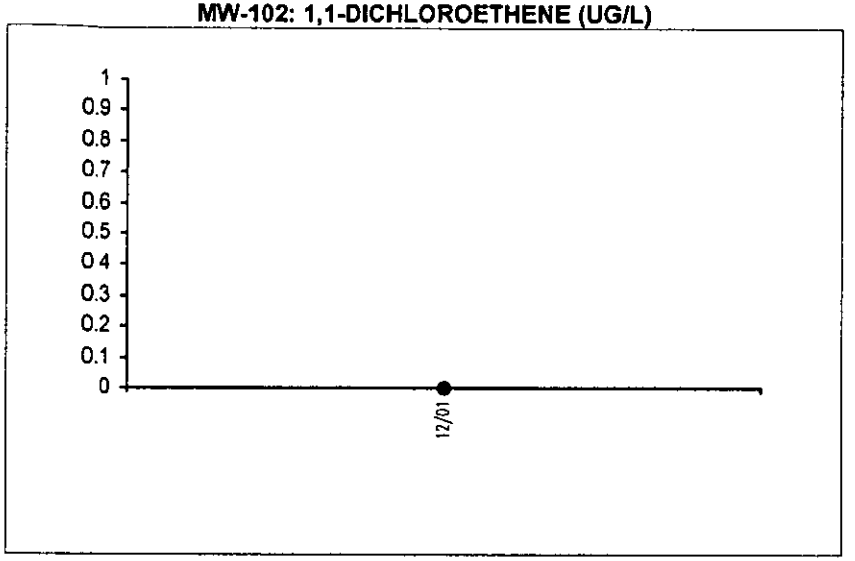
* N[redacted]ects shown as 0.

Location Purpose : Boundary

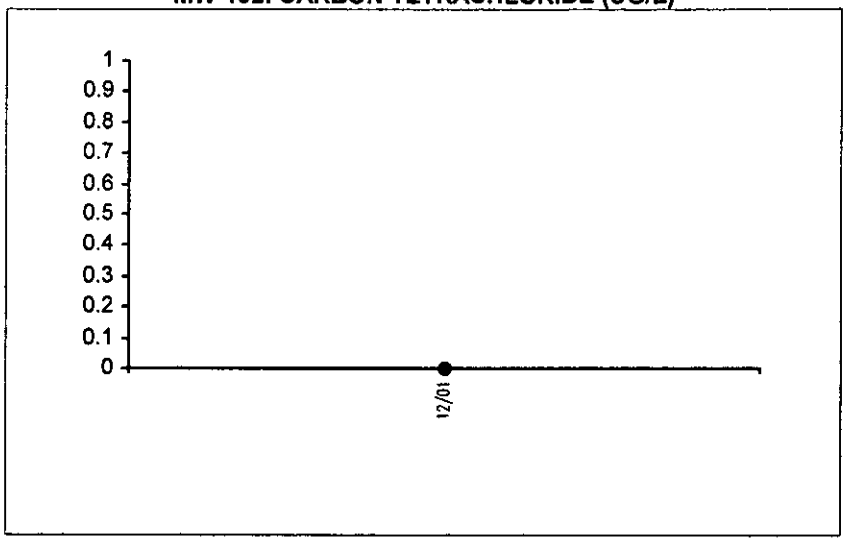
Boundary MW-102

Concentration vs Time

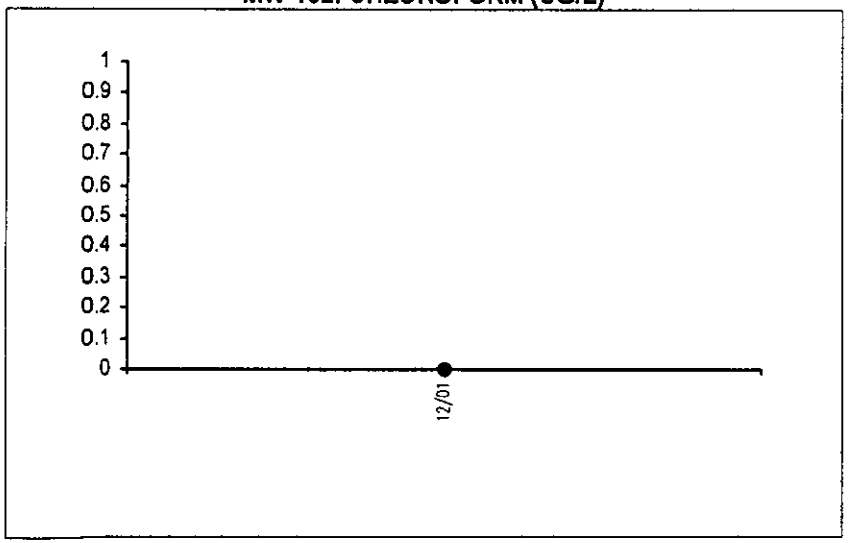
MW-102: 1,1-DICHLOROETHENE (UG/L)



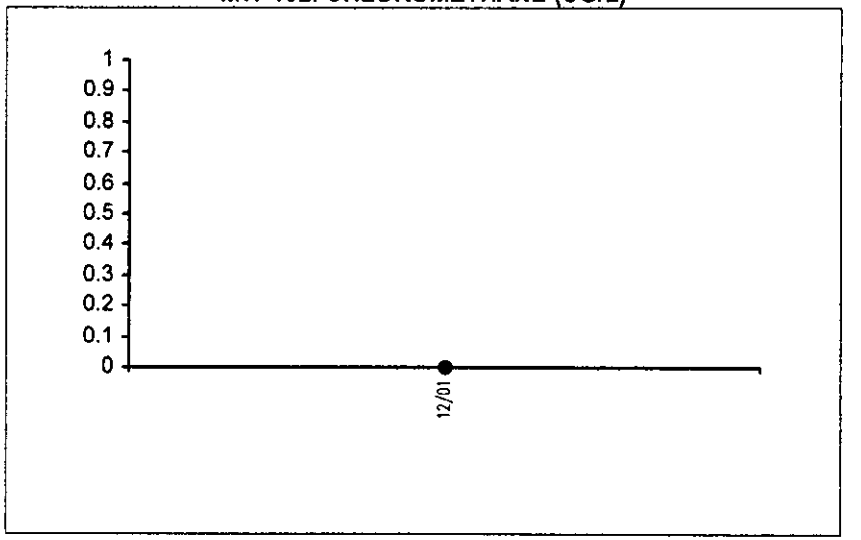
MW-102: CARBON TETRACHLORIDE (UG/L)



MW-102: CHLOROFORM (UG/L)



MW-102: CHLOROMETHANE (UG/L)



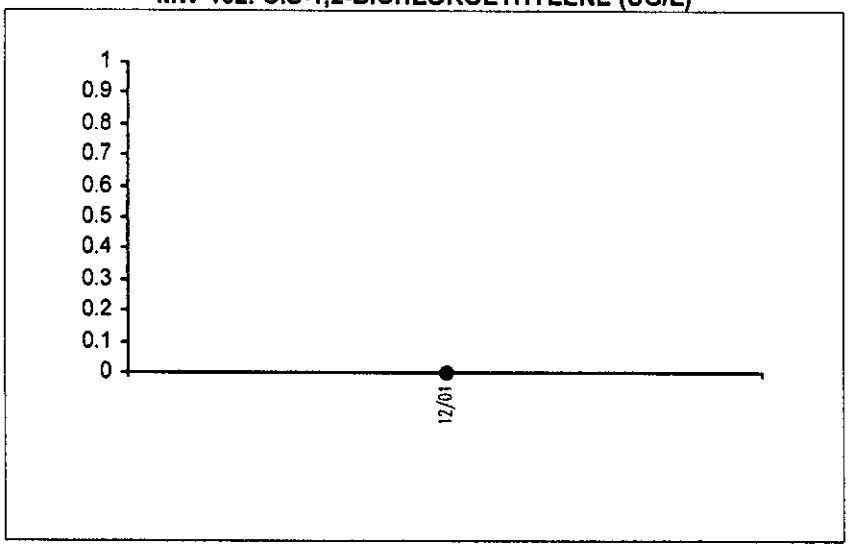
* Nondetects shown as 0.

Location Purpose : Boundary

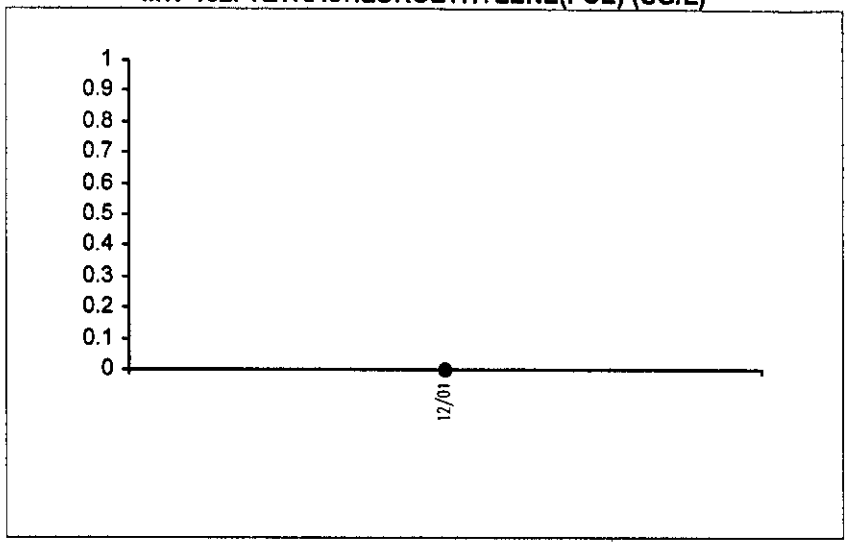
Boundary MW-102

Concentration vs Time

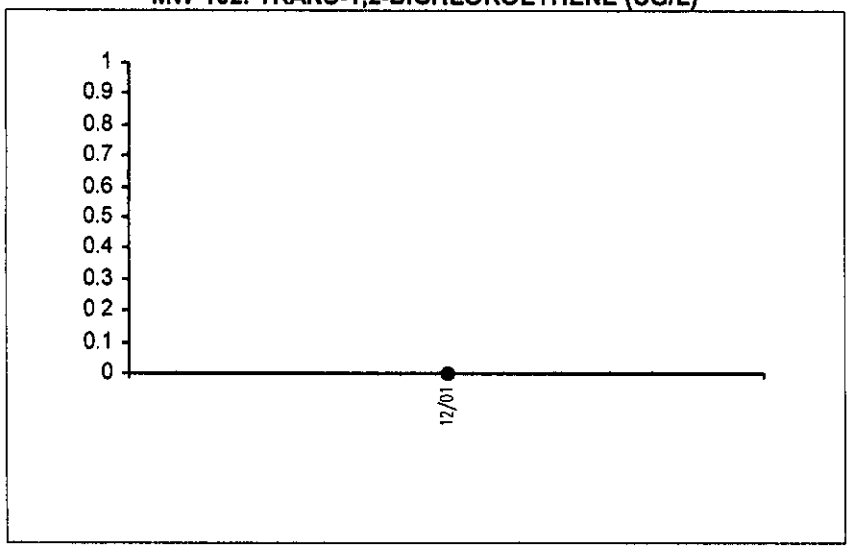
MW-102: CIS-1,2-DICHLOROETHYLENE (UG/L)



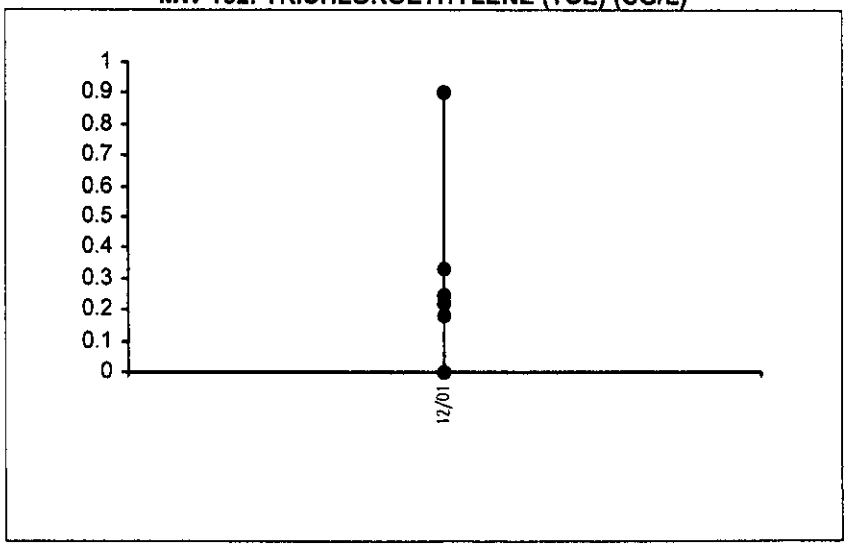
MW-102: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-102: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-102: TRICHLOROETHYLENE (TCE) (UG/L)



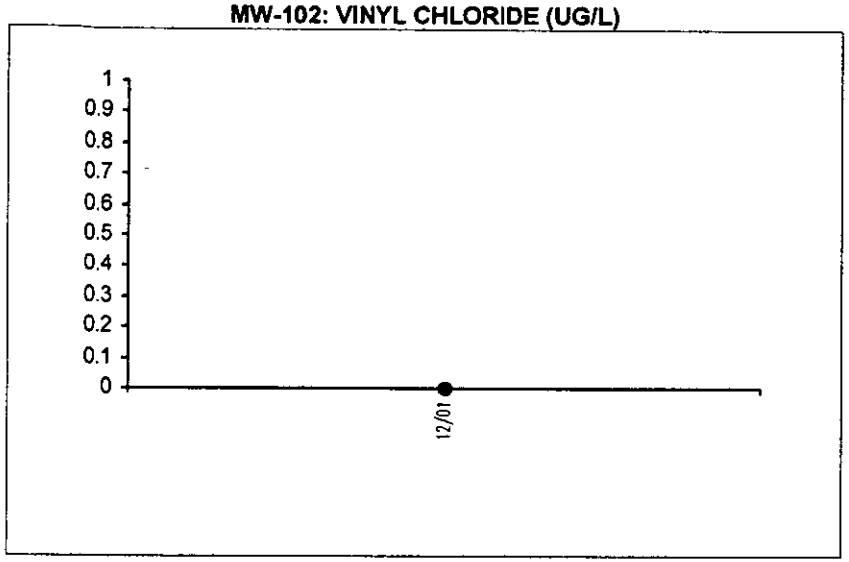
* N[redacted]ects shown as 0.

794 920

Location Purpose : Boundary

Boundary MW-102

Concentration vs Time



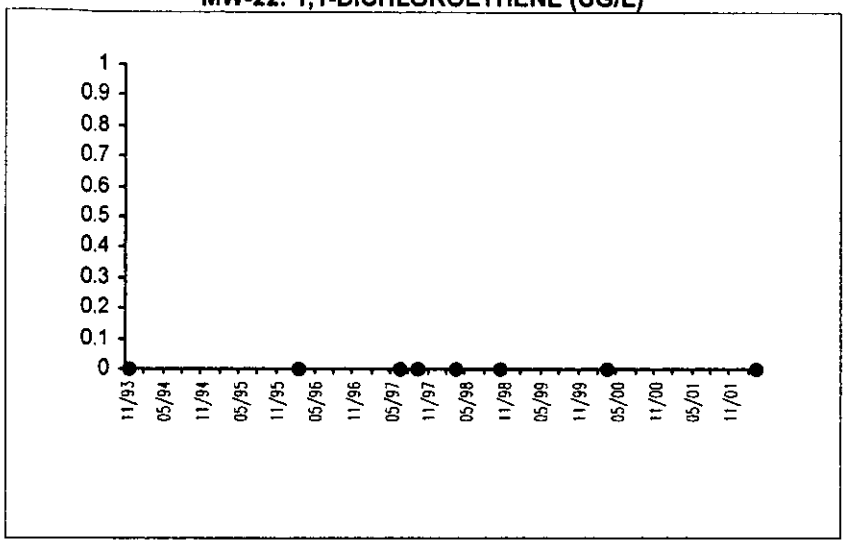
* Nondetects shown as 0.

Location Purpose : Boundary

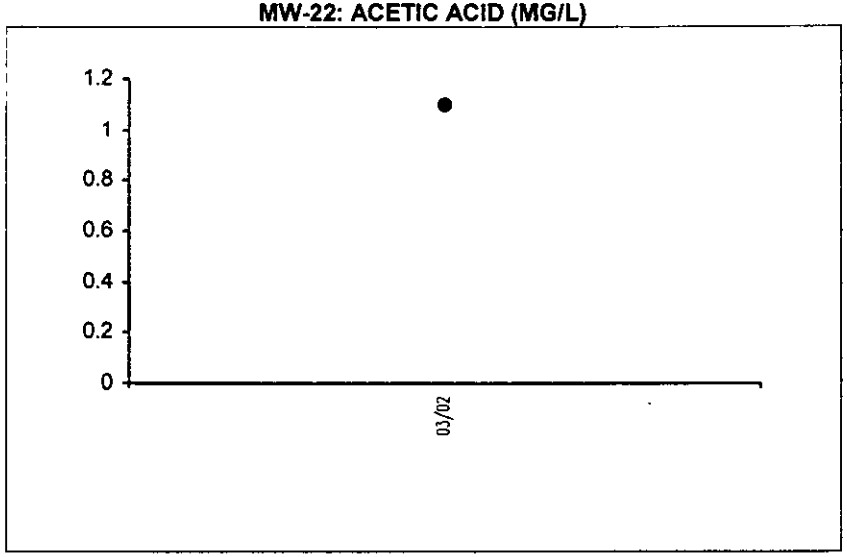
Boundary MW-22

Concentration vs Time

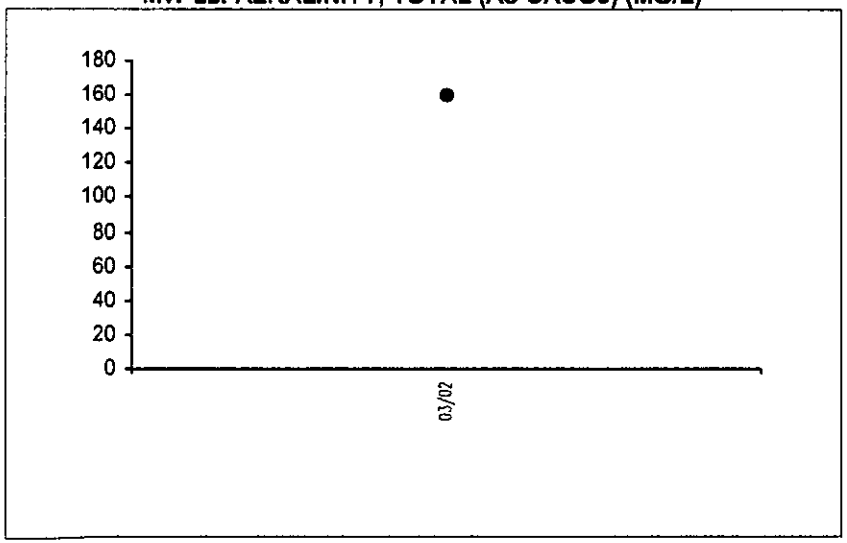
MW-22: 1,1-DICHLOROETHENE (UG/L)



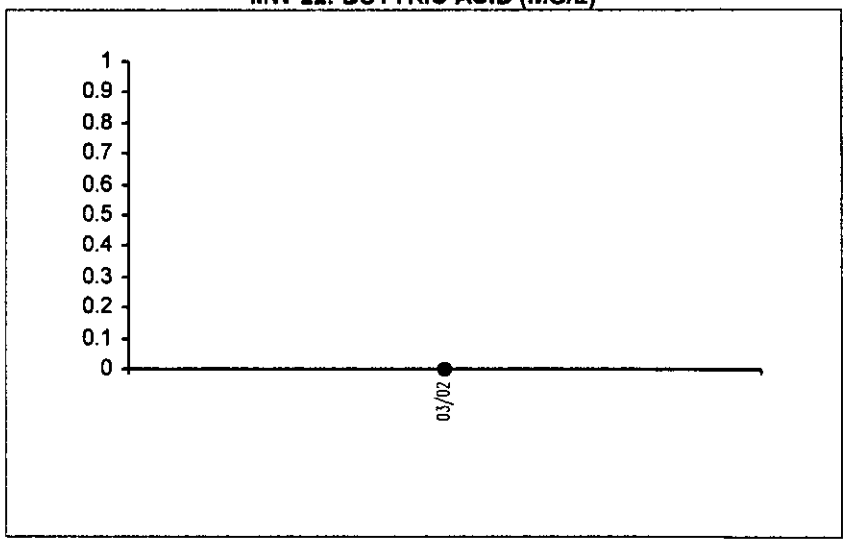
MW-22: ACETIC ACID (MG/L)



MW-22: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-22: BUTYRIC ACID (MG/L)



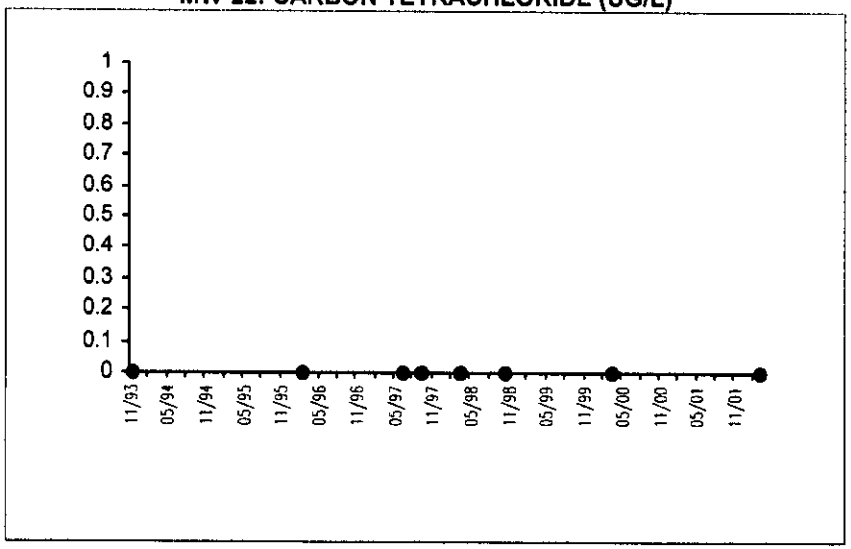
* Nondetects shown as 0.

Location Purpose : Boundary

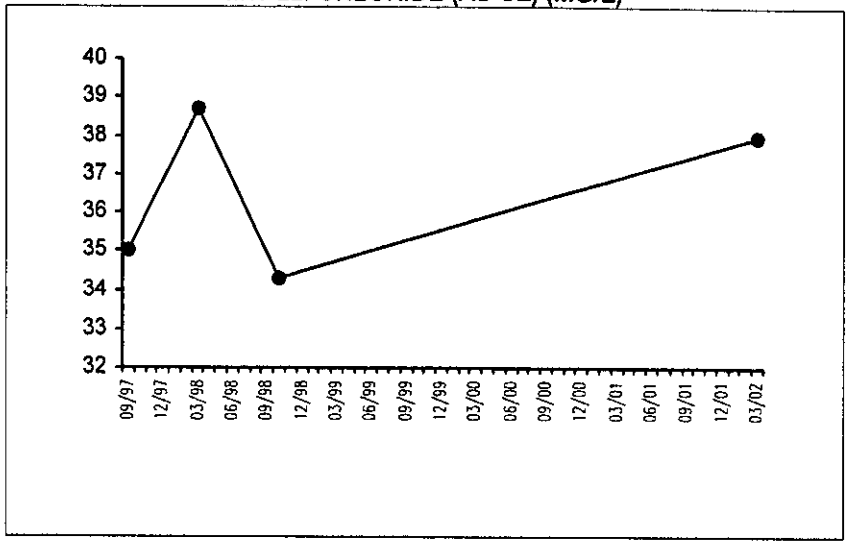
Boundary MW-22

Concentration vs Time

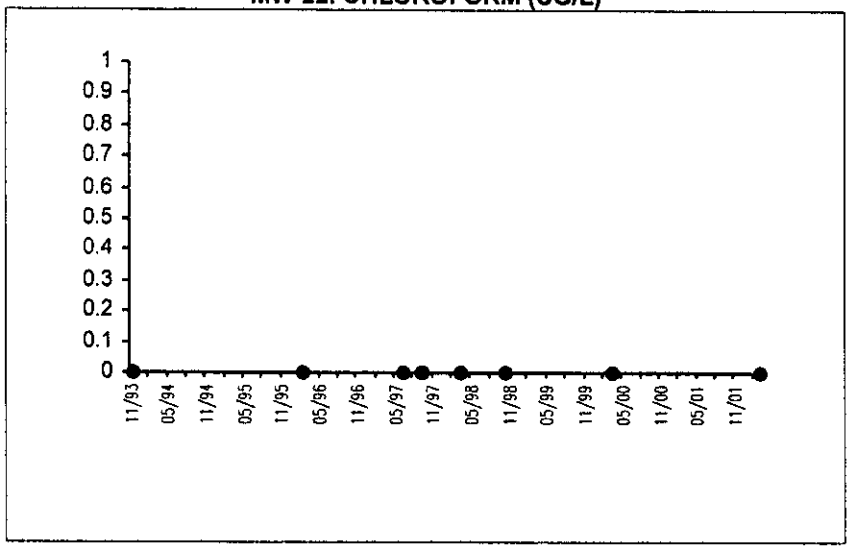
MW-22: CARBON TETRACHLORIDE (UG/L)



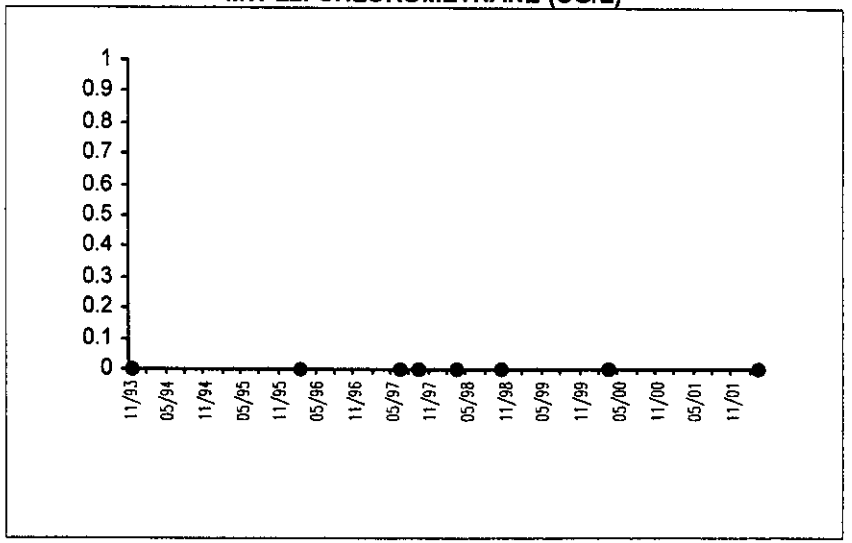
MW-22: CHLORIDE (AS CL) (MG/L)



MW-22: CHLOROFORM (UG/L)



MW-22: CHLOROMETHANE (UG/L)



* N[redacted]ects shown as 0.

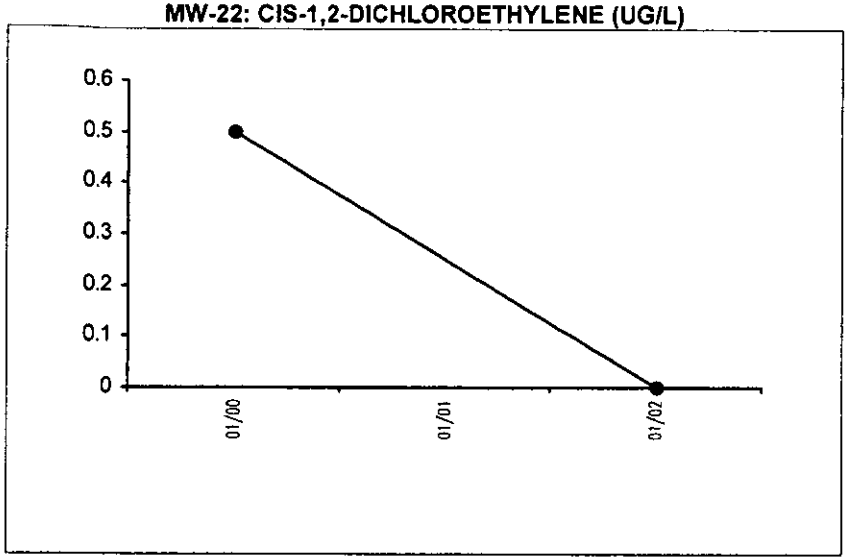
794 923

Location Purpose : Boundary

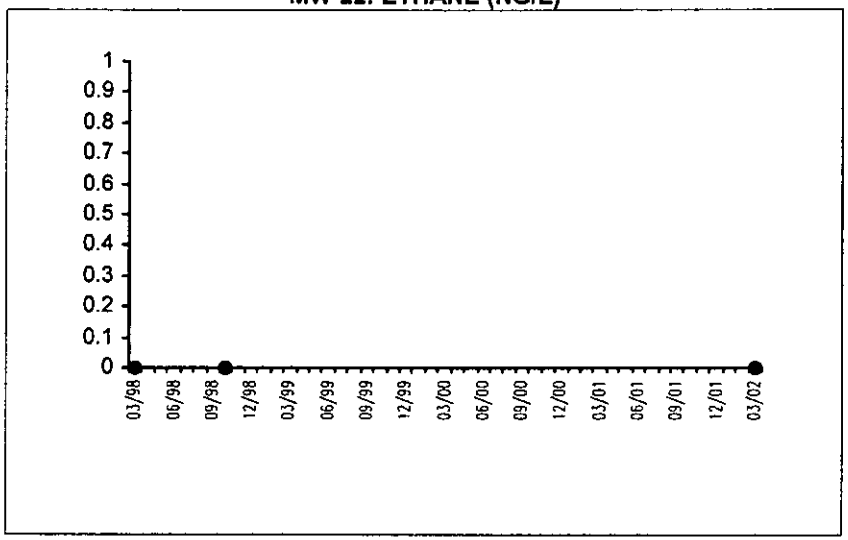
Boundary MW-22

Concentration vs Time

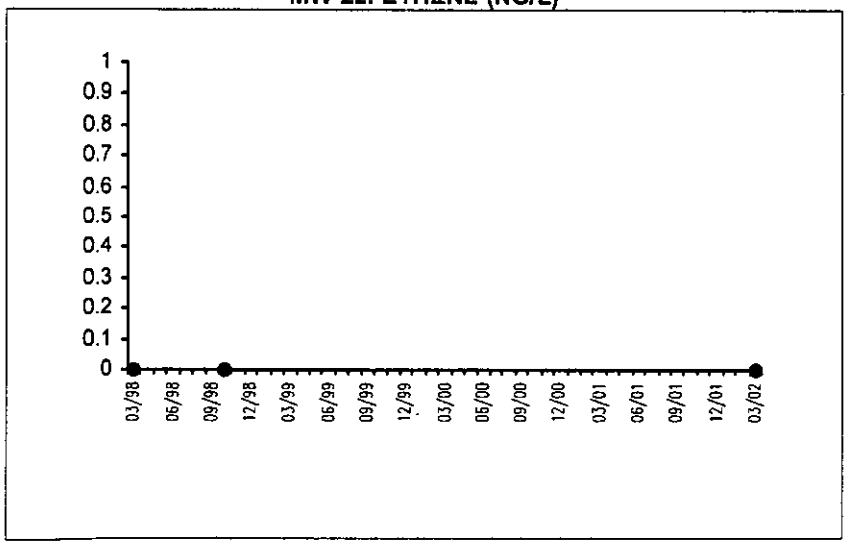
MW-22: CIS-1,2-DICHLOROETHYLENE (UG/L)



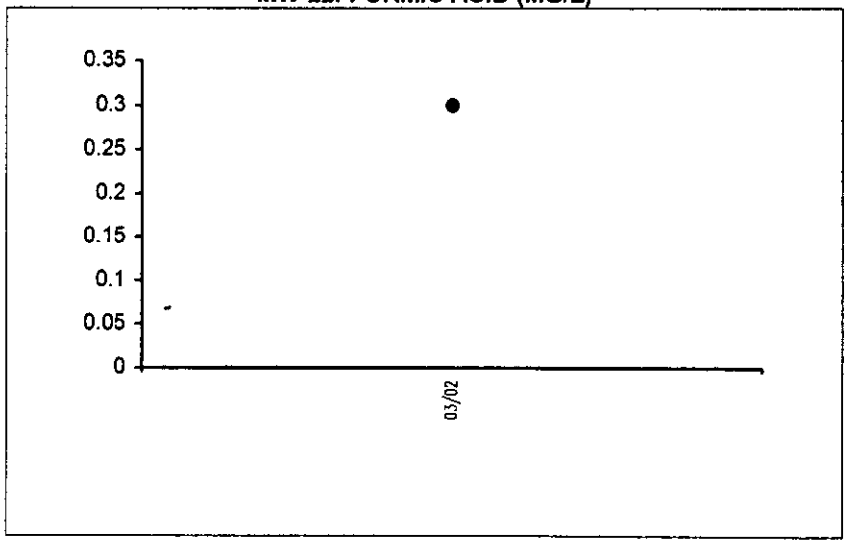
MW-22: ETHANE (NG/L)



MW-22: ETHENE (NG/L)



MW-22: FORMIC ACID (MG/L)



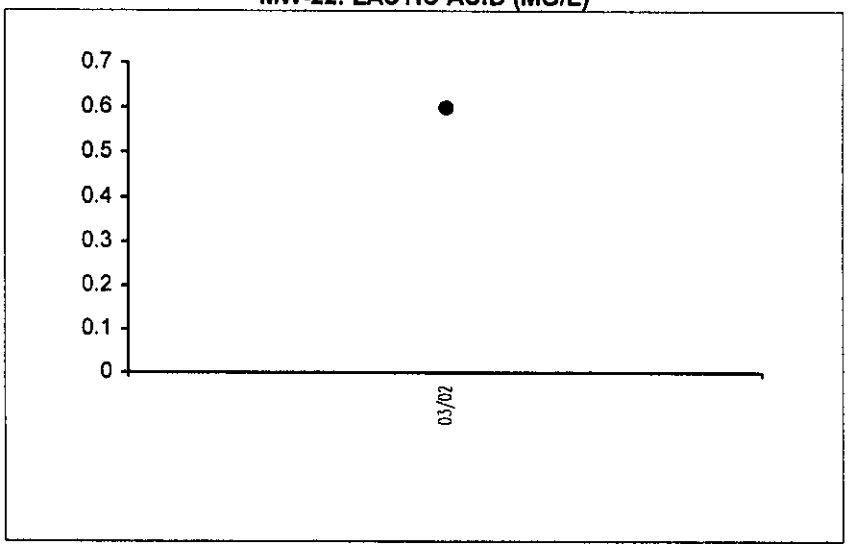
* Nondetects shown as 0.

Location Purpose : Boundary

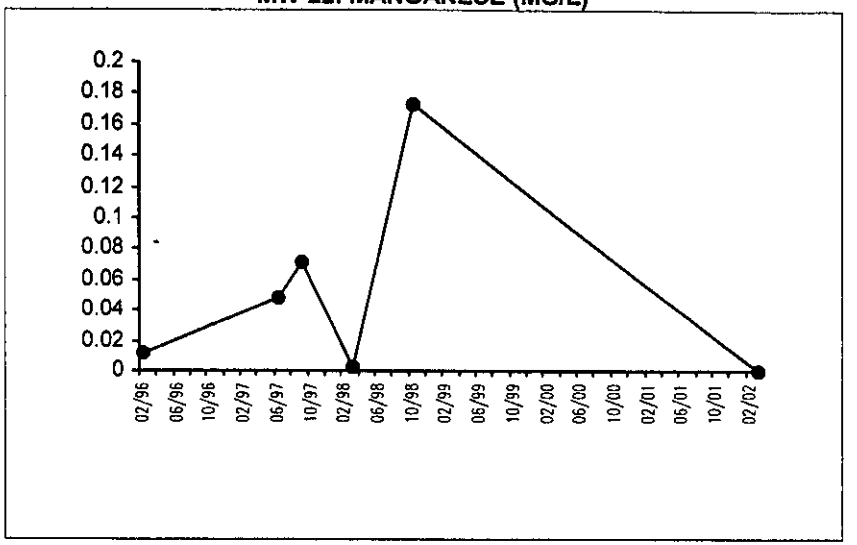
Boundary MW-22

Concentration vs Time

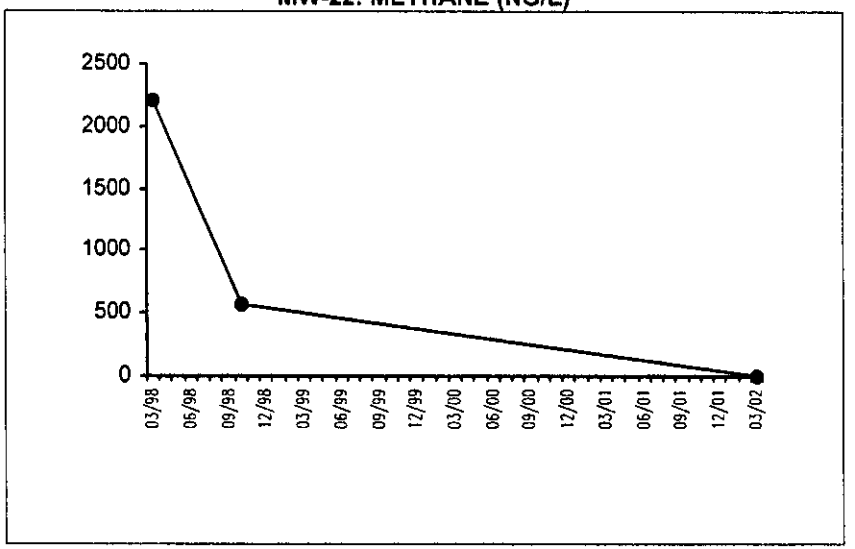
MW-22: LACTIC ACID (MG/L)



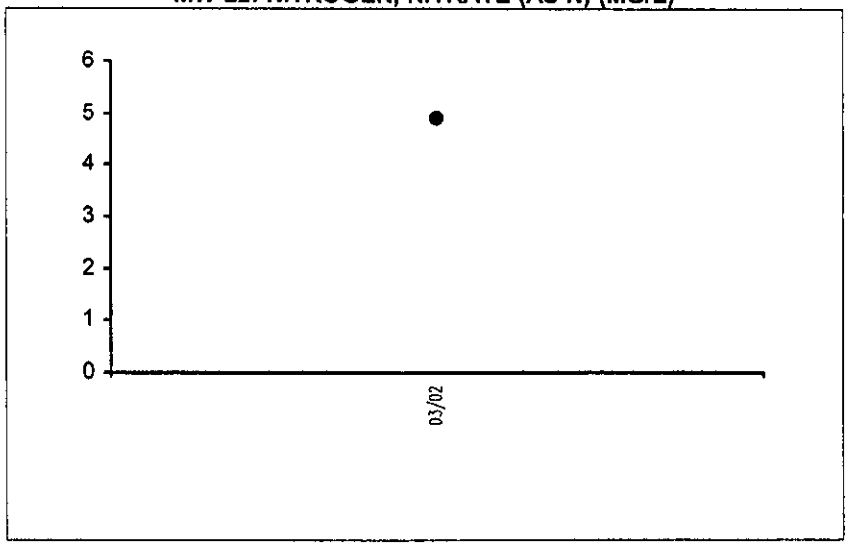
MW-22: MANGANESE (MG/L)



MW-22: METHANE (NG/L)



MW-22: NITROGEN, NITRATE (AS N) (MG/L)



* N ects shown as 0.

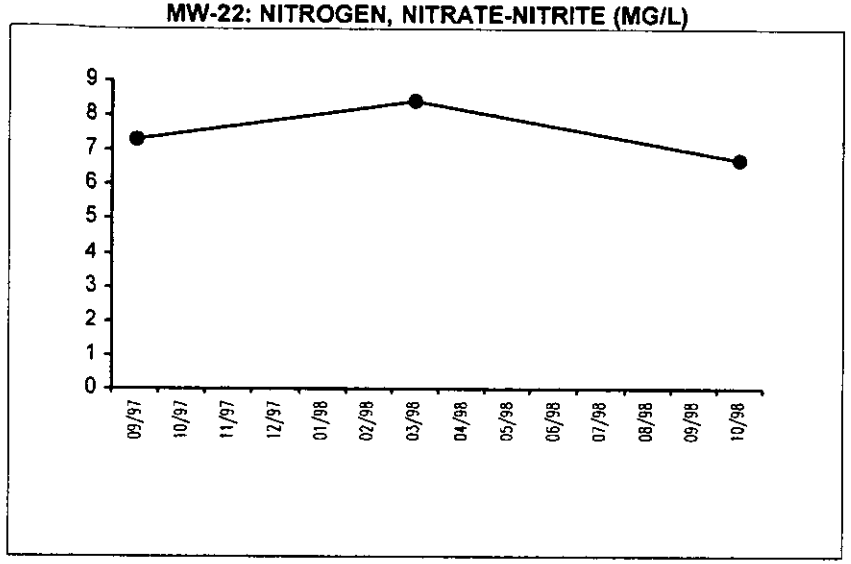
794 925

Location Purpose : Boundary

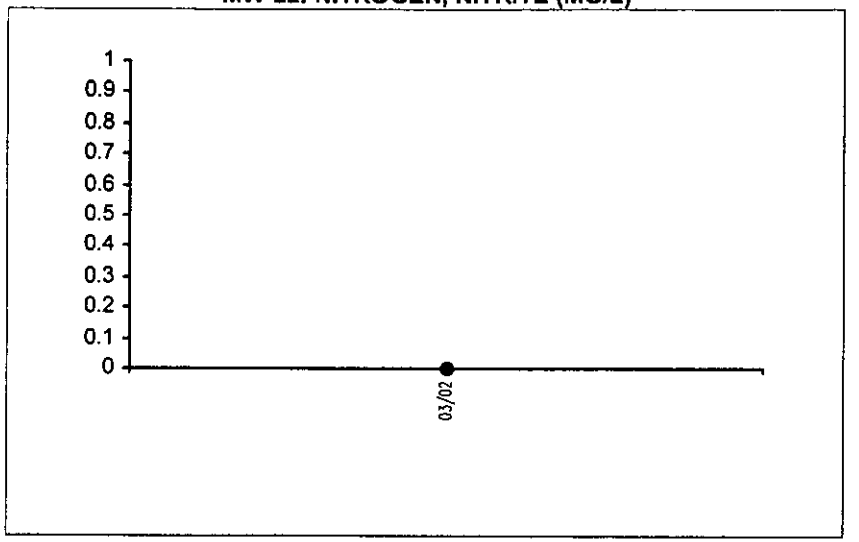
Boundary MW-22

Concentration vs Time

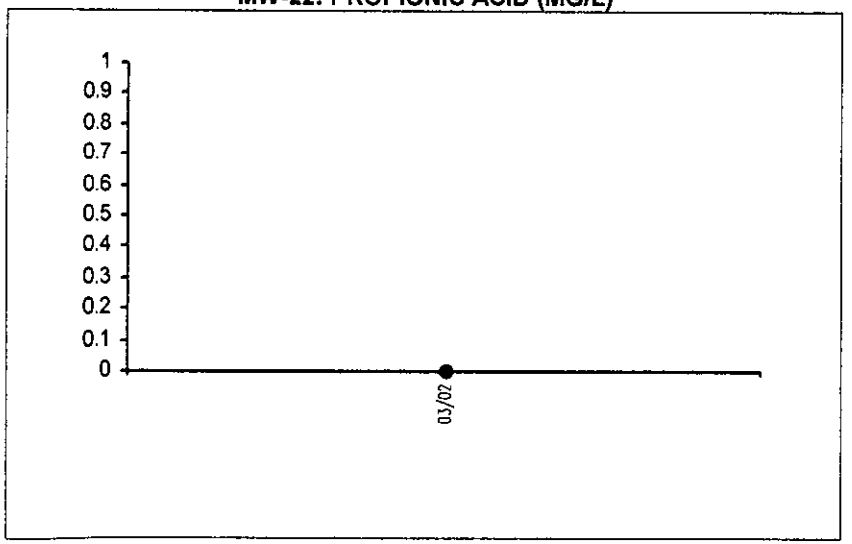
MW-22: NITROGEN, NITRATE-NITRITE (MG/L)



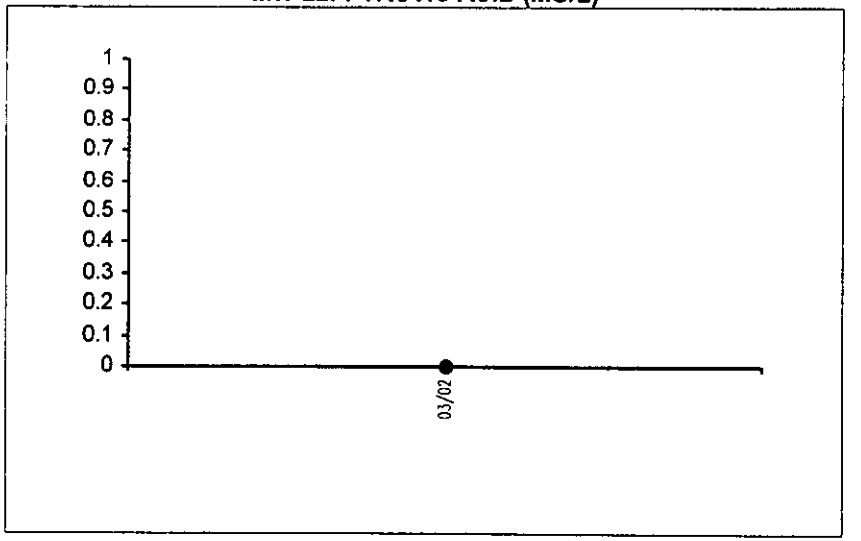
MW-22: NITROGEN, NITRITE (MG/L)



MW-22: PROPIONIC ACID (MG/L)



MW-22: PYRUVIC ACID (MG/L)



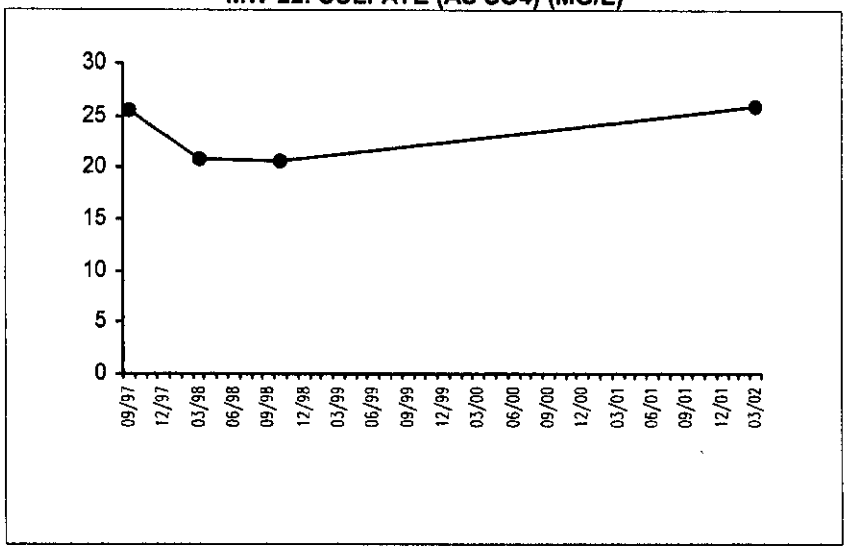
* Nondetects shown as 0.

Location Purpose : Boundary

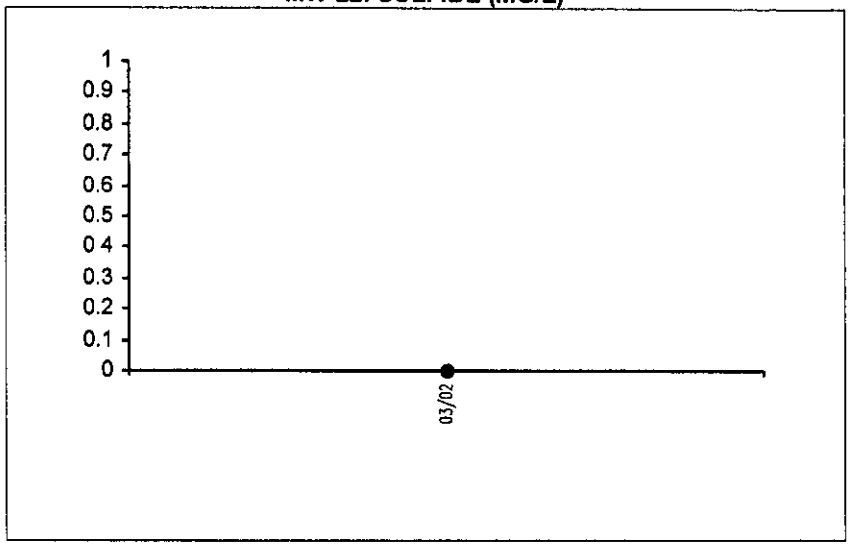
Boundary MW-22

Concentration vs Time

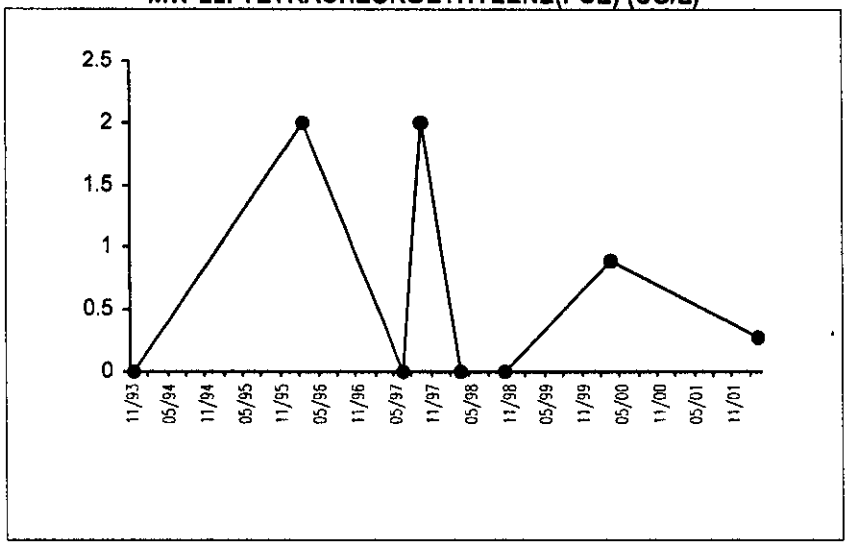
MW-22: SULFATE (AS SO4) (MG/L)



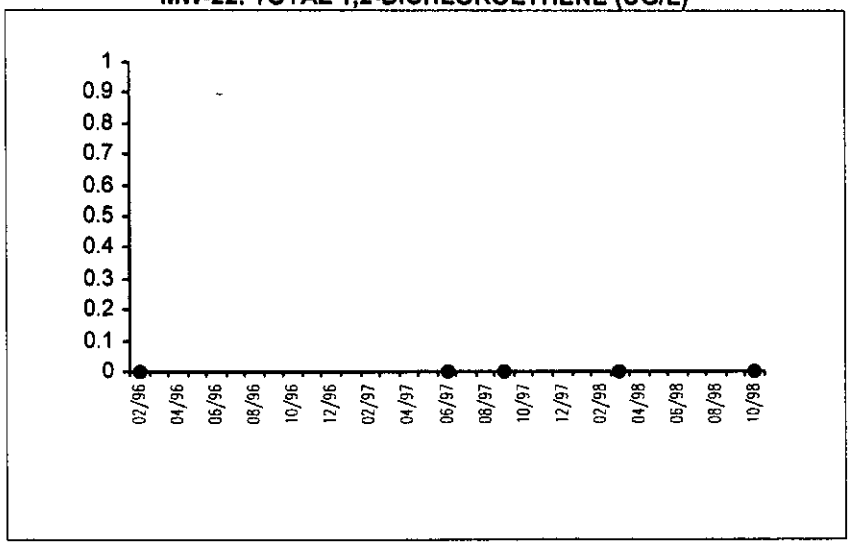
MW-22: SULFIDE (MG/L)



MW-22: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-22: TOTAL 1,2-DICHLOROETHENE (UG/L)



* N[redacted]ects shown as 0.

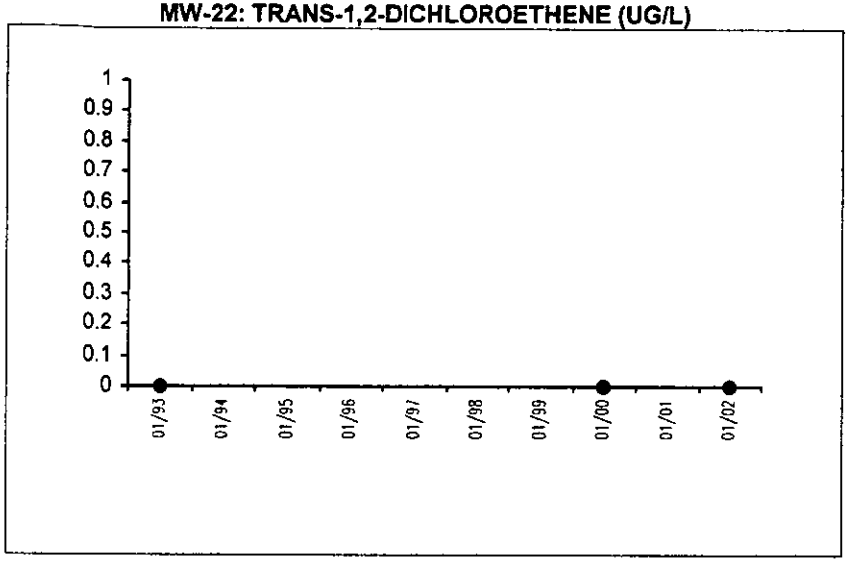
794 927

Location Purpose : Boundary

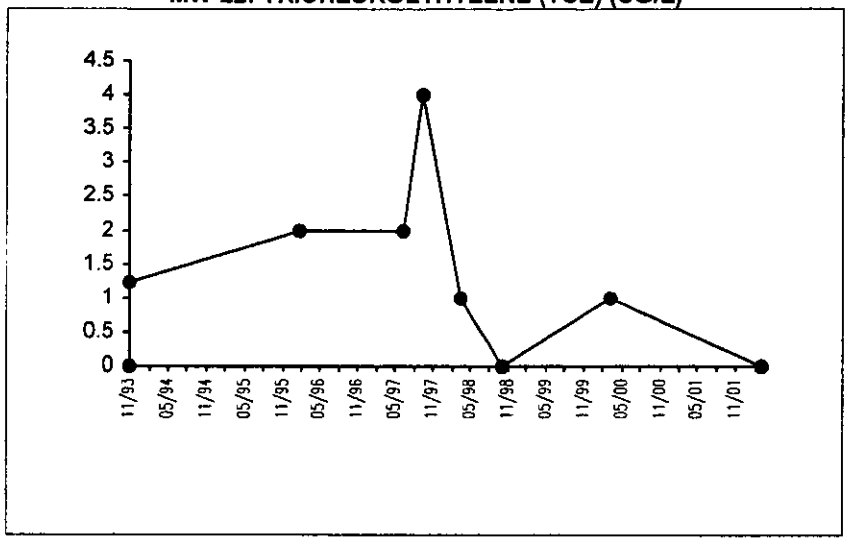
Boundary MW-22

Concentration vs Time

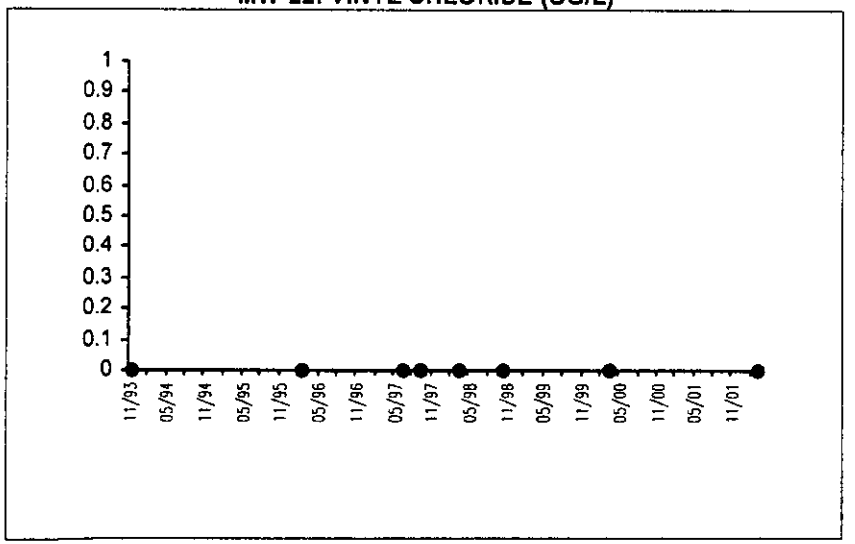
MW-22: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-22: TRICHLOROETHYLENE (TCE) (UG/L)



MW-22: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

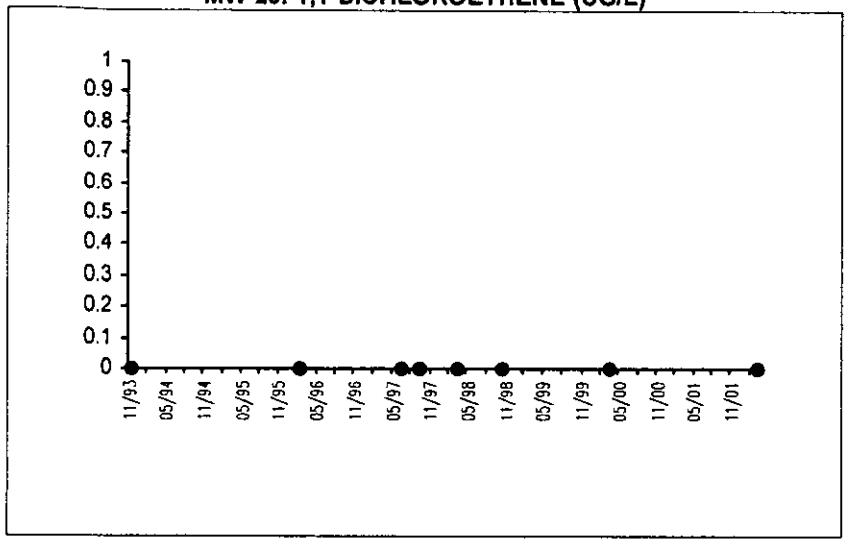
794 928

Location Purpose : Boundary

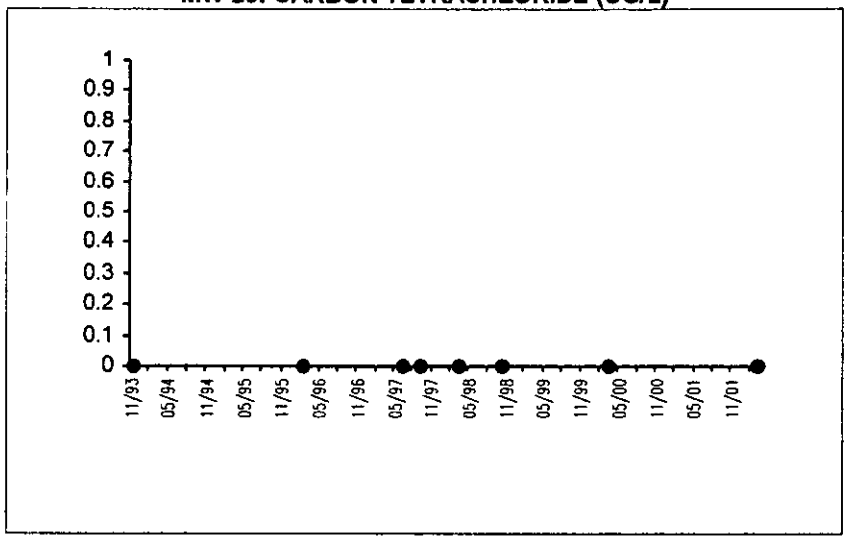
Boundary MW-23

Concentration vs Time

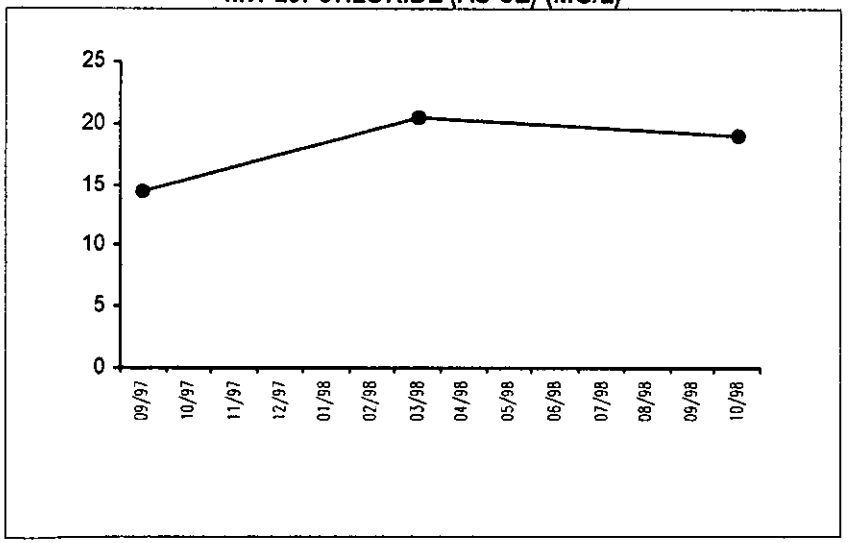
MW-23: 1,1-DICHLOROETHENE (UG/L)



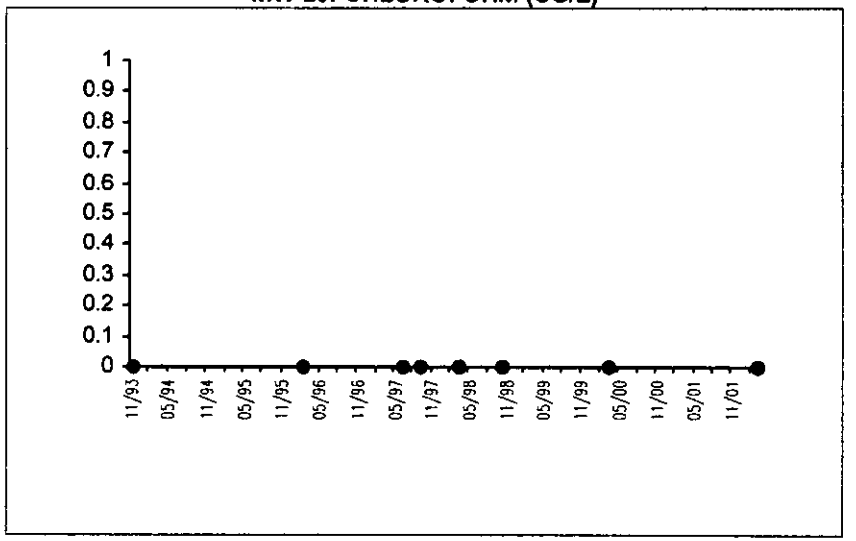
MW-23: CARBON TETRACHLORIDE (UG/L)



MW-23: CHLORIDE (AS CL) (MG/L)



MW-23: CHLOROFORM (UG/L)



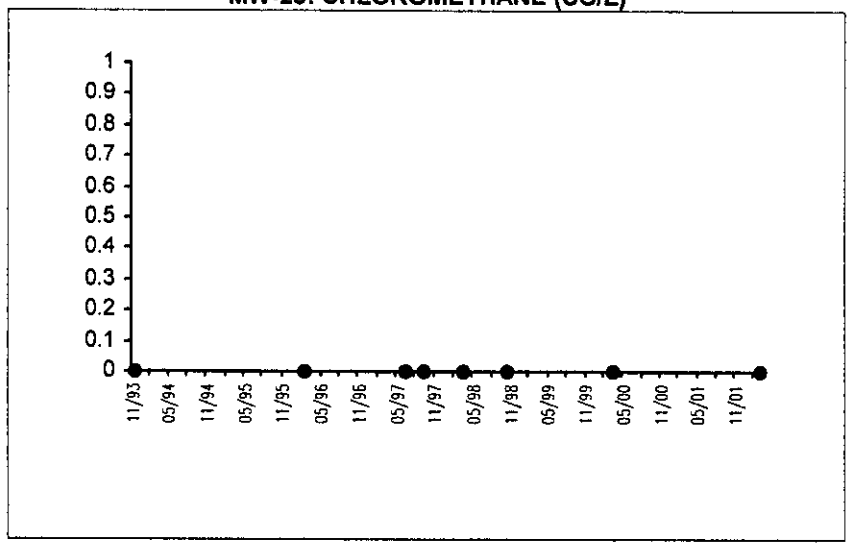
* Nondetects shown as 0.

Location Purpose : Boundary

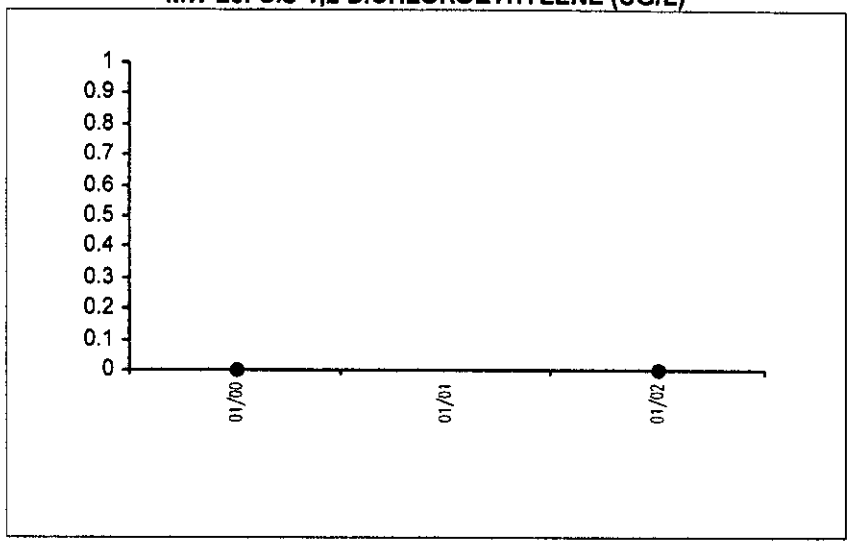
Boundary MW-23

Concentration vs Time

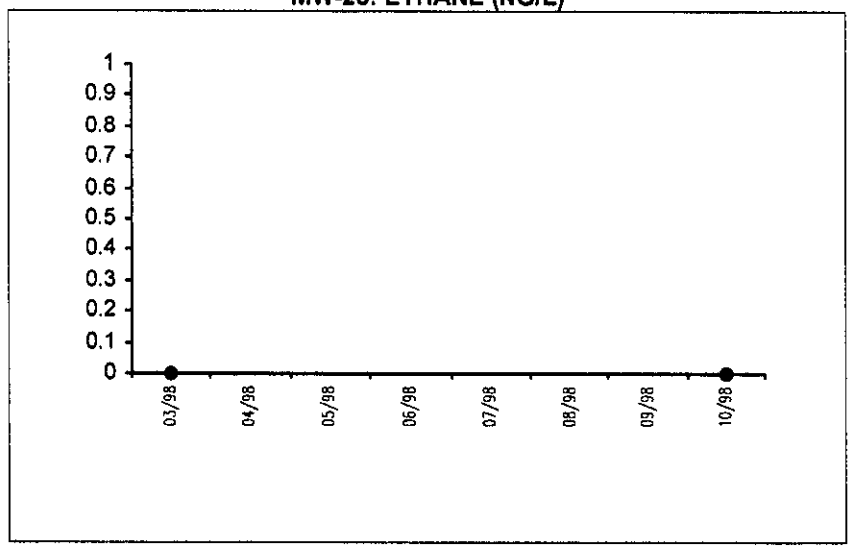
MW-23: CHLOROMETHANE (UG/L)



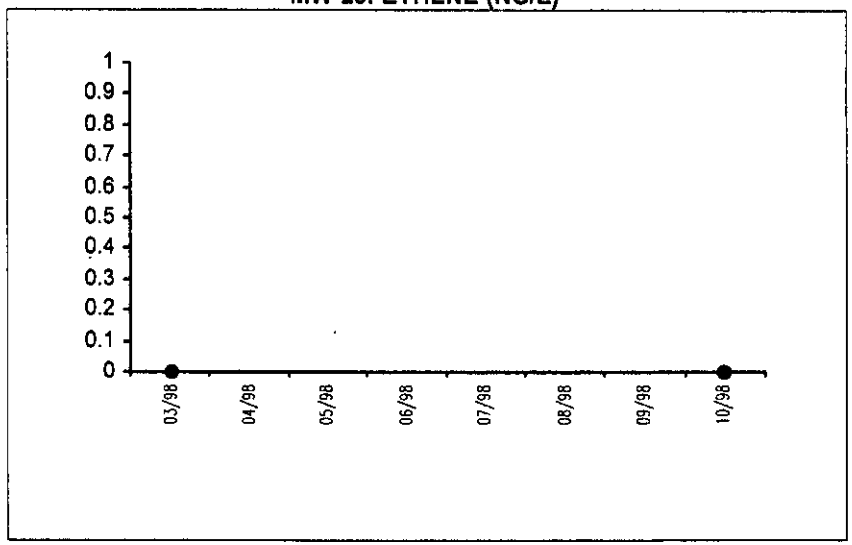
MW-23: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-23: ETHANE (NG/L)



MW-23: ETHENE (NG/L)



* N[redacted]ects shown as 0.

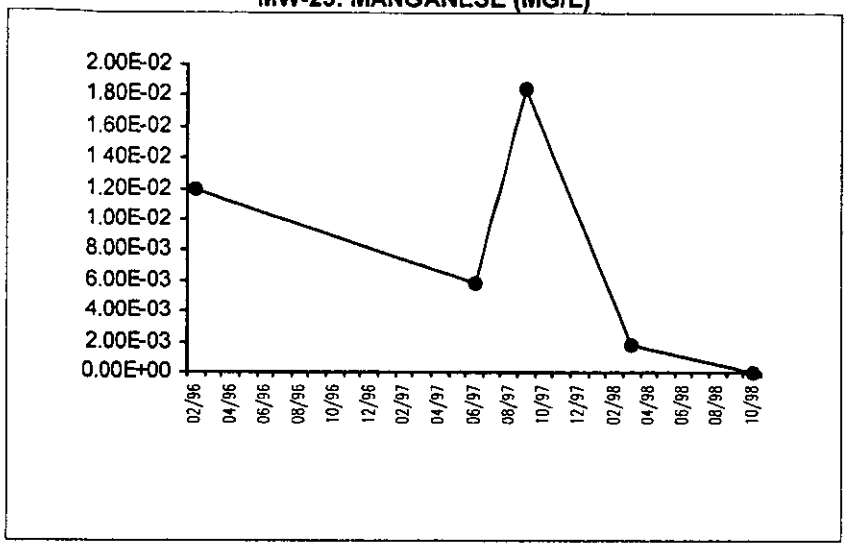
794 930

Location Purpose : Boundary

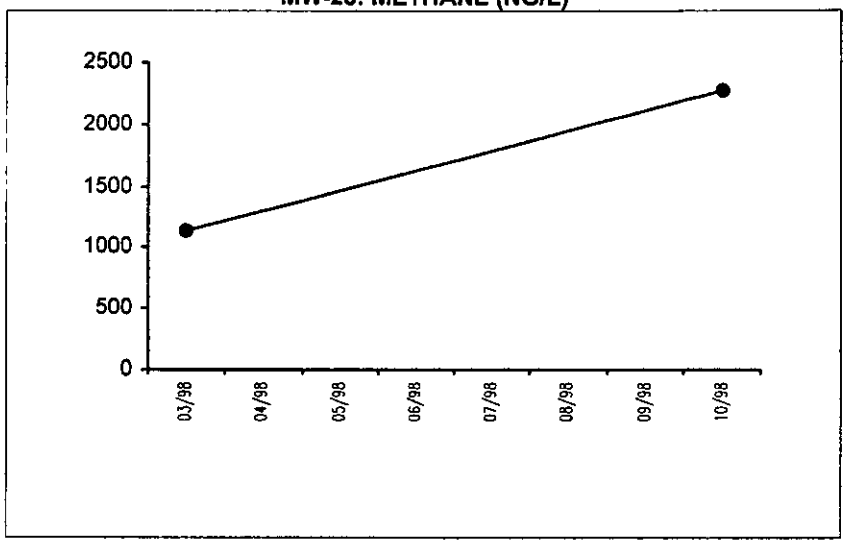
Boundary MW-23

Concentration vs Time

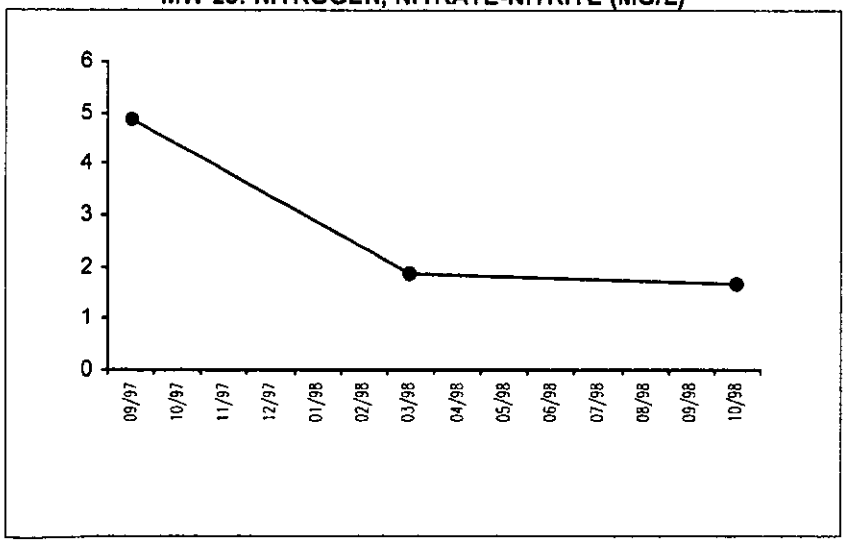
MW-23: MANGANESE (MG/L)



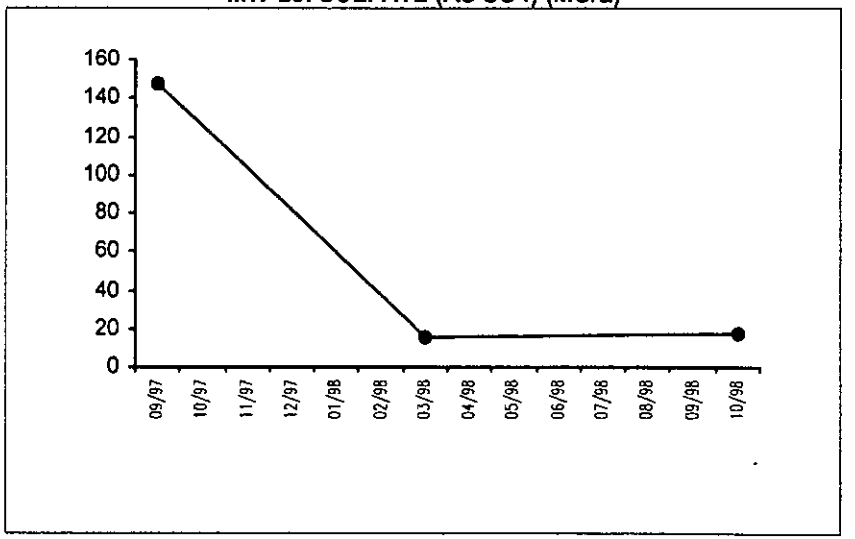
MW-23: METHANE (NG/L)



MW-23: NITROGEN, NITRATE-NITRITE (MG/L)



MW-23: SULFATE (AS SO4) (MG/L)



* Nondetects shown as 0.

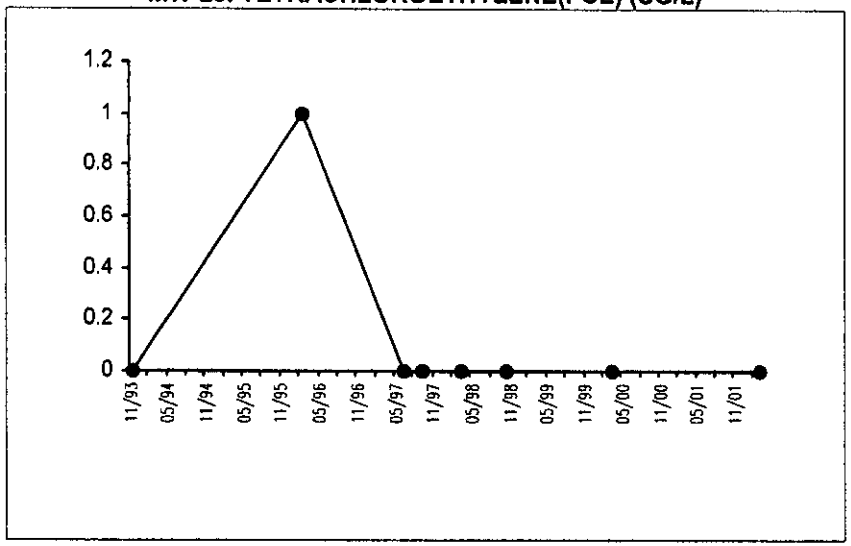
794 93:

Location Purpose : Boundary

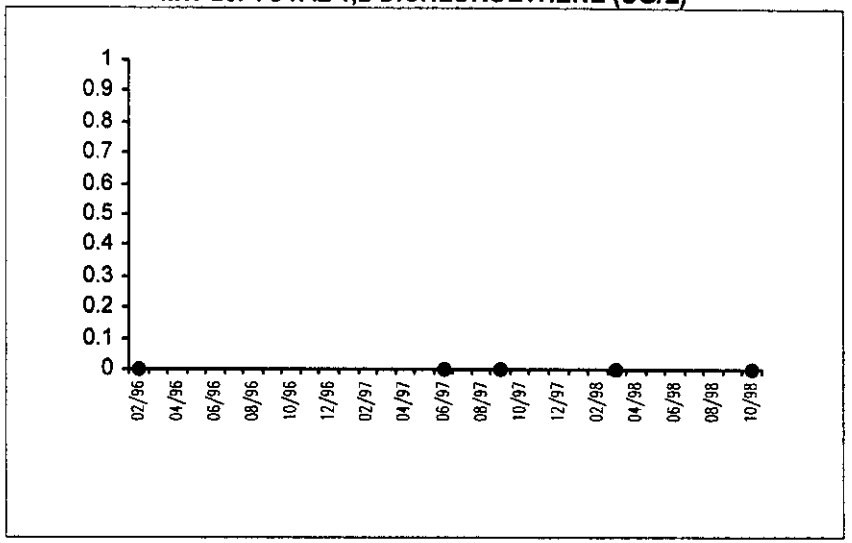
Boundary MW-23

Concentration vs Time

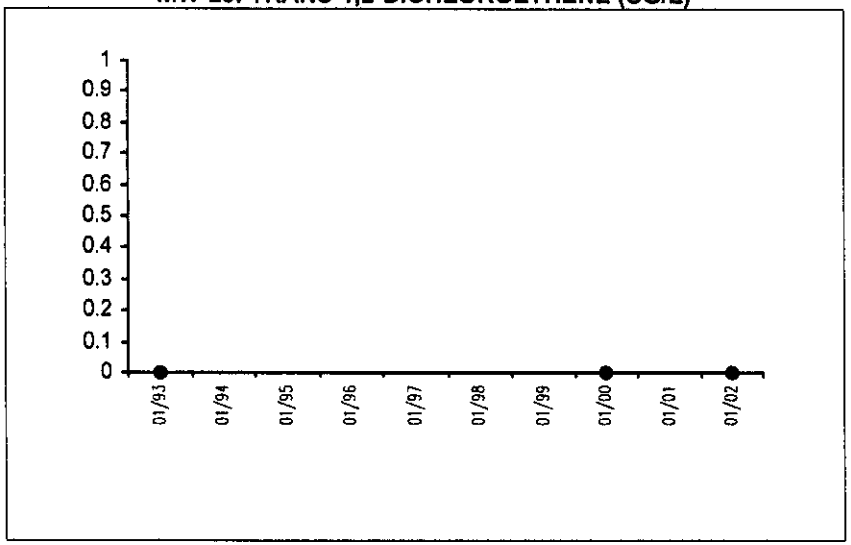
MW-23: TETRACHLOROETHYLENE(PCE) (UG/L)



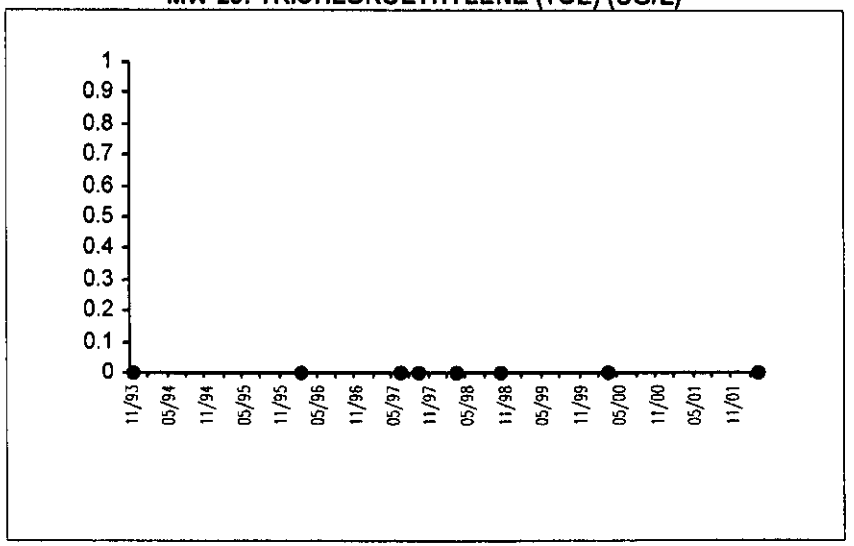
MW-23: TOTAL 1,2-DICHLOROETHENE (UG/L)



MW-23: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-23: TRICHLOROETHYLENE (TCE) (UG/L)



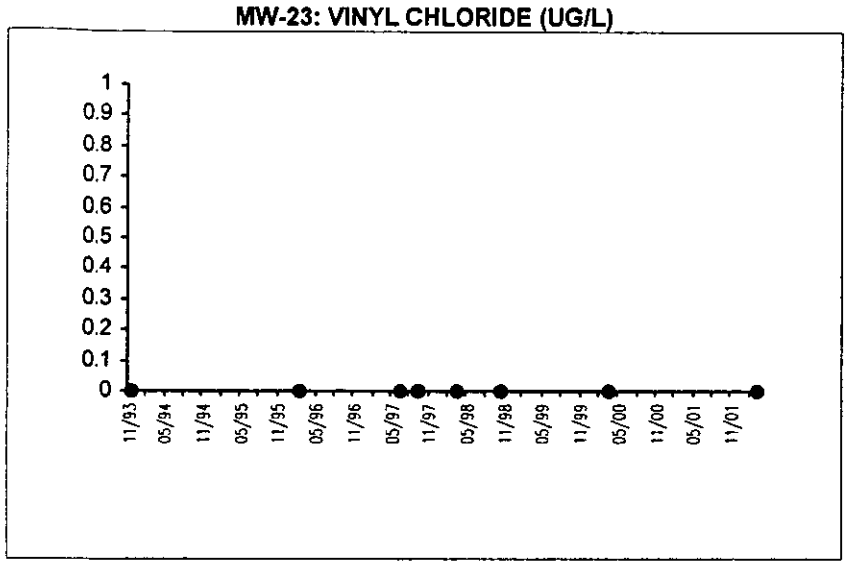
* N[redacted]ects shown as 0.

794 932

Location Purpose : Boundary

Boundary MW-23

Concentration vs Time



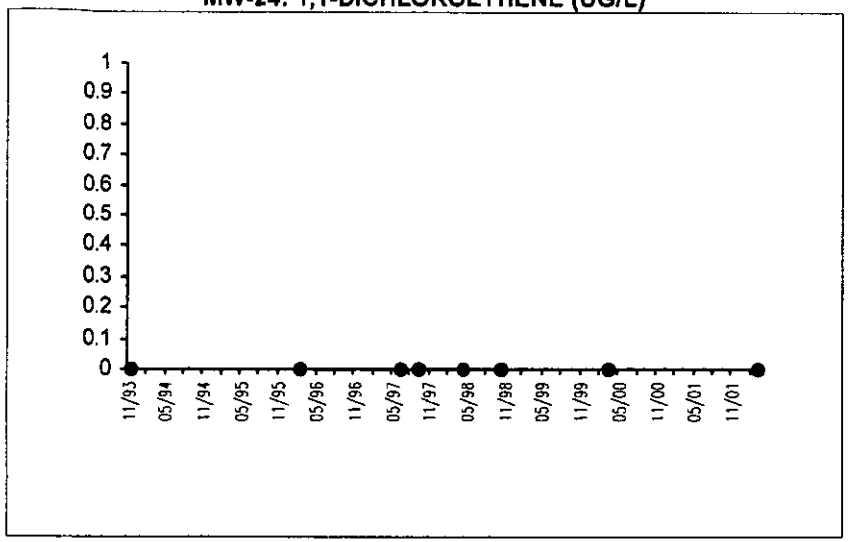
* Nondetects shown as 0.

Location Purpose : Boundary

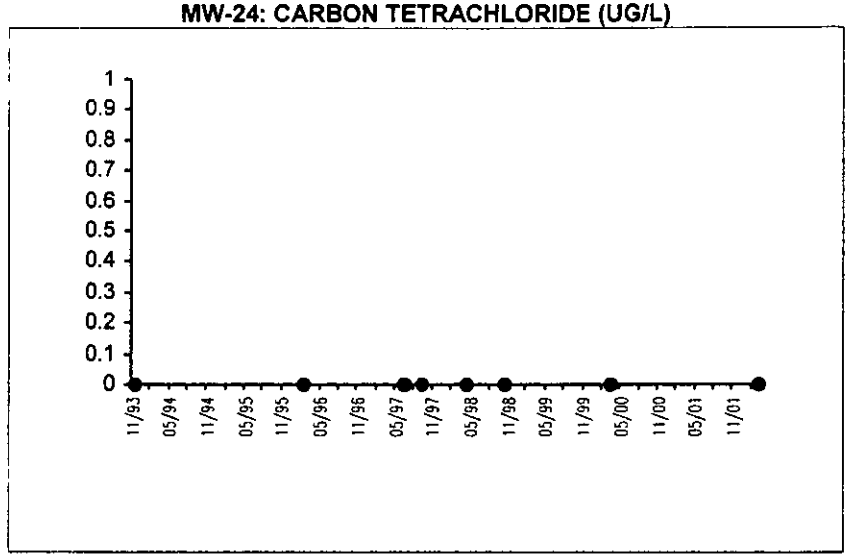
Boundary MW-24

Concentration vs Time

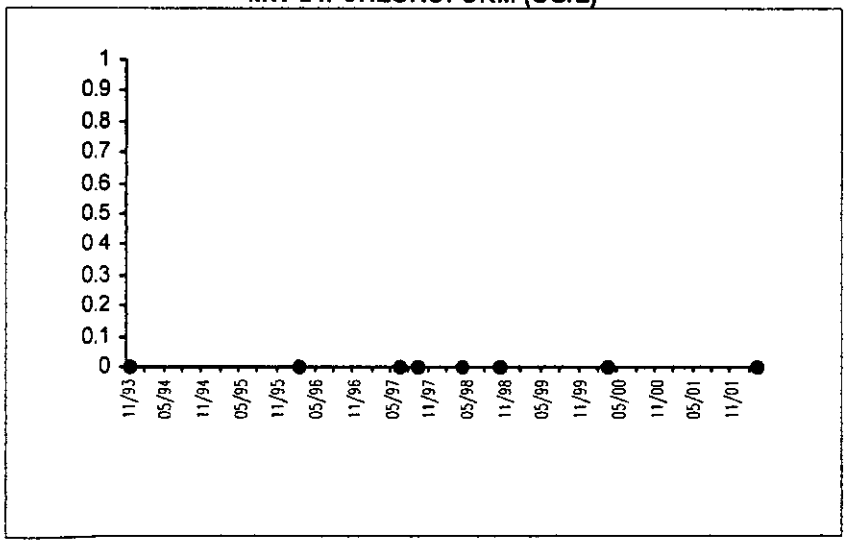
MW-24: 1,1-DICHLOROETHENE (UG/L)



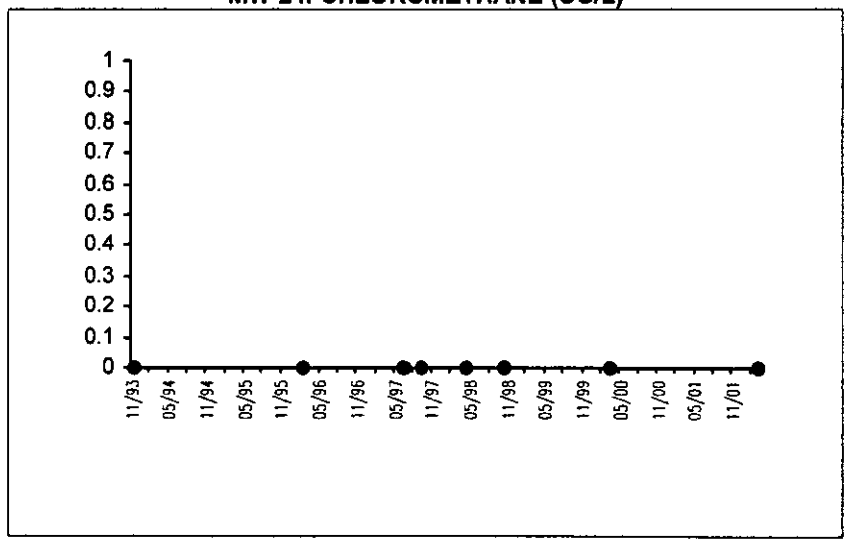
MW-24: CARBON TETRACHLORIDE (UG/L)



MW-24: CHLOROFORM (UG/L)



MW-24: CHLOROMETHANE (UG/L)



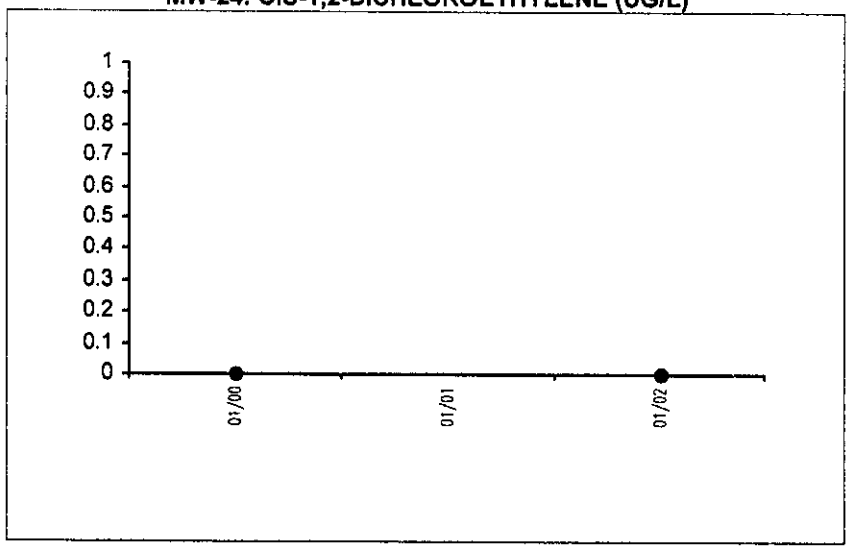
* Nondetects shown as 0.

Location Purpose : Boundary

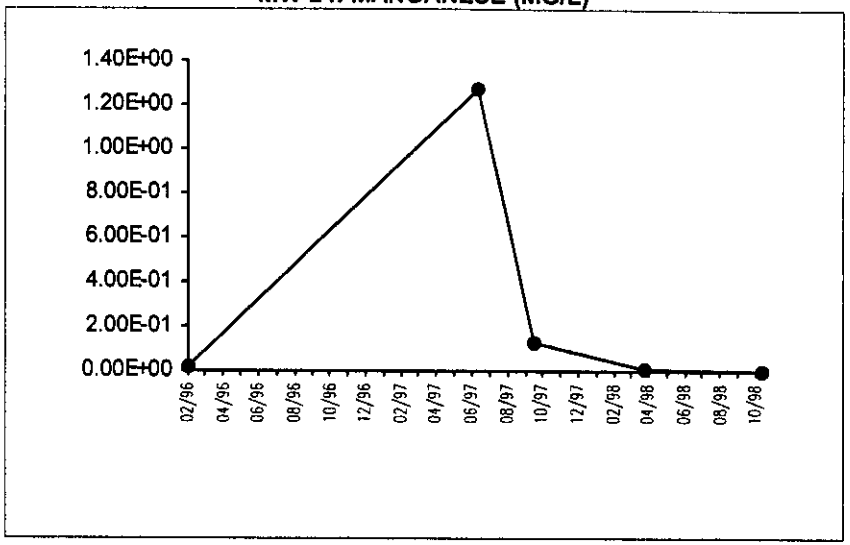
Boundary MW-24

Concentration vs Time

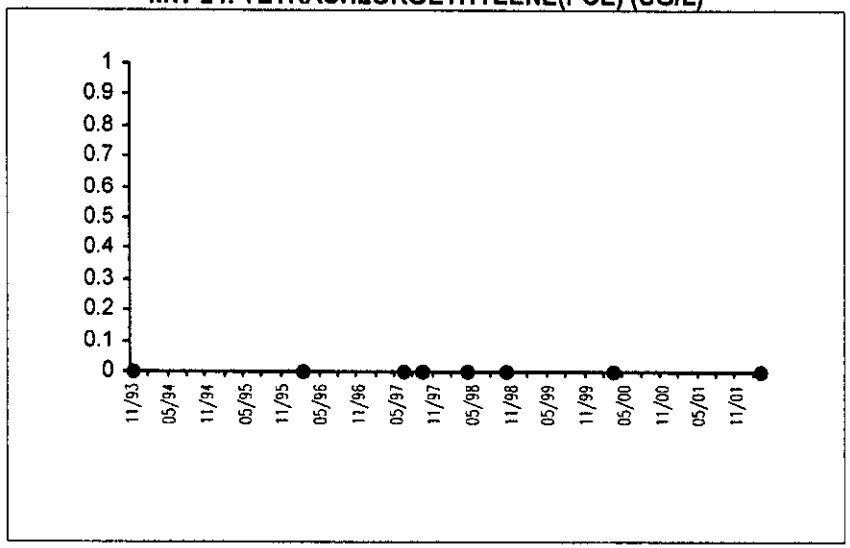
MW-24: CIS-1,2-DICHLOROETHYLENE (UG/L)



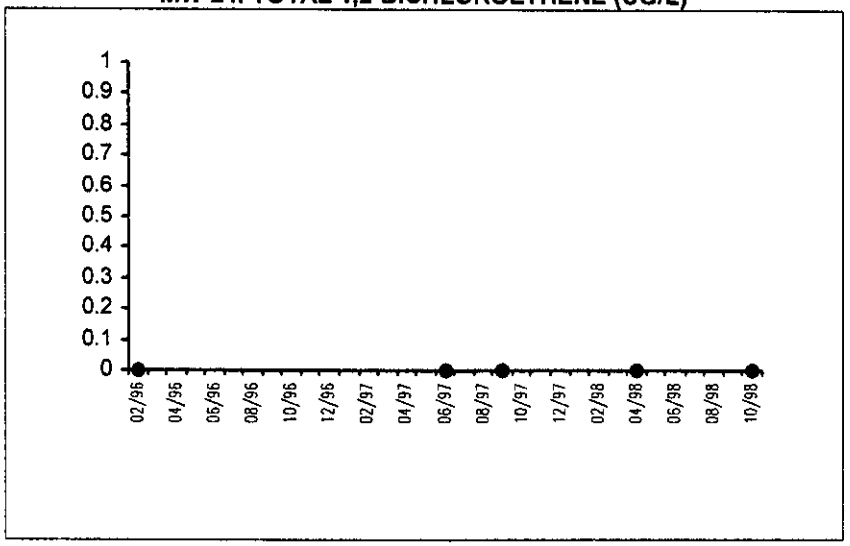
MW-24: MANGANESE (MG/L)



MW-24: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-24: TOTAL 1,2-DICHLOROETHENE (UG/L)



* N[redacted]ects shown as 0.

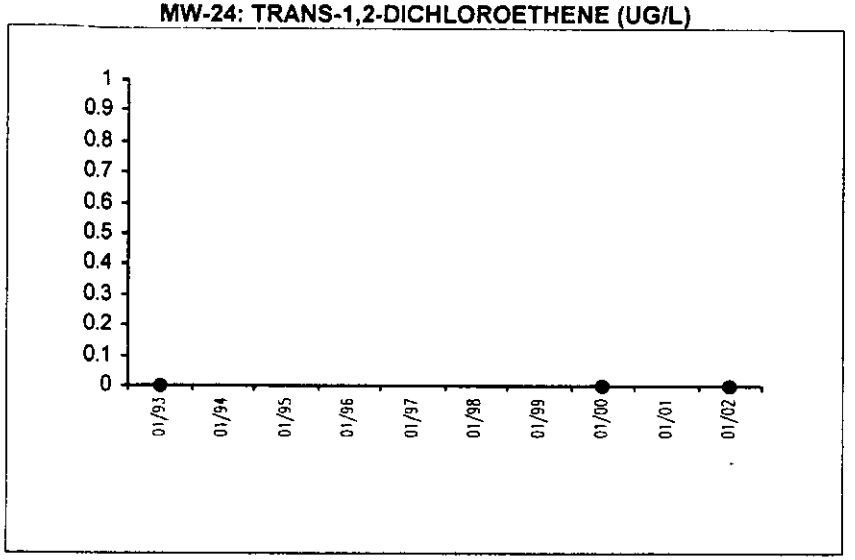
794 935

Location Purpose : Boundary

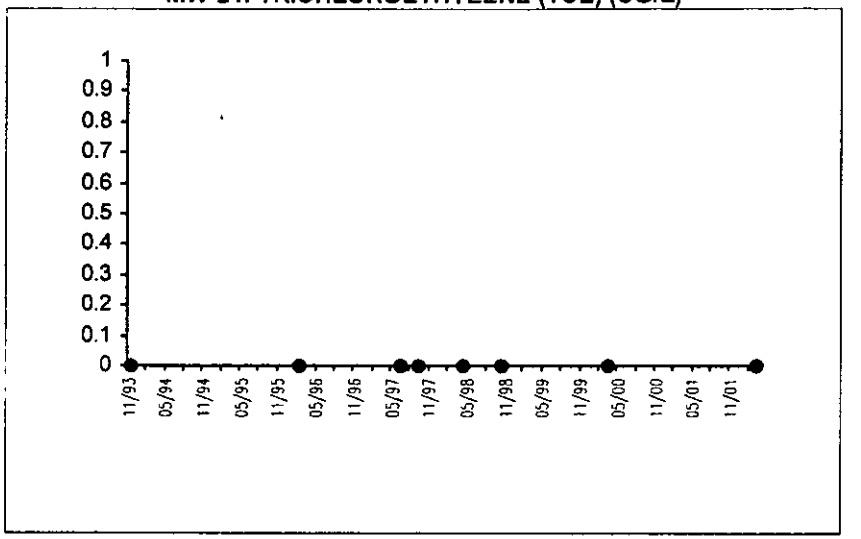
Boundary MW-24

Concentration vs Time

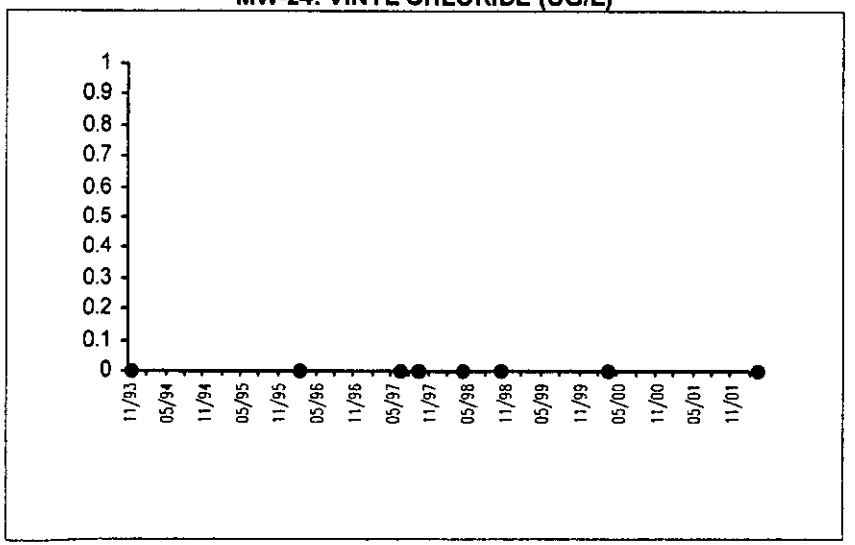
MW-24: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-24: TRICHLOROETHYLENE (TCE) (UG/L)



MW-24: VINYL CHLORIDE (UG/L)



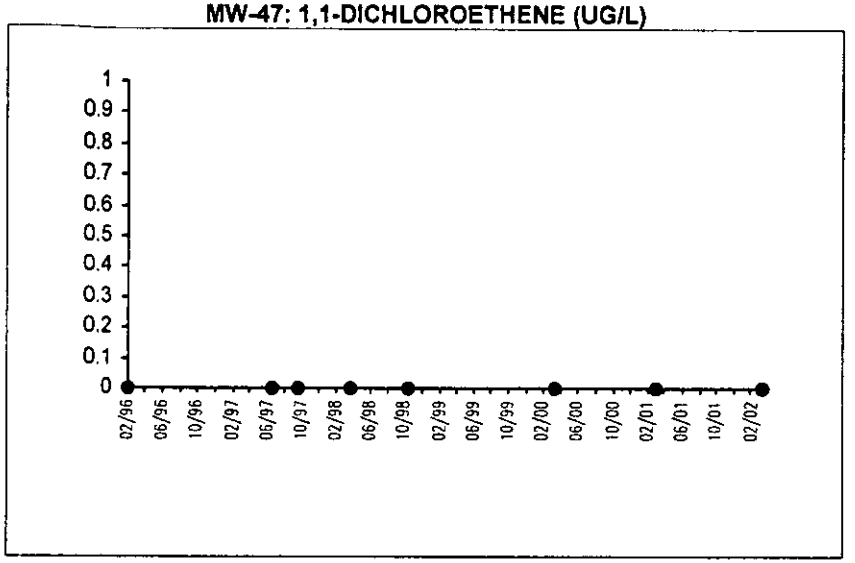
* Nondetects shown as 0.

Location Purpose : Boundary

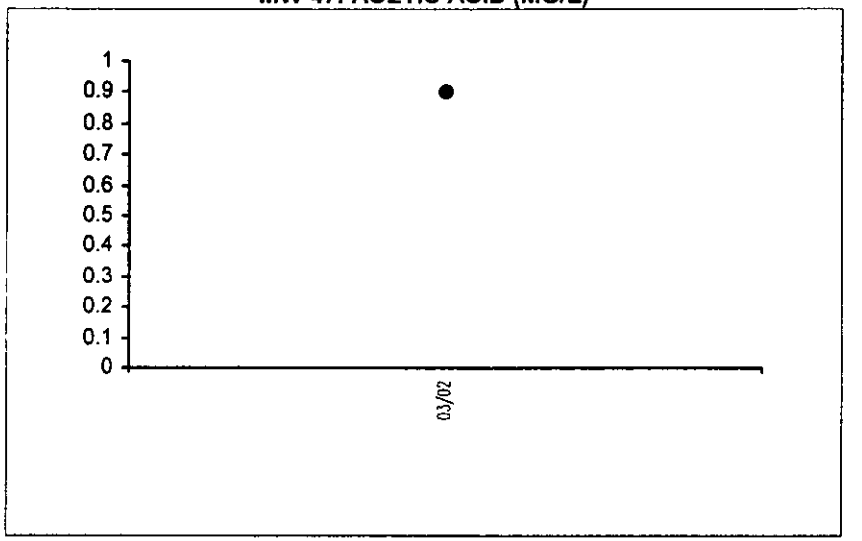
Boundary MW-47

Concentration vs Time

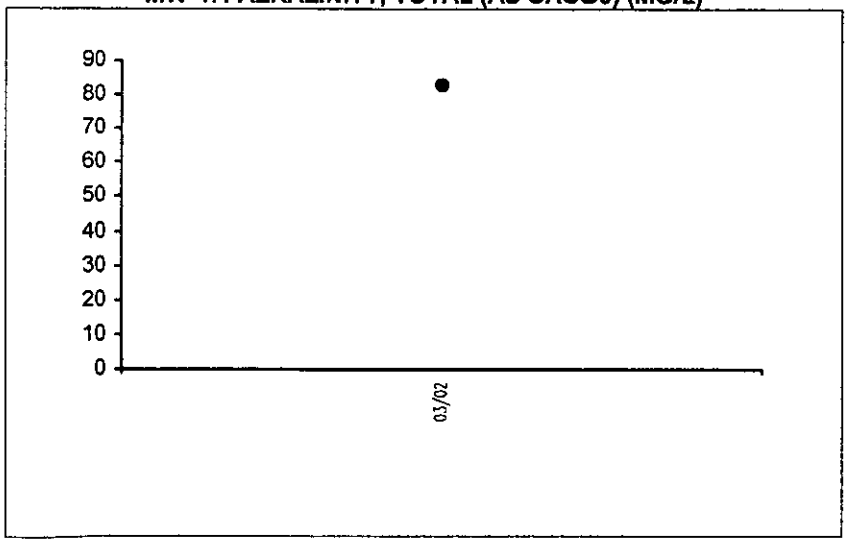
MW-47: 1,1-DICHLOROETHENE (UG/L)



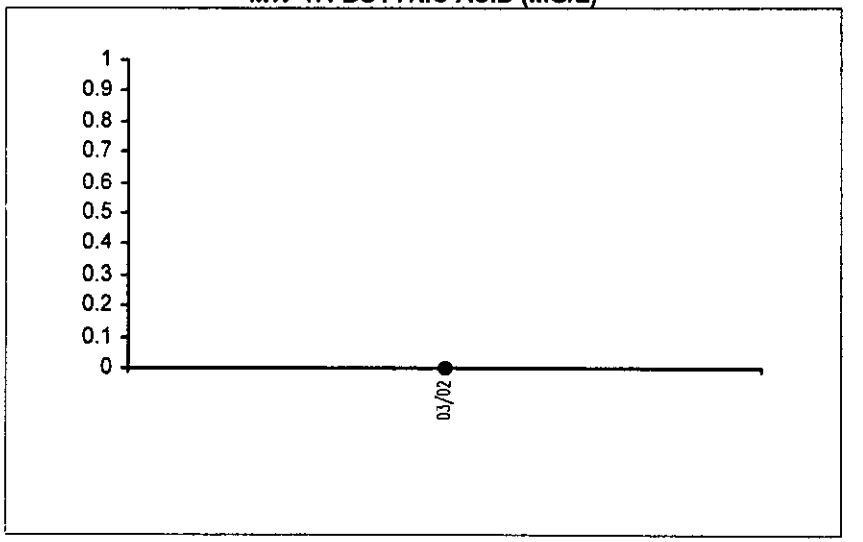
MW-47: ACETIC ACID (MG/L)



MW-47: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-47: BUTYRIC ACID (MG/L)



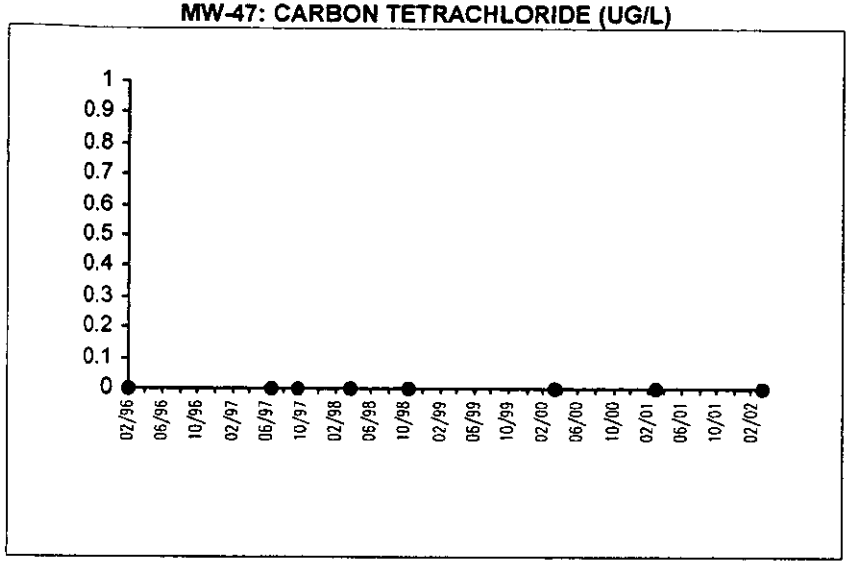
* Nondetects shown as 0.

Location Purpose : Boundary

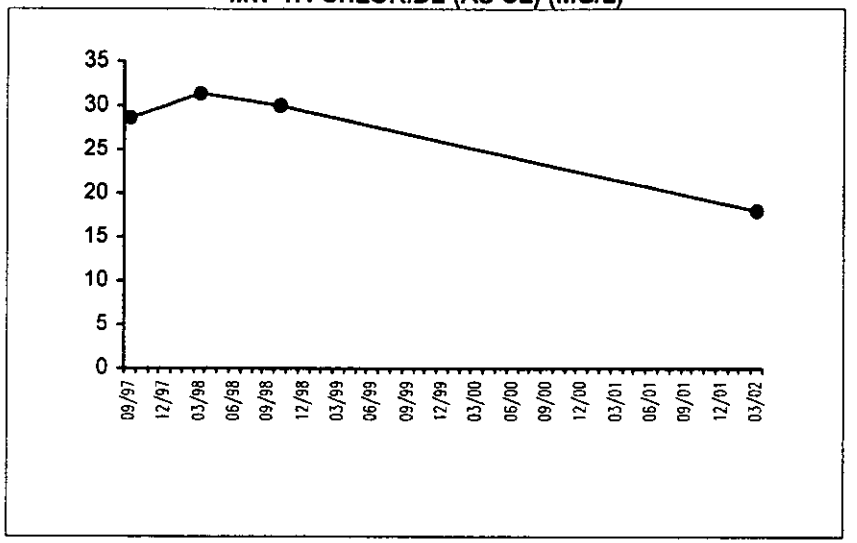
Boundary MW-47

Concentration vs Time

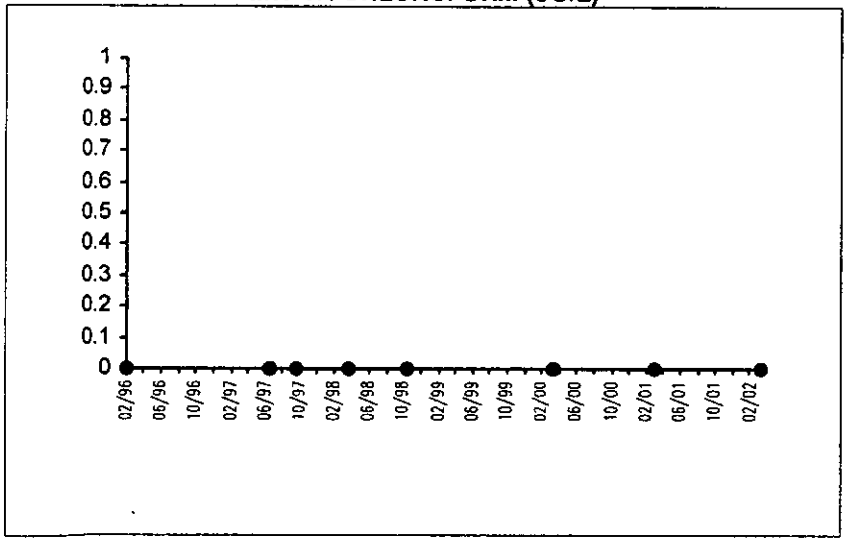
MW-47: CARBON TETRACHLORIDE (UG/L)



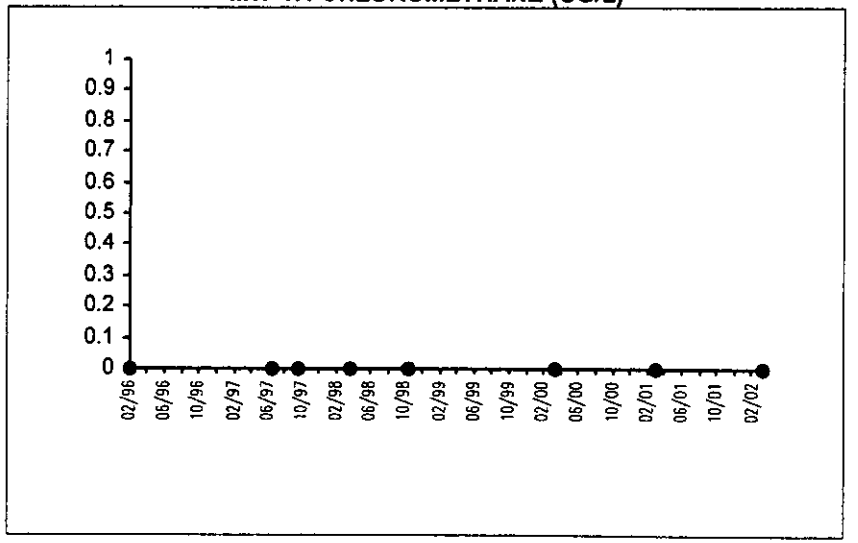
MW-47: CHLORIDE (AS CL) (MG/L)



MW-47: CHLOROFORM (UG/L)



MW-47: CHLOROMETHANE (UG/L)



* N[redacted]ects shown as 0.

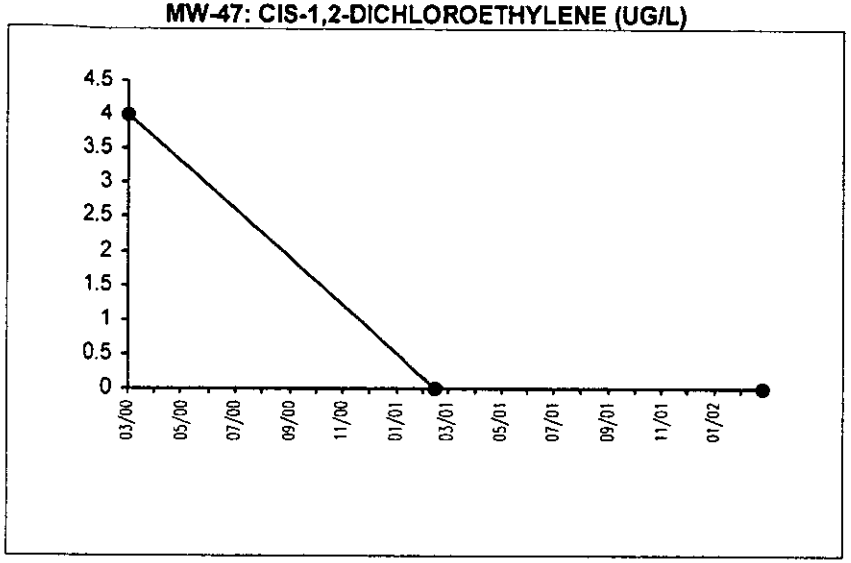
794 938

Location Purpose : Boundary

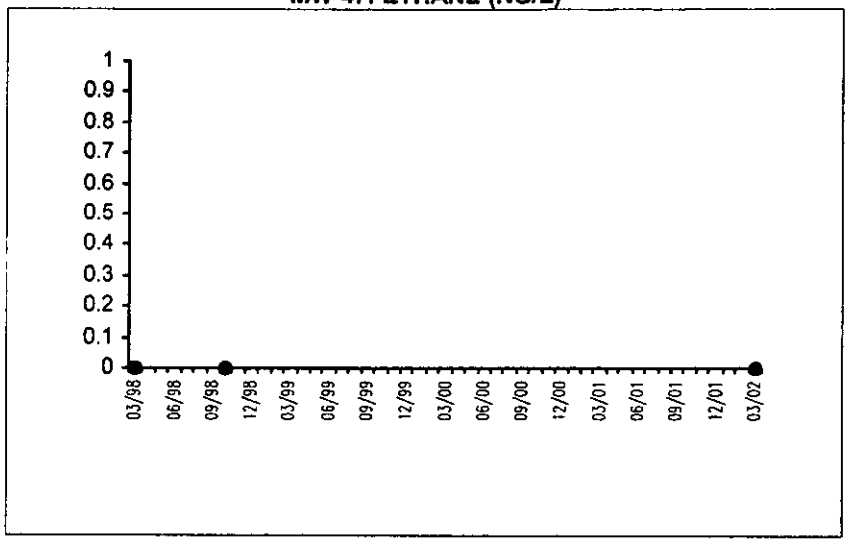
Boundary MW-47

Concentration vs Time

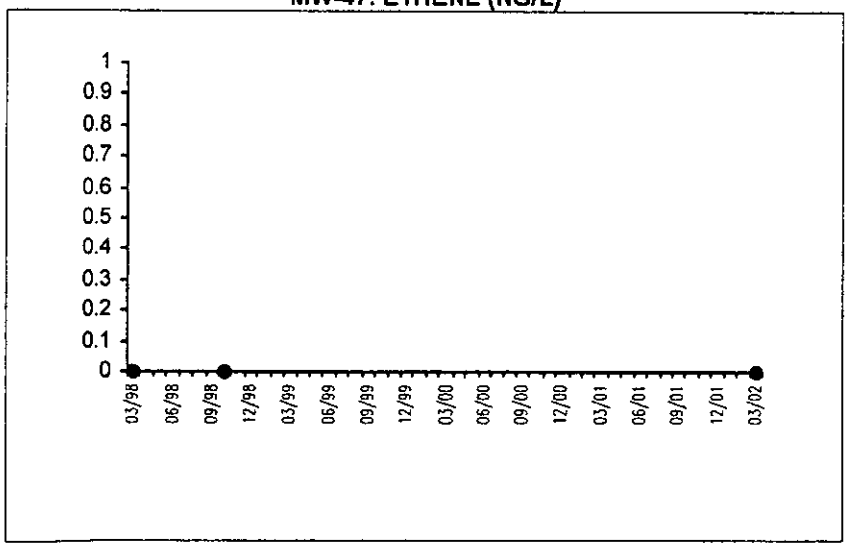
MW-47: CIS-1,2-DICHLOROETHYLENE (UG/L)



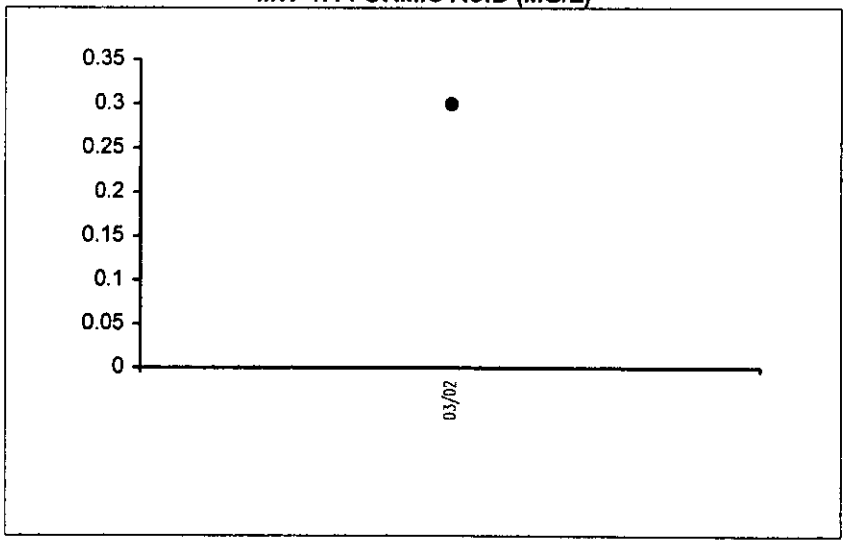
MW-47: ETHANE (NG/L)



MW-47: ETHENE (NG/L)



MW-47: FORMIC ACID (MG/L)



* Nondetects shown as 0.

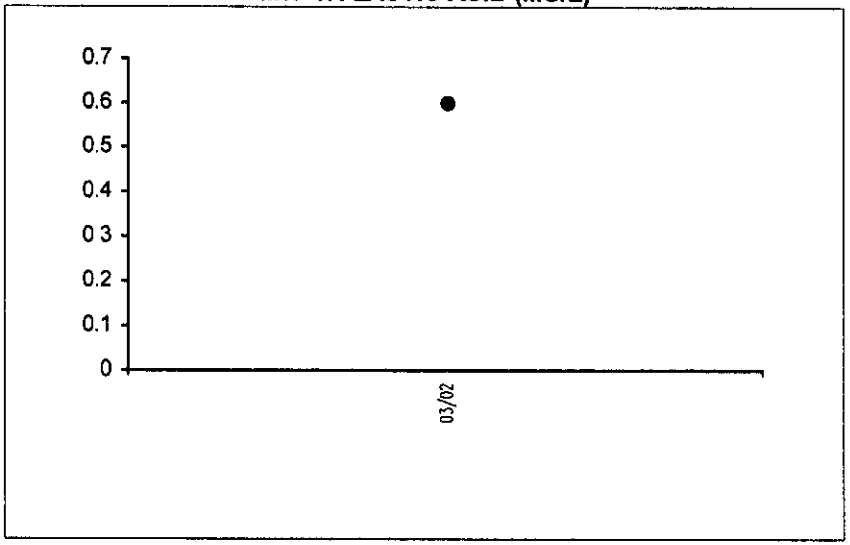
794 939

Location Purpose : Boundary

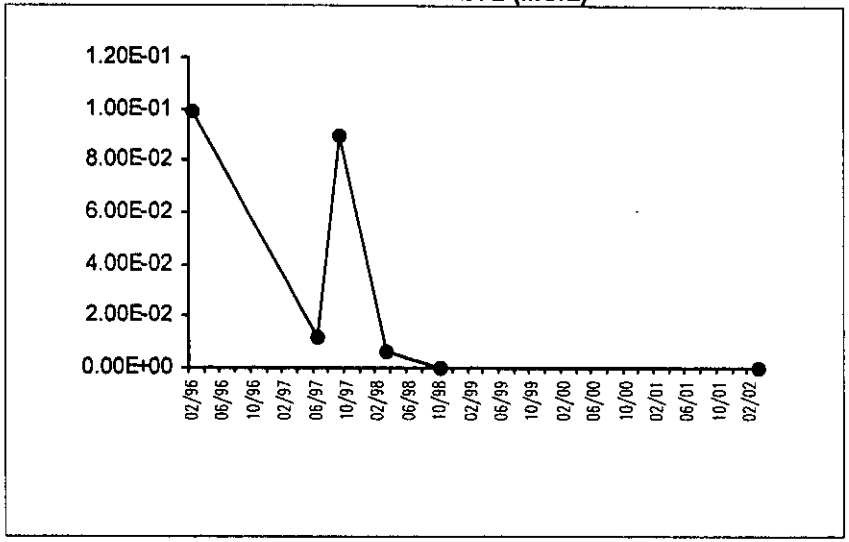
Boundary MW-47

Concentration vs Time

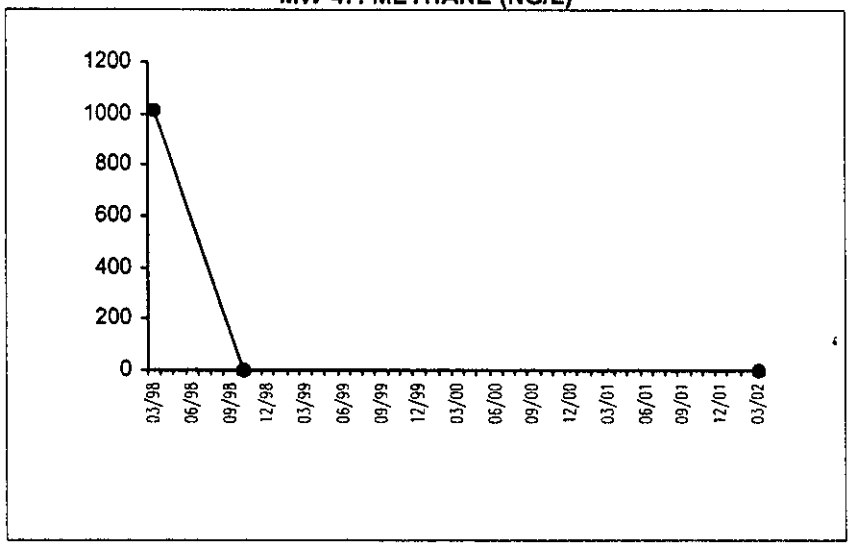
MW-47: LACTIC ACID (MG/L)



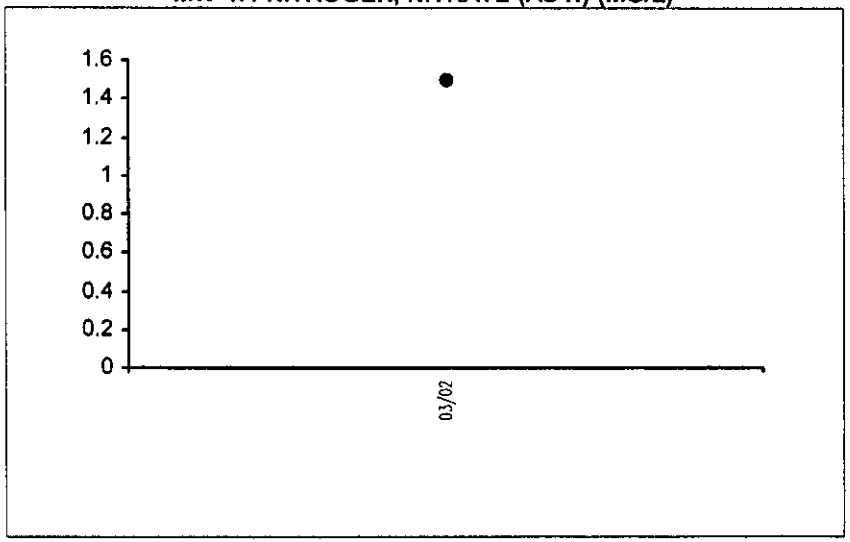
MW-47: MANGANESE (MG/L)



MW-47: METHANE (NG/L)



MW-47: NITROGEN, NITRATE (AS N) (MG/L)



* N[redacted]ects shown as 0.

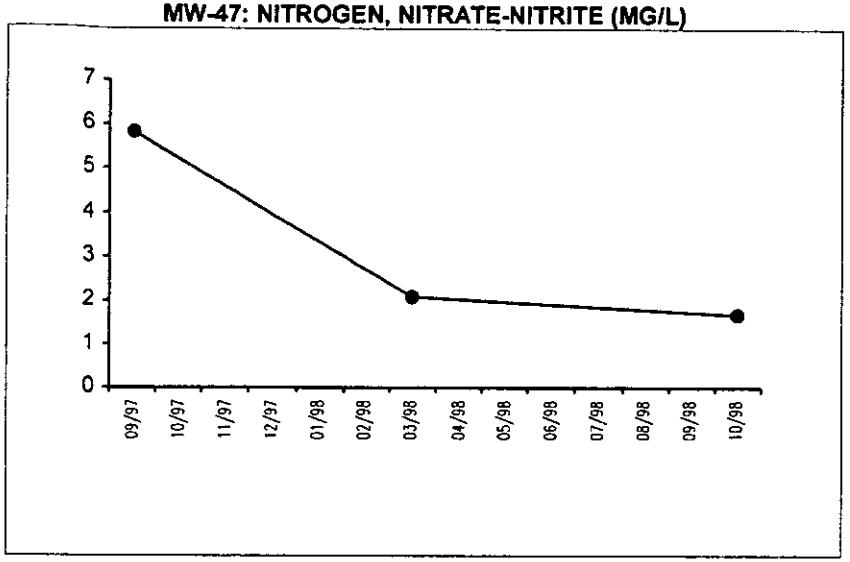
794 940

Location Purpose : Boundary

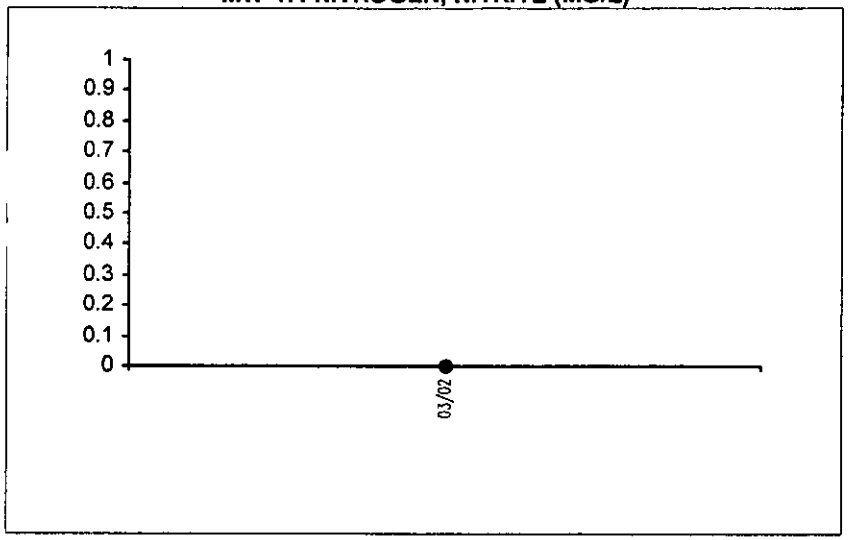
Boundary MW-47

Concentration vs Time

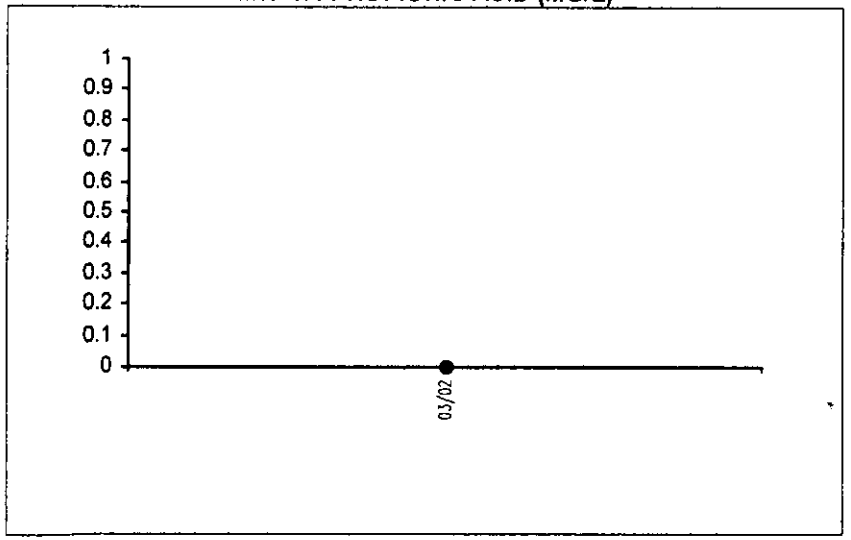
MW-47: NITROGEN, NITRATE-NITRITE (MG/L)



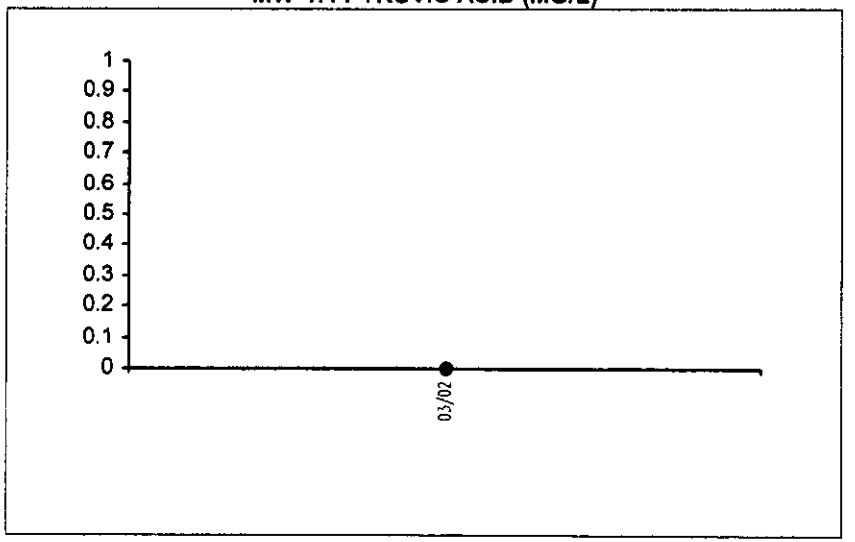
MW-47: NITROGEN, NITRITE (MG/L)



MW-47: PROPIONIC ACID (MG/L)



MW-47: PYRUVIC ACID (MG/L)



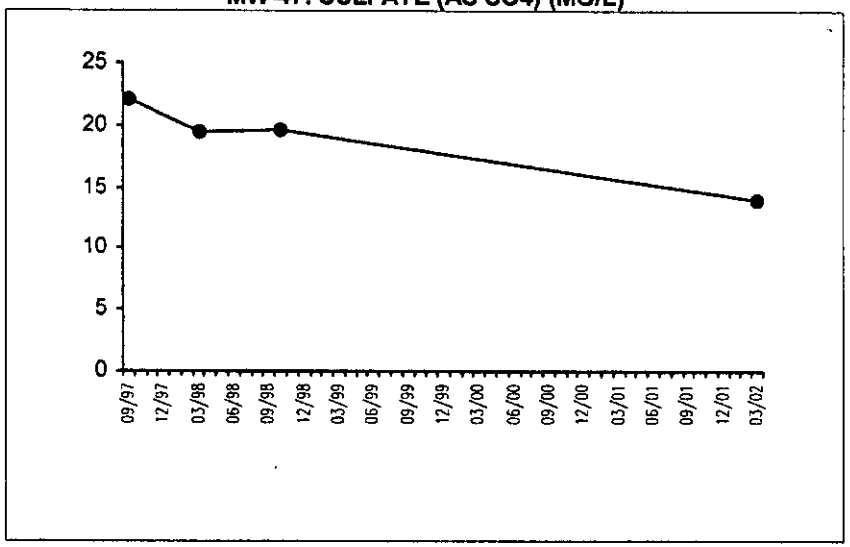
* Nondetects shown as 0.

Location Purpose : Boundary

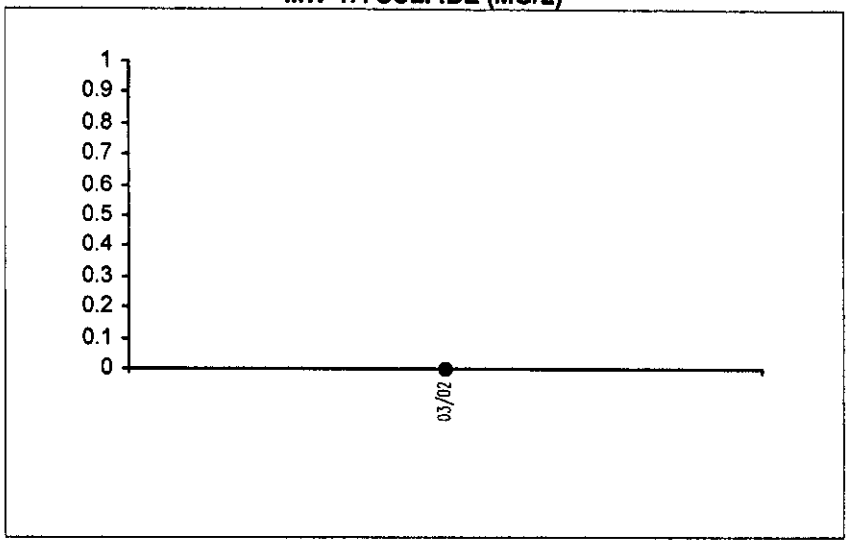
Boundary MW-47

Concentration vs Time

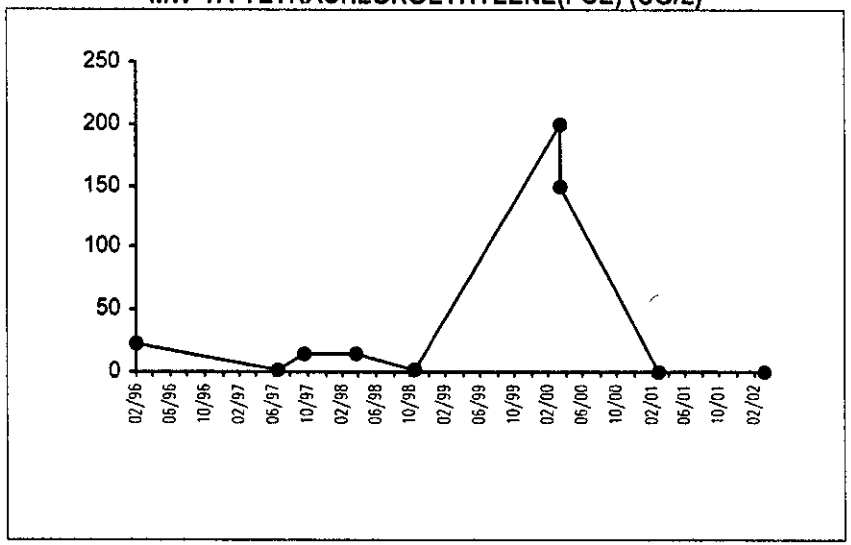
MW-47: SULFATE (AS SO4) (MG/L)



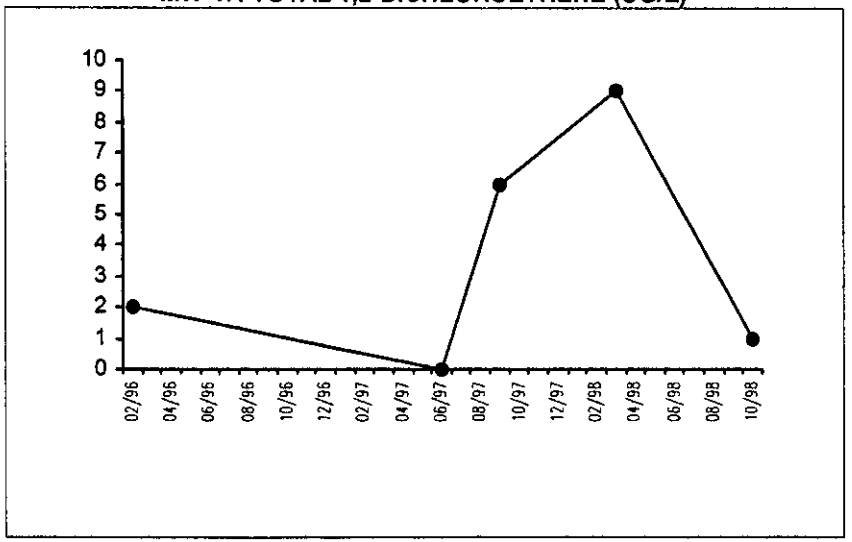
MW-47: SULFIDE (MG/L)



MW-47: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-47: TOTAL 1,2-DICHLOROETHENE (UG/L)



* N[redacted]ects shown as 0.

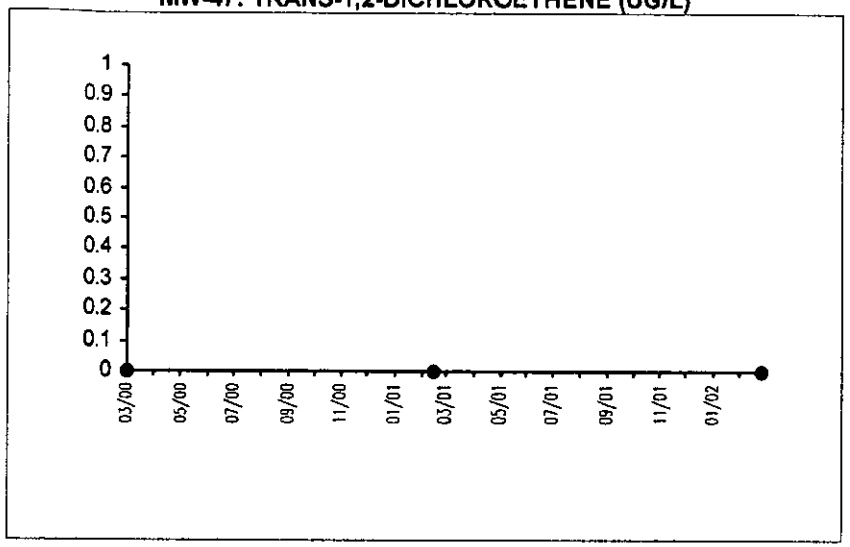
794 942

Location Purpose : Boundary

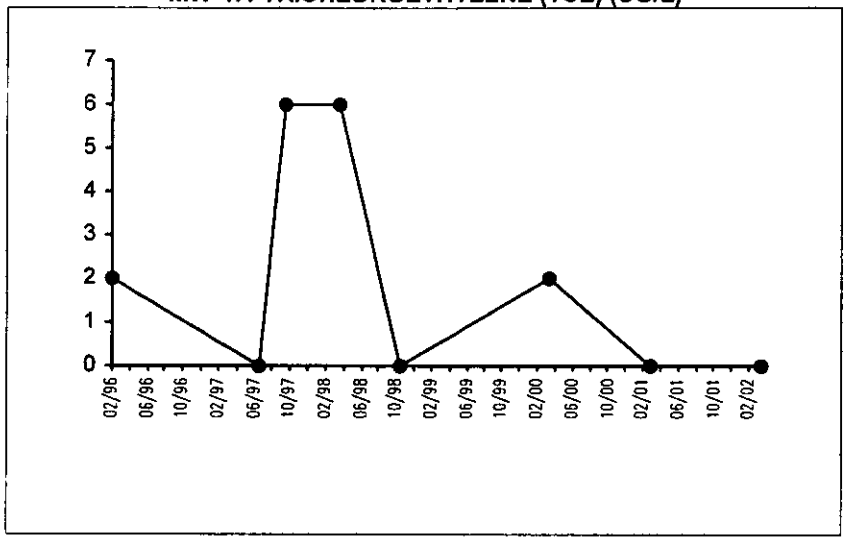
Boundary MW-47

Concentration vs Time

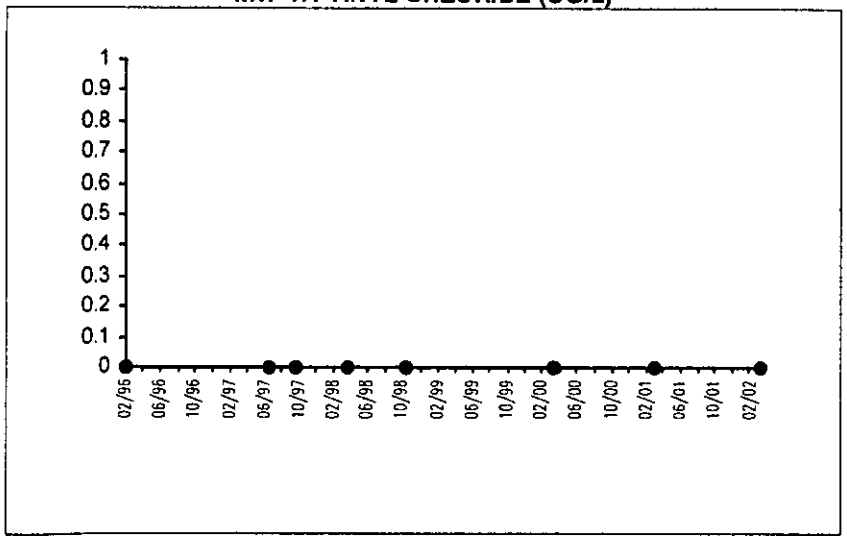
MW-47: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-47: TRICHLOROETHYLENE (TCE) (UG/L)



MW-47: VINYL CHLORIDE (UG/L)



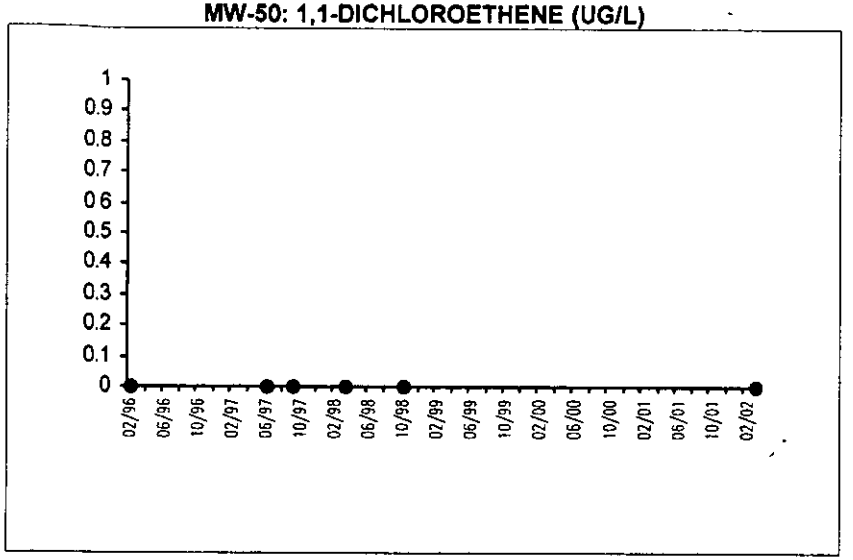
* Nondetects shown as 0.

Location Purpose : Boundary

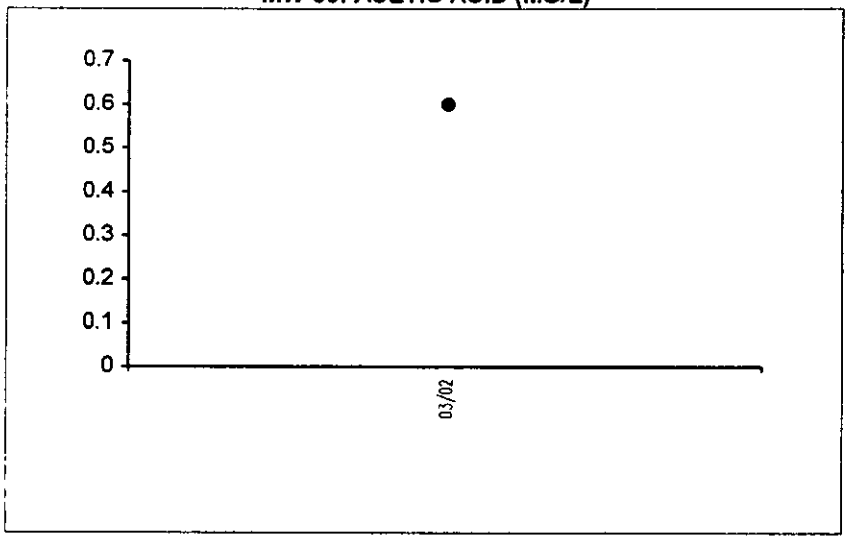
Boundary MW-50

Concentration vs Time

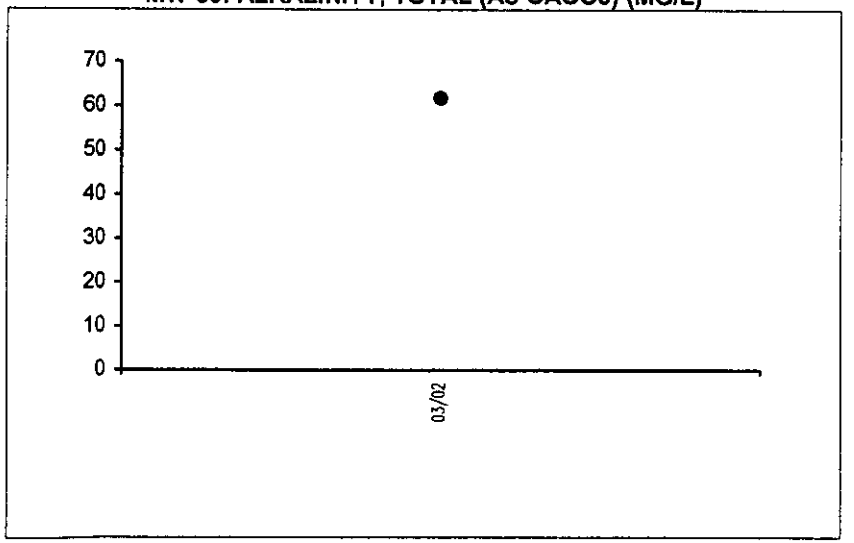
MW-50: 1,1-DICHLOROETHENE (UG/L)



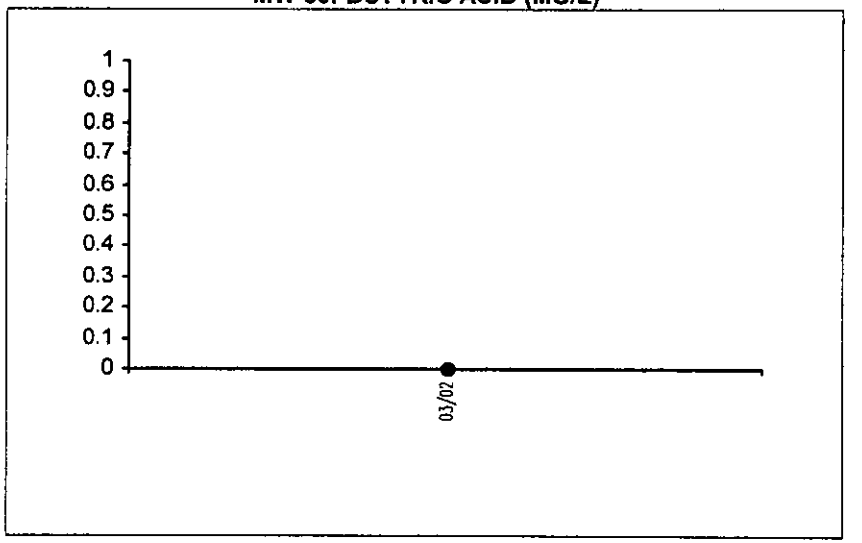
MW-50: ACETIC ACID (MG/L)



MW-50: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-50: BUTYRIC ACID (MG/L)



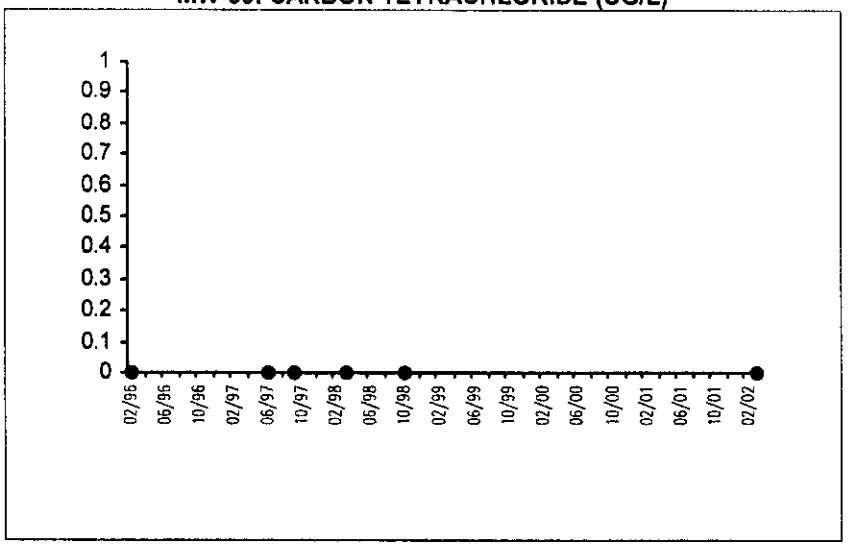
* Nondetects shown as 0.

Location Purpose : Boundary

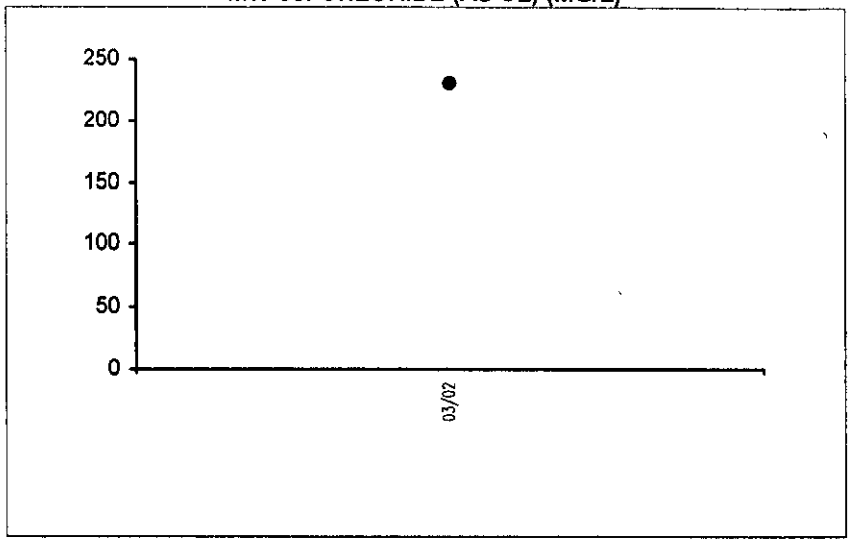
Boundary MW-50

Concentration vs Time

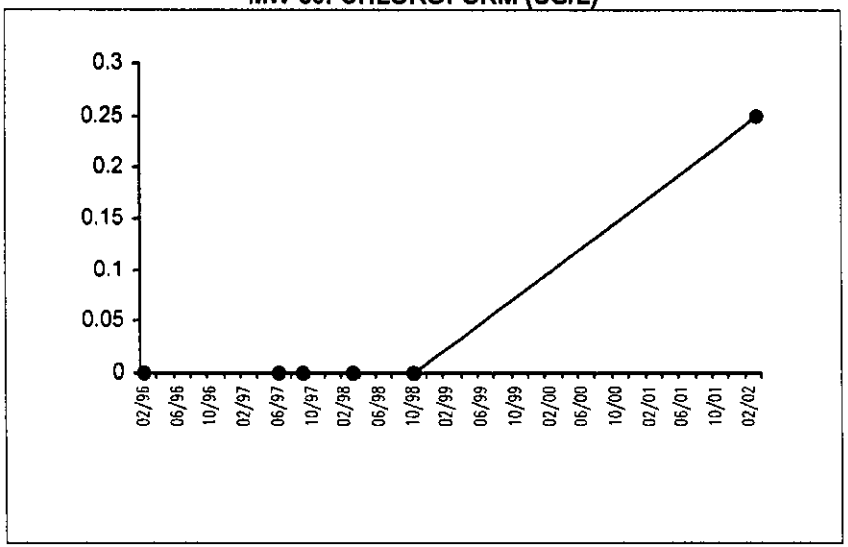
MW-50: CARBON TETRACHLORIDE (UG/L)



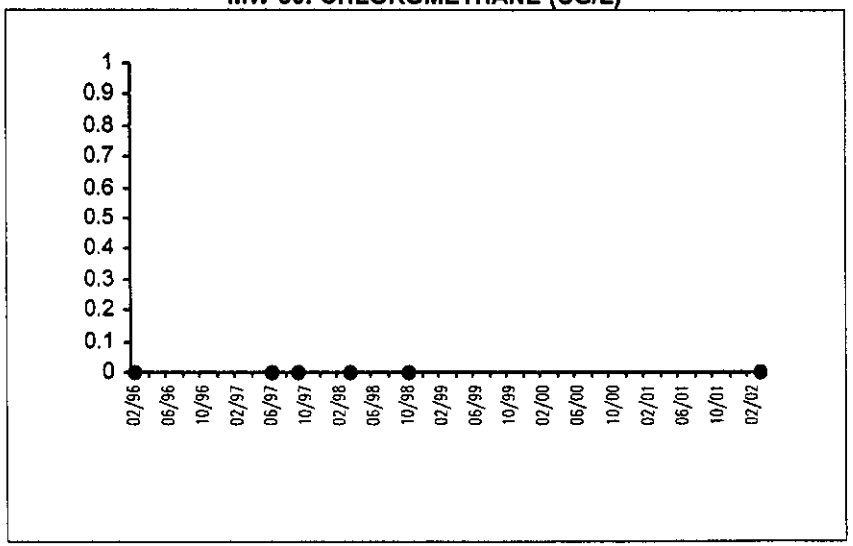
MW-50: CHLORIDE (AS CL) (MG/L)



MW-50: CHLOROFORM (UG/L)



MW-50: CHLOROMETHANE (UG/L)



* N[redacted]ects shown as 0.

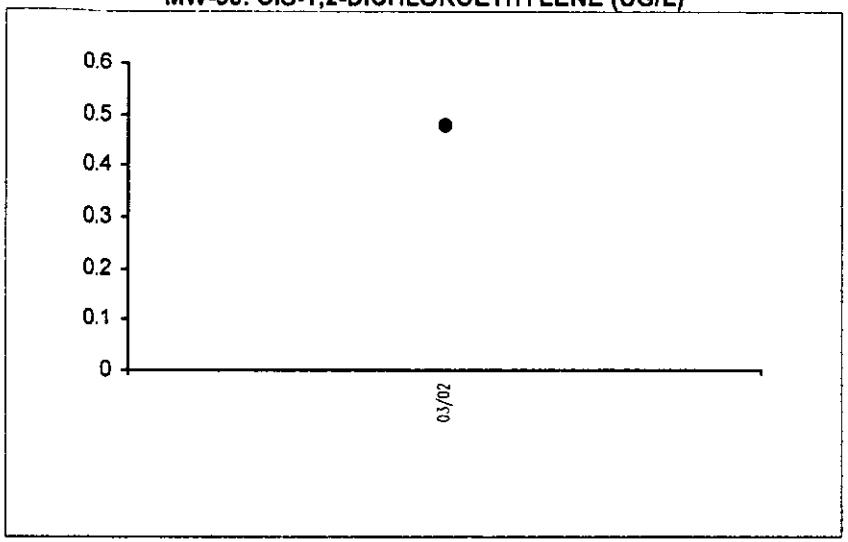
794 945

Location Purpose : Boundary

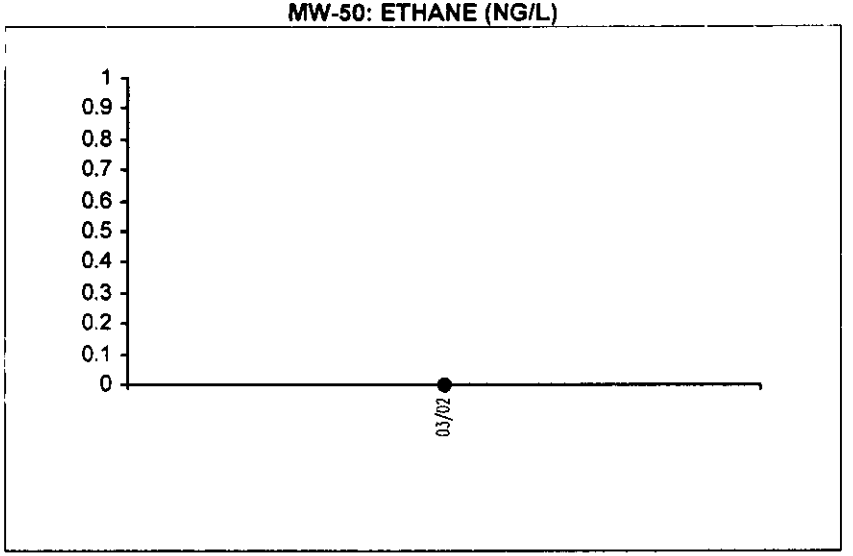
Boundary MW-50

Concentration vs Time

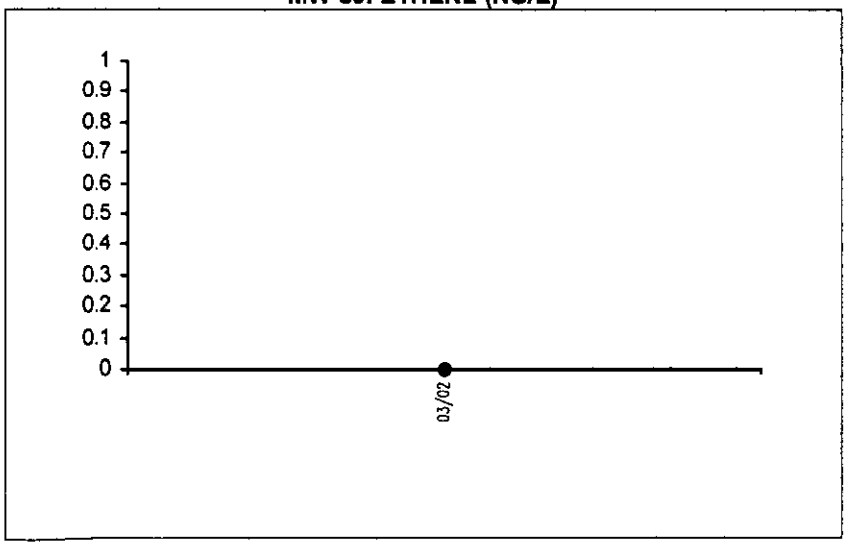
MW-50: CIS-1,2-DICHLOROETHYLENE (UG/L)



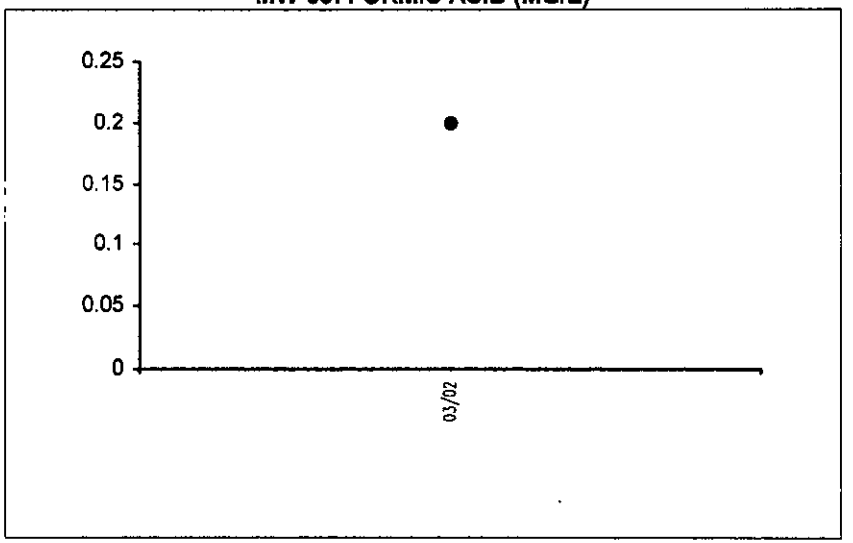
MW-50: ETHANE (NG/L)



MW-50: ETHENE (NG/L)



MW-50: FORMIC ACID (MG/L)



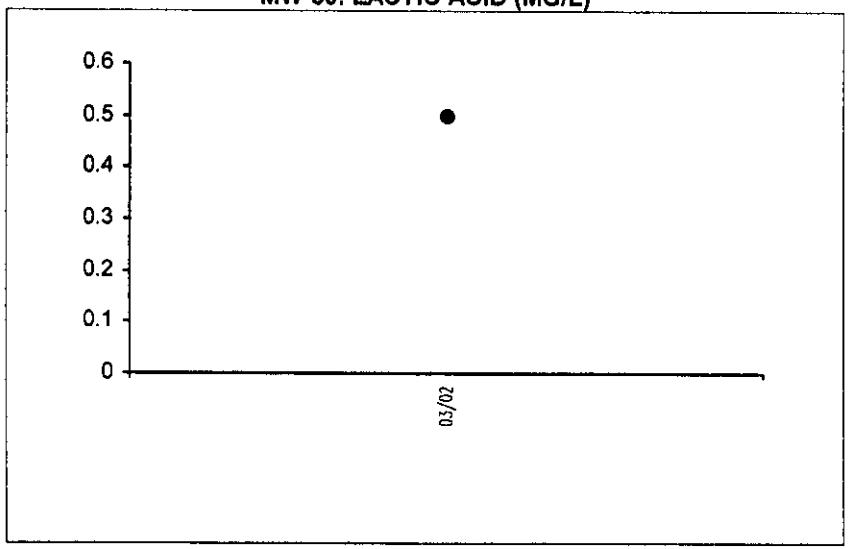
* Nondetects shown as 0.

Location Purpose : Boundary

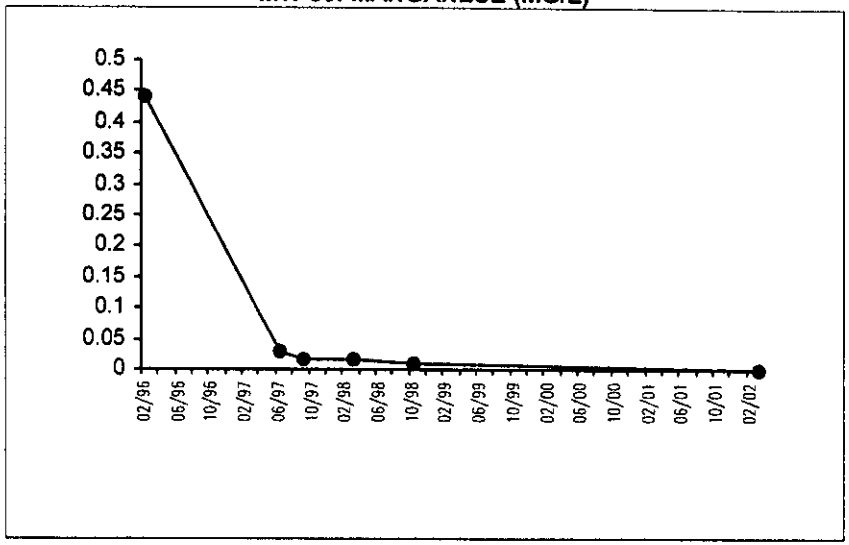
Boundary MW-50

Concentration vs Time

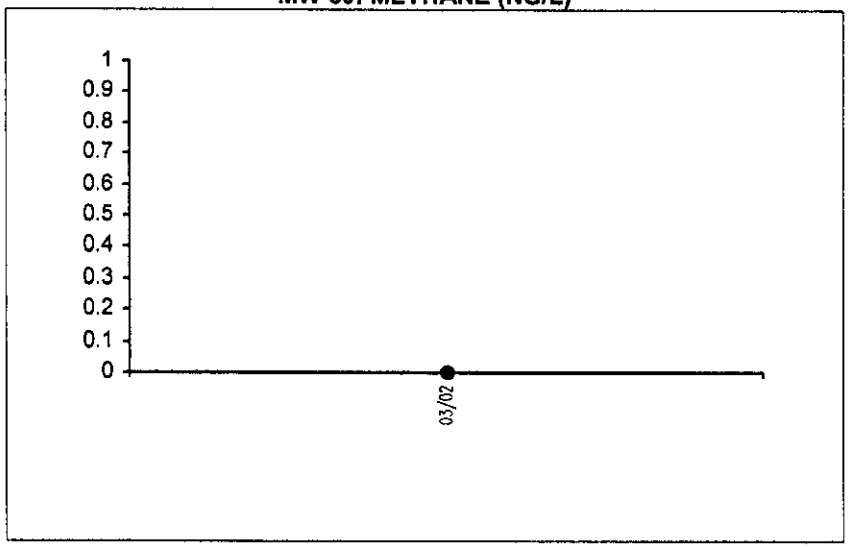
MW-50: LACTIC ACID (MG/L)



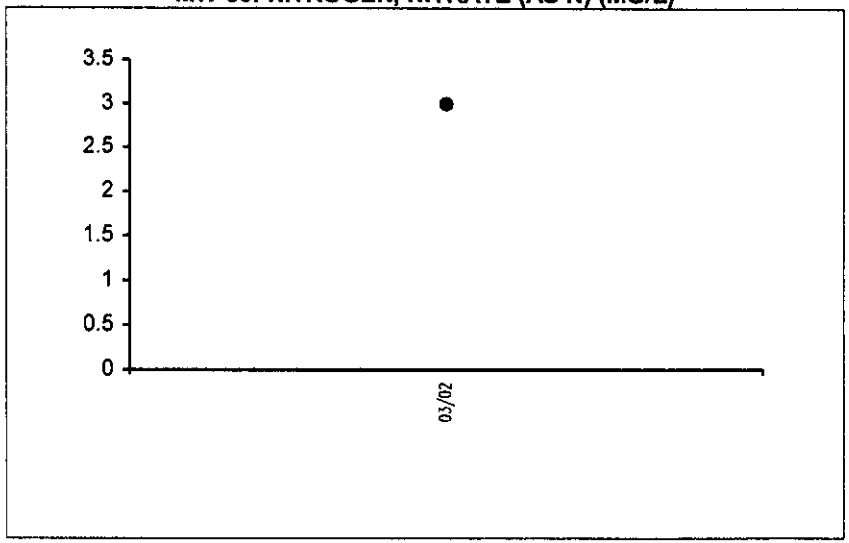
MW-50: MANGANESE (MG/L)



MW-50: METHANE (NG/L)



MW-50: NITROGEN, NITRATE (AS N) (MG/L)



* N[redacted]ects shown as 0.

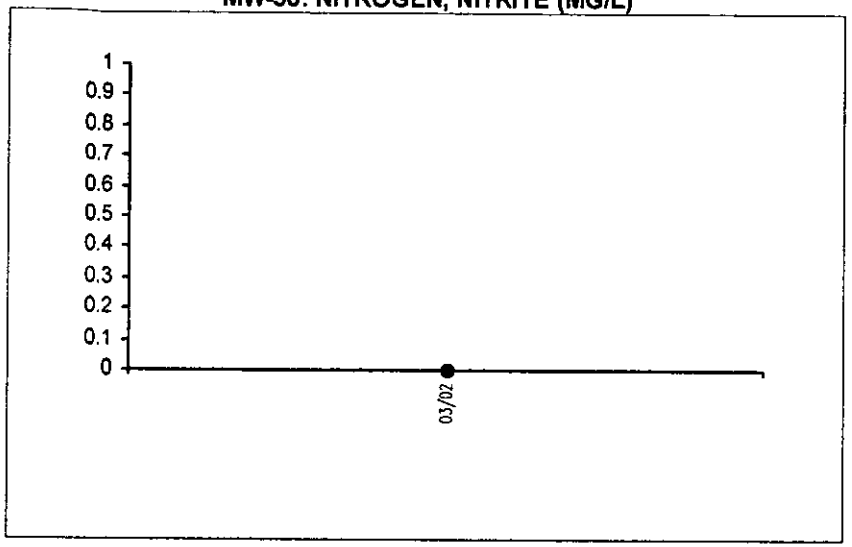
794 947

Location Purpose : Boundary

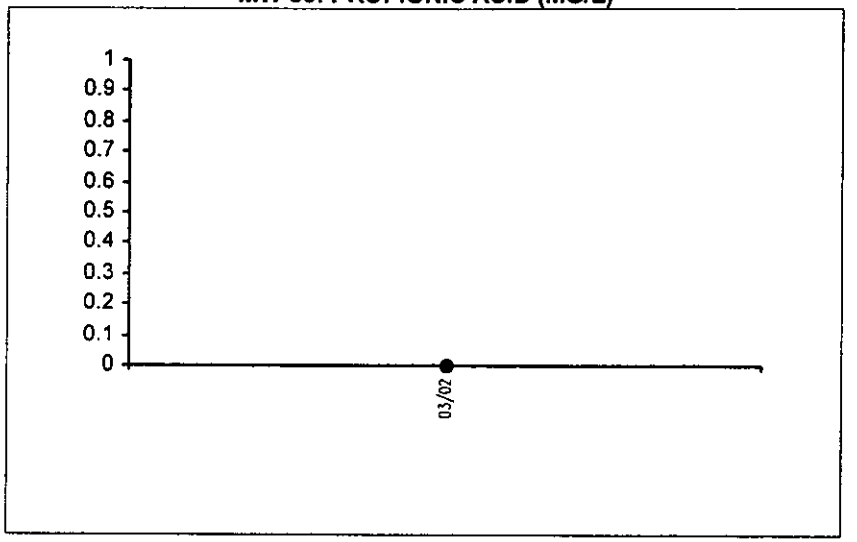
Boundary MW-50

Concentration vs Time

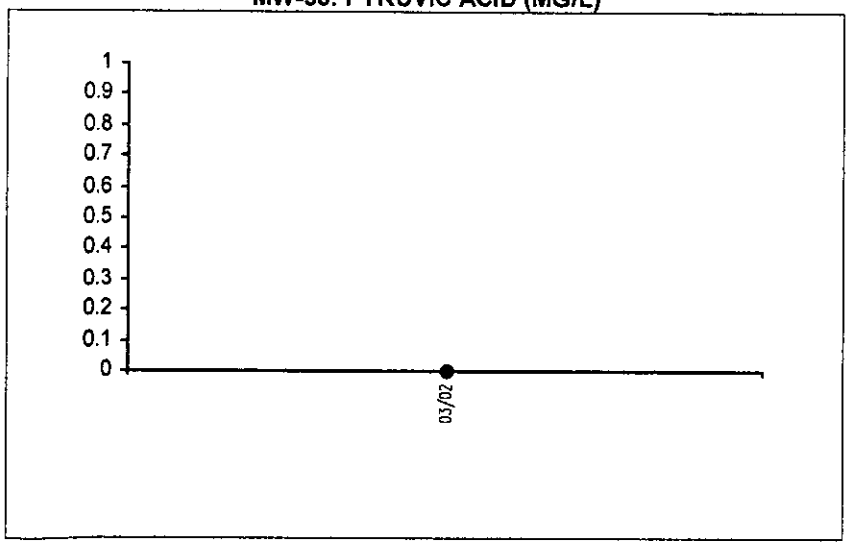
MW-50: NITROGEN, NITRITE (MG/L)



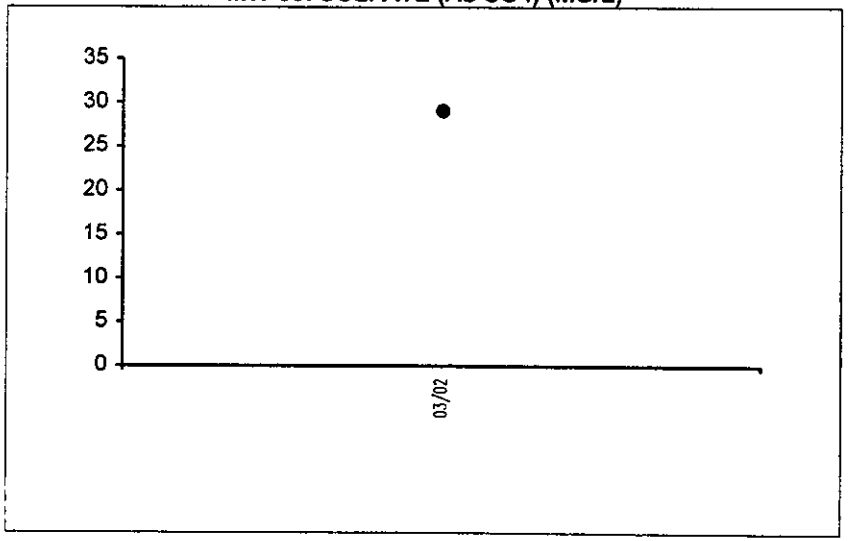
MW-50: PROPIONIC ACID (MG/L)



MW-50: PYRUVIC ACID (MG/L)



MW-50: SULFATE (AS SO4) (MG/L)



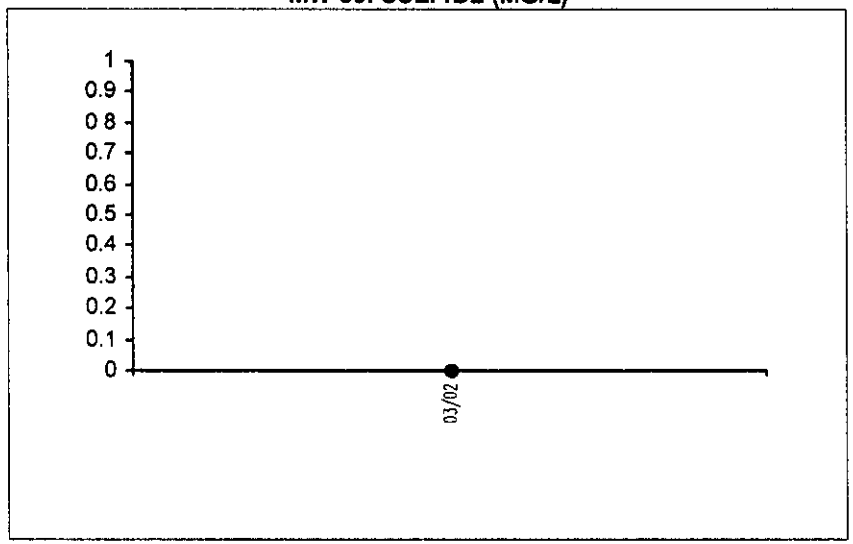
* Nondetects shown as 0.

Location Purpose : Boundary

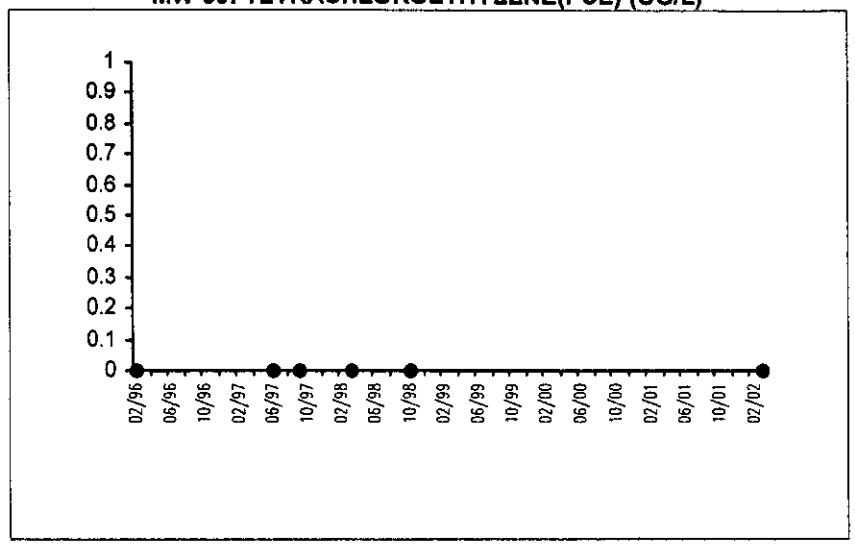
Boundary MW-50

Concentration vs Time

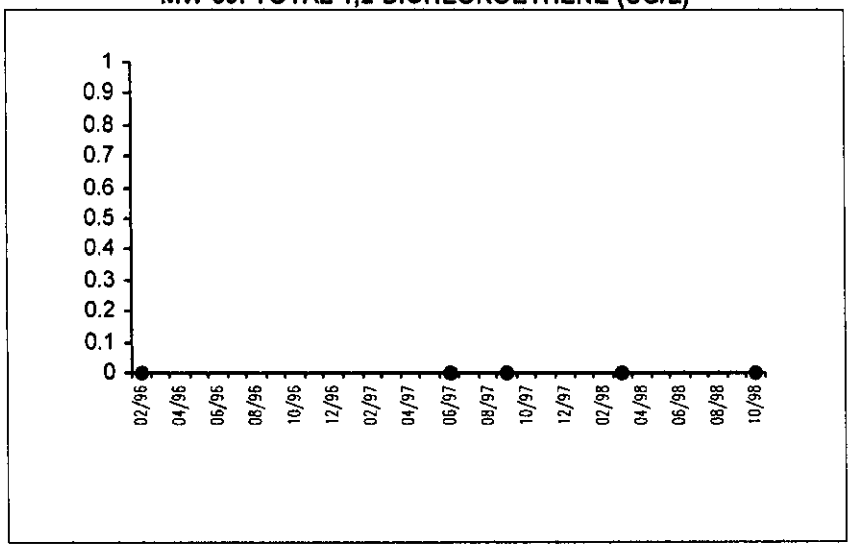
MW-50: SULFIDE (MG/L)



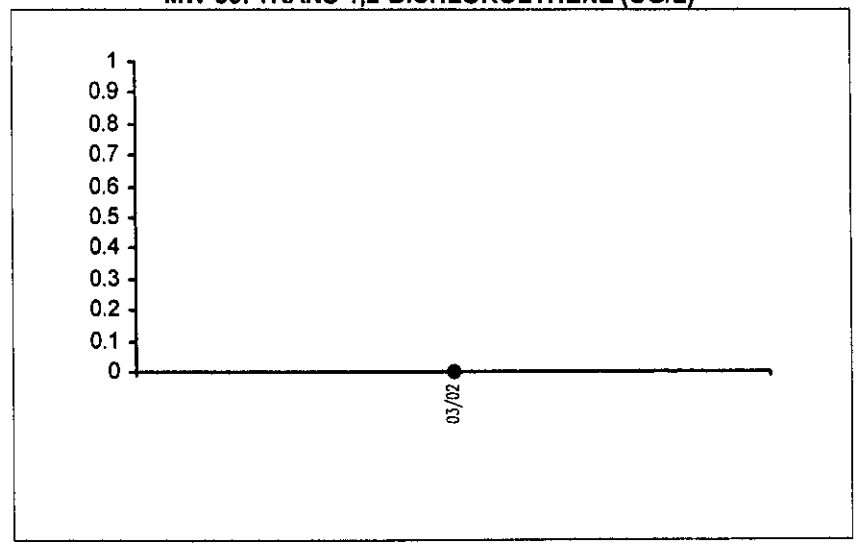
MW-50: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-50: TOTAL 1,2-DICHLOROETHENE (UG/L)



MW-50: TRANS-1,2-DICHLOROETHENE (UG/L)



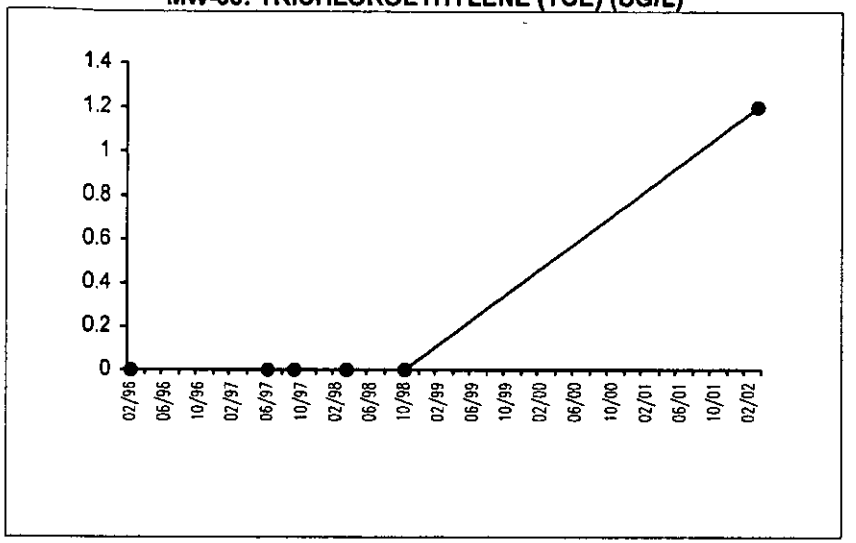
* N[redacted]ects shown as 0.

Location Purpose : Boundary

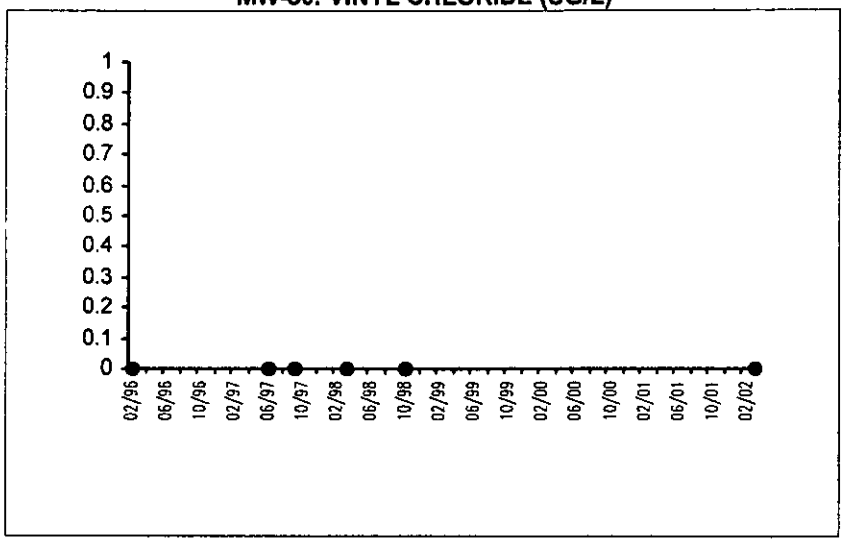
Boundary MW-50

Concentration vs Time

MW-50: TRICHLOROETHYLENE (TCE) (UG/L)



MW-50: VINYL CHLORIDE (UG/L)



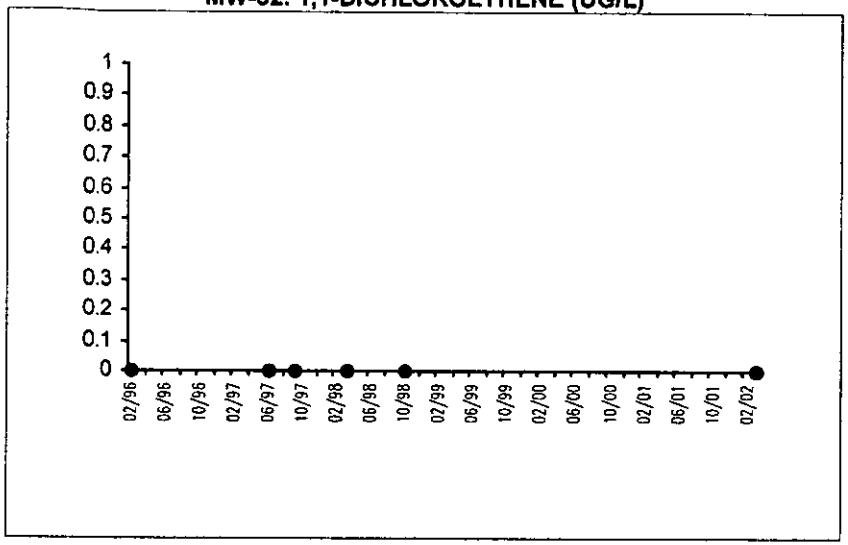
* Nondetects shown as 0.

Location Purpose : Boundary

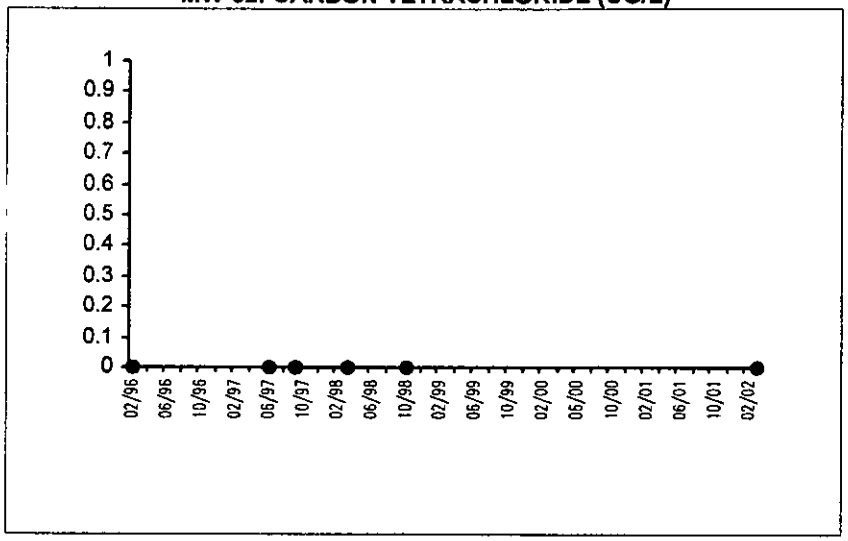
Boundary MW-52

Concentration vs Time

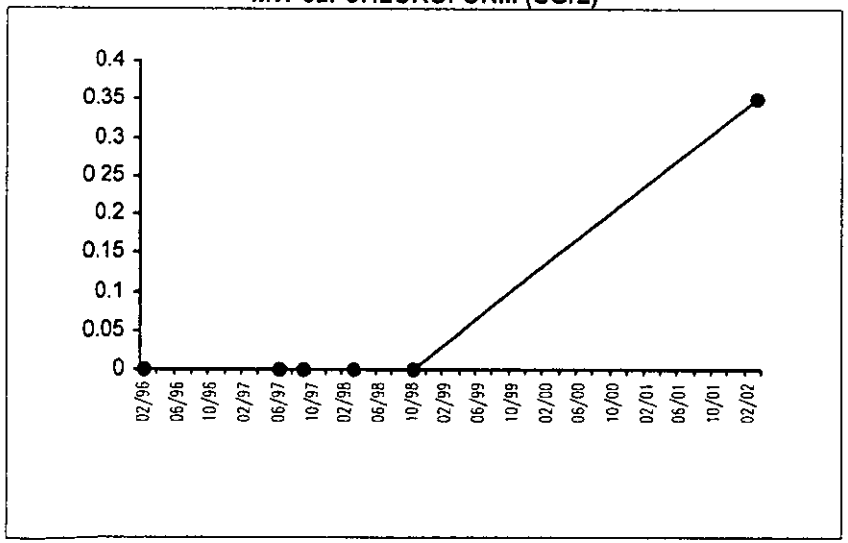
MW-52: 1,1-DICHLOROETHENE (UG/L)



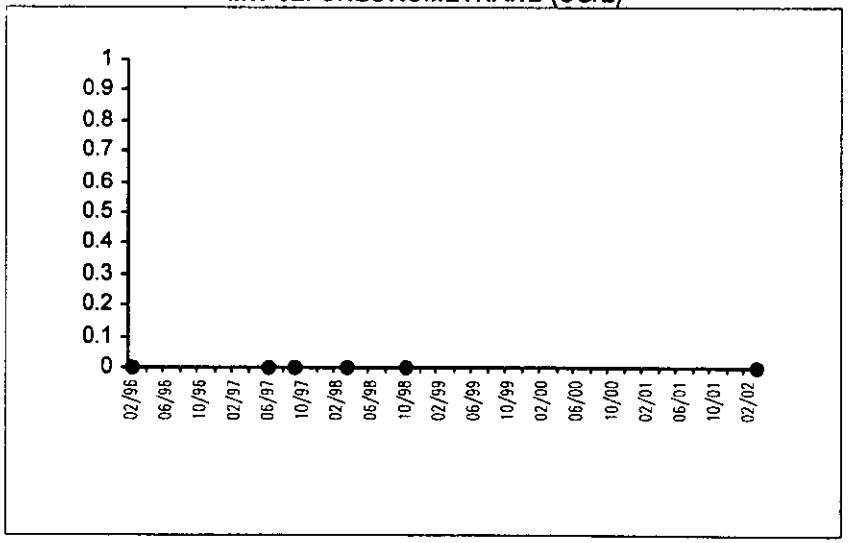
MW-52: CARBON TETRACHLORIDE (UG/L)



MW-52: CHLOROFORM (UG/L)



MW-52: CHLOROMETHANE (UG/L)



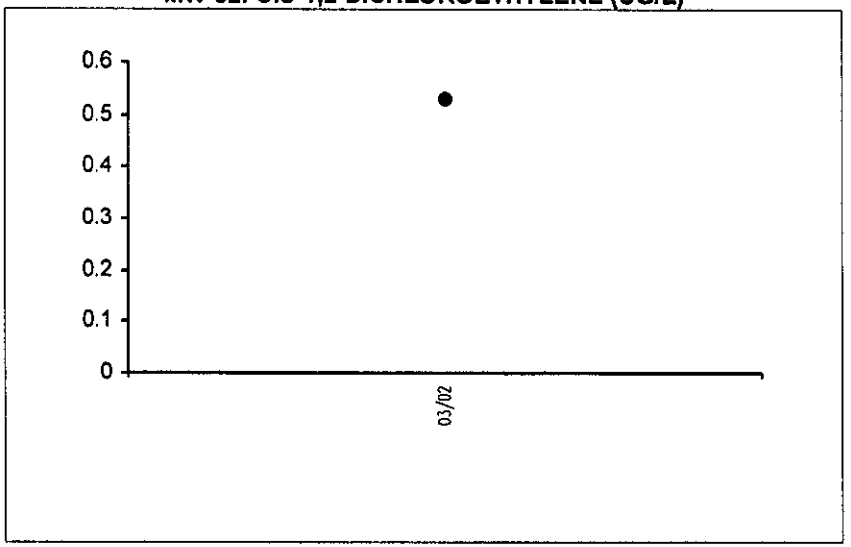
* Nondetects shown as 0.

Location Purpose : Boundary

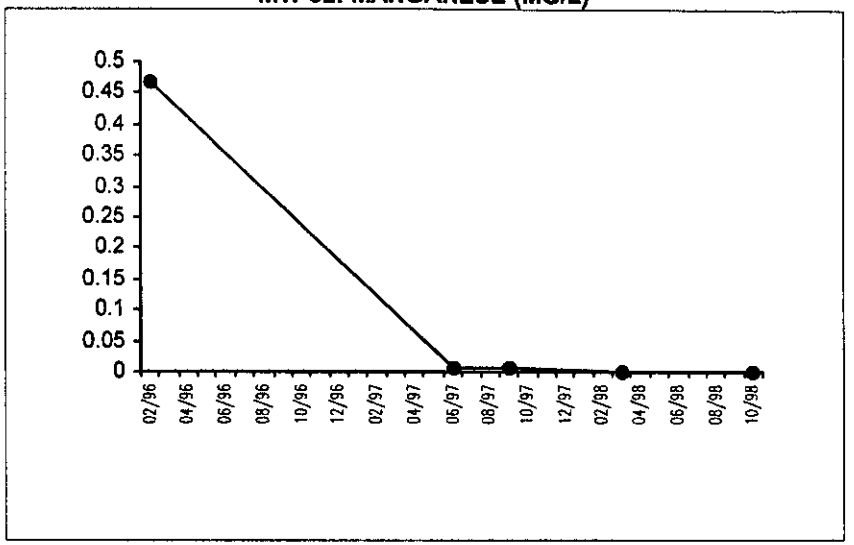
Boundary MW-52

Concentration vs Time

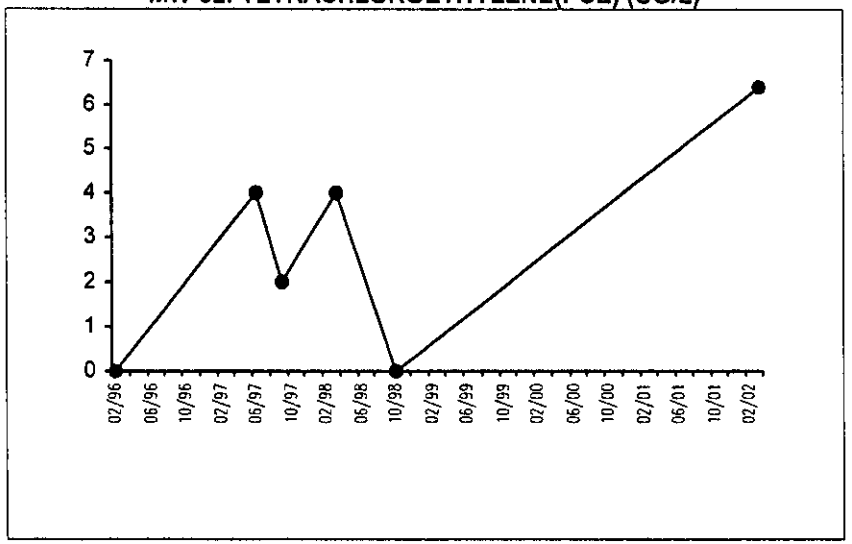
MW-52: CIS-1,2-DICHLOROETHYLENE (UG/L)



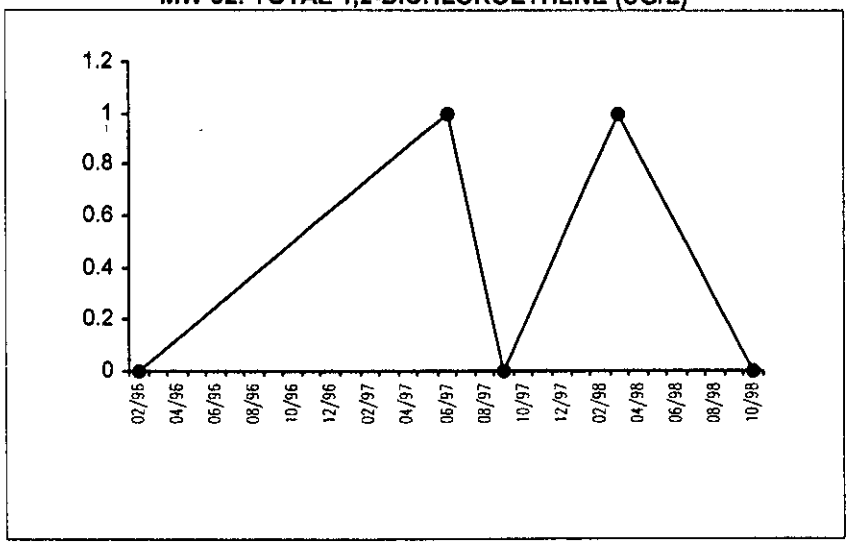
MW-52: MANGANESE (MG/L)



MW-52: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-52: TOTAL 1,2-DICHLOROETHENE (UG/L)



* N[redacted]ects shown as 0.

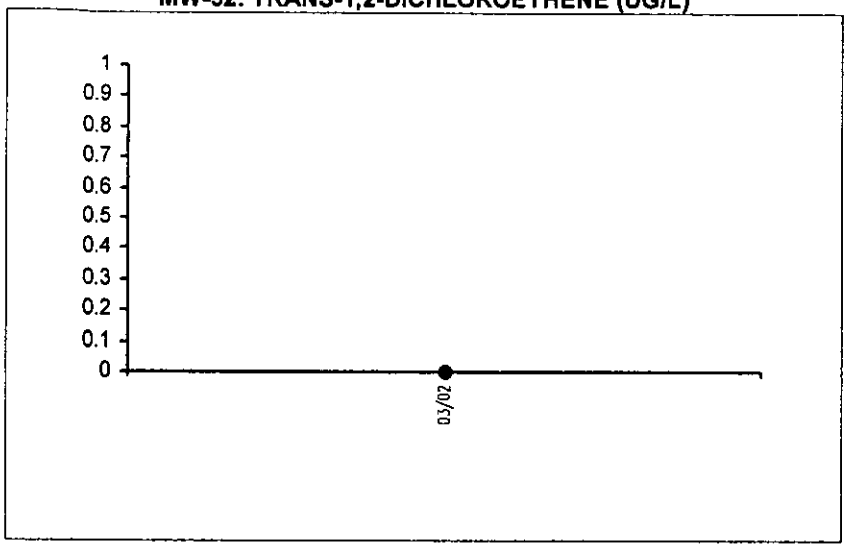
794 952

Location Purpose : Boundary

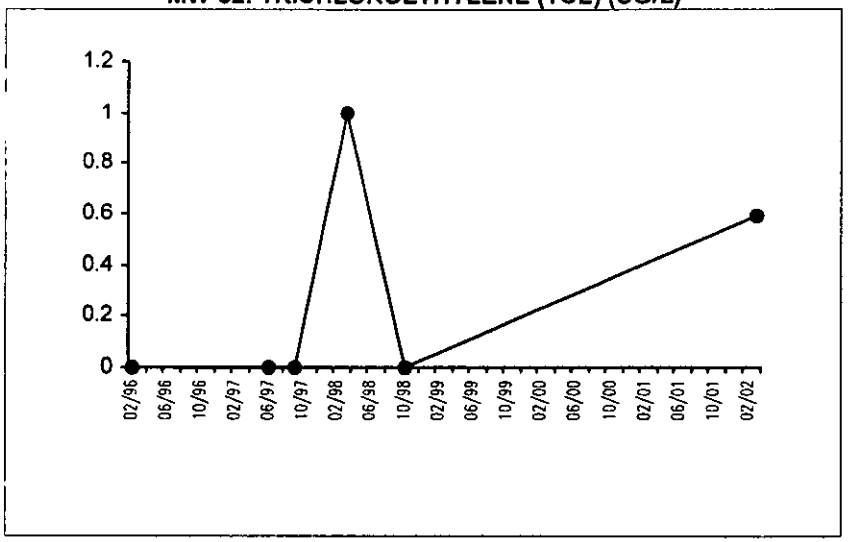
Boundary MW-52

Concentration vs Time

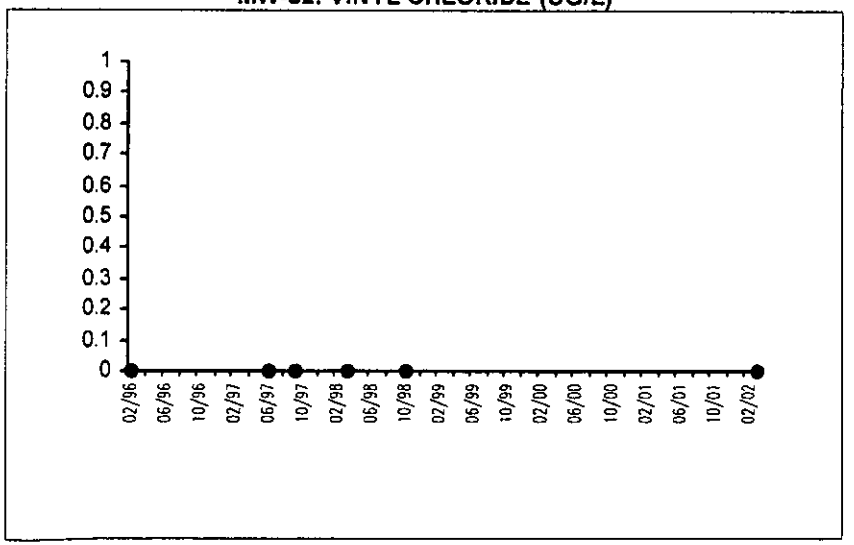
MW-52: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-52: TRICHLOROETHYLENE (TCE) (UG/L)



MW-52: VINYL CHLORIDE (UG/L)



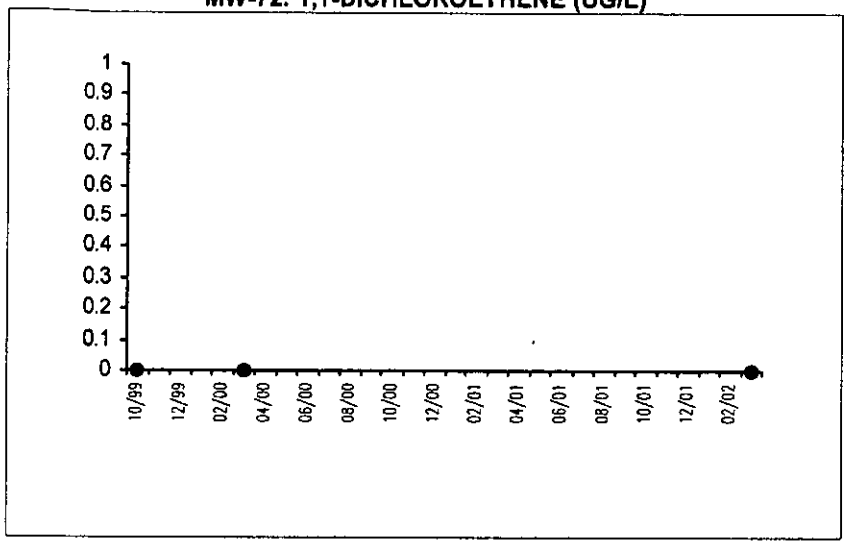
* Nondetects shown as 0.

Location Purpose : Boundary

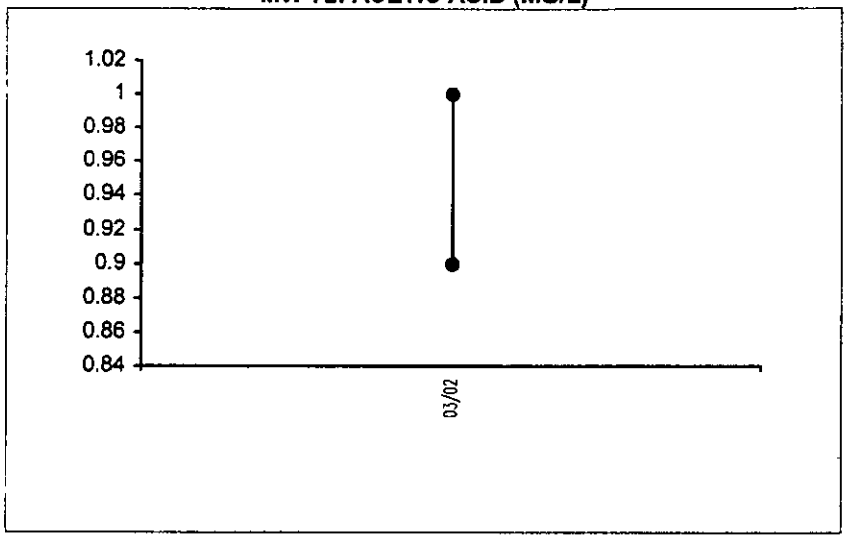
Boundary MW-72

Concentration vs Time

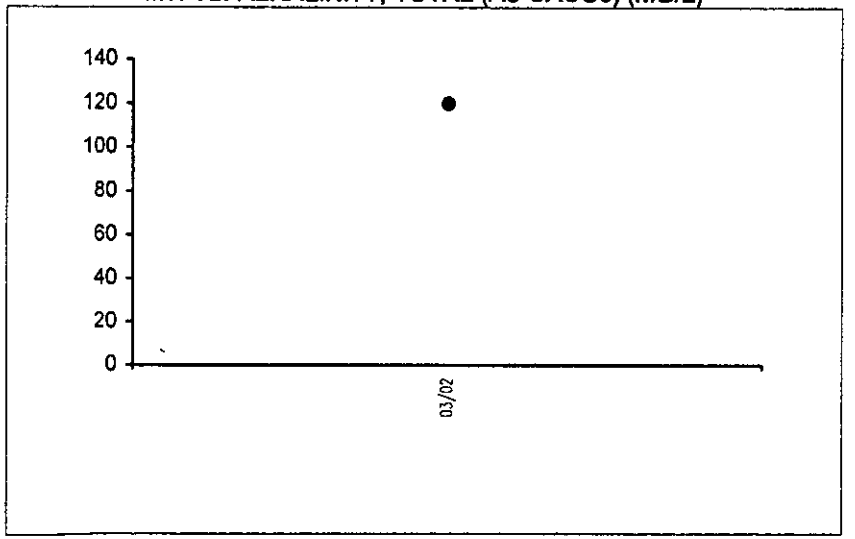
MW-72: 1,1-DICHLOROETHENE (UG/L)



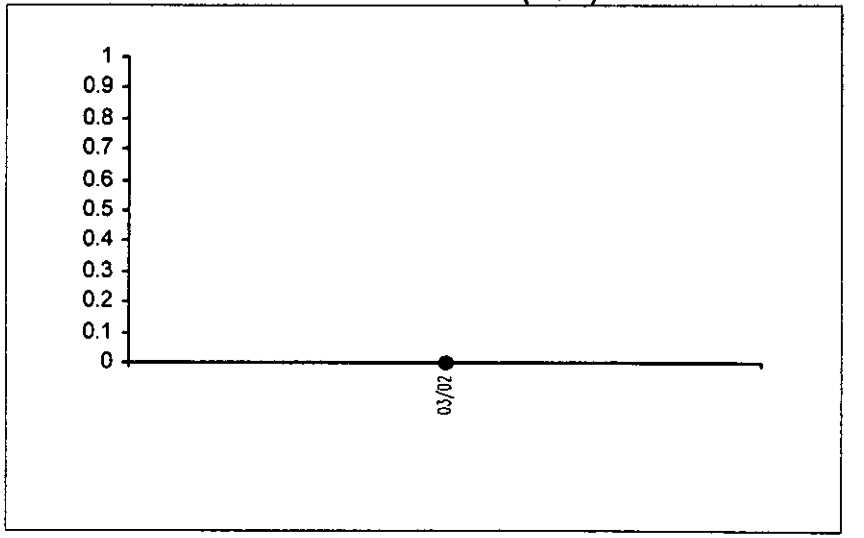
MW-72: ACETIC ACID (MG/L)



MW-72: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-72: BUTYRIC ACID (MG/L)



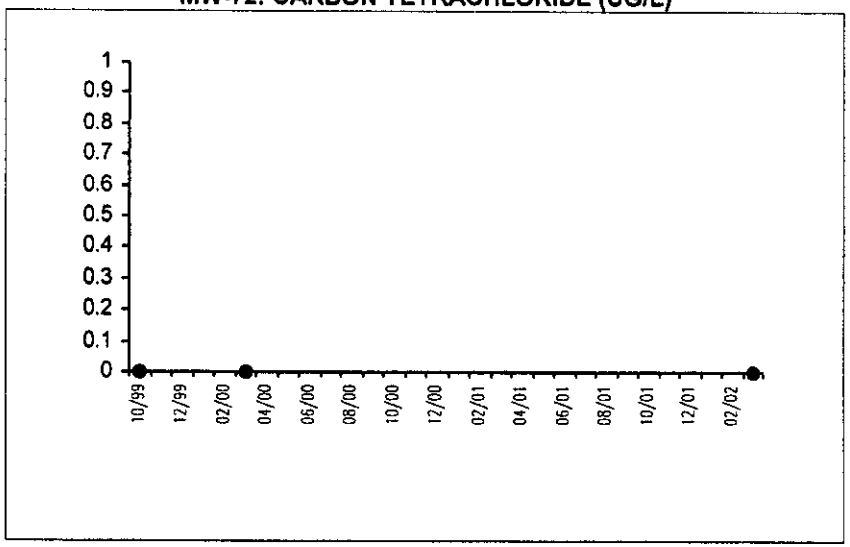
* Nondetects shown as 0.

Location Purpose : Boundary

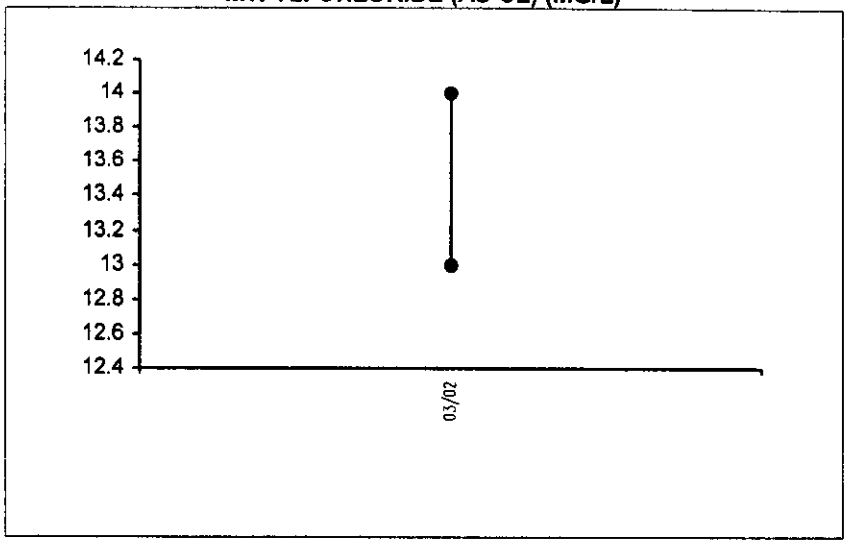
Boundary MW-72

Concentration vs Time

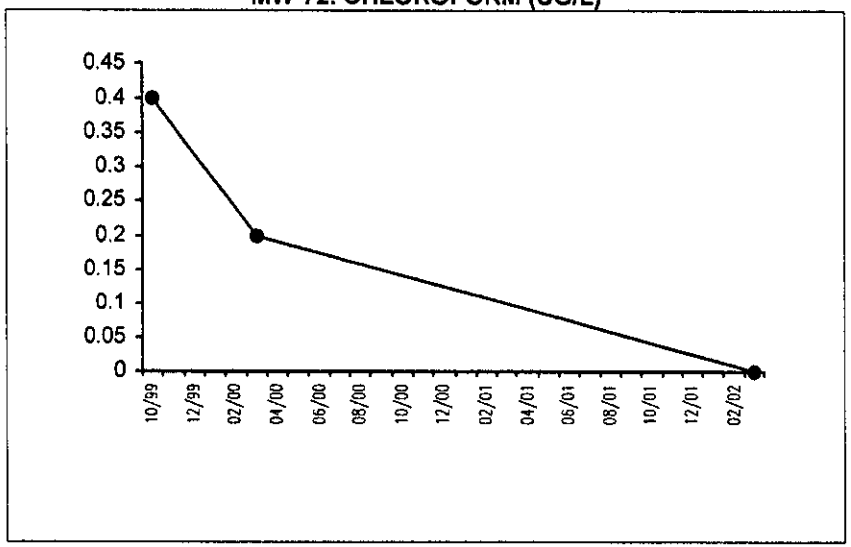
MW-72: CARBON TETRACHLORIDE (UG/L)



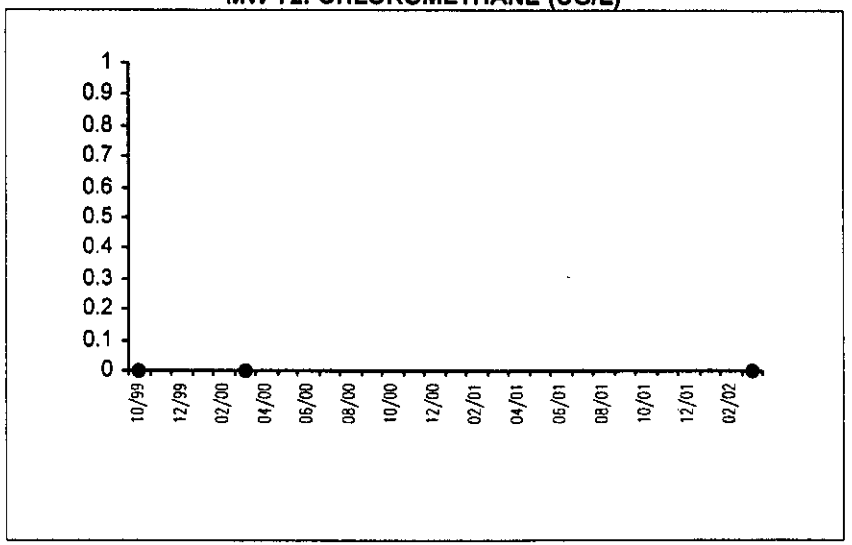
MW-72: CHLORIDE (AS CL) (MG/L)



MW-72: CHLOROFORM (UG/L)



MW-72: CHLOROMETHANE (UG/L)



* N[redacted]cts shown as 0.

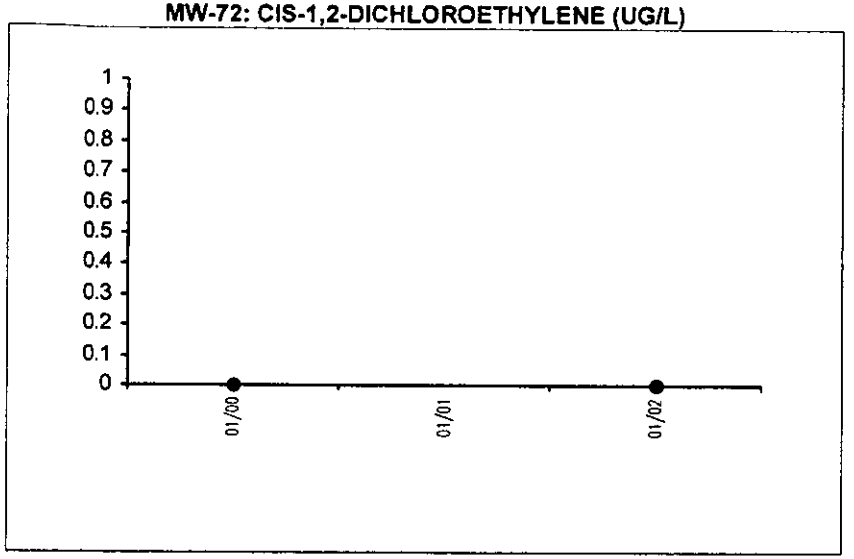
794 955

Location Purpose : Boundary

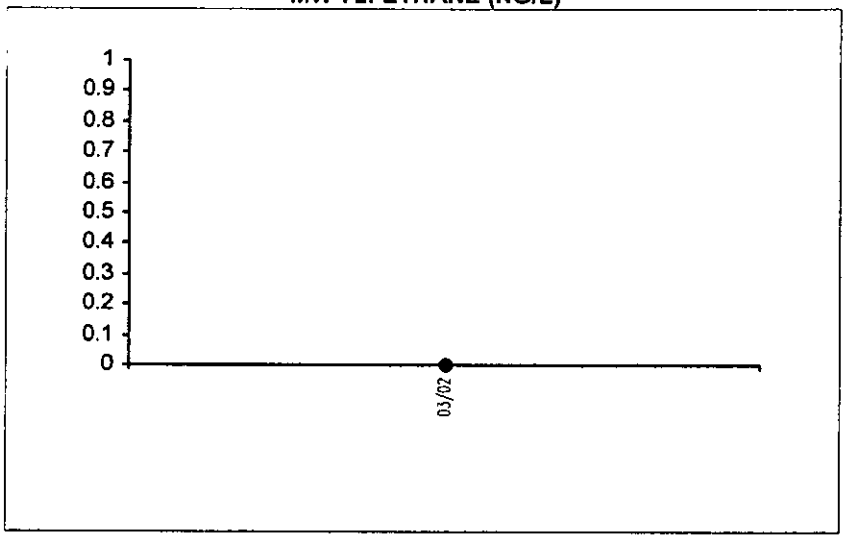
Boundary MW-72

Concentration vs Time

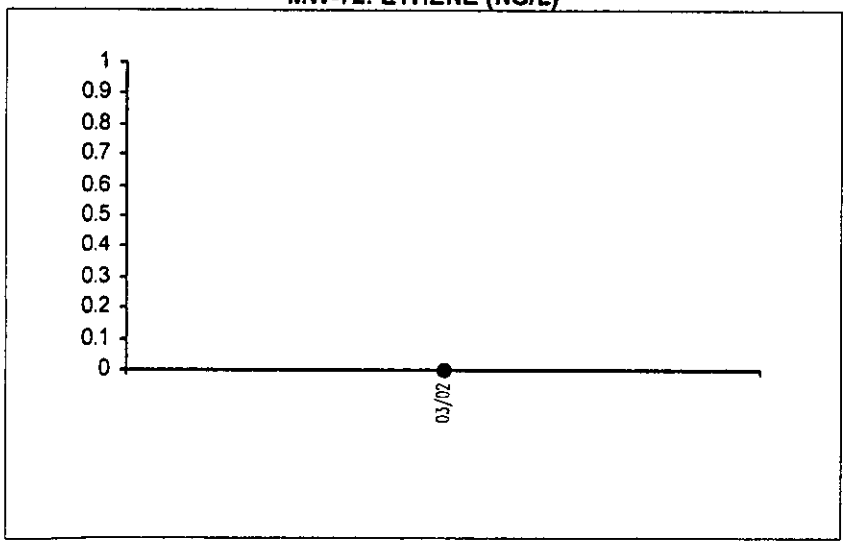
MW-72: CIS-1,2-DICHLOROETHYLENE (UG/L)



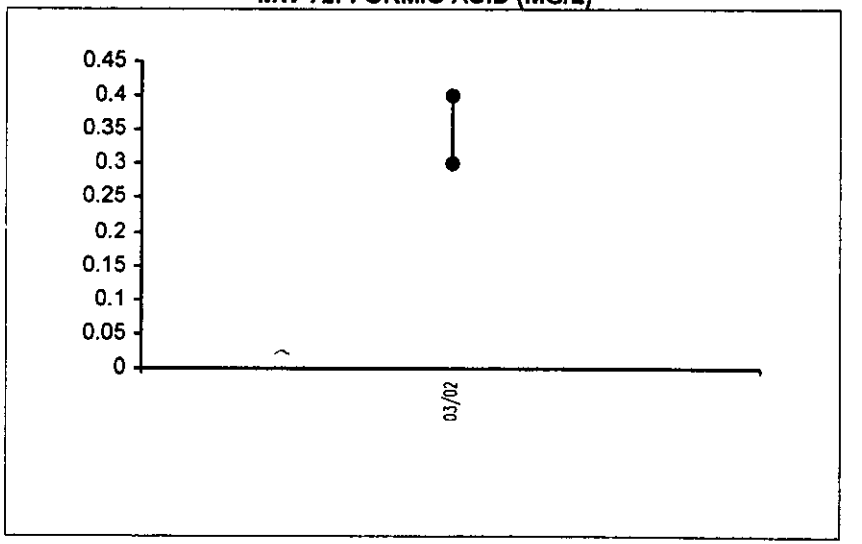
MW-72: ETHANE (NG/L)



MW-72: ETHENE (NG/L)



MW-72: FORMIC ACID (MG/L)



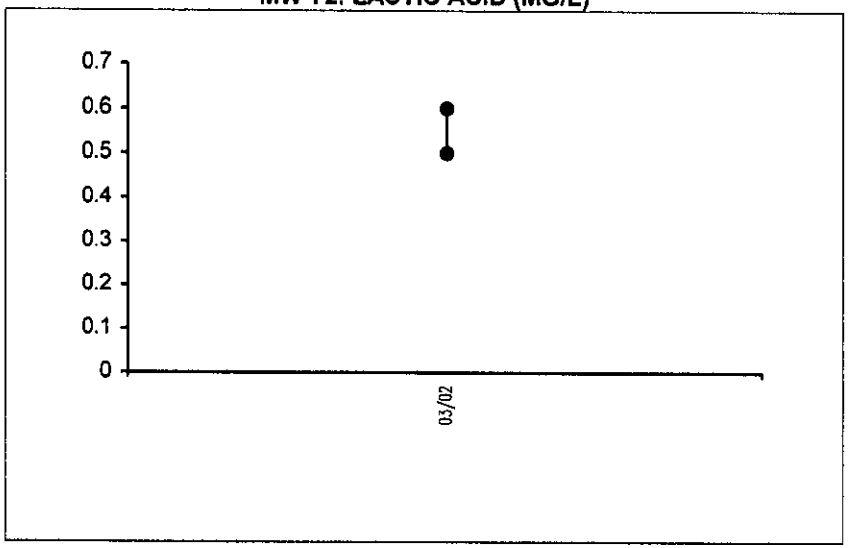
* Nondetects shown as 0.

Location Purpose : Boundary

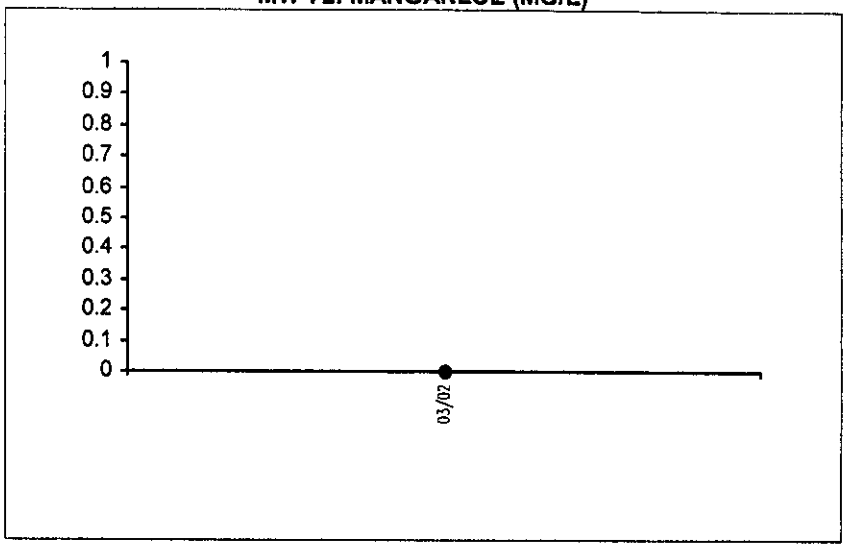
Boundary MW-72

Concentration vs Time

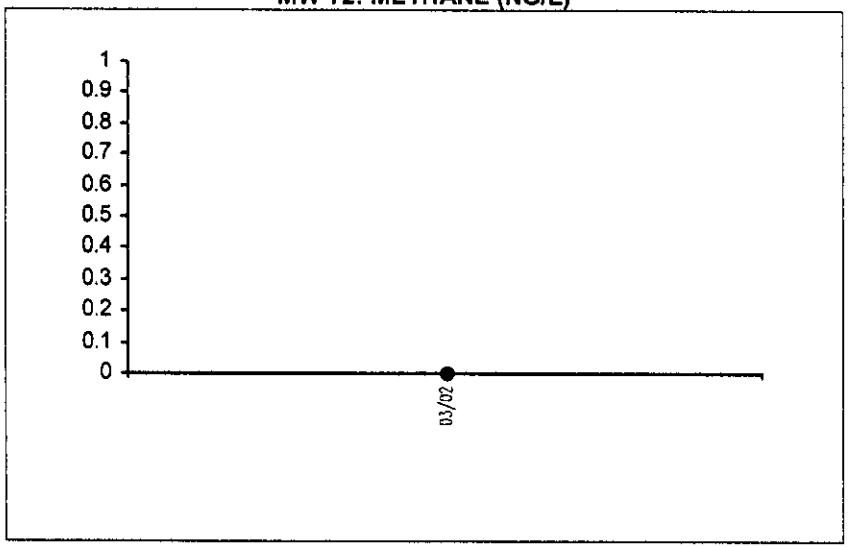
MW-72: LACTIC ACID (MG/L)



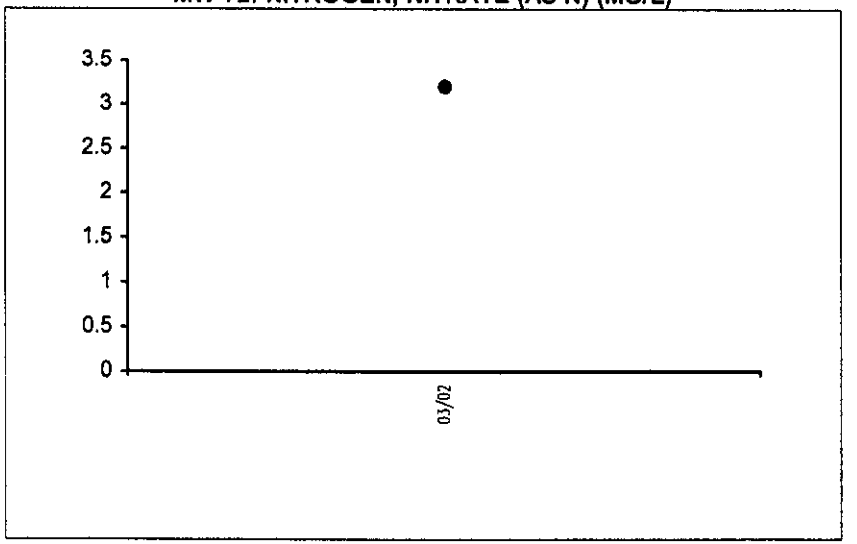
MW-72: MANGANESE (MG/L)



MW-72: METHANE (NG/L)



MW-72: NITROGEN, NITRATE (AS N) (MG/L)



* Non-detects shown as 0.

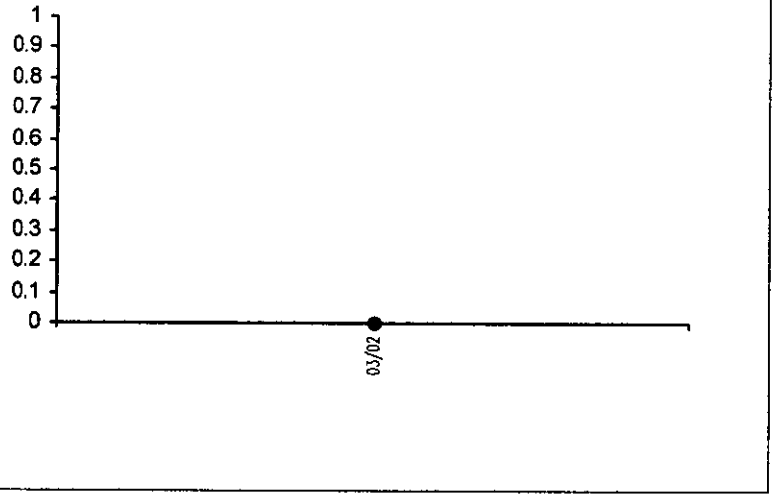
794 957

Location Purpose : Boundary

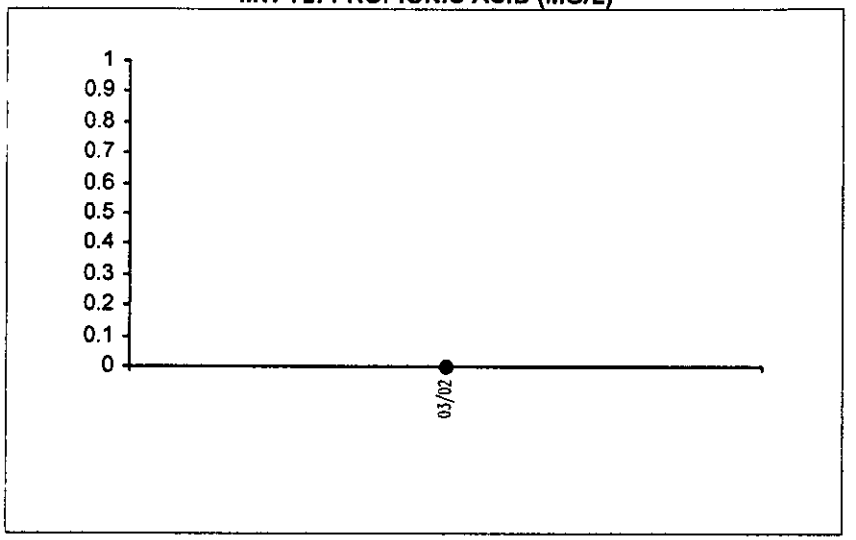
Boundary MW-72

Concentration vs Time

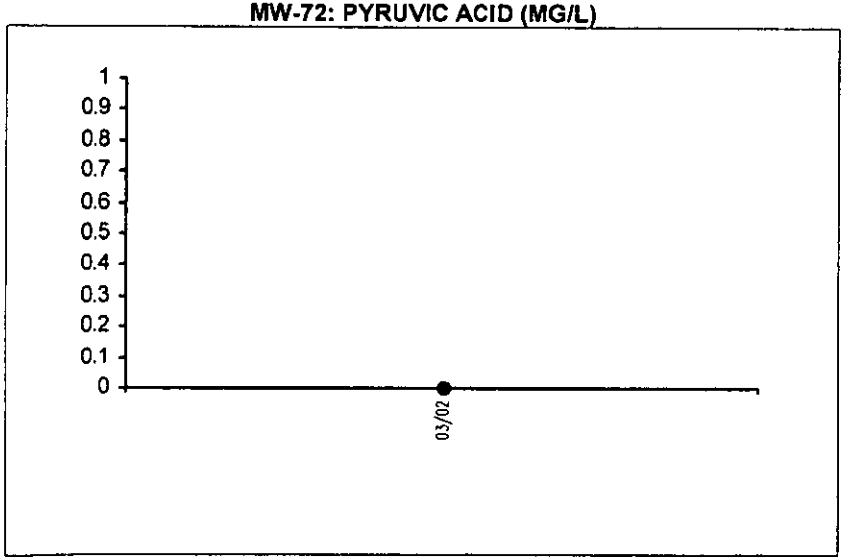
MW-72: NITROGEN, NITRITE (MG/L)



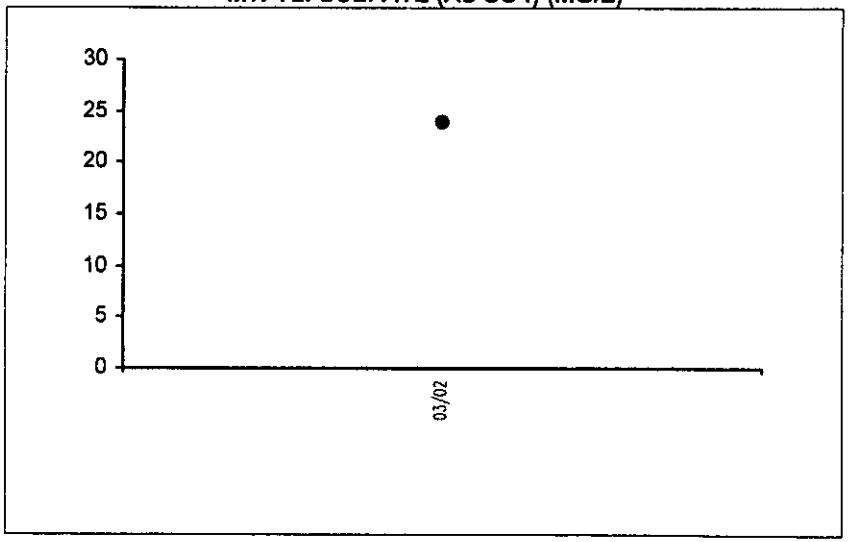
MW-72: PROPIONIC ACID (MG/L)



MW-72: PYRUVIC ACID (MG/L)



MW-72: SULFATE (AS SO4) (MG/L)



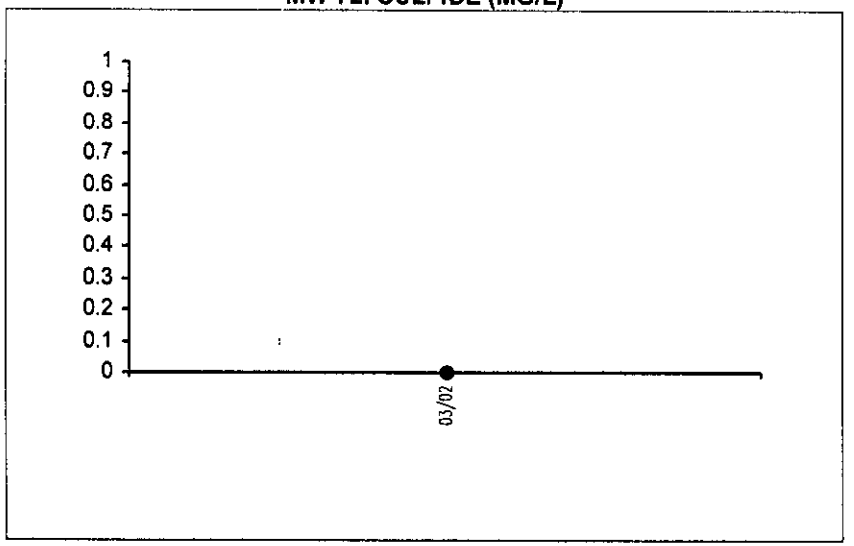
* Nondetects shown as 0.

Location Purpose : Boundary

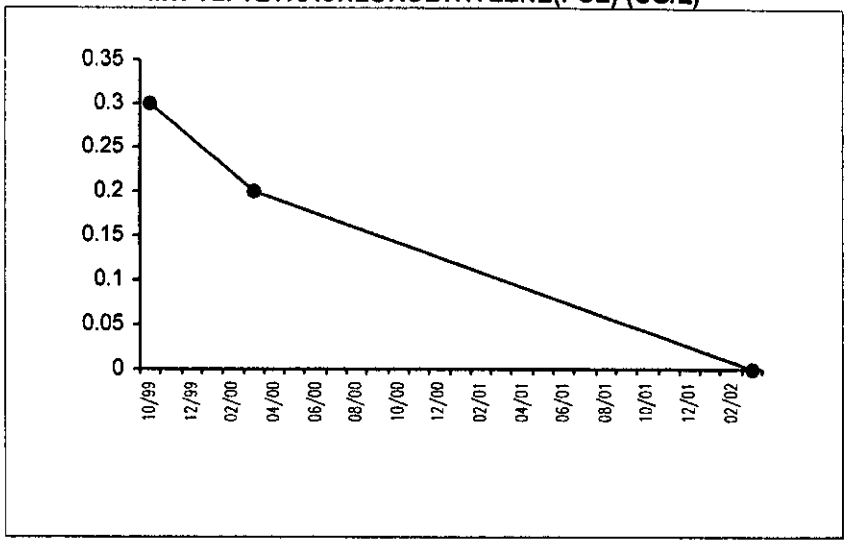
Boundary MW-72

Concentration vs Time

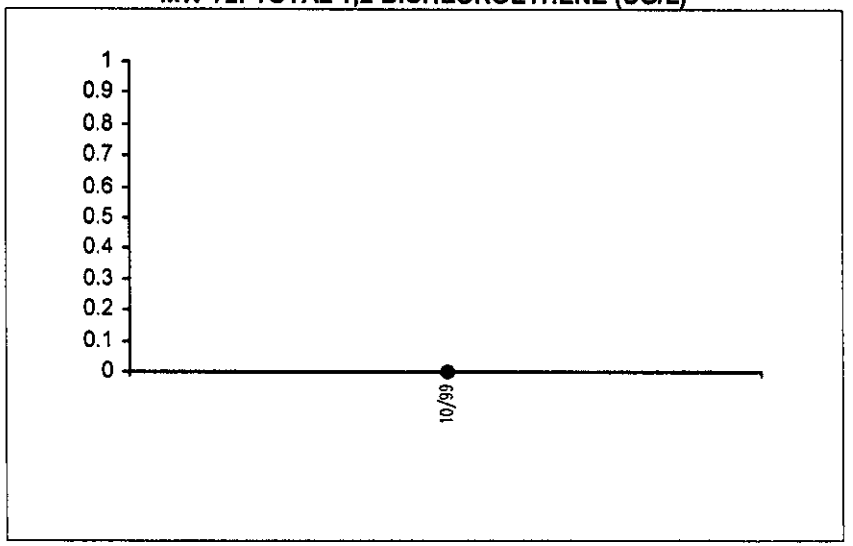
MW-72: SULFIDE (MG/L)



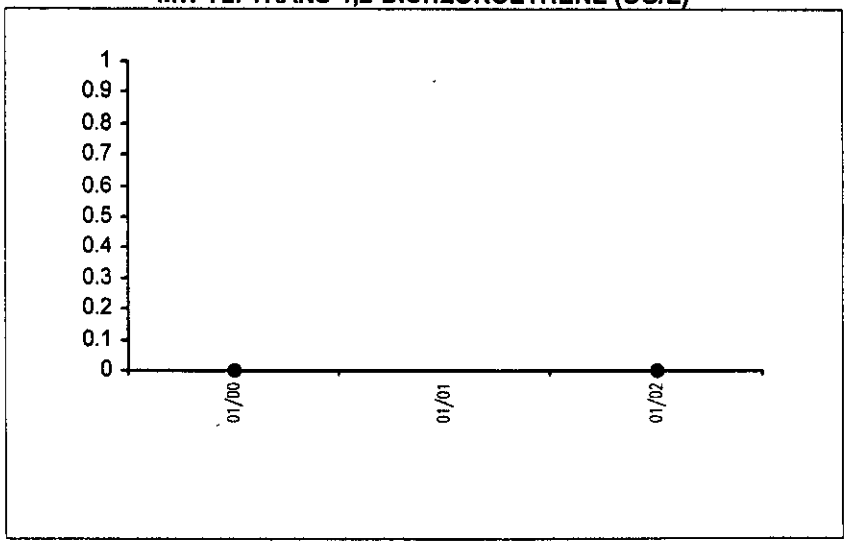
MW-72: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-72: TOTAL 1,2-DICHLOROETHENE (UG/L)



MW-72: TRANS-1,2-DICHLOROETHENE (UG/L)



* No[redacted]cts shown as 0.

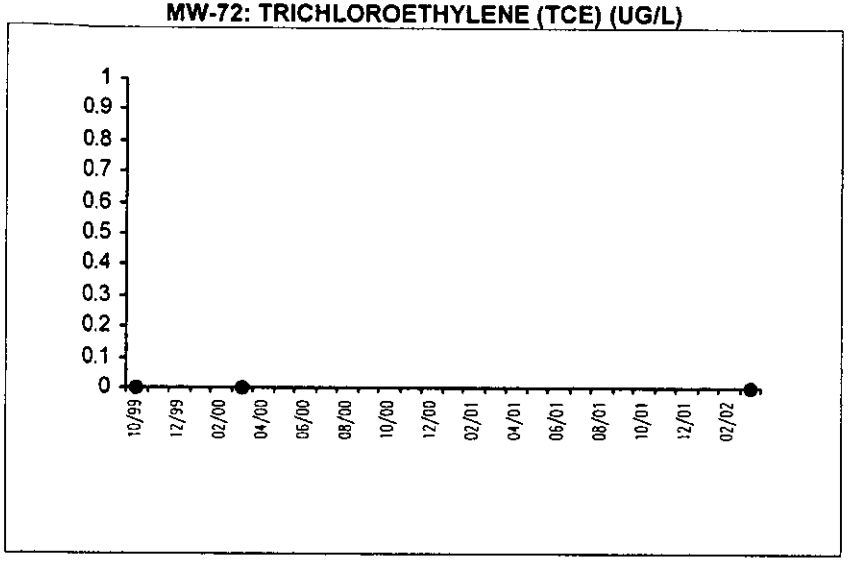
794 959

Location Purpose : Boundary

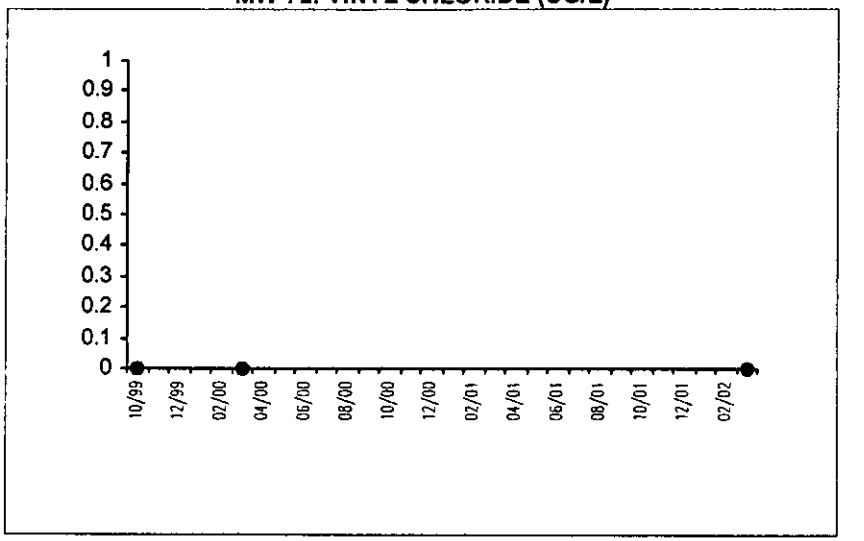
Boundary MW-72

Concentration vs Time

MW-72: TRICHLOROETHYLENE (TCE) (UG/L)



MW-72: VINYL CHLORIDE (UG/L)



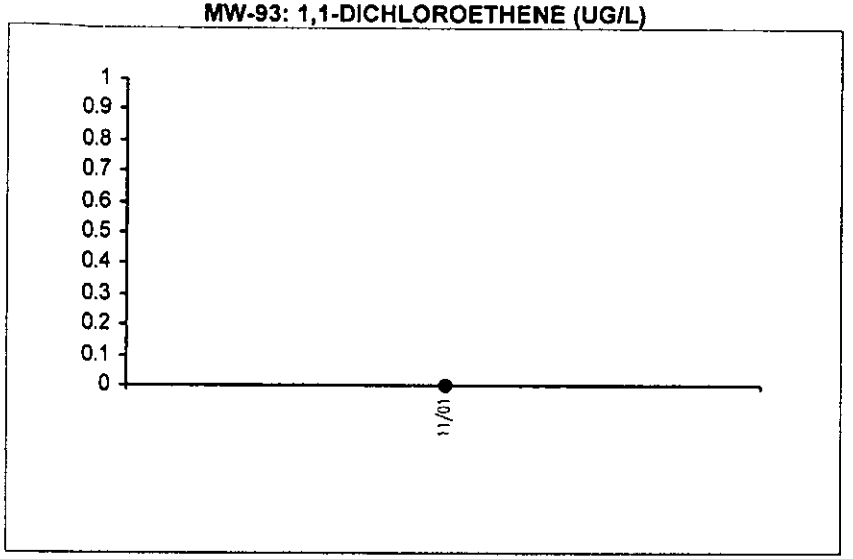
* Nondetects shown as 0.

Location Purpose : Boundary

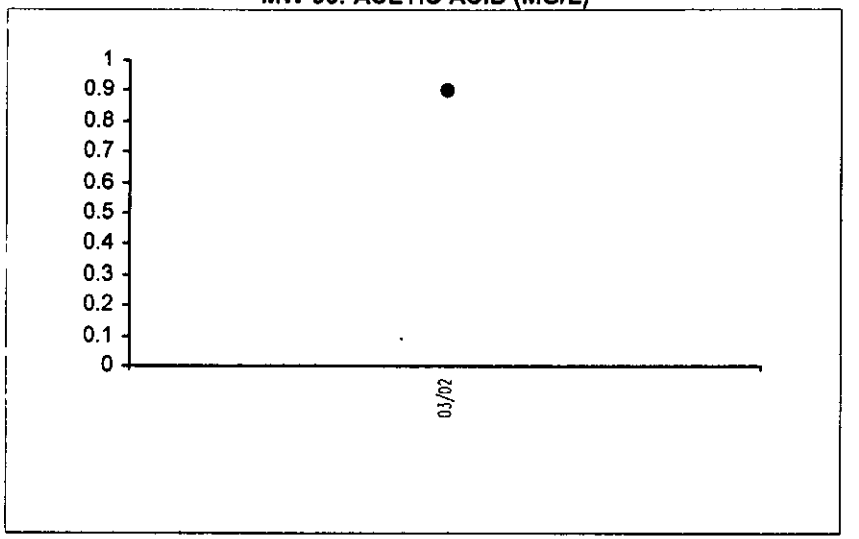
Boundary MW-93

Concentration vs Time

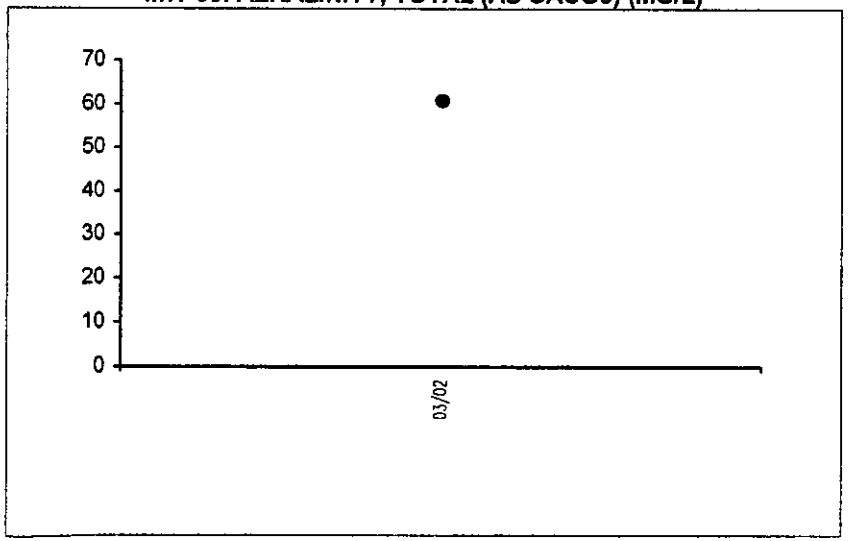
MW-93: 1,1-DICHLOROETHENE (UG/L)



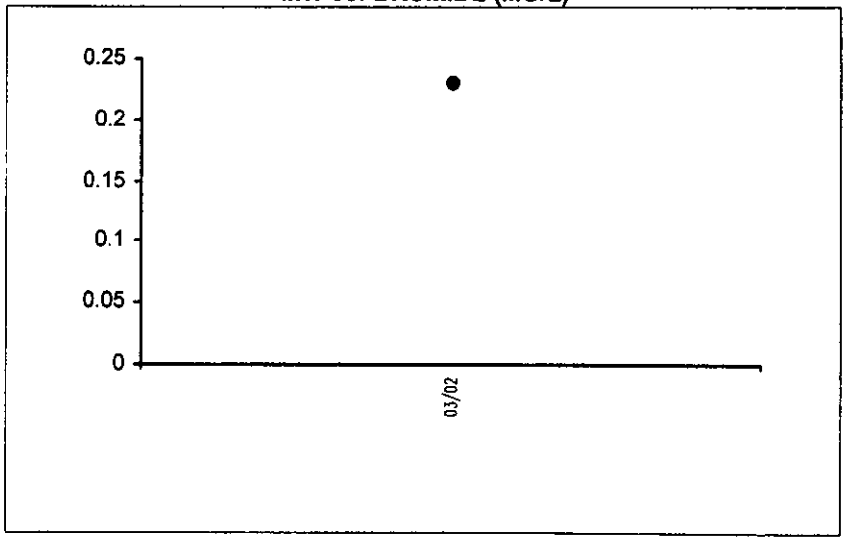
MW-93: ACETIC ACID (MG/L)



MW-93: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-93: BROMIDE (MG/L)



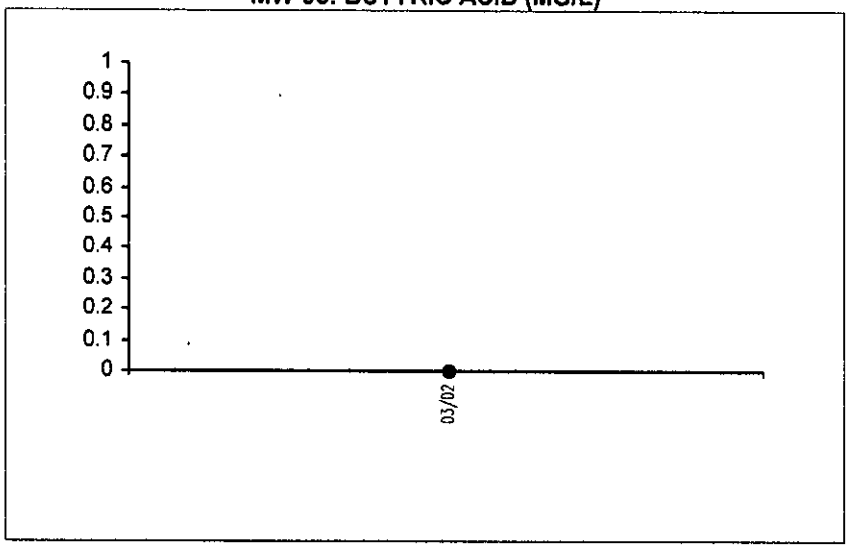
* Nondetects shown as 0.

Location Purpose : Boundary

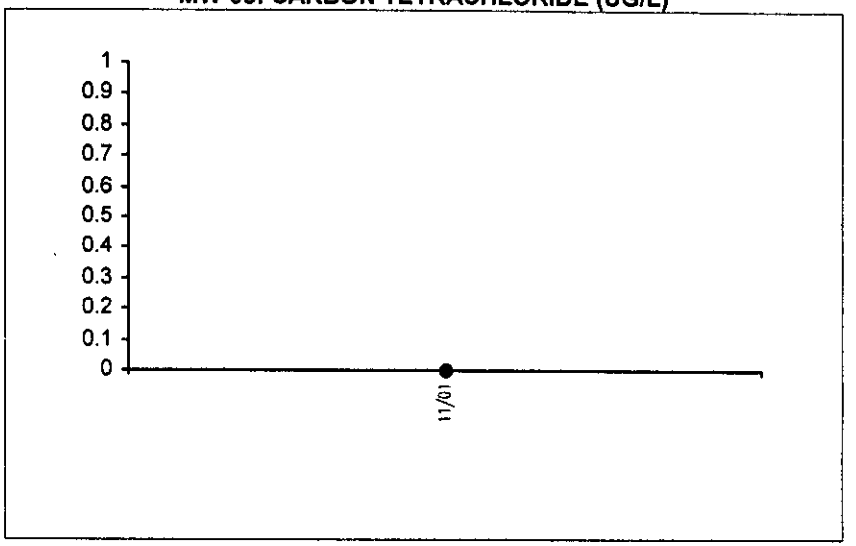
Boundary MW-93

Concentration vs Time

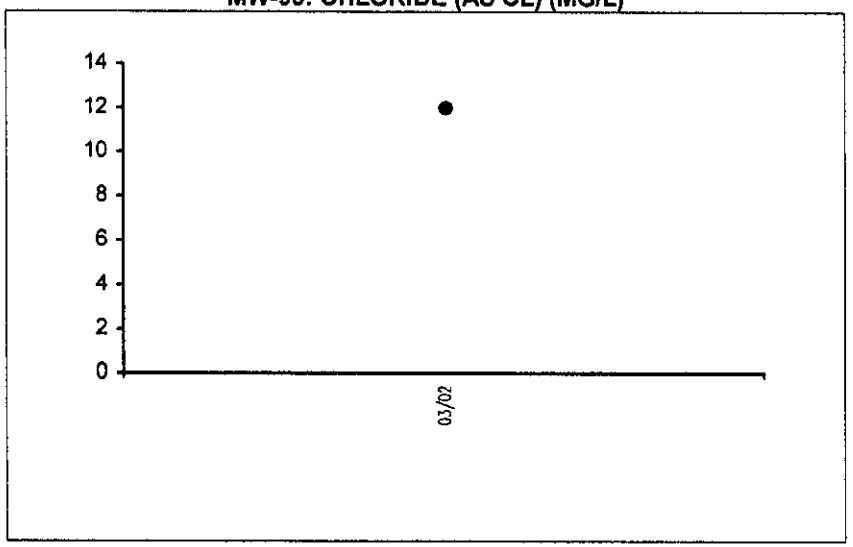
MW-93: BUTYRIC ACID (MG/L)



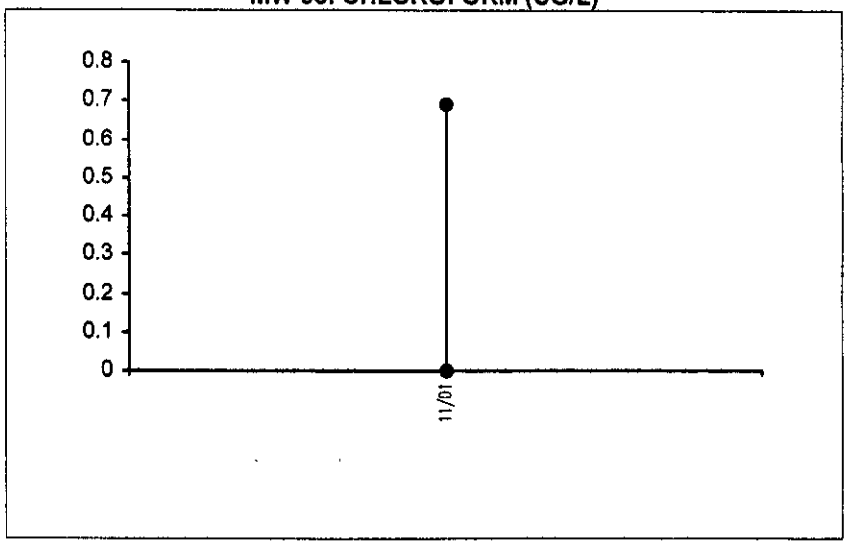
MW-93: CARBON TETRACHLORIDE (UG/L)



MW-93: CHLORIDE (AS CL) (MG/L)



MW-93: CHLOROFORM (UG/L)



* N[redacted]ects shown as 0.

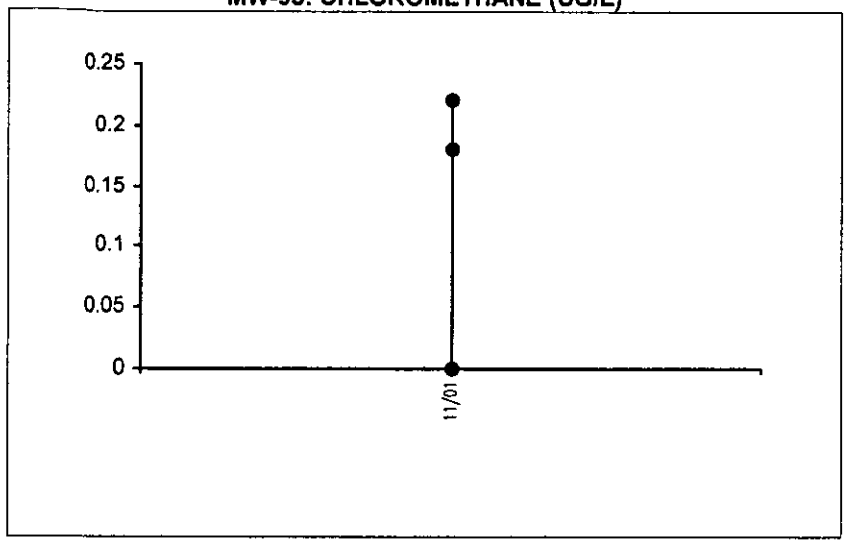
794 962

Location Purpose : Boundary

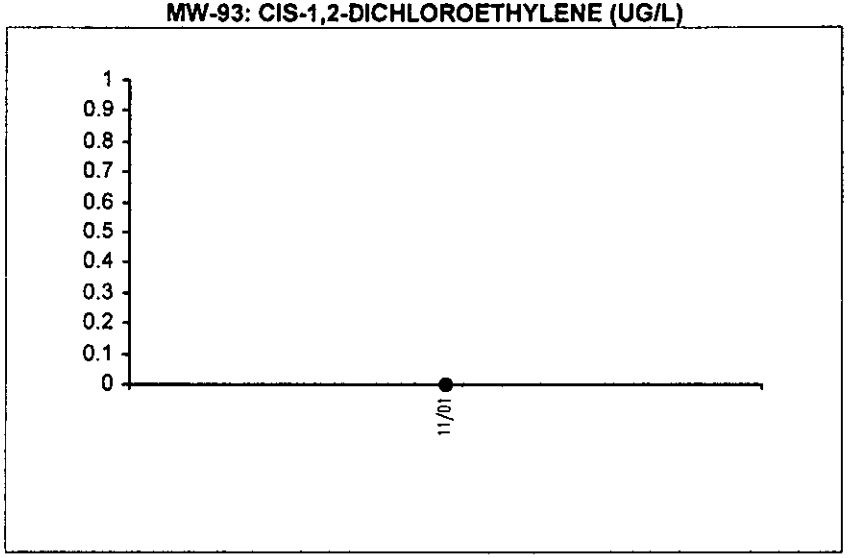
Boundary MW-93

Concentration vs Time

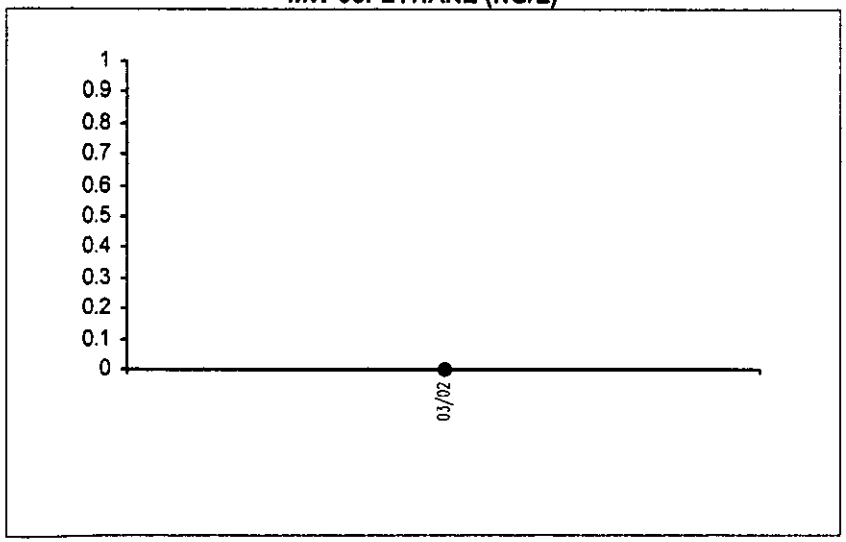
MW-93: CHLOROMETHANE (UG/L)



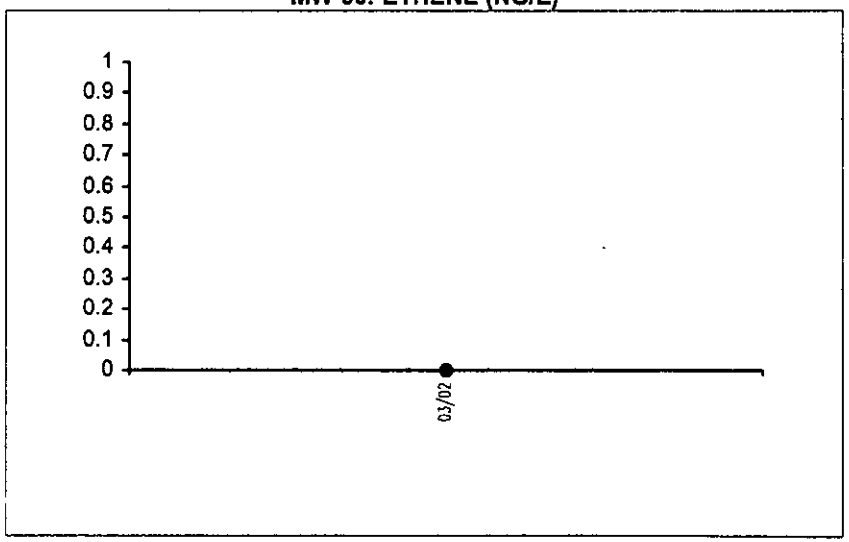
MW-93: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-93: ETHANE (NG/L)



MW-93: ETHENE (NG/L)



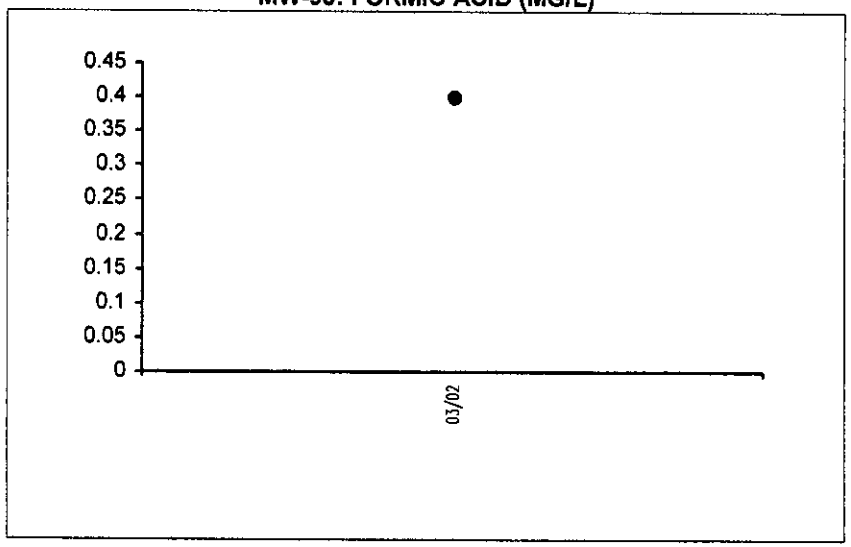
* Nondetects shown as 0.

Location Purpose : Boundary

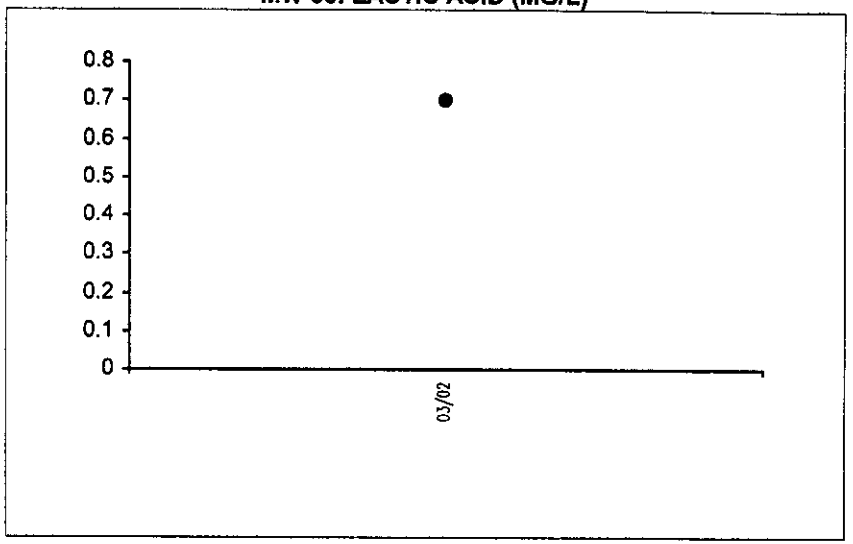
Boundary MW-93

Concentration vs Time

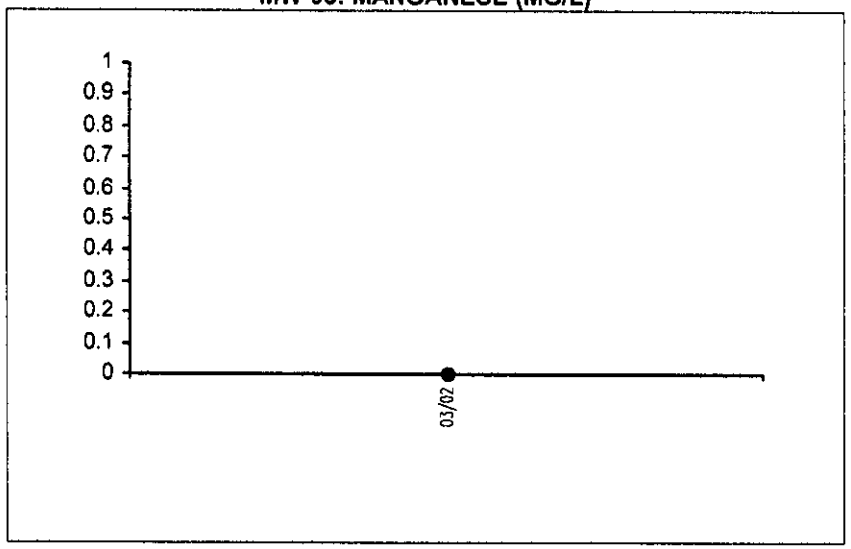
MW-93: FORMIC ACID (MG/L)



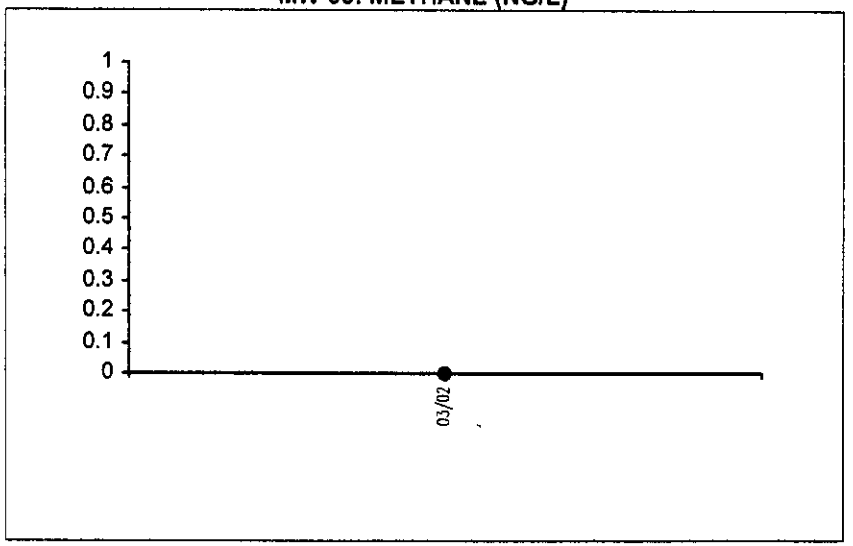
MW-93: LACTIC ACID (MG/L)



MW-93: MANGANESE (MG/L)



MW-93: METHANE (NG/L)



* N[redacted]cts shown as 0.

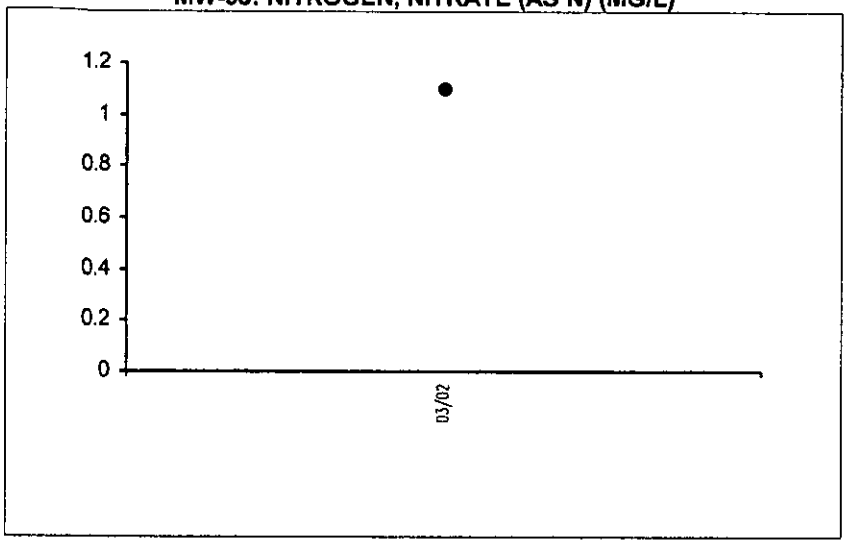
794 964

Location Purpose : Boundary

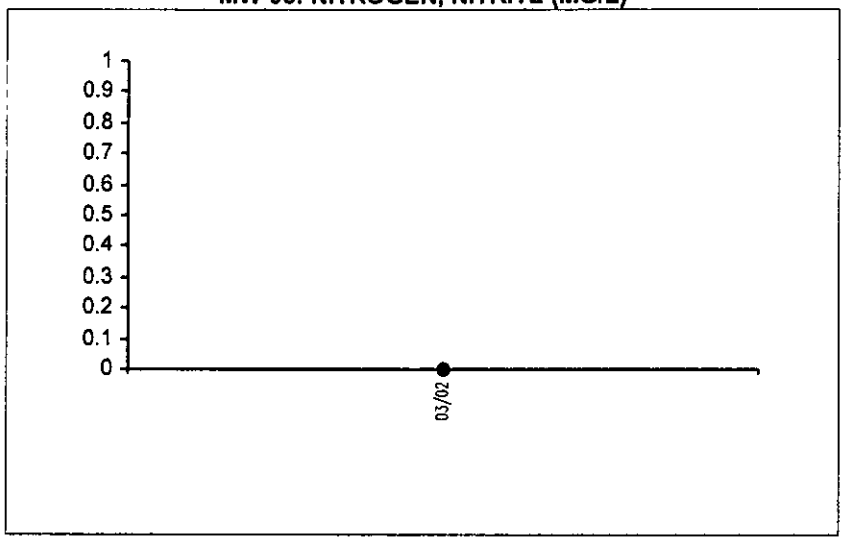
Boundary MW-93

Concentration vs Time

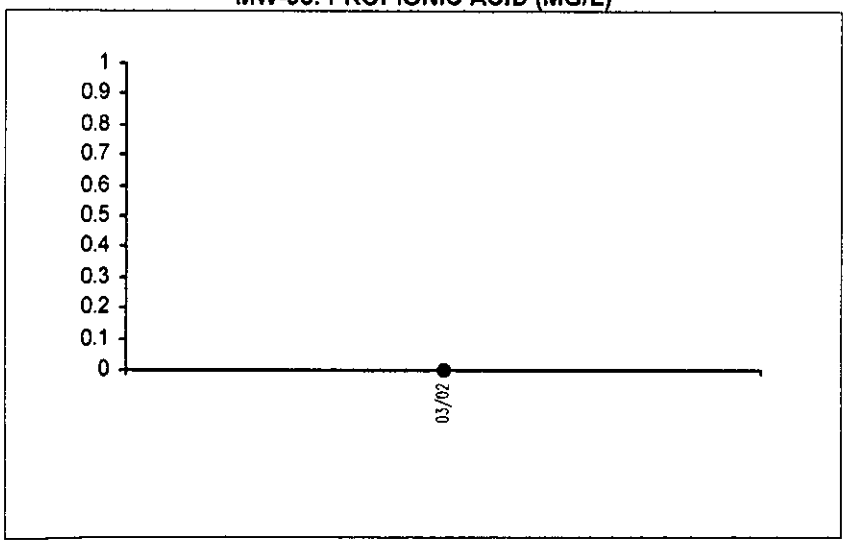
MW-93: NITROGEN, NITRATE (AS N) (MG/L)



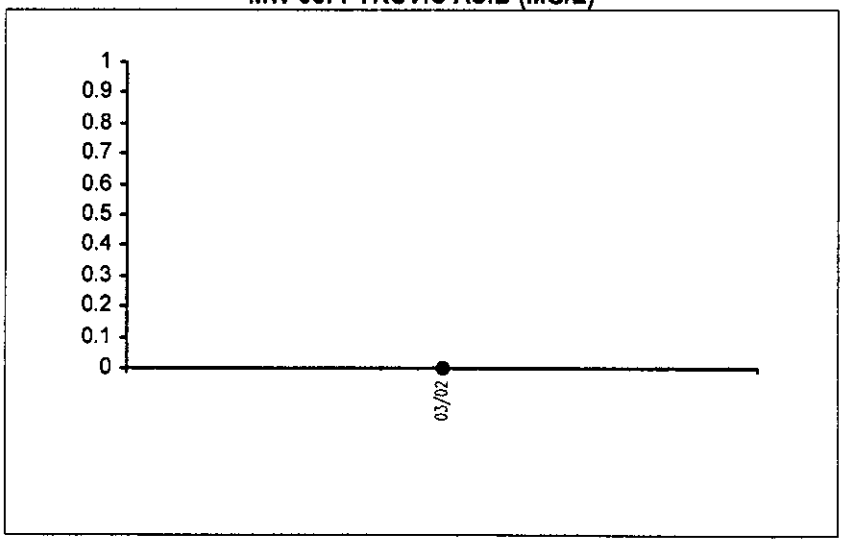
MW-93: NITROGEN, NITRITE (MG/L)



MW-93: PROPIONIC ACID (MG/L)



MW-93: PYRUVIC ACID (MG/L)



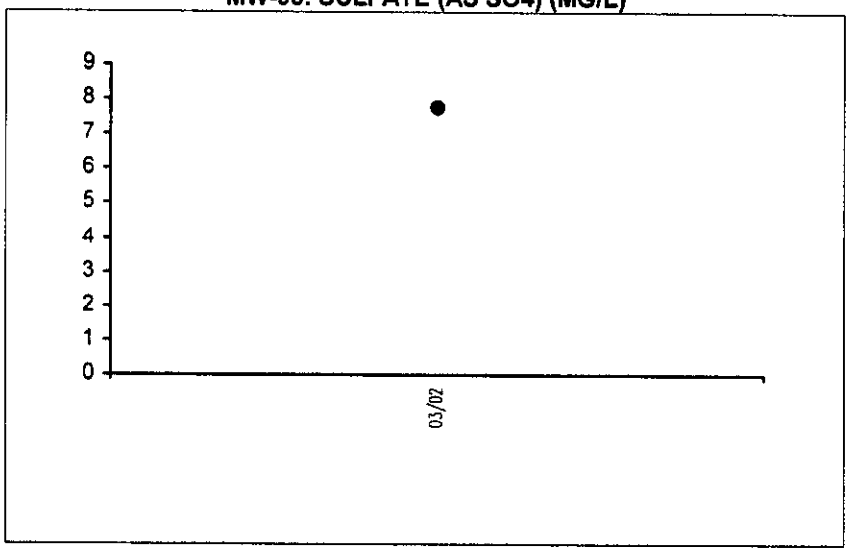
* Nondetects shown as 0.

Location Purpose : Boundary

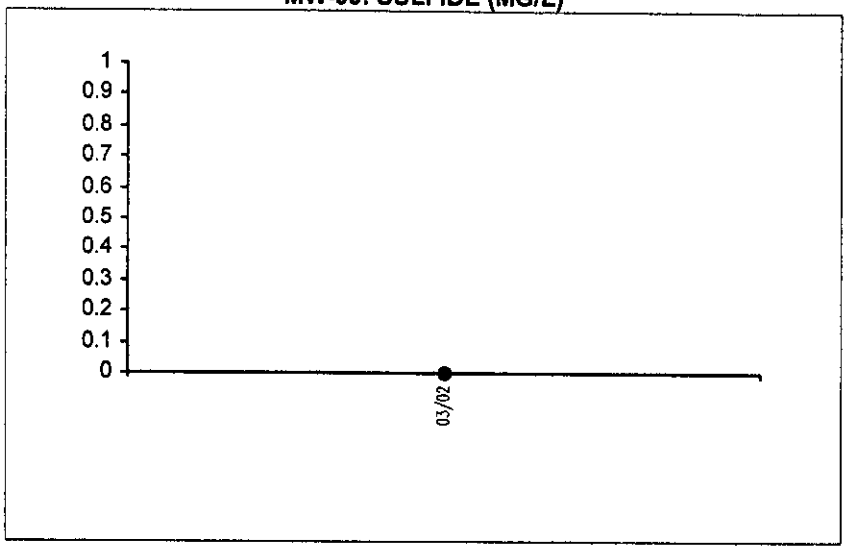
Boundary MW-93

Concentration vs Time

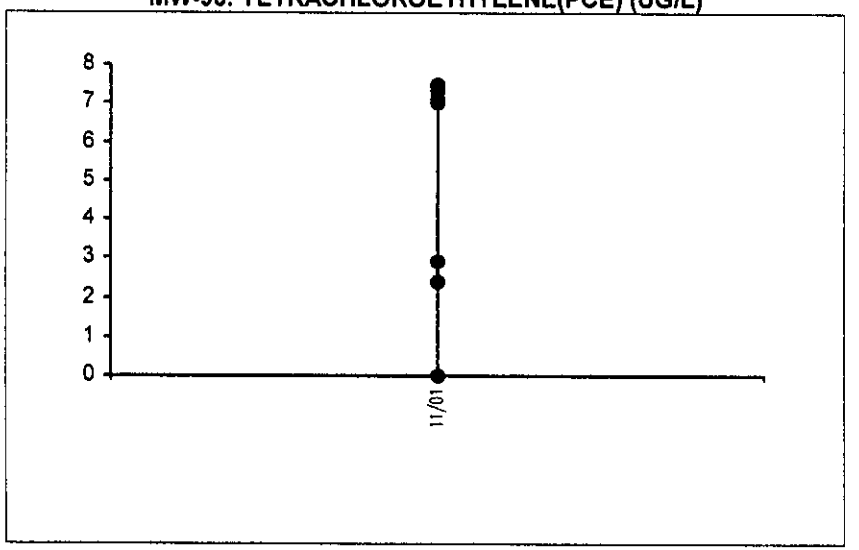
MW-93: SULFATE (AS SO4) (MG/L)



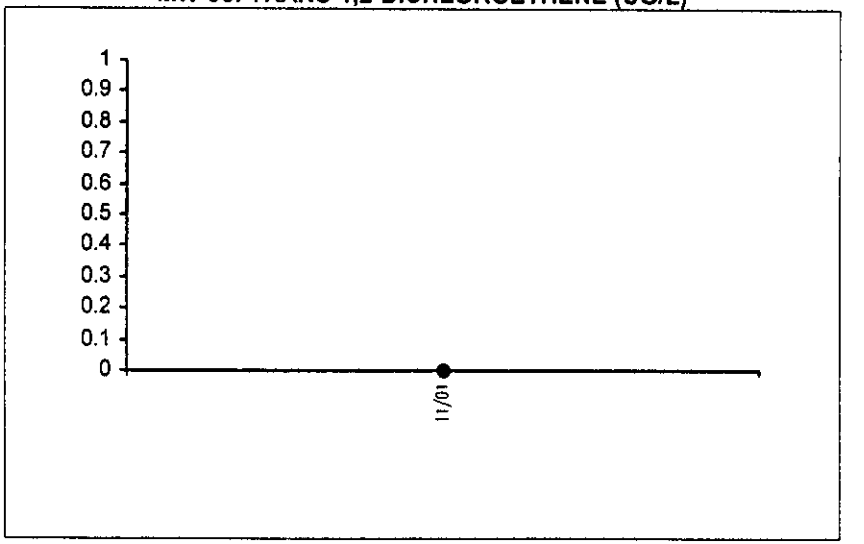
MW-93: SULFIDE (MG/L)



MW-93: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-93: TRANS-1,2-DICHLOROETHENE (UG/L)



* Non-detects shown as 0.

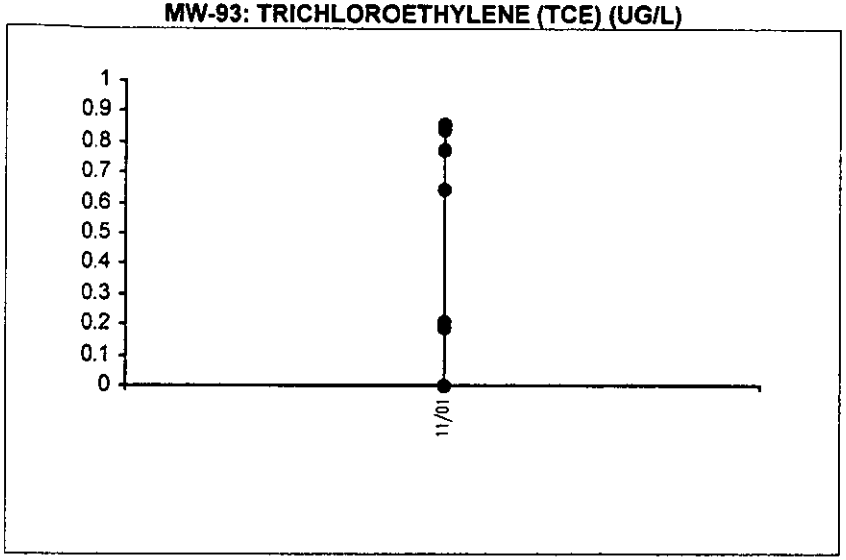
794 966

Location Purpose : Boundary

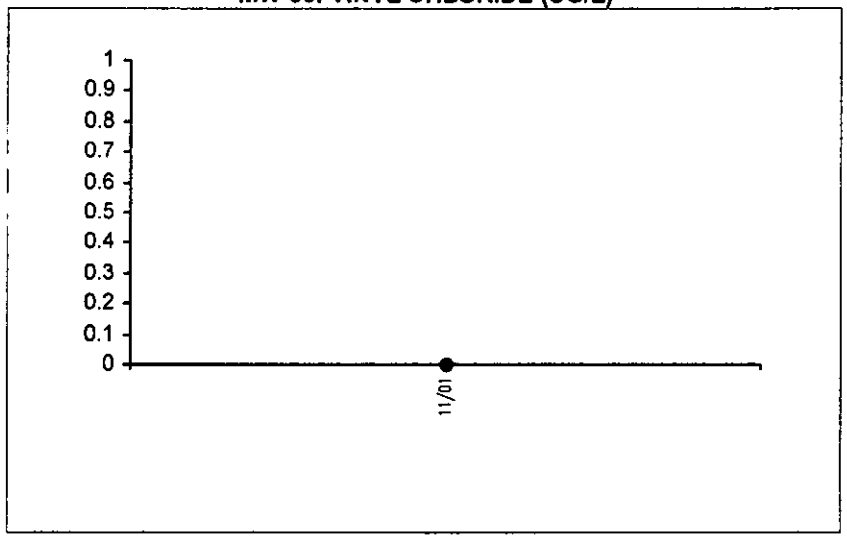
Boundary MW-93

Concentration vs Time

MW-93: TRICHLOROETHYLENE (TCE) (UG/L)



MW-93: VINYL CHLORIDE (UG/L)



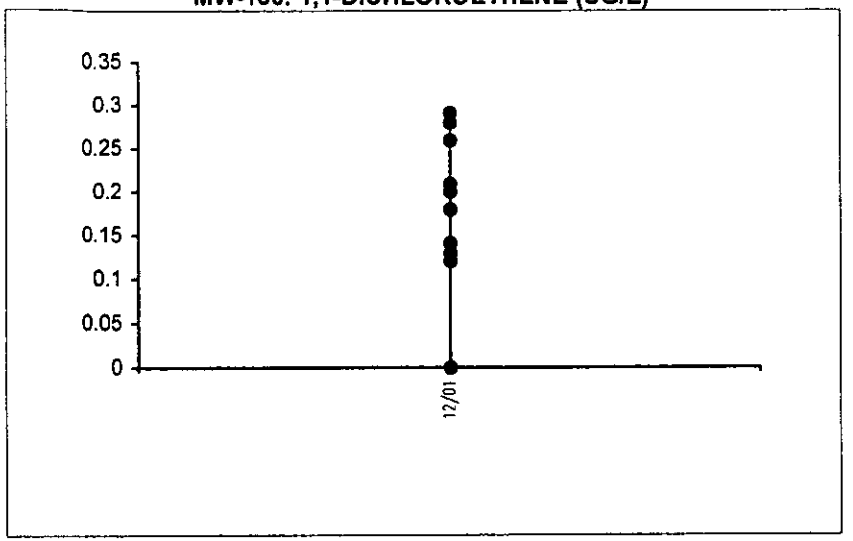
* Nondetects shown as 0.

Location Purpose : Remediation

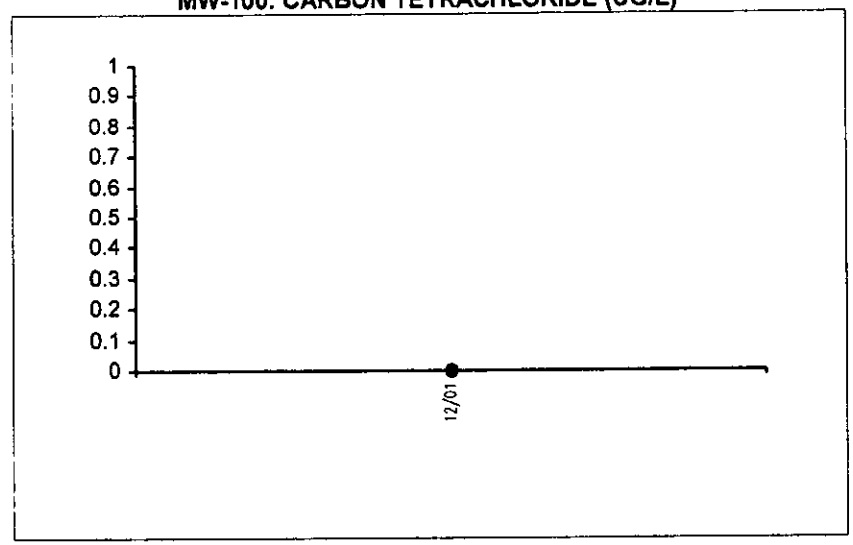
Remediation MW-100

Concentration vs Time

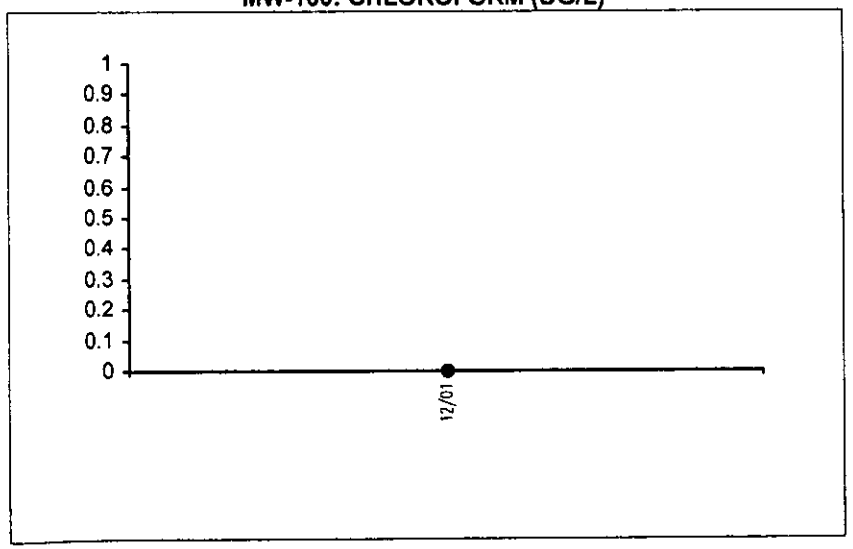
MW-100: 1,1-DICHLOROETHENE (UG/L)



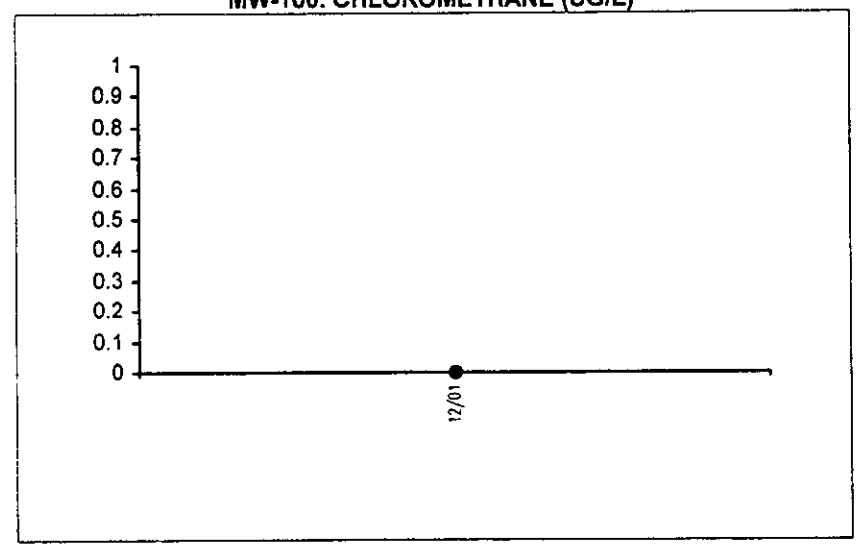
MW-100: CARBON TETRACHLORIDE (UG/L)



MW-100: CHLOROFORM (UG/L)



MW-100: CHLOROMETHANE (UG/L)



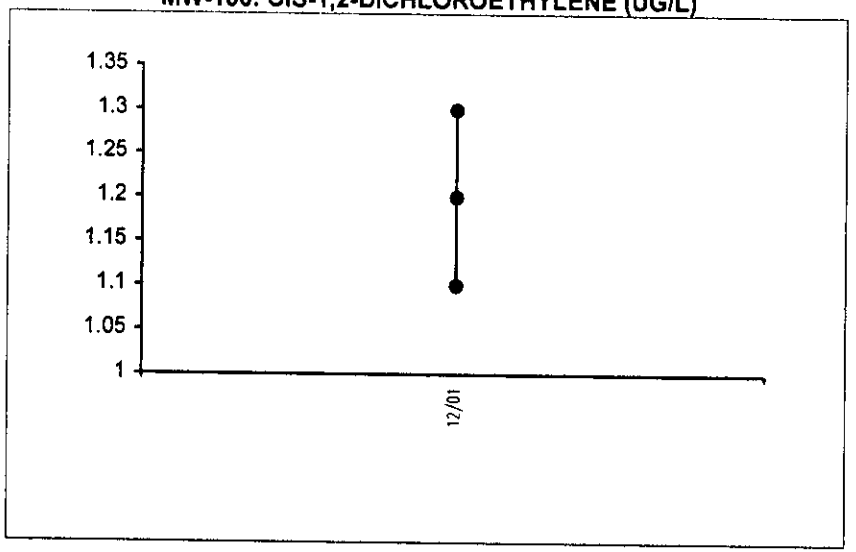
* Nondetects shown as 0.

Location Purpose : Remediation

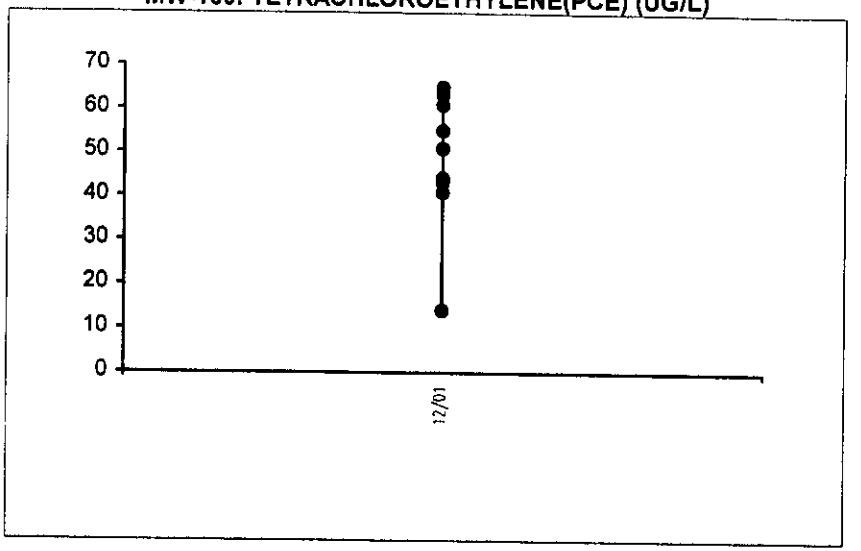
Remediation MW-100

Concentration vs Time

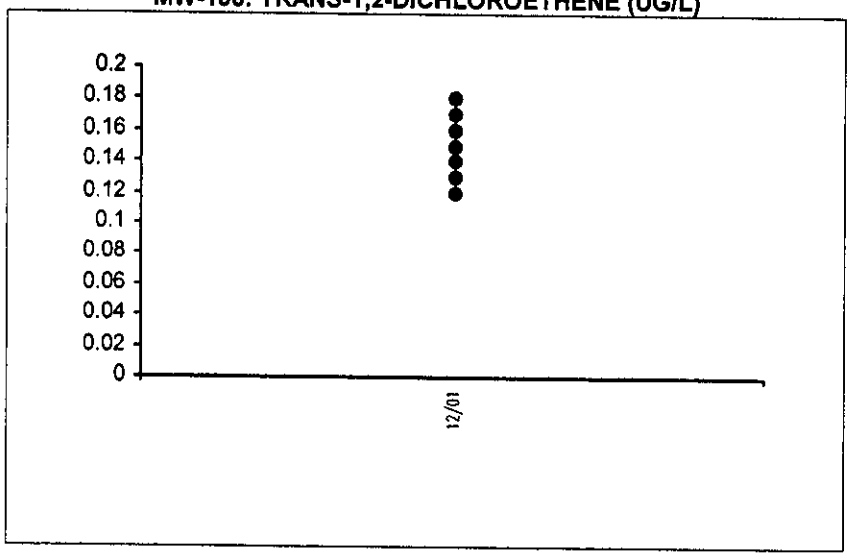
MW-100: CIS-1,2-DICHLOROETHYLENE (UG/L)



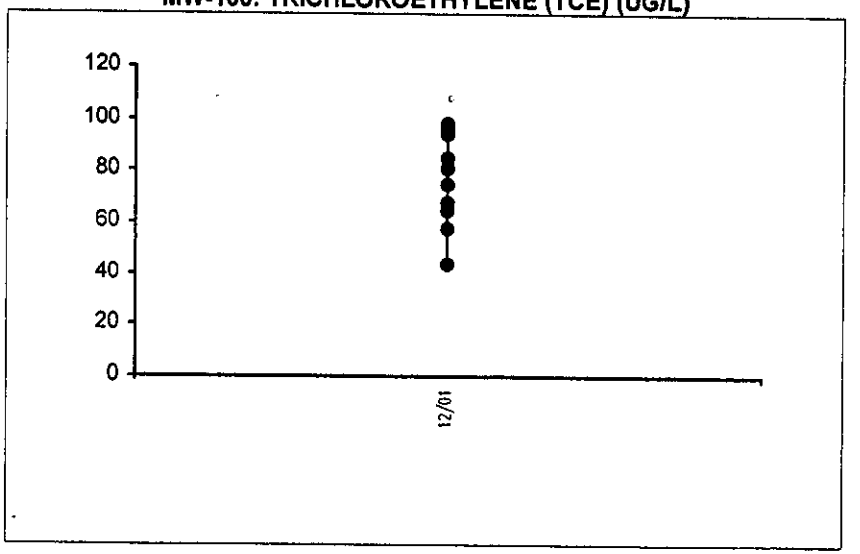
MW-100: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-100: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-100: TRICHLOROETHYLENE (TCE) (UG/L)



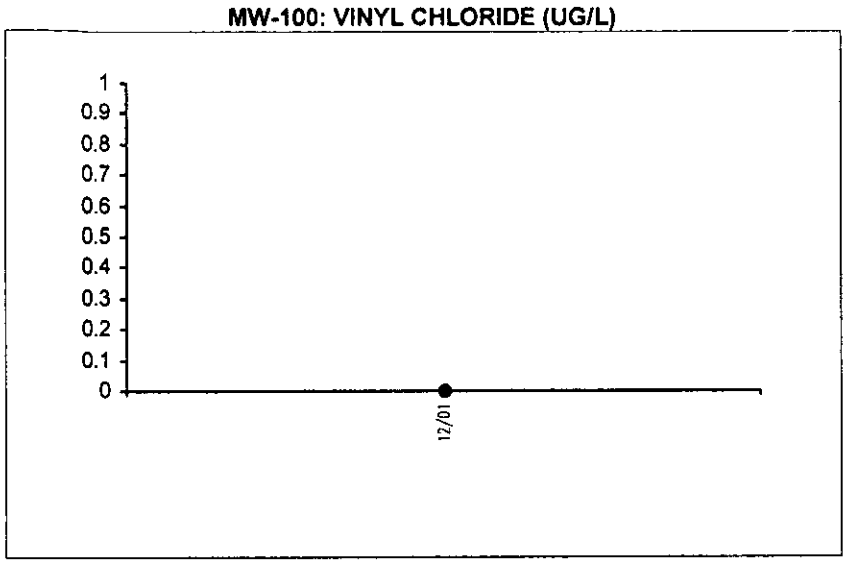
* No[illegible]cts shown as 0.

794 969

Location Purpose : Remediation

Remediation MW-100

Concentration vs Time



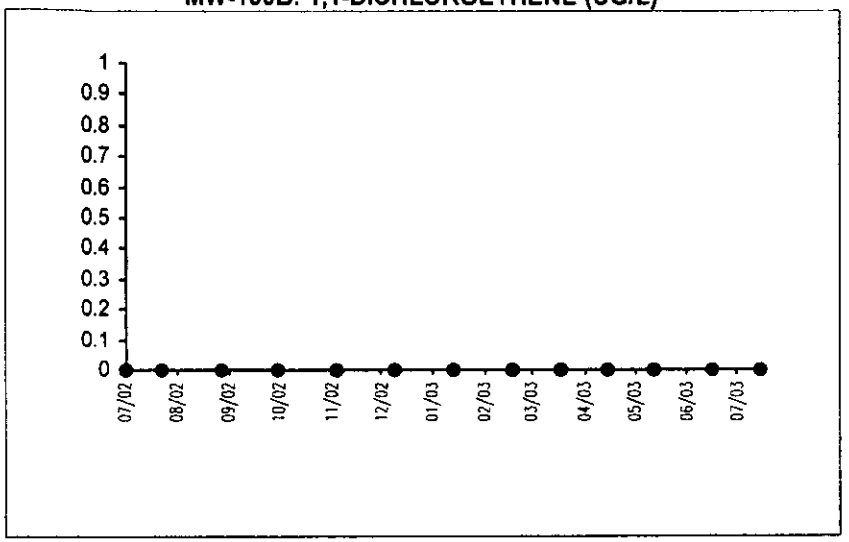
* Nondetects shown as 0.

Location Purpose : Remediation

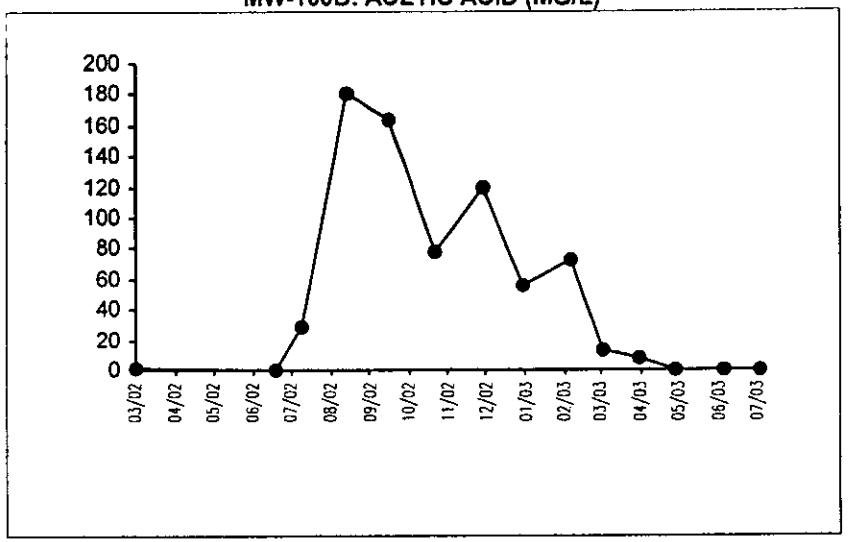
Remediation MW-100B

Concentration vs Time

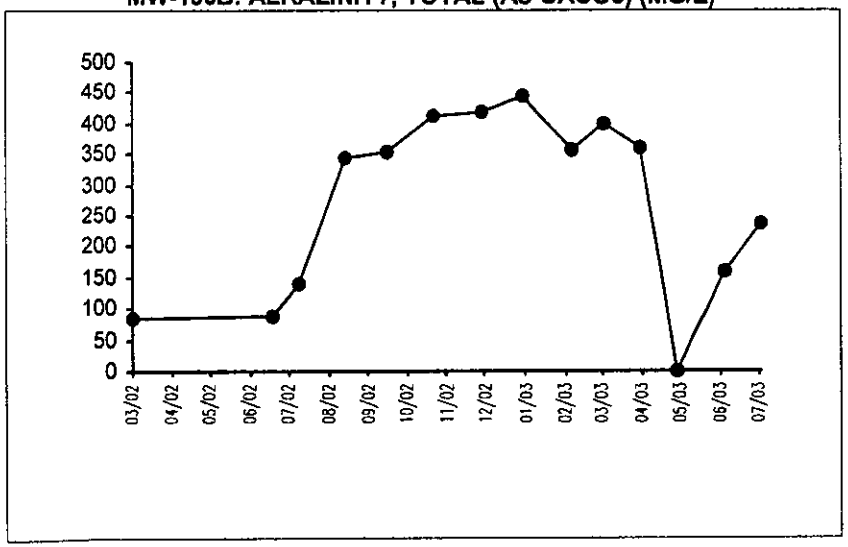
MW-100B: 1,1-DICHLOROETHENE (UG/L)



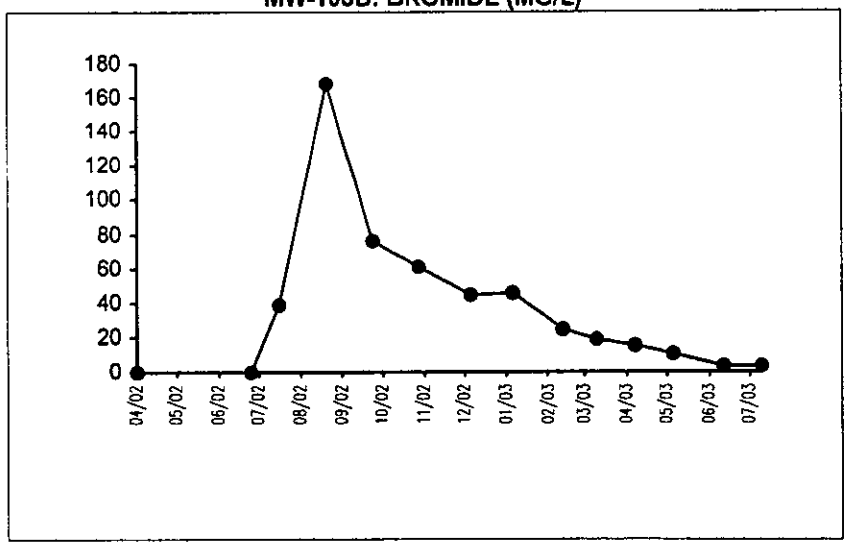
MW-100B: ACETIC ACID (MG/L)



MW-100B: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-100B: BROMIDE (MG/L)



* Nondetects shown as 0.

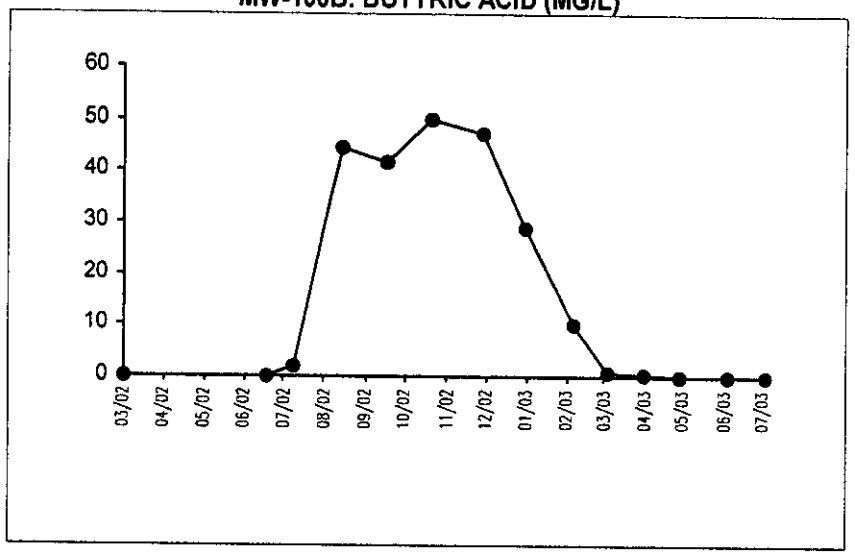
794 971

Location Purpose : Remediation

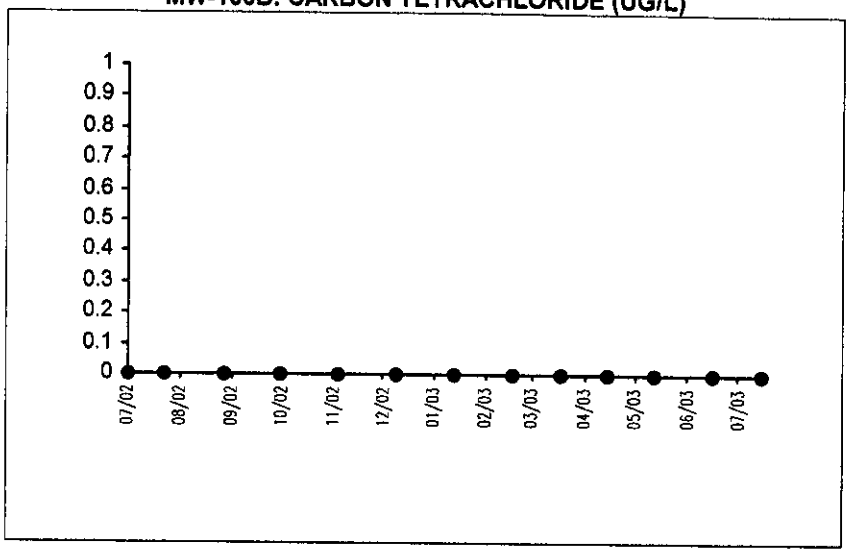
Remediation MW-100B

Concentration vs Time

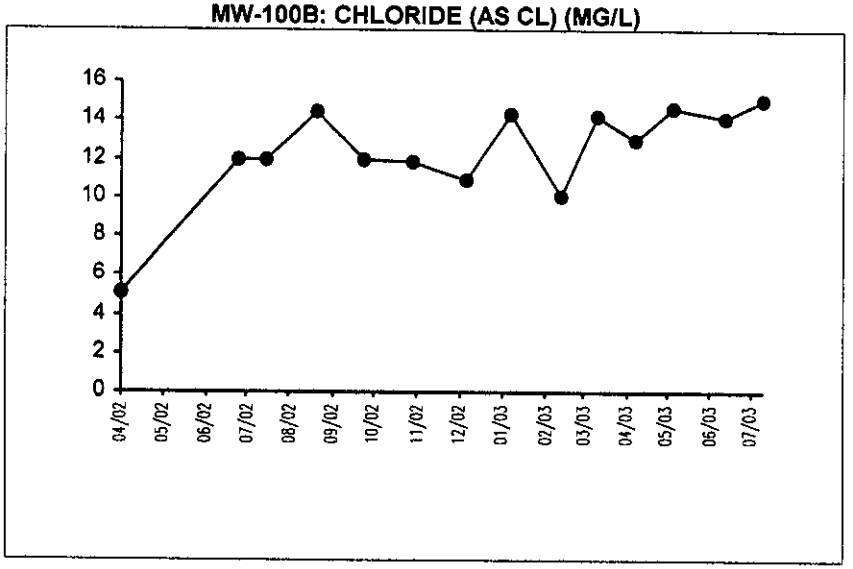
MW-100B: BUTYRIC ACID (MG/L)



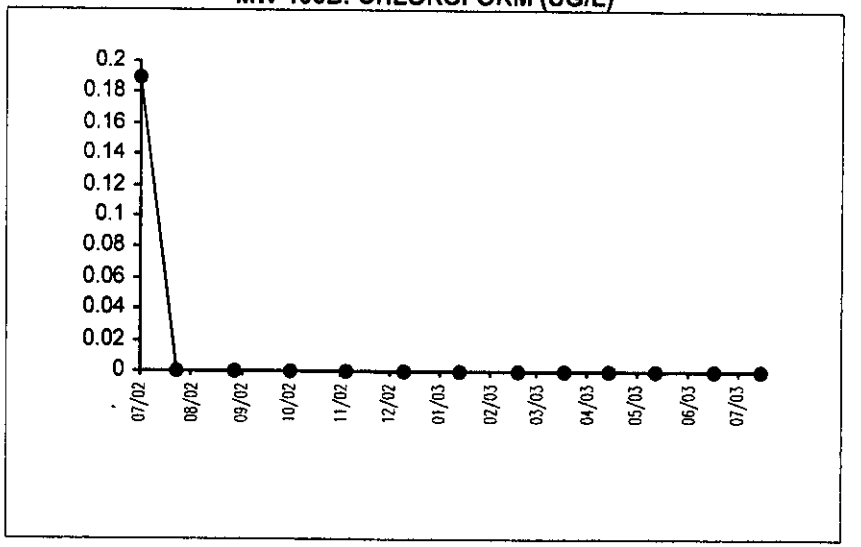
MW-100B: CARBON TETRACHLORIDE (UG/L)



MW-100B: CHLORIDE (AS CL) (MG/L)



MW-100B: CHLOROFORM (UG/L)



* Ne[redacted]cts shown as 0.

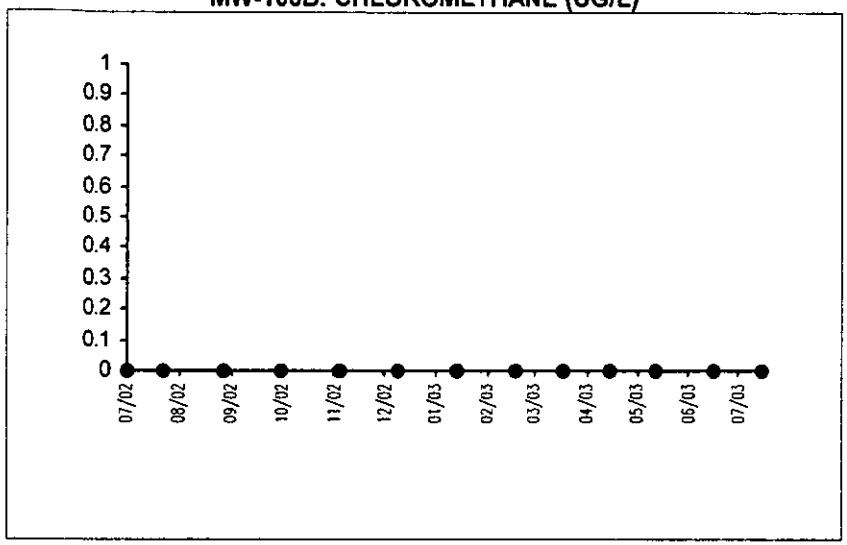
794 972

Location Purpose : Remediation

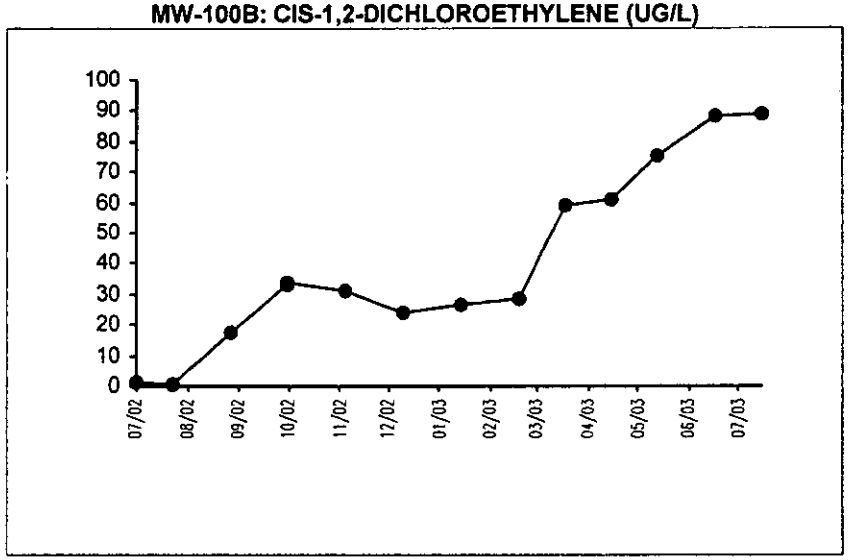
Remediation MW-100B

Concentration vs Time

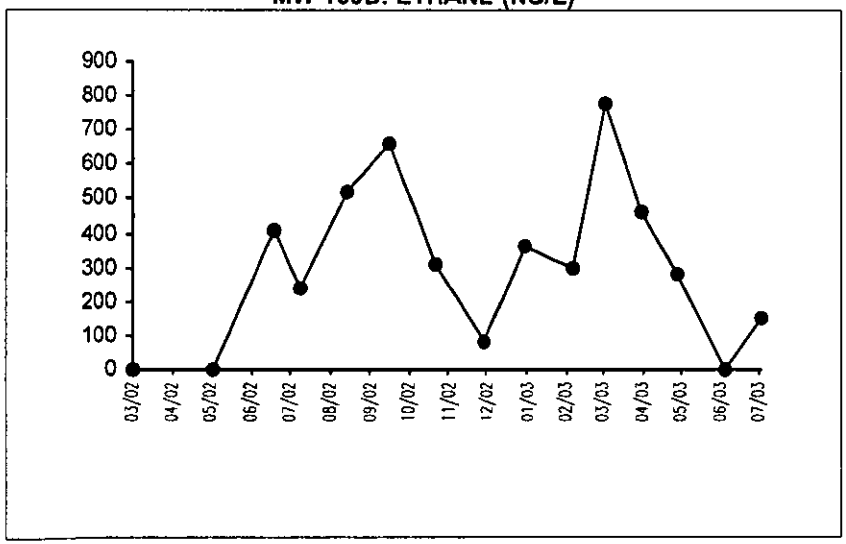
MW-100B: CHLOROMETHANE (UG/L)



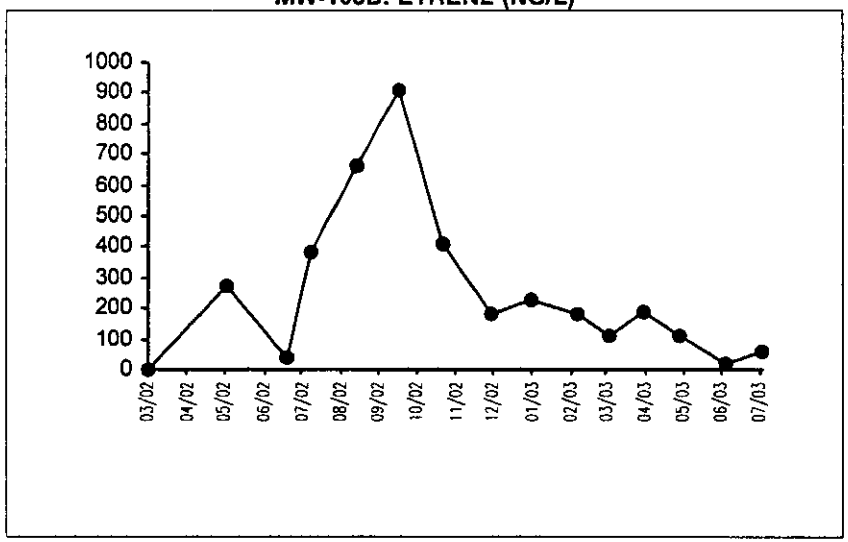
MW-100B: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-100B: ETHANE (NG/L)



MW-100B: ETHENE (NG/L)



* Nondetects shown as 0.

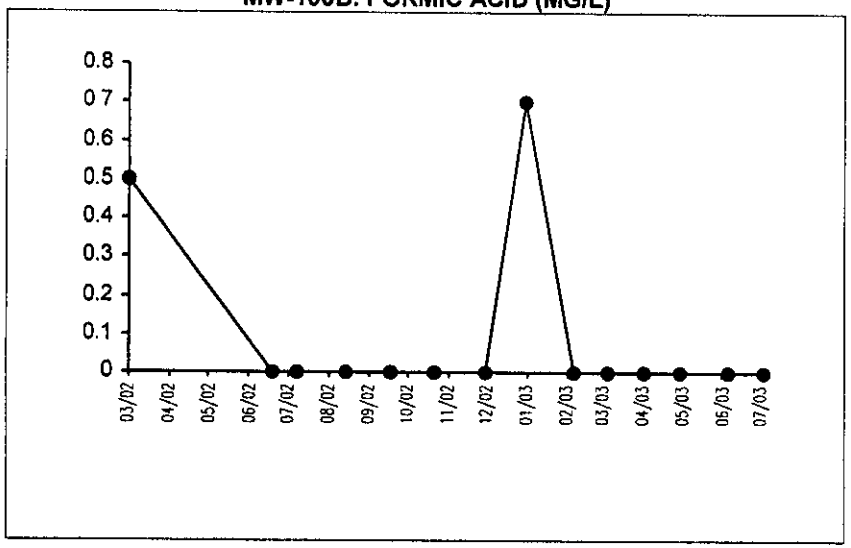
794 973

Location Purpose : Remediation

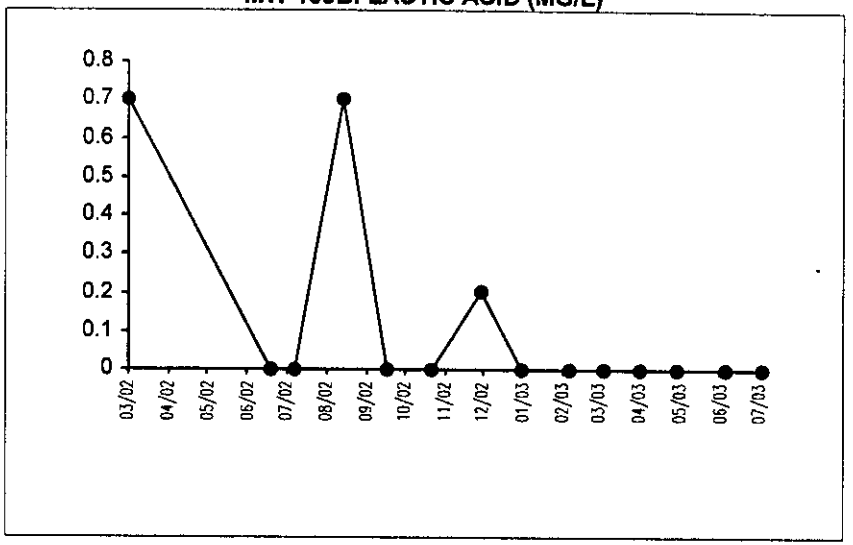
Remediation MW-100B

Concentration vs Time

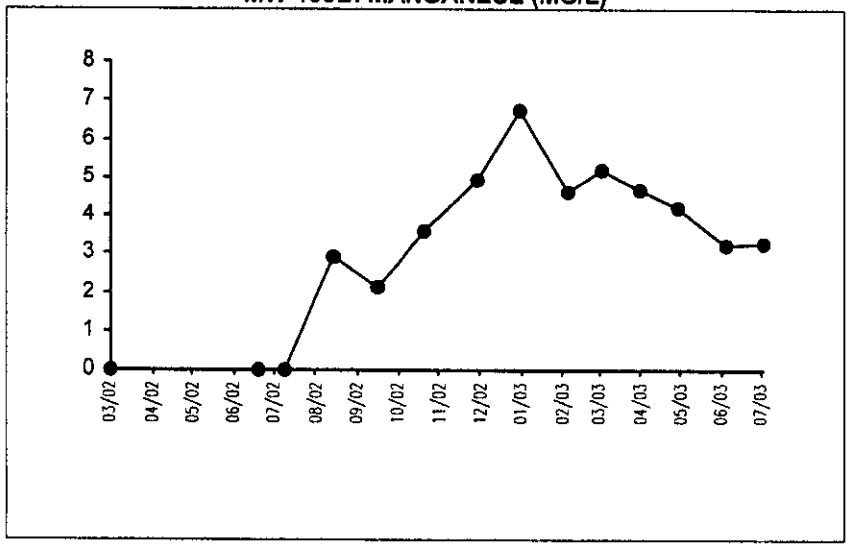
MW-100B: FORMIC ACID (MG/L)



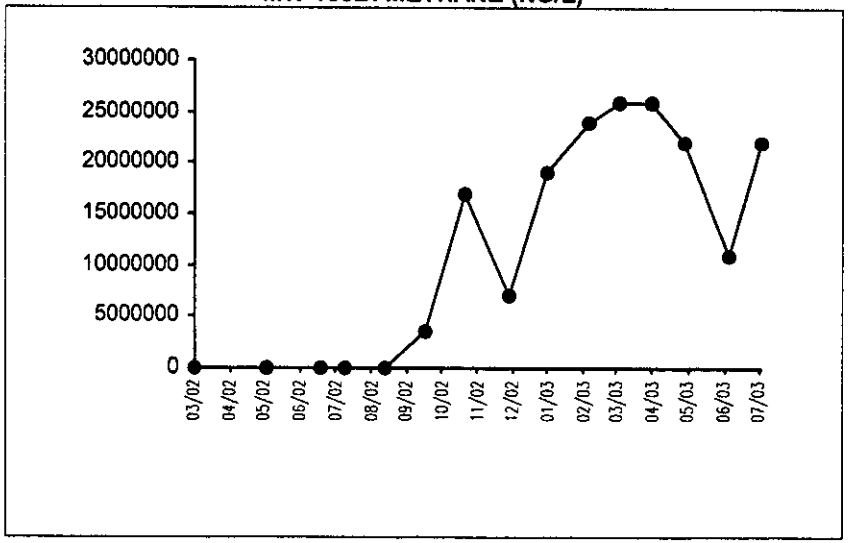
MW-100B: LACTIC ACID (MG/L)



MW-100B: MANGANESE (MG/L)



MW-100B: METHANE (NG/L)



* N[redacted]cts shown as 0.

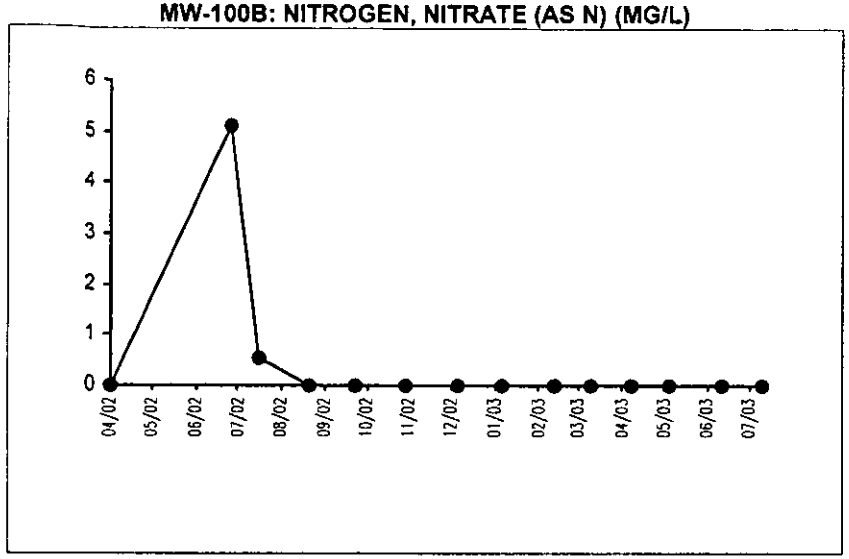
794 974

Location Purpose : Remediation

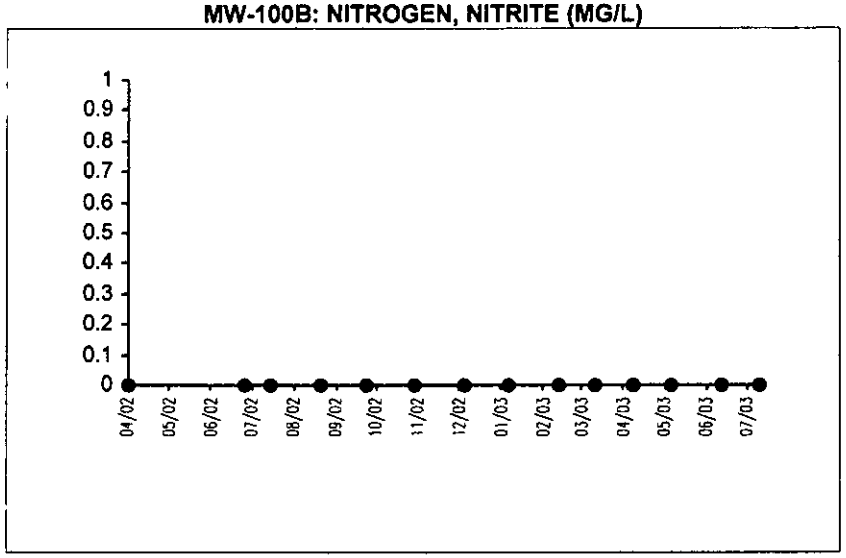
Remediation MW-100B

Concentration vs Time

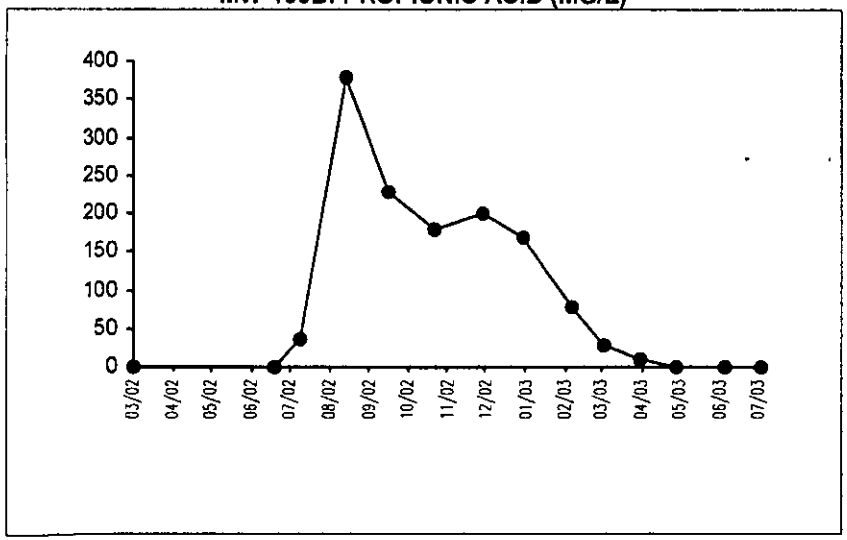
MW-100B: NITROGEN, NITRATE (AS N) (MG/L)



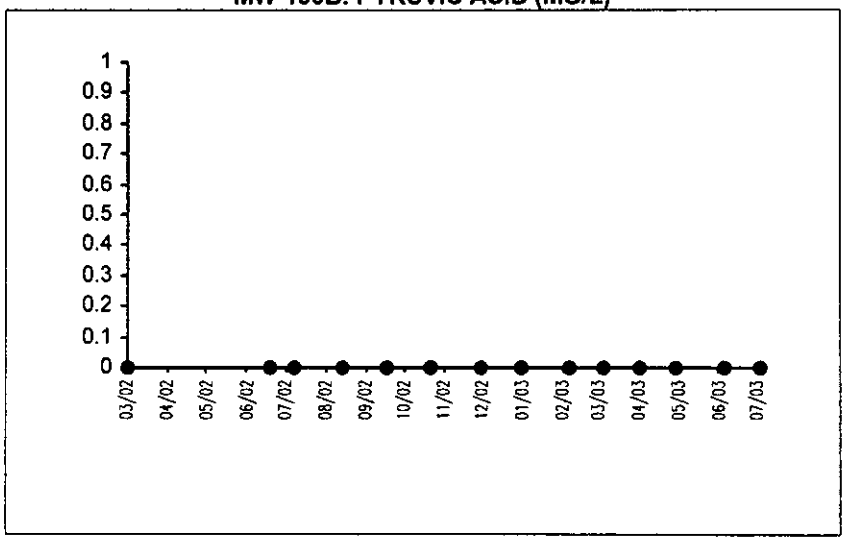
MW-100B: NITROGEN, NITRITE (MG/L)



MW-100B: PROPIONIC ACID (MG/L)



MW-100B: PYRUVIC ACID (MG/L)



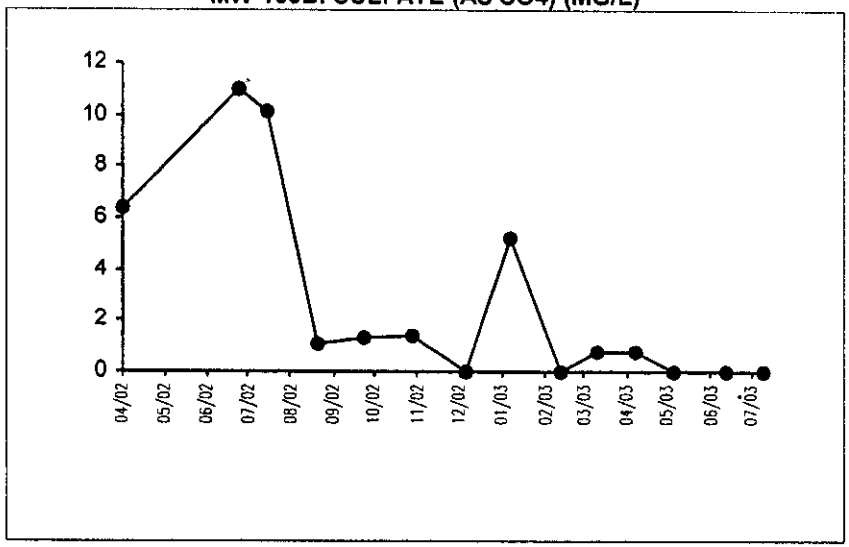
* Nondetects shown as 0.

Location Purpose : Remediation

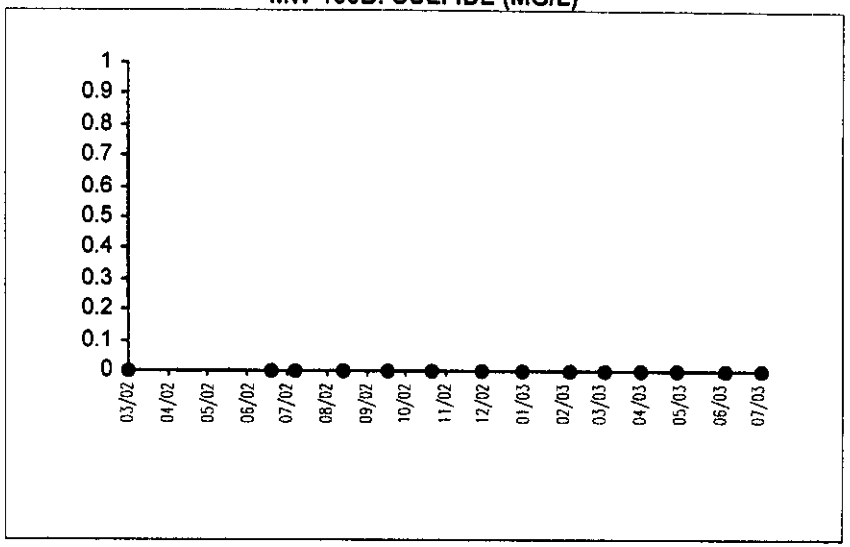
Remediation MW-100B

Concentration vs Time

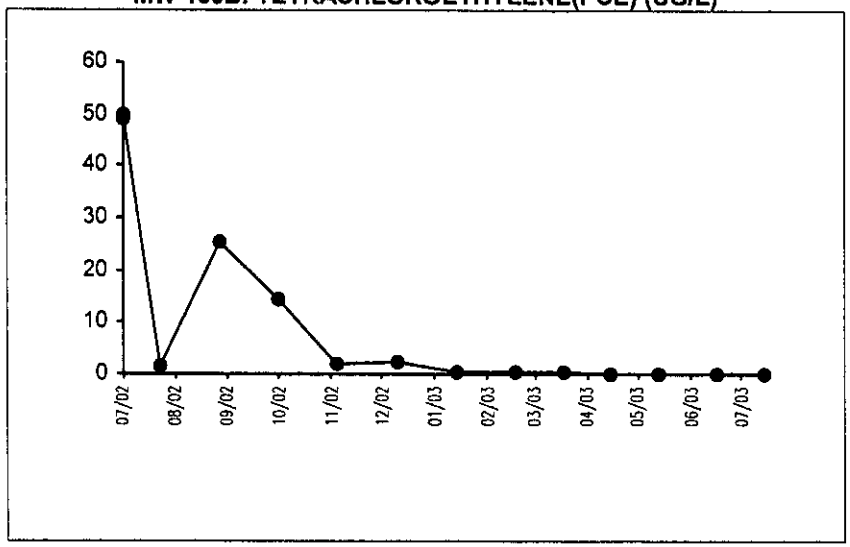
MW-100B: SULFATE (AS SO4) (MG/L)



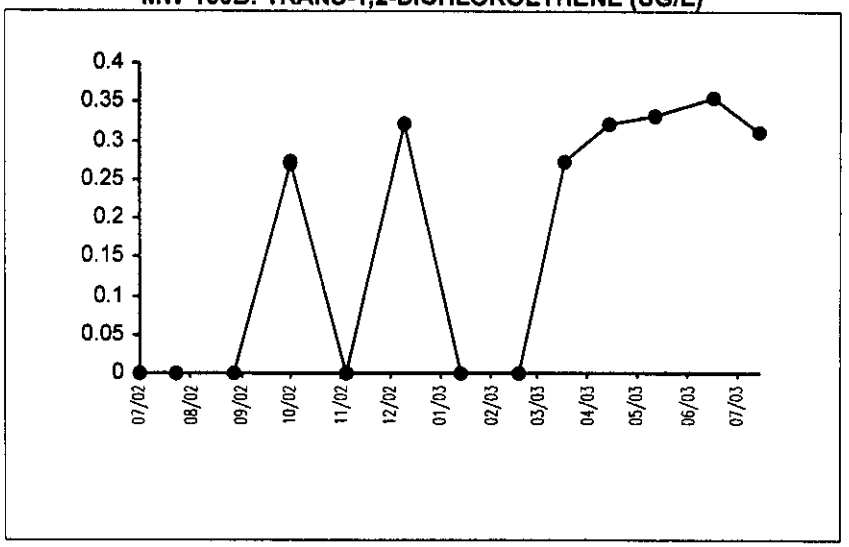
MW-100B: SULFIDE (MG/L)



MW-100B: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-100B: TRANS-1,2-DICHLOROETHENE (UG/L)



* N[redacted]ects shown as 0.

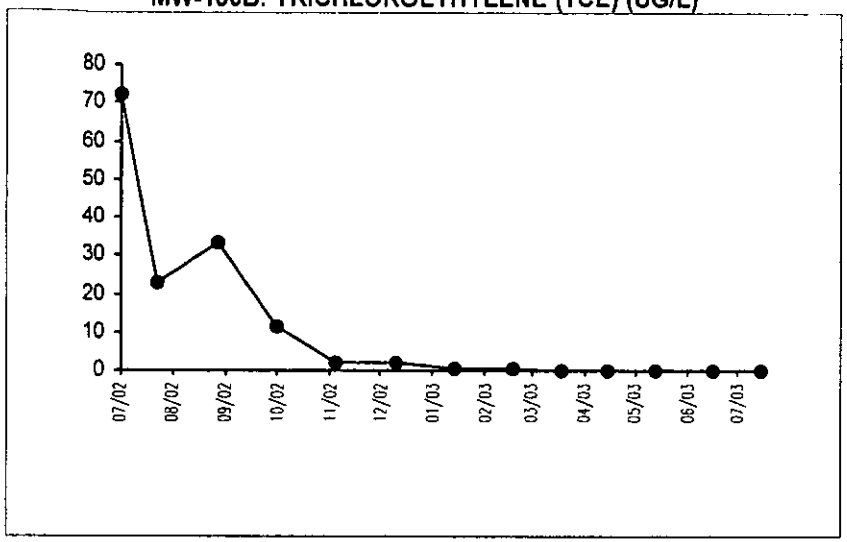
794 976

Location Purpose : Remediation

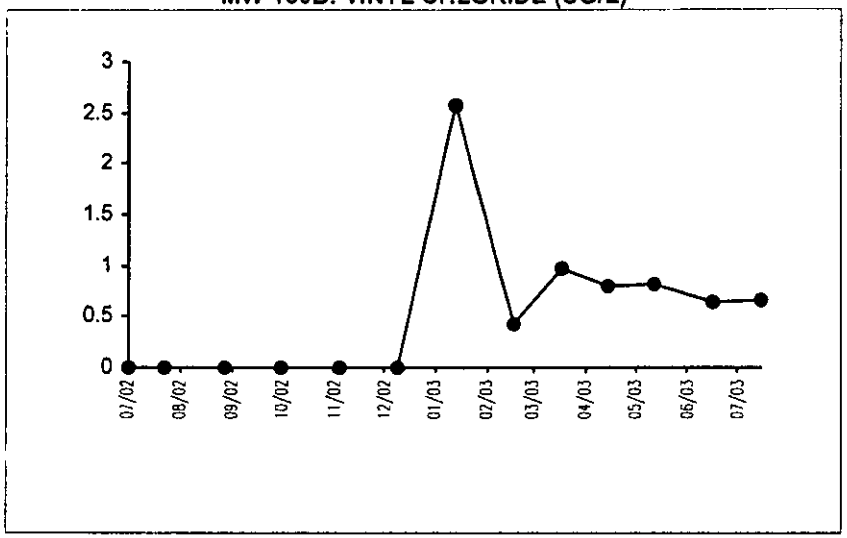
Remediation MW-100B

Concentration vs Time

MW-100B: TRICHLOROETHYLENE (TCE) (UG/L)



MW-100B: VINYL CHLORIDE (UG/L)



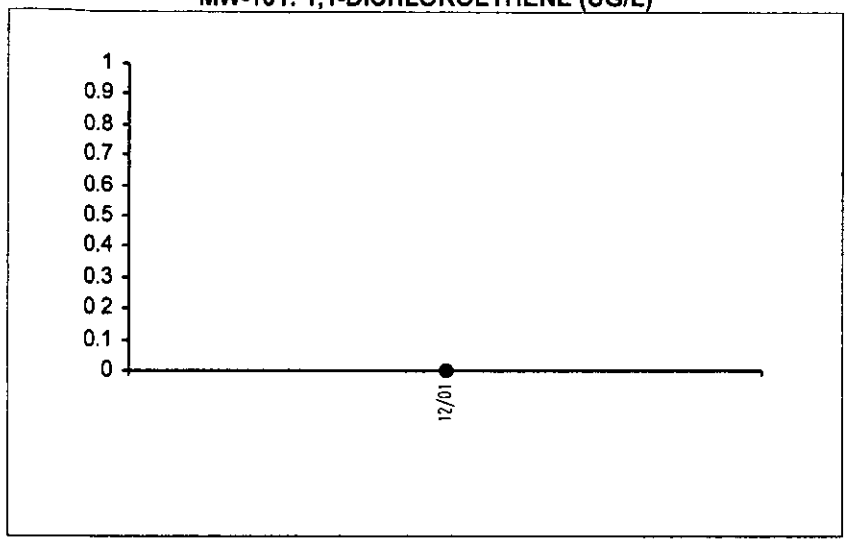
* Nondetects shown as 0.

Location Purpose : Remediation

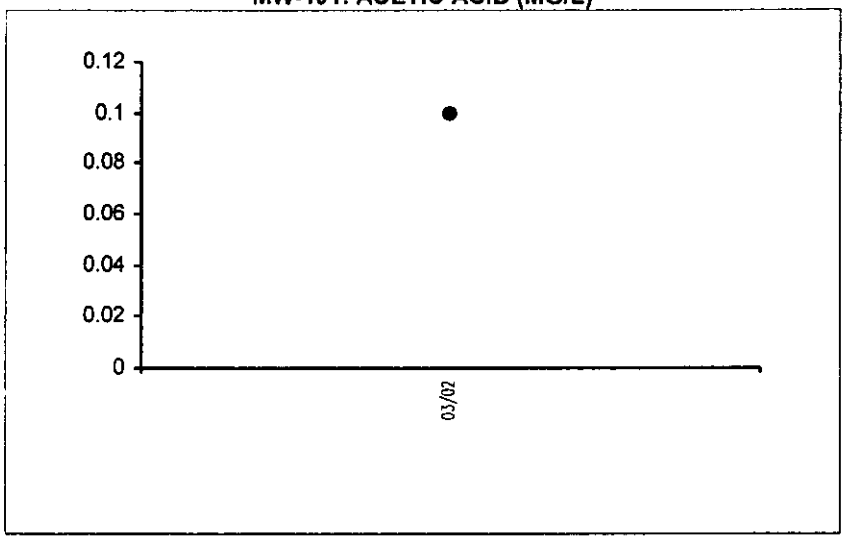
Remediation MW-101

Concentration vs Time

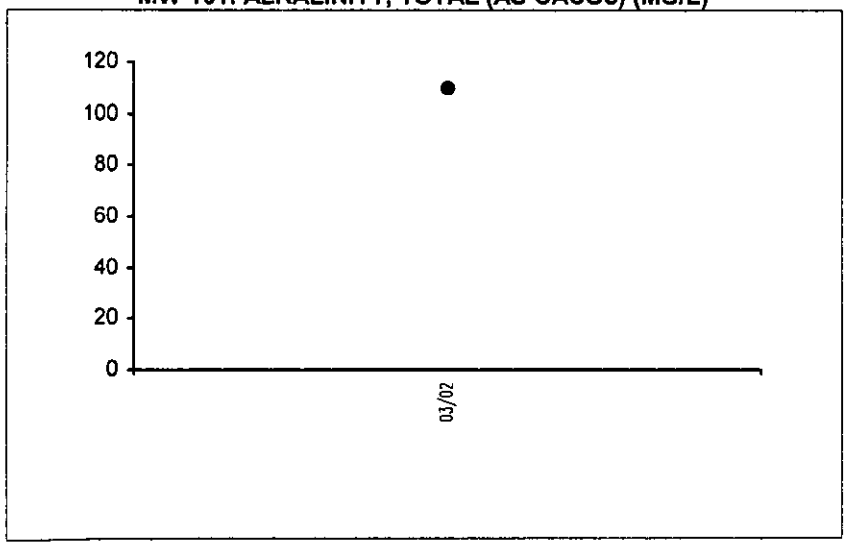
MW-101: 1,1-DICHLOROETHENE (UG/L)



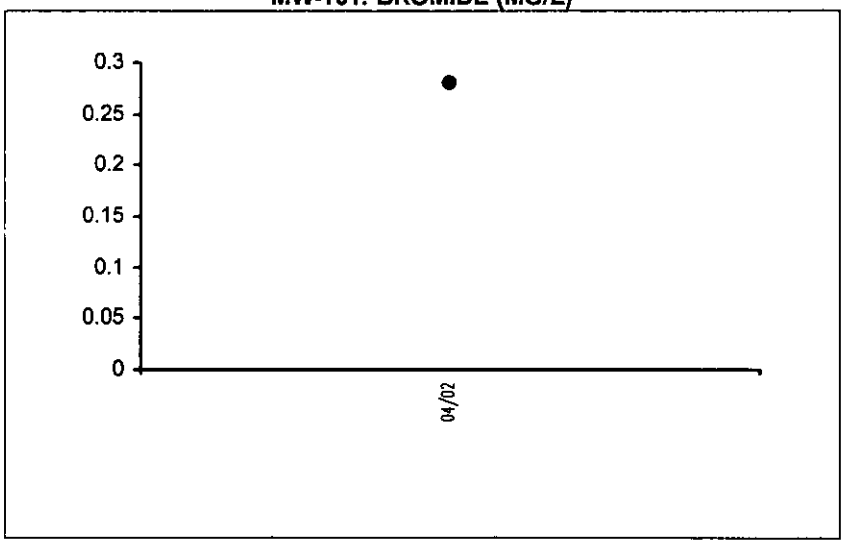
MW-101: ACETIC ACID (MG/L)



MW-101: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-101: BROMIDE (MG/L)



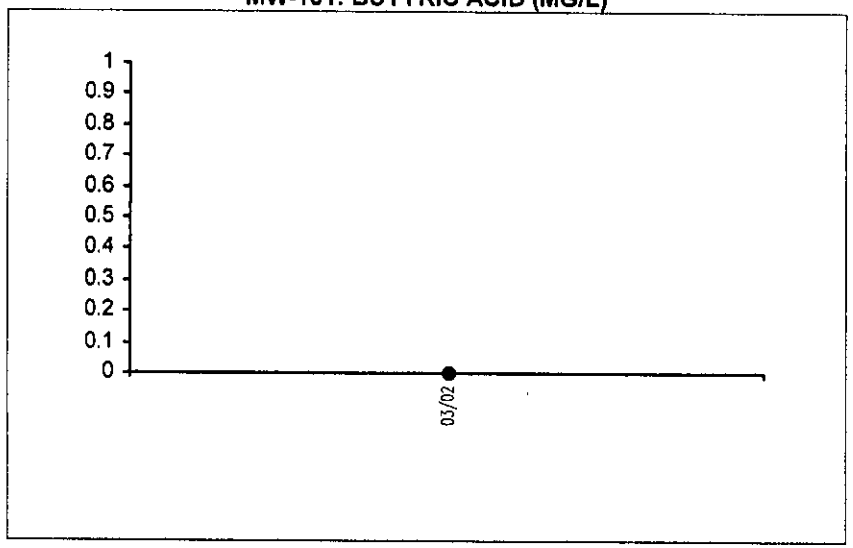
* Nondetects shown as 0.

Location Purpose : Remediation

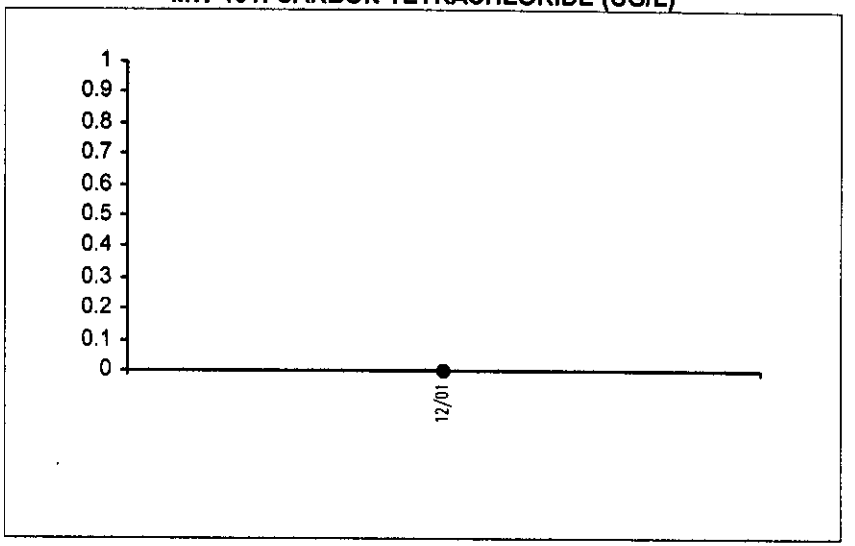
Remediation MW-101

Concentration vs Time

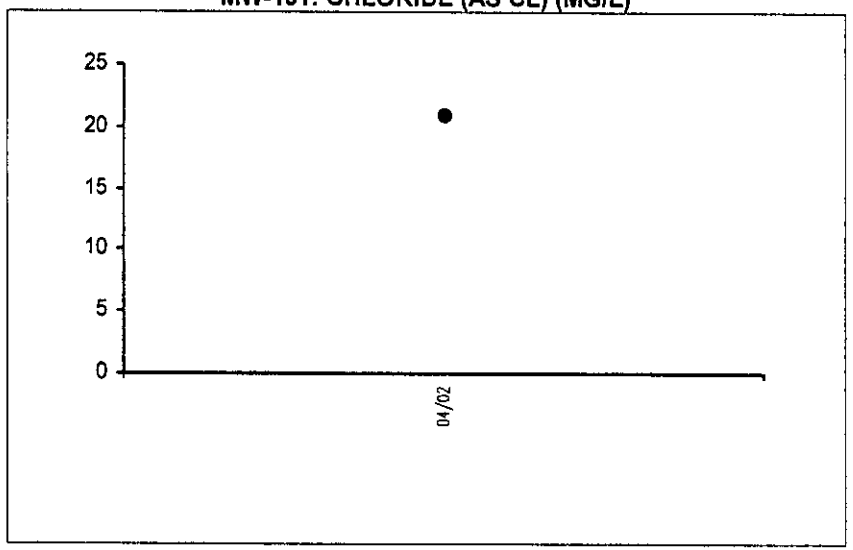
MW-101: BUTYRIC ACID (MG/L)



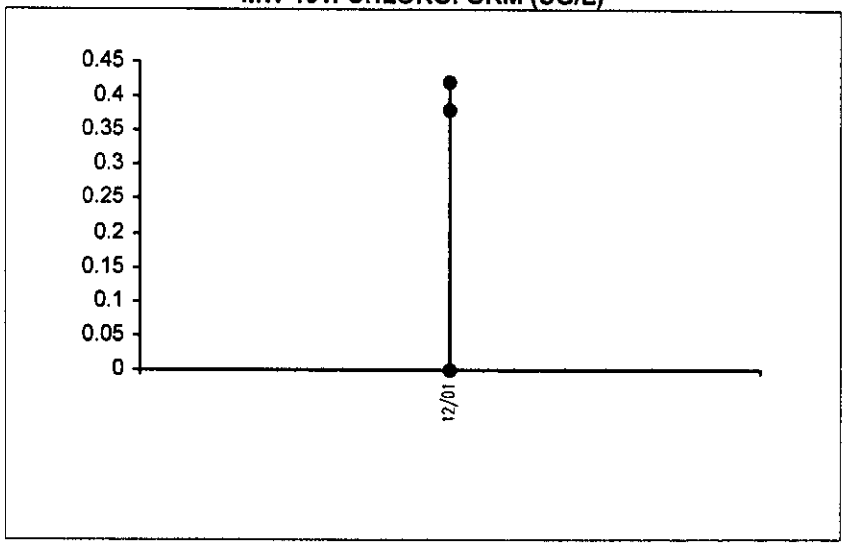
MW-101: CARBON TETRACHLORIDE (UG/L)



MW-101: CHLORIDE (AS CL) (MG/L)



MW-101: CHLOROFORM (UG/L)



* N[redacted]ects shown as 0.

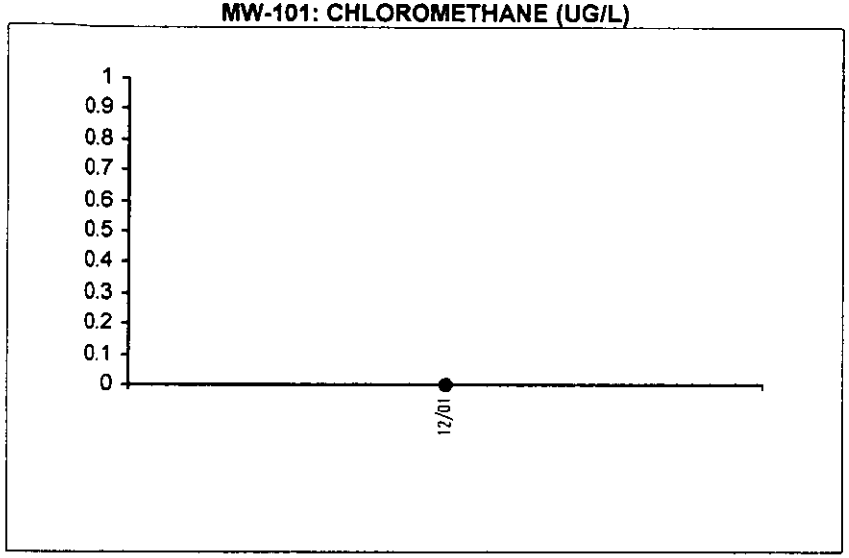
794 979

Location Purpose : Remediation

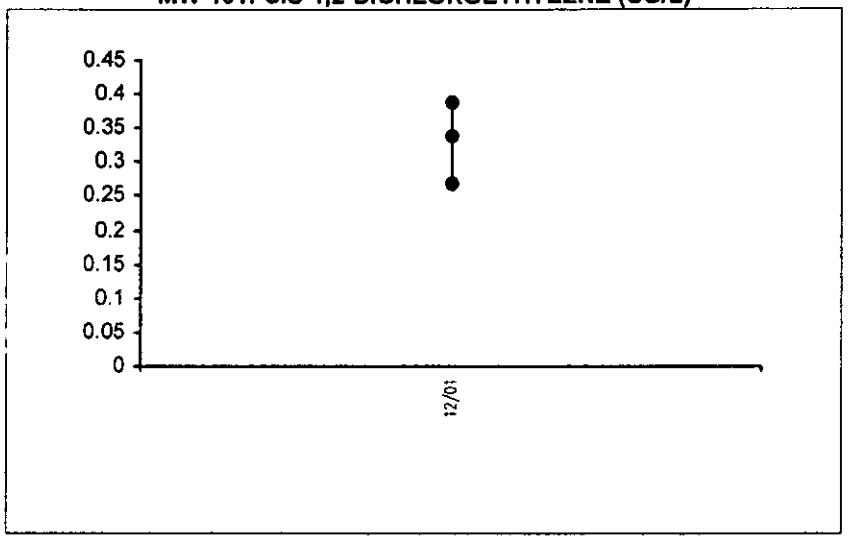
Remediation MW-101

Concentration vs Time

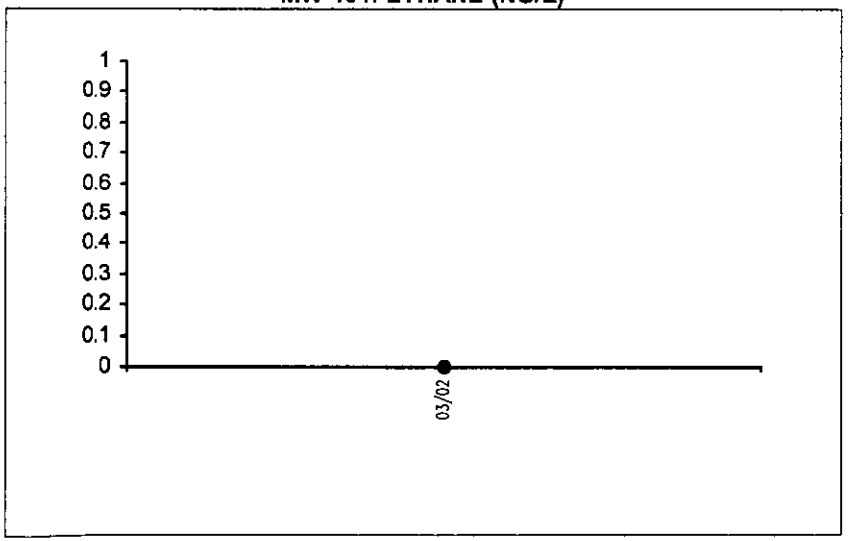
MW-101: CHLOROMETHANE (UG/L)



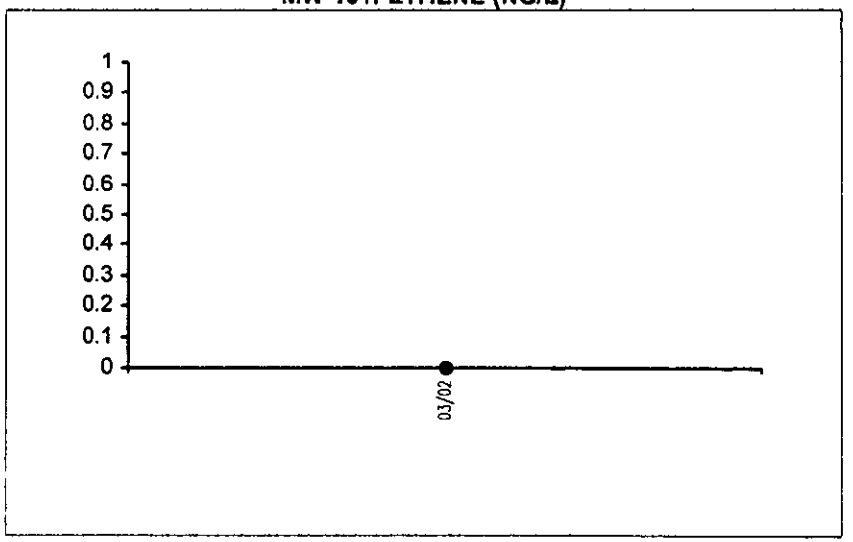
MW-101: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-101: ETHANE (NG/L)



MW-101: ETHENE (NG/L)



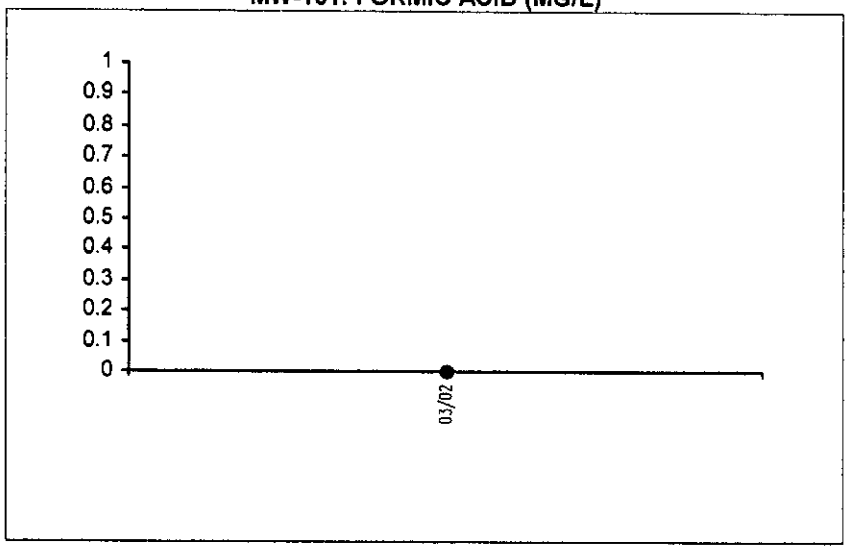
* Nondetects shown as 0.

Location Purpose : Remediation

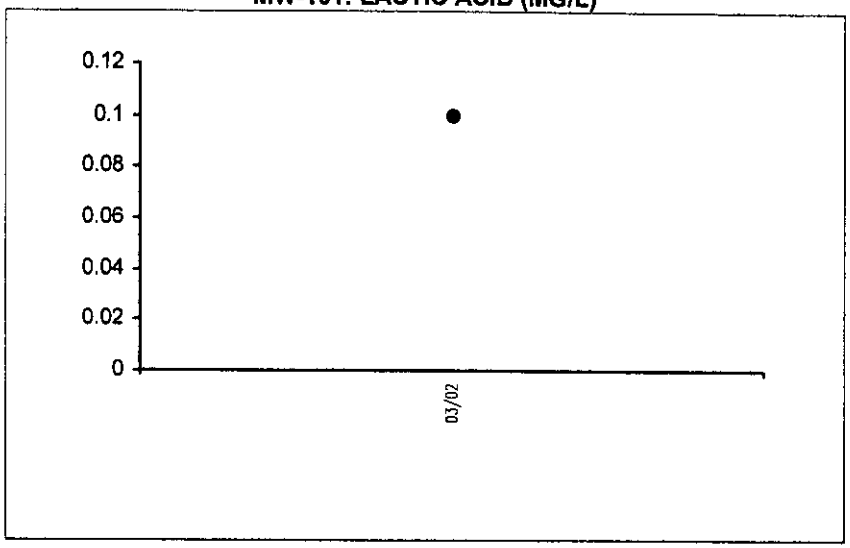
Remediation MW-101

Concentration vs Time

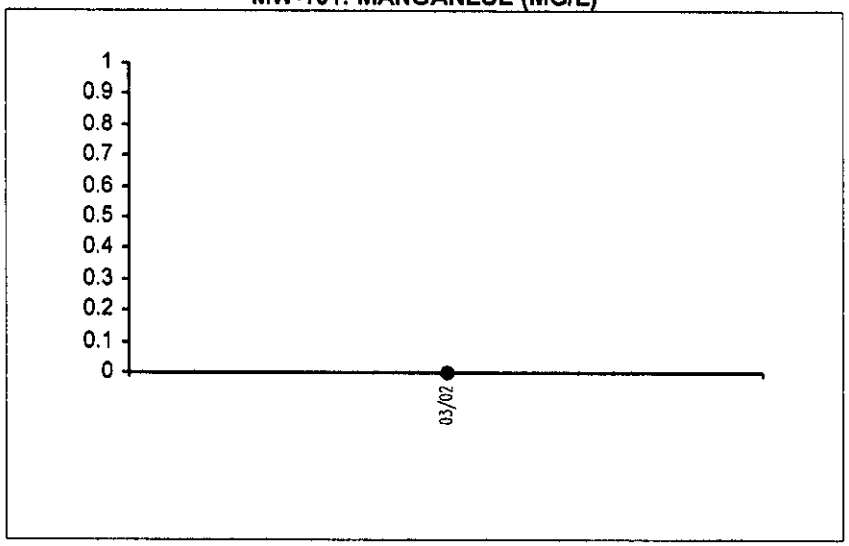
MW-101: FORMIC ACID (MG/L)



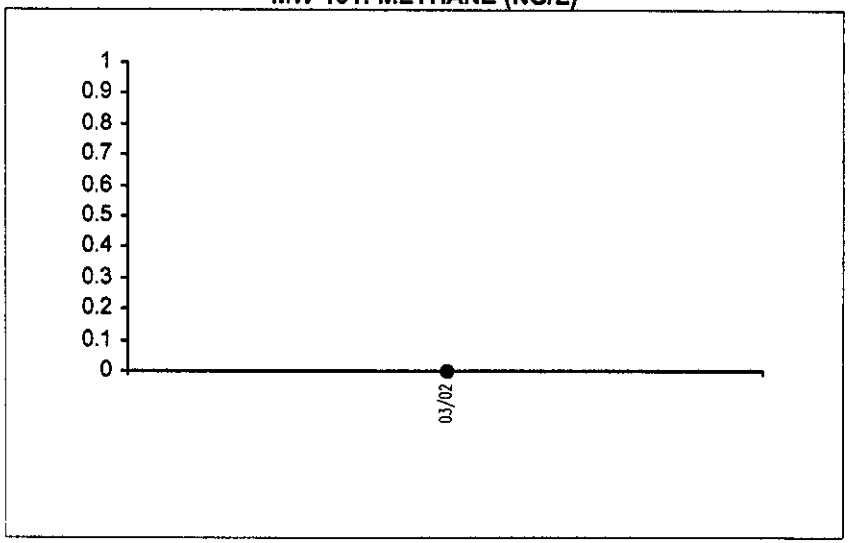
MW-101: LACTIC ACID (MG/L)



MW-101: MANGANESE (MG/L)



MW-101: METHANE (NG/L)



* N[redacted]cts shown as 0.

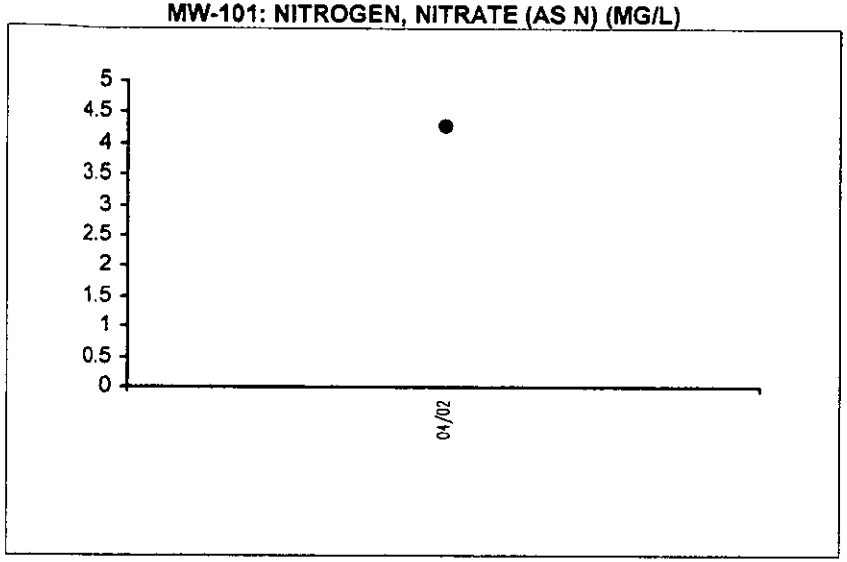
794 981

Location Purpose : Remediation

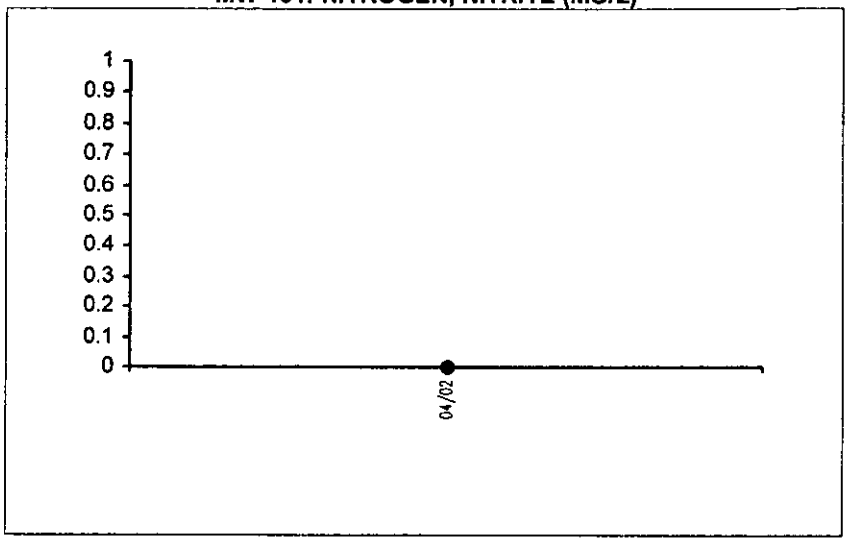
Remediation MW-101

Concentration vs Time

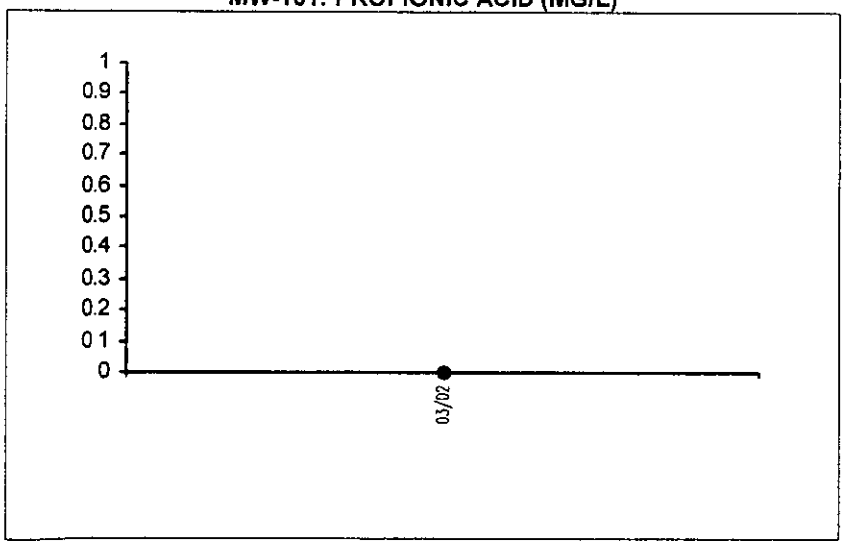
MW-101: NITROGEN, NITRATE (AS N) (MG/L)



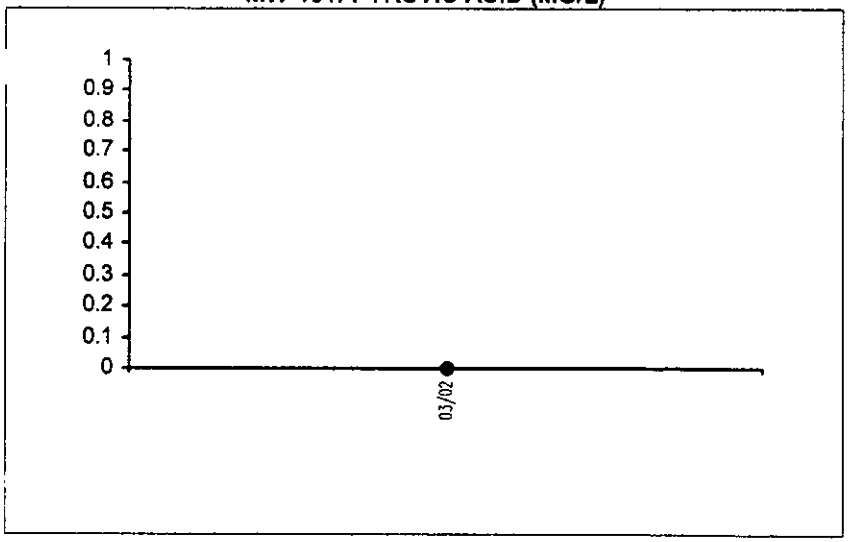
MW-101: NITROGEN, NITRITE (MG/L)



MW-101: PROPIONIC ACID (MG/L)



MW-101: PYRUVIC ACID (MG/L)



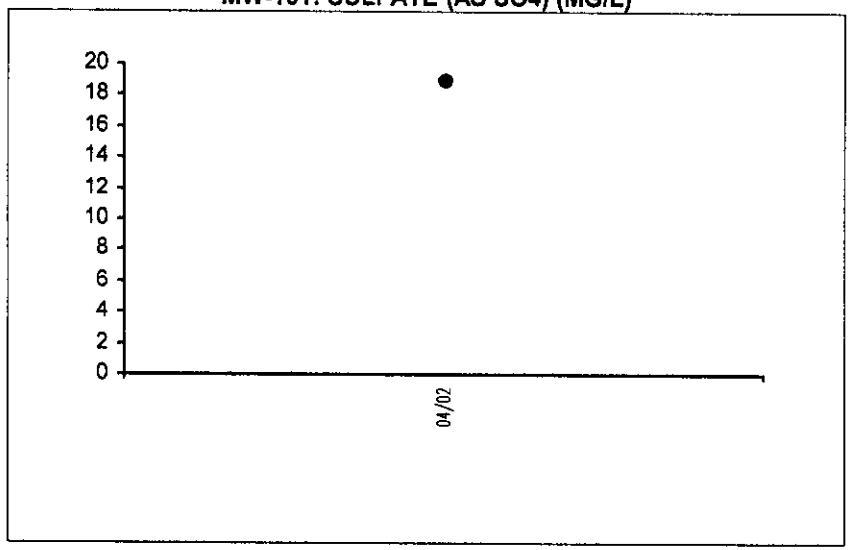
* Nondetects shown as 0.

Location Purpose : Remediation

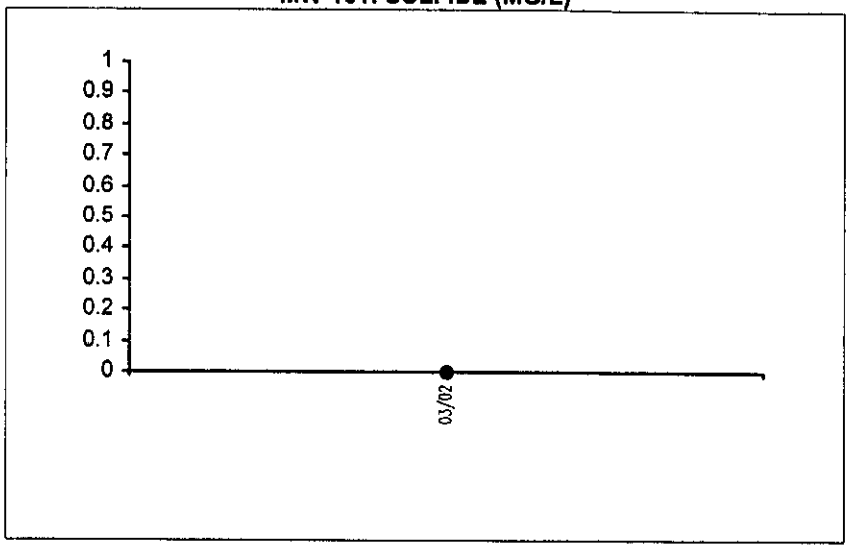
Remediation MW-101

Concentration vs Time

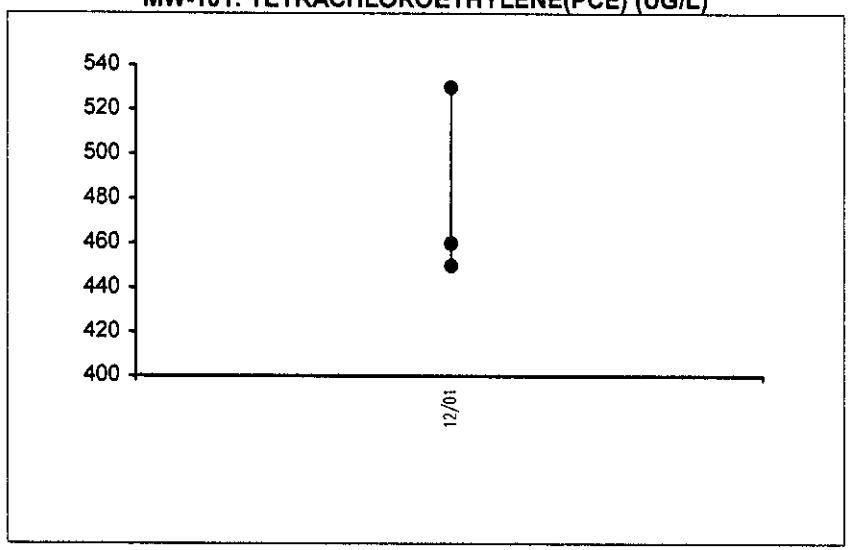
MW-101: SULFATE (AS SO4) (MG/L)



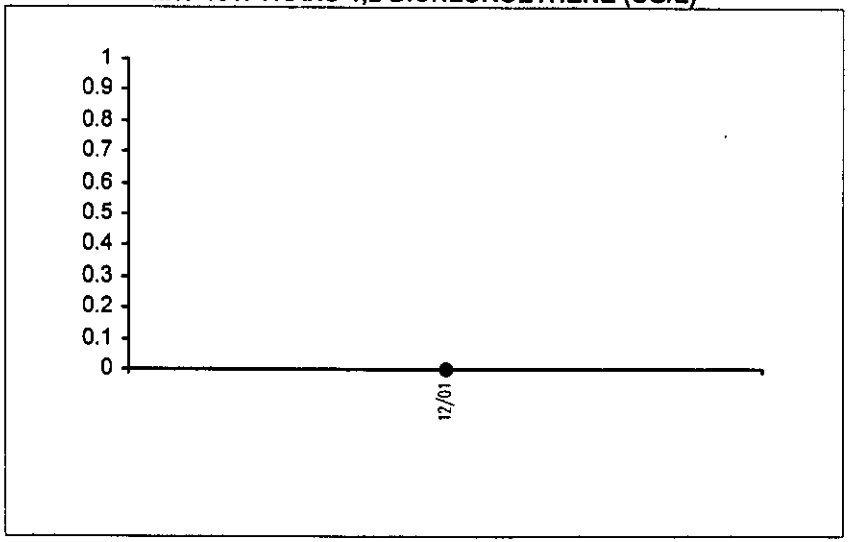
MW-101: SULFIDE (MG/L)



MW-101: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-101: TRANS-1,2-DICHLOROETHENE (UG/L)



* No[redacted]cts shown as 0.

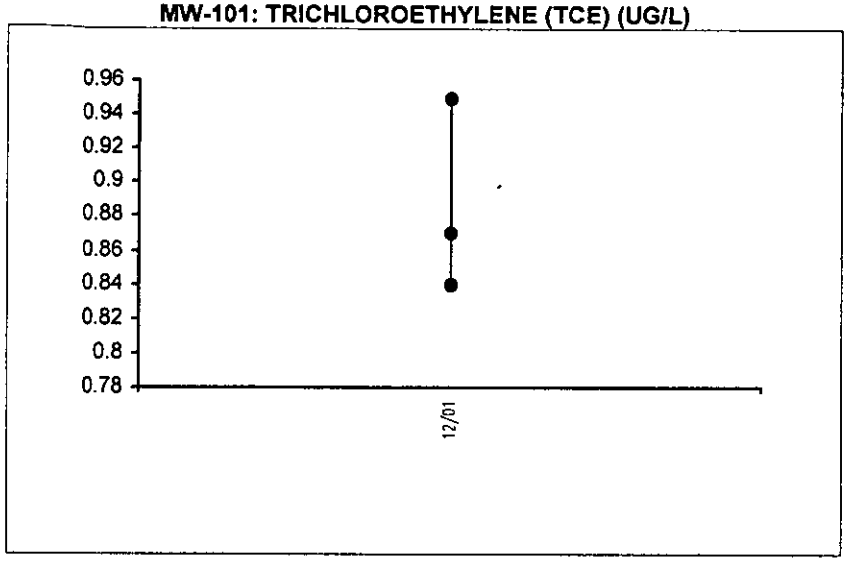
794 983

Location Purpose : Remediation

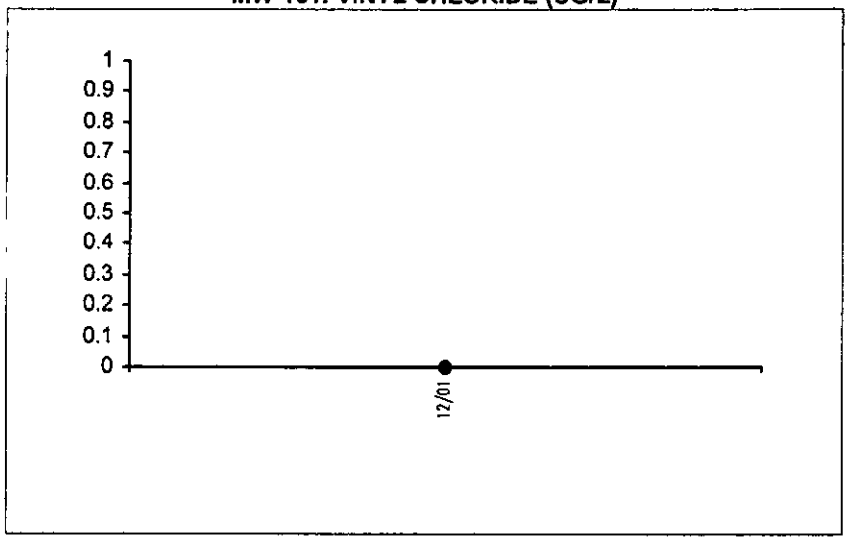
Remediation MW-101

Concentration vs Time

MW-101: TRICHLOROETHYLENE (TCE) (UG/L)



MW-101: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

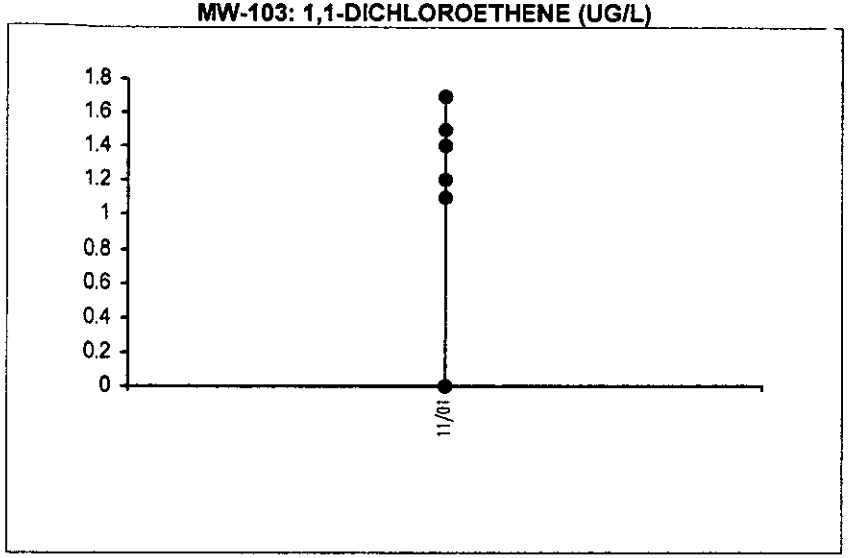
794 984

Location Purpose : Remediation

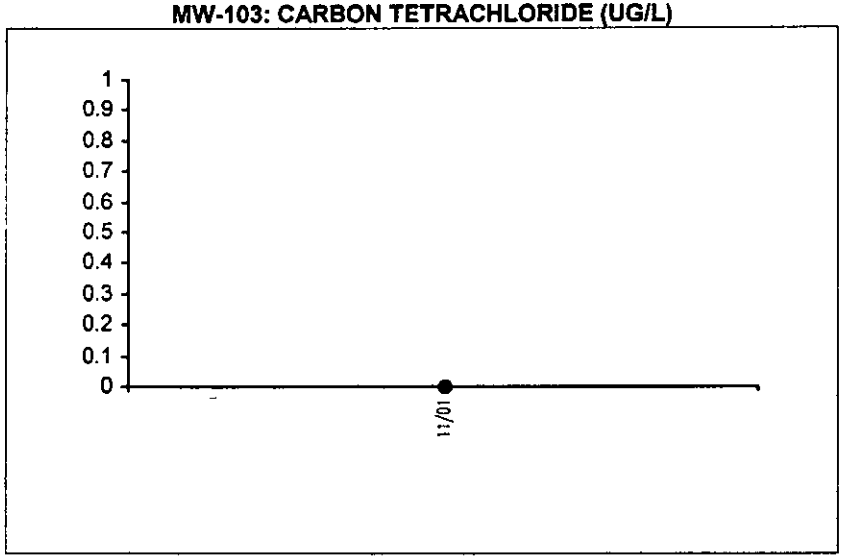
Remediation MW-103

Concentration vs Time

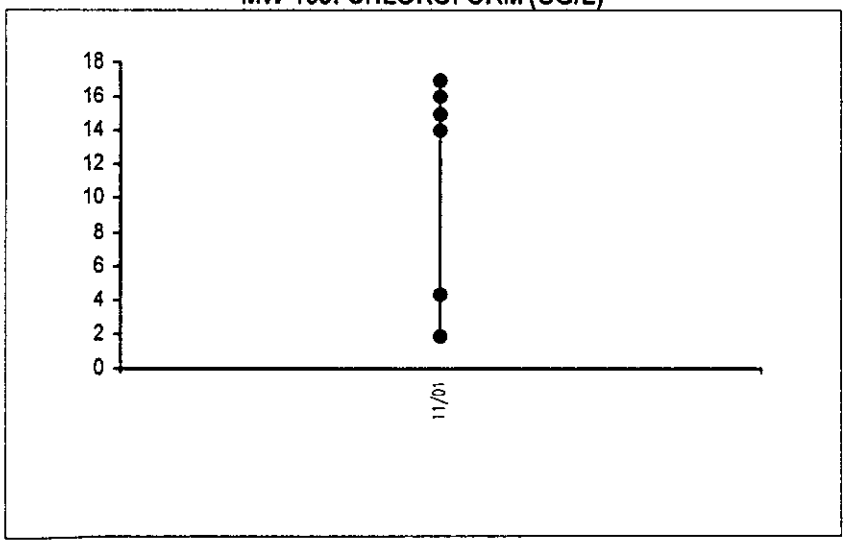
MW-103: 1,1-DICHLOROETHENE (UG/L)



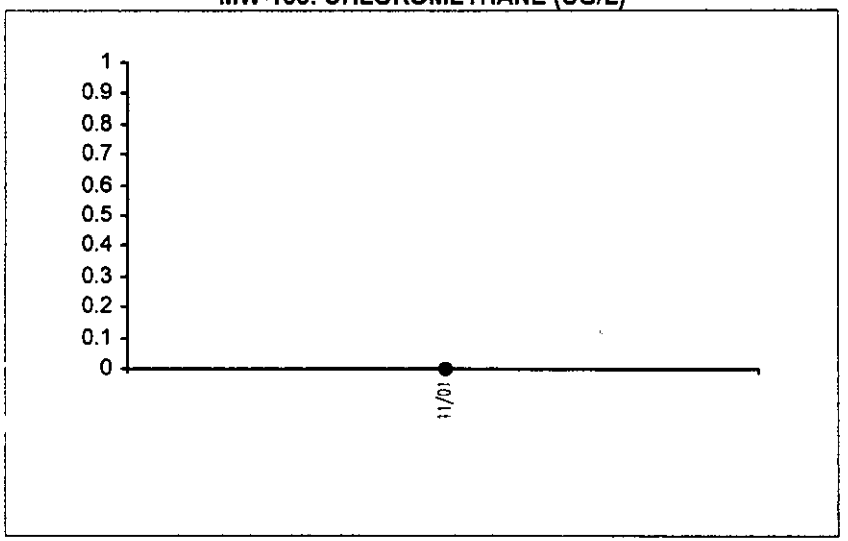
MW-103: CARBON TETRACHLORIDE (UG/L)



MW-103: CHLOROFORM (UG/L)



MW-103: CHLOROMETHANE (UG/L)



* Nondetects shown as 0.

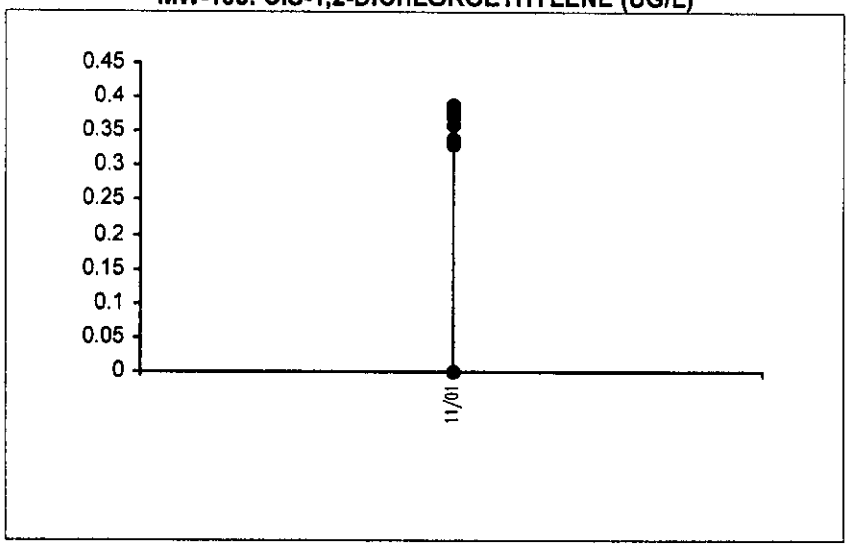
Location Purpose : Remediation

Remediation MW-103

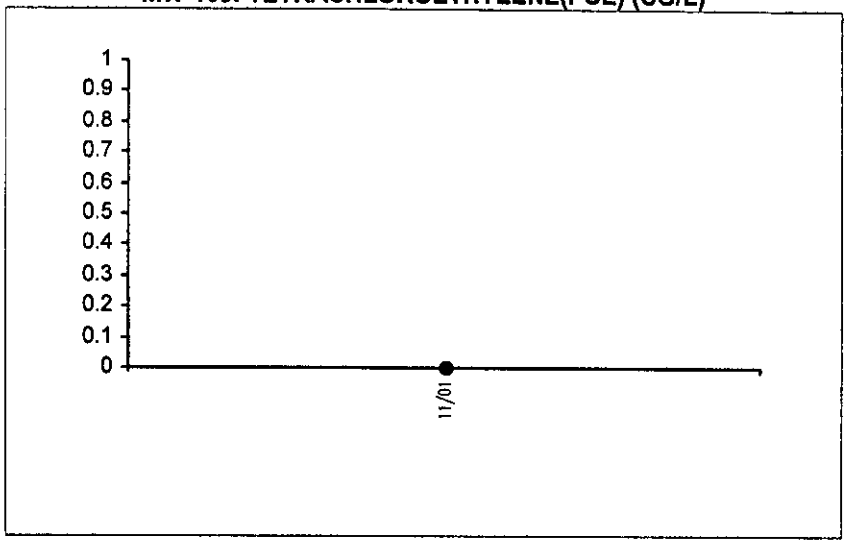
Concentration vs Time

794 986

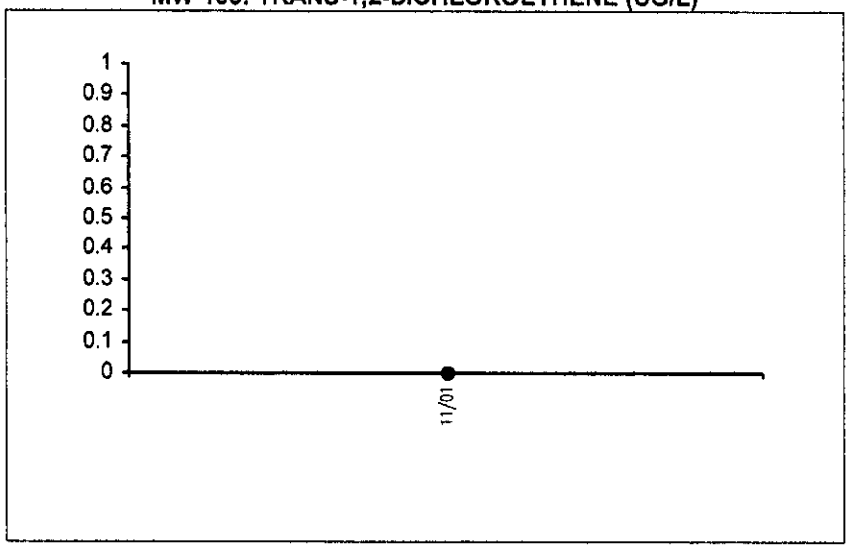
MW-103: CIS-1,2-DICHLOROETHYLENE (UG/L)



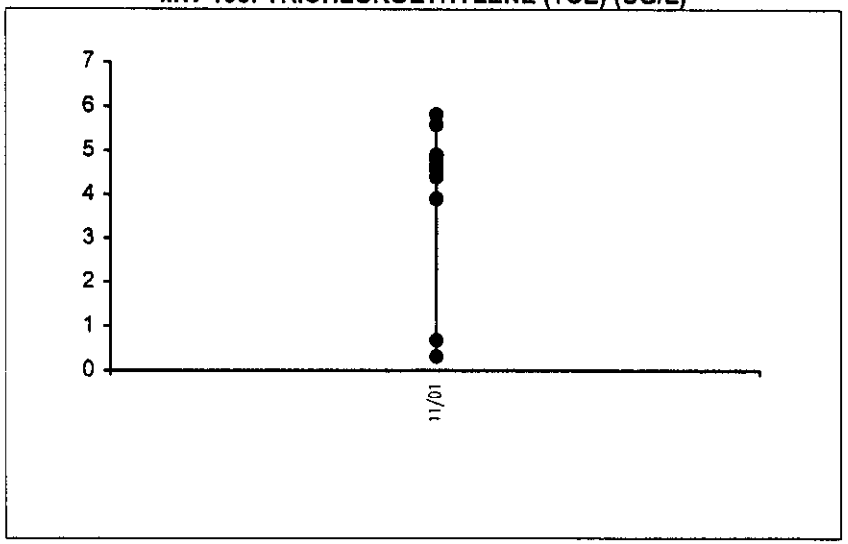
MW-103: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-103: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-103: TRICHLOROETHYLENE (TCE) (UG/L)

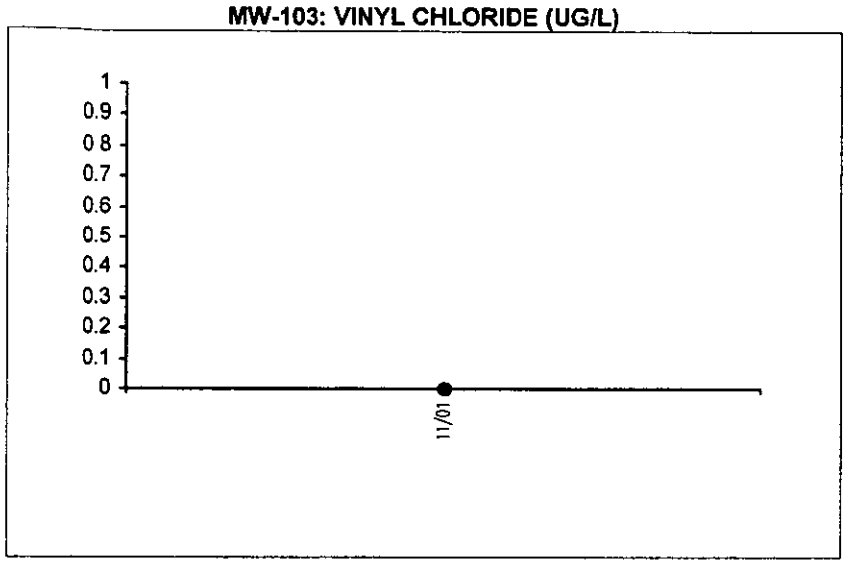


* No[redacted]cts shown as 0.

Location Purpose : Remediation

Remediation MW-103

Concentration vs Time



* Nondetects shown as 0.

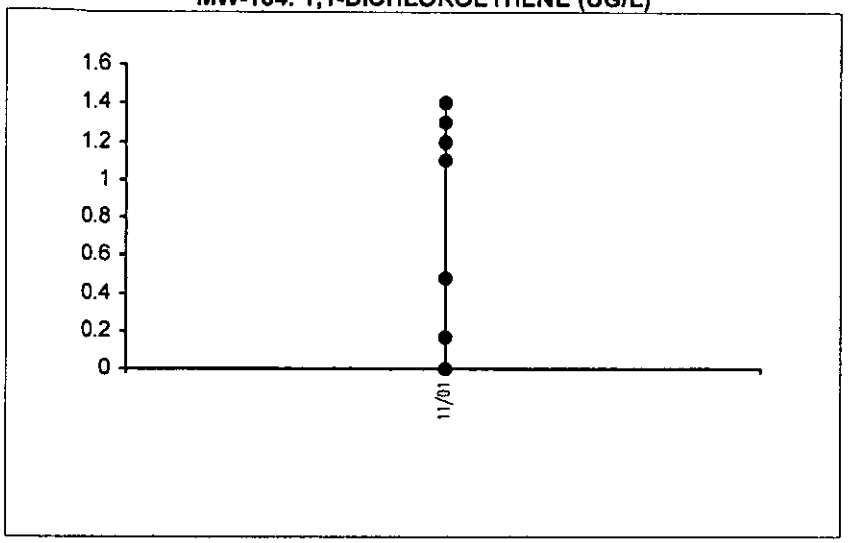
794 987

Location Purpose : Remediation

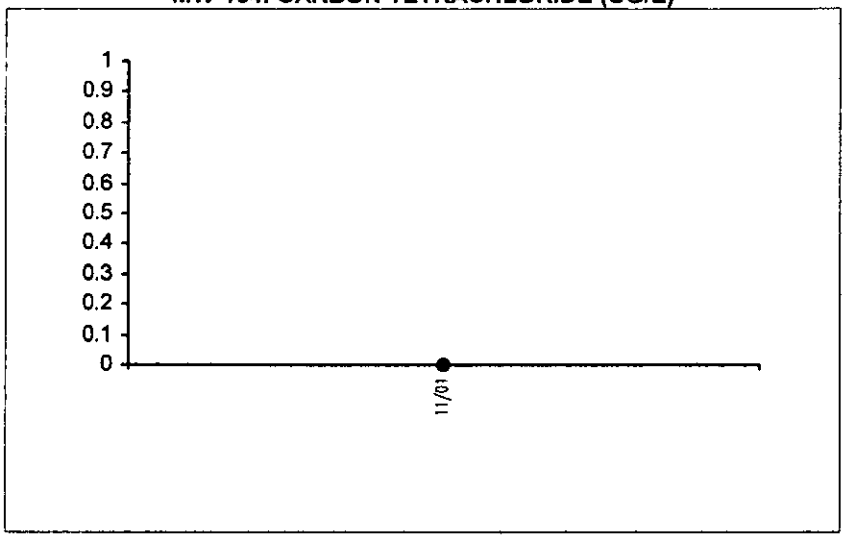
Remediation MW-104

Concentration vs Time

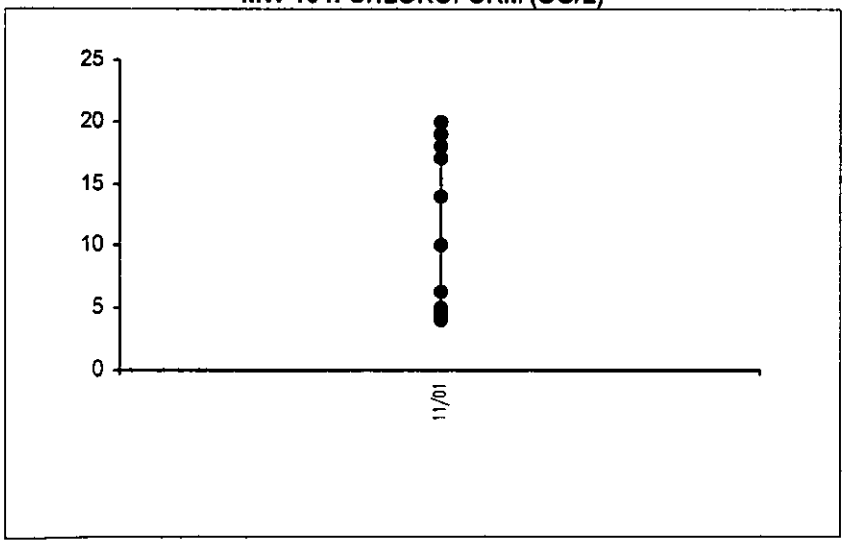
MW-104: 1,1-DICHLOROETHENE (UG/L)



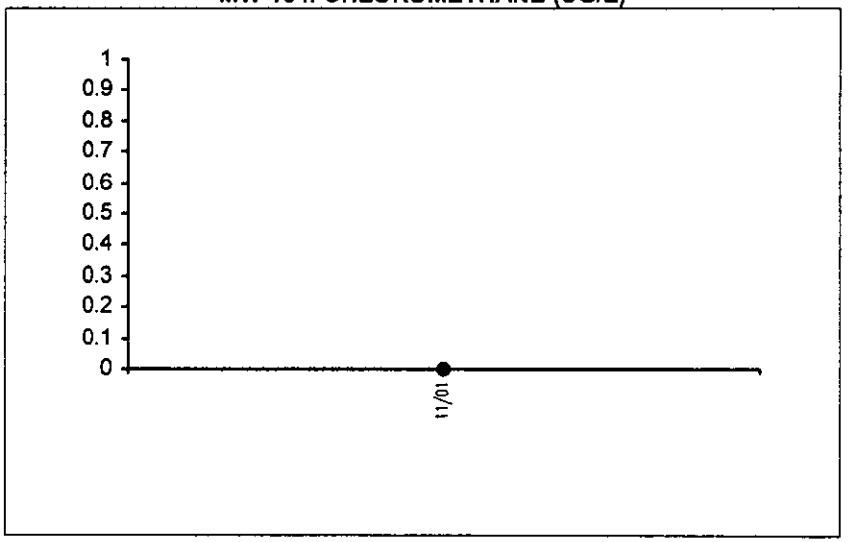
MW-104: CARBON TETRACHLORIDE (UG/L)



MW-104: CHLOROFORM (UG/L)



MW-104: CHLOROMETHANE (UG/L)



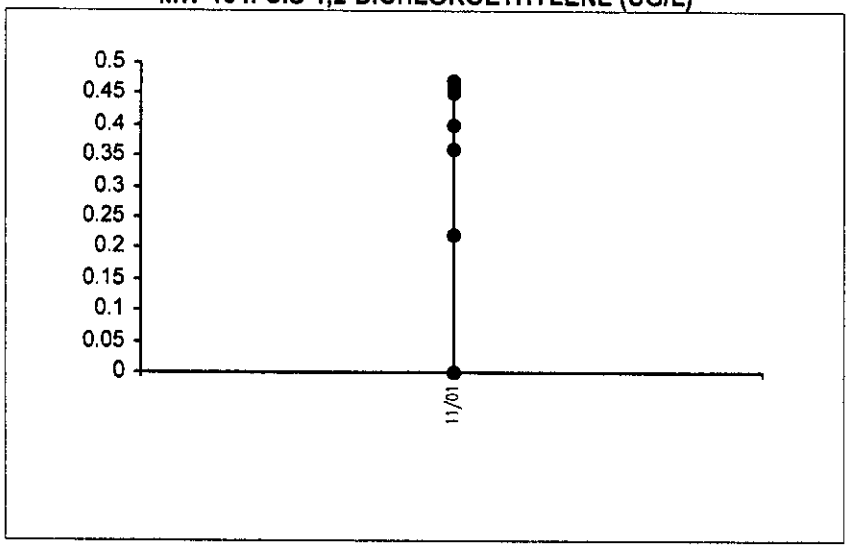
* Nondetects shown as 0.

Location Purpose : Remediation

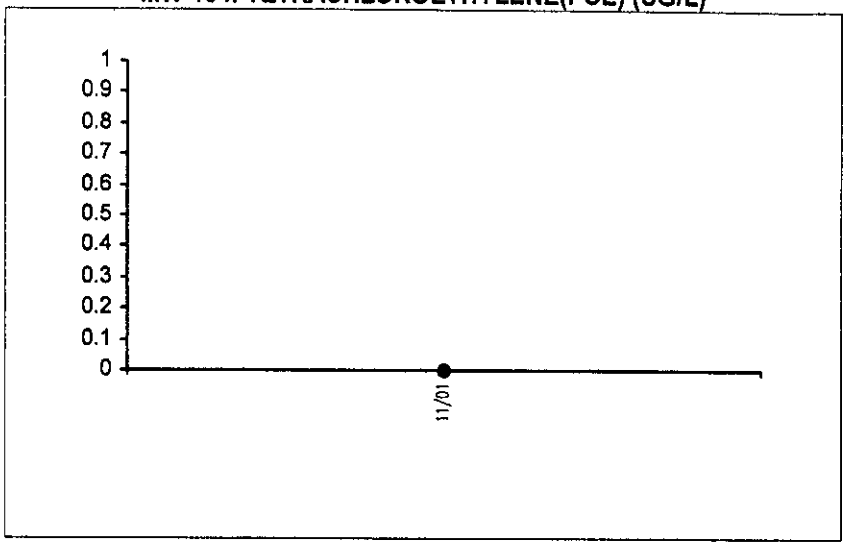
Remediation MW-104

Concentration vs Time

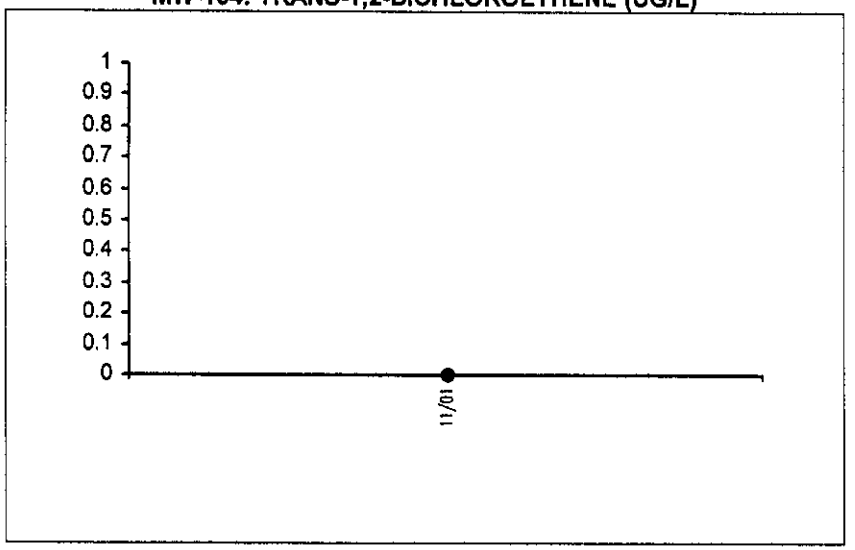
MW-104: CIS-1,2-DICHLOROETHYLENE (UG/L)



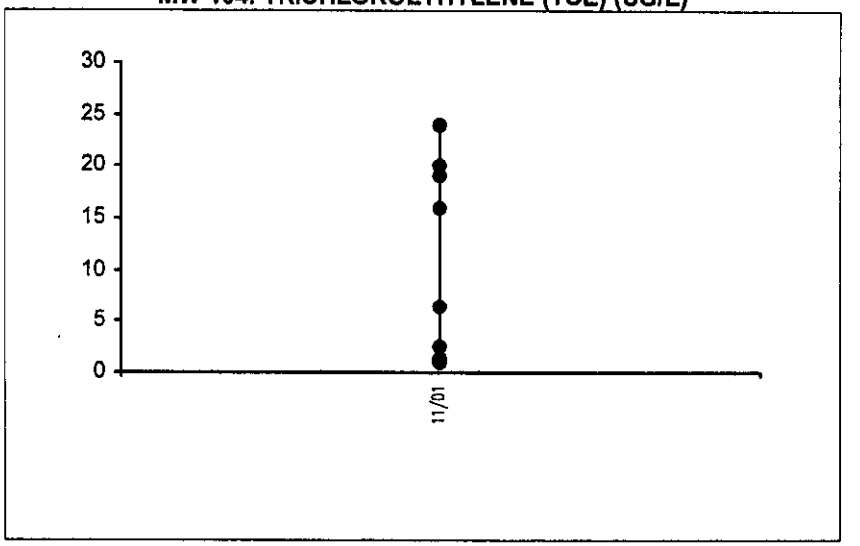
MW-104: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-104: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-104: TRICHLOROETHYLENE (TCE) (UG/L)

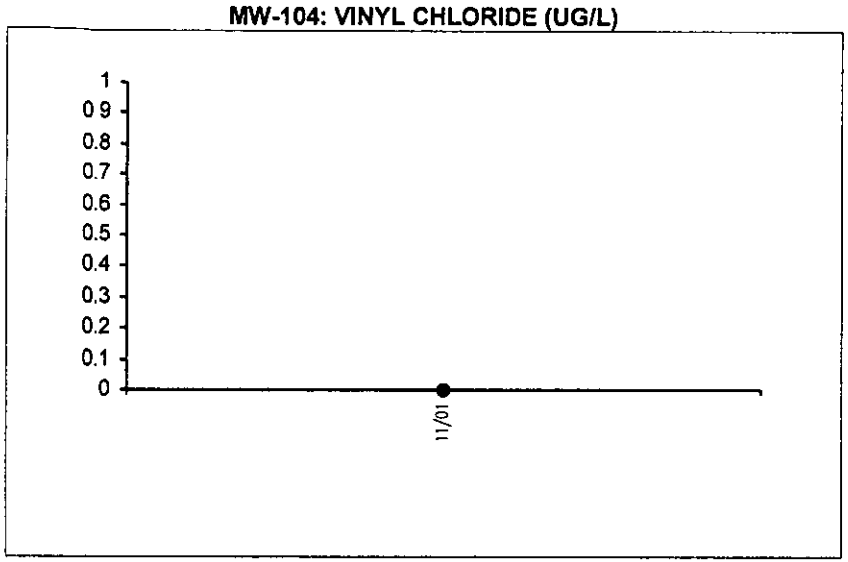


* N[redacted]cts shown as 0.

Location Purpose : Remediation

Remediation MW-104

Concentration vs Time



* Nondetects shown as 0.

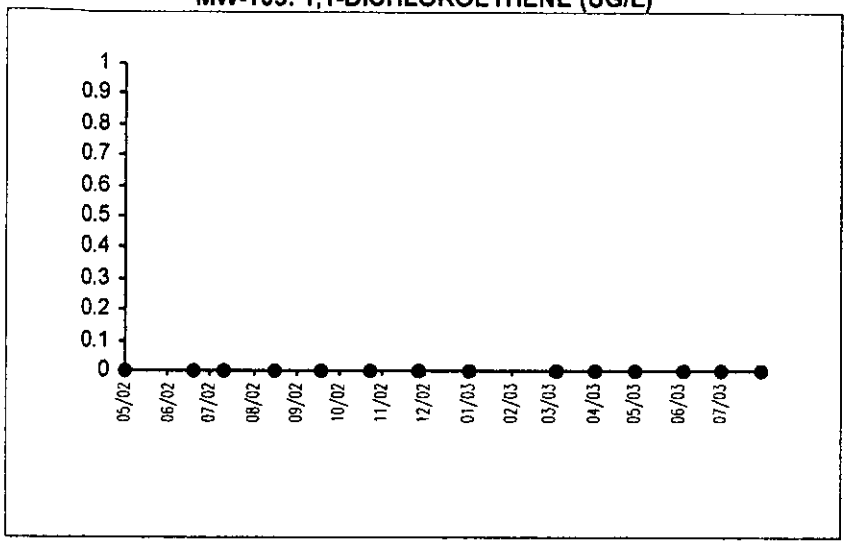
794 990

Location Purpose : Remediation

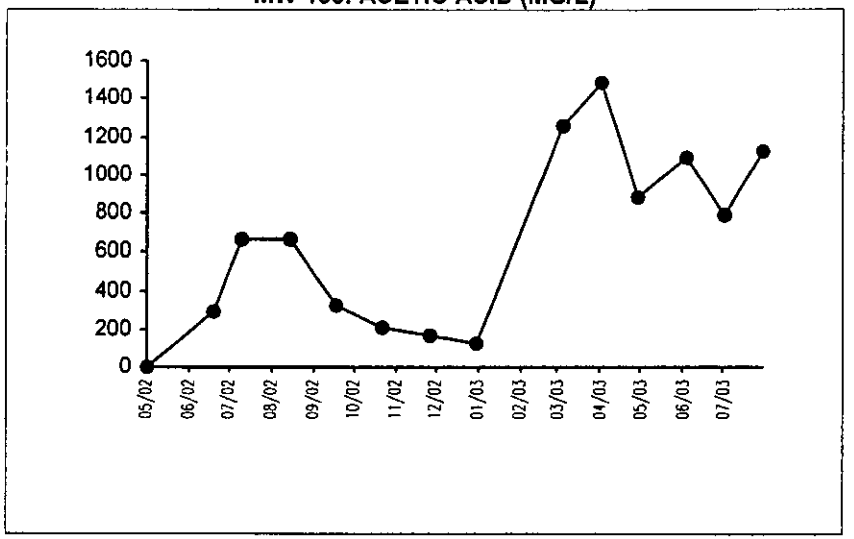
Remediation MW-105

Concentration vs Time

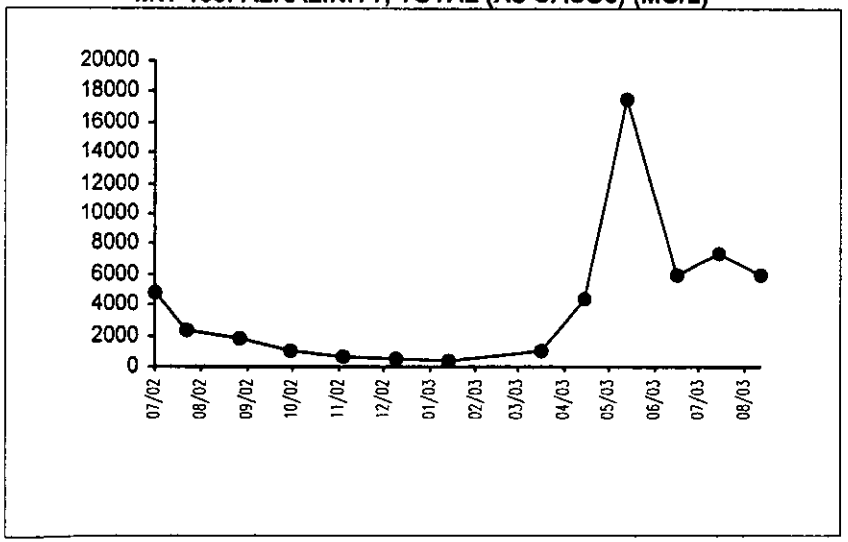
MW-105: 1,1-DICHLOROETHENE (UG/L)



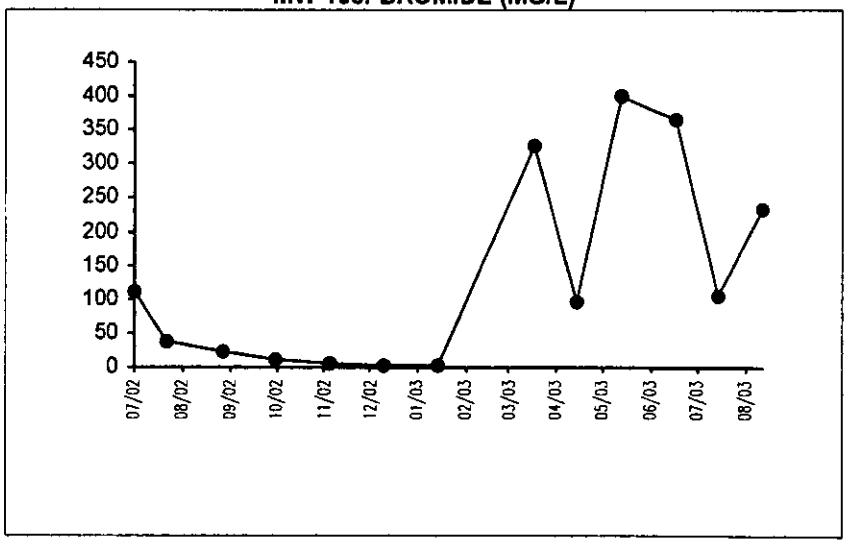
MW-105: ACETIC ACID (MG/L)



MW-105: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-105: BROMIDE (MG/L)



* Nondetects shown as 0.

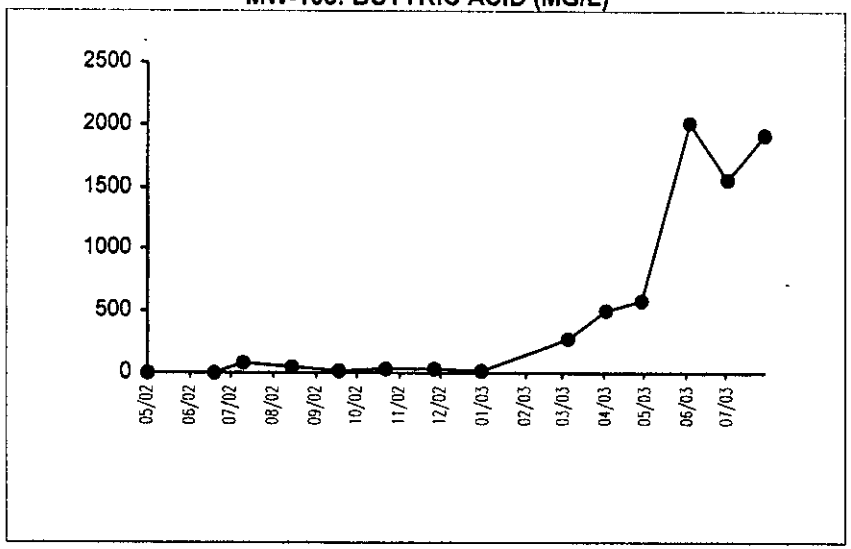
Location Purpose : Remediation

Remediation MW-105

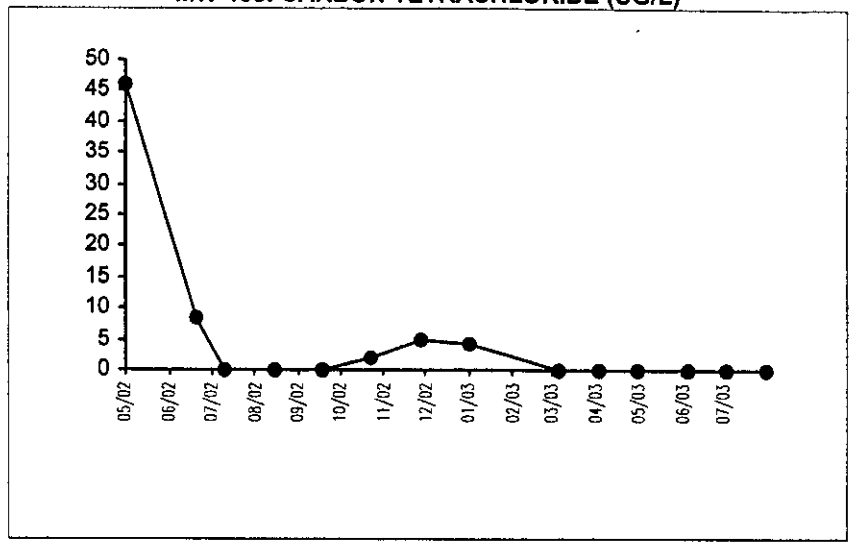
Concentration vs Time

794 992

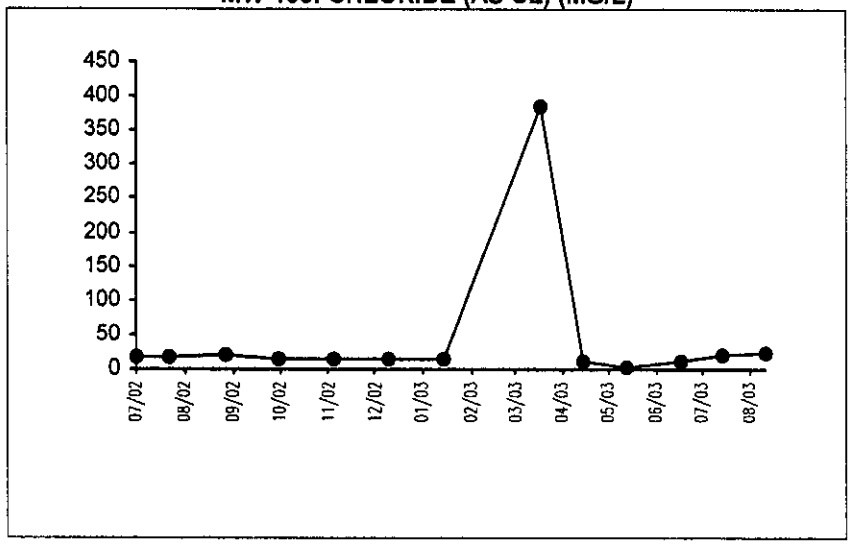
MW-105: BUTYRIC ACID (MG/L)



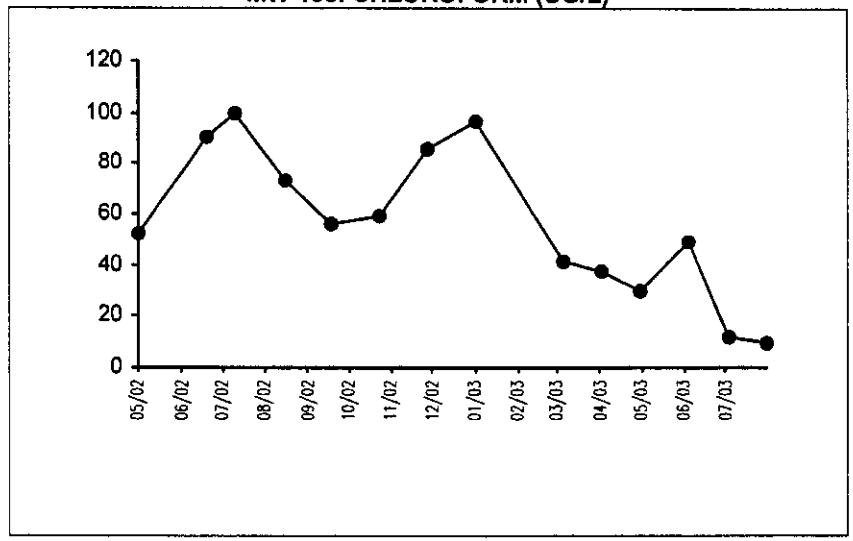
MW-105: CARBON TETRACHLORIDE (UG/L)



MW-105: CHLORIDE (AS CL) (MG/L)



MW-105: CHLOROFORM (UG/L)



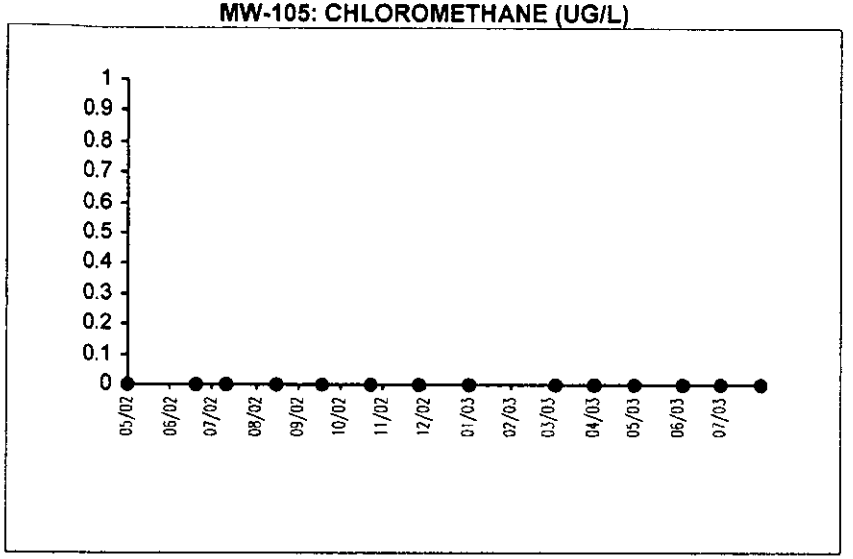
* Non-detects shown as 0.

Location Purpose : Remediation

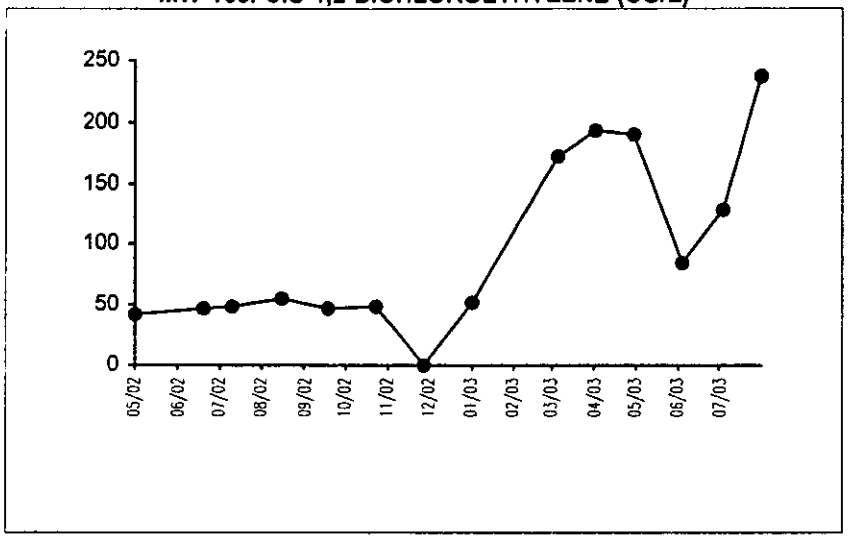
Remediation MW-105

Concentration vs Time

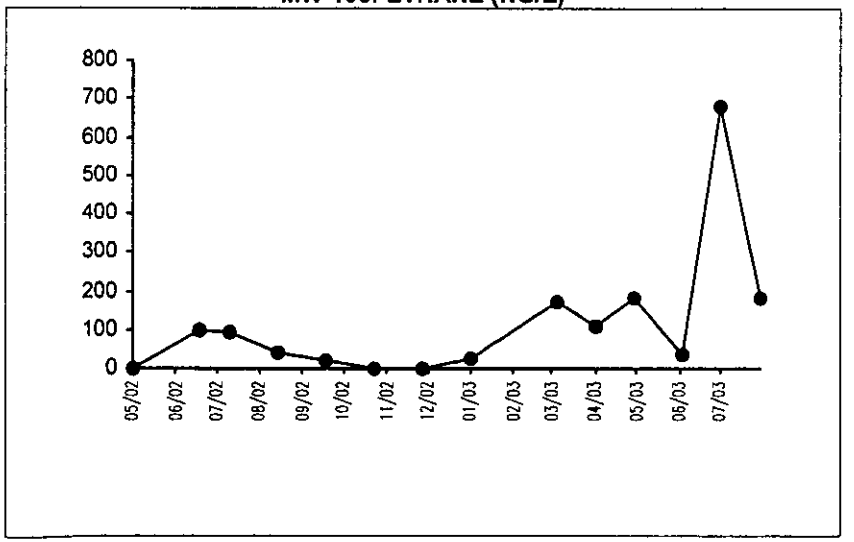
MW-105: CHLOROMETHANE (UG/L)



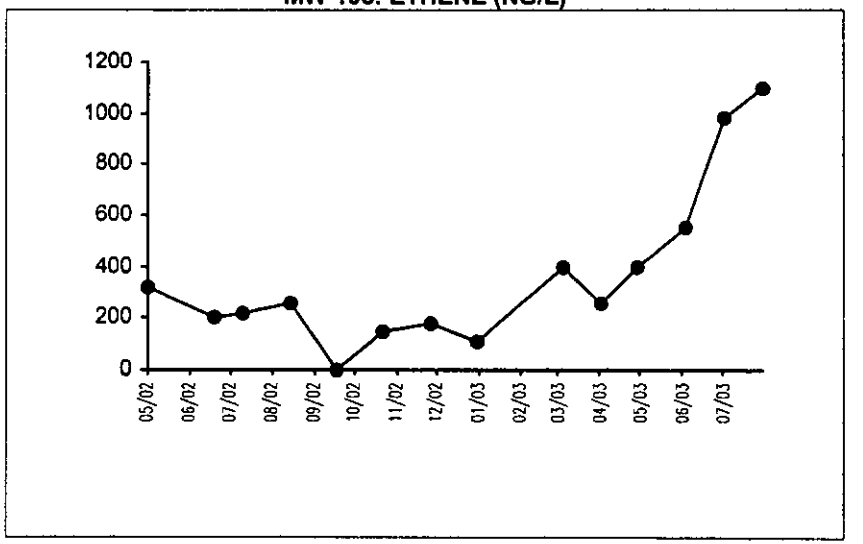
MW-105: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-105: ETHANE (NG/L)



MW-105: ETHENE (NG/L)



* Nondetects shown as 0.

794 993

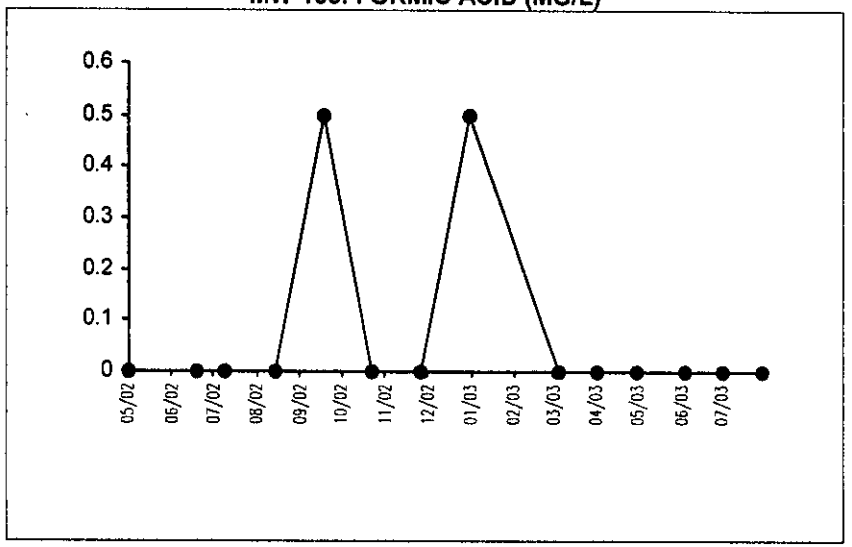
Location Purpose : Remediation

Remediation MW-105

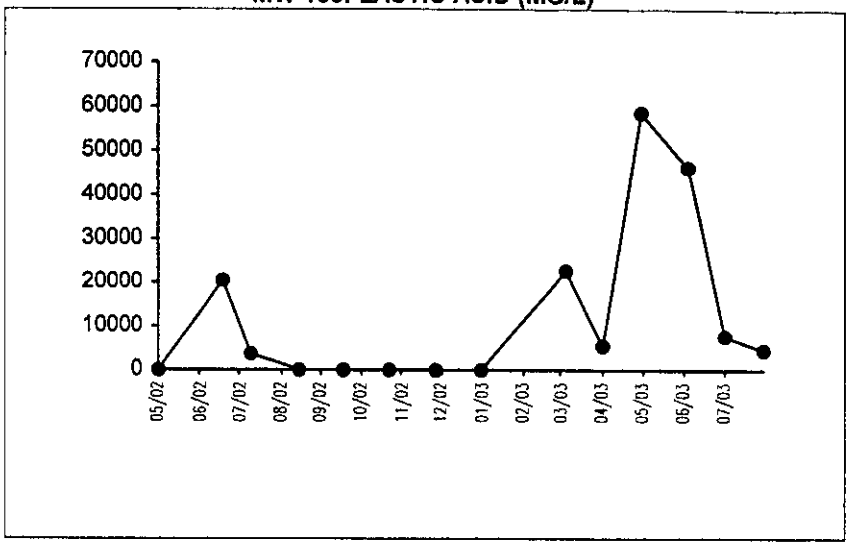
Concentration vs Time

794 994

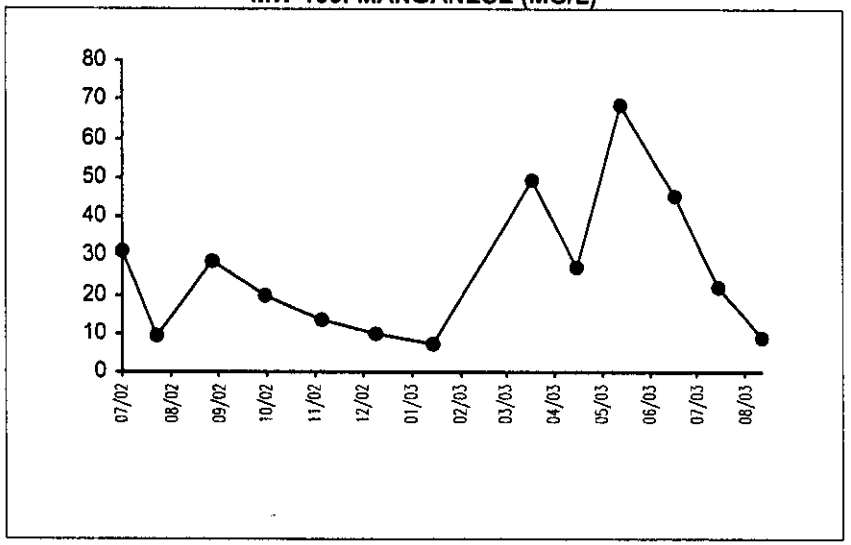
MW-105: FORMIC ACID (MG/L)



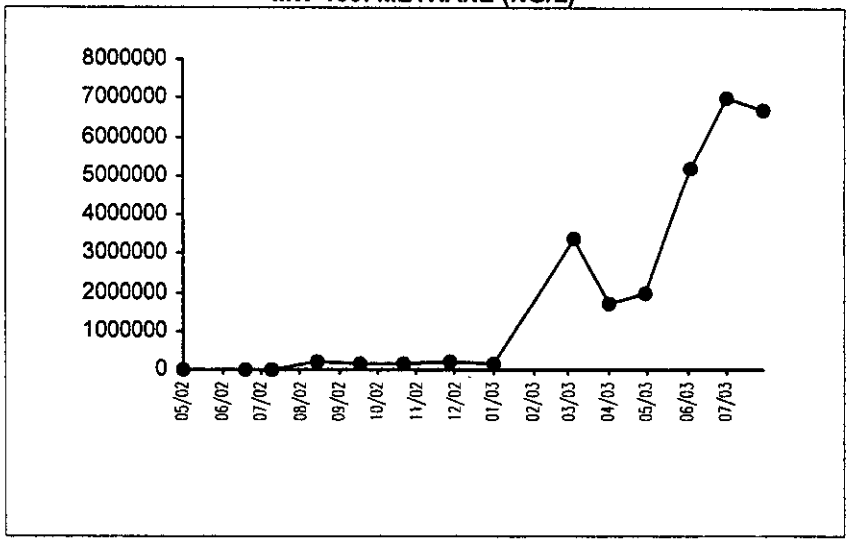
MW-105: LACTIC ACID (MG/L)



MW-105: MANGANESE (MG/L)



MW-105: METHANE (NG/L)



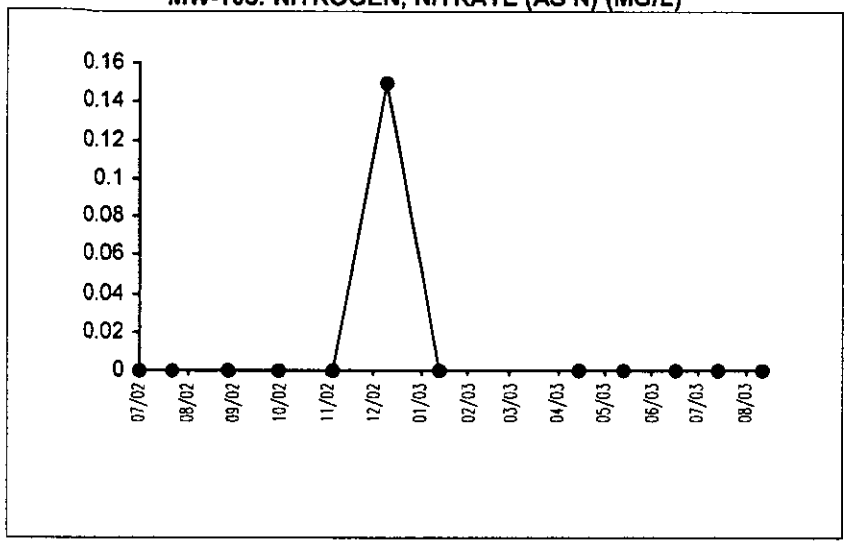
* No[redacted]cts shown as 0.

Location Purpose : Remediation

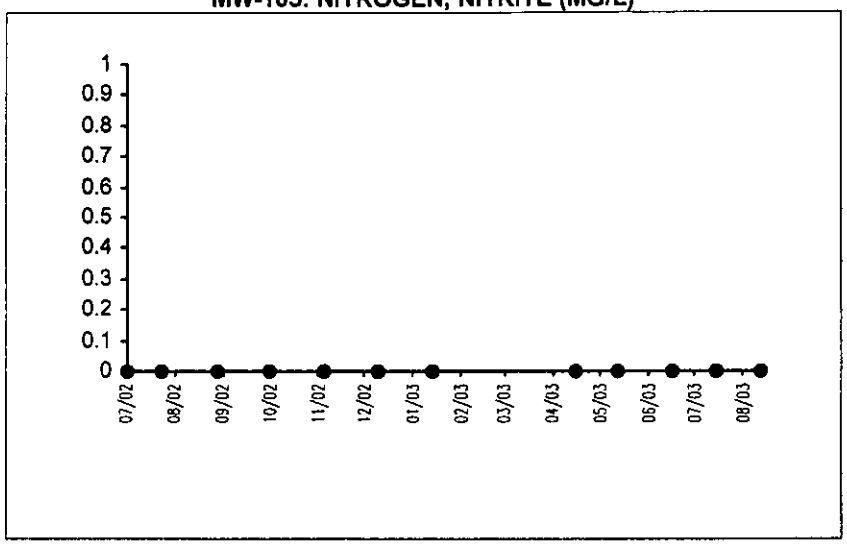
Remediation MW-105

Concentration vs Time

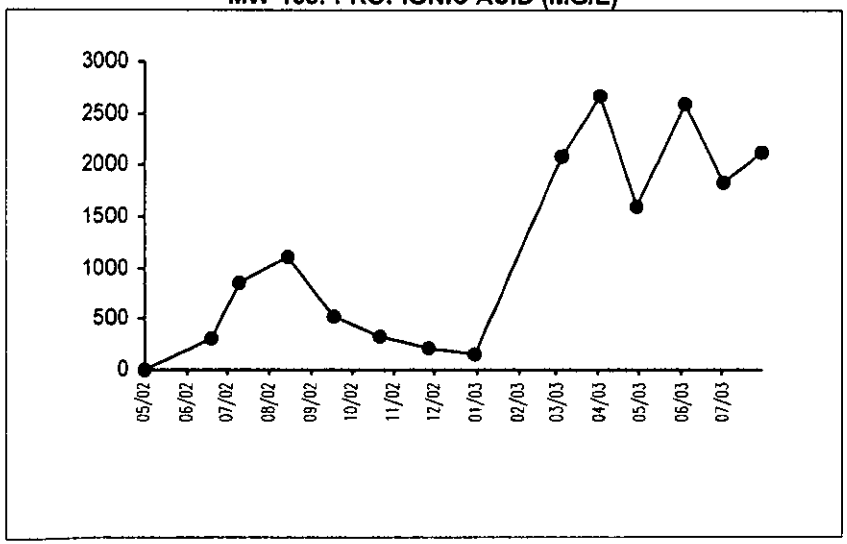
MW-105: NITROGEN, NITRATE (AS N) (MG/L)



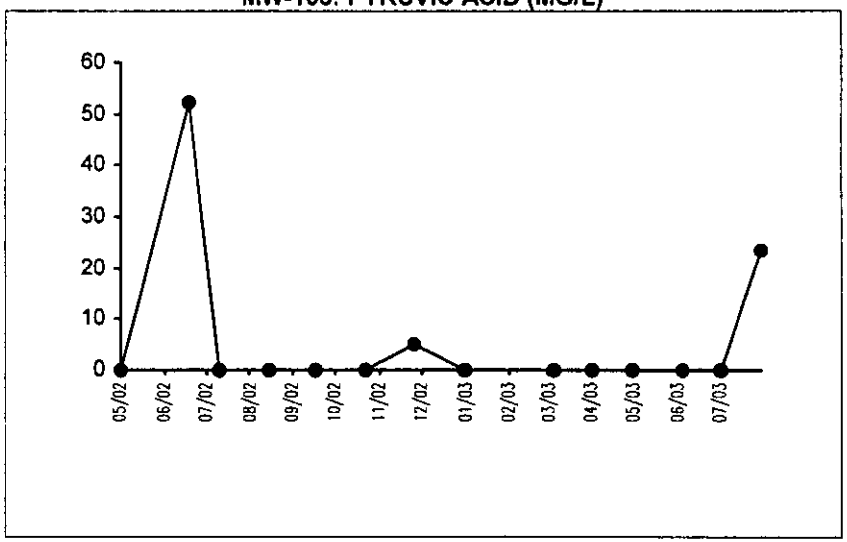
MW-105: NITROGEN, NITRITE (MG/L)



MW-105: PROPIONIC ACID (MG/L)



MW-105: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

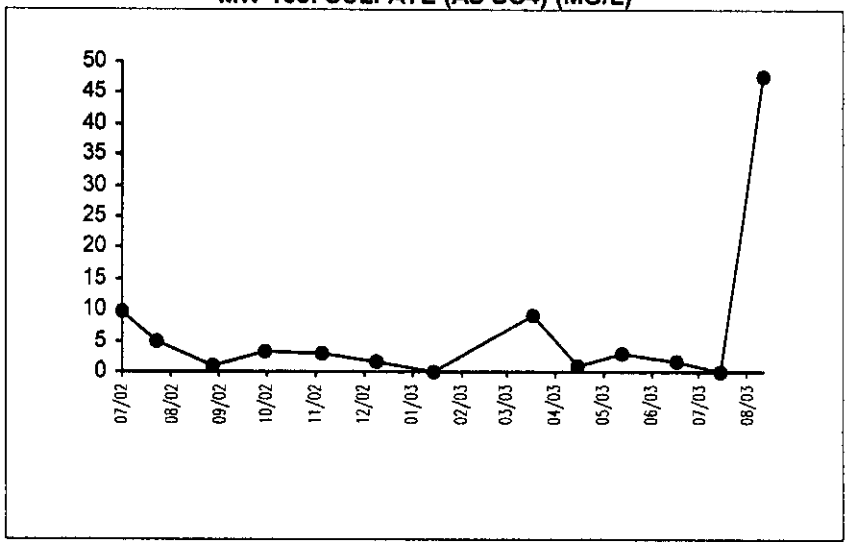
Location Purpose : Remediation

Remediation MW-105

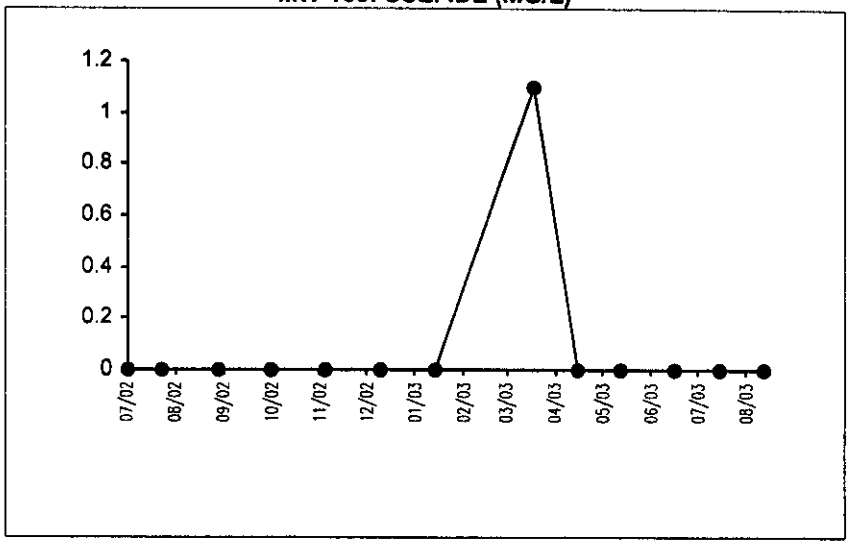
Concentration vs Time

794 996

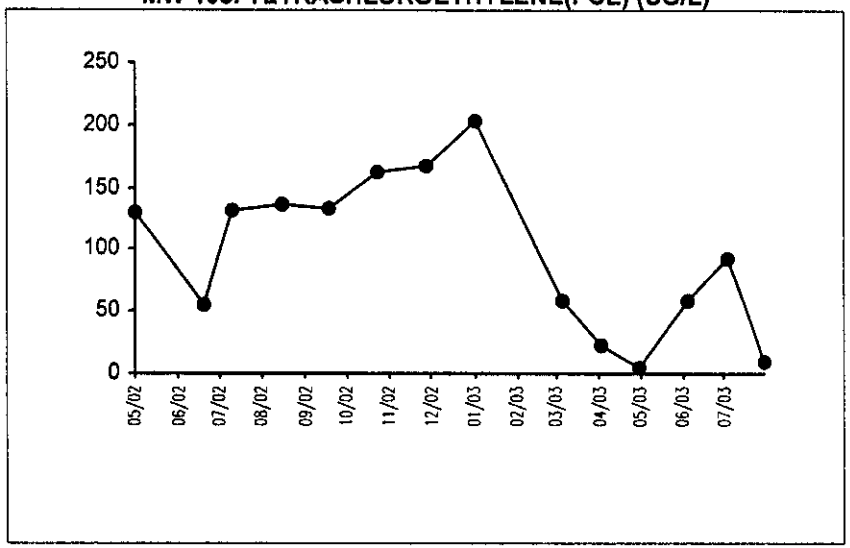
MW-105: SULFATE (AS SO4) (MG/L)



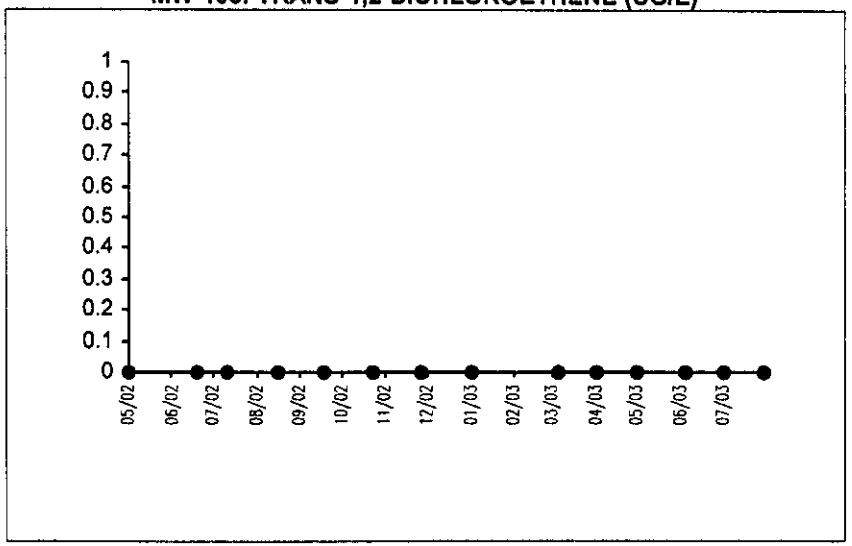
MW-105: SULFIDE (MG/L)



MW-105: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-105: TRANS-1,2-DICHLOROETHENE (UG/L)



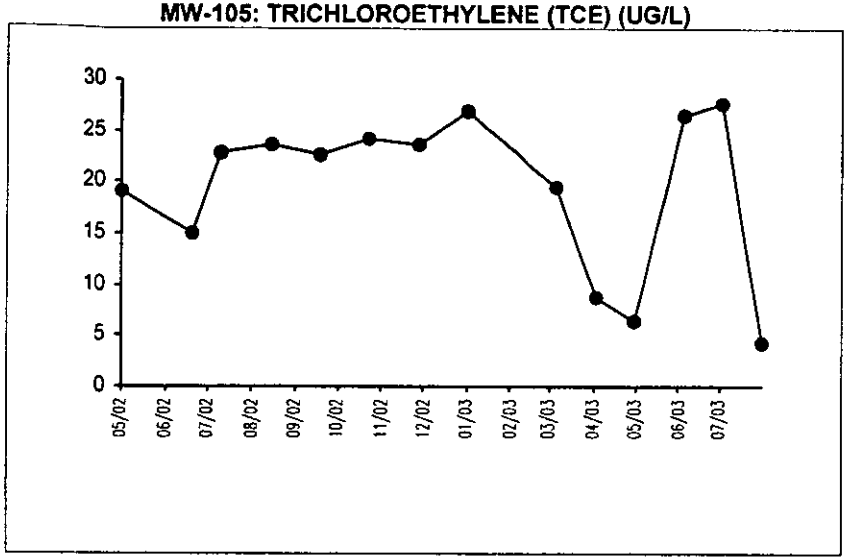
* Non-detects shown as 0.

Location Purpose : Remediation

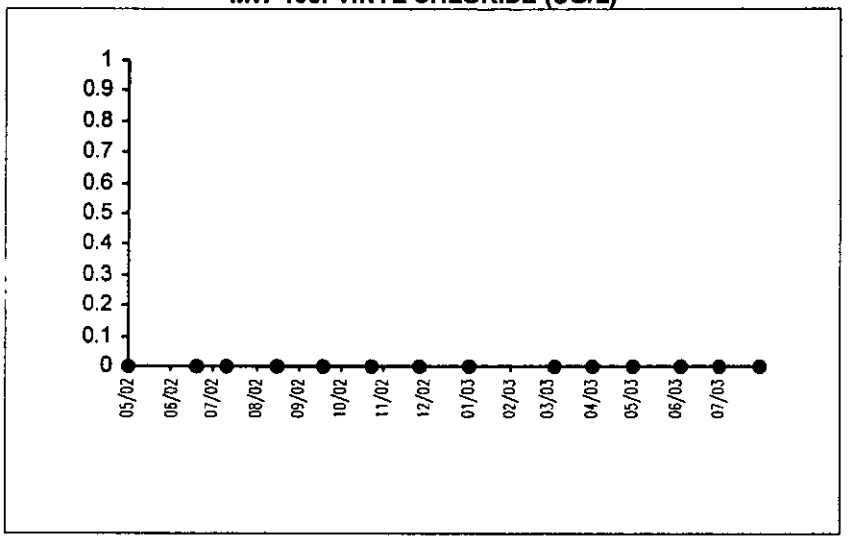
Remediation MW-105

Concentration vs Time

MW-105: TRICHLOROETHYLENE (TCE) (UG/L)



MW-105: VINYL CHLORIDE (UG/L)



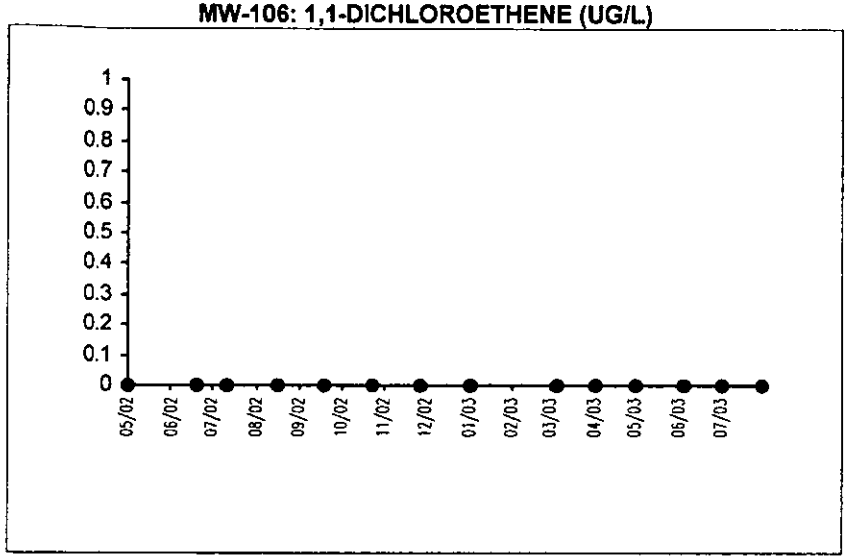
* Nondetects shown as 0.

Location Purpose : Remediation

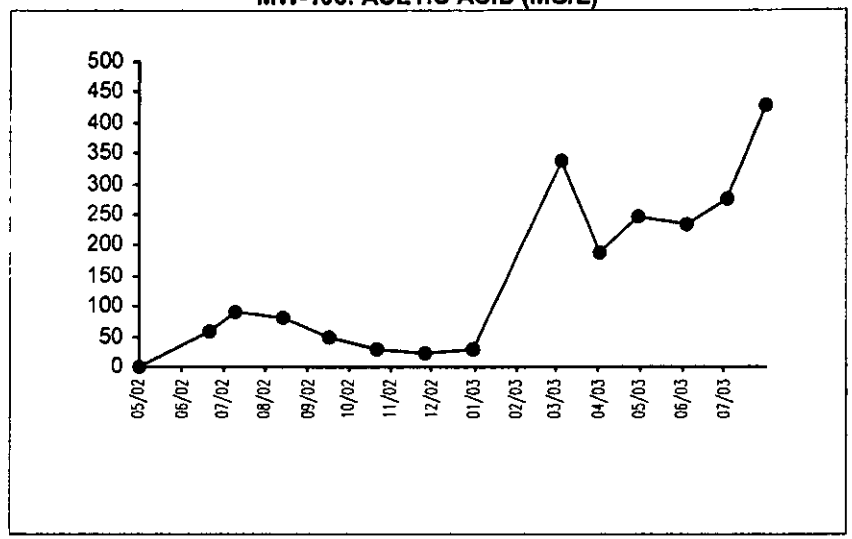
Remediation MW-106

Concentration vs Time

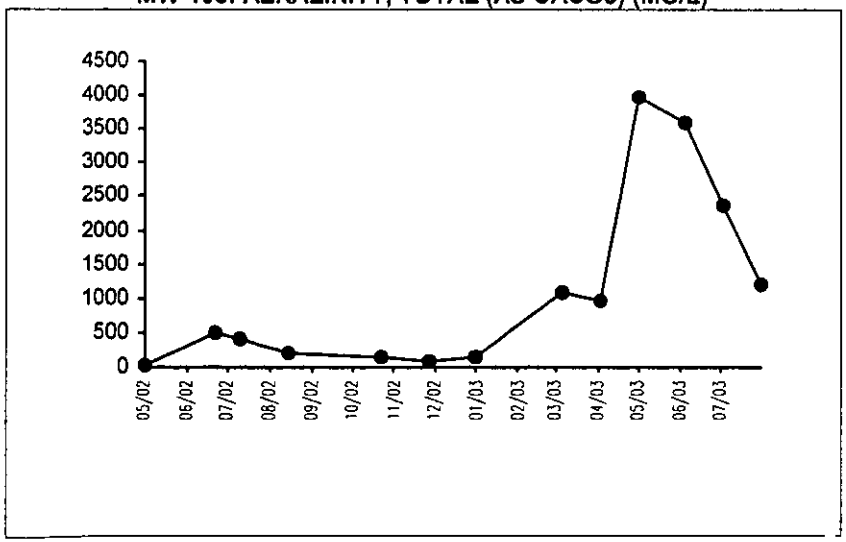
MW-106: 1,1-DICHLOROETHENE (UG/L)



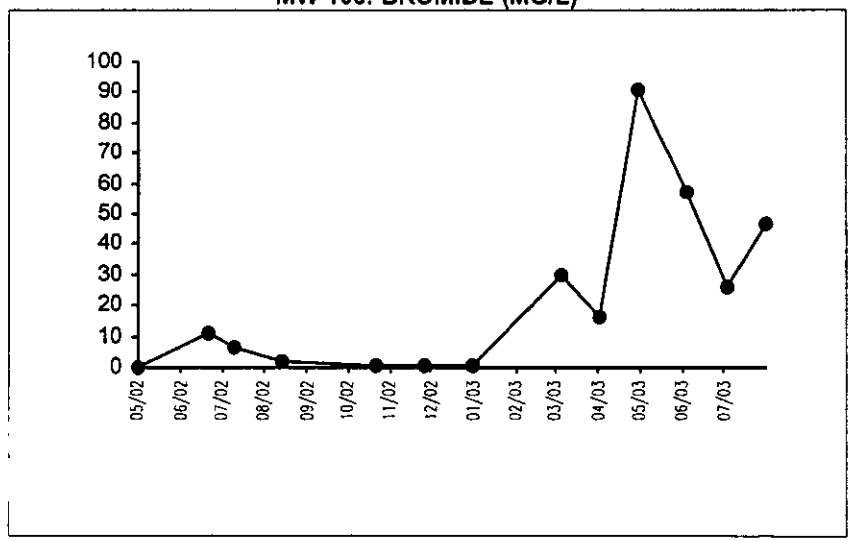
MW-106: ACETIC ACID (MG/L)



MW-106: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-106: BROMIDE (MG/L)



* Nondetects shown as 0.

794 998

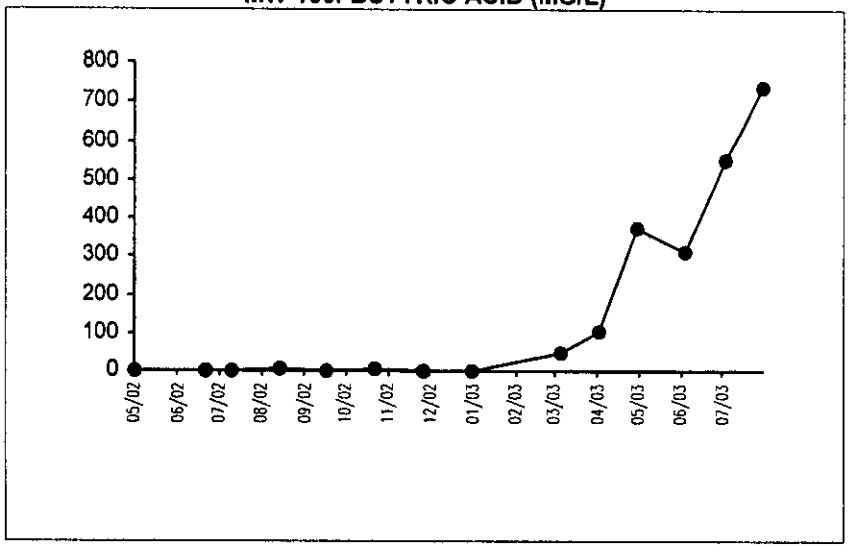
Location Purpose : Remediation

Remediation MW-106

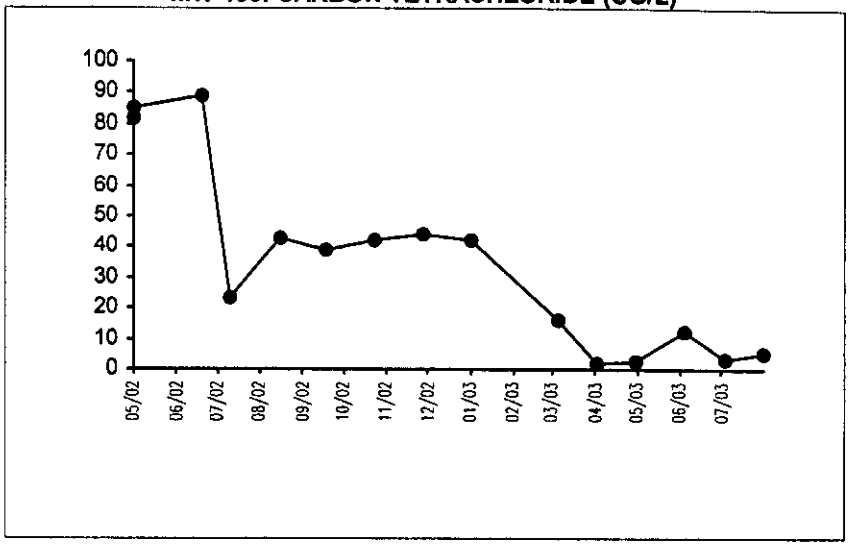
Concentration vs Time

794 999

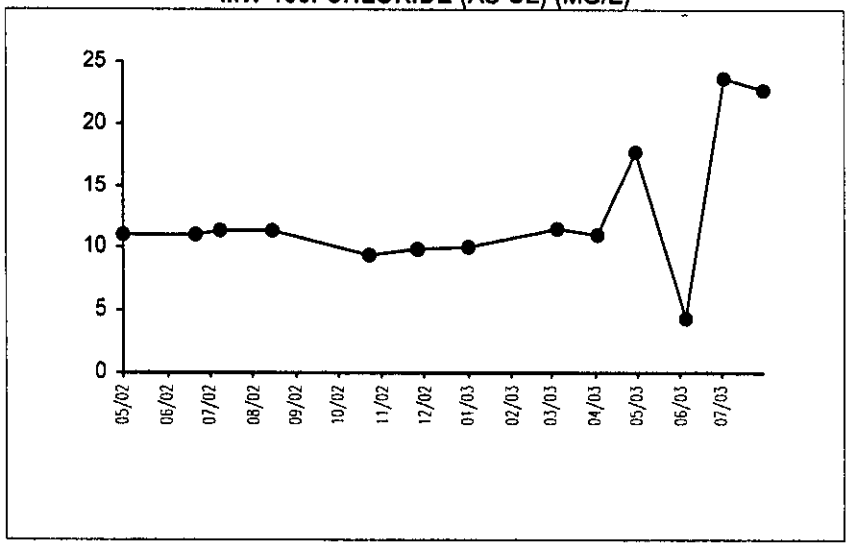
MW-106: BUTYRIC ACID (MG/L)



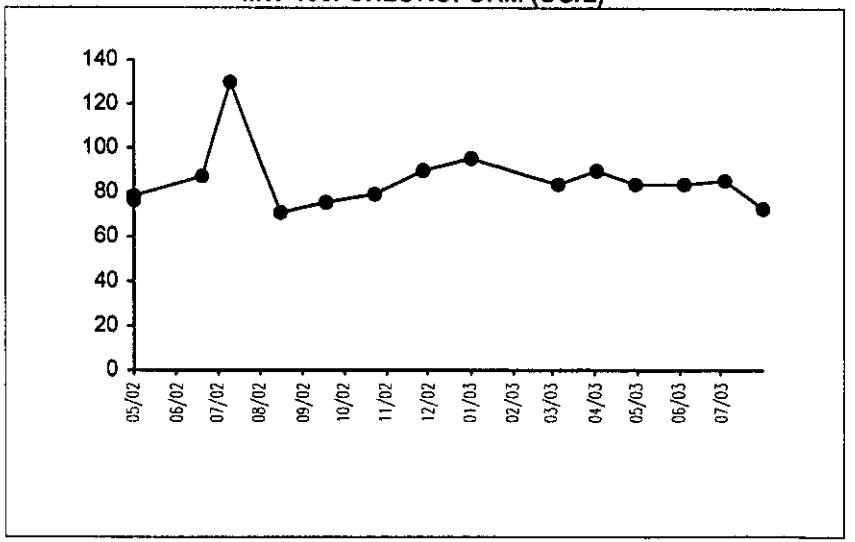
MW-106: CARBON TETRACHLORIDE (UG/L)



MW-106: CHLORIDE (AS CL) (MG/L)



MW-106: CHLOROFORM (UG/L)



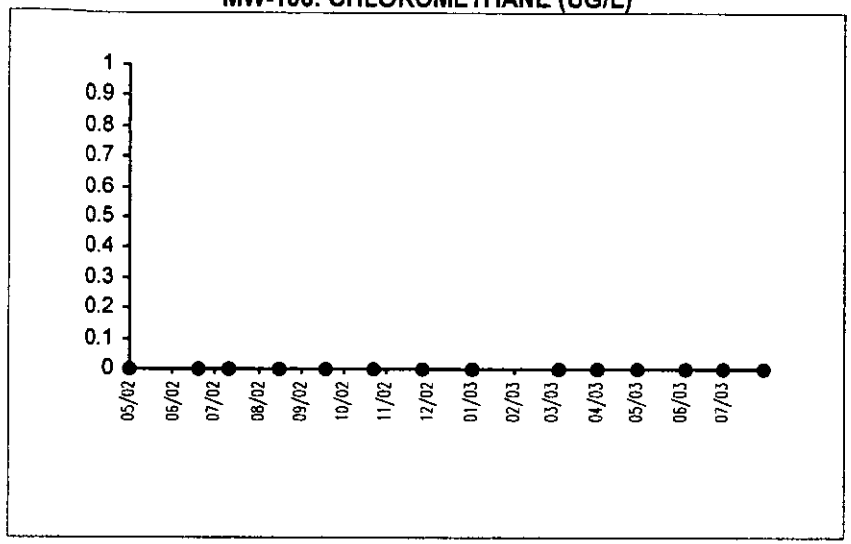
* No[redacted]cts shown as 0.

Location Purpose : Remediation

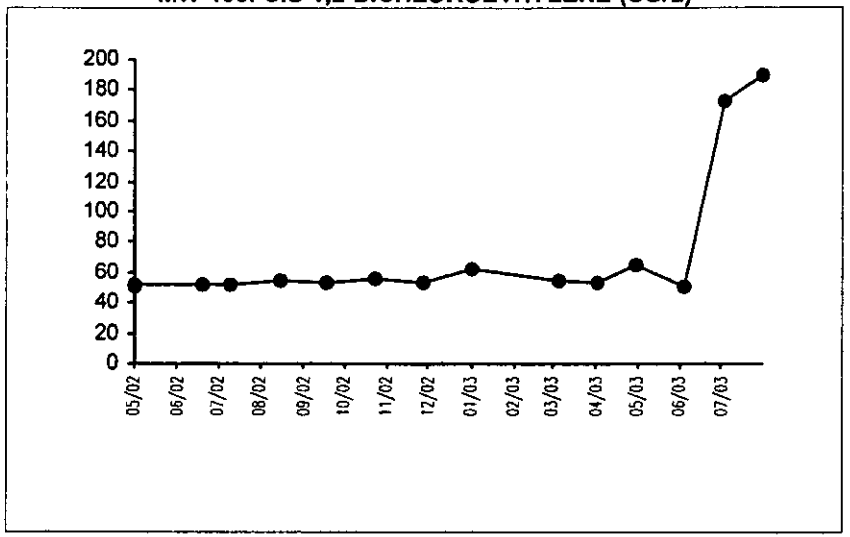
Remediation MW-106

Concentration vs Time

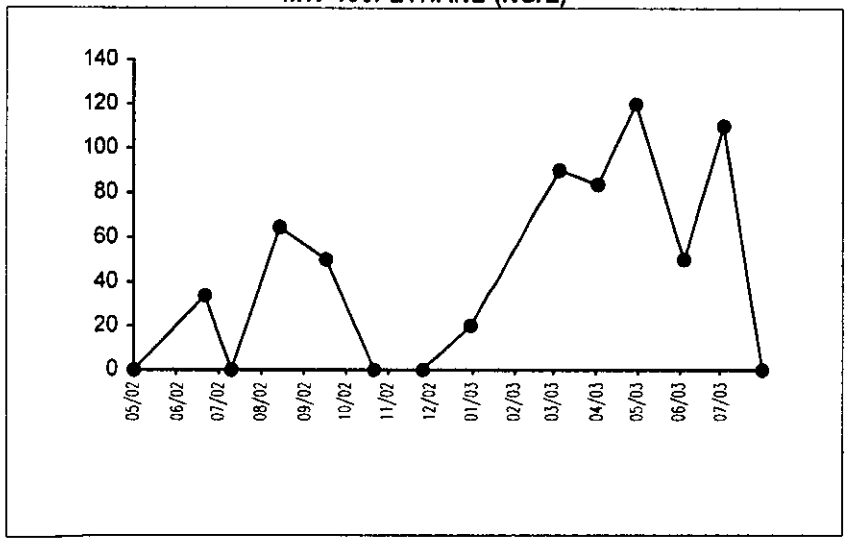
MW-106: CHLOROMETHANE (UG/L)



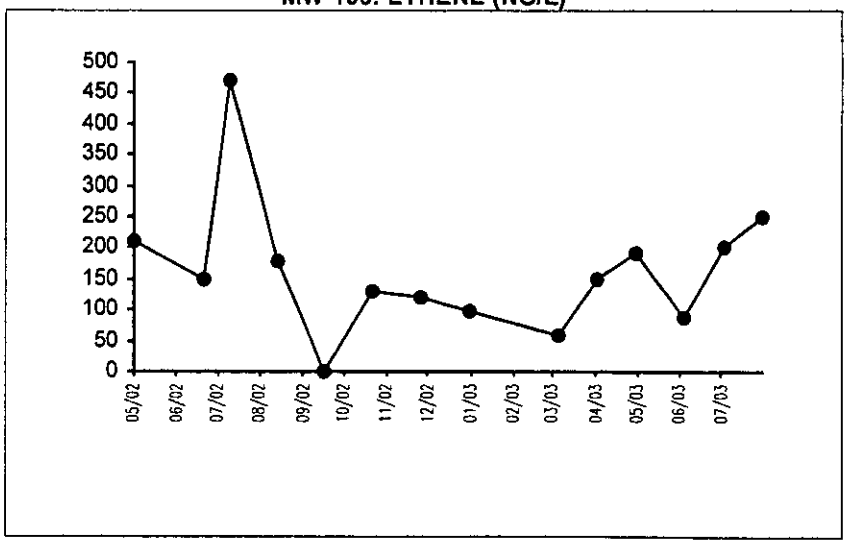
MW-106: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-106: ETHANE (NG/L)



MW-106: ETHENE (NG/L)



* Nondetects shown as 0.

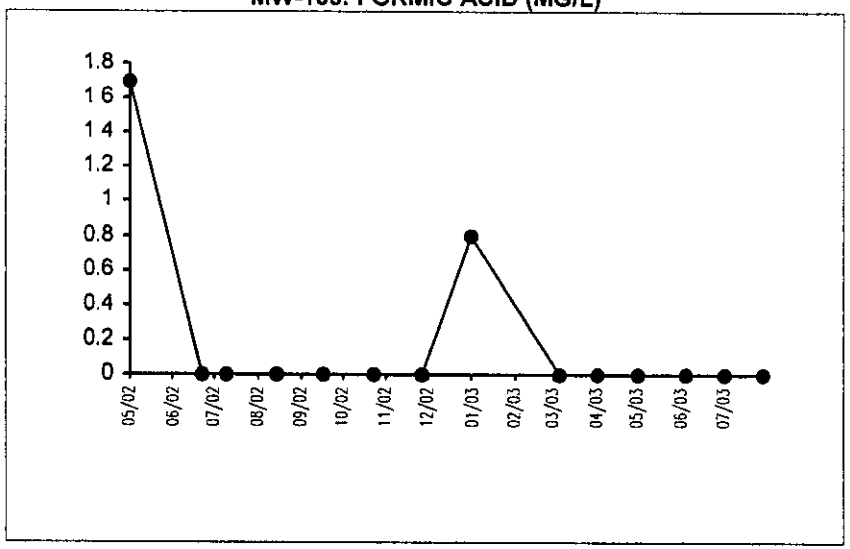
7941006

Location Purpose : Remediation

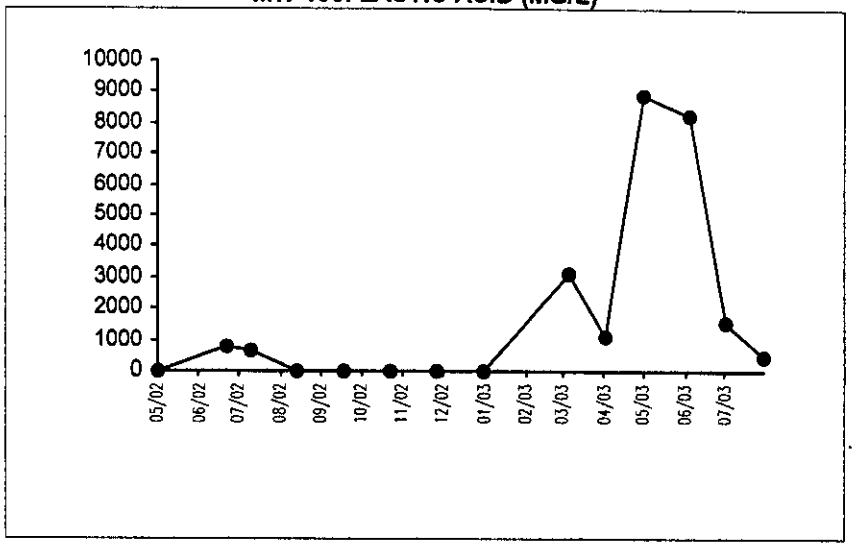
Remediation MW-106

Concentration vs Time

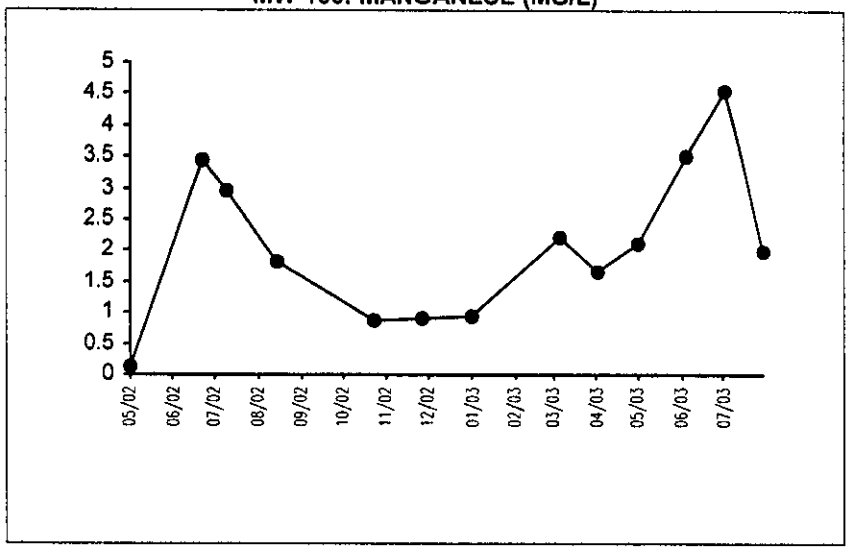
MW-106: FORMIC ACID (MG/L)



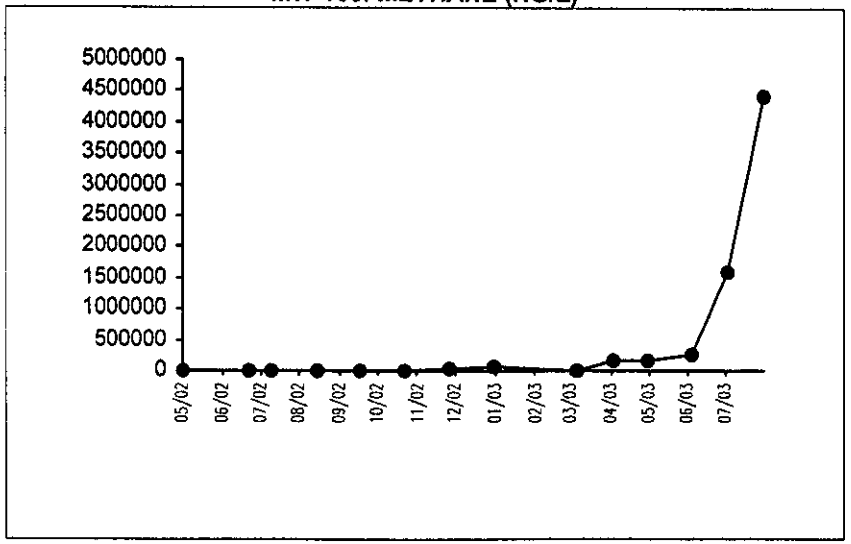
MW-106: LACTIC ACID (MG/L)



MW-106: MANGANESE (MG/L)



MW-106: METHANE (NG/L)



* No[redacted]cts shown as 0.

[redacted]

[redacted]

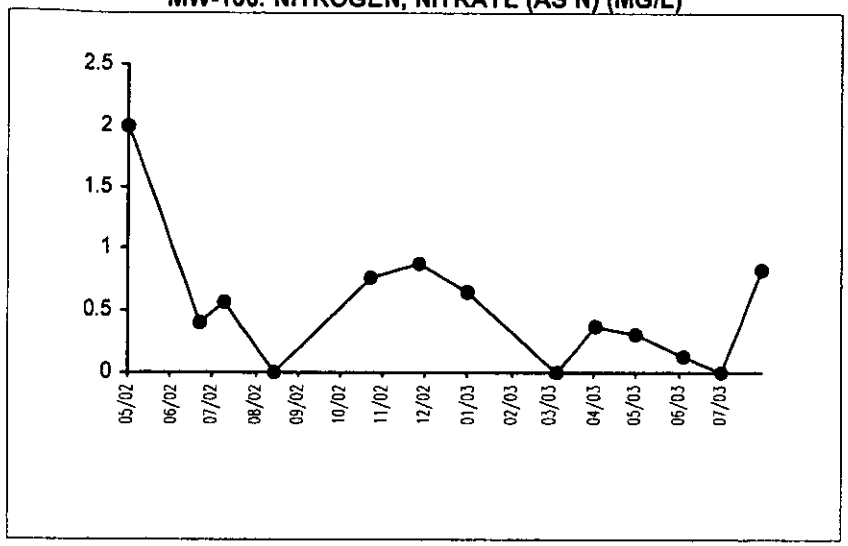
7941001

Location Purpose : Remediation

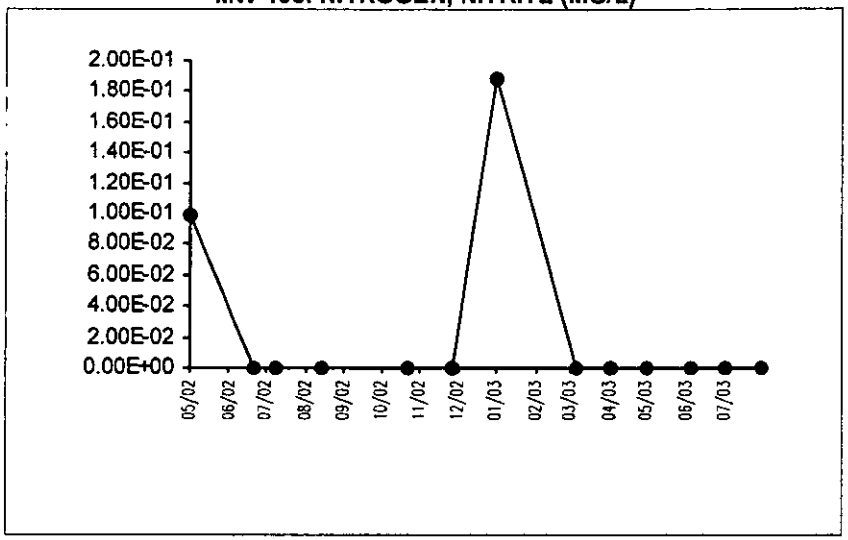
Remediation MW-106

Concentration vs Time

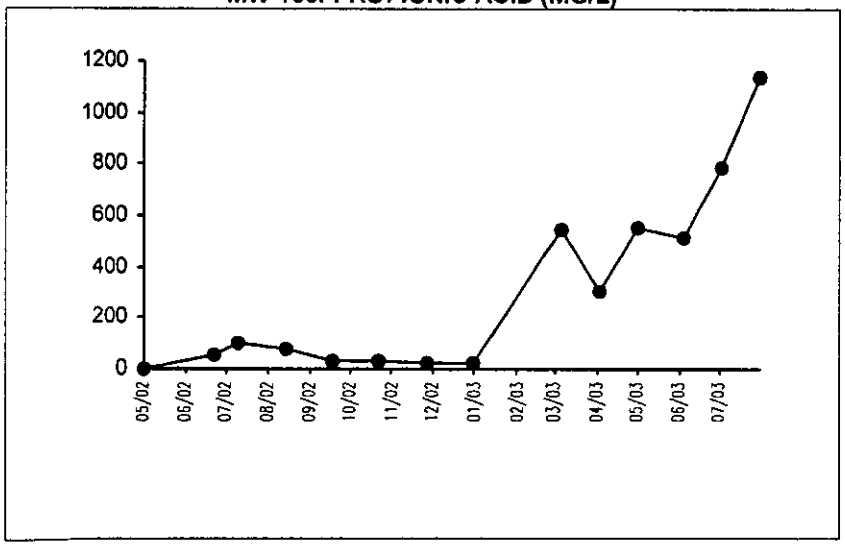
MW-106: NITROGEN, NITRATE (AS N) (MG/L)



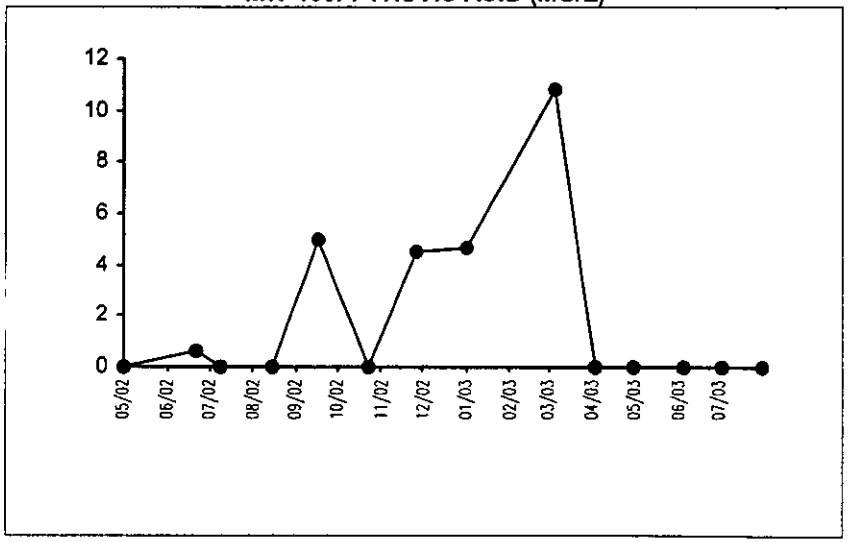
MW-106: NITROGEN, NITRITE (MG/L)



MW-106: PROPIONIC ACID (MG/L)



MW-106: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

7941002

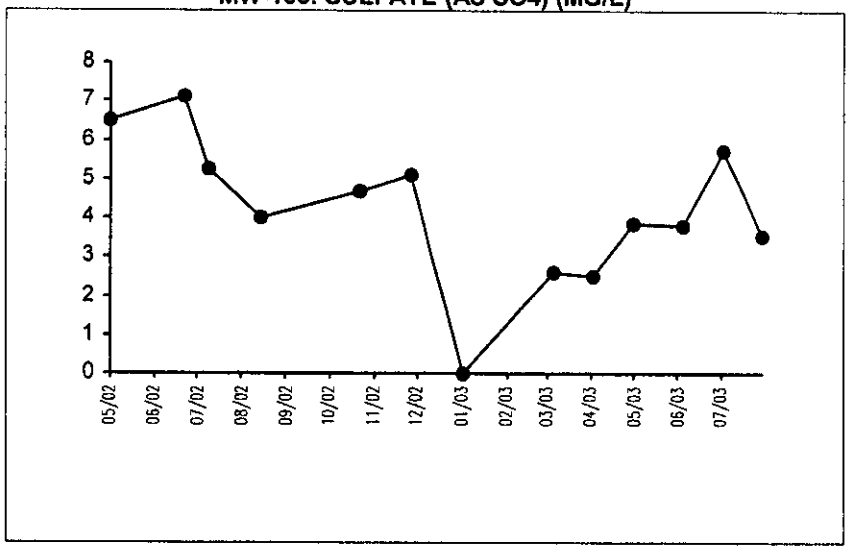
Location Purpose : Remediation

Remediation MW-106

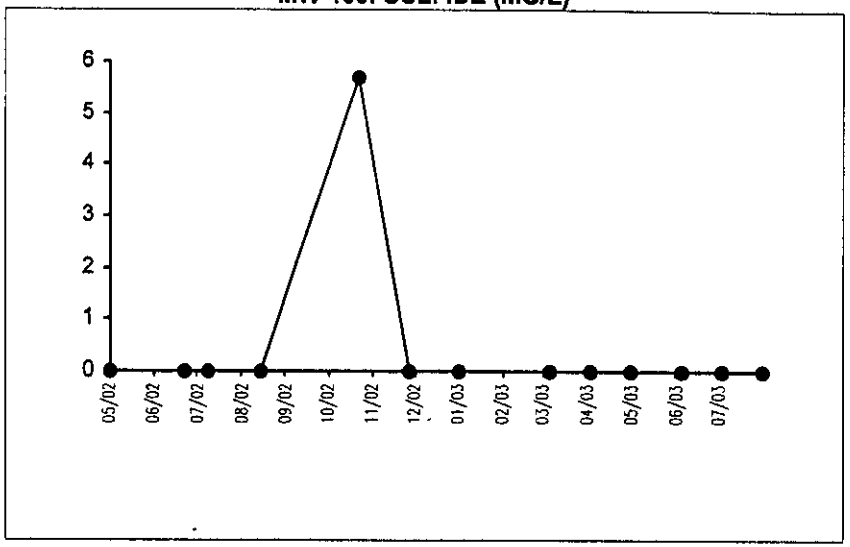
Concentration vs Time

7941003

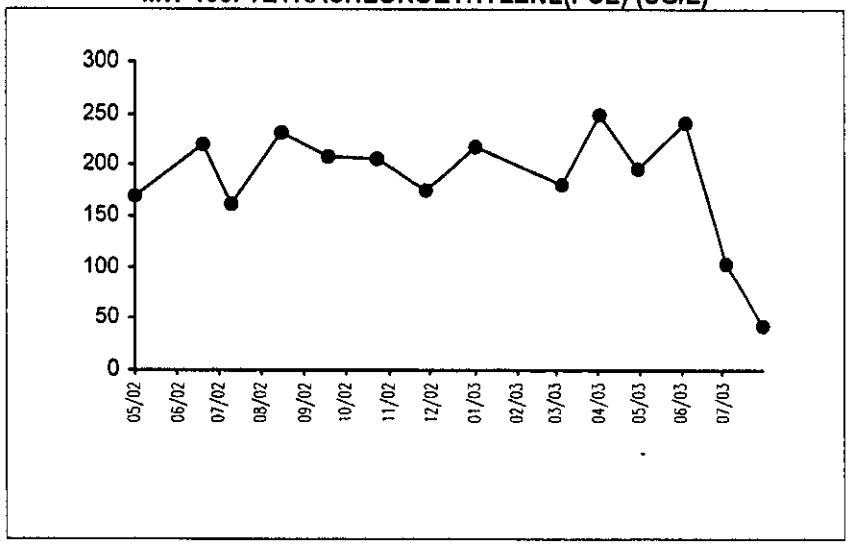
MW-106: SULFATE (AS SO4) (MG/L)



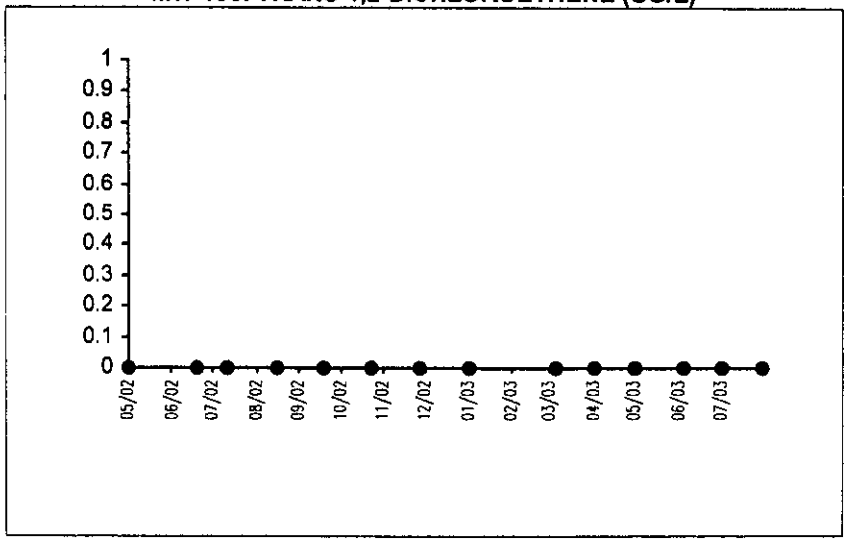
MW-106: SULFIDE (MG/L)



MW-106: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-106: TRANS-1,2-DICHLOROETHENE (UG/L)



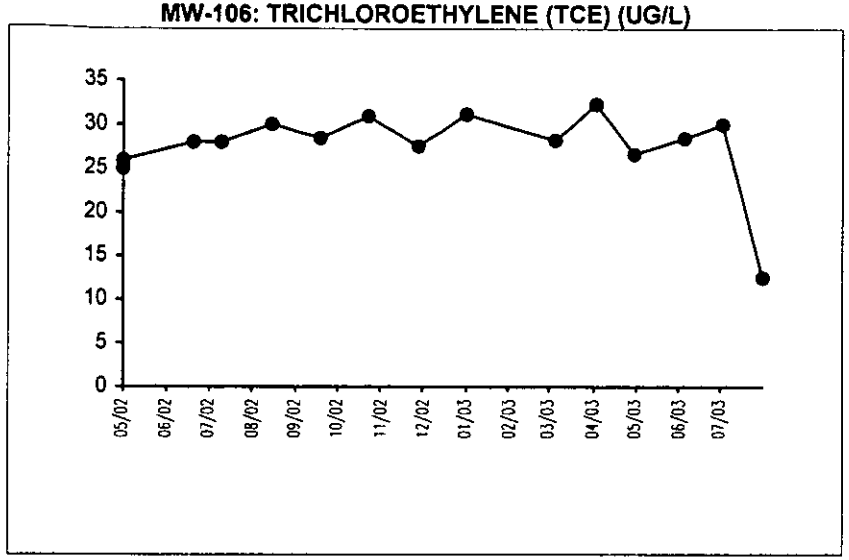
* No[redacted]cts shown as 0.

Location Purpose : Remediation

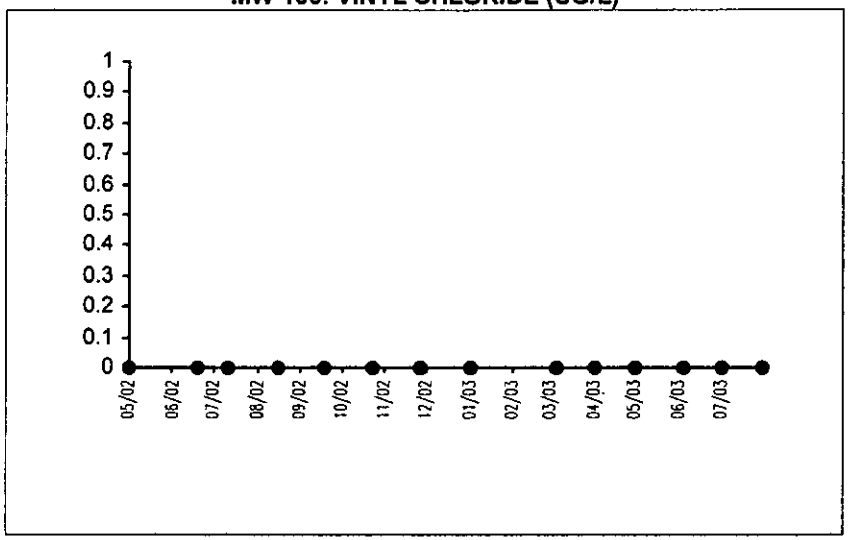
Remediation MW-106

Concentration vs Time

MW-106: TRICHLOROETHYLENE (TCE) (UG/L)



MW-106: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

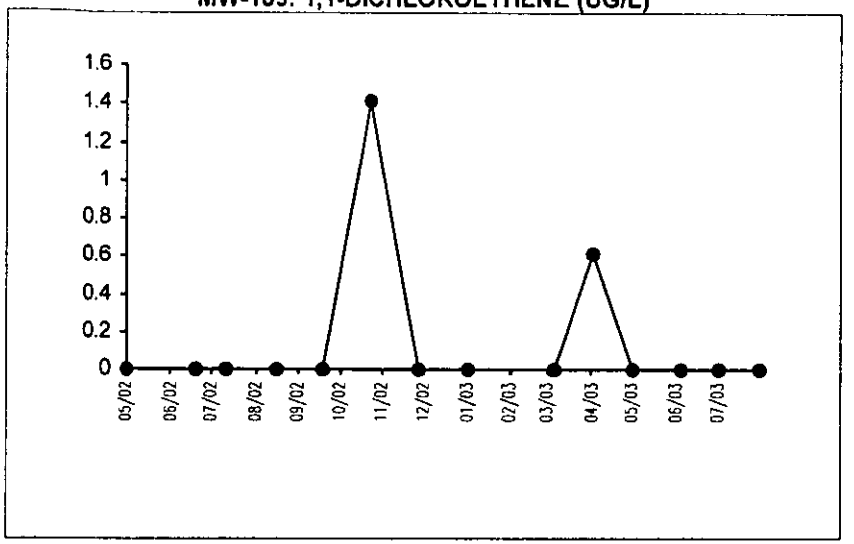
7941004

Location Purpose : Remediation

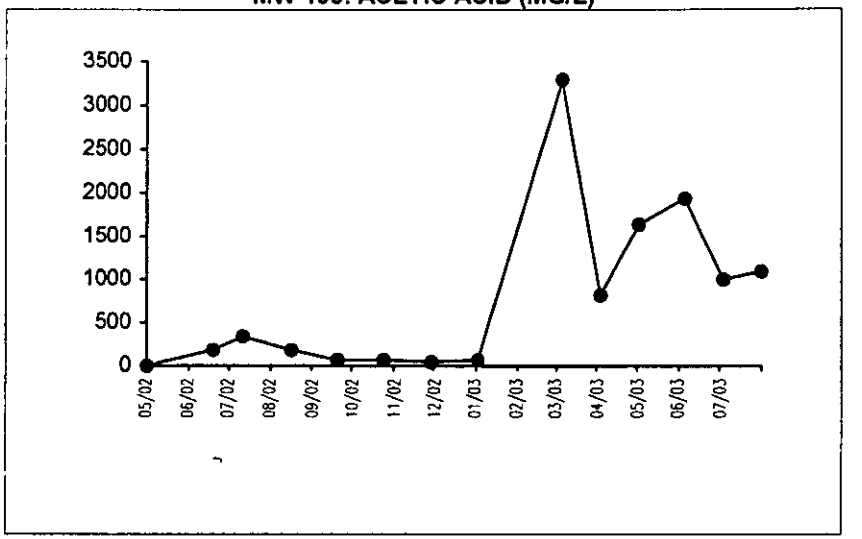
Remediation MW-109

Concentration vs Time

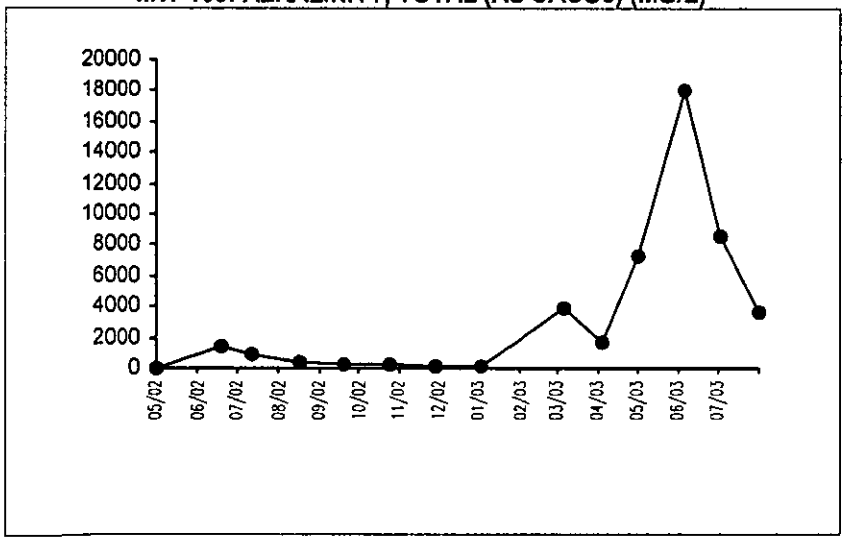
MW-109: 1,1-DICHLOROETHENE (UG/L)



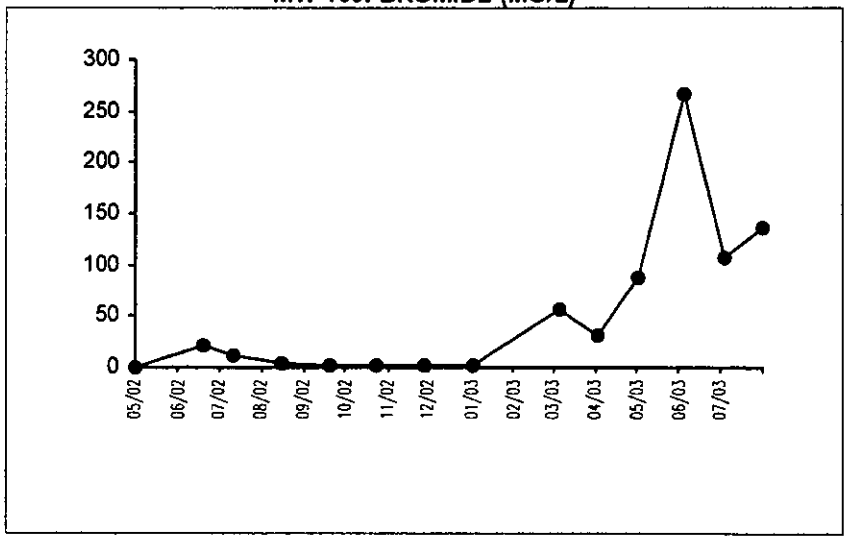
MW-109: ACETIC ACID (MG/L)



MW-109: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-109: BROMIDE (MG/L)



* Nondetects shown as 0.

79410005

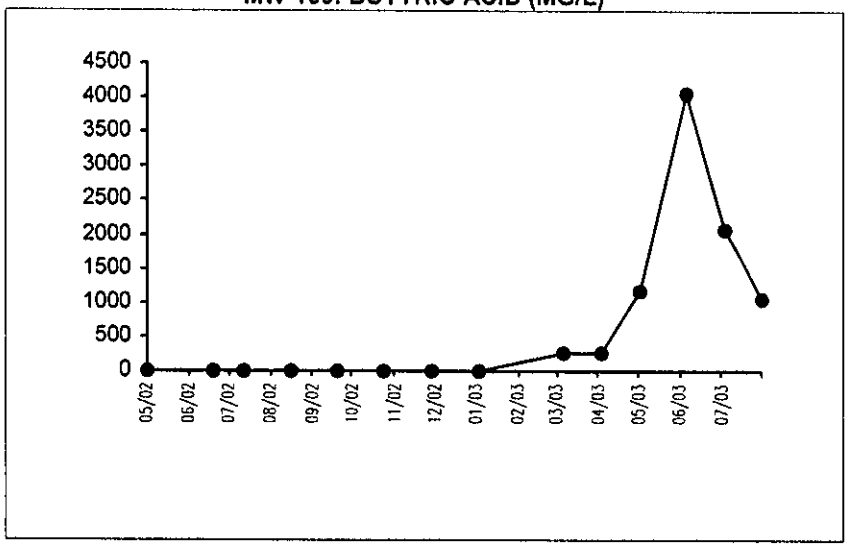
Location Purpose : Remediation

Remediation MW-109

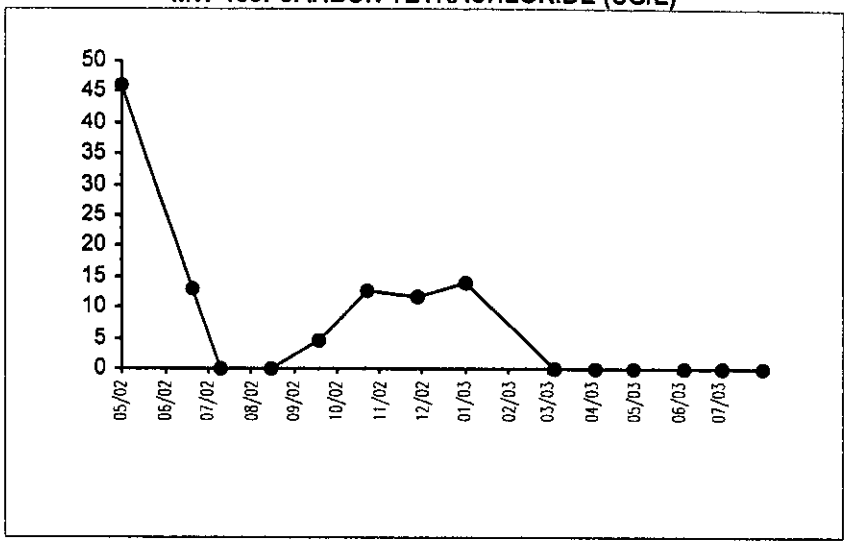
Concentration vs Time

7941006

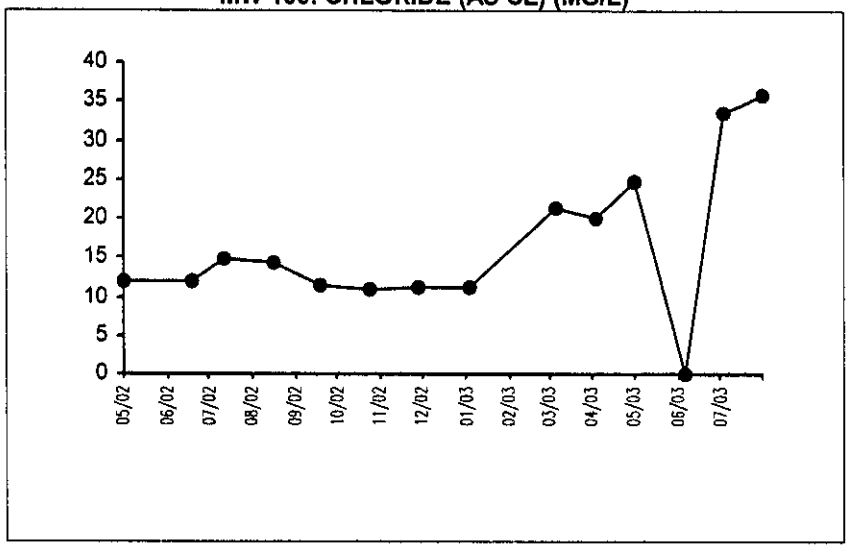
MW-109: BUTYRIC ACID (MG/L)



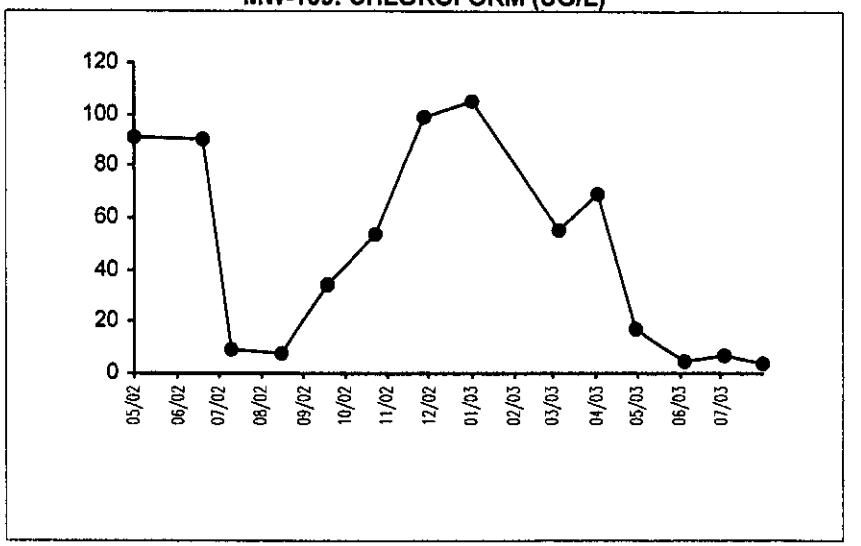
MW-109: CARBON TETRACHLORIDE (UG/L)



MW-109: CHLORIDE (AS CL) (MG/L)



MW-109: CHLOROFORM (UG/L)



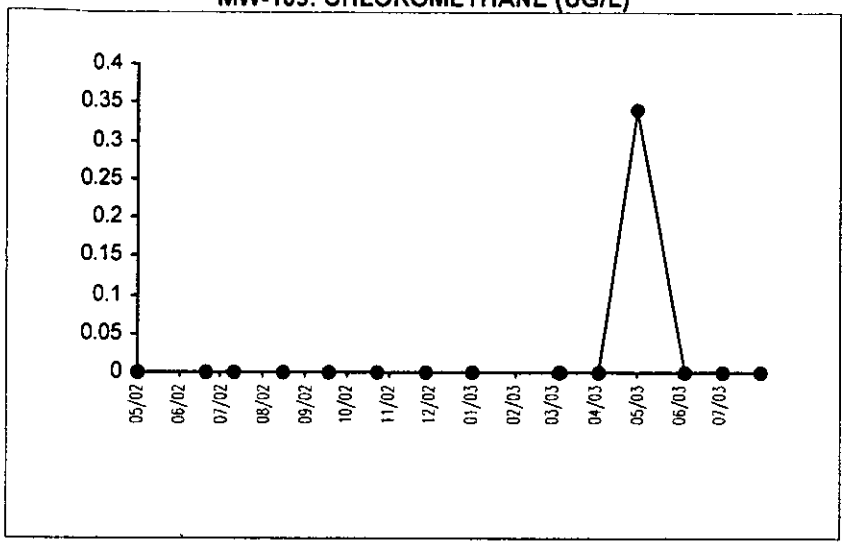
* N[redacted]cts shown as 0.

Location Purpose : Remediation

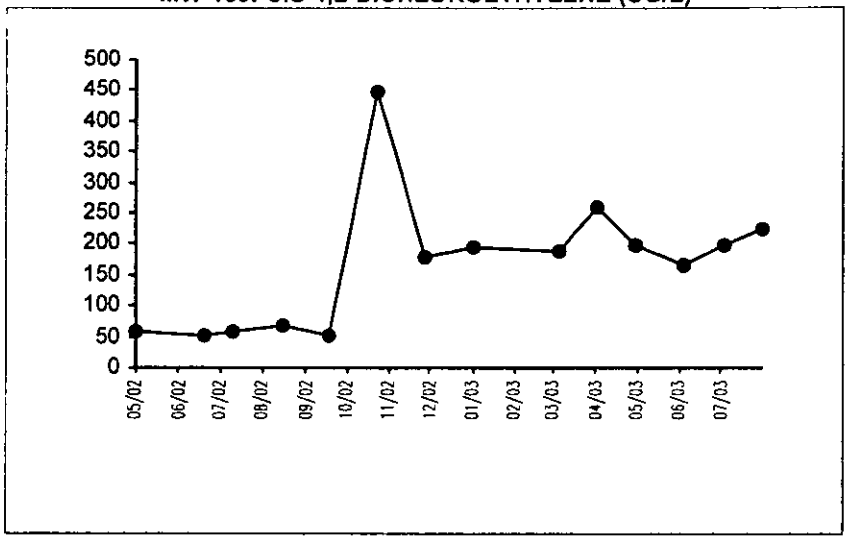
Remediation MW-109

Concentration vs Time

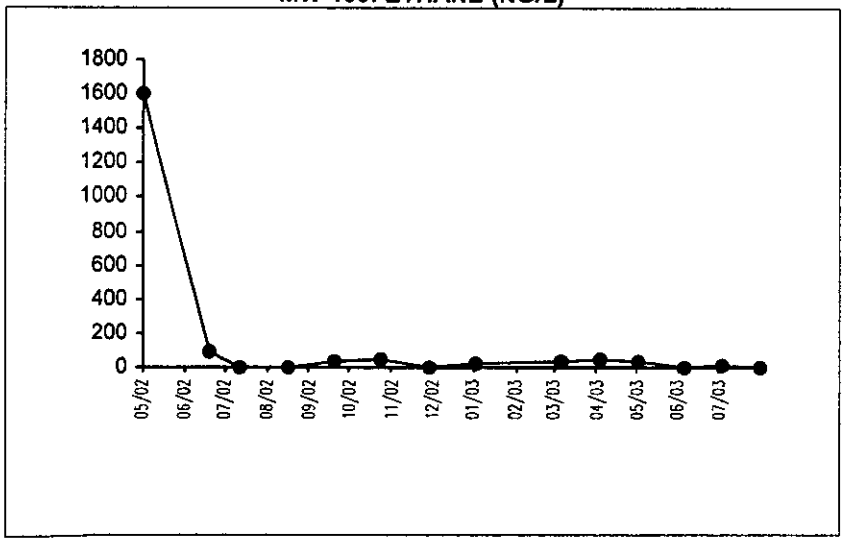
MW-109: CHLOROMETHANE (UG/L)



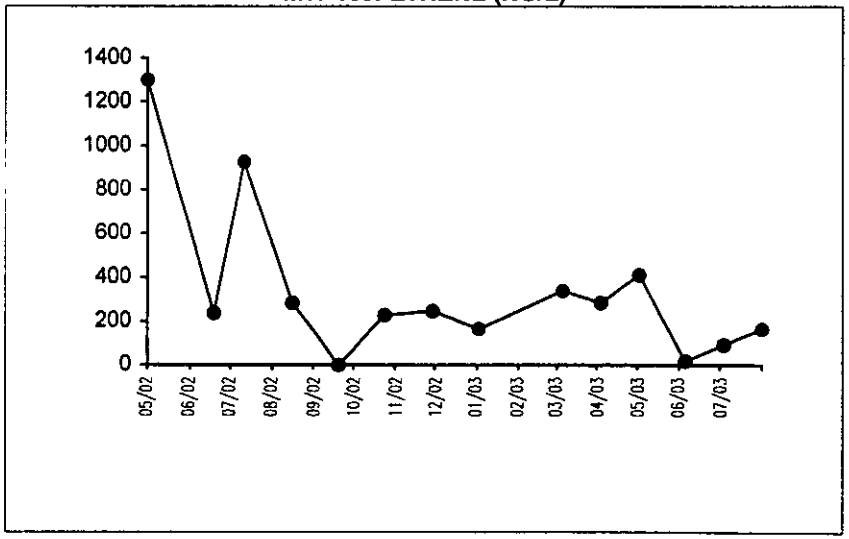
MW-109: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-109: ETHANE (NG/L)



MW-109: ETHENE (NG/L)



* Nondetects shown as 0.

7941007

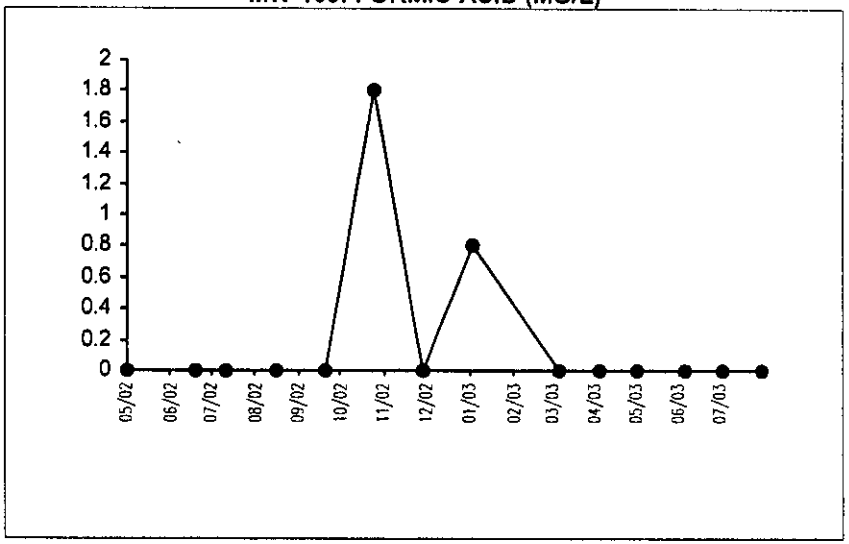
Location Purpose : Remediation

Remediation MW-109

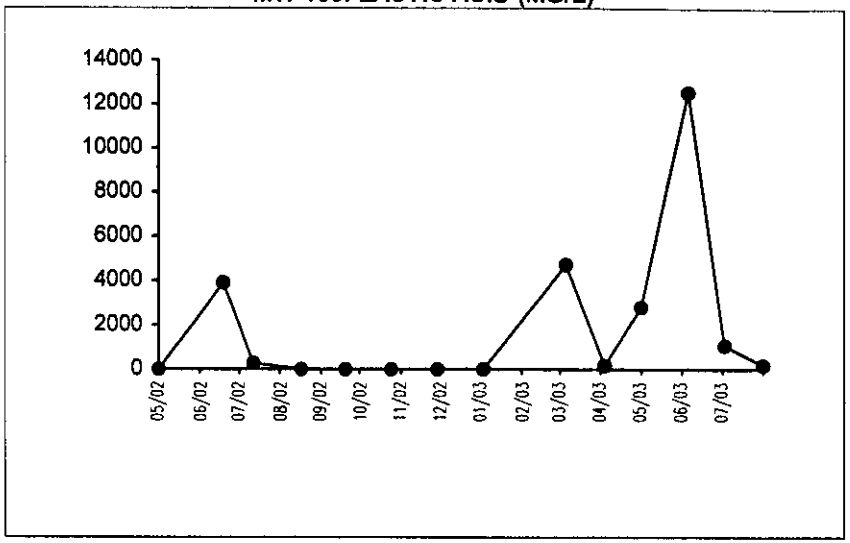
Concentration vs Time

7941008

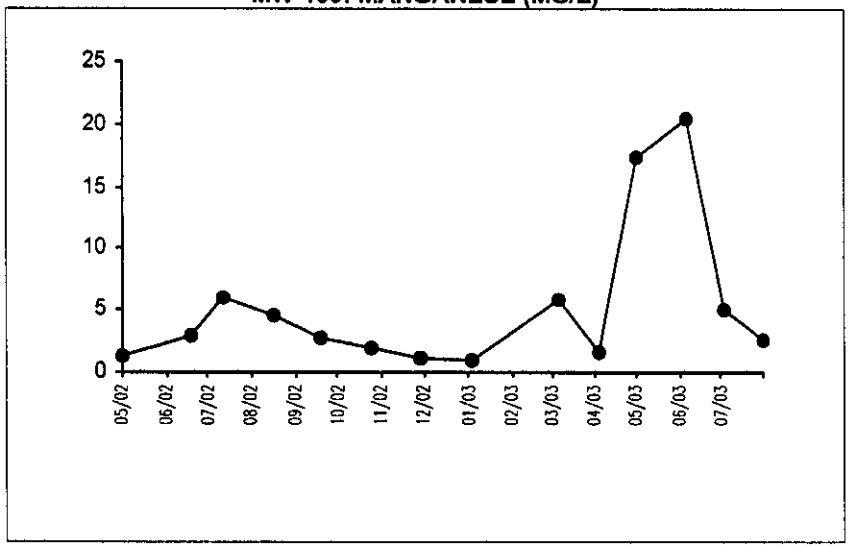
MW-109: FORMIC ACID (MG/L)



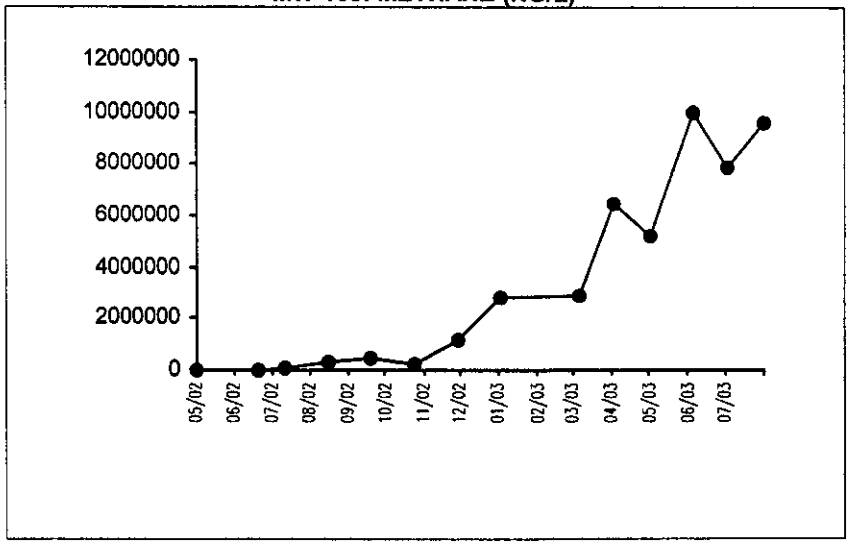
MW-109: LACTIC ACID (MG/L)



MW-109: MANGANESE (MG/L)



MW-109: METHANE (NG/L)



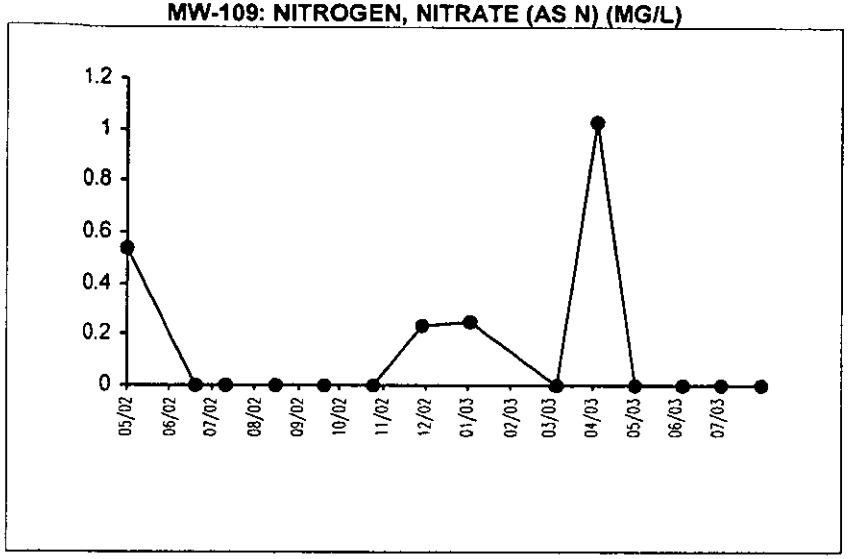
* No[redacted]cts shown as 0.

Location Purpose : Remediation

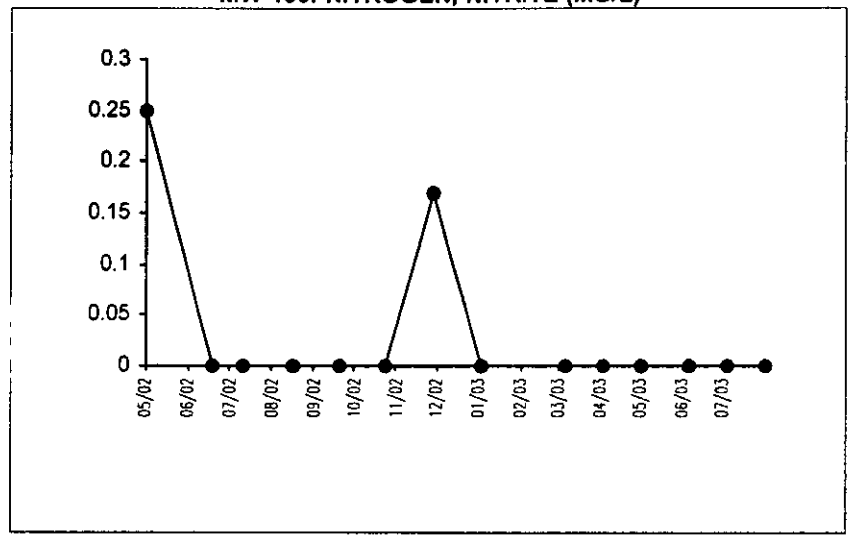
Remediation MW-109

Concentration vs Time

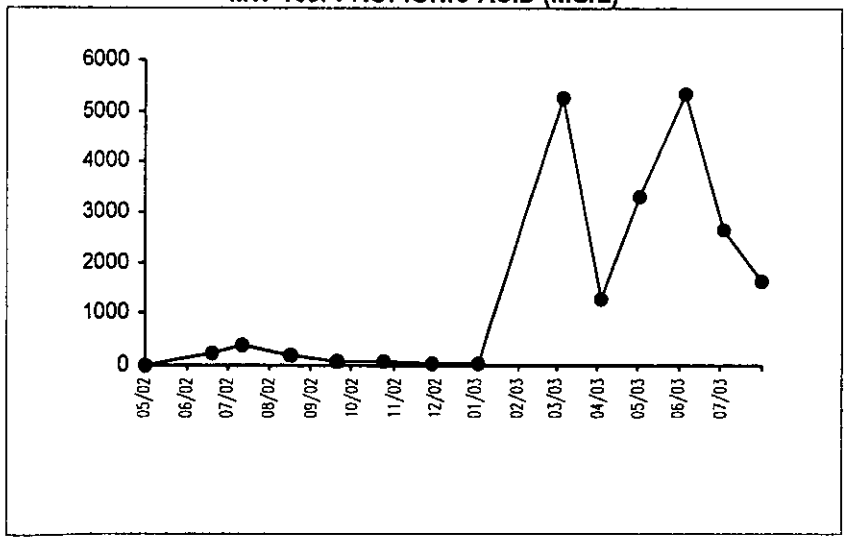
MW-109: NITROGEN, NITRATE (AS N) (MG/L)



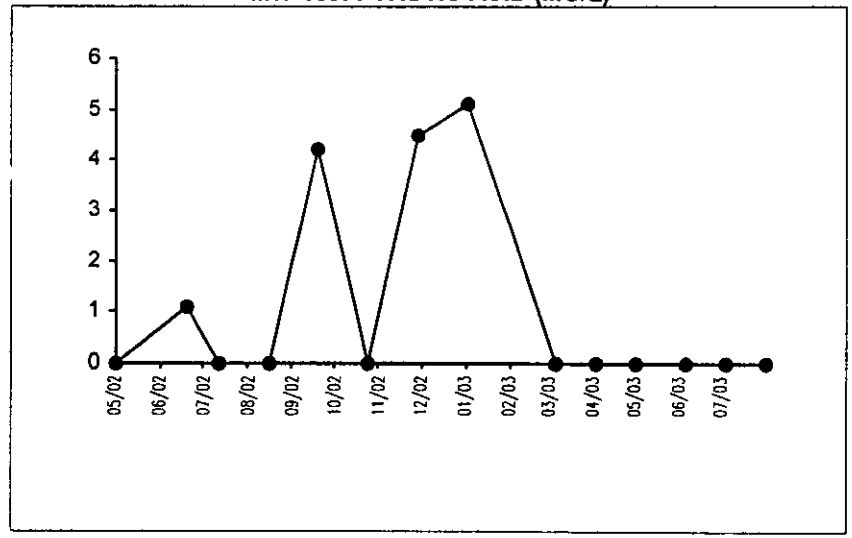
MW-109: NITROGEN, NITRITE (MG/L)



MW-109: PROPIONIC ACID (MG/L)



MW-109: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

7941009

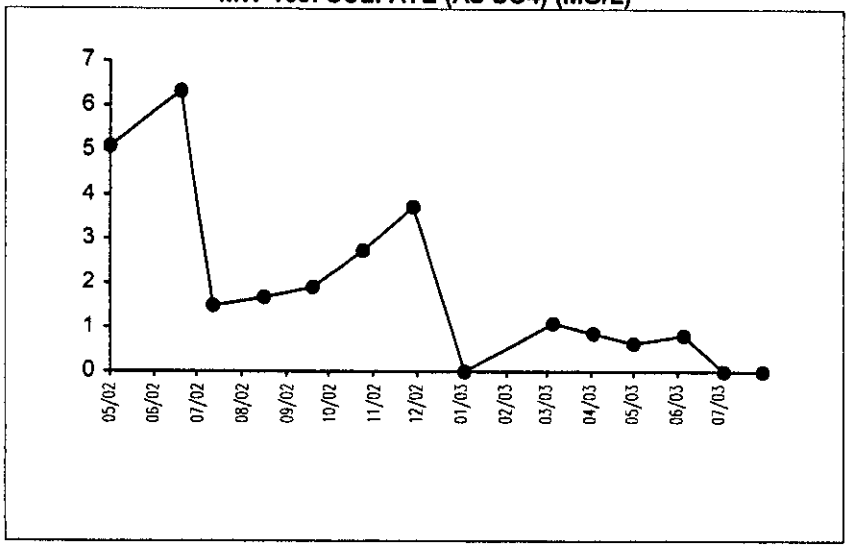
Location Purpose : Remediation

Remediation MW-109

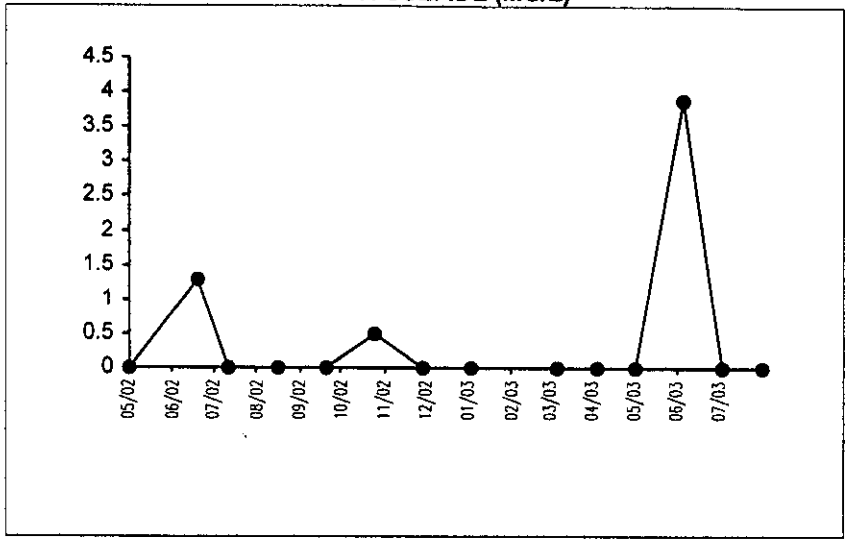
Concentration vs Time

79410110

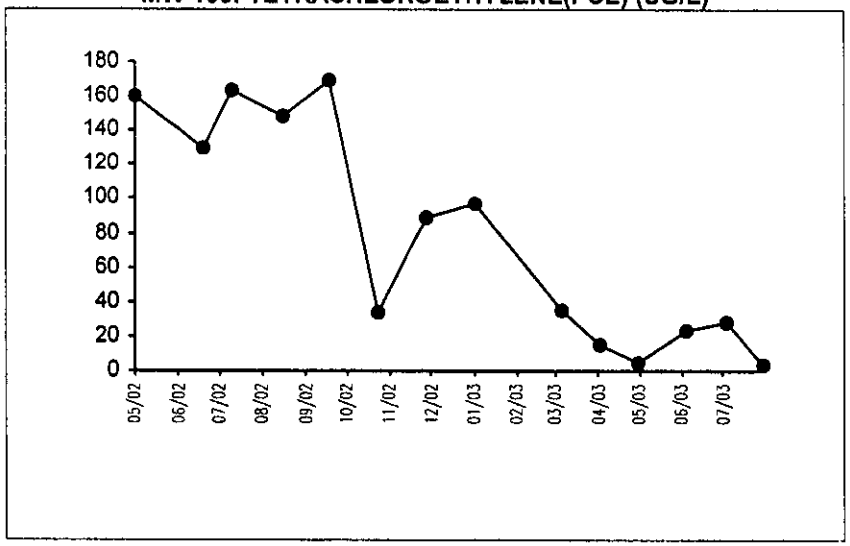
MW-109: SULFATE (AS SO4) (MG/L)



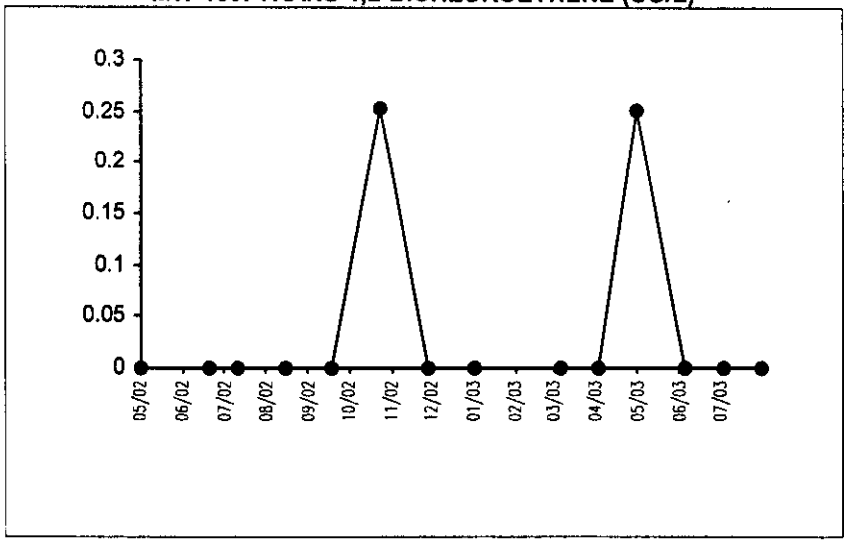
MW-109: SULFIDE (MG/L)



MW-109: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-109: TRANS-1,2-DICHLOROETHENE (UG/L)



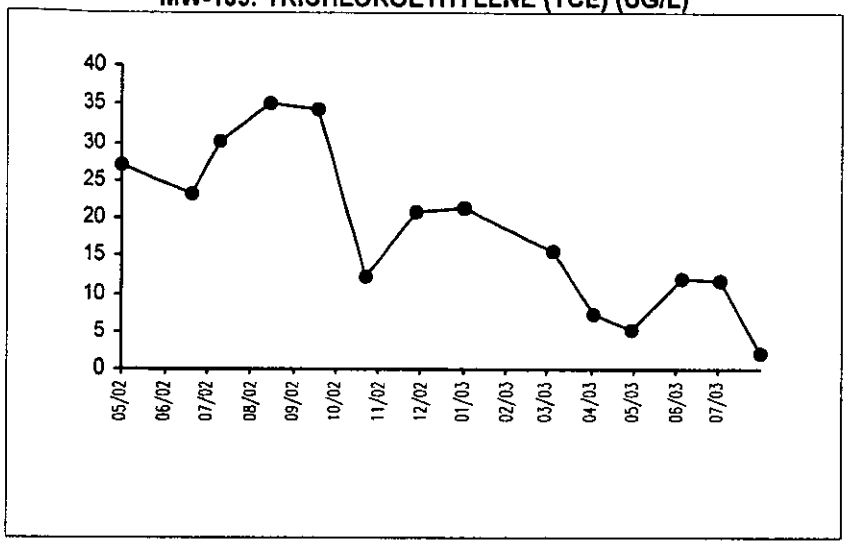
* N[redacted]cts shown as 0.

Location Purpose : Remediation

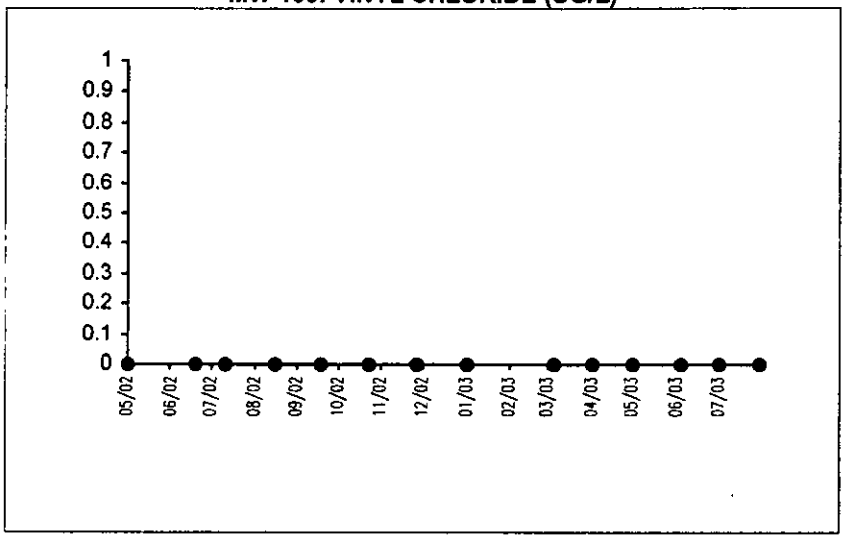
Remediation MW-109

Concentration vs Time

MW-109: TRICHLOROETHYLENE (TCE) (UG/L)



MW-109: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

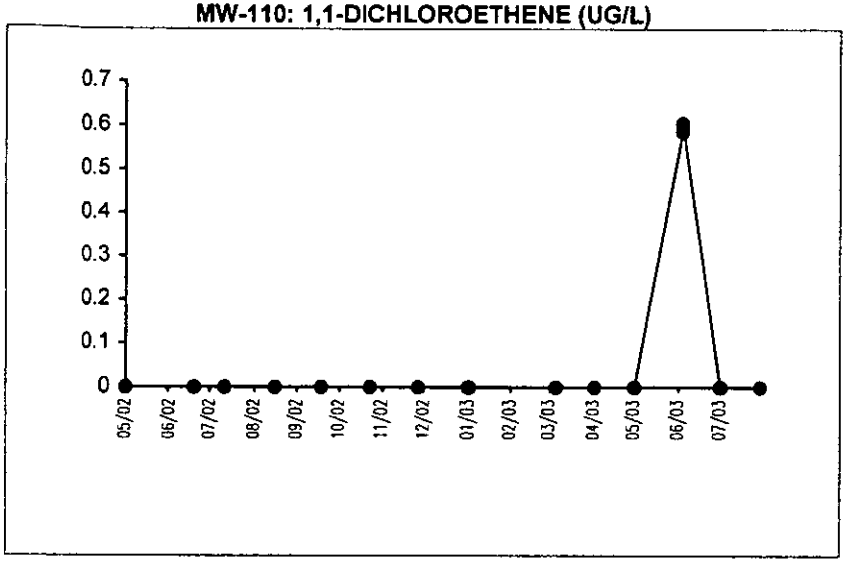
794101

Location Purpose : Remediation

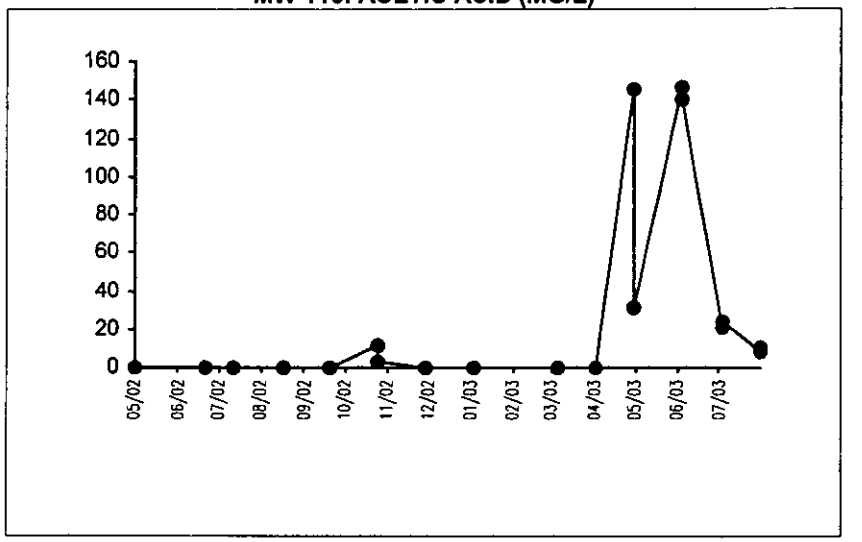
Remediation MW-110

Concentration vs Time

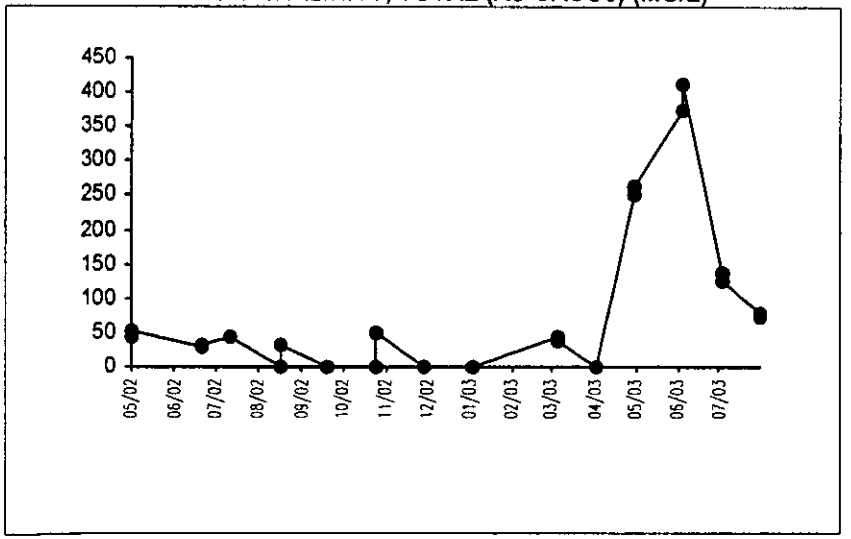
MW-110: 1,1-DICHLOROETHENE (UG/L)



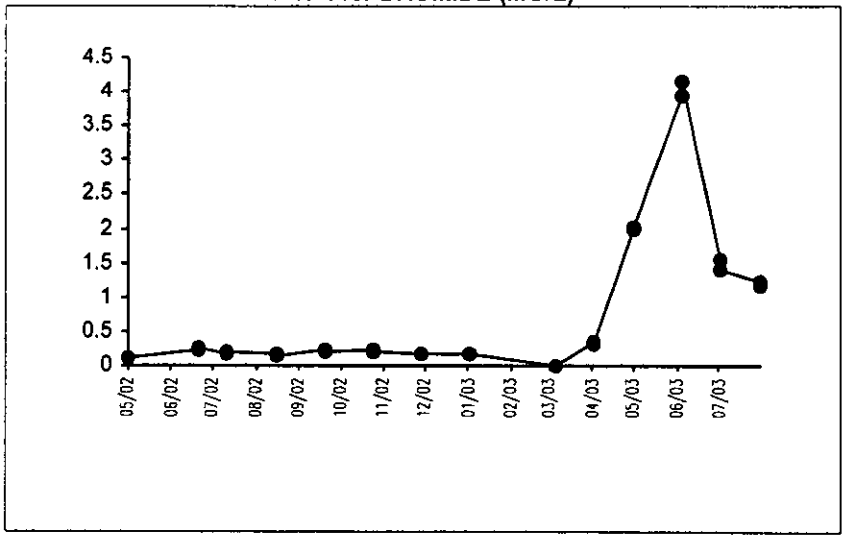
MW-110: ACETIC ACID (MG/L)



MW-110: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-110: BROMIDE (MG/L)



* Nondetects shown as 0.

7941012

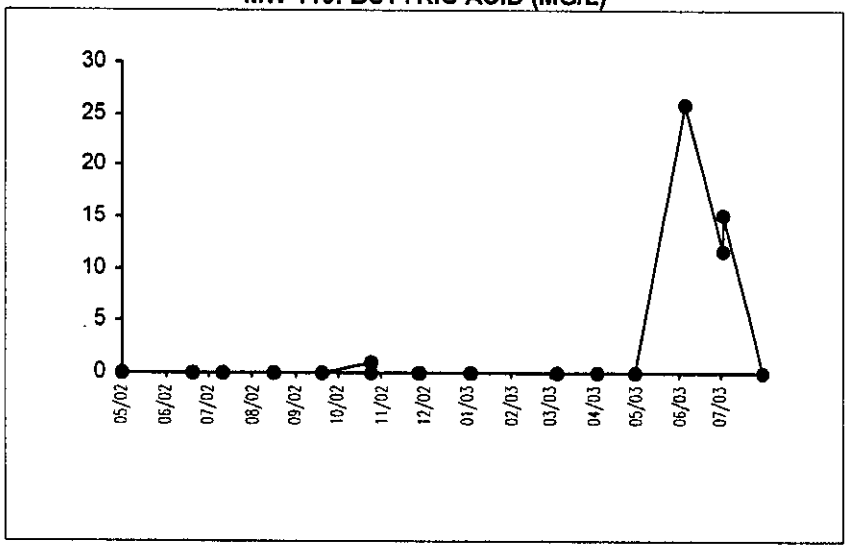
Location Purpose : Remediation

Remediation MW-110

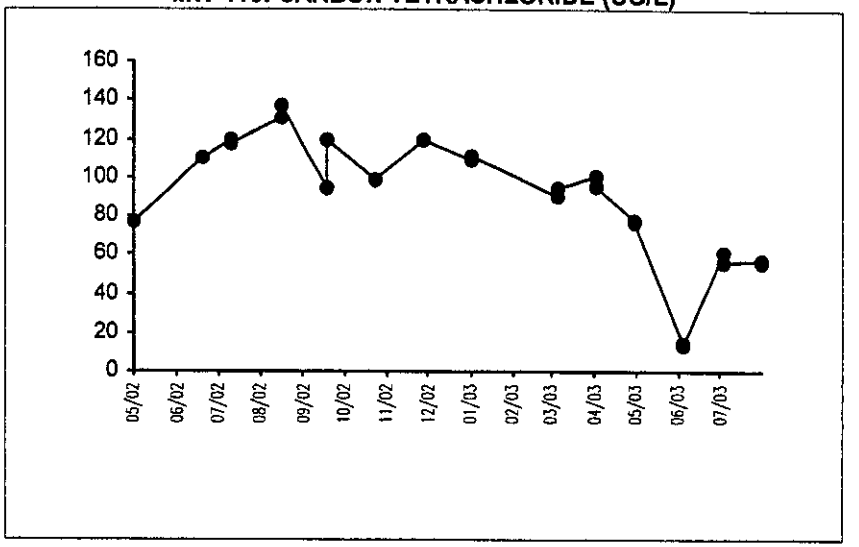
Concentration vs Time

7941013

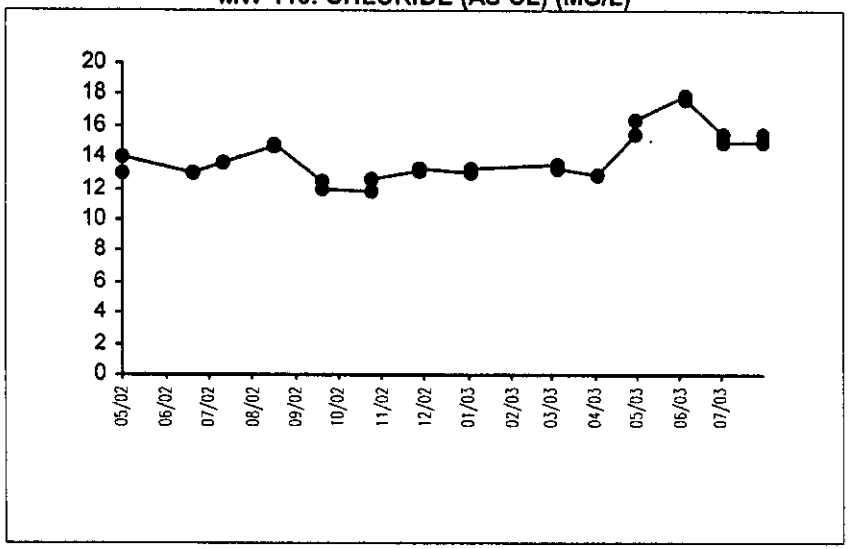
MW-110: BUTYRIC ACID (MG/L)



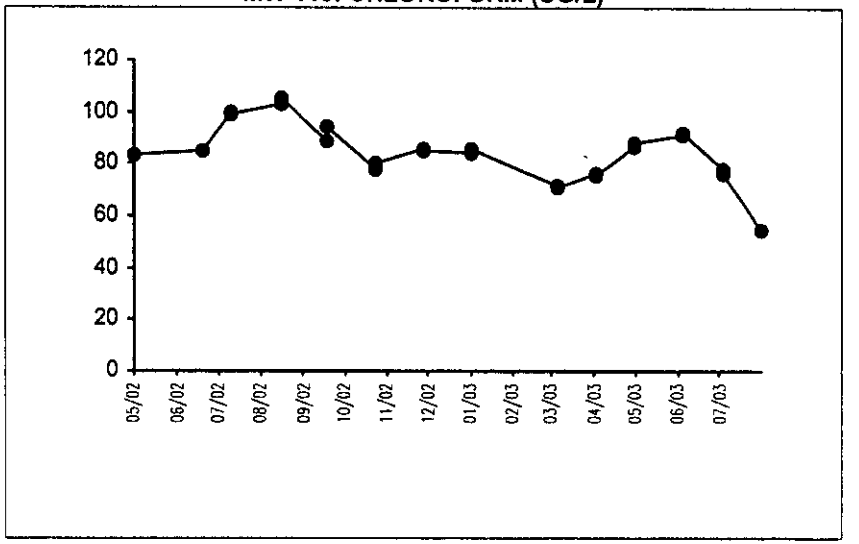
MW-110: CARBON TETRACHLORIDE (UG/L)



MW-110: CHLORIDE (AS CL) (MG/L)



MW-110: CHLOROFORM (UG/L)



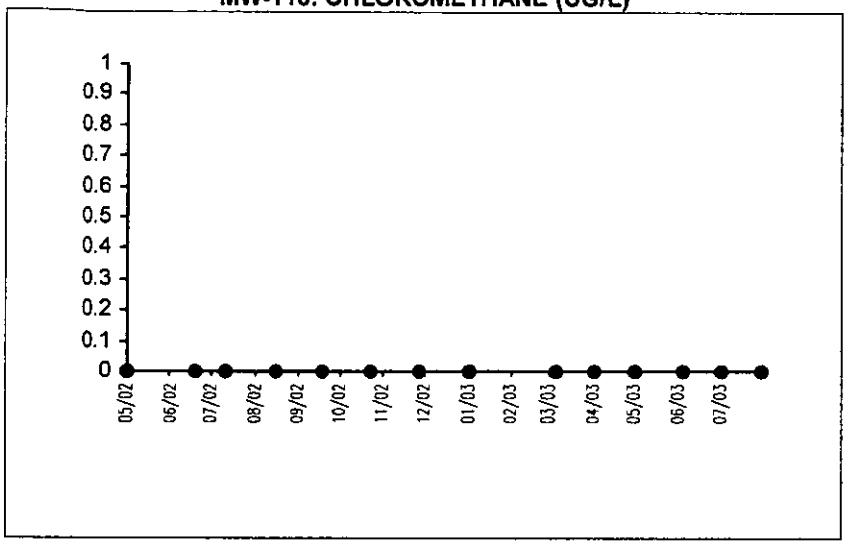
* N[redacted]cts shown as 0.

Location Purpose : Remediation

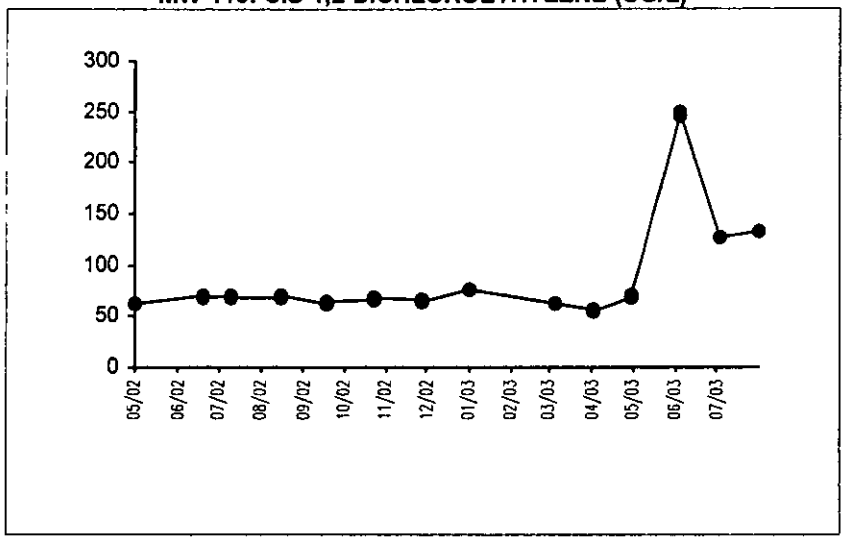
Remediation MW-110

Concentration vs Time

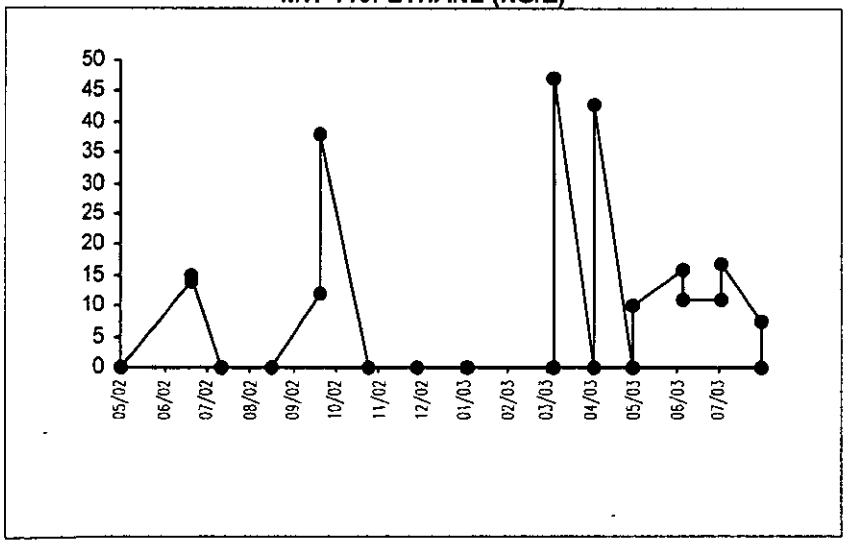
MW-110: CHLOROMETHANE (UG/L)



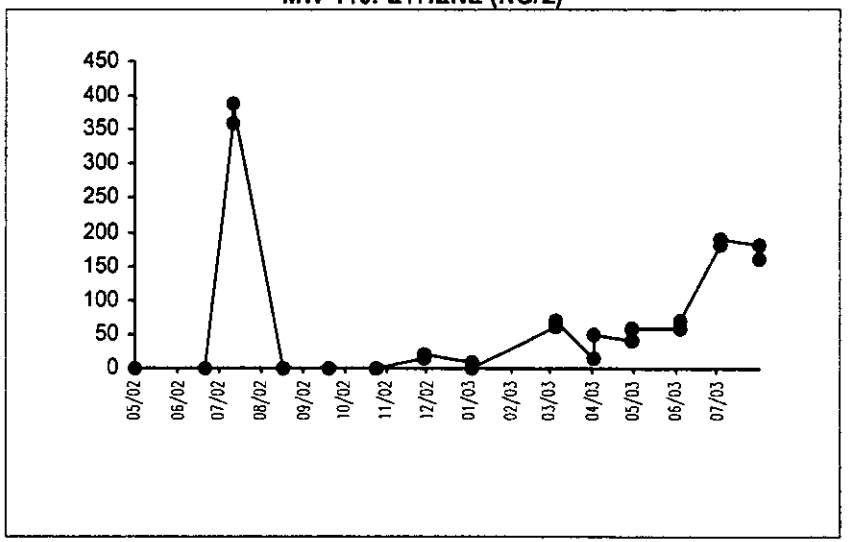
MW-110: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-110: ETHANE (NG/L)



MW-110: ETHENE (NG/L)



* Nondetects shown as 0.

7941014

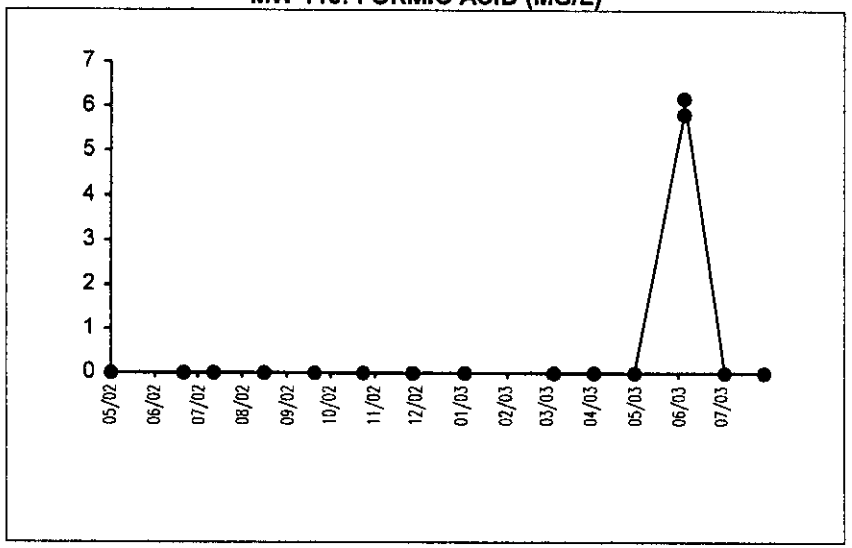
Location Purpose : Remediation

Remediation MW-110

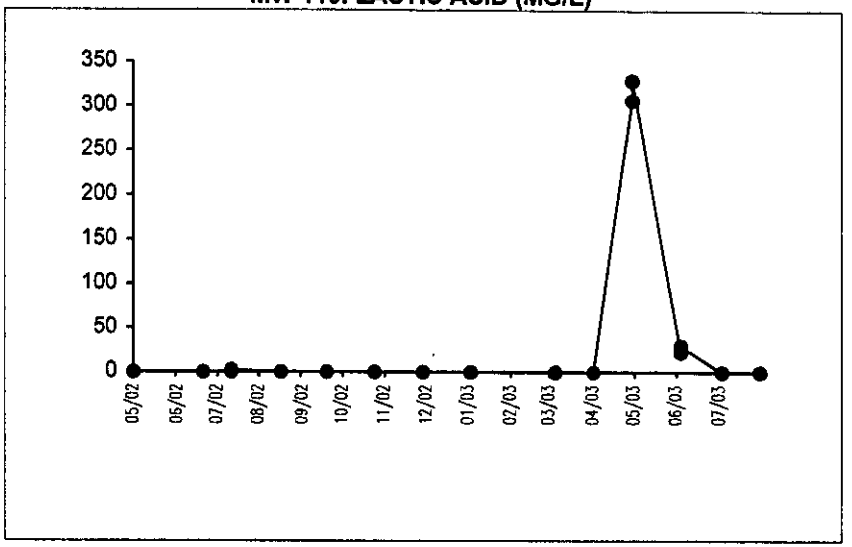
Concentration vs Time

7941015

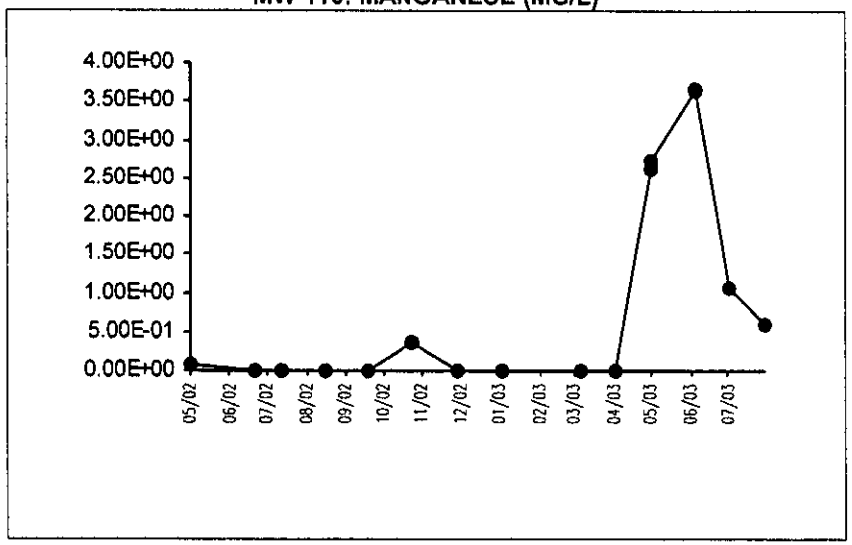
MW-110: FORMIC ACID (MG/L)



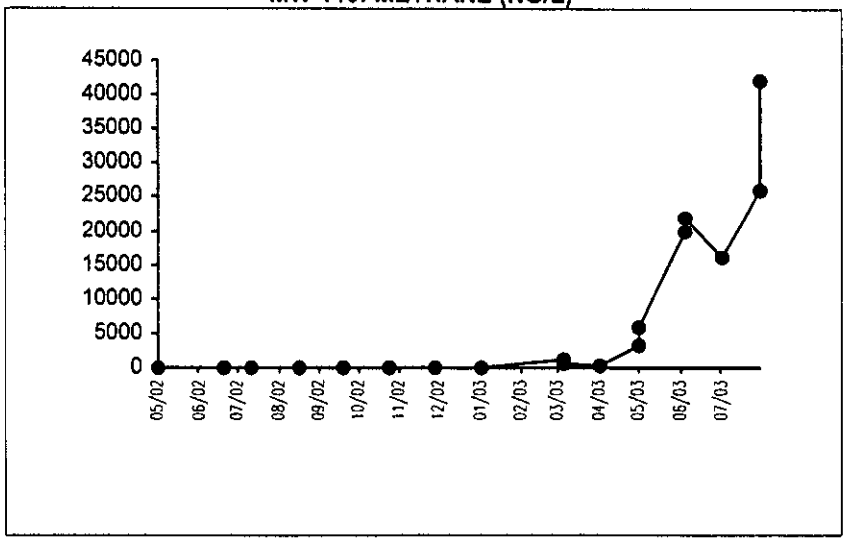
MW-110: LACTIC ACID (MG/L)



MW-110: MANGANESE (MG/L)



MW-110: METHANE (NG/L)



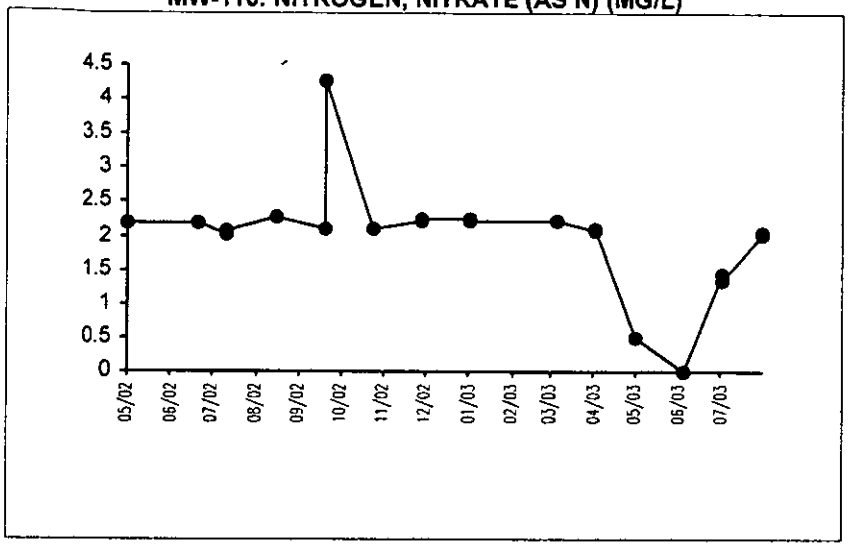
* N[redacted]cts shown as 0.

Location Purpose : Remediation

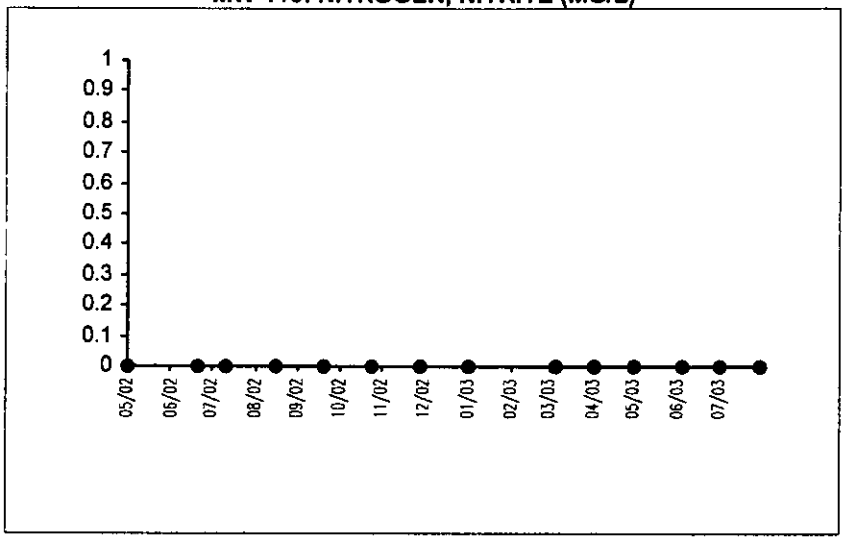
Remediation MW-110

Concentration vs Time

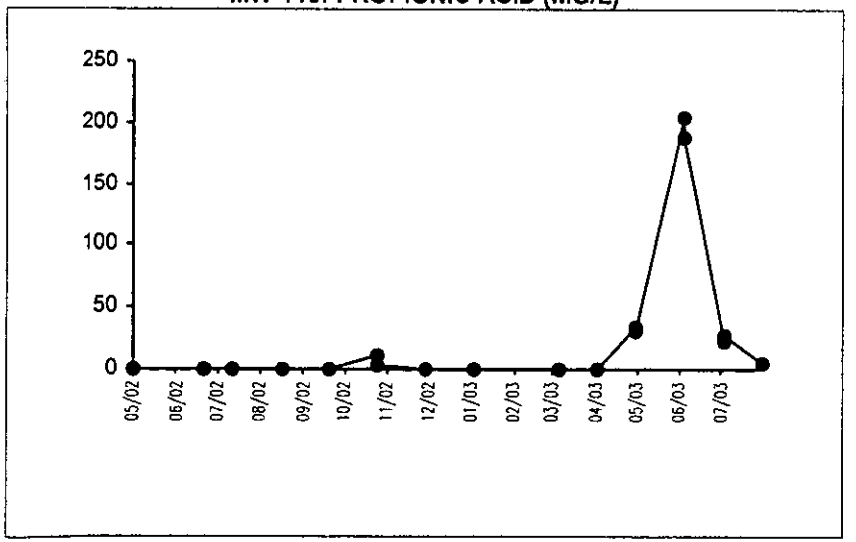
MW-110: NITROGEN, NITRATE (AS N) (MG/L)



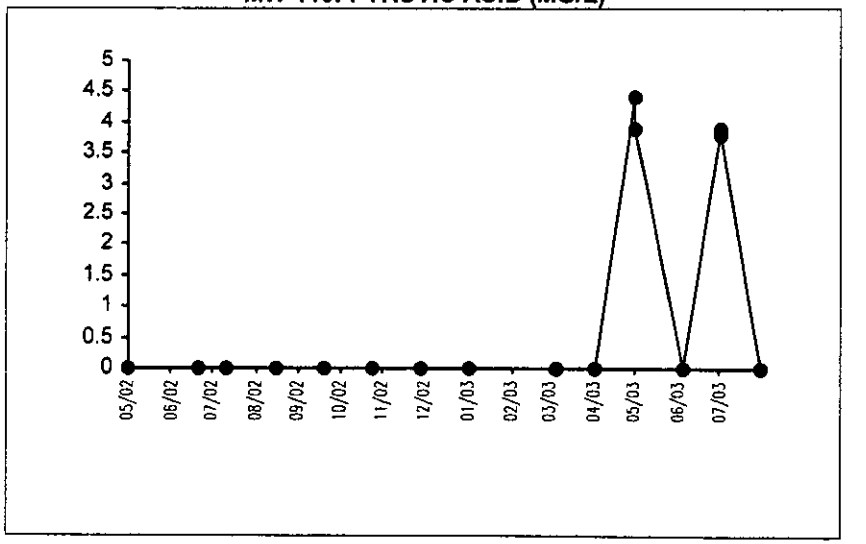
MW-110: NITROGEN, NITRITE (MG/L)



MW-110: PROPIONIC ACID (MG/L)



MW-110: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

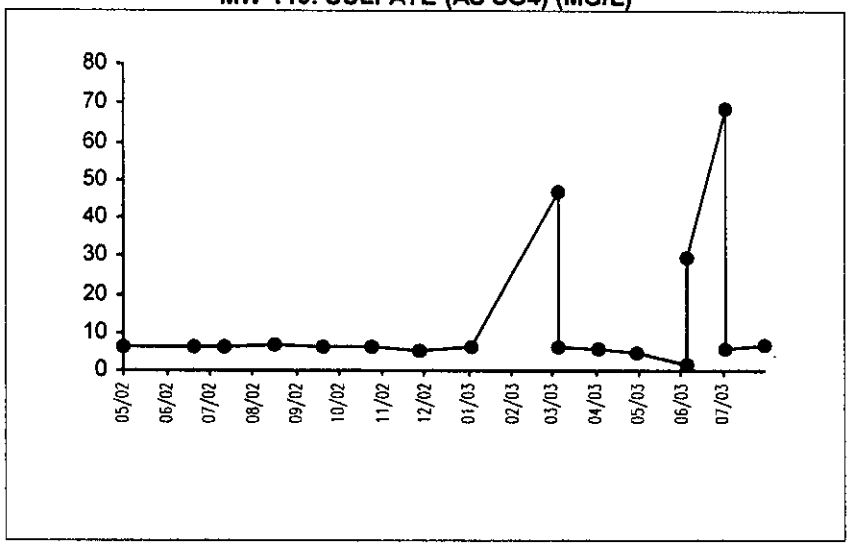
7941016

Location Purpose : Remediation

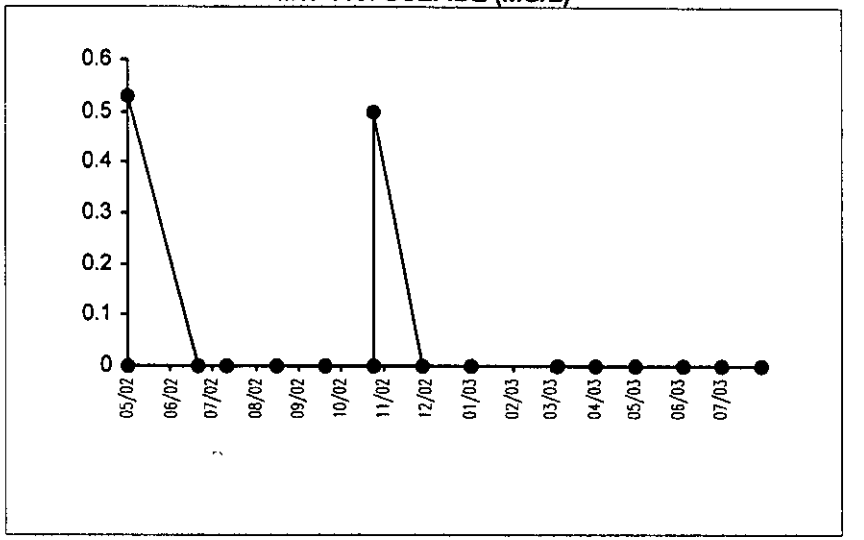
Remediation MW-110

Concentration vs Time

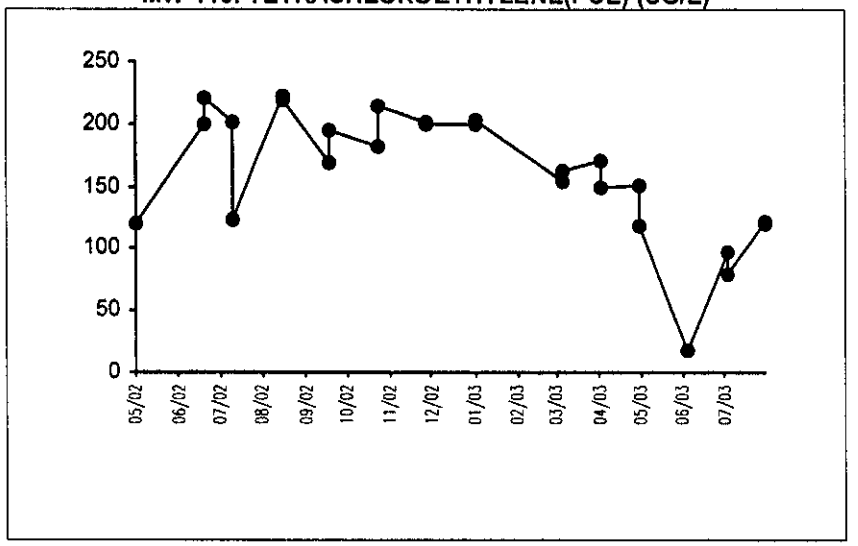
MW-110: SULFATE (AS SO4) (MG/L)



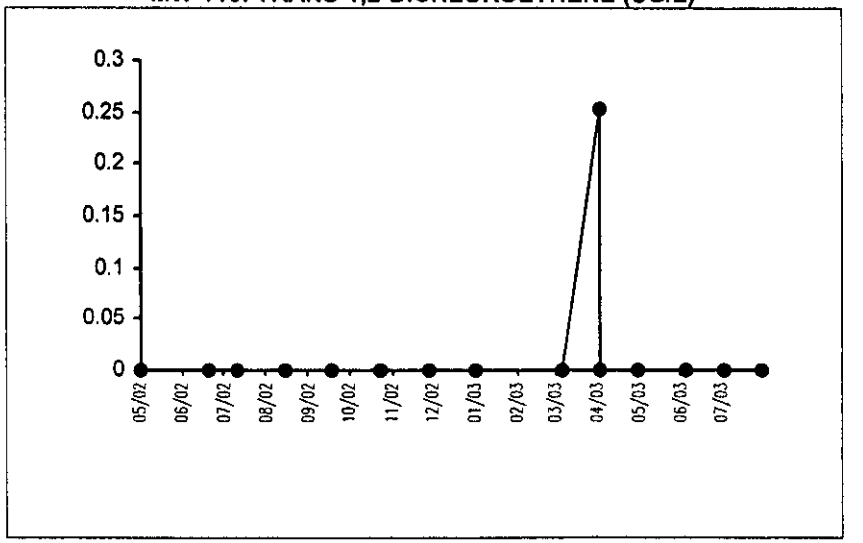
MW-110: SULFIDE (MG/L)



MW-110: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-110: TRANS-1,2-DICHLOROETHENE (UG/L)



* No[redacted]cts shown as 0.

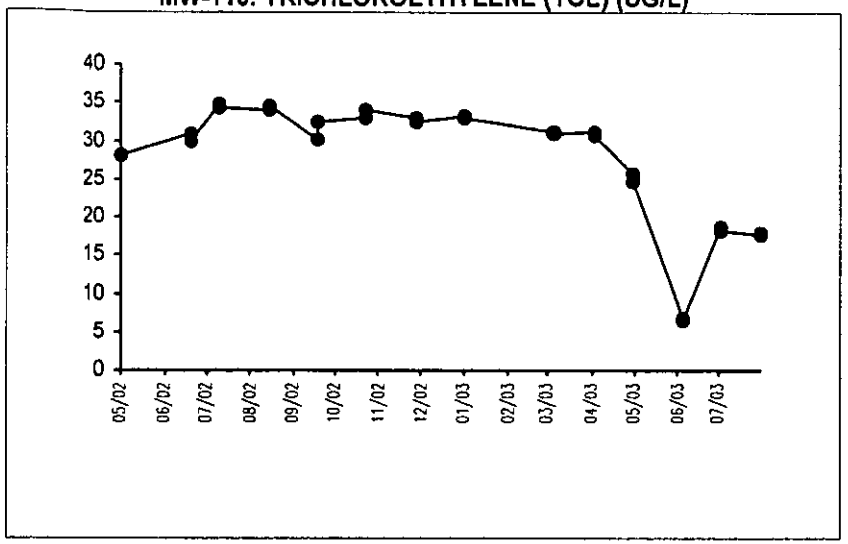
7941017

Location Purpose : Remediation

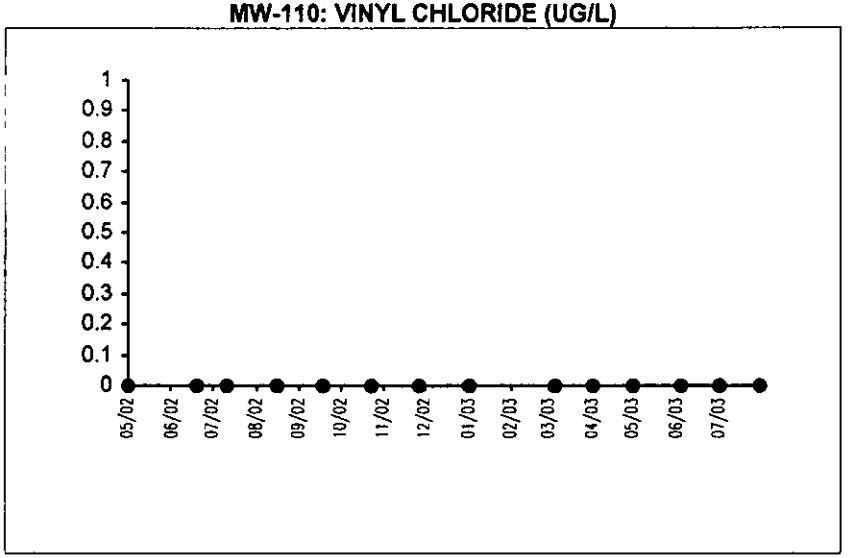
Remediation MW-110

Concentration vs Time

MW-110: TRICHLOROETHYLENE (TCE) (UG/L)



MW-110: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

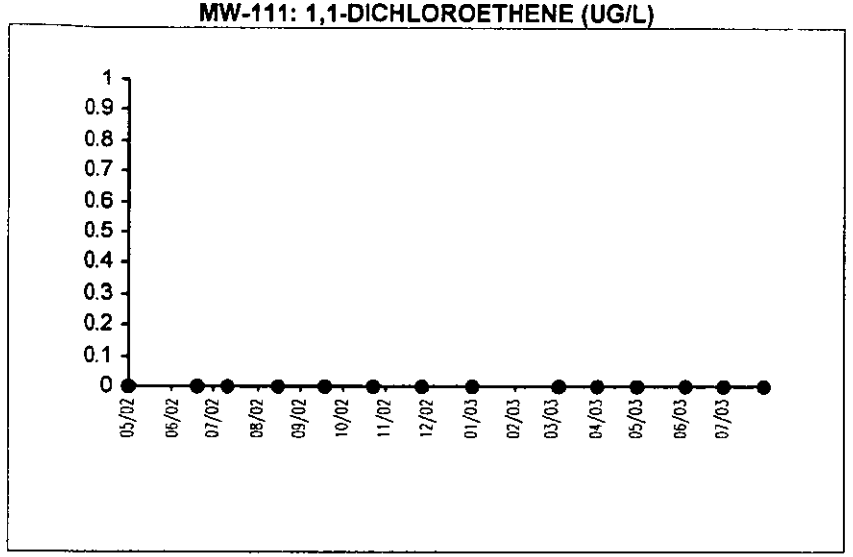
7941018

Location Purpose : Remediation

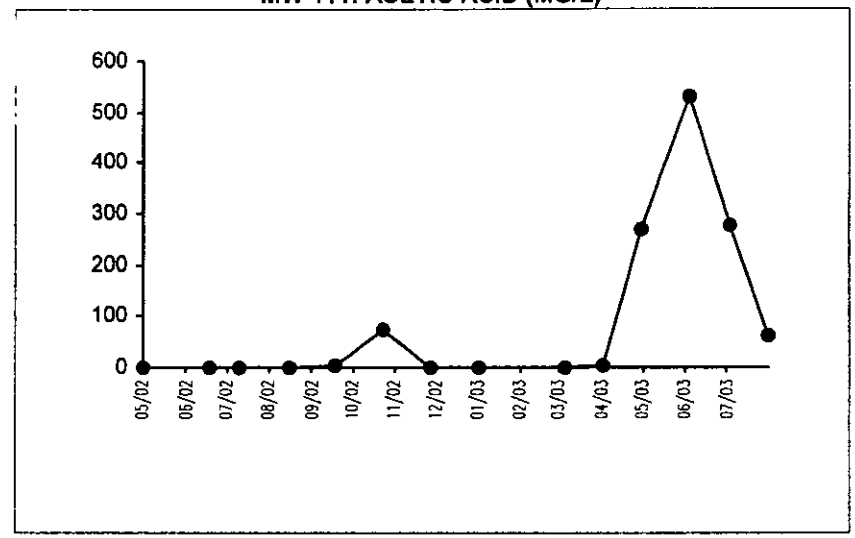
Remediation MW-111

Concentration vs Time

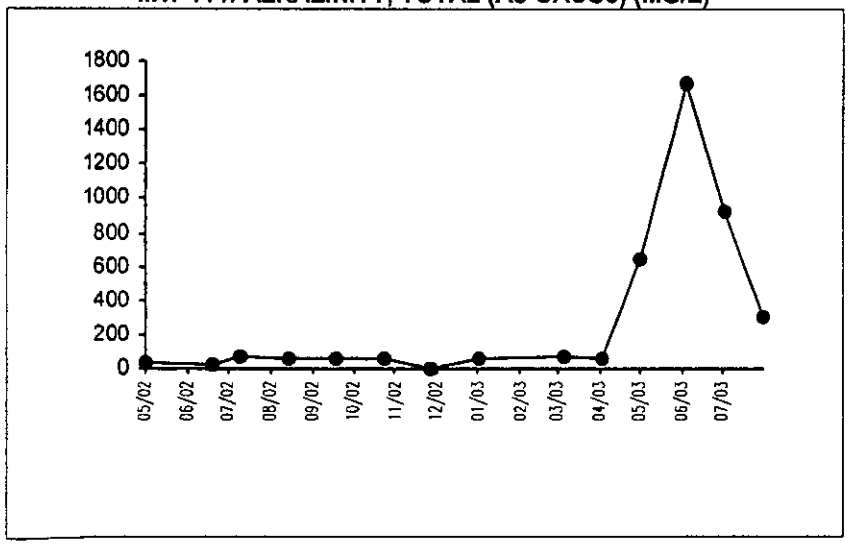
MW-111: 1,1-DICHLOROETHENE (UG/L)



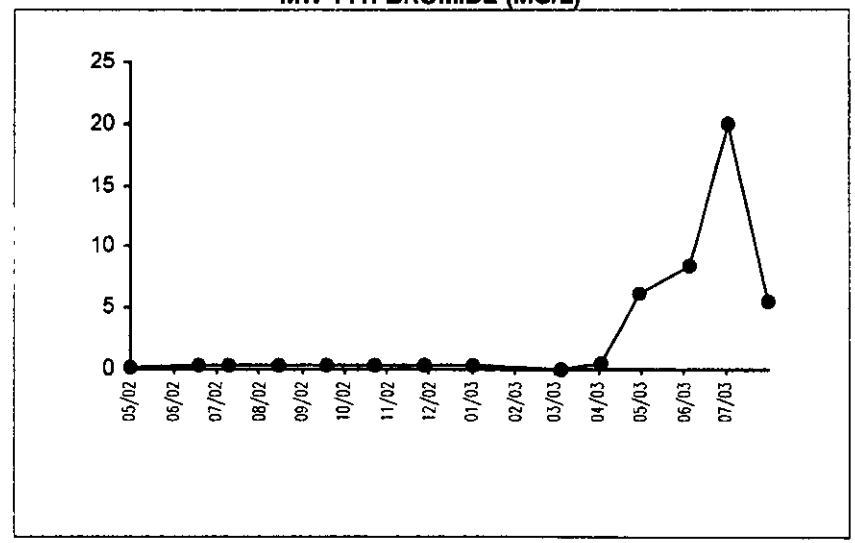
MW-111: ACETIC ACID (MG/L)



MW-111: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-111: BROMIDE (MG/L)



* Nondetects shown as 0.

7941019

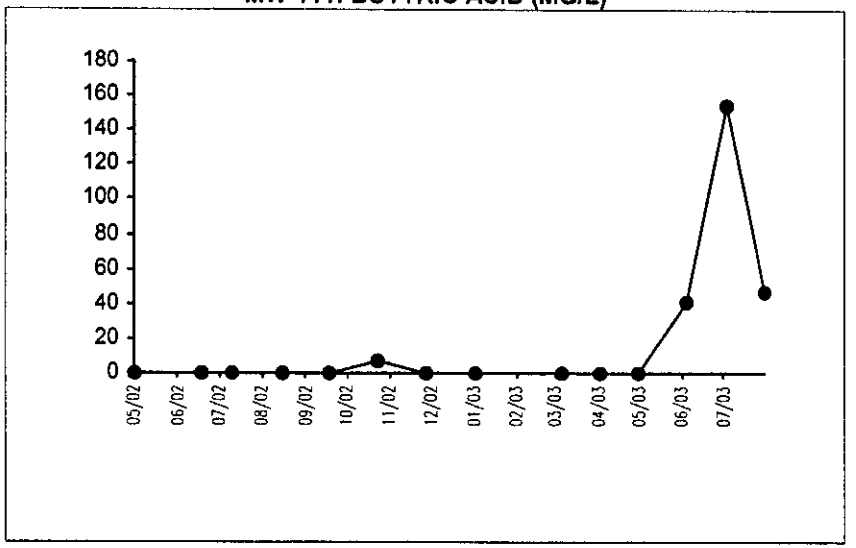
Location Purpose : Remediation

Remediation MW-111

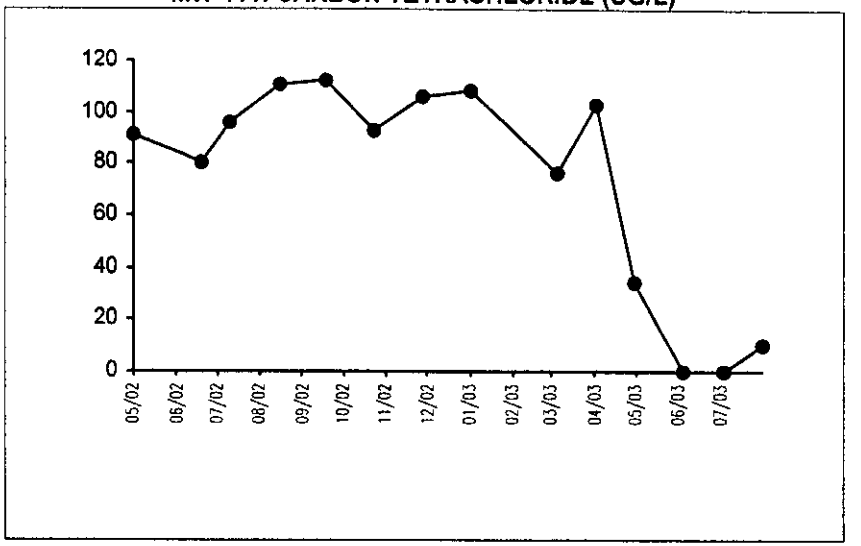
Concentration vs Time

7941020

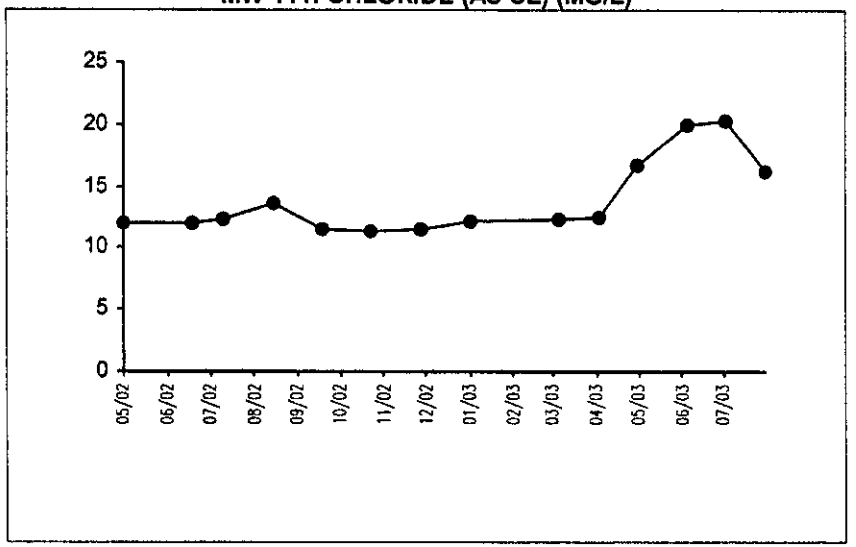
MW-111: BUTYRIC ACID (MG/L)



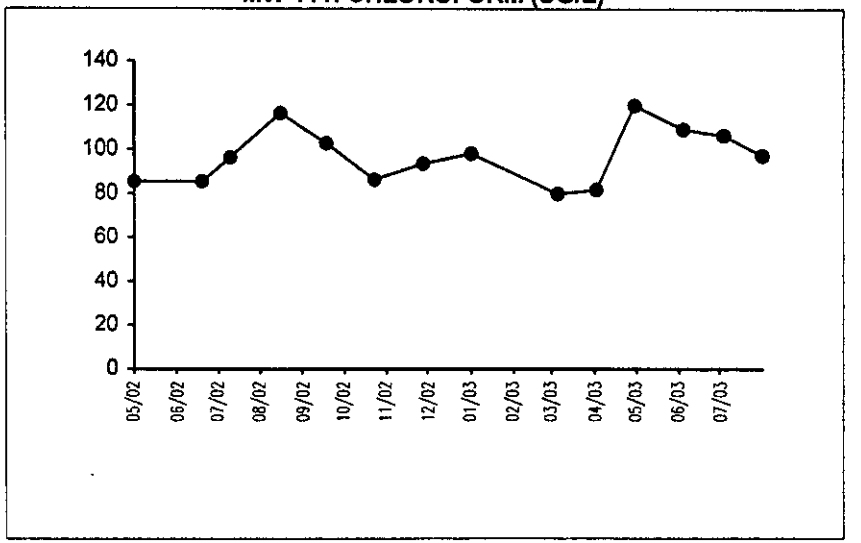
MW-111: CARBON TETRACHLORIDE (UG/L)



MW-111: CHLORIDE (AS CL) (MG/L)



MW-111: CHLOROFORM (UG/L)



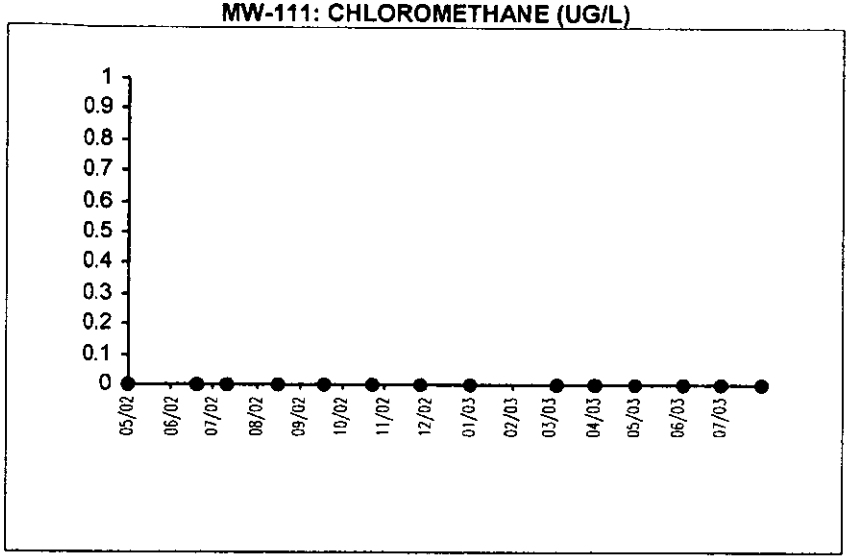
* No[redacted]cts shown as 0.

Location Purpose : Remediation

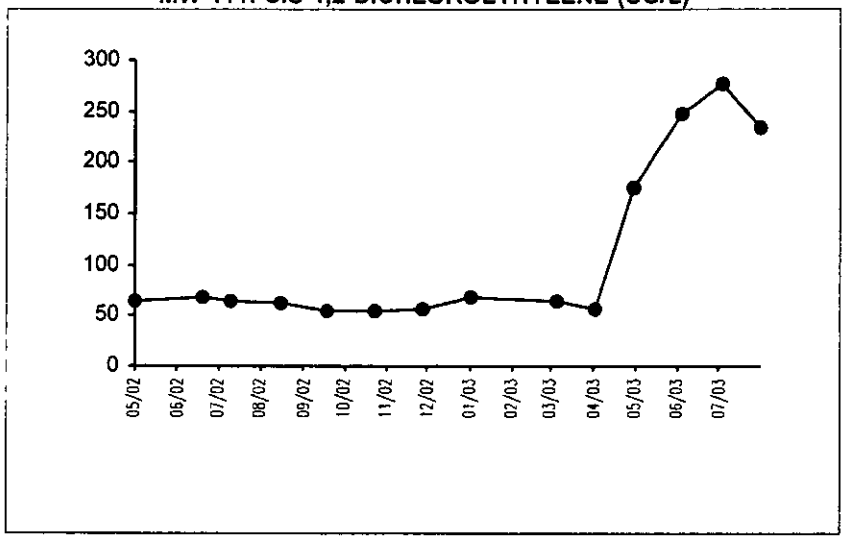
Remediation MW-111

Concentration vs Time

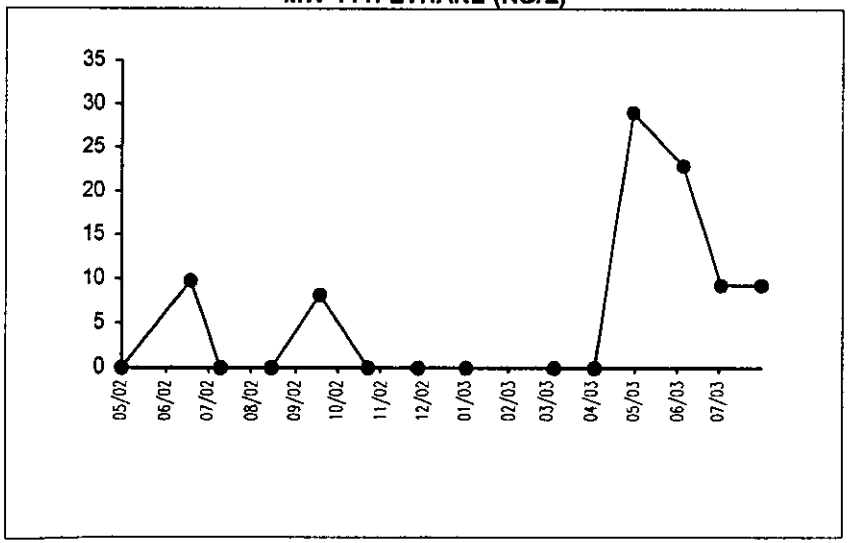
MW-111: CHLOROMETHANE (UG/L)



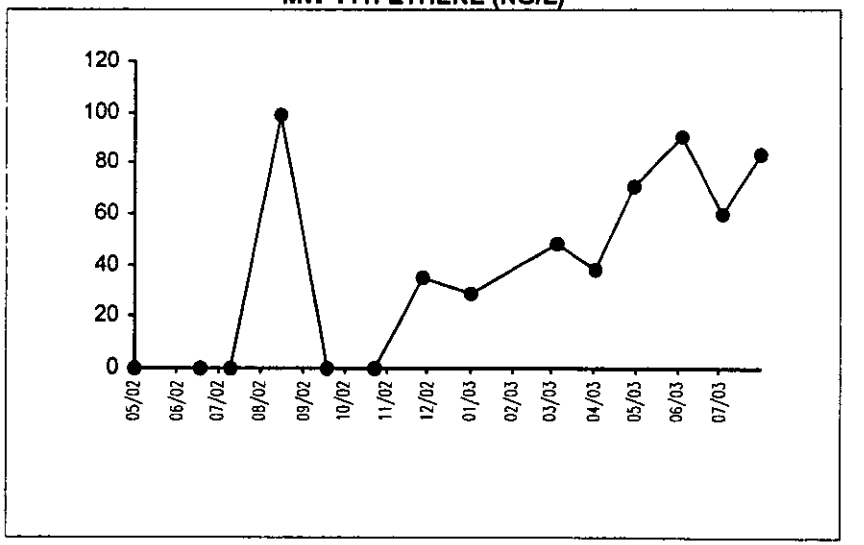
MW-111: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-111: ETHANE (NG/L)



MW-111: ETHENE (NG/L)



* Nondetects shown as 0.

7941021

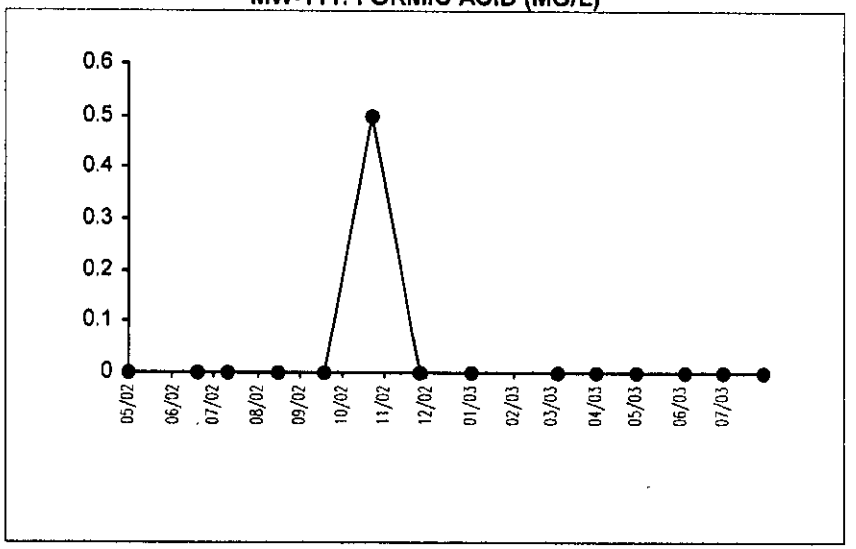
Location Purpose : Remediation

Remediation MW-111

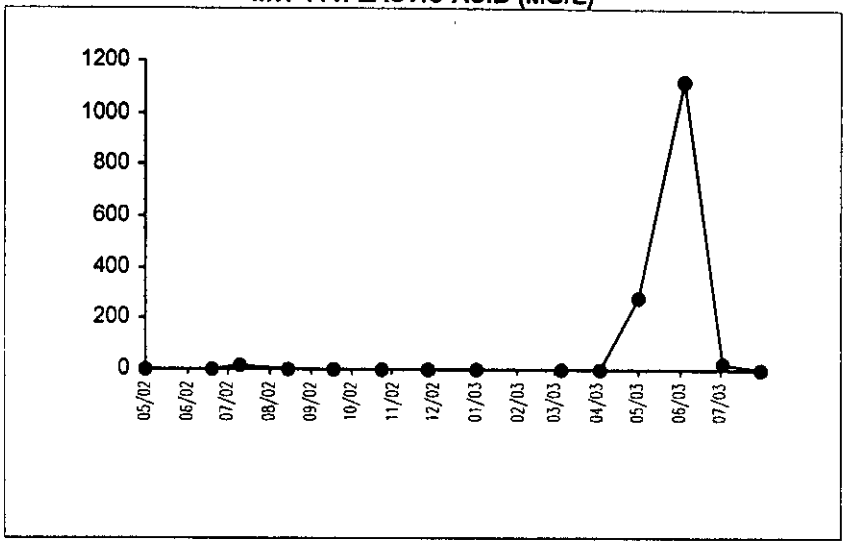
Concentration vs Time

7941022

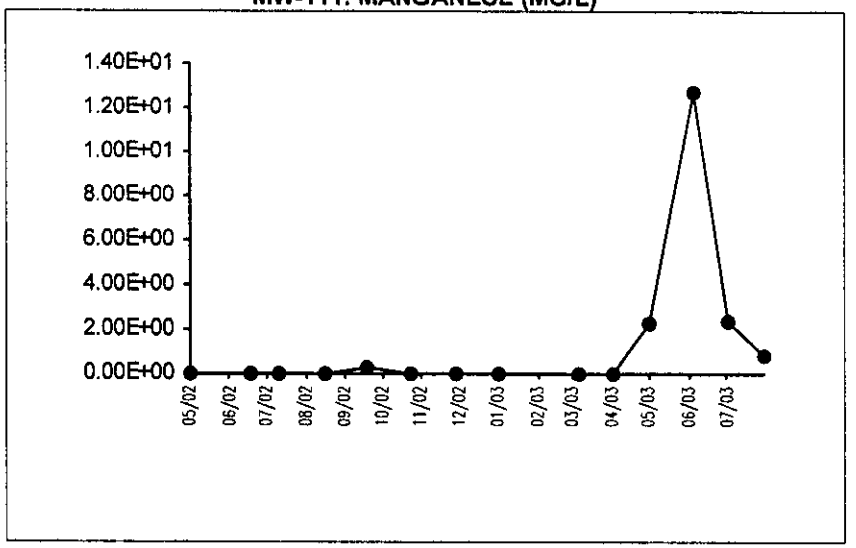
MW-111: FORMIC ACID (MG/L)



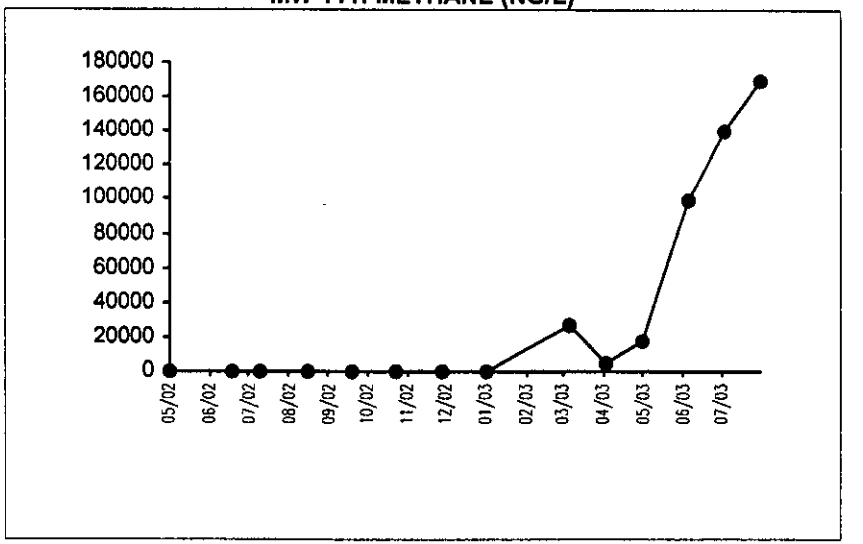
MW-111: LACTIC ACID (MG/L)



MW-111: MANGANESE (MG/L)



MW-111: METHANE (NG/L)



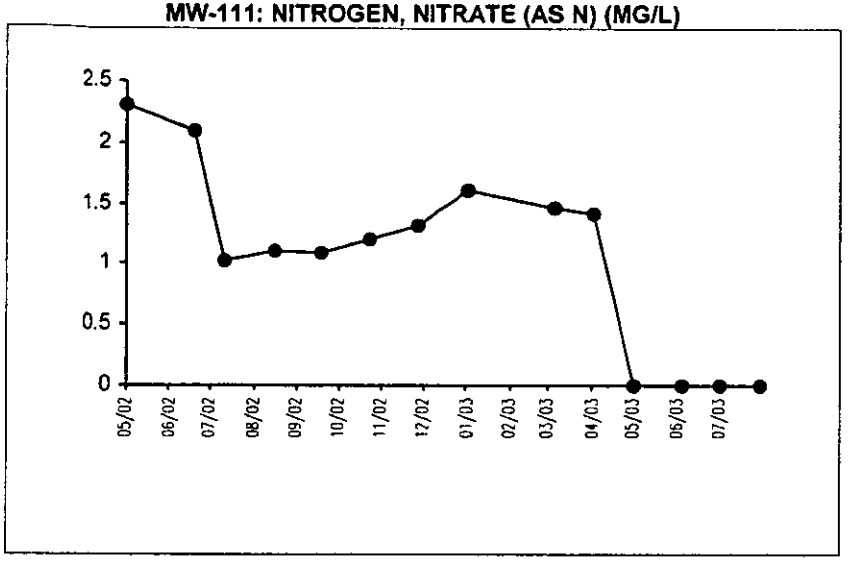
* N[redacted]cts shown as 0.

Location Purpose : Remediation

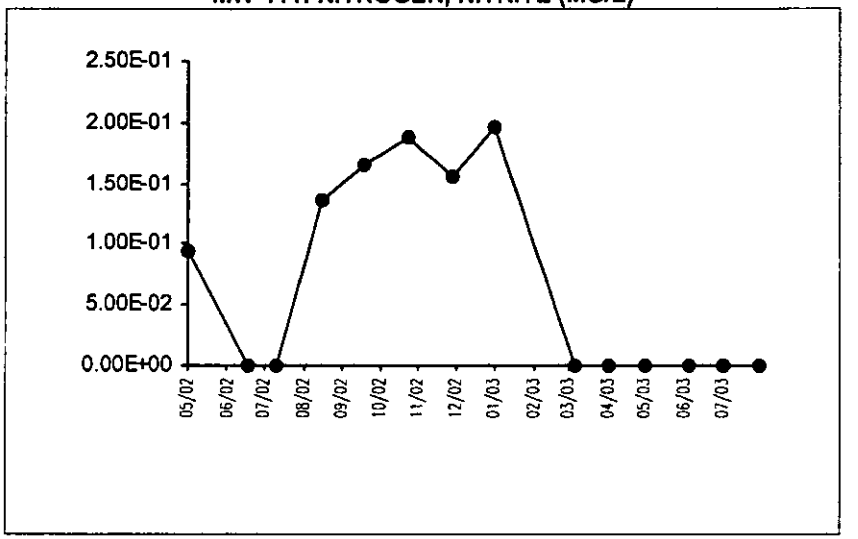
Remediation MW-111

Concentration vs Time

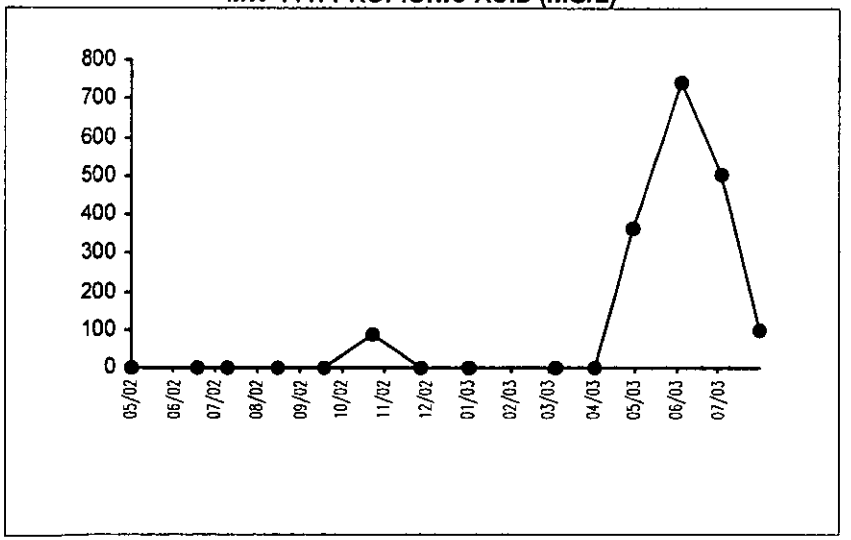
MW-111: NITROGEN, NITRATE (AS N) (MG/L)



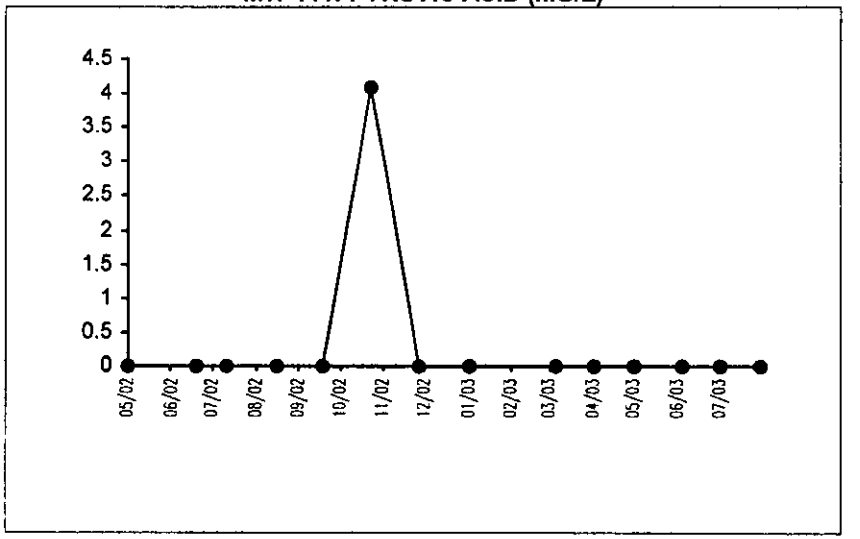
MW-111: NITROGEN, NITRITE (MG/L)



MW-111: PROPIONIC ACID (MG/L)



MW-111: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

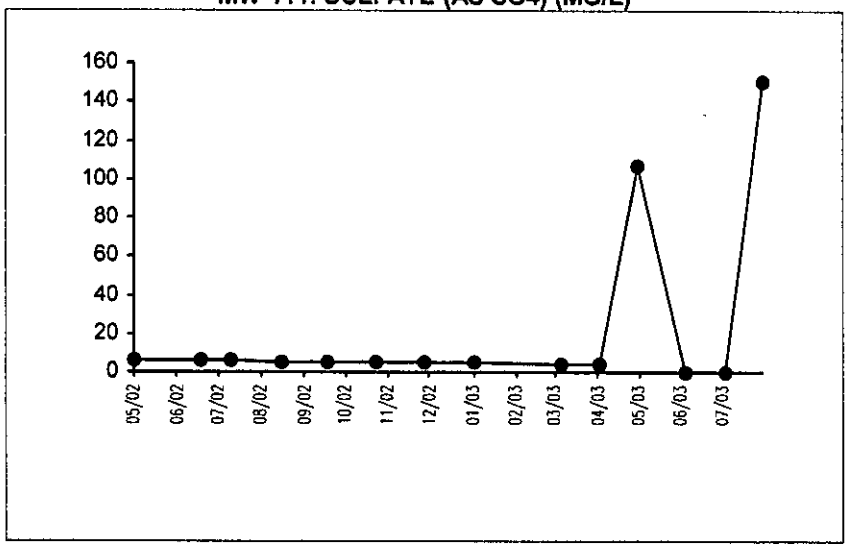
7941023

Location Purpose : Remediation

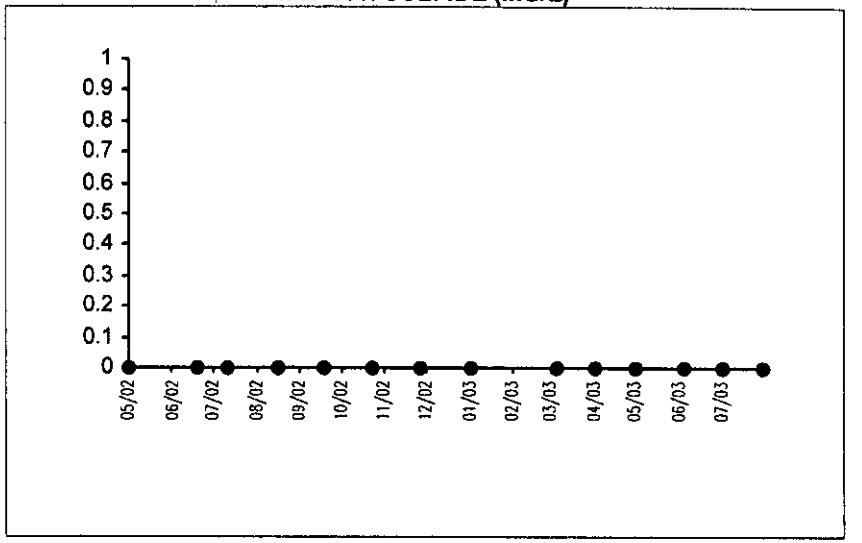
Remediation MW-111

Concentration vs Time

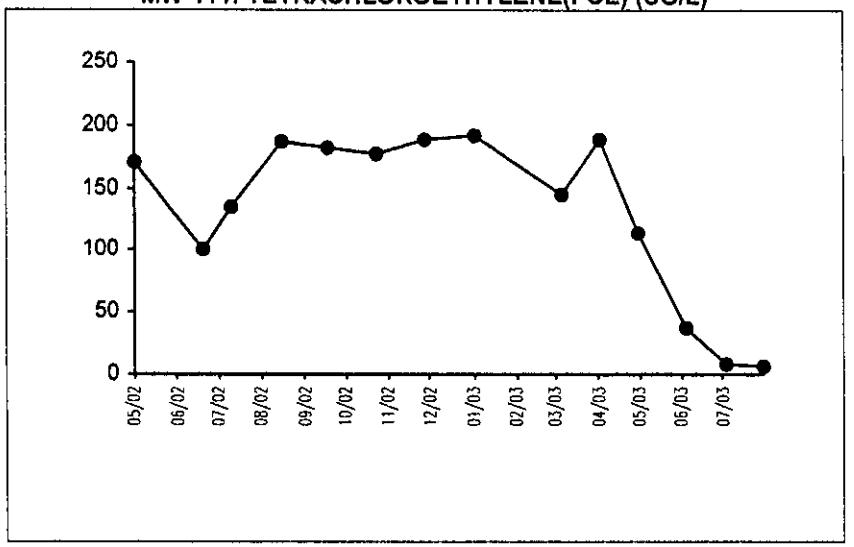
MW-111: SULFATE (AS SO4) (MG/L)



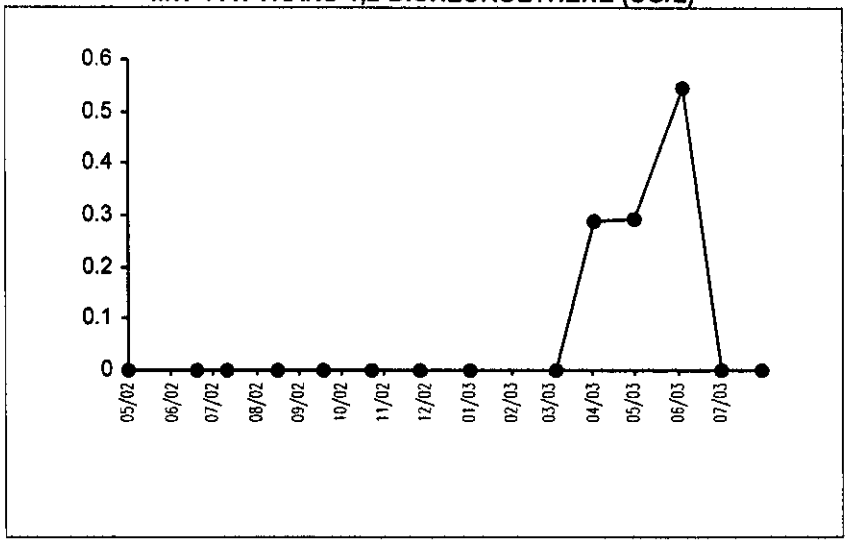
MW-111: SULFIDE (MG/L)



MW-111: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-111: TRANS-1,2-DICHLOROETHENE (UG/L)



7941024

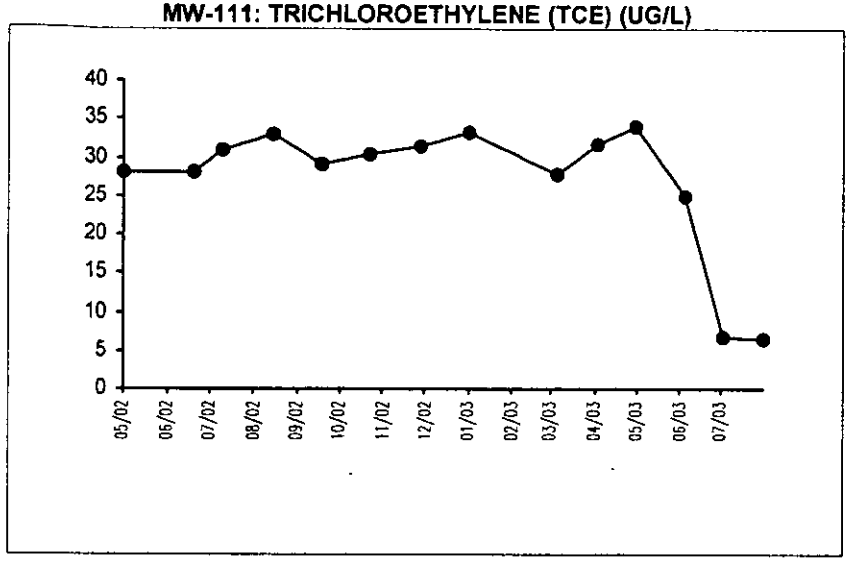
* N[redacted]cts shown as 0.

Location Purpose : Remediation

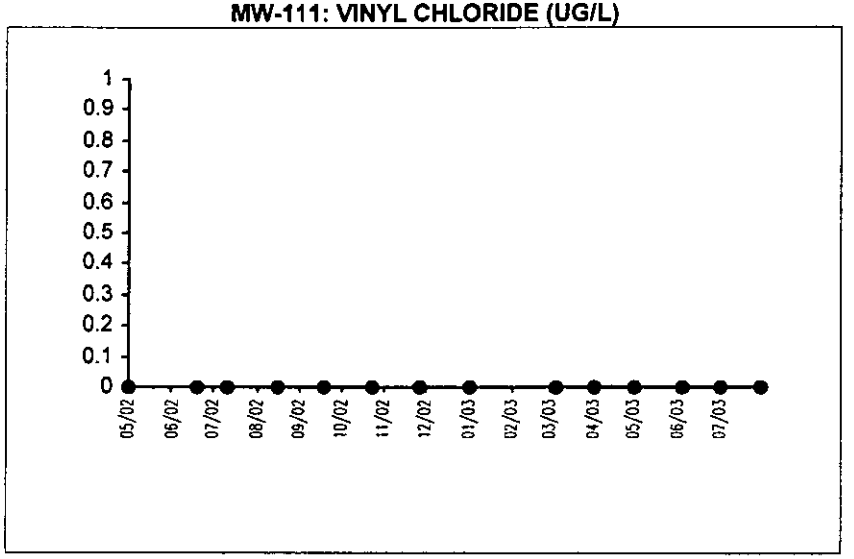
Remediation MW-111

Concentration vs Time

MW-111: TRICHLOROETHYLENE (TCE) (UG/L)



MW-111: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

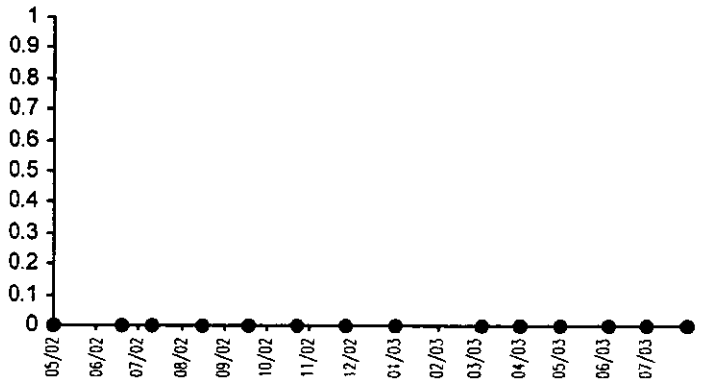
7941025

Location Purpose : Remediation

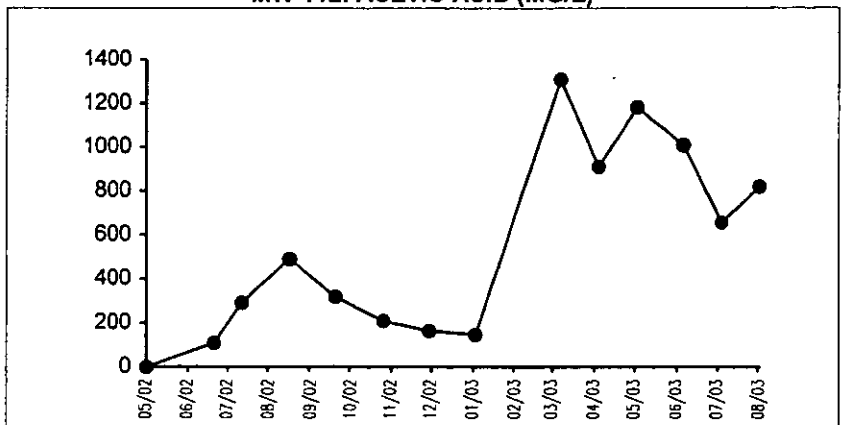
Remediation MW-112

Concentration vs Time

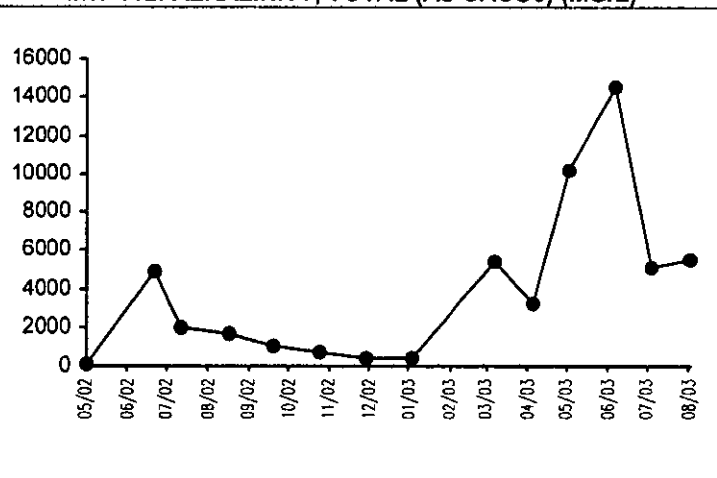
MW-112: 1,1-DICHLOROETHENE (UG/L)



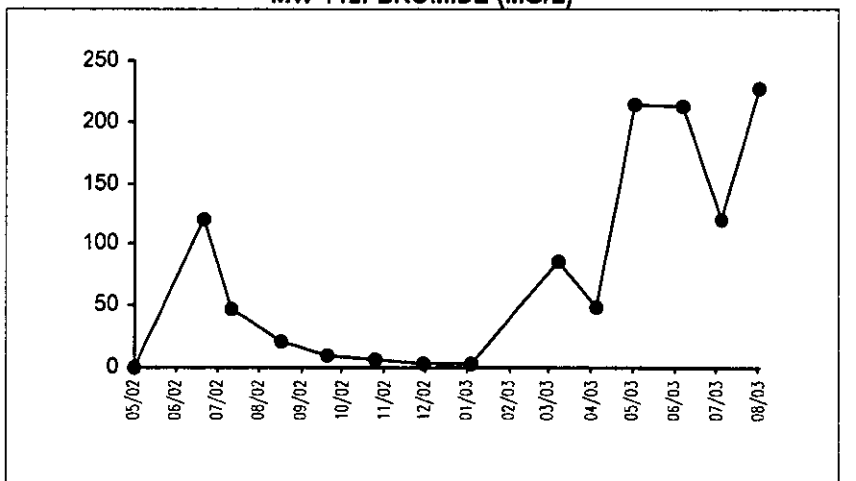
MW-112: ACETIC ACID (MG/L)



MW-112: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-112: BROMIDE (MG/L)



* Nondetects shown as 0.

7941026

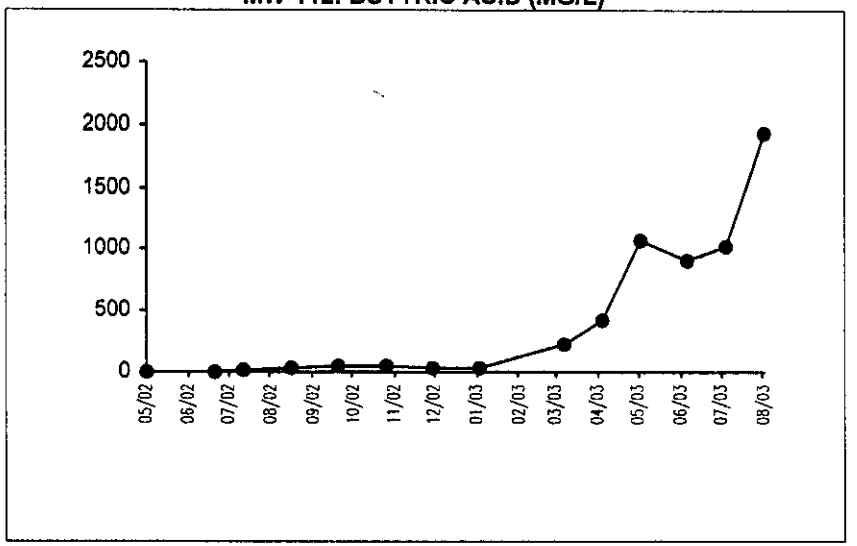
Location Purpose : Remediation

Remediation MW-112

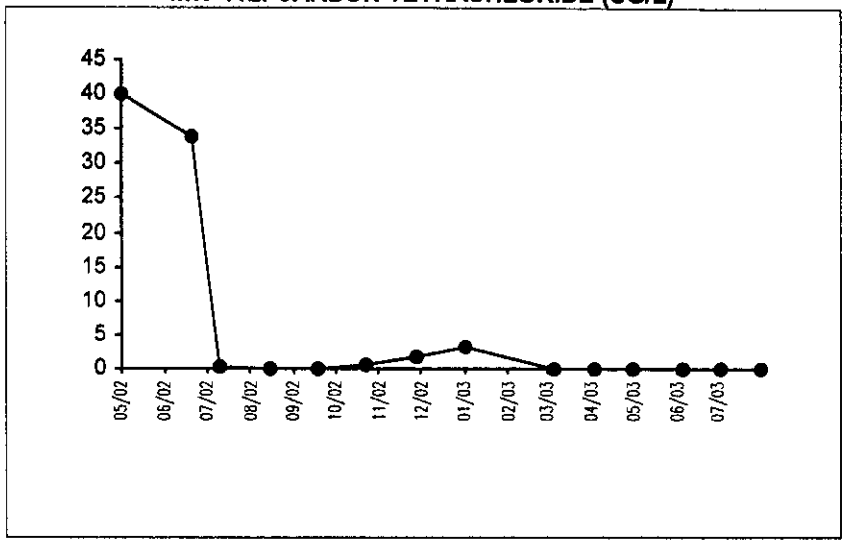
Concentration vs Time

7941027

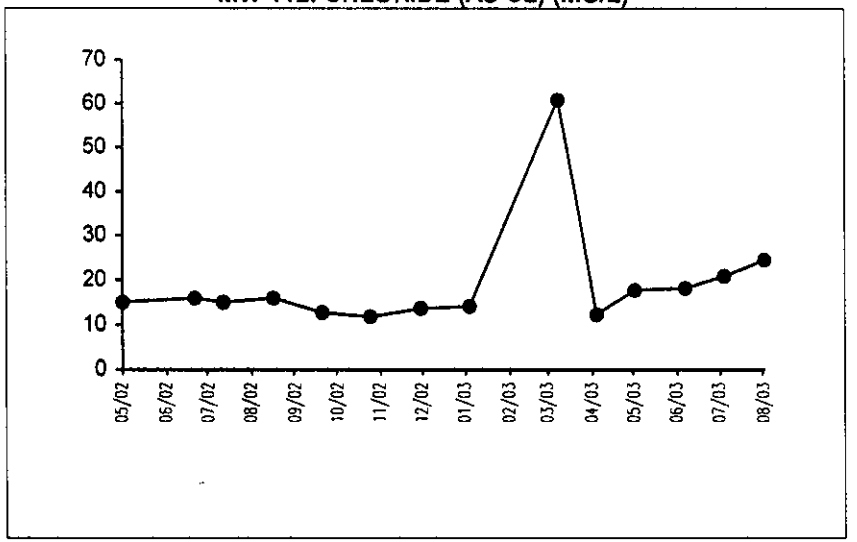
MW-112: BUTYRIC ACID (MG/L)



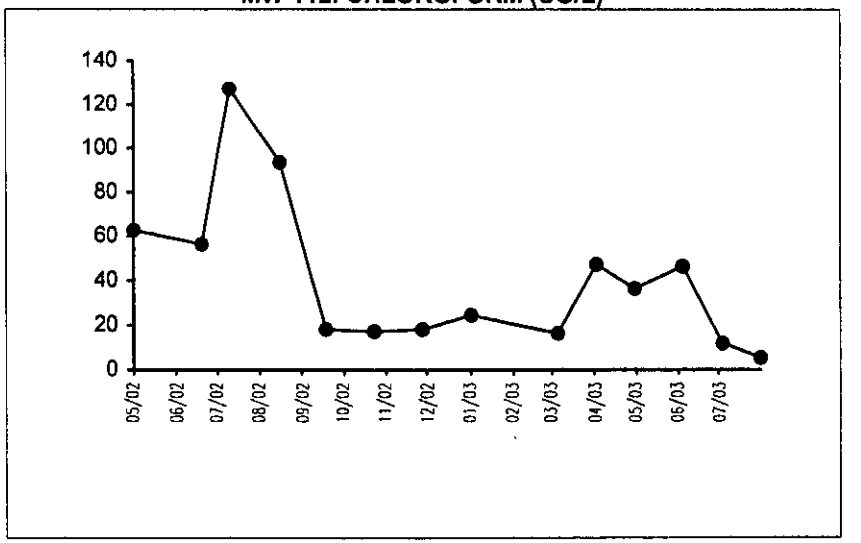
MW-112: CARBON TETRACHLORIDE (UG/L)



MW-112: CHLORIDE (AS CL) (MG/L)



MW-112: CHLOROFORM (UG/L)



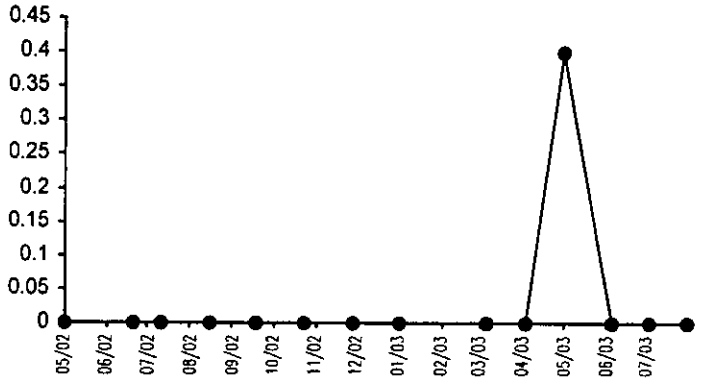
* N[redacted]cts shown as 0.

Location Purpose : Remediation

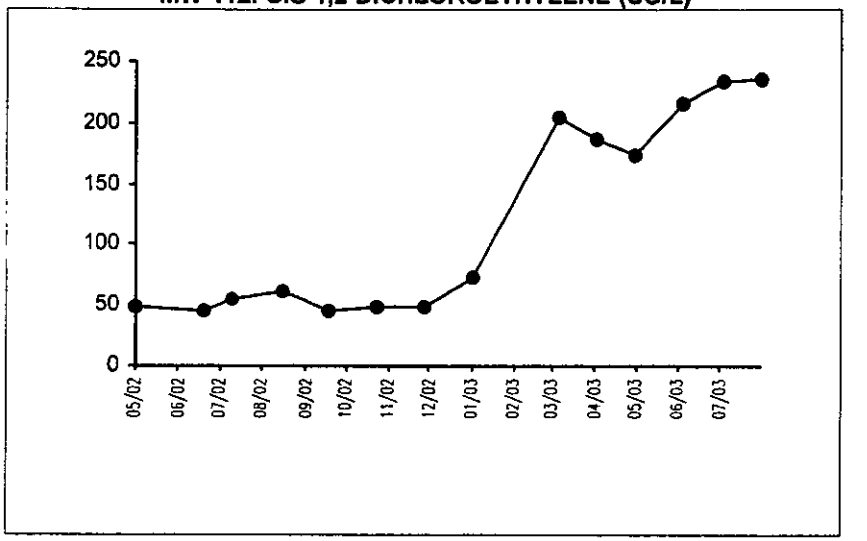
Remediation MW-112

Concentration vs Time

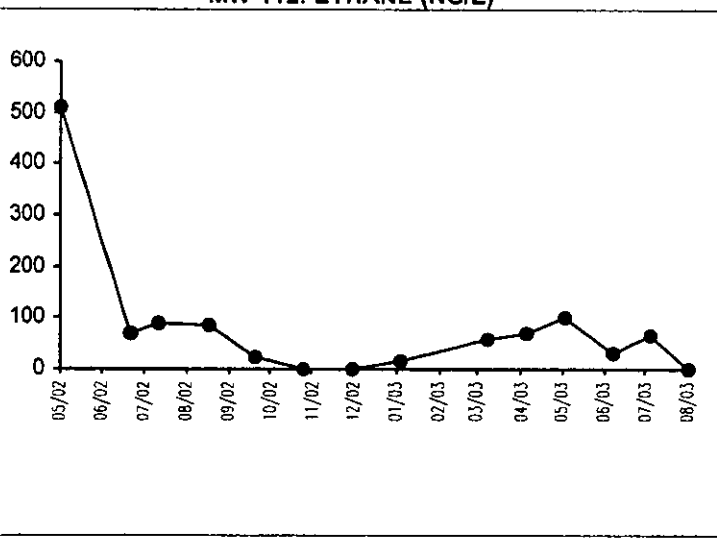
MW-112: CHLOROMETHANE (UG/L)



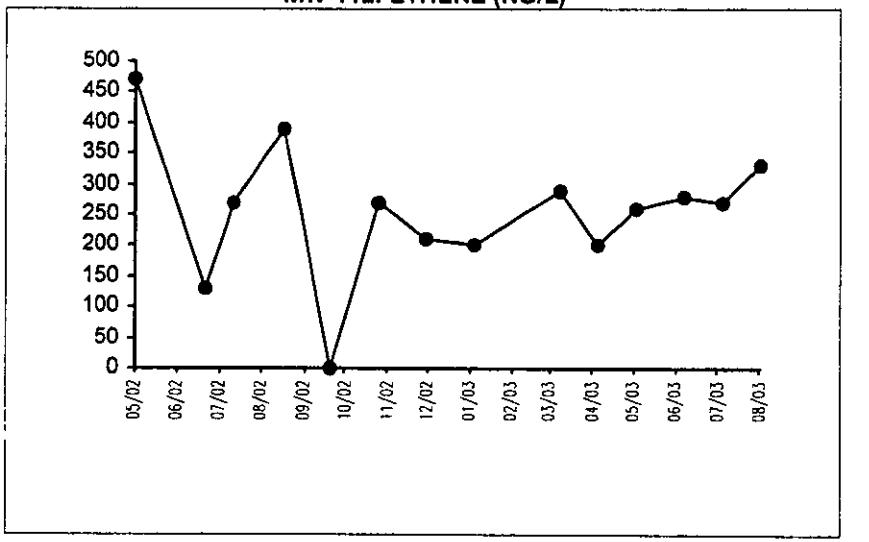
MW-112: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-112: ETHANE (NG/L)



MW-112: ETHENE (NG/L)



* Nondetects shown as 0.

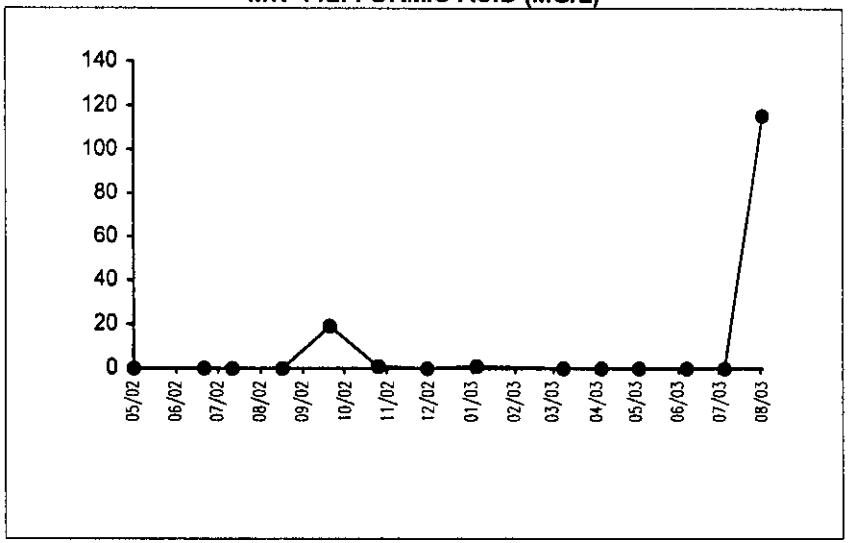
7941028

Location Purpose : Remediation

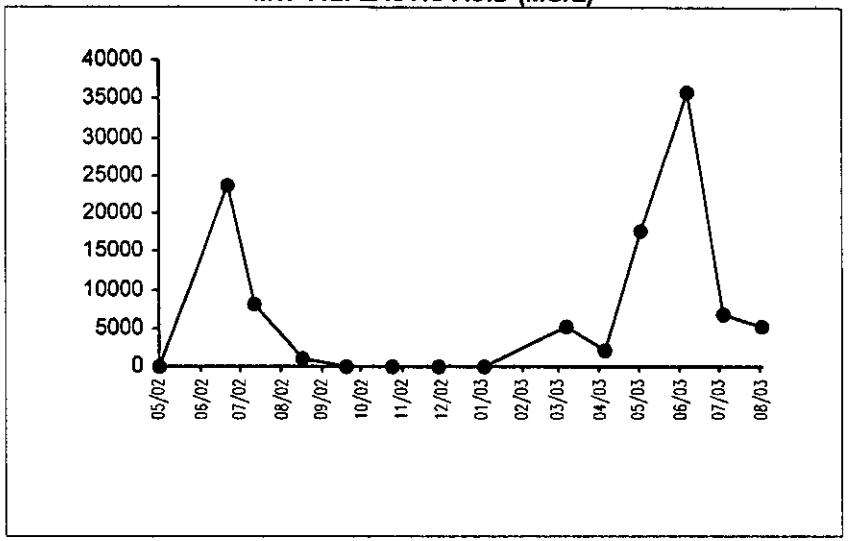
Remediation MW-112

Concentration vs Time

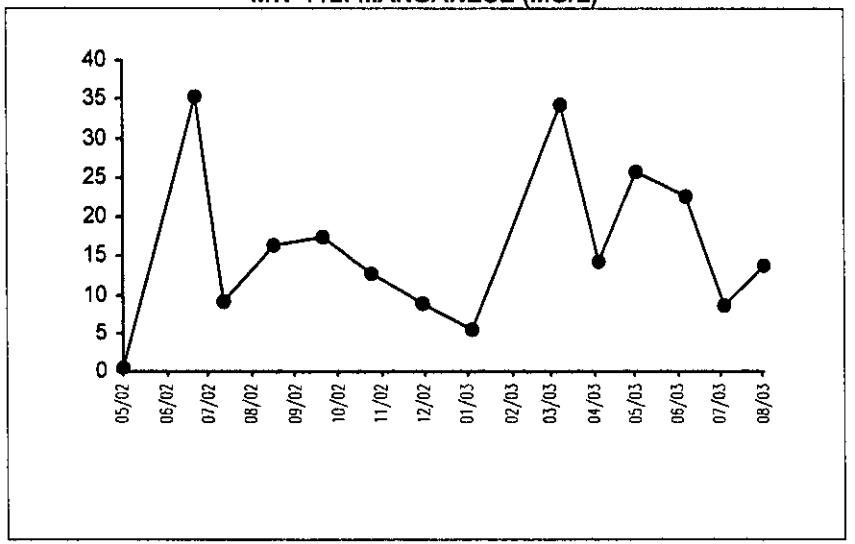
MW-112: FORMIC ACID (MG/L)



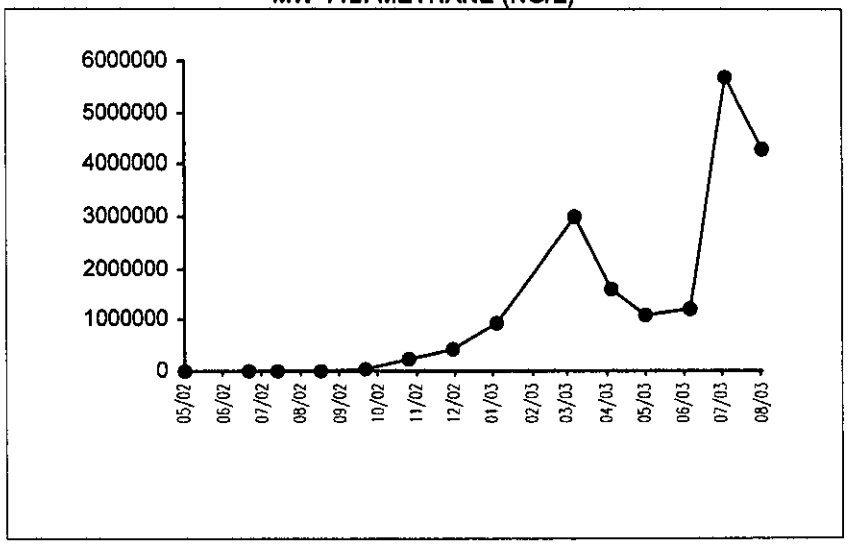
MW-112: LACTIC ACID (MG/L)



MW-112: MANGANESE (MG/L)



MW-112: METHANE (NG/L)



* No[redacted]cts shown as 0.

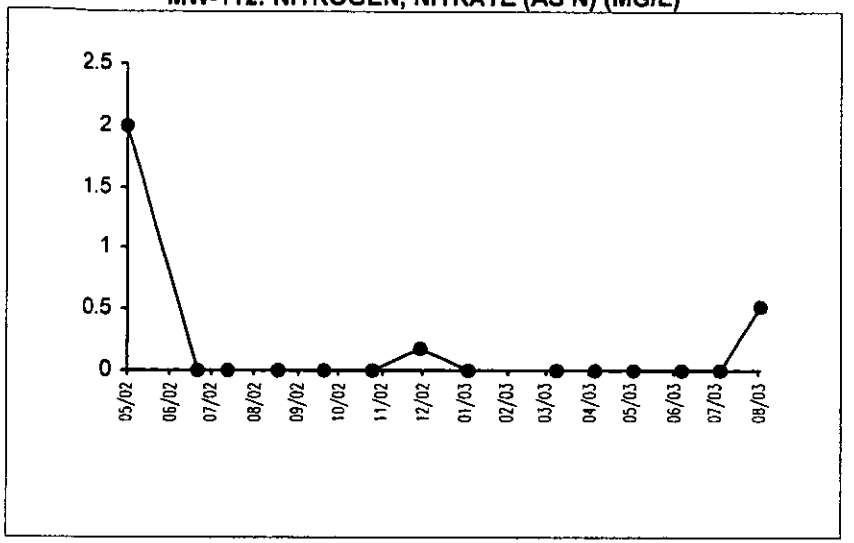
7941029

Location Purpose : Remediation

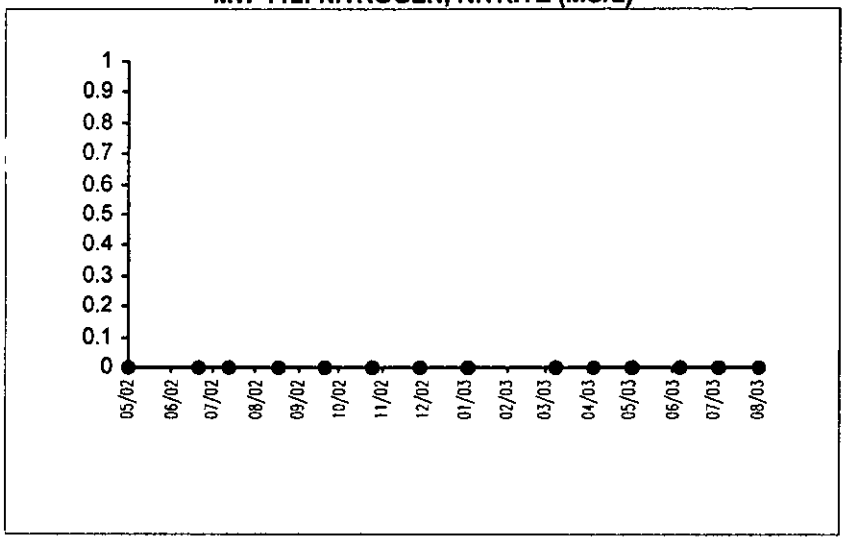
Remediation MW-112

Concentration vs Time

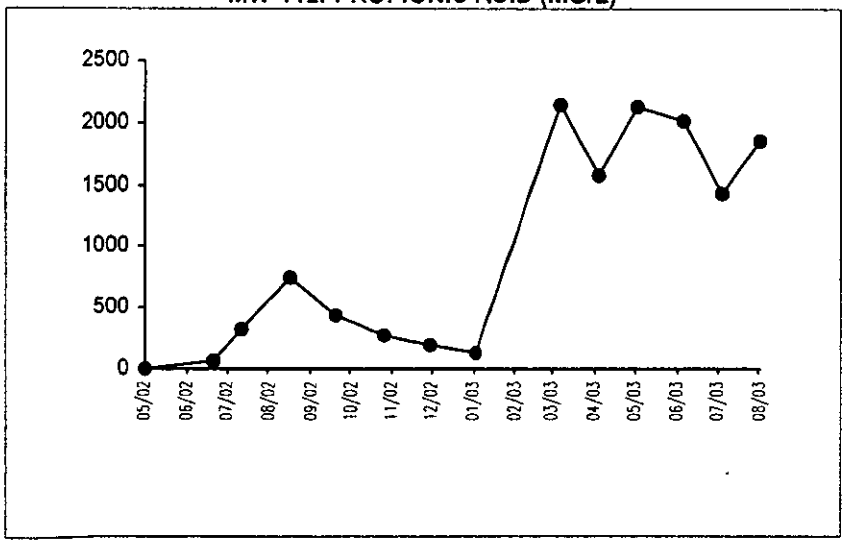
MW-112: NITROGEN, NITRATE (AS N) (MG/L)



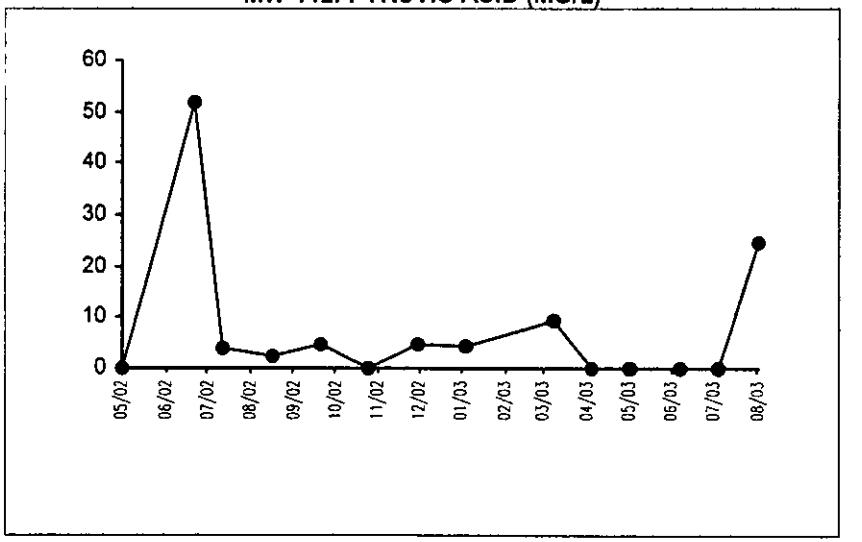
MW-112: NITROGEN, NITRITE (MG/L)



MW-112: PROPIONIC ACID (MG/L)



MW-112: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

7941030

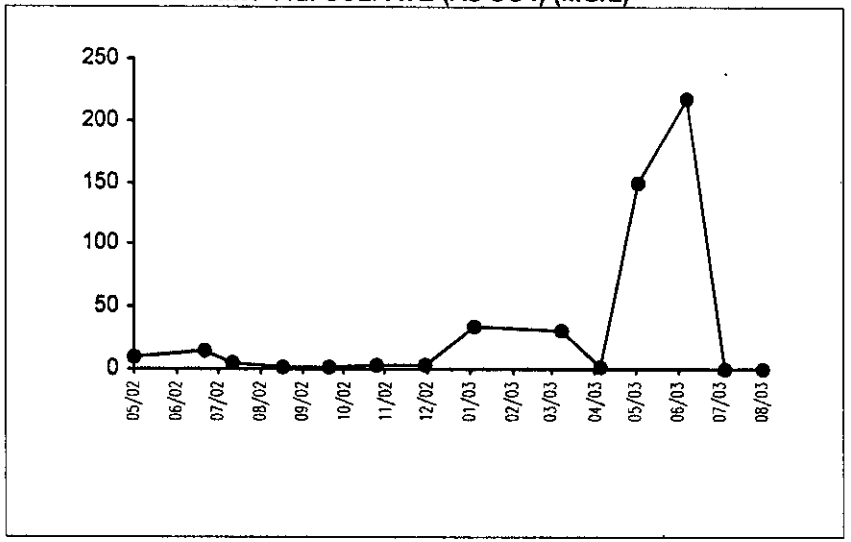
Location Purpose : Remediation

Remediation MW-112

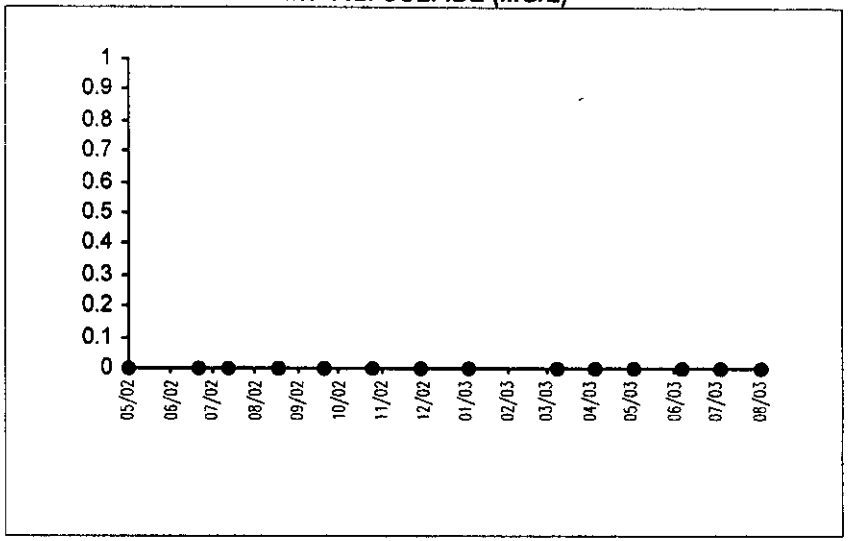
Concentration vs Time

7941031

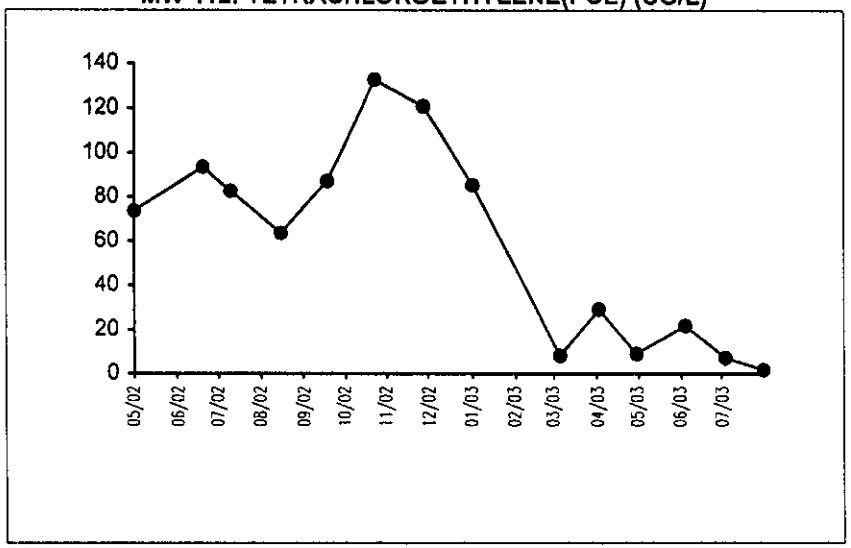
MW-112: SULFATE (AS SO4) (MG/L)



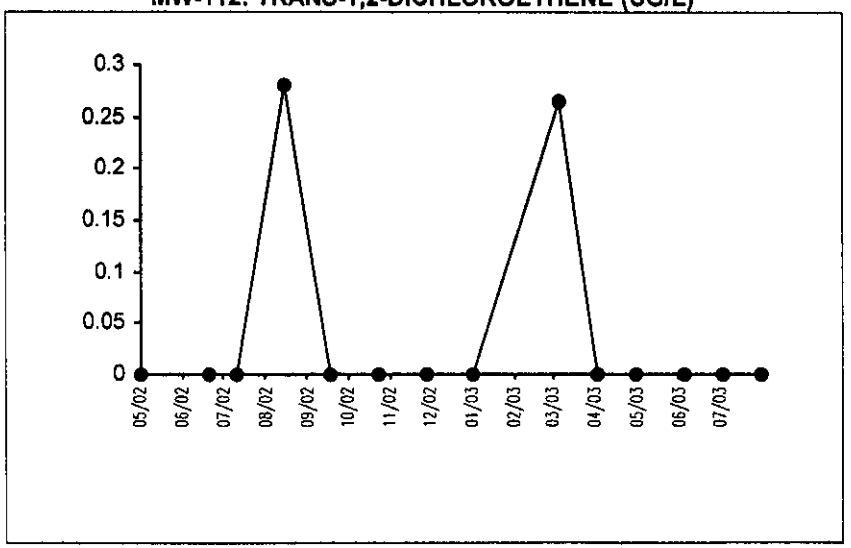
MW-112: SULFIDE (MG/L)



MW-112: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-112: TRANS-1,2-DICHLOROETHENE (UG/L)



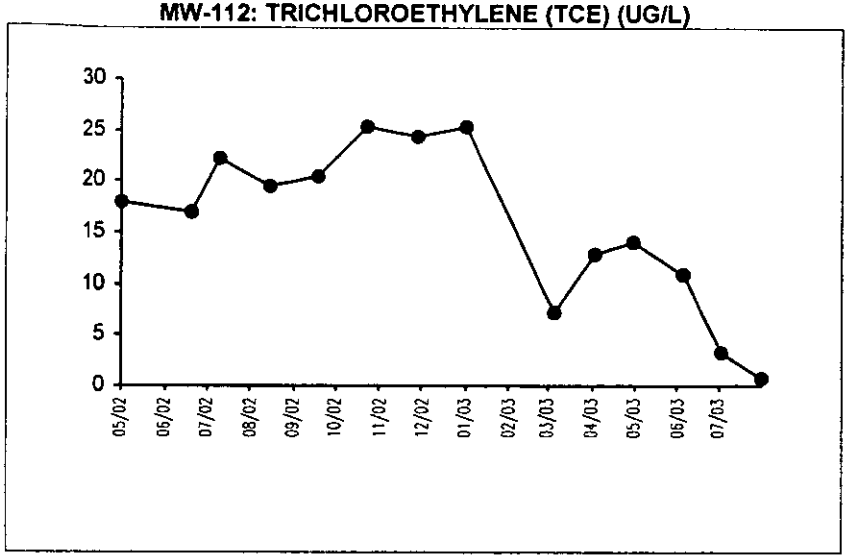
* N[redacted]cts shown as 0.

Location Purpose : Remediation

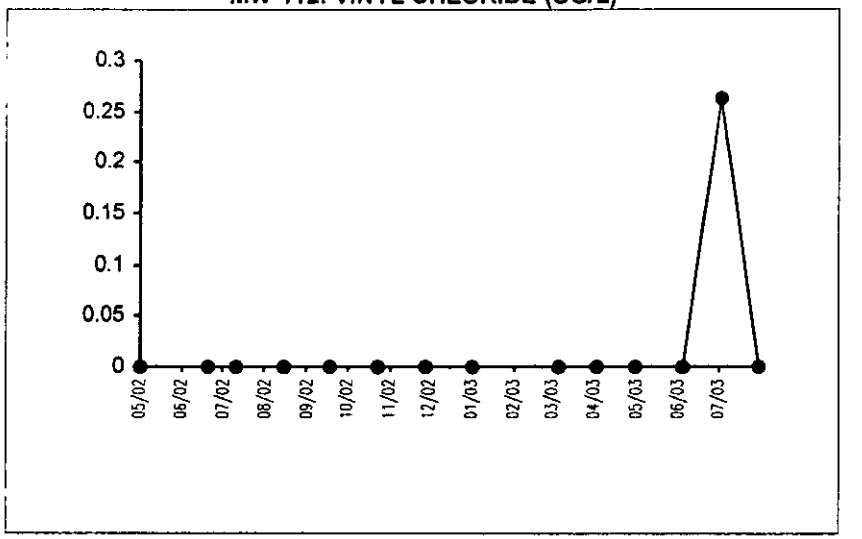
Remediation MW-112

Concentration vs Time

MW-112: TRICHLOROETHYLENE (TCE) (UG/L)



MW-112: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

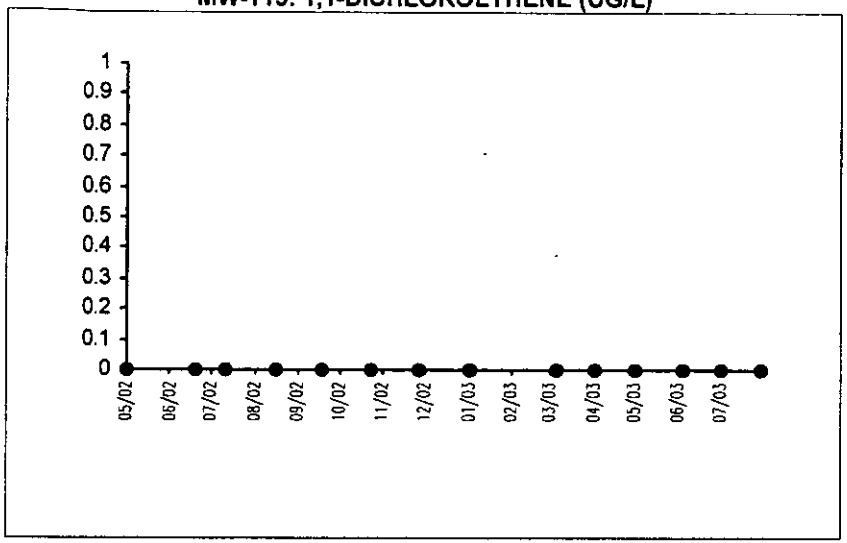
7941032

Location Purpose : Remediation

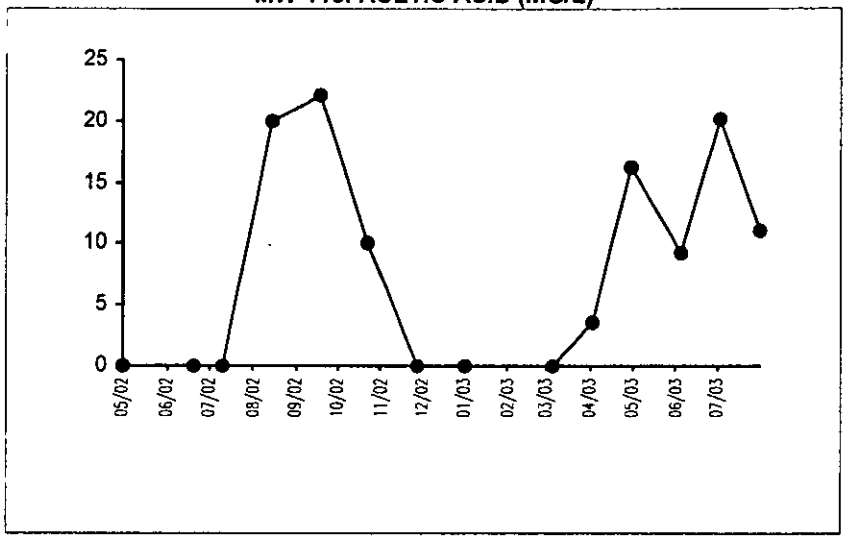
Remediation MW-113

Concentration vs Time

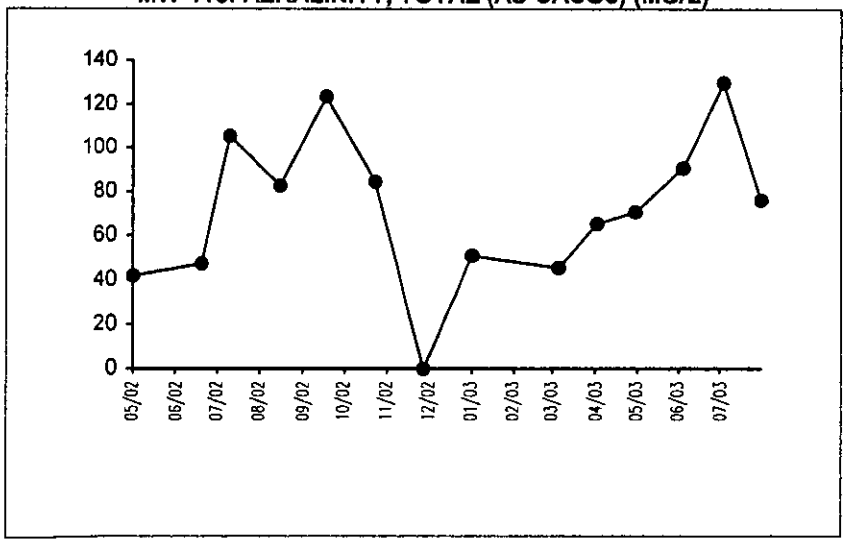
MW-113: 1,1-DICHLOROETHENE (UG/L)



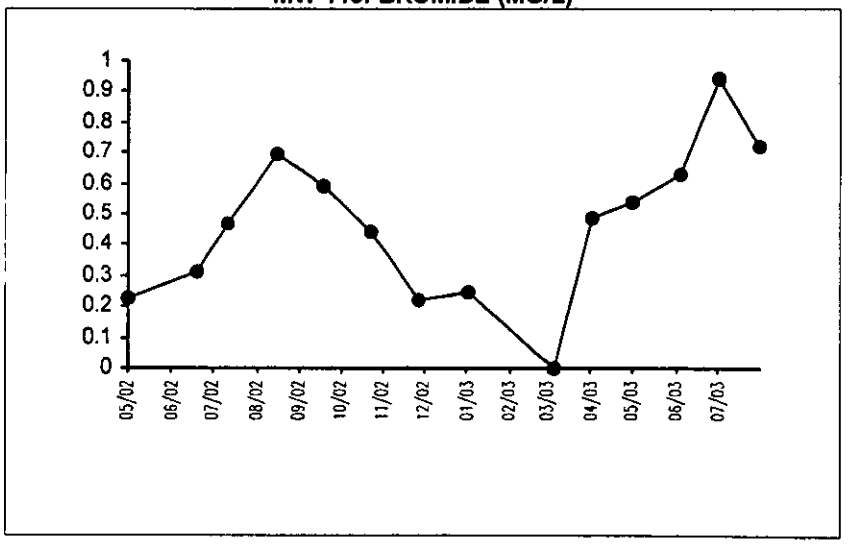
MW-113: ACETIC ACID (MG/L)



MW-113: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-113: BROMIDE (MG/L)



* Nondetects shown as 0.

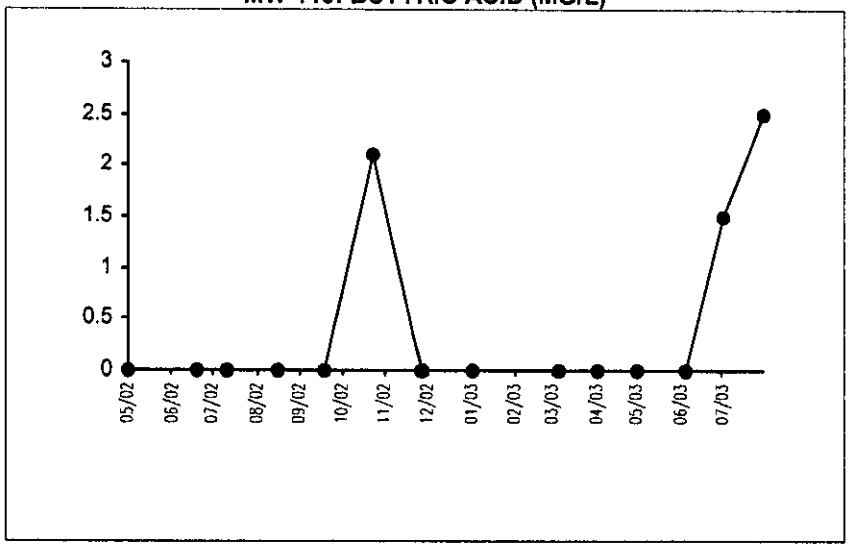
7941033

Location Purpose : Remediation

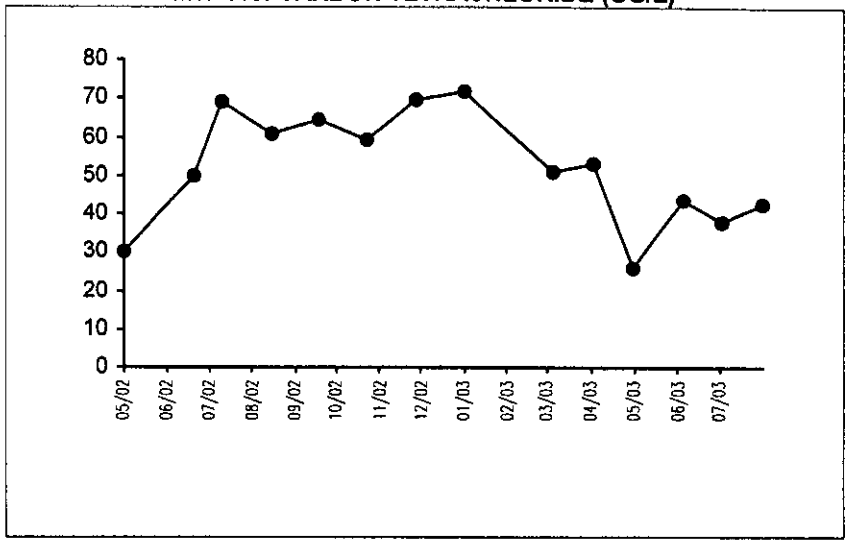
Remediation MW-113

Concentration vs Time

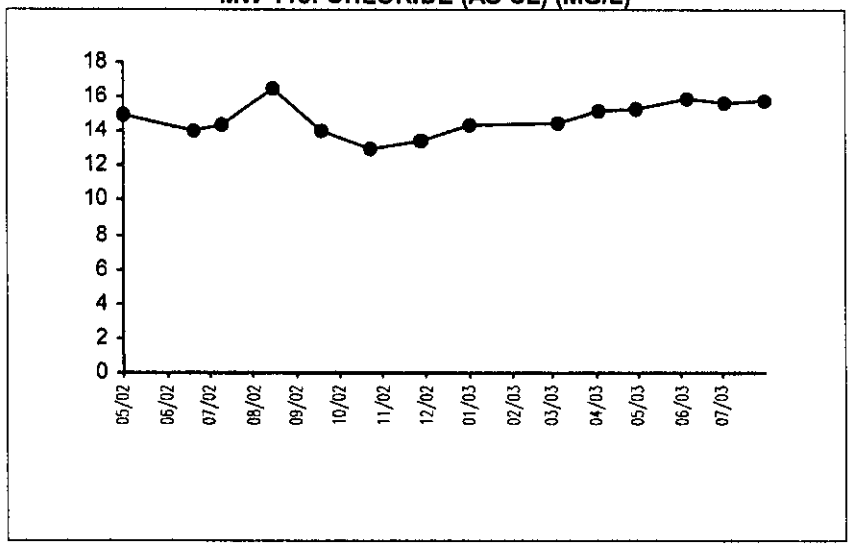
MW-113: BUTYRIC ACID (MG/L)



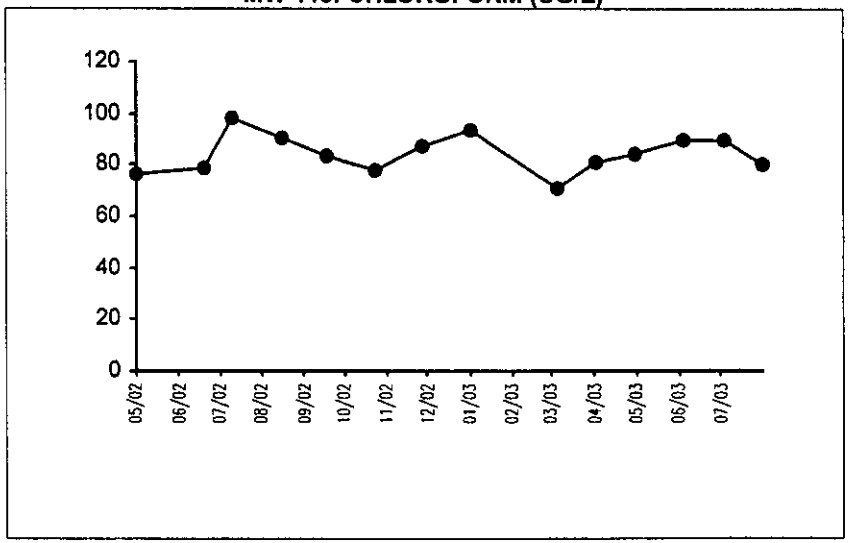
MW-113: CARBON TETRACHLORIDE (UG/L)



MW-113: CHLORIDE (AS CL) (MG/L)



MW-113: CHLOROFORM (UG/L)



* No[redacted]cts shown as 0.

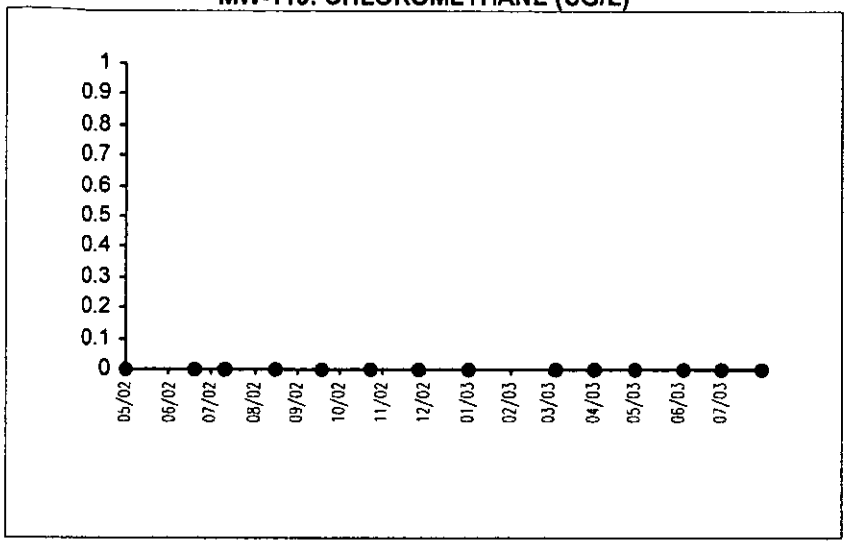
7941034

Location Purpose : Remediation

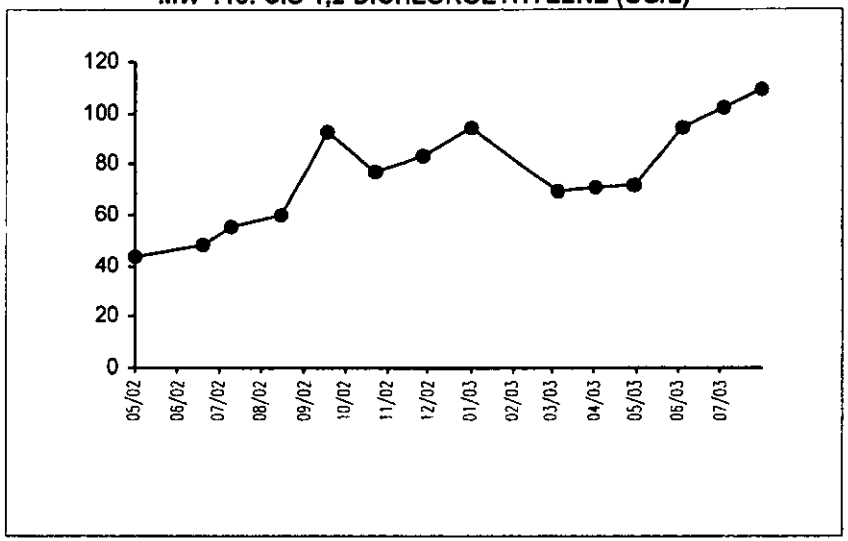
Remediation MW-113

Concentration vs Time

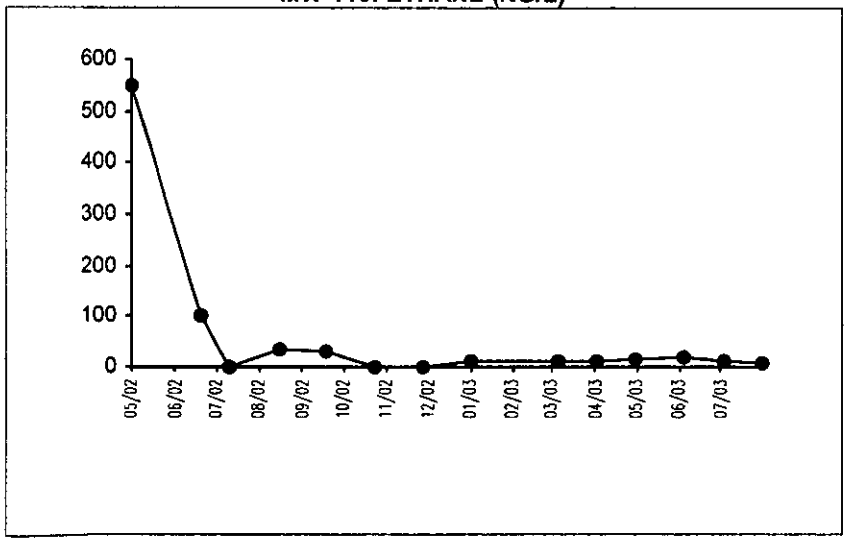
MW-113: CHLOROMETHANE (UG/L)



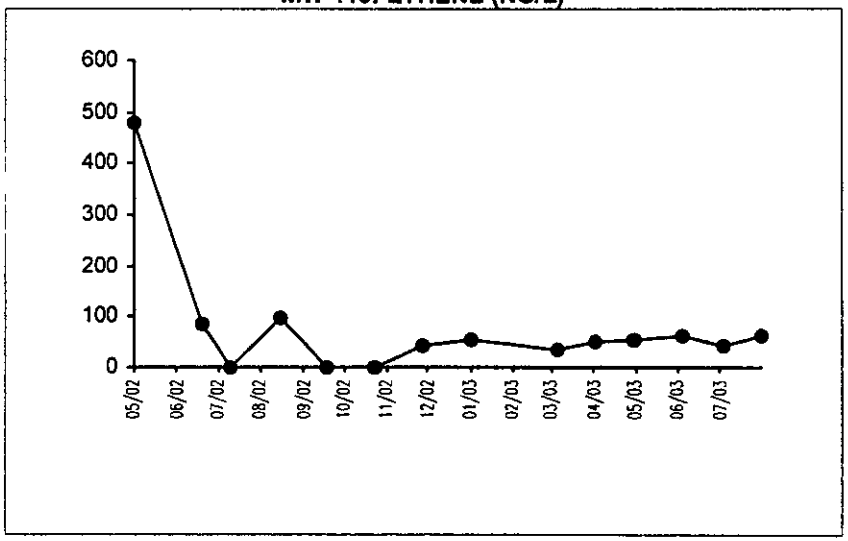
MW-113: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-113: ETHANE (NG/L)



MW-113: ETHENE (NG/L)



* Nondetects shown as 0.

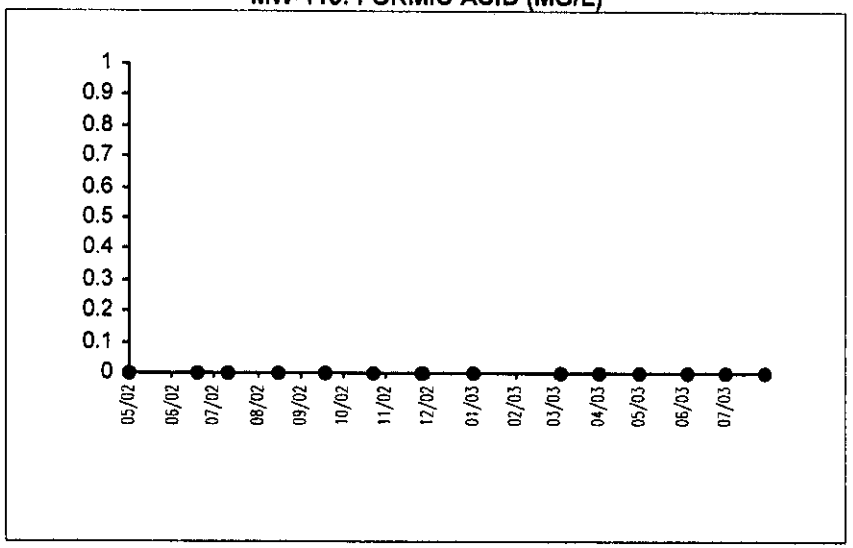
7941035

Location Purpose : Remediation

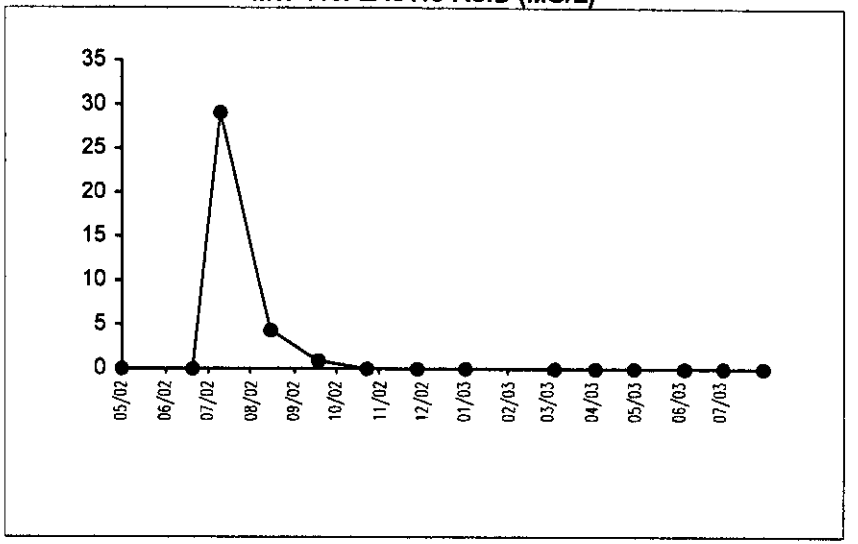
Remediation MW-113

Concentration vs Time

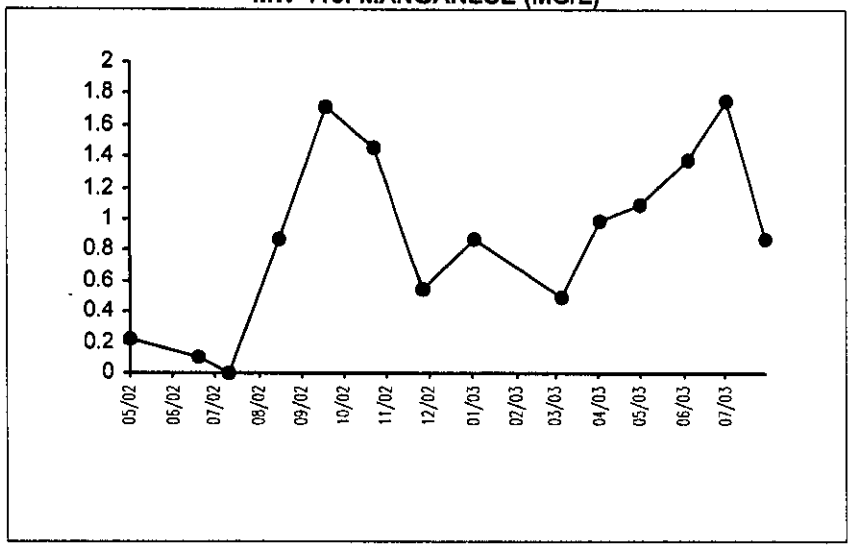
MW-113: FORMIC ACID (MG/L)



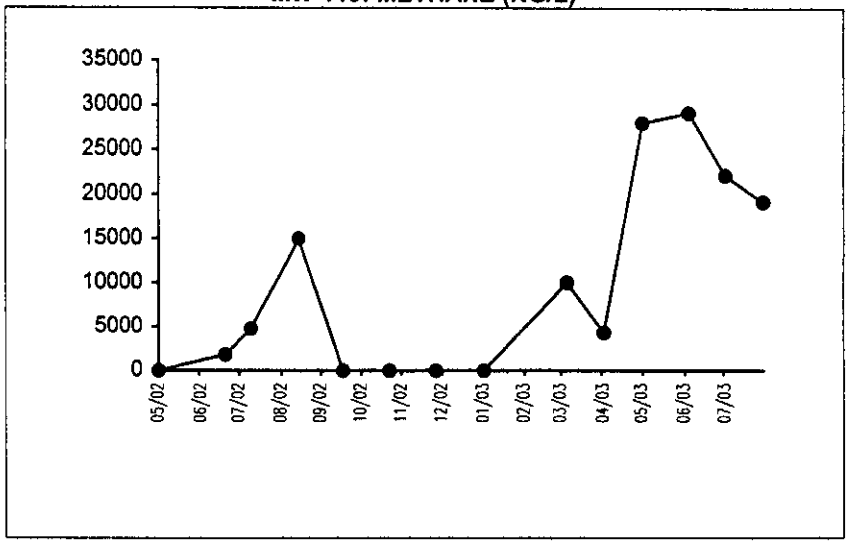
MW-113: LACTIC ACID (MG/L)



MW-113: MANGANESE (MG/L)



MW-113: METHANE (NG/L)



7941036

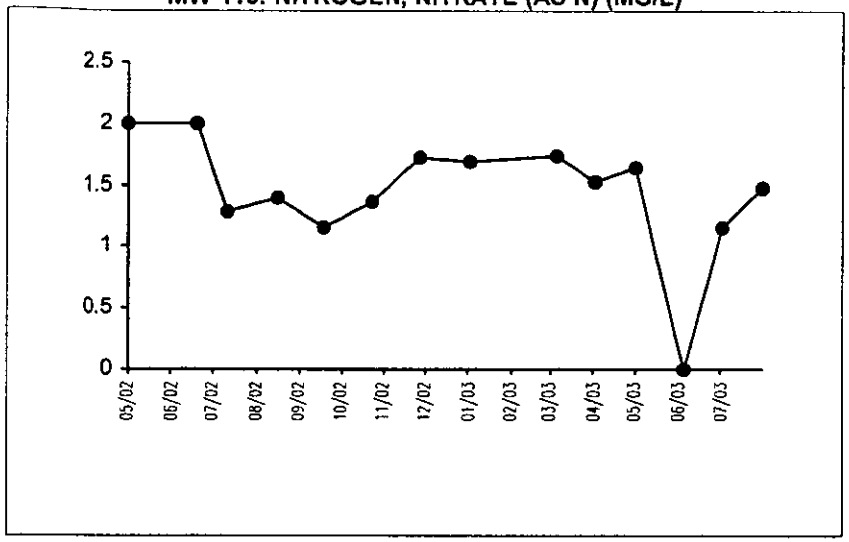
* No[redacted]cts shown as 0.

Location Purpose : Remediation

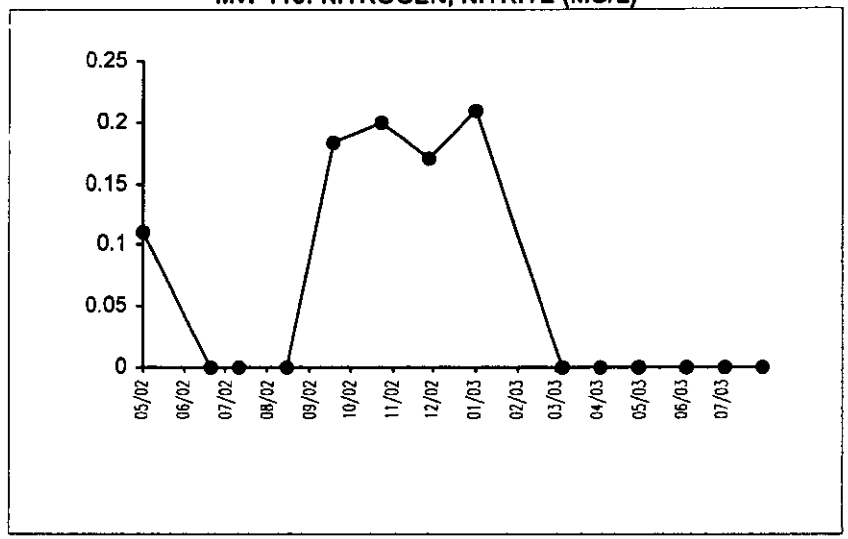
Remediation MW-113

Concentration vs Time

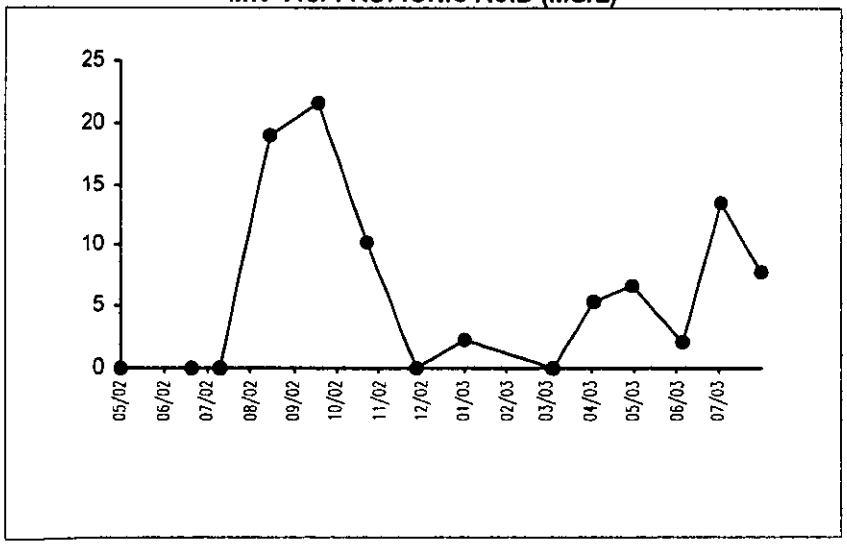
MW-113: NITROGEN, NITRATE (AS N) (MG/L)



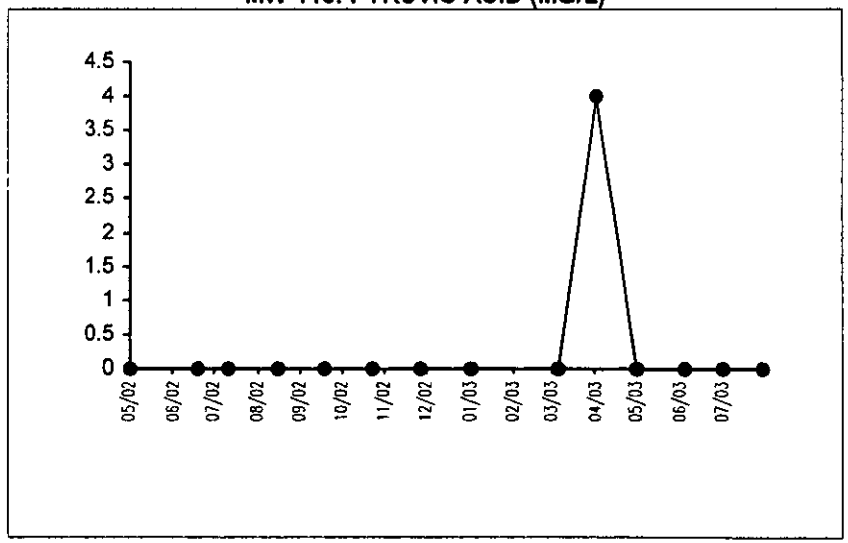
MW-113: NITROGEN, NITRITE (MG/L)



MW-113: PROPIONIC ACID (MG/L)



MW-113: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

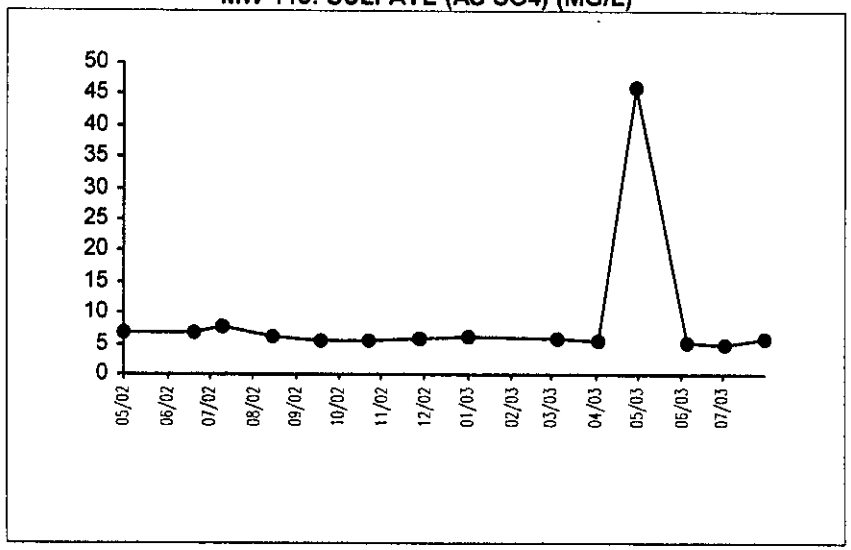
7941037

Location Purpose : Remediation

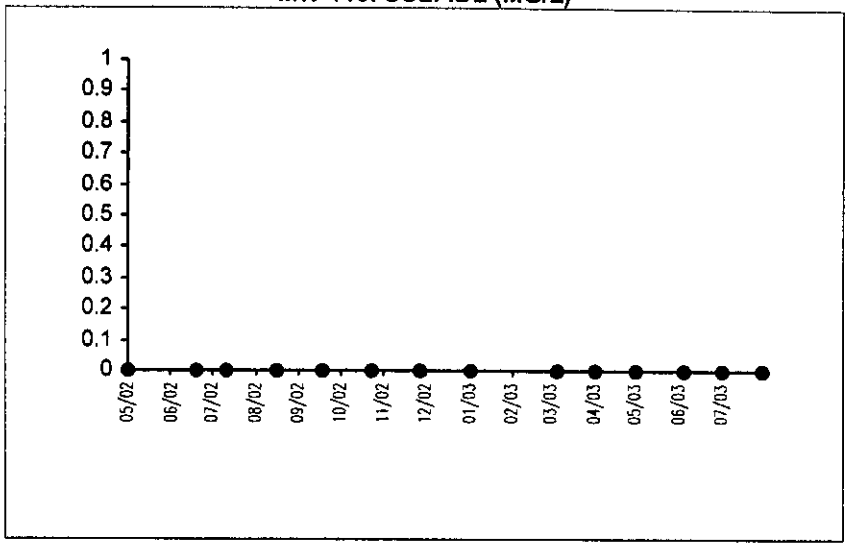
Remediation MW-113

Concentration vs Time

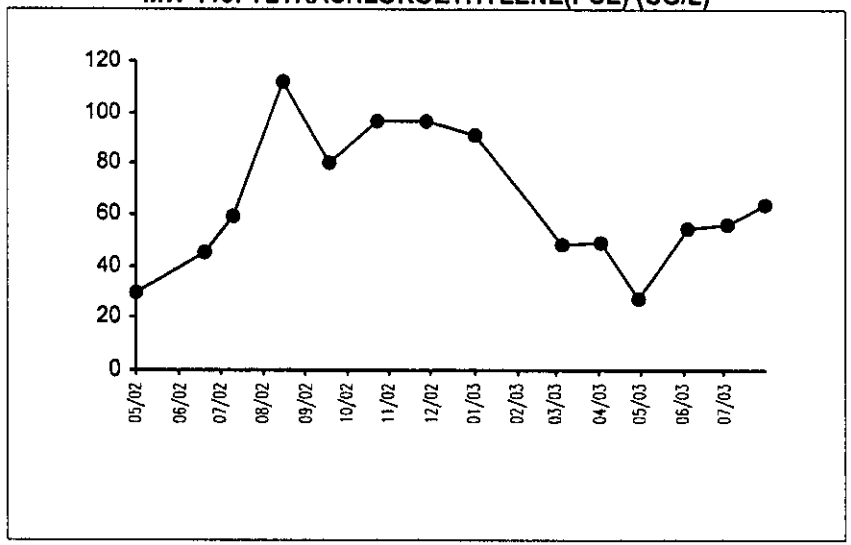
MW-113: SULFATE (AS SO4) (MG/L)



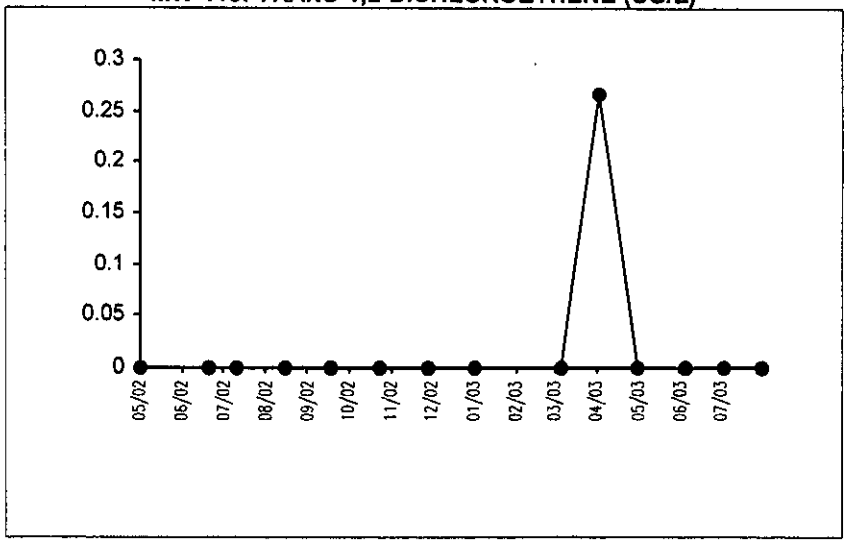
MW-113: SULFIDE (MG/L)



MW-113: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-113: TRANS-1,2-DICHLOROETHENE (UG/L)



* N[redacted]cts shown as 0.

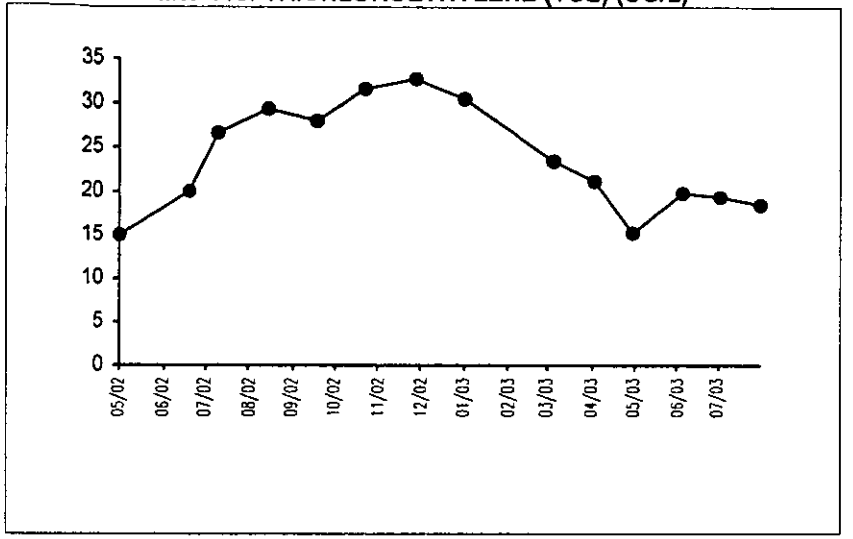
7941038

Location Purpose : Remediation

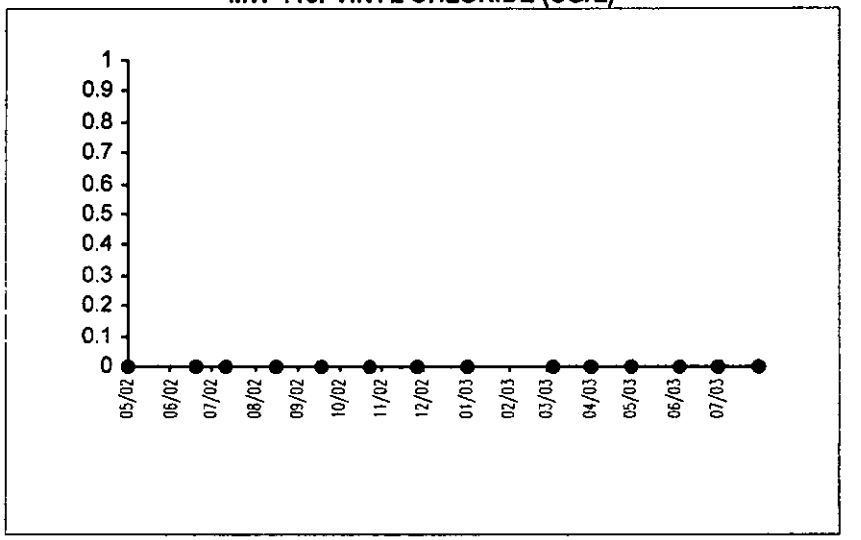
Remediation MW-113

Concentration vs Time

MW-113: TRICHLOROETHYLENE (TCE) (UG/L)



MW-113: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

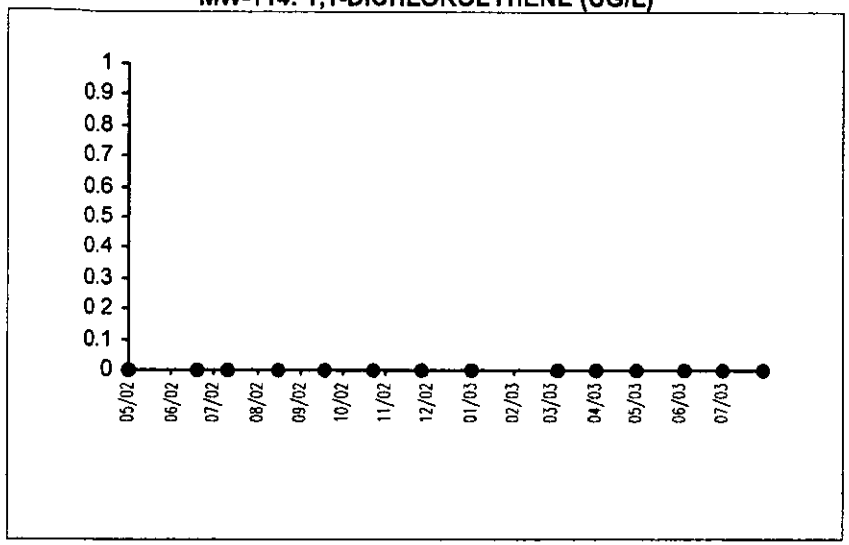
7941039

Location Purpose : Remediation

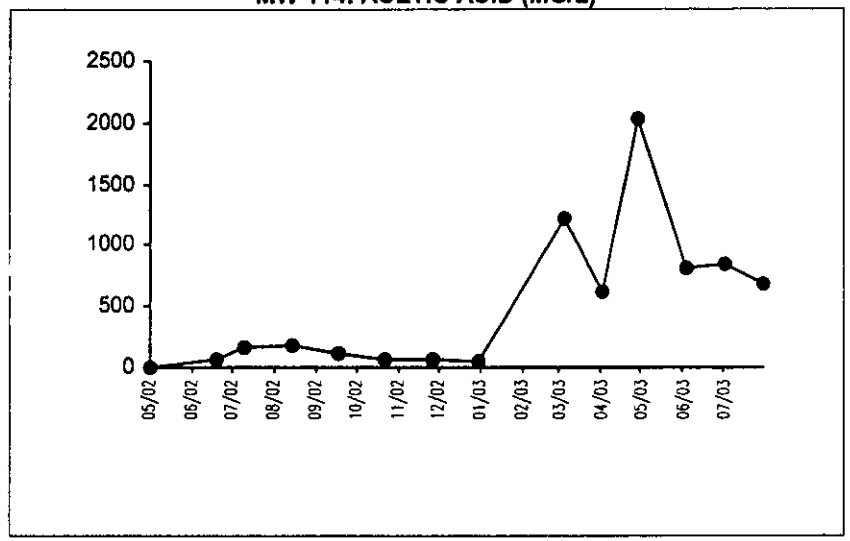
Remediation MW-114

Concentration vs Time

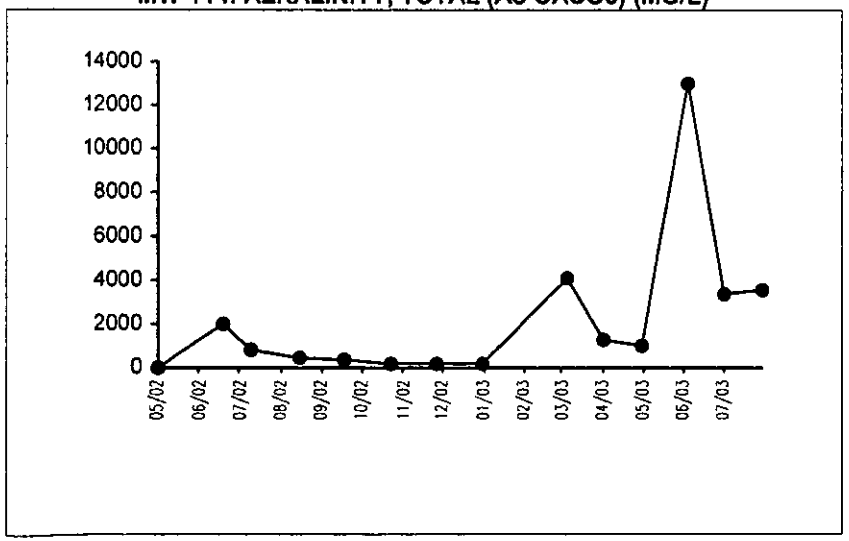
MW-114: 1,1-DICHLOROETHENE (UG/L)



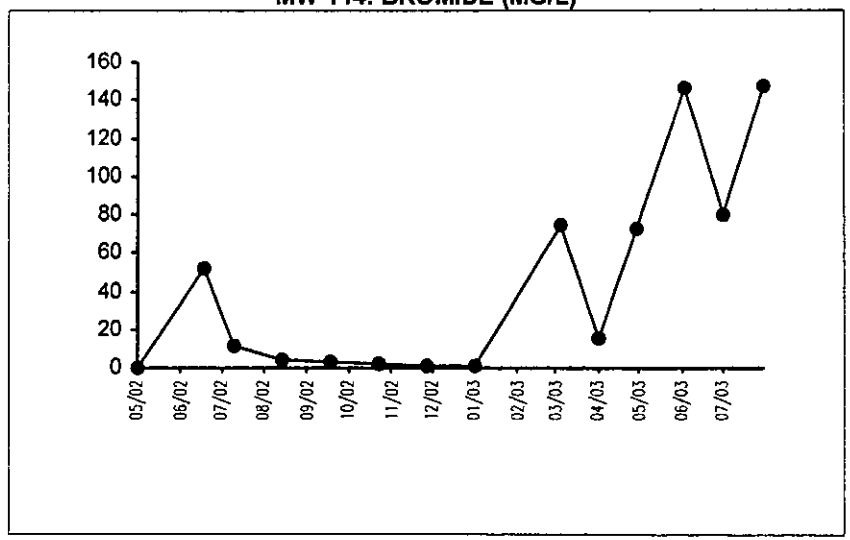
MW-114: ACETIC ACID (MG/L)



MW-114: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-114: BROMIDE (MG/L)



* Nondetects shown as 0.

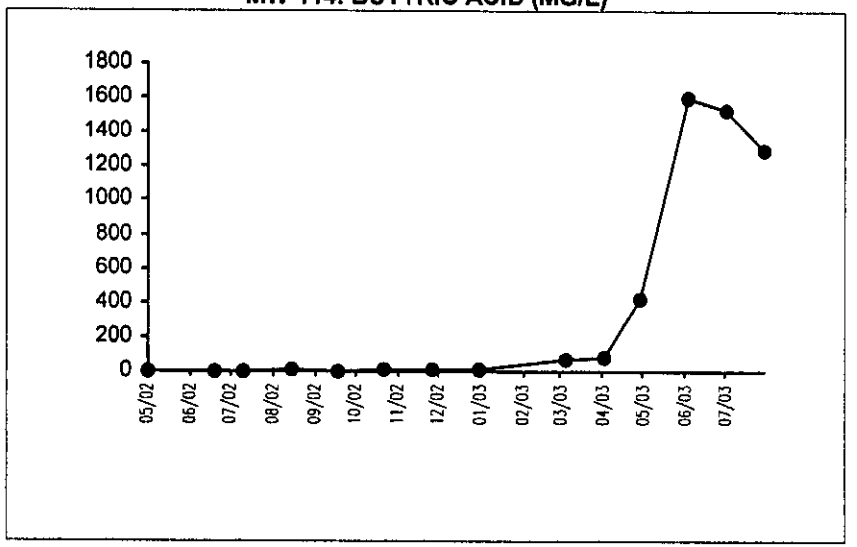
7941040

Location Purpose : Remediation

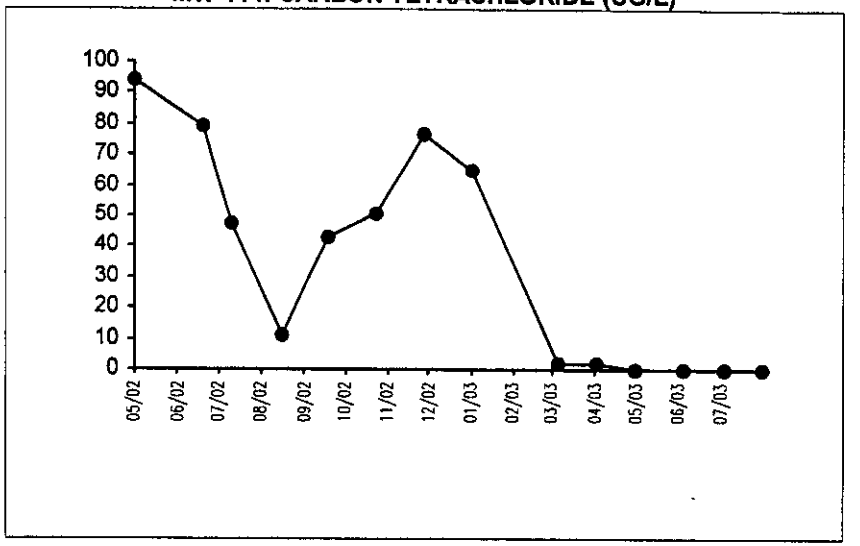
Remediation MW-114

Concentration vs Time

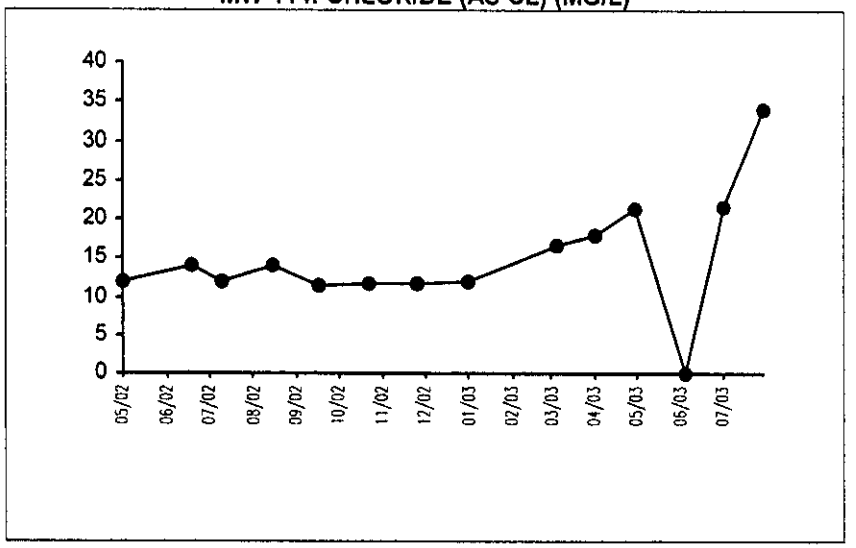
MW-114: BUTYRIC ACID (MG/L)



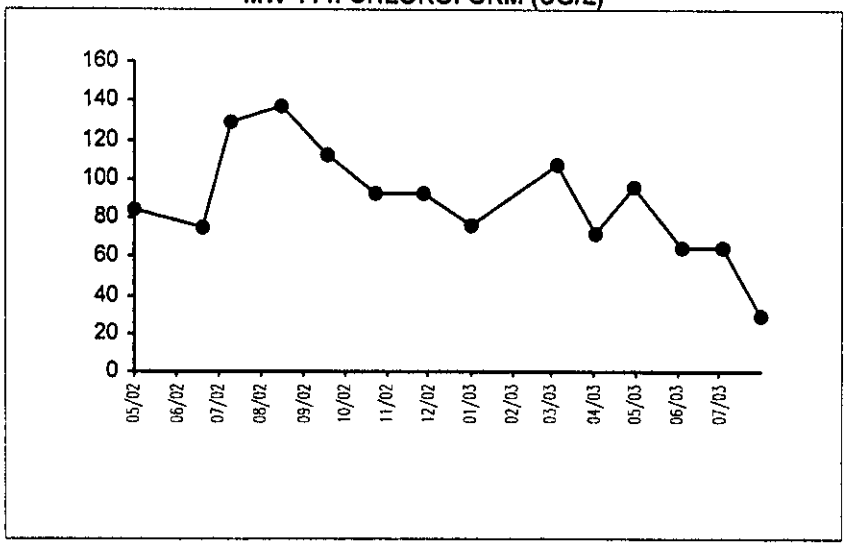
MW-114: CARBON TETRACHLORIDE (UG/L)



MW-114: CHLORIDE (AS CL) (MG/L)



MW-114: CHLOROFORM (UG/L)



* N[redacted]cts shown as 0.

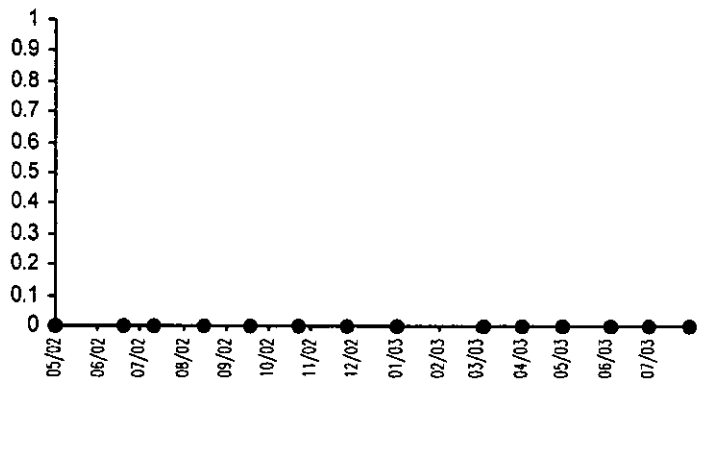
7941041

Location Purpose : Remediation

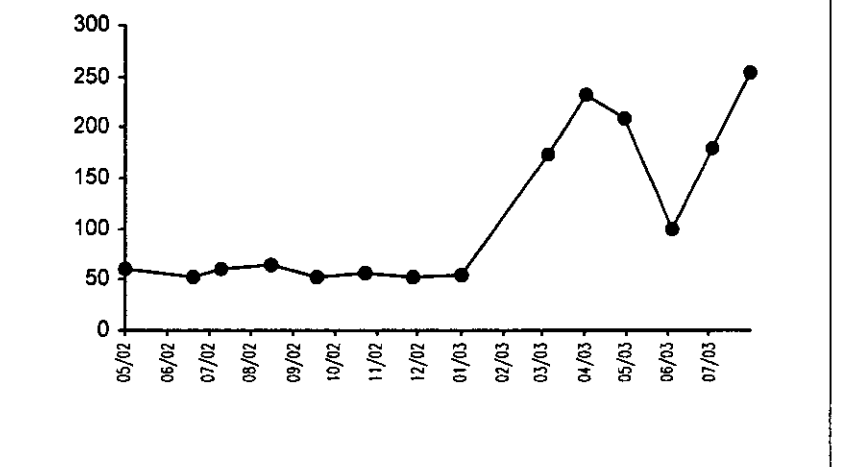
Remediation MW-114

Concentration vs Time

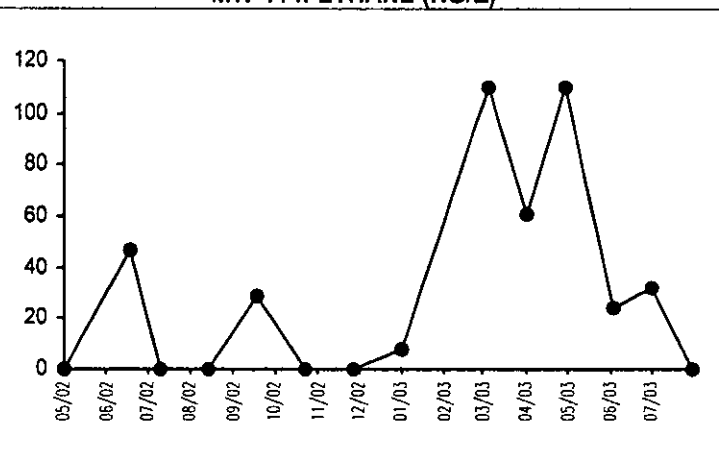
MW-114: CHLOROMETHANE (UG/L)



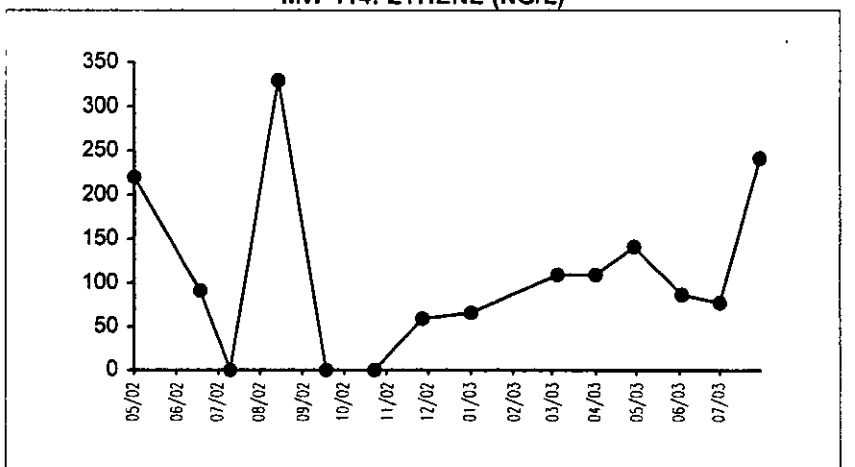
MW-114: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-114: ETHANE (NG/L)



MW-114: ETHENE (NG/L)



* Nondetects shown as 0.

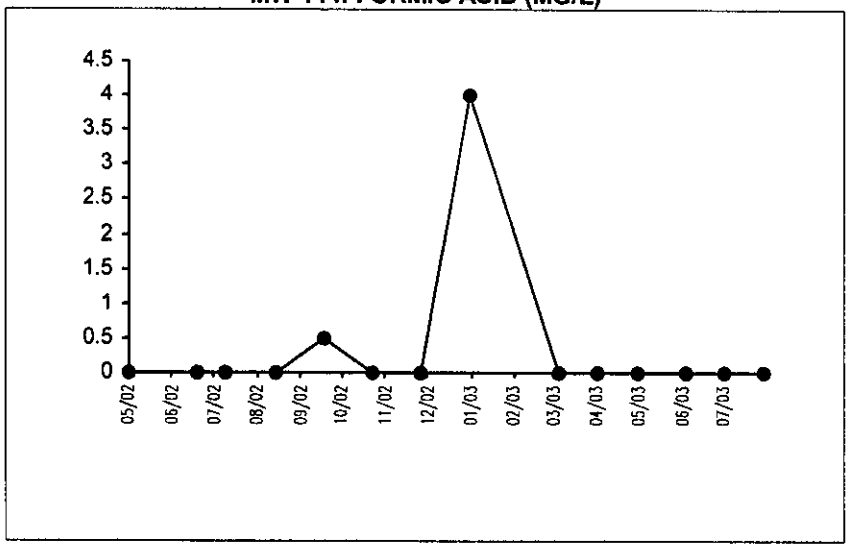
7941042

Location Purpose : Remediation

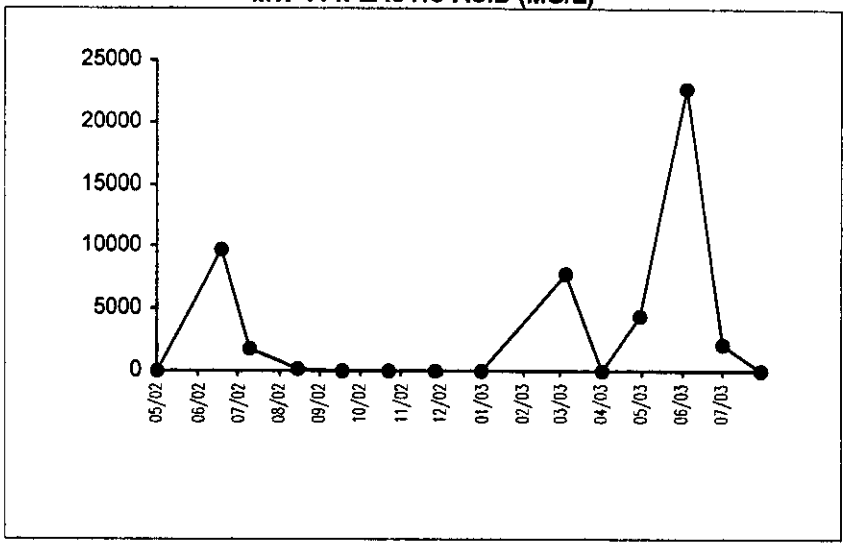
Remediation MW-114

Concentration vs Time

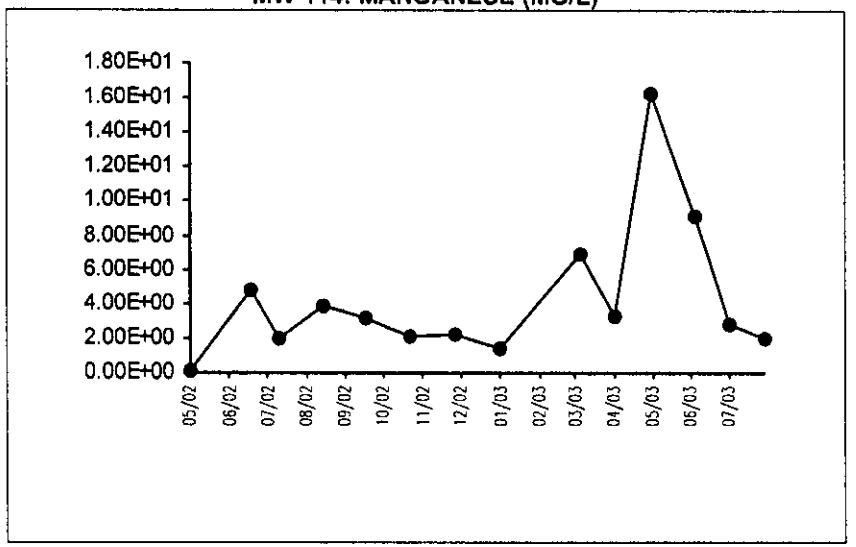
MW-114: FORMIC ACID (MG/L)



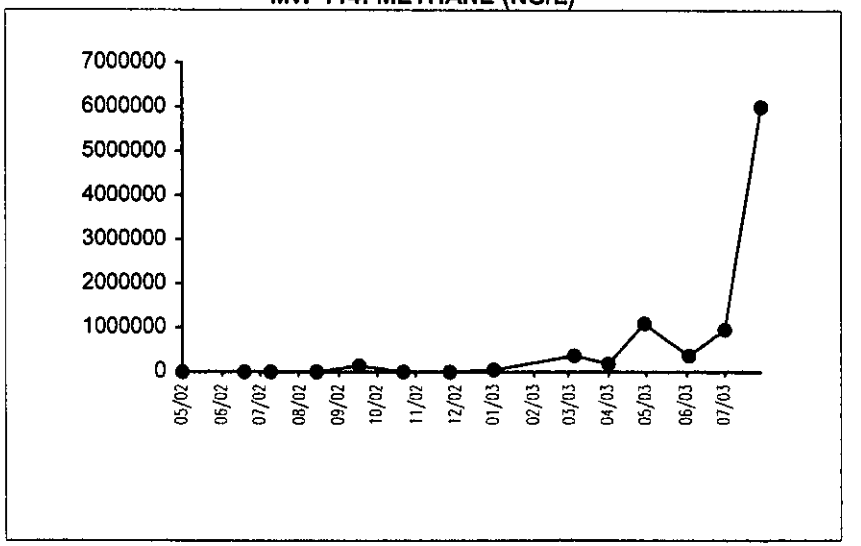
MW-114: LACTIC ACID (MG/L)



MW-114: MANGANESE (MG/L)



MW-114: METHANE (NG/L)



* Nc cts shown as 0.

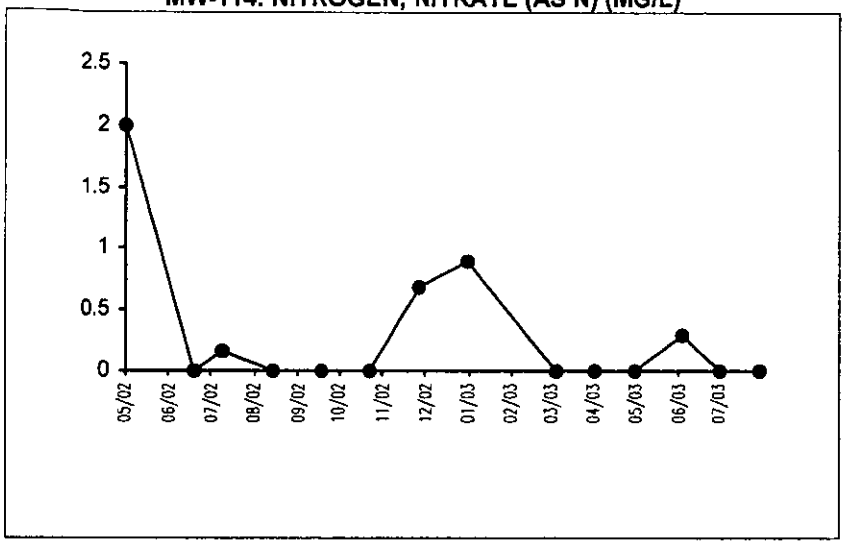
7941043

Location Purpose : Remediation

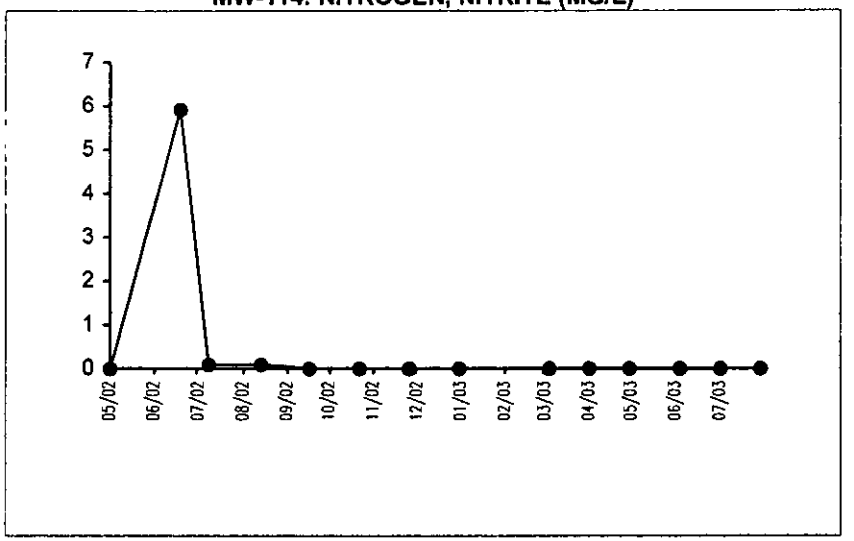
Remediation MW-114

Concentration vs Time

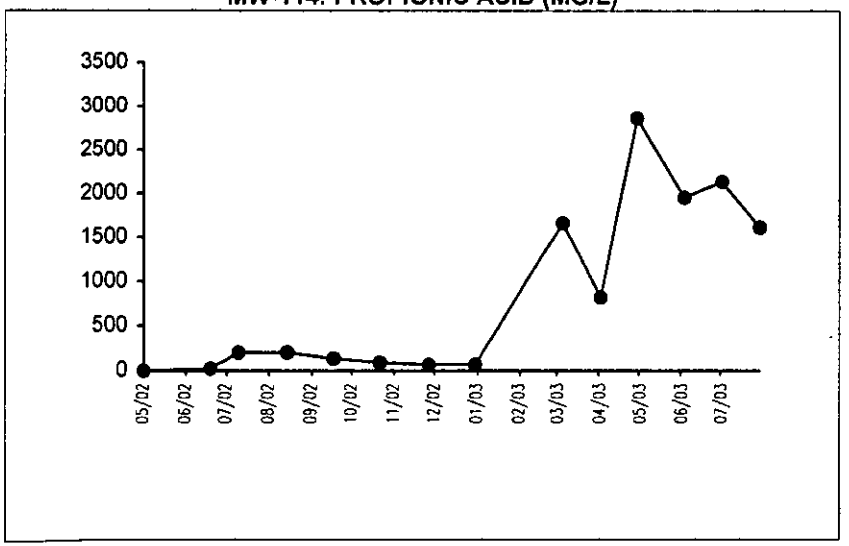
MW-114: NITROGEN, NITRATE (AS N) (MG/L)



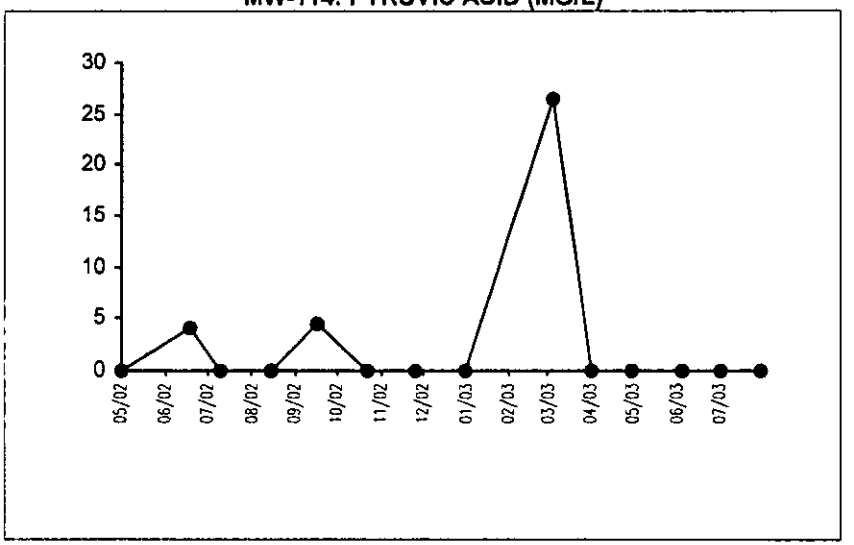
MW-114: NITROGEN, NITRITE (MG/L)



MW-114: PROPIONIC ACID (MG/L)



MW-114: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

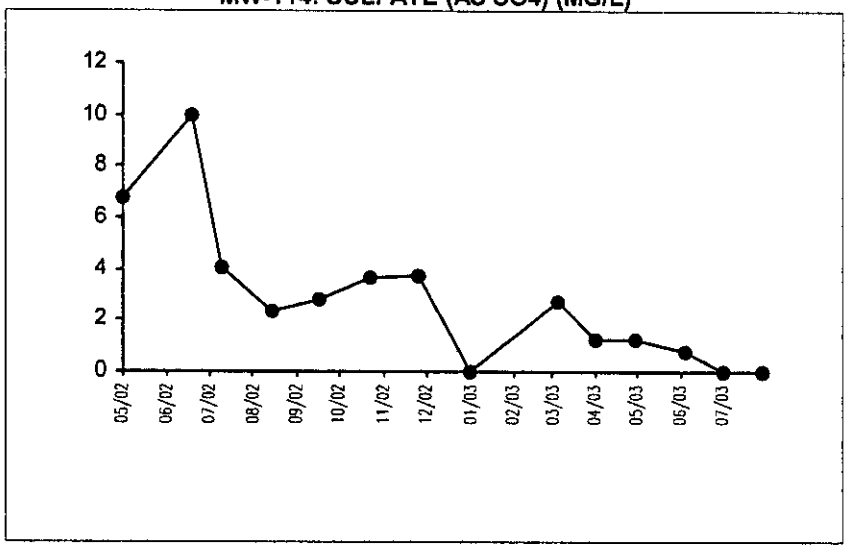
7941044

Location Purpose : Remediation

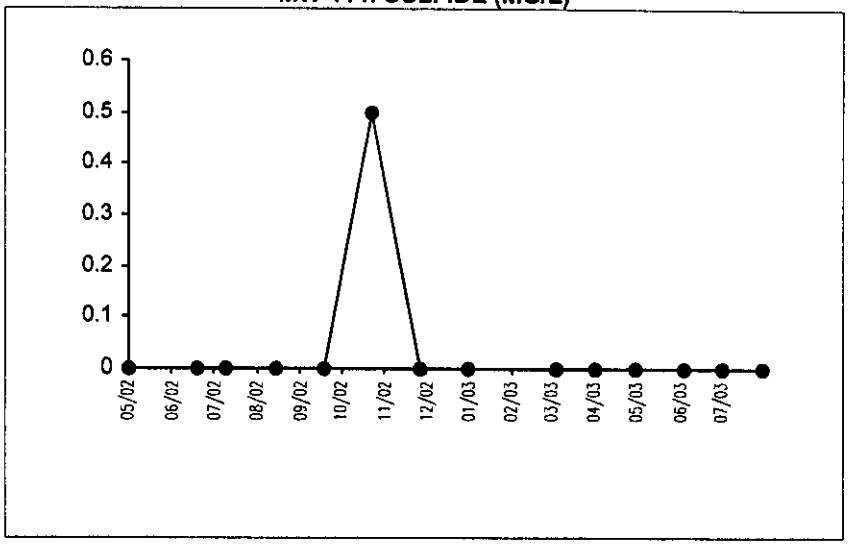
Remediation MW-114

Concentration vs Time

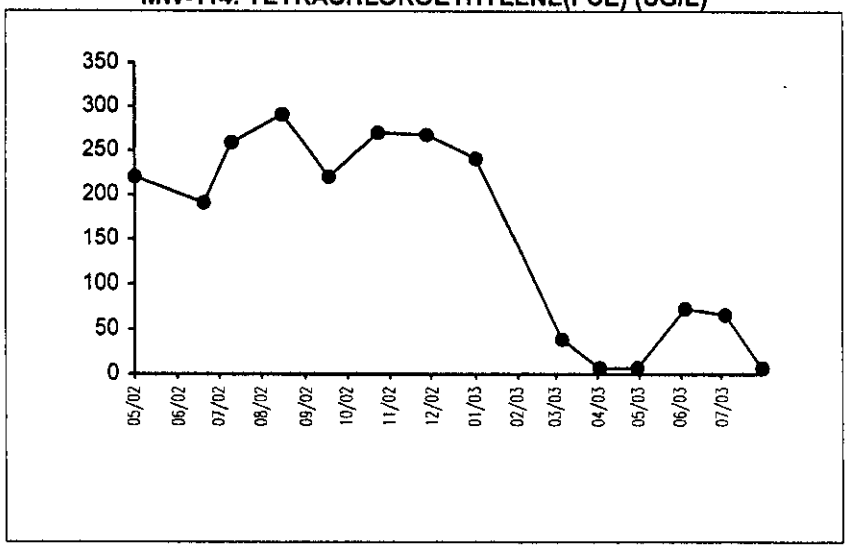
MW-114: SULFATE (AS SO4) (MG/L)



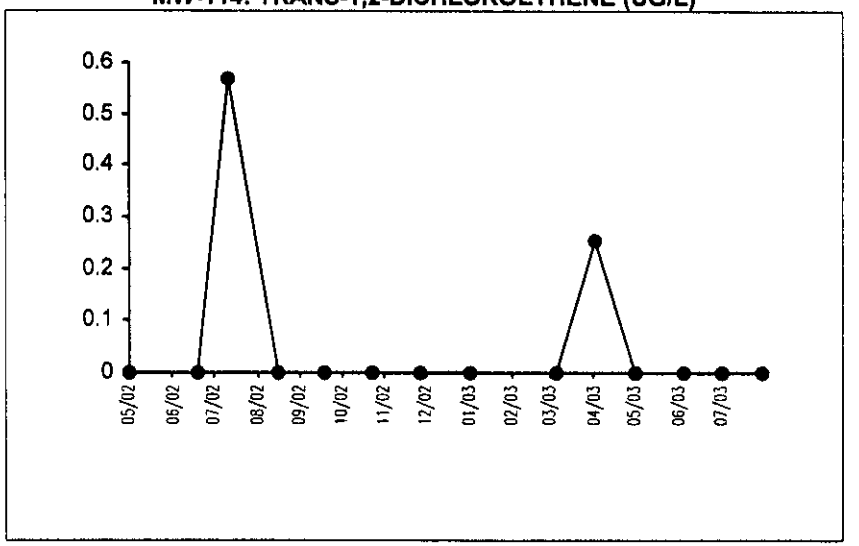
MW-114: SULFIDE (MG/L)



MW-114: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-114: TRANS-1,2-DICHLOROETHENE (UG/L)



* Non-detects shown as 0.

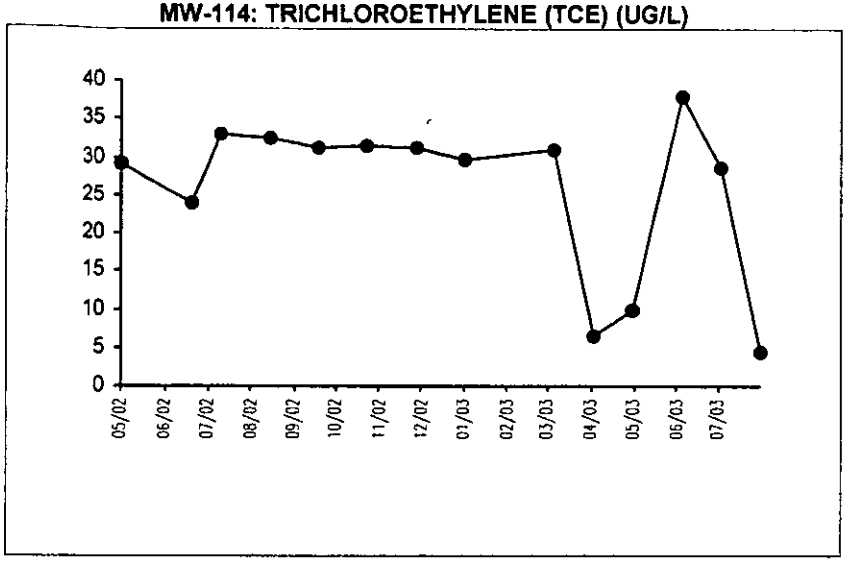
7941045

Location Purpose : Remediation

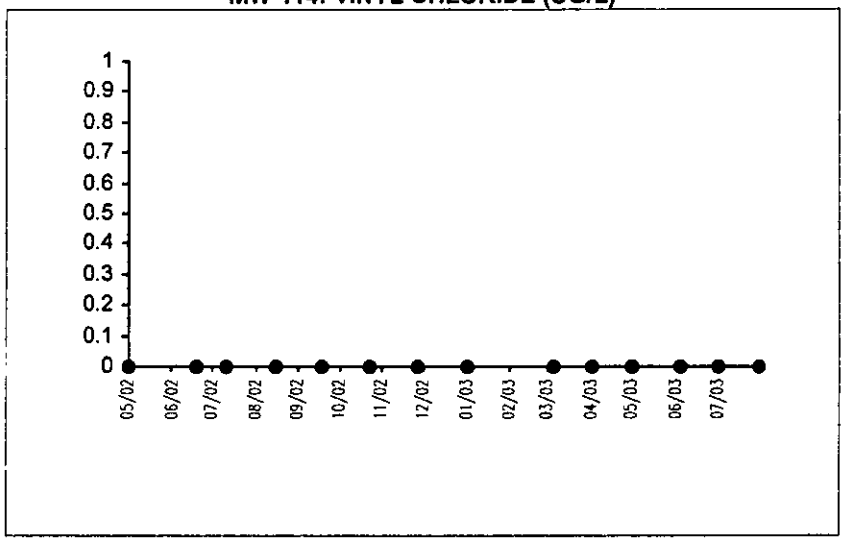
Remediation MW-114

Concentration vs Time

MW-114: TRICHLOROETHYLENE (TCE) (UG/L)



MW-114: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

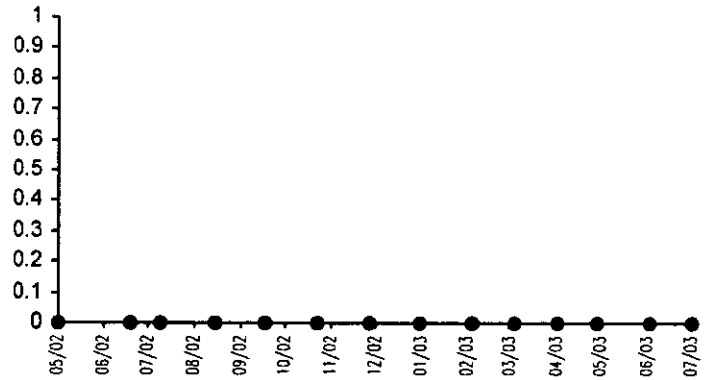
7941046

Location Purpose : Remediation

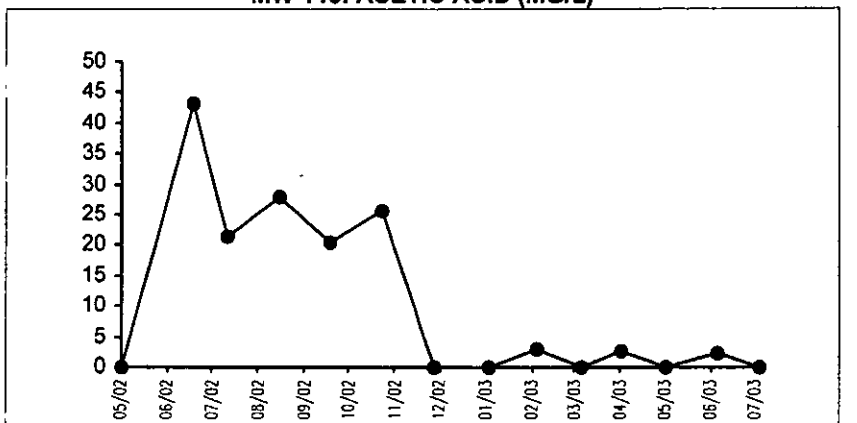
Remediation MW-115

Concentration vs Time

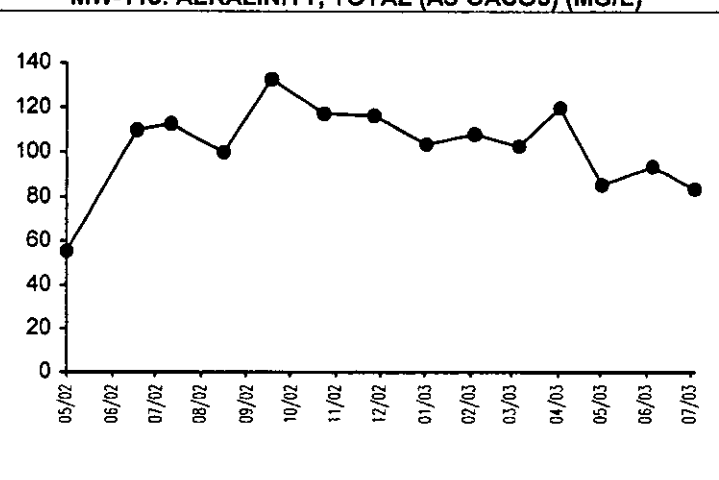
MW-115: 1,1-DICHLOROETHENE (UG/L)



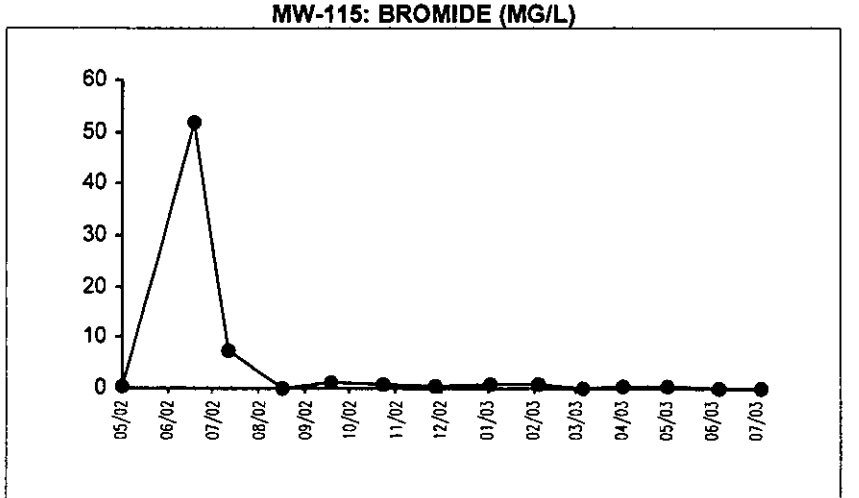
MW-115: ACETIC ACID (MG/L)



MW-115: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-115: BROMIDE (MG/L)



* Nondetects shown as 0.

7941047

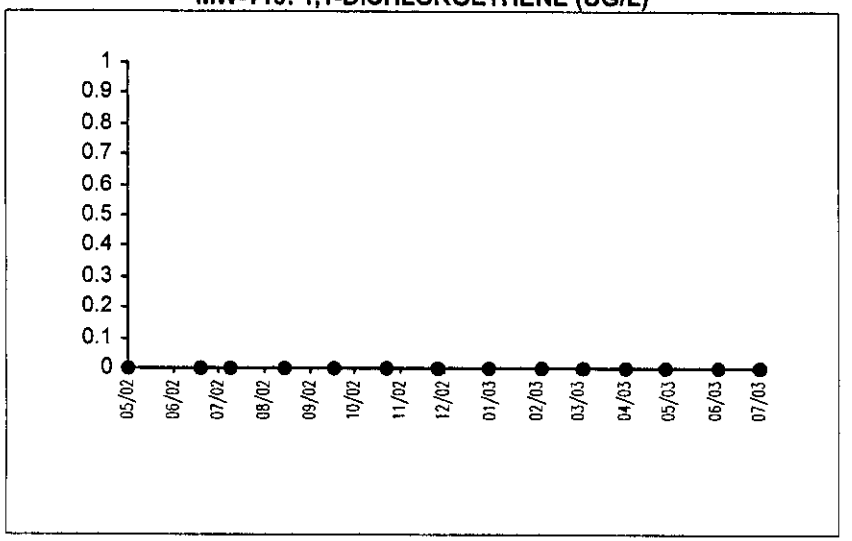
Location Purpose : Remediation

Remediation MW-115

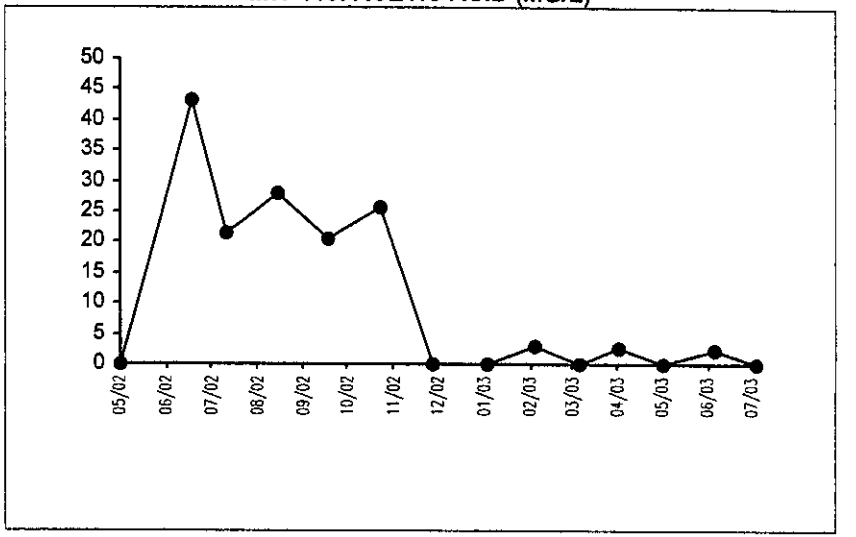
Concentration vs Time

7941048

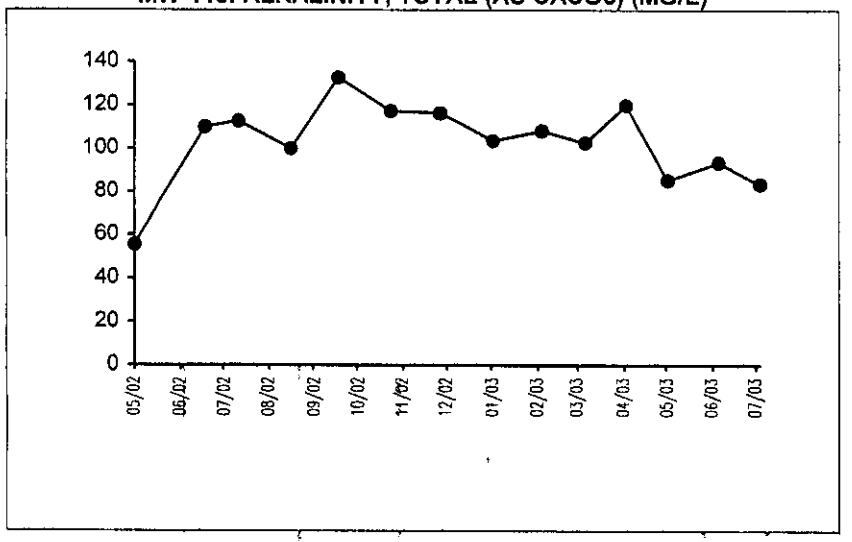
MW-115: 1,1-DICHLOROETHENE (UG/L)



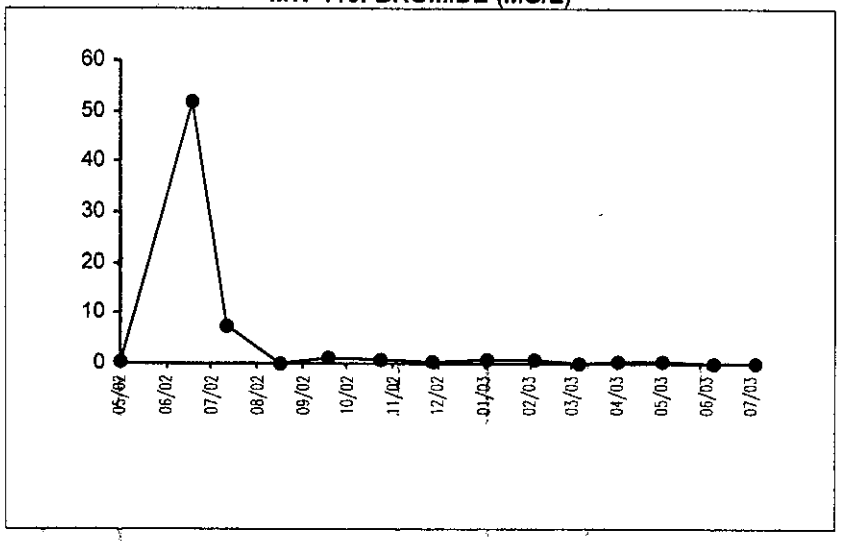
MW-115: ACETIC ACID (MG/L)



MW-115: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-115: BROMIDE (MG/L)



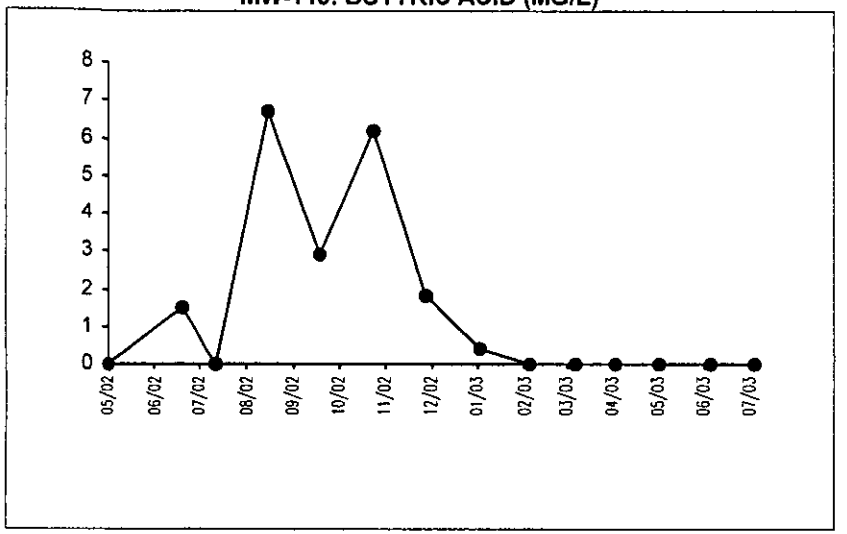
* Nondetects shown as 0.

Location Purpose : Remediation

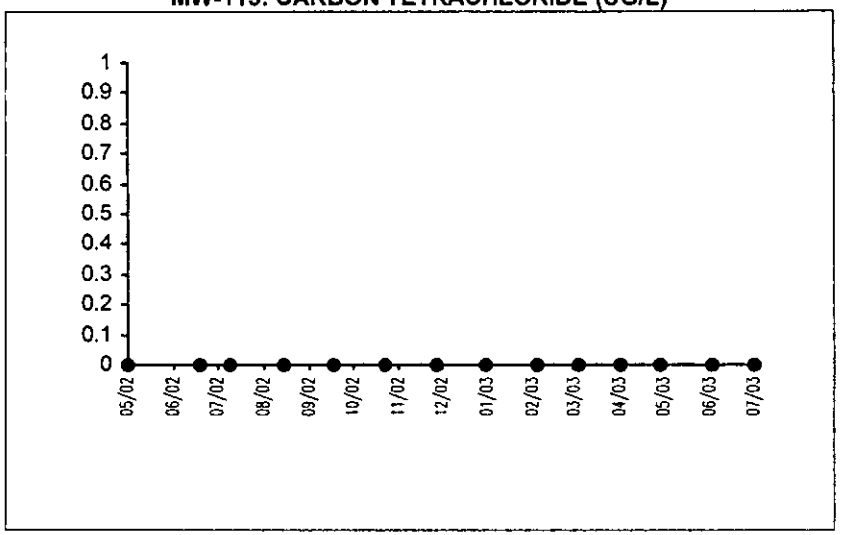
Remediation MW-115

Concentration vs Time

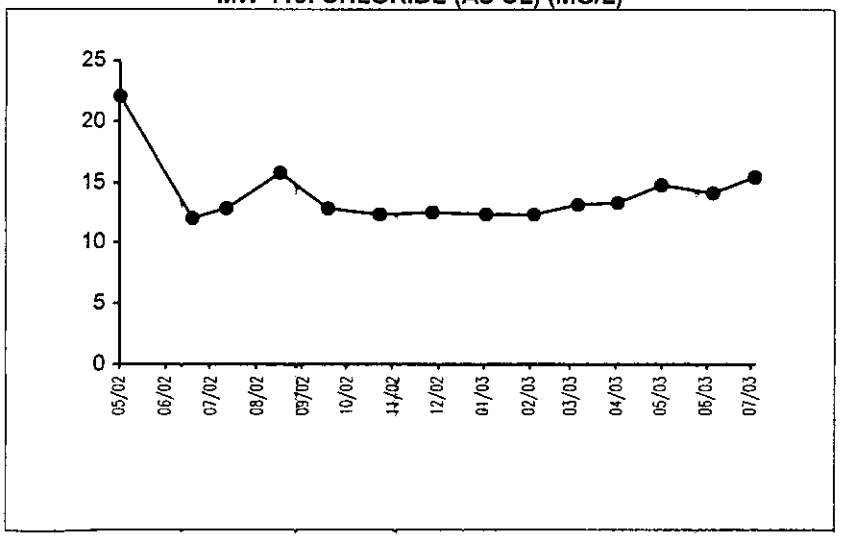
MW-115: BUTYRIC ACID (MG/L)



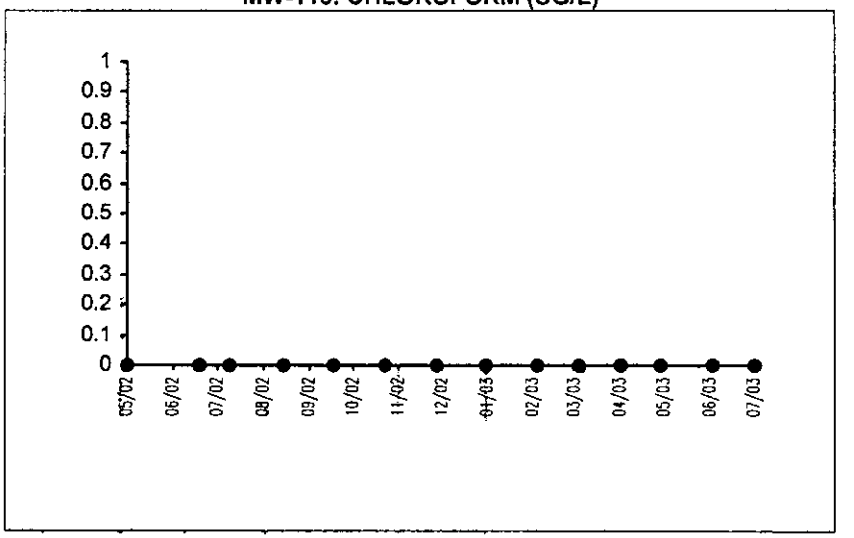
MW-115: CARBON TETRACHLORIDE (UG/L)



MW-115: CHLORIDE (AS CL) (MG/L)



MW-115: CHLOROFORM (UG/L)



* Nondetects shown as 0.

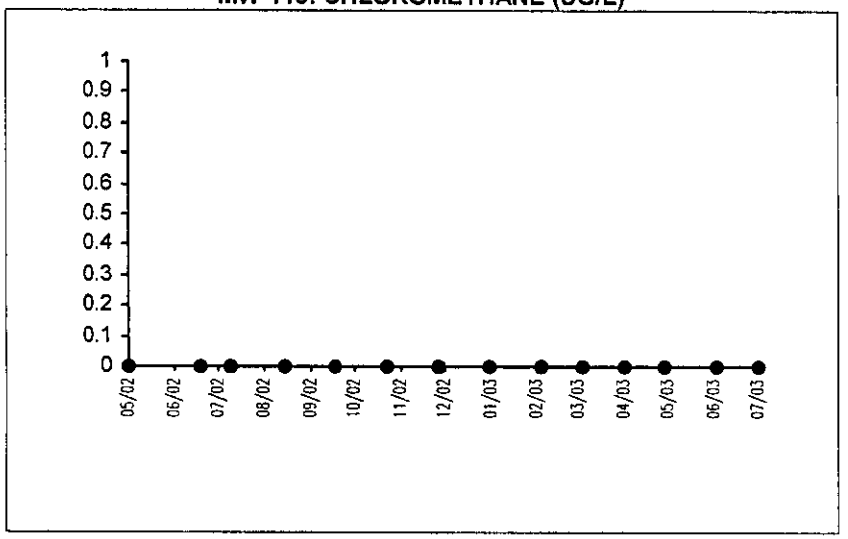
7941049

Location Purpose : Remediation

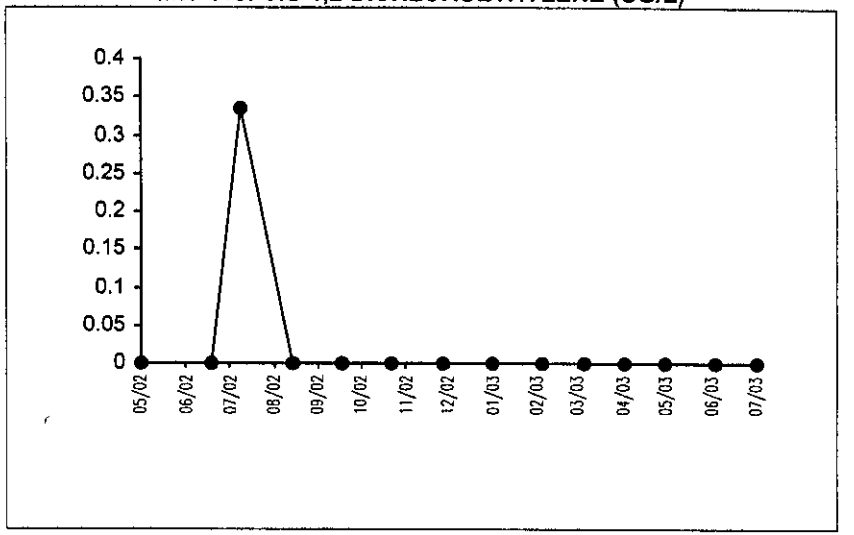
Remediation MW-115

Concentration vs Time

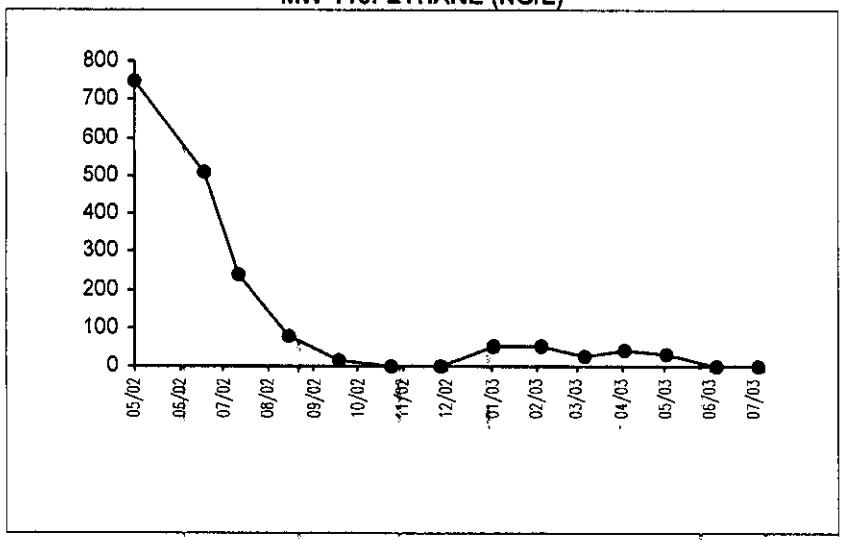
MW-115: CHLOROMETHANE (UG/L)



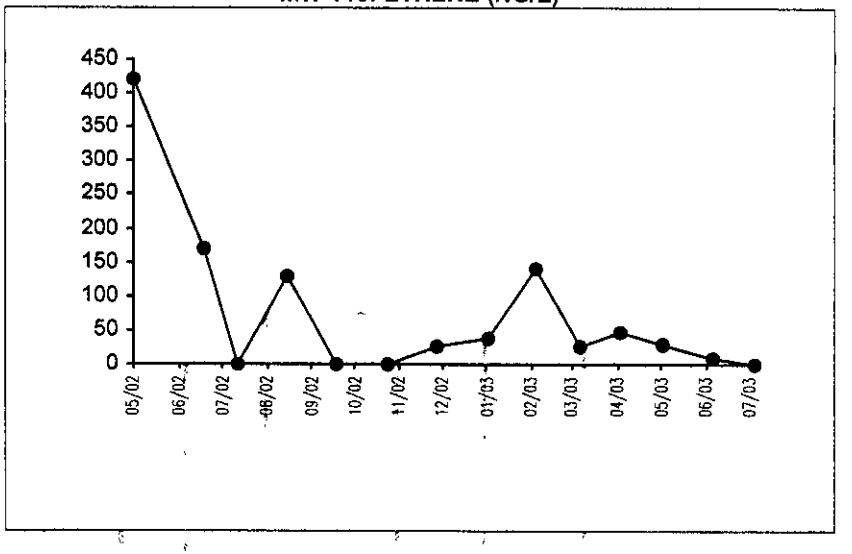
MW-115: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-115: ETHANE (NG/L)



MW-115: ETHENE (NG/L)



* Nondetects shown as 0.

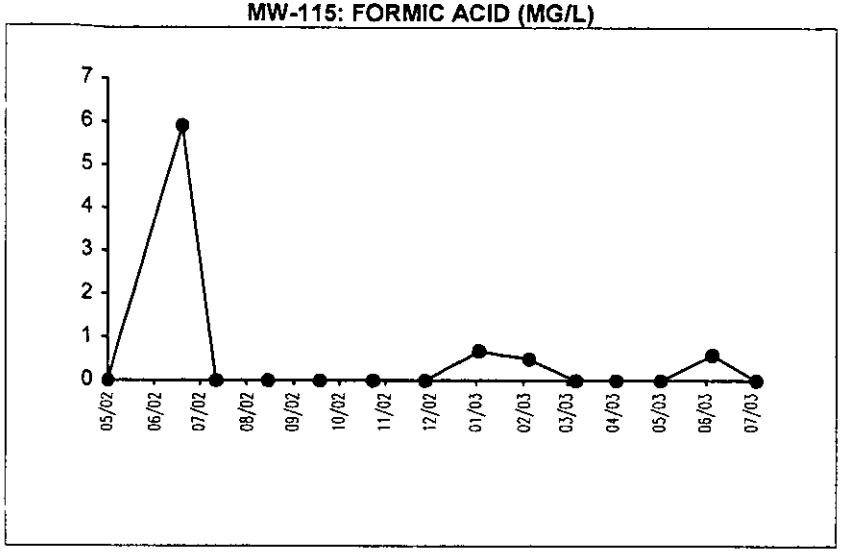
7941050

Location Purpose : Remediation

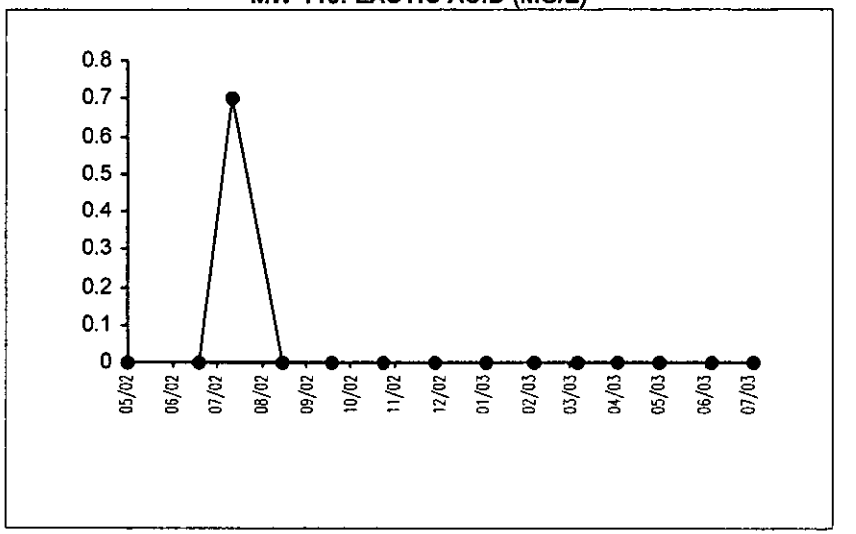
Remediation MW-115

Concentration vs Time

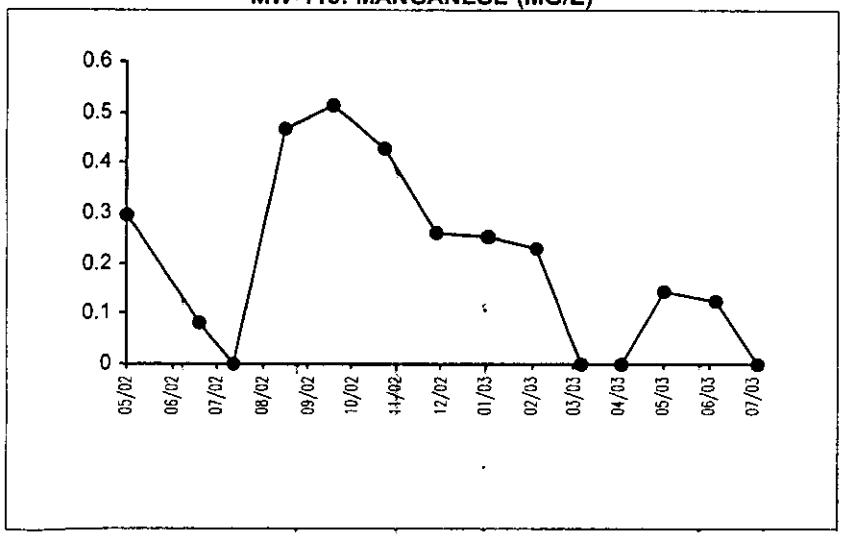
MW-115: FORMIC ACID (MG/L)



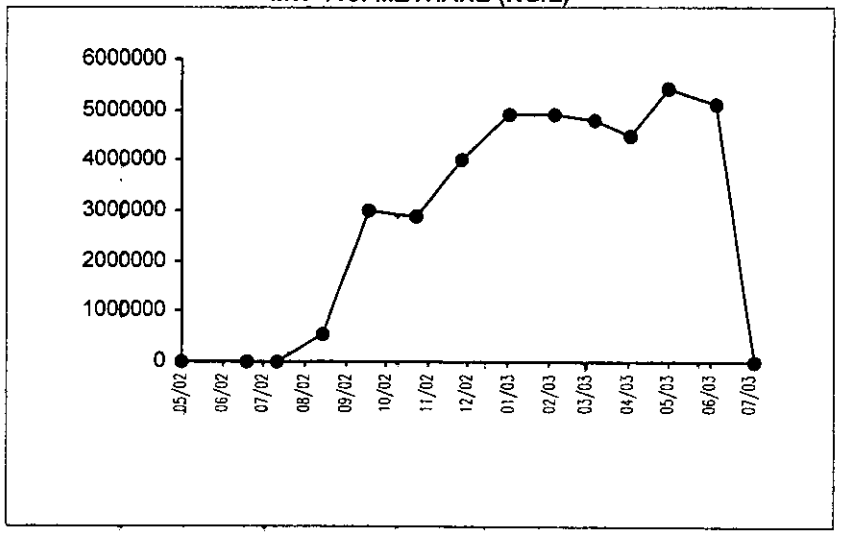
MW-115: LACTIC ACID (MG/L)



MW-115: MANGANESE (MG/L)



MW-115: METHANE (NG/L)



* Nondetects shown as 0.

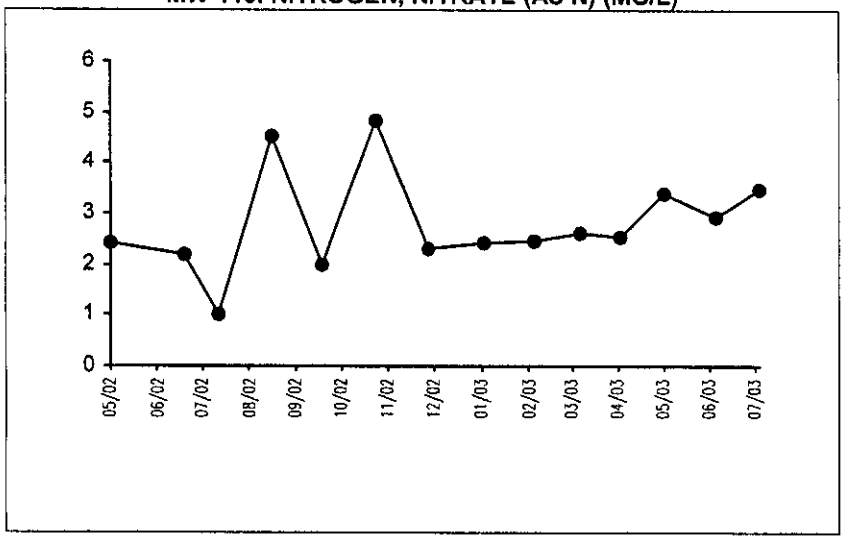
79411051

Location Purpose : Remediation

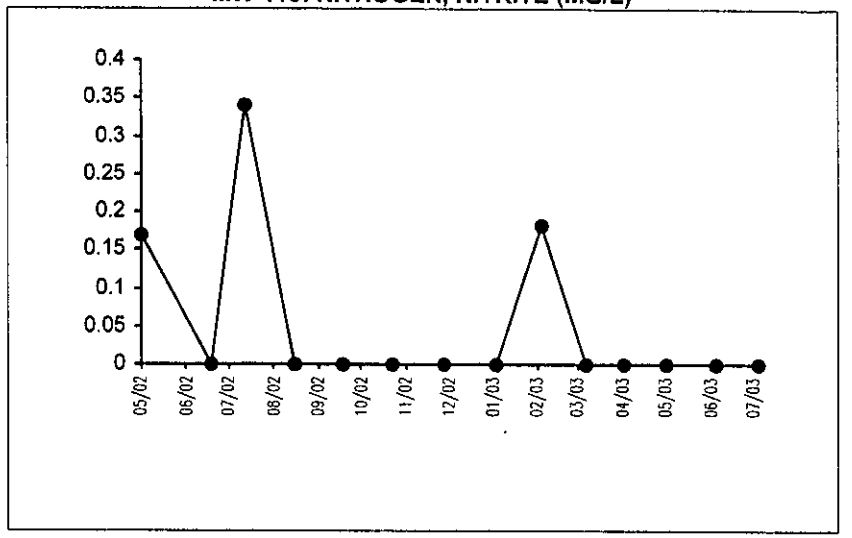
Remediation MW-115

Concentration vs Time

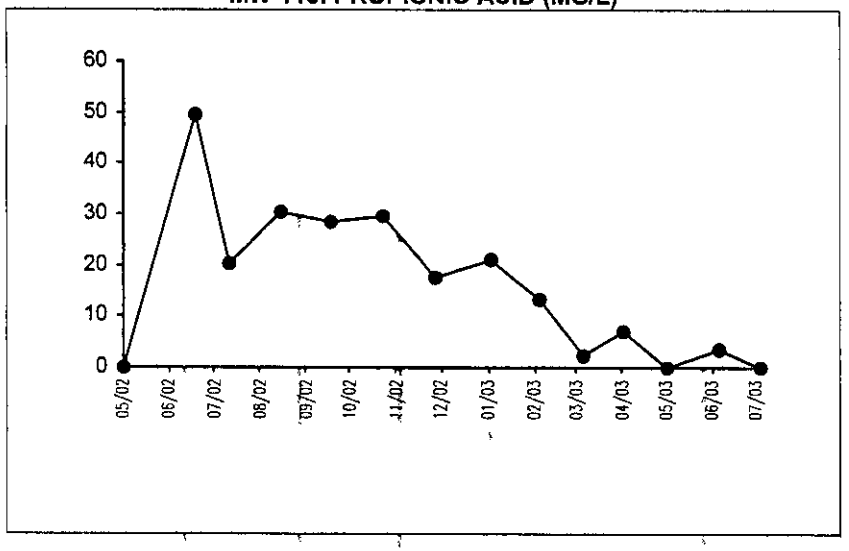
MW-115: NITROGEN, NITRATE (AS N) (MG/L)



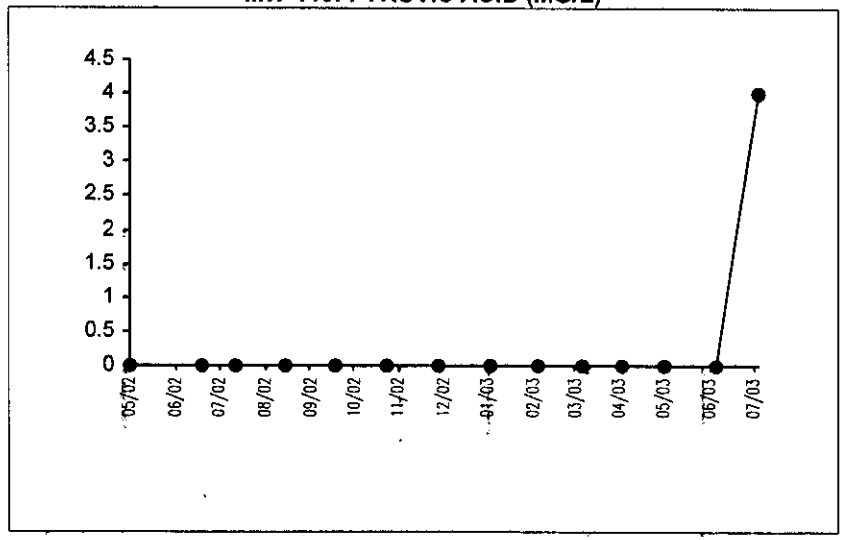
MW-115: NITROGEN, NITRITE (MG/L)



MW-115: PROPIONIC ACID (MG/L)



MW-115: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

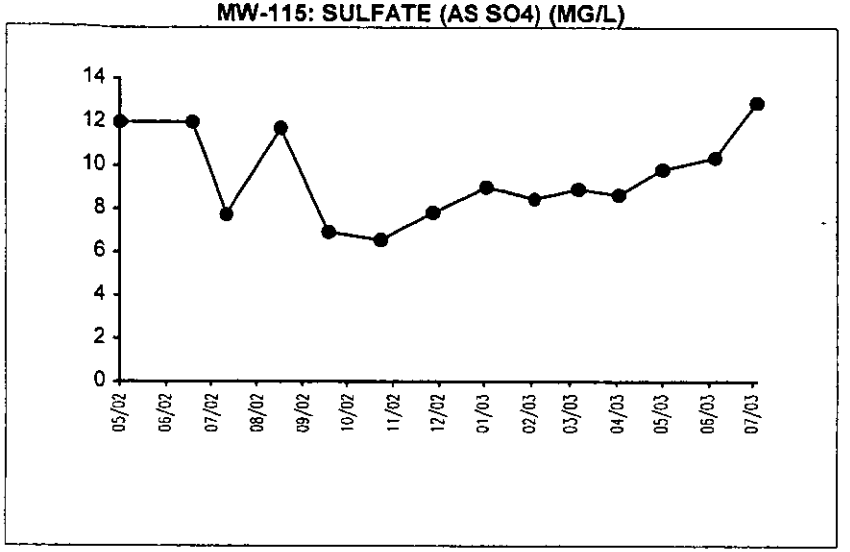
7941052

Location Purpose : Remediation

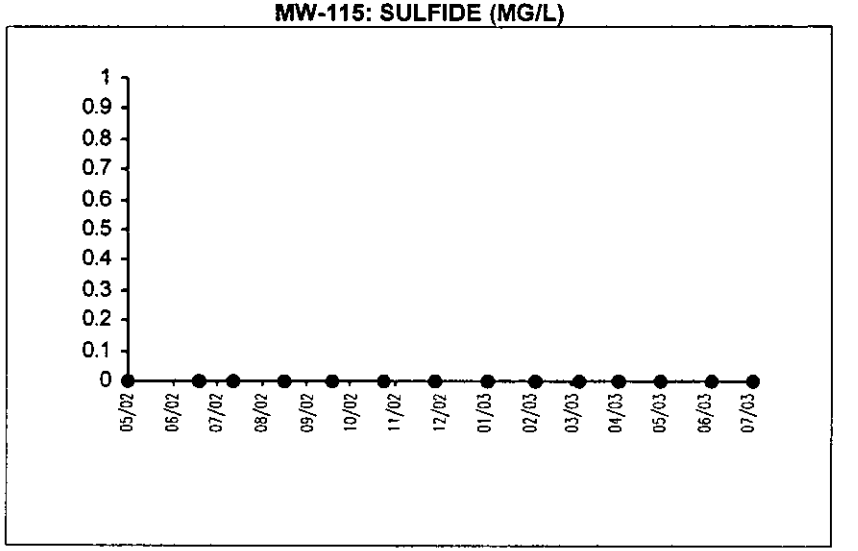
Remediation MW-115

Concentration vs Time

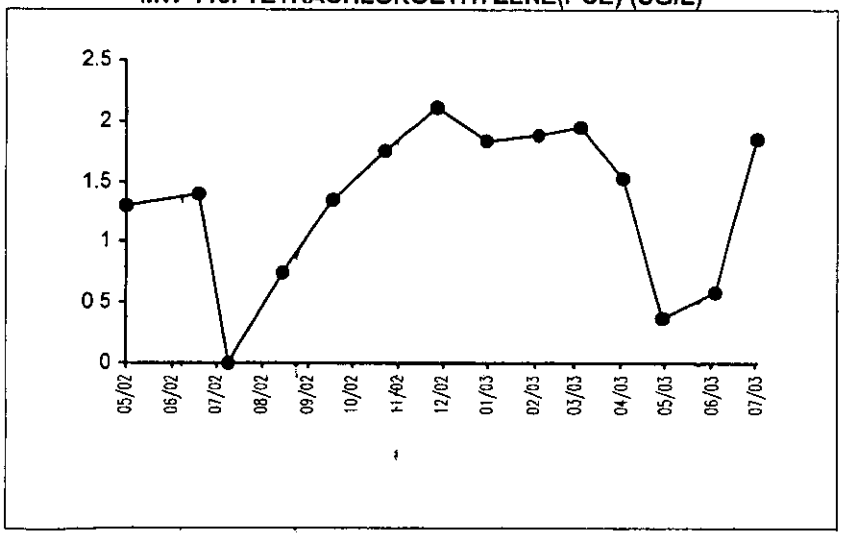
MW-115: SULFATE (AS SO4) (MG/L)



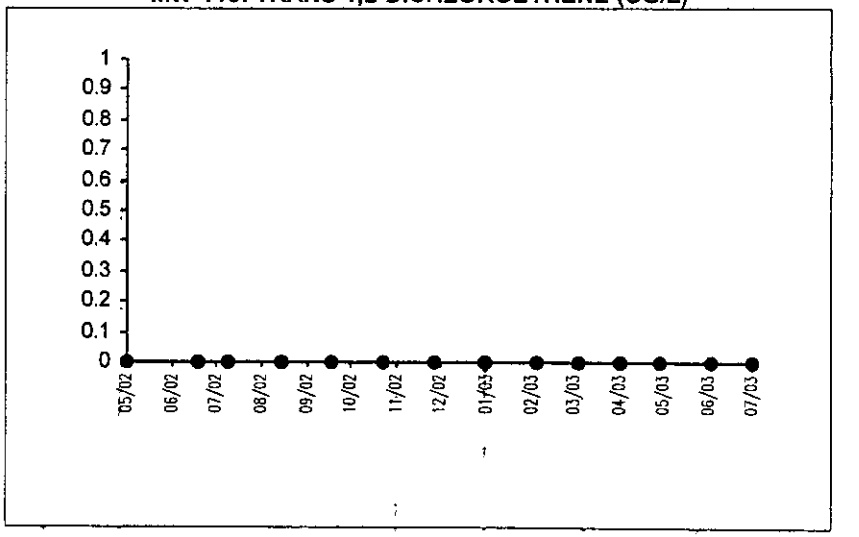
MW-115: SULFIDE (MG/L)



MW-115: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-115: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

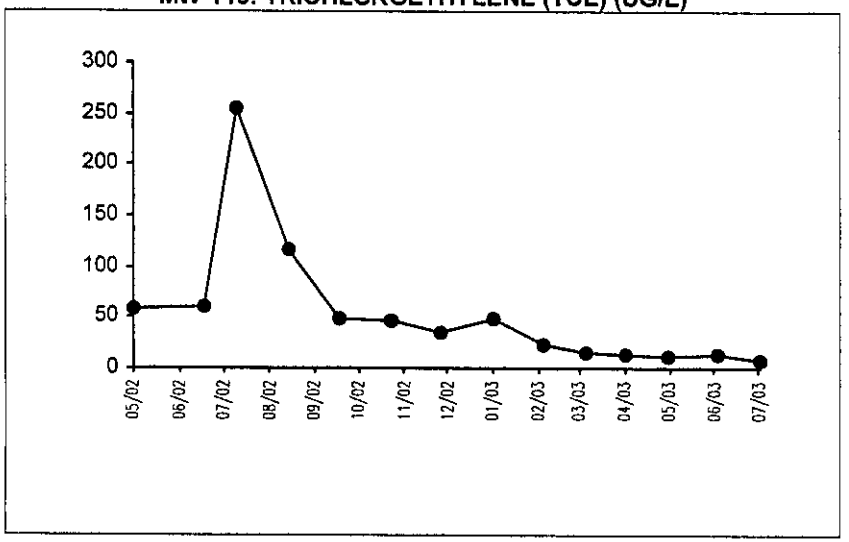
7941053

Location Purpose : Remediation

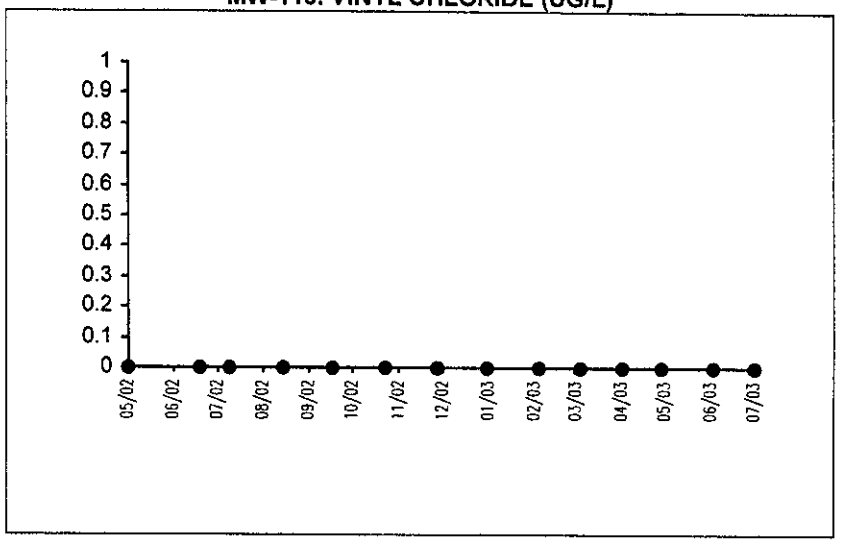
Remediation MW-115

Concentration vs Time

MW-115: TRICHLOROETHYLENE (TCE) (UG/L)



MW-115: VINYL CHLORIDE (UG/L)



7941054

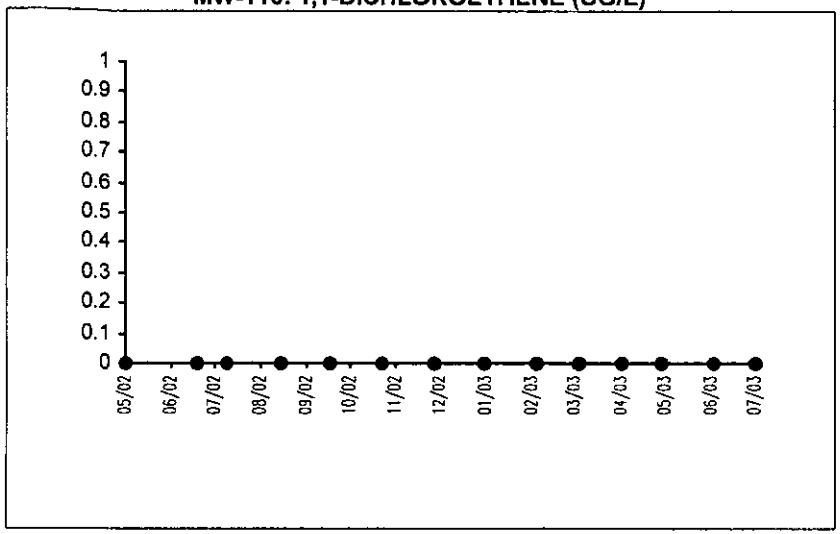
* Nondetects shown as 0.

Location Purpose : Remediation

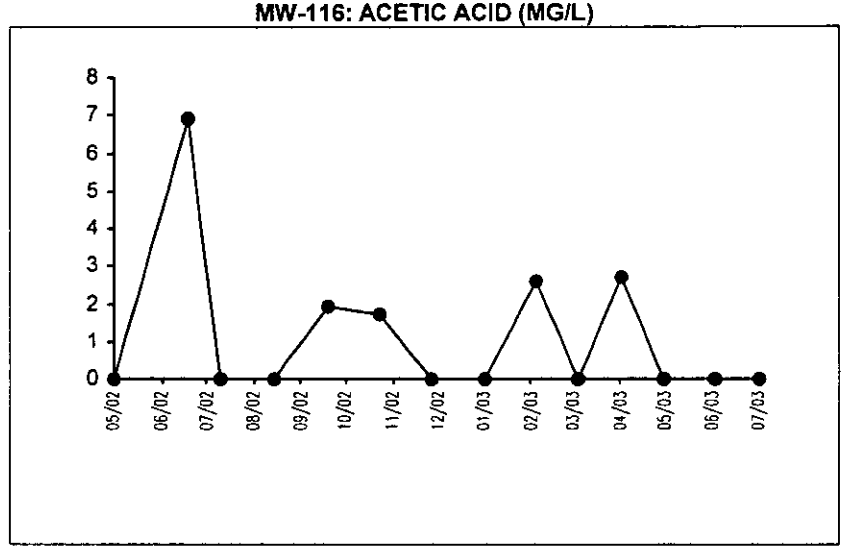
Remediation MW-116

Concentration vs Time

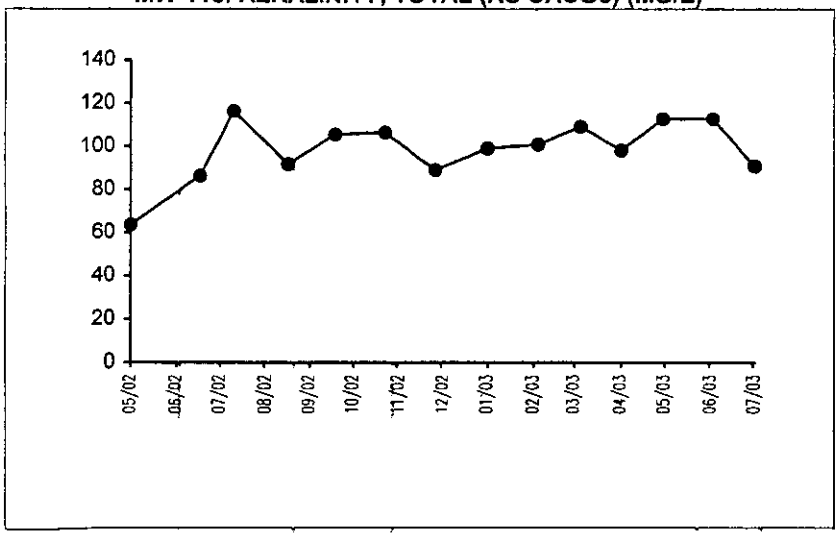
MW-116: 1,1-DICHLOROETHENE (UG/L)



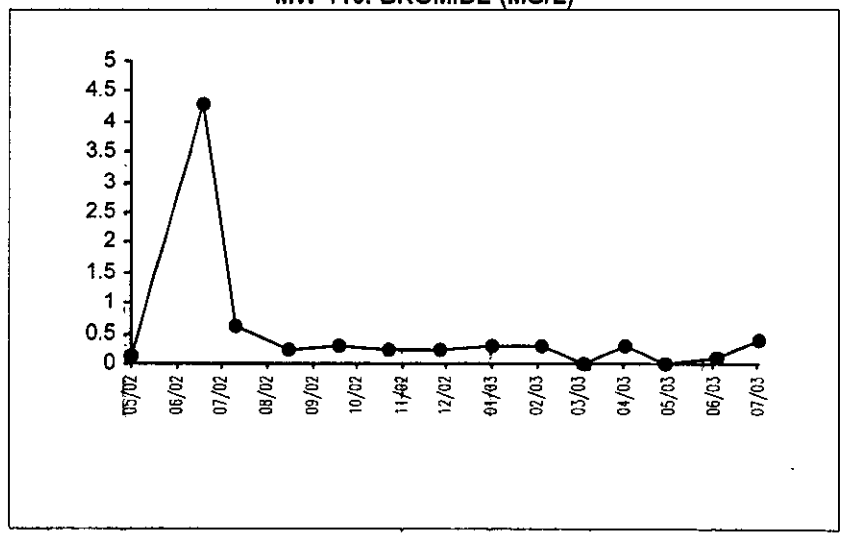
MW-116: ACETIC ACID (MG/L)



MW-116: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-116: BROMIDE (MG/L)



* Nondetects shown as 0.

7941055

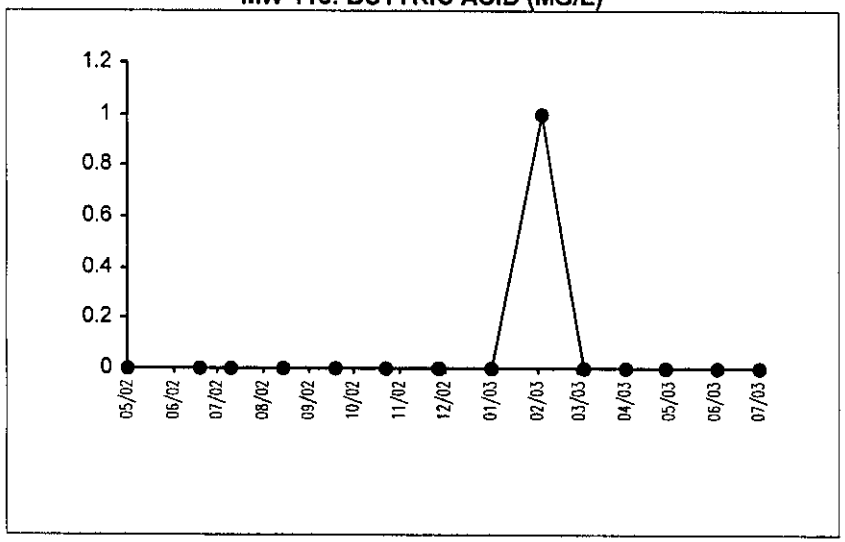
Location Purpose : Remediation

Remediation MW-116

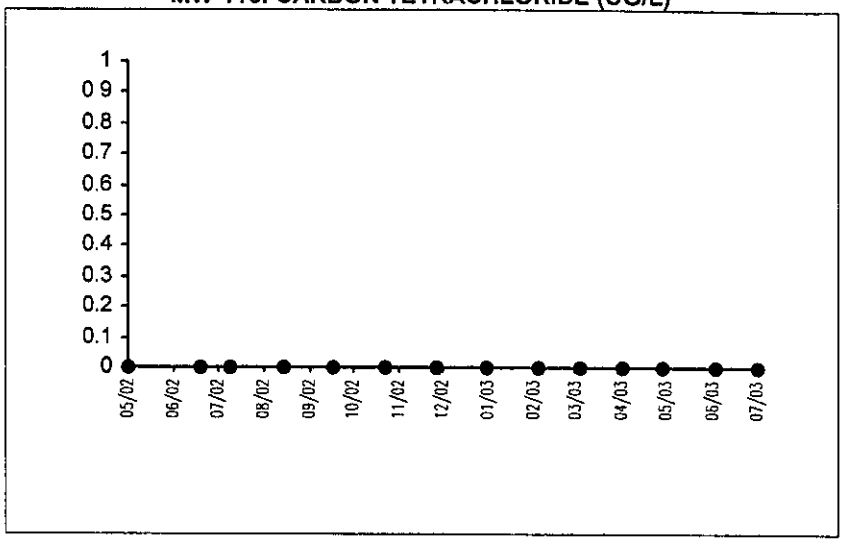
Concentration vs Time

7941056

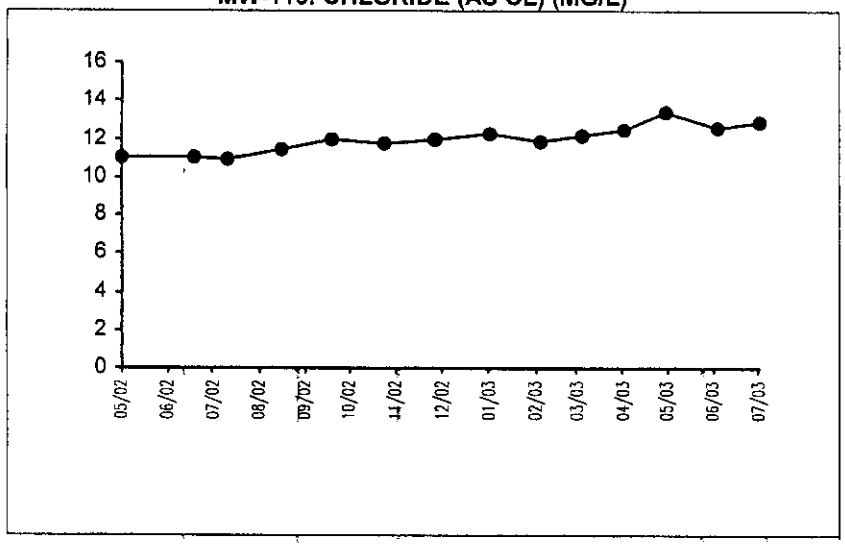
MW-116: BUTYRIC ACID (MG/L)



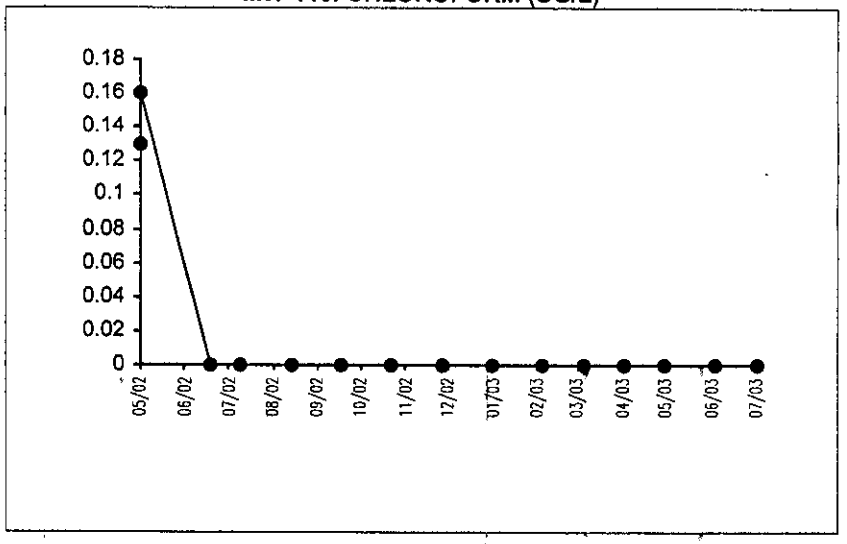
MW-116: CARBON TETRACHLORIDE (UG/L)



MW-116: CHLORIDE (AS CL) (MG/L)



MW-116: CHLOROFORM (UG/L)



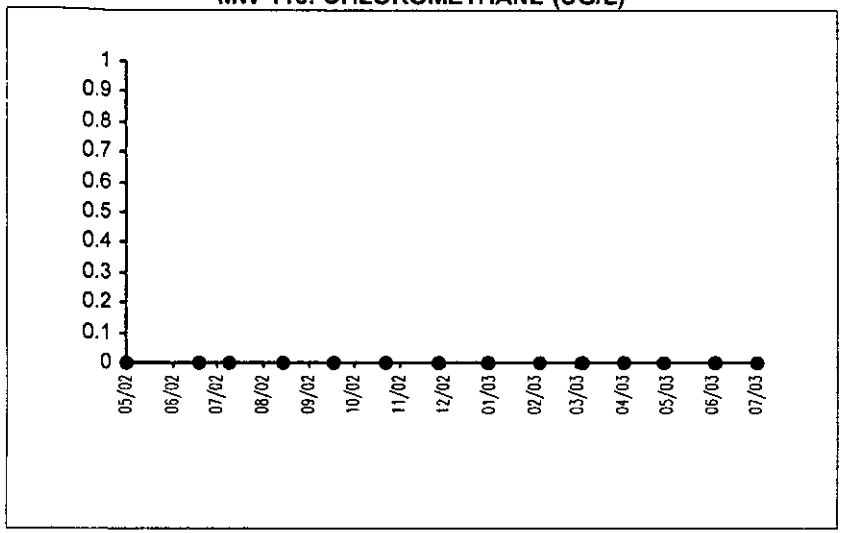
* Nondetects shown as 0.

Location Purpose : Remediation

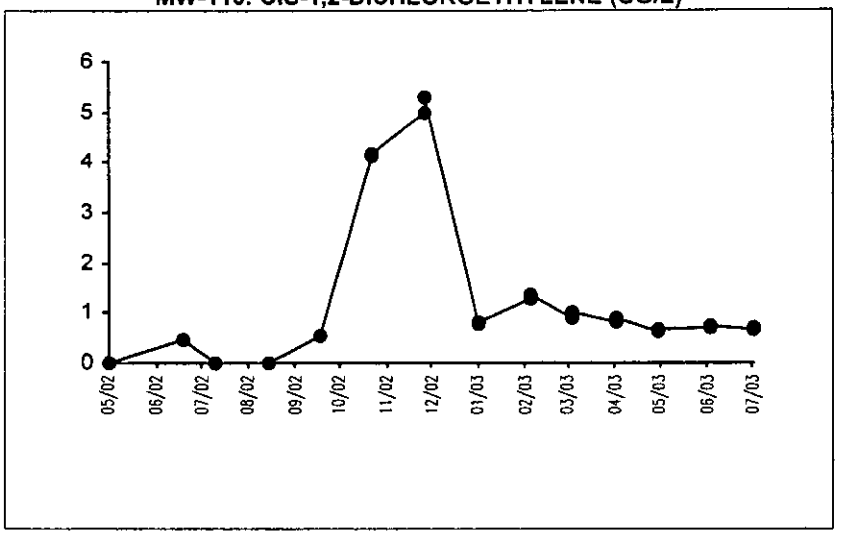
Remediation MW-116

Concentration vs Time

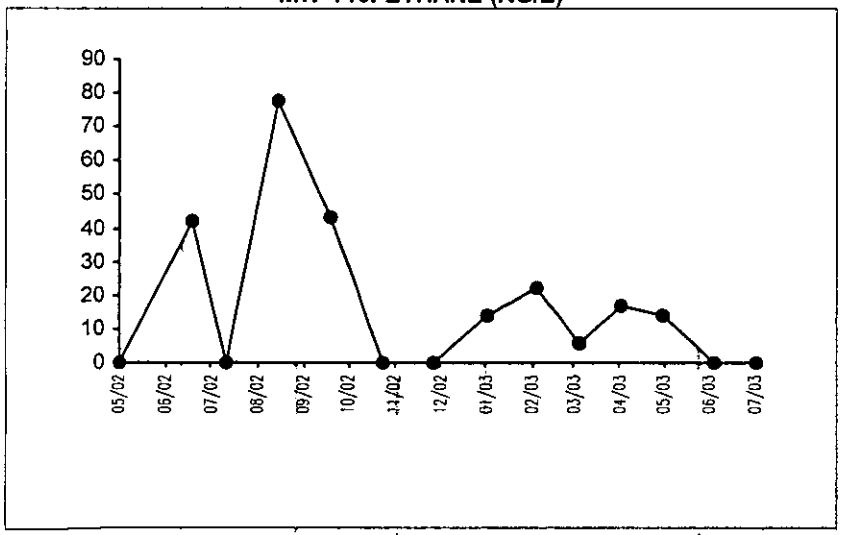
MW-116: CHLOROMETHANE (UG/L)



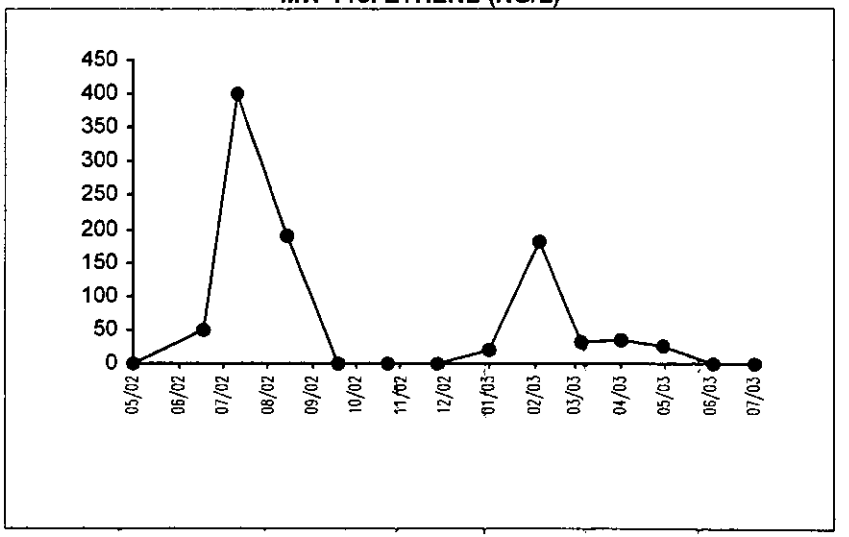
MW-116: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-116: ETHANE (NG/L)



MW-116: ETHENE (NG/L)



* Nondetects shown as 0.

7941057

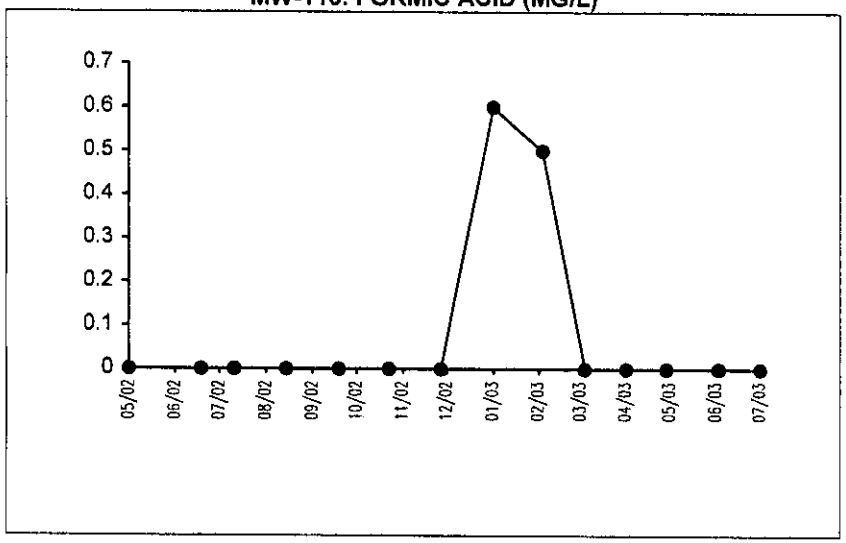
Location Purpose : Remediation

Remediation MW-116

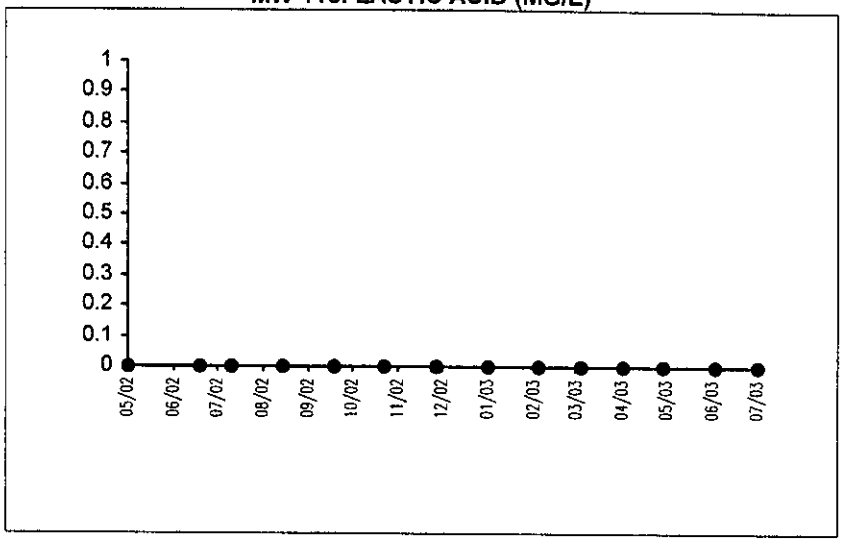
Concentration vs Time

7941058

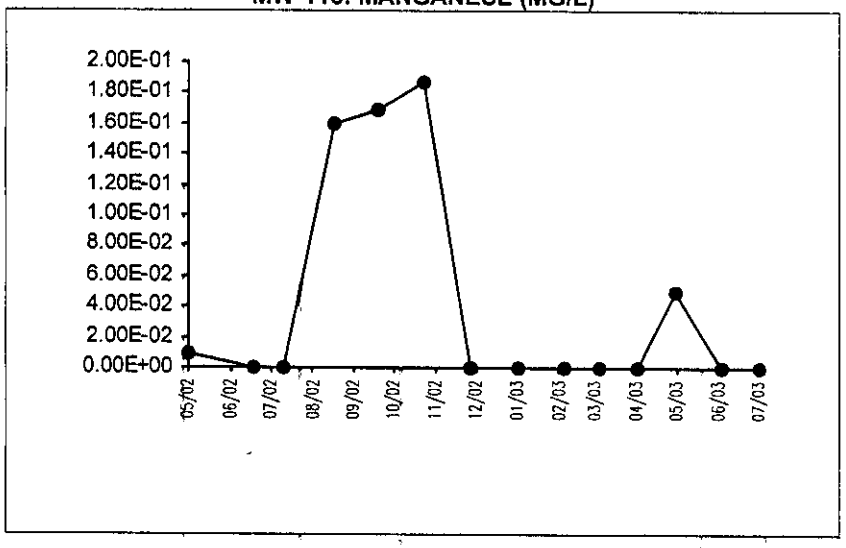
MW-116: FORMIC ACID (MG/L)



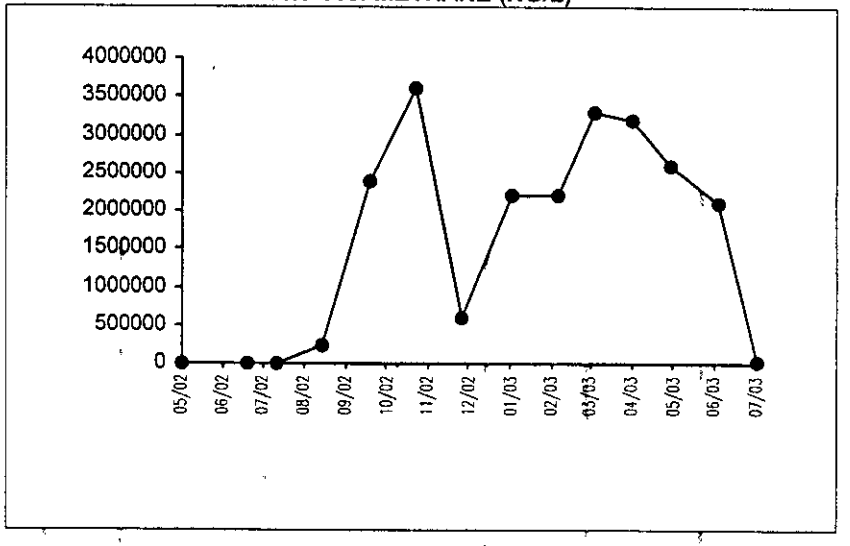
MW-116: LACTIC ACID (MG/L)



MW-116: MANGANESE (MG/L)



MW-116: METHANE (NG/L)



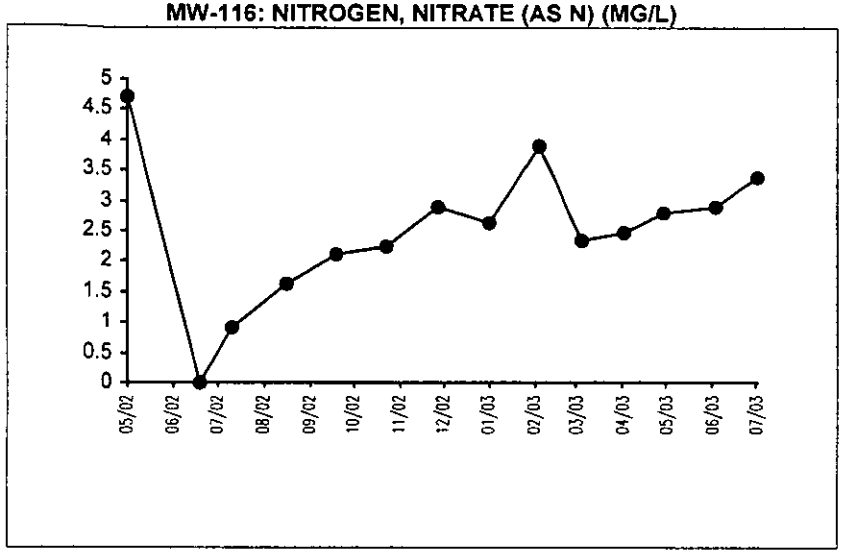
* Nondetects shown as 0.

Location Purpose : Remediation

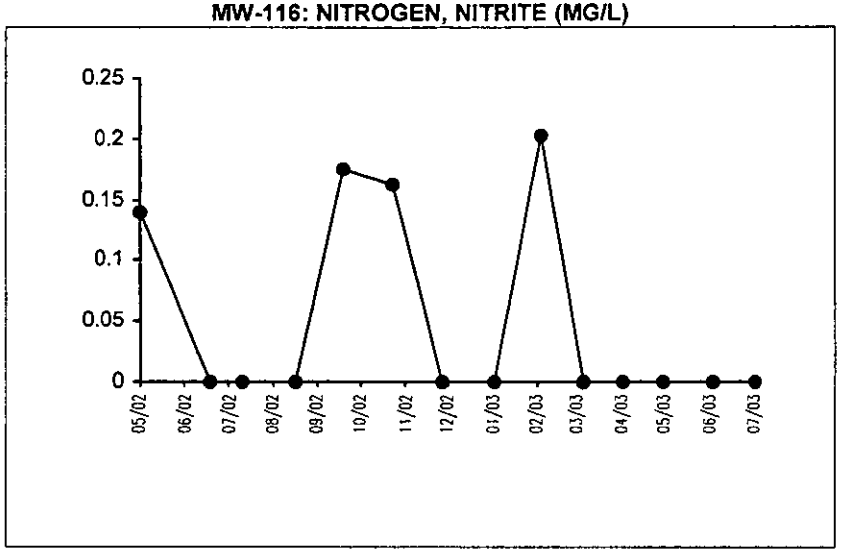
Remediation MW-116

Concentration vs Time

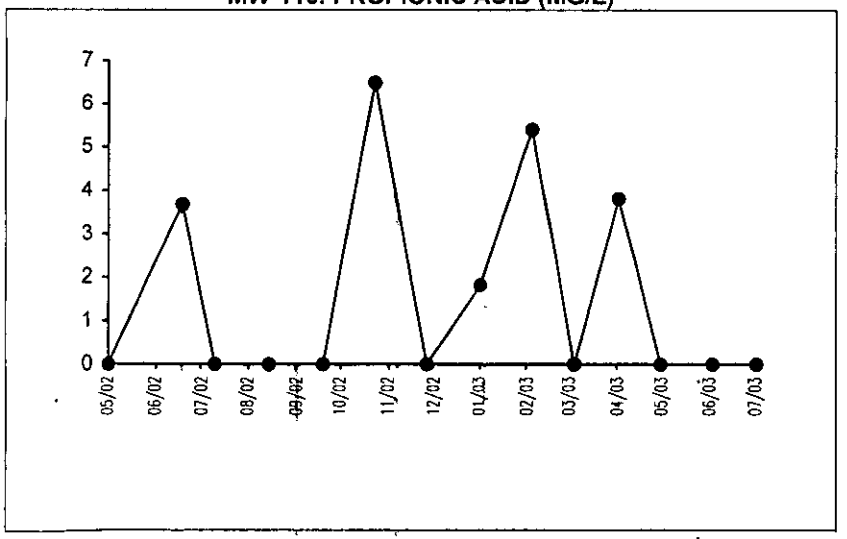
MW-116: NITROGEN, NITRATE (AS N) (MG/L)



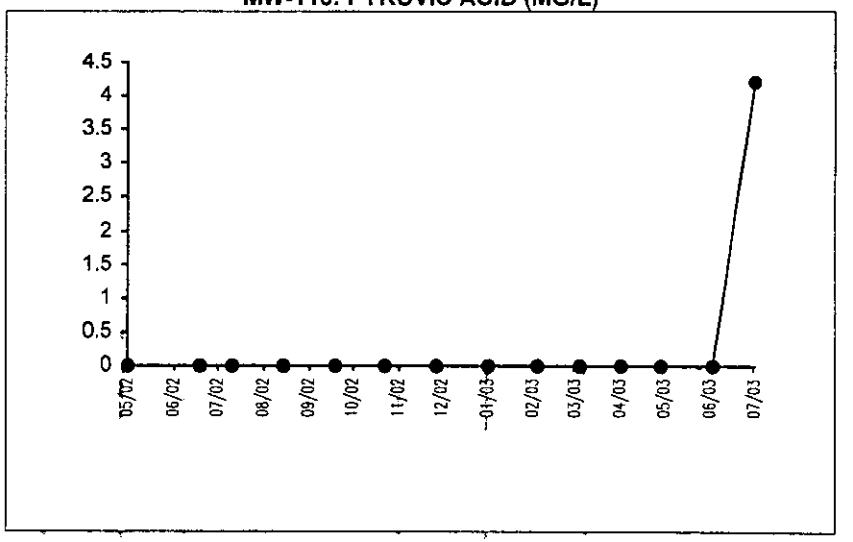
MW-116: NITROGEN, NITRITE (MG/L)



MW-116: PROPIONIC ACID (MG/L)



MW-116: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

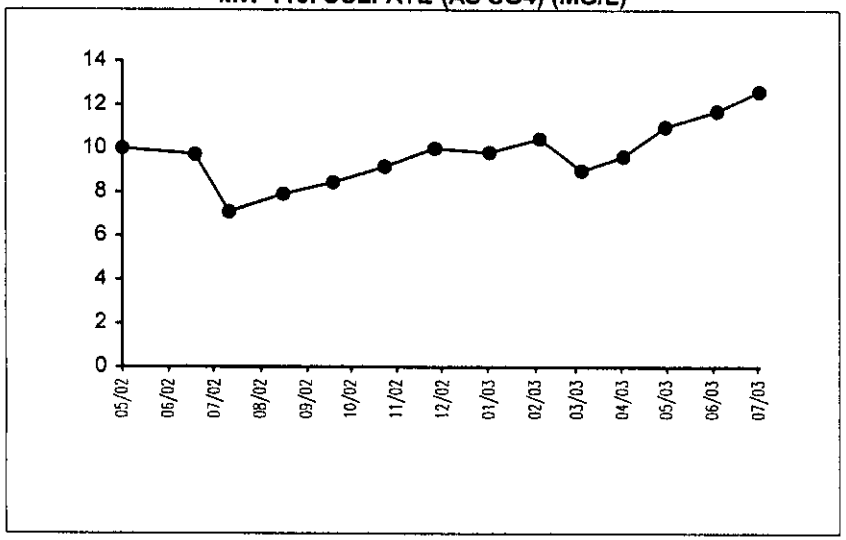
7941059

Location Purpose : Remediation

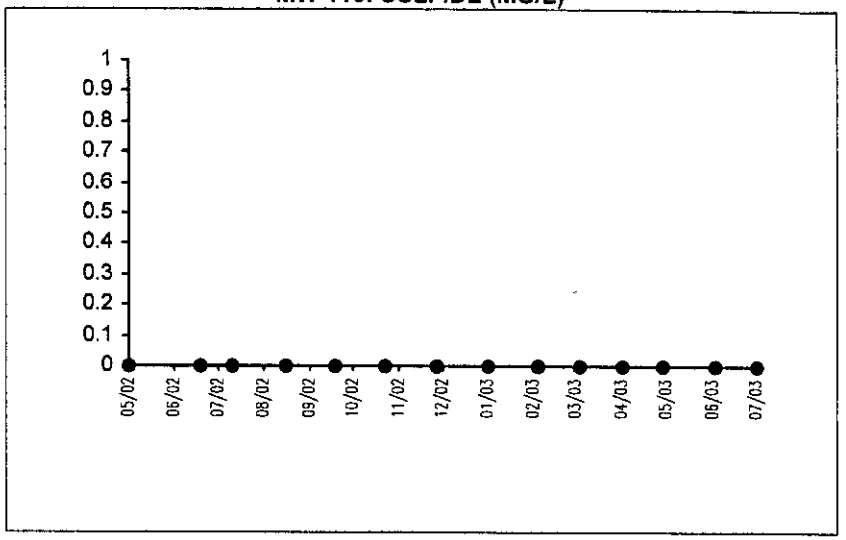
Remediation MW-116

Concentration vs Time

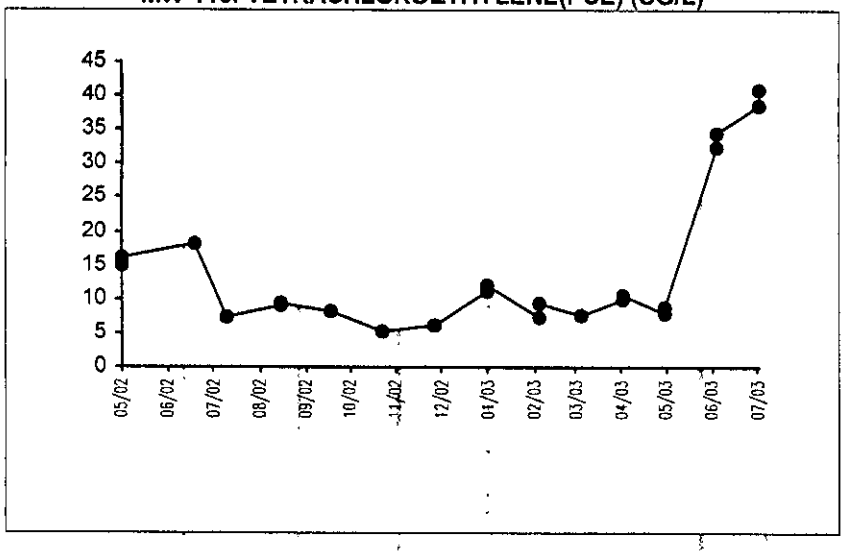
MW-116: SULFATE (AS SO4) (MG/L)



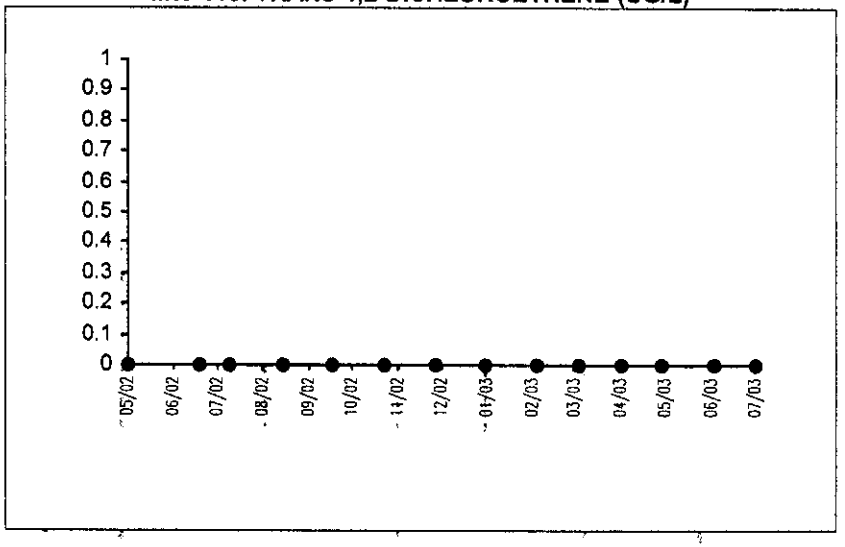
MW-116: SULFIDE (MG/L)



MW-116: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-116: TRANS-1,2-DICHLOROETHENE (UG/L)



7941060

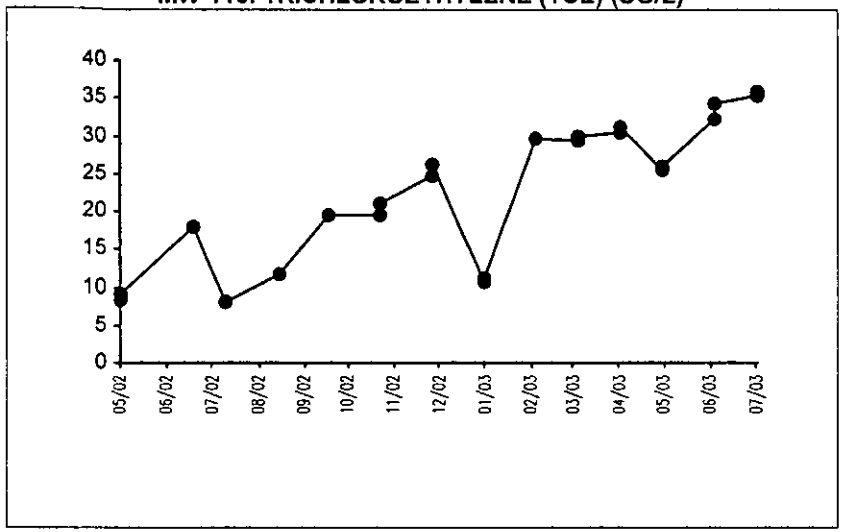
* Nondetects shown as 0.

Location Purpose : Remediation

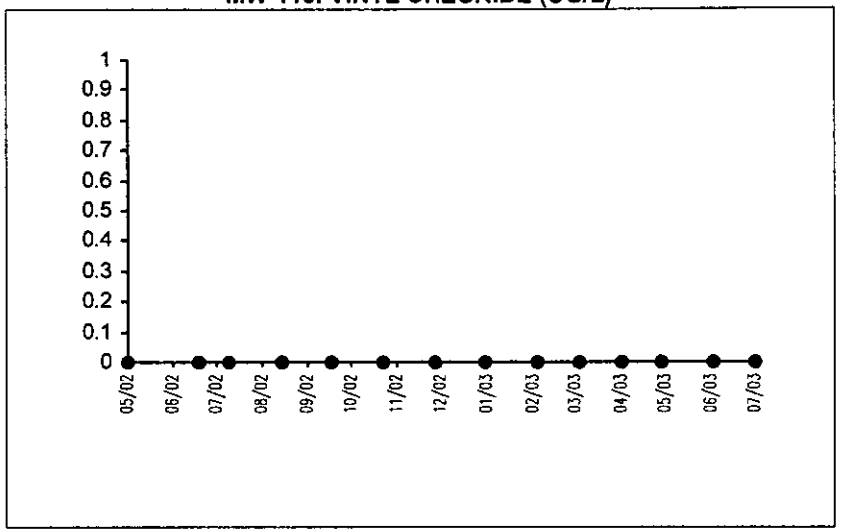
Remediation MW-116

Concentration vs Time

MW-116: TRICHLOROETHYLENE (TCE) (UG/L)



MW-116: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

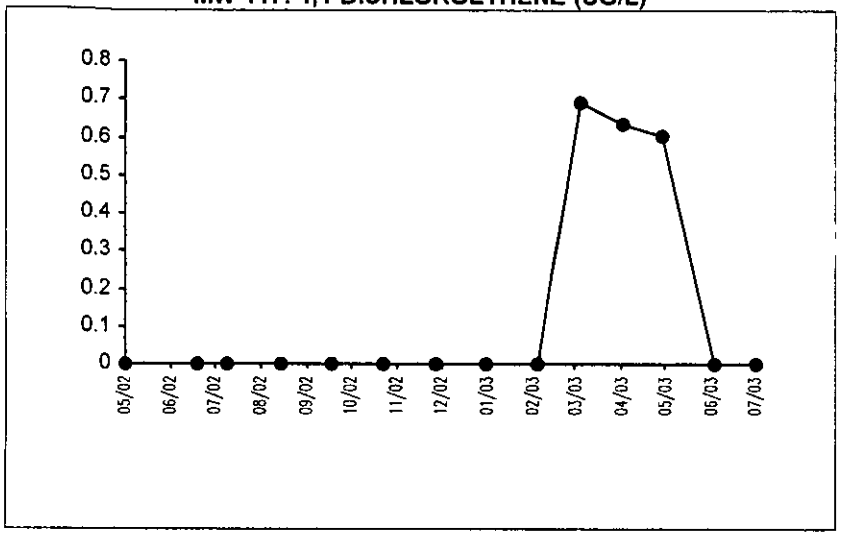
7941061

Location Purpose : Remediation

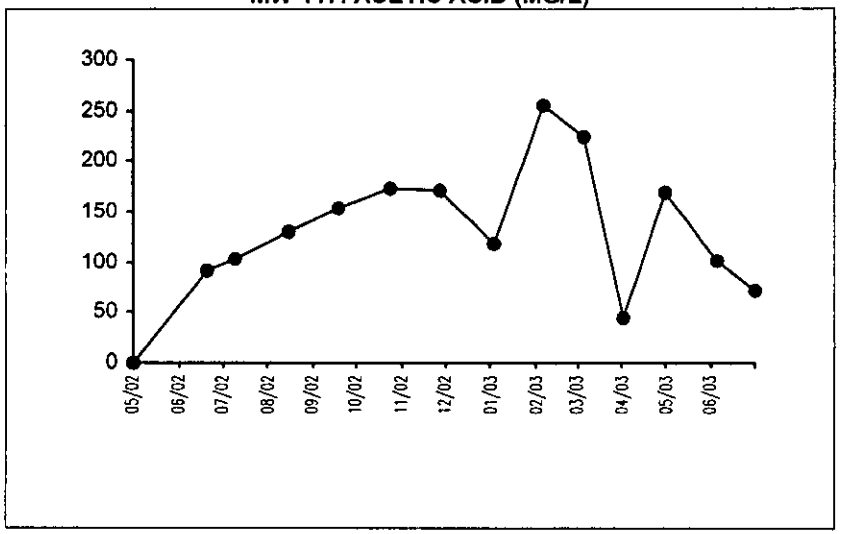
Remediation MW-117

Concentration vs Time

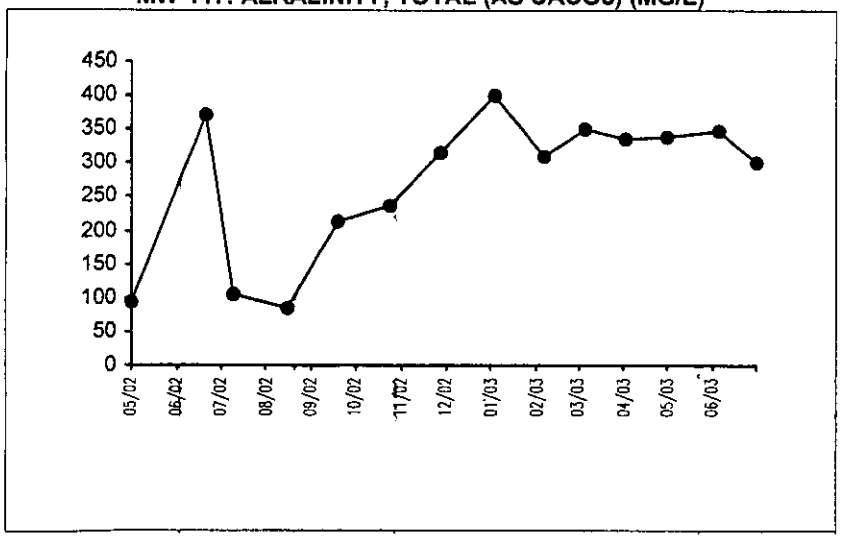
MW-117: 1,1-DICHLOROETHENE (UG/L)



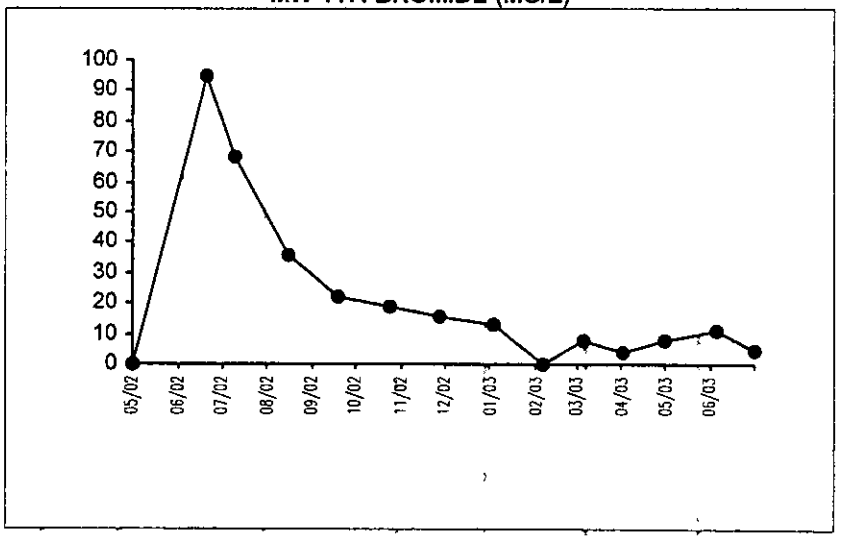
MW-117: ACETIC ACID (MG/L)



MW-117: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-117: BROMIDE (MG/L)



* Nondetects shown as 0.

7941062

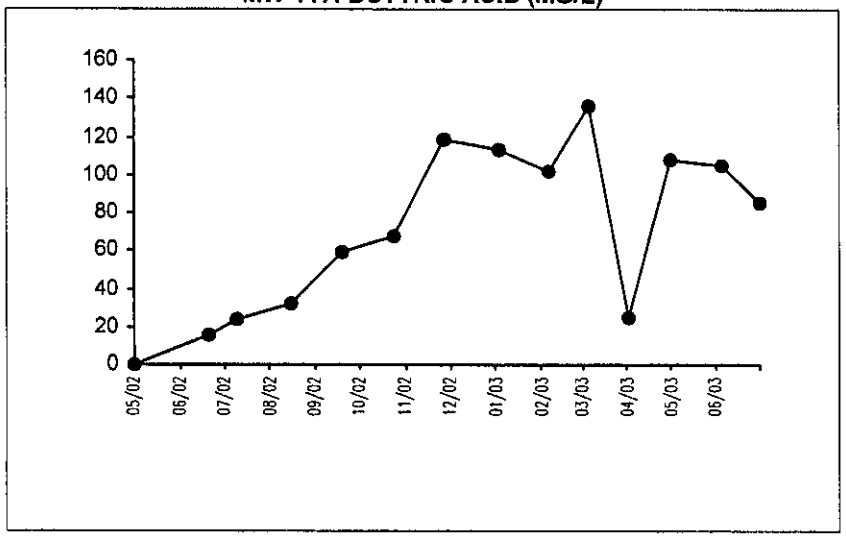
Location Purpose : Remediation

Remediation MW-117

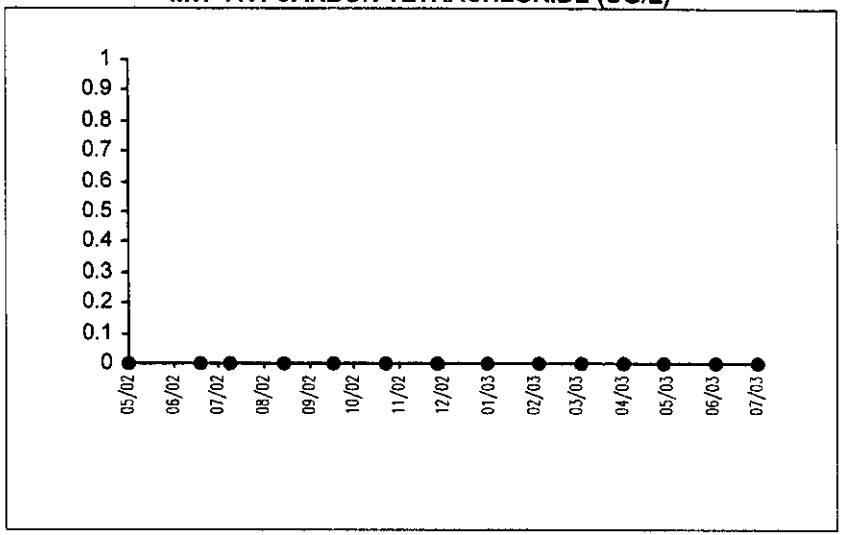
Concentration vs Time

7941063

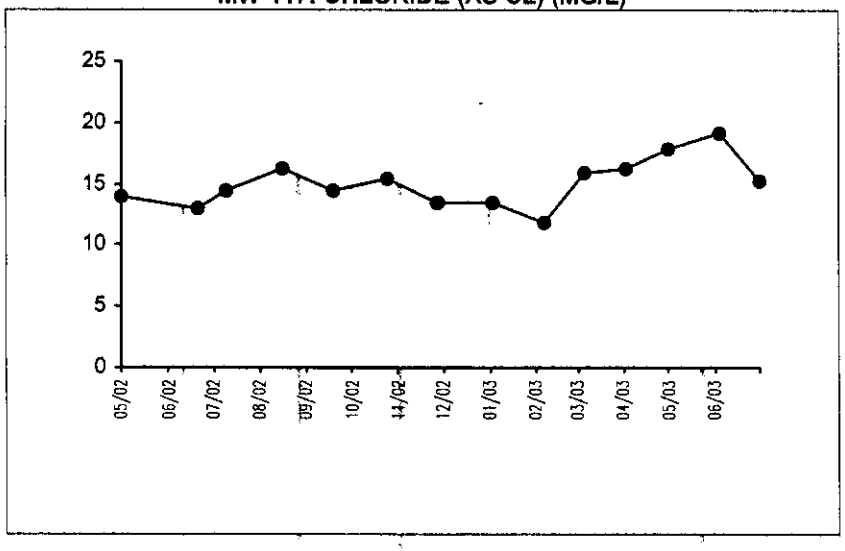
MW-117: BUTYRIC ACID (MG/L)



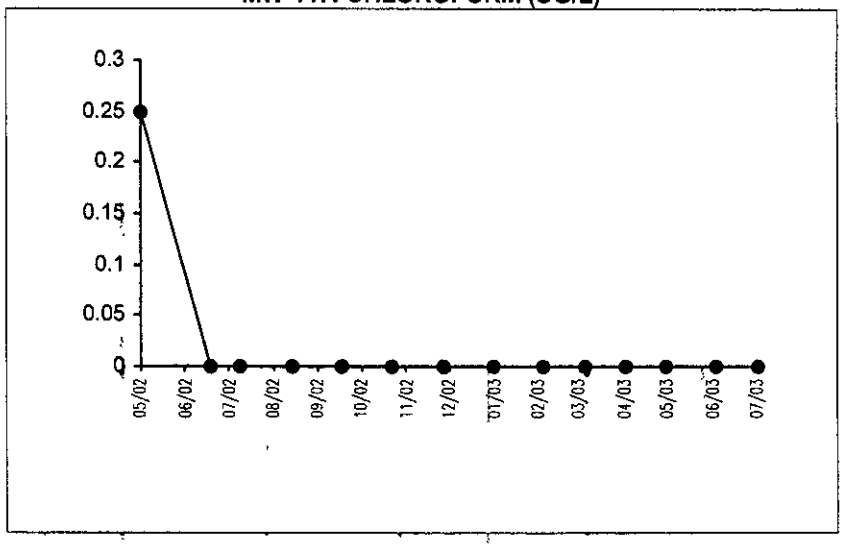
MW-117: CARBON TETRACHLORIDE (UG/L)



MW-117: CHLORIDE (AS CL) (MG/L)



MW-117: CHLOROFORM (UG/L)



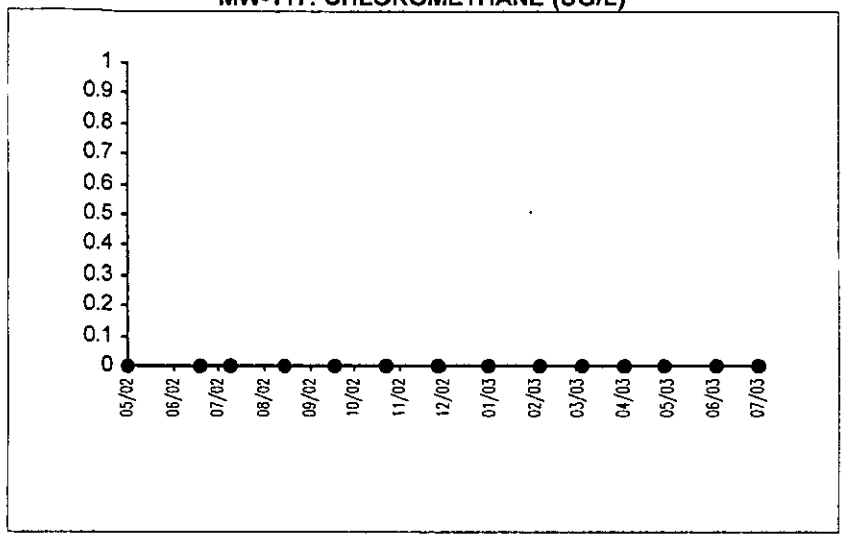
* Nond[illegible]ts shown as 0.

Location Purpose : Remediation

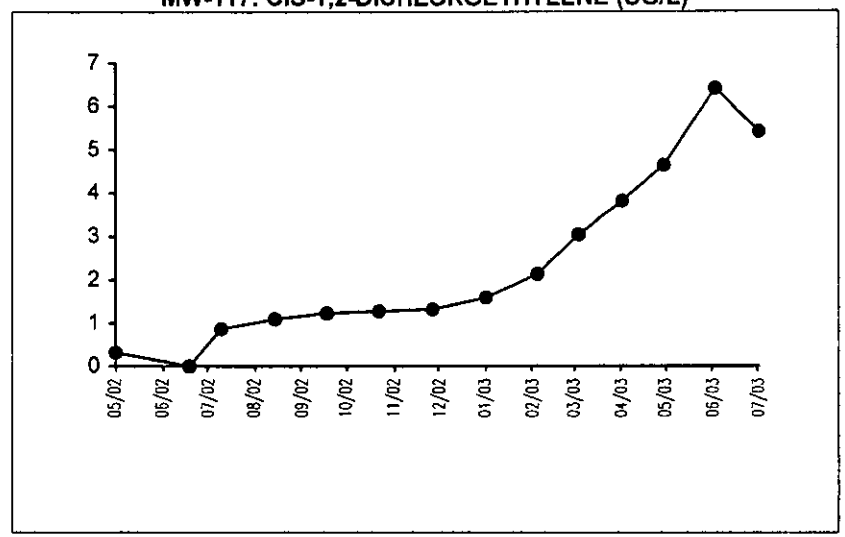
Remediation MW-117

Concentration vs Time

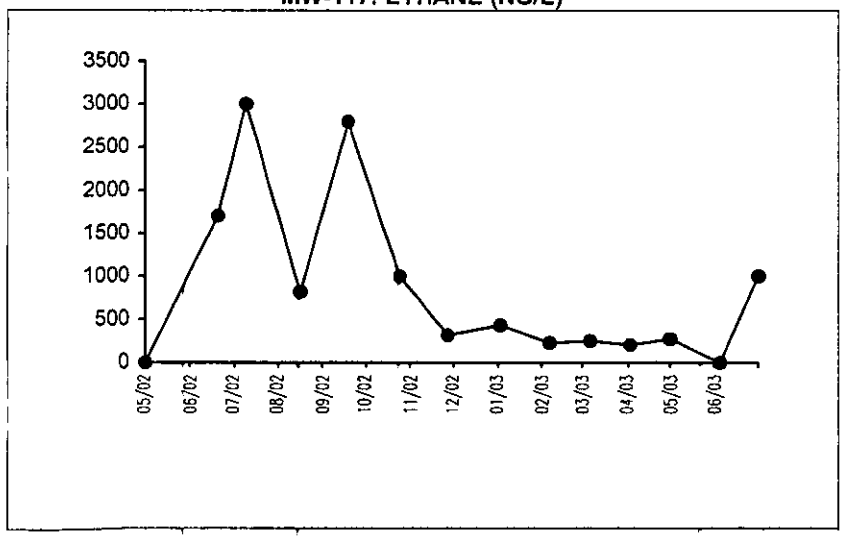
MW-117: CHLOROMETHANE (UG/L)



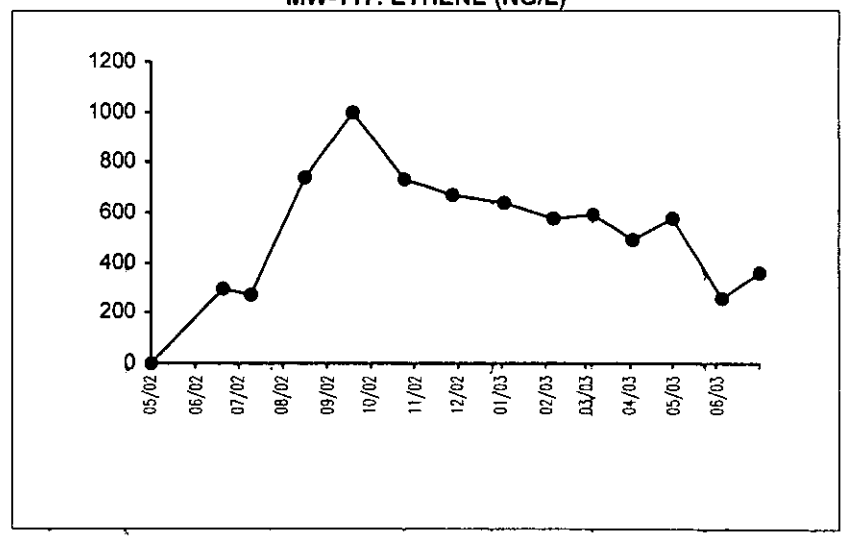
MW-117: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-117: ETHANE (NG/L)



MW-117: ETHENE (NG/L)



* Nondetects shown as 0.

7941064

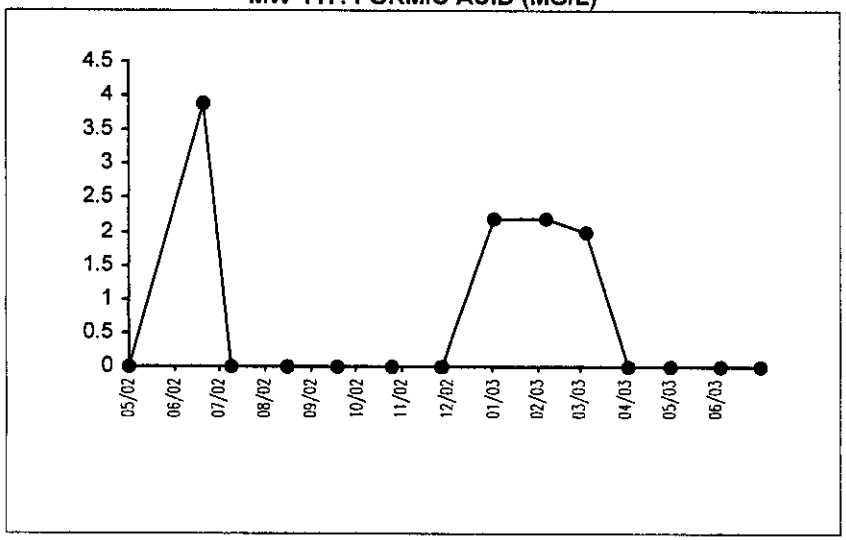
Location Purpose : Remediation

Remediation MW-117

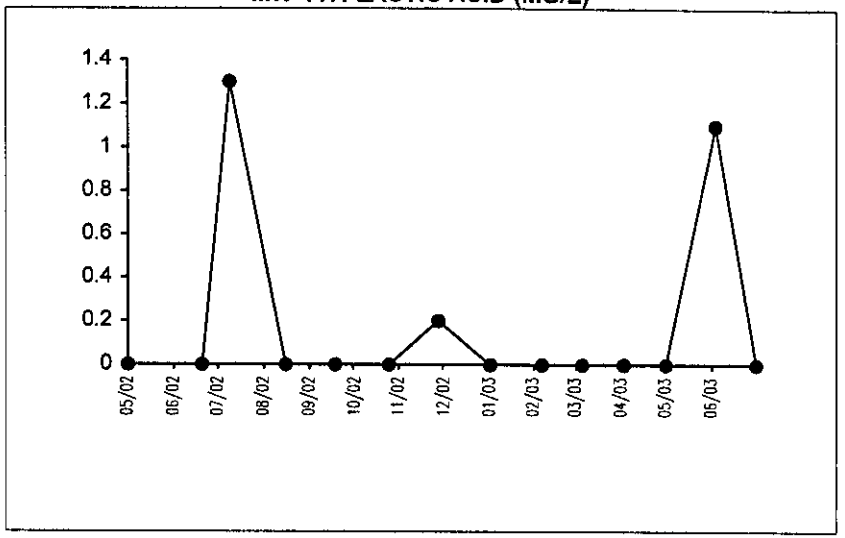
Concentration vs Time

7941065

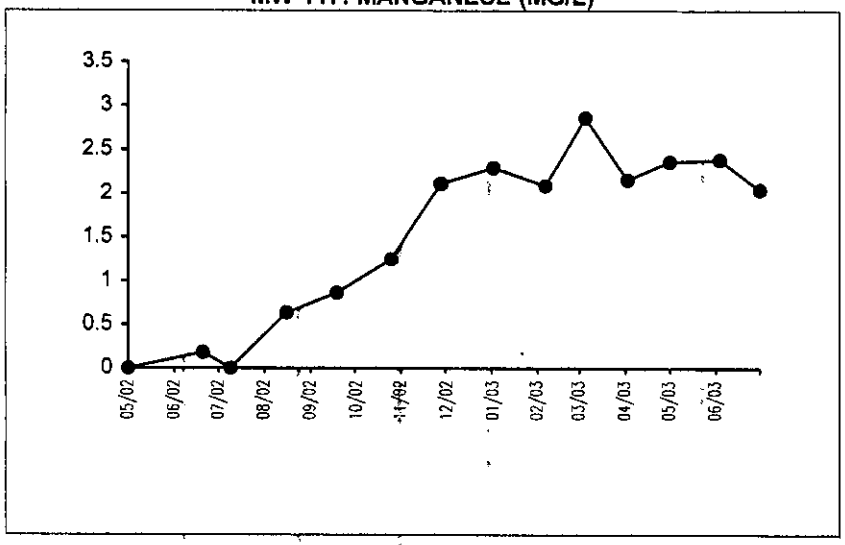
MW-117: FORMIC ACID (MG/L)



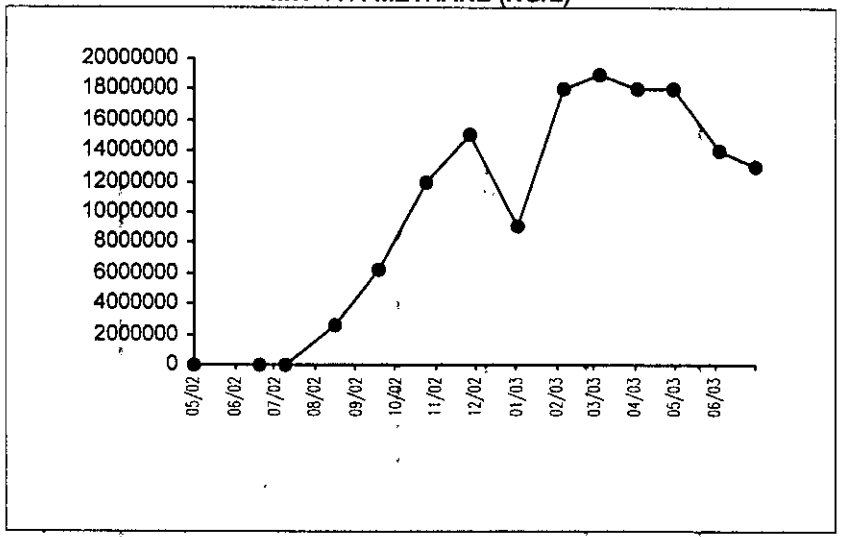
MW-117: LACTIC ACID (MG/L)



MW-117: MANGANESE (MG/L)



MW-117: METHANE (NG/L)



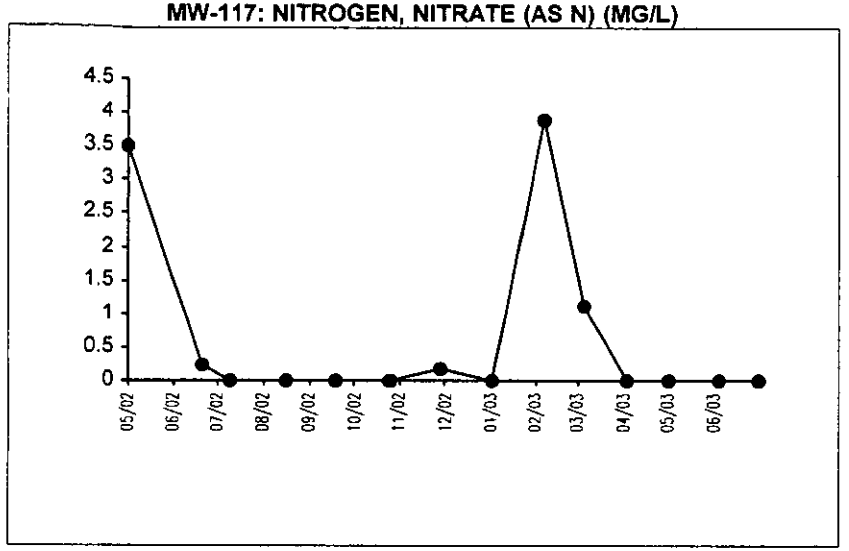
* Nondetects shown as 0.

Location Purpose : Remediation

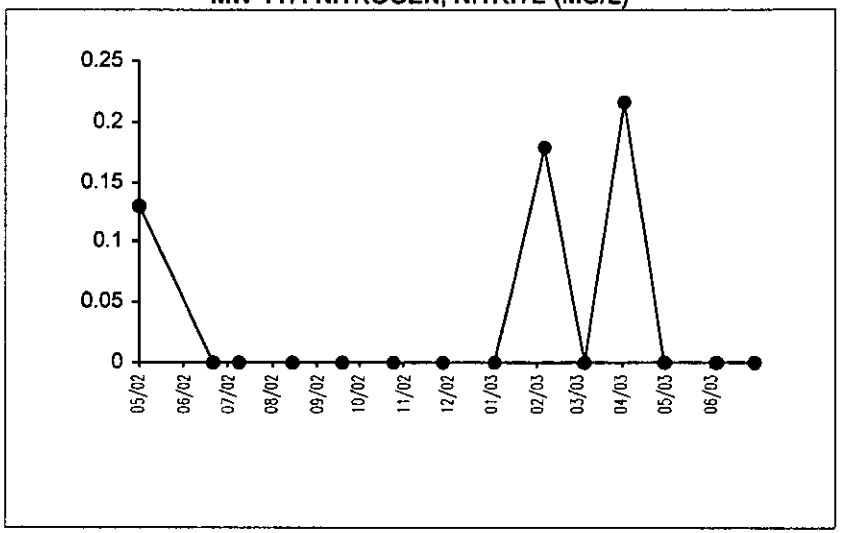
Remediation MW-117

Concentration vs Time

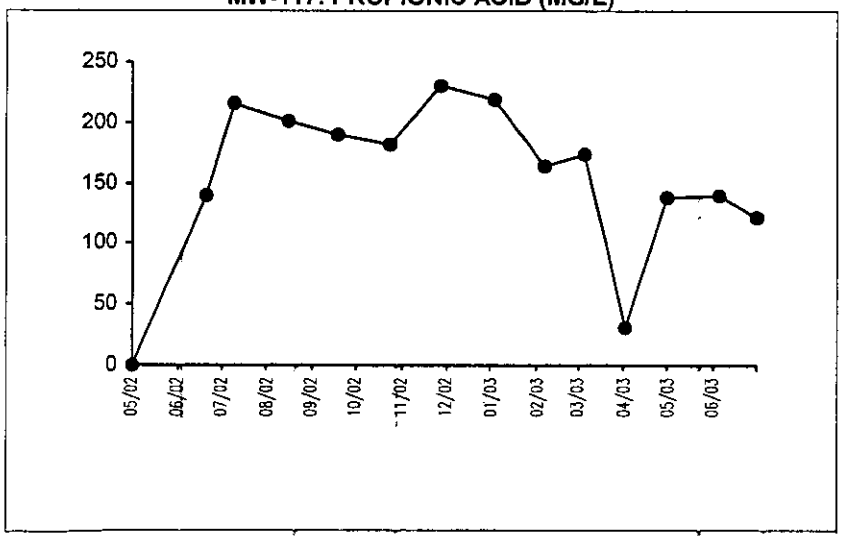
MW-117: NITROGEN, NITRATE (AS N) (MG/L)



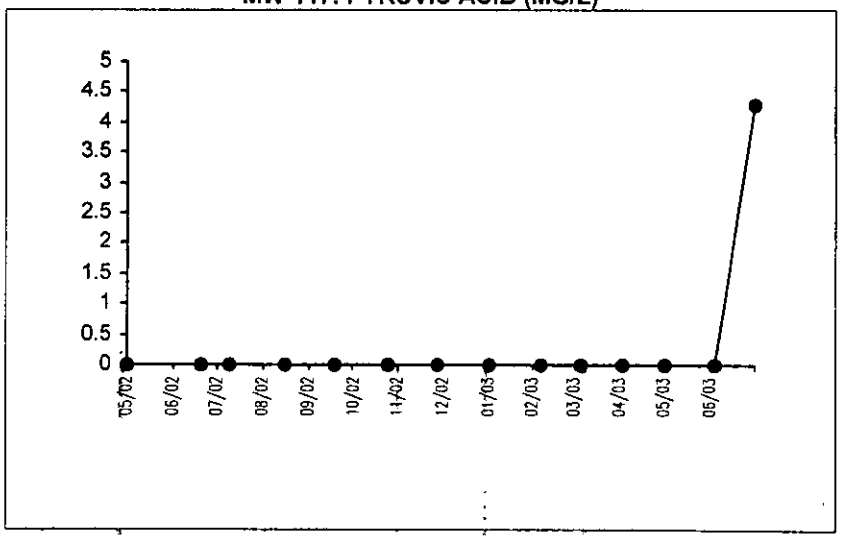
MW-117: NITROGEN, NITRITE (MG/L)



MW-117: PROPIONIC ACID (MG/L)



MW-117: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

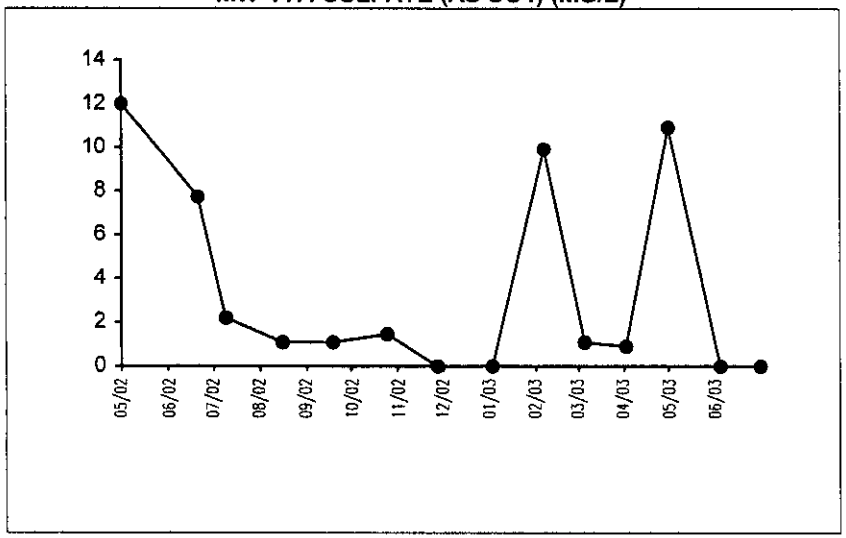
7941066

Location Purpose : Remediation

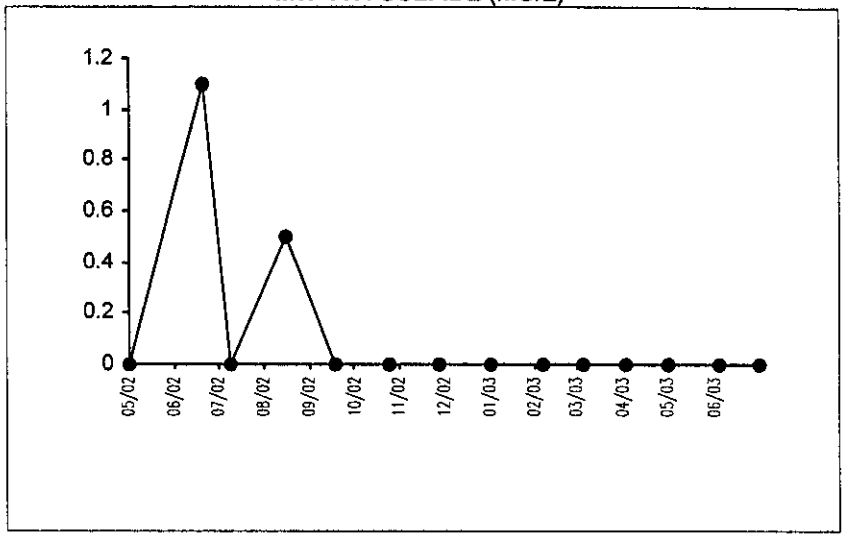
Remediation MW-117

Concentration vs Time

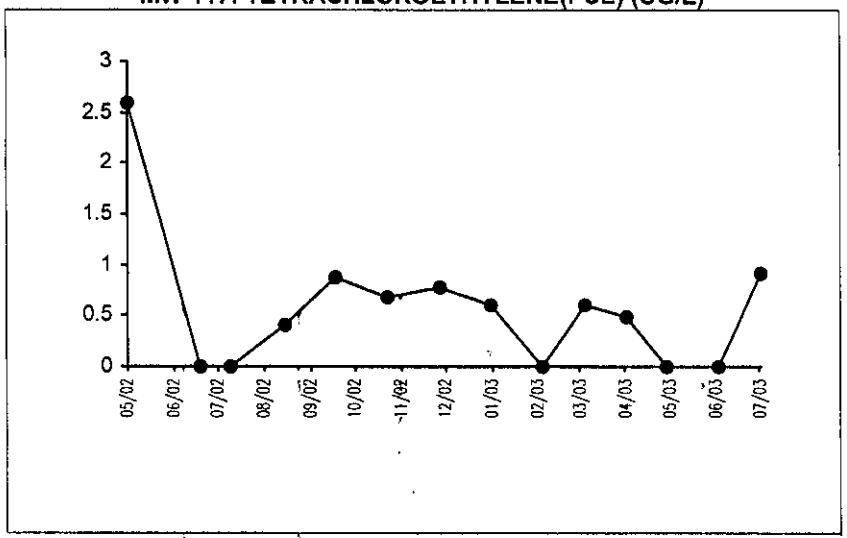
MW-117: SULFATE (AS SO4) (MG/L)



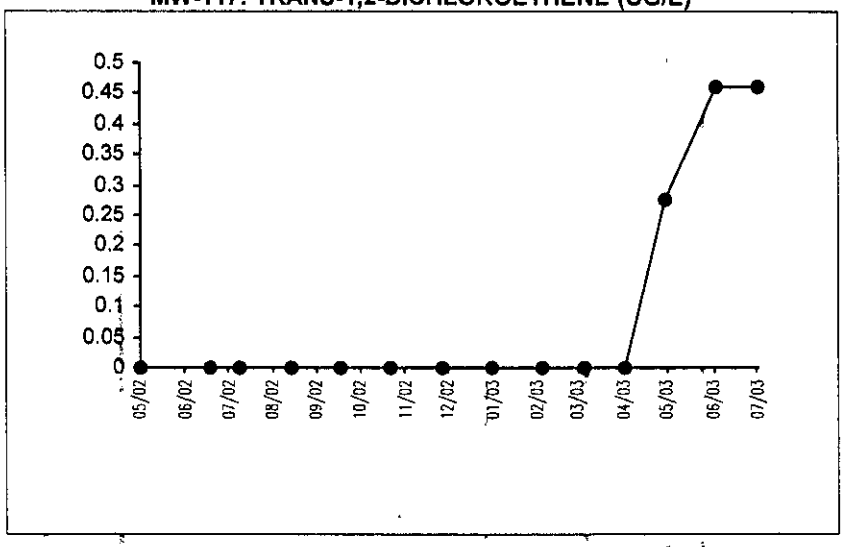
MW-117: SULFIDE (MG/L)



MW-117: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-117: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

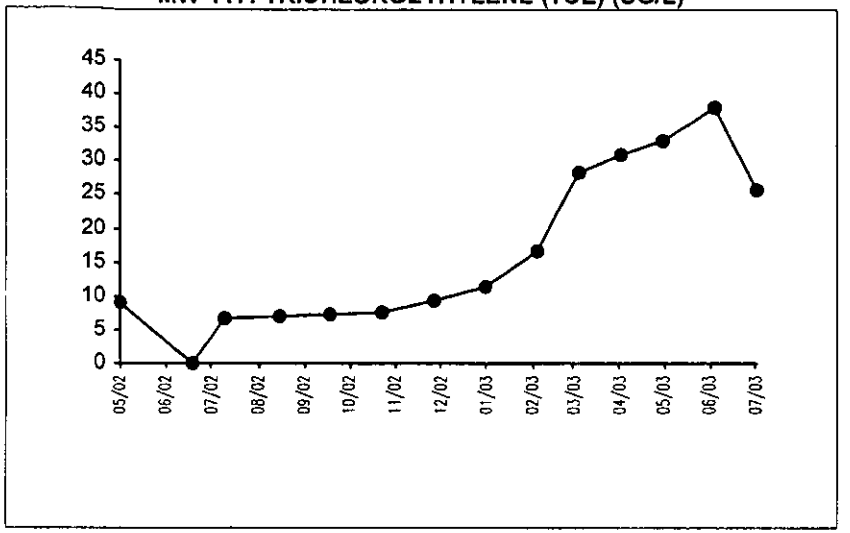
7941067

Location Purpose : Remediation

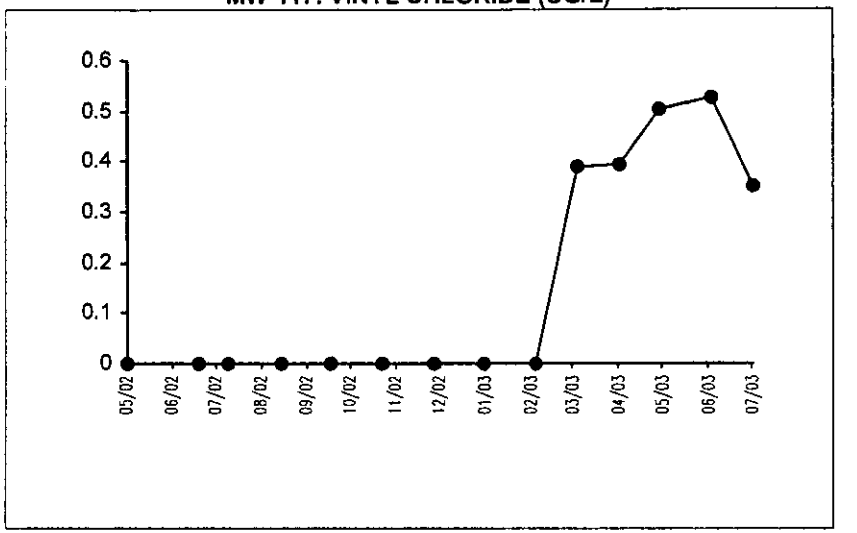
Remediation MW-117

Concentration vs Time

MW-117: TRICHLOROETHYLENE (TCE) (UG/L)



MW-117: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

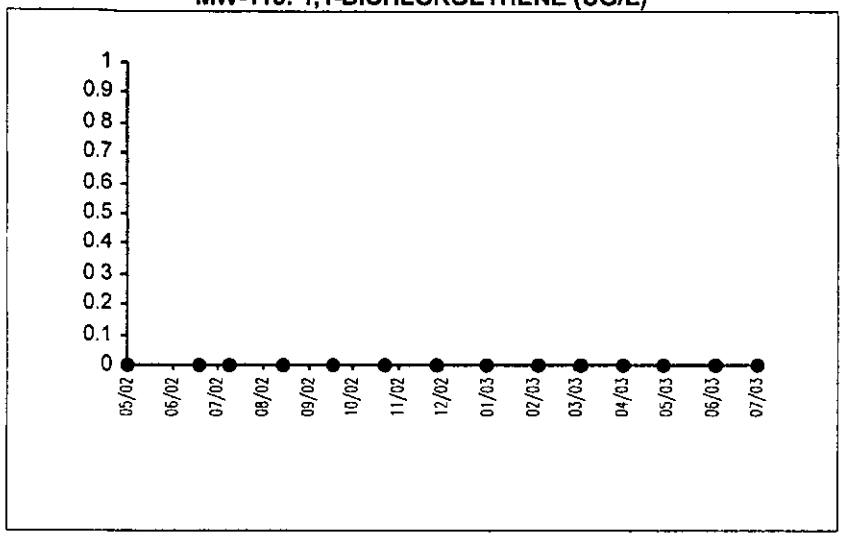
7941068

Location Purpose : Remediation

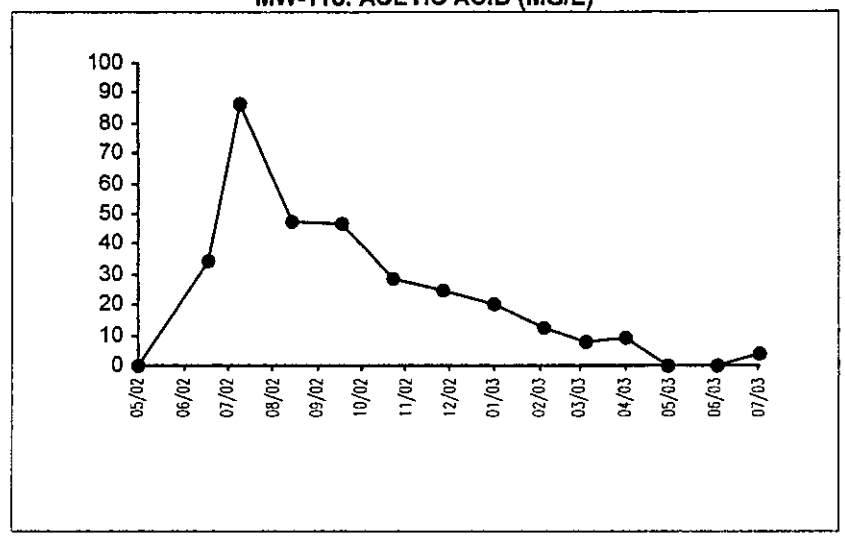
Remediation MW-118

Concentration vs Time

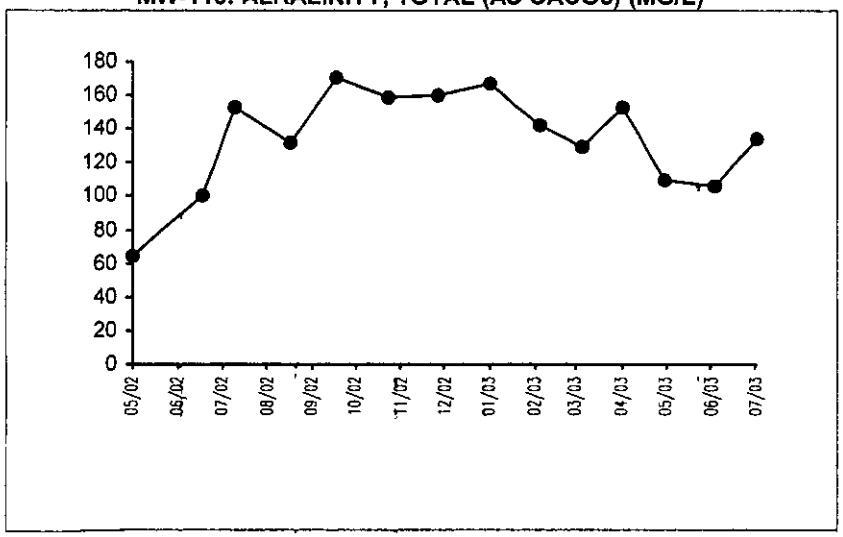
MW-118: 1,1-DICHLOROETHENE (UG/L)



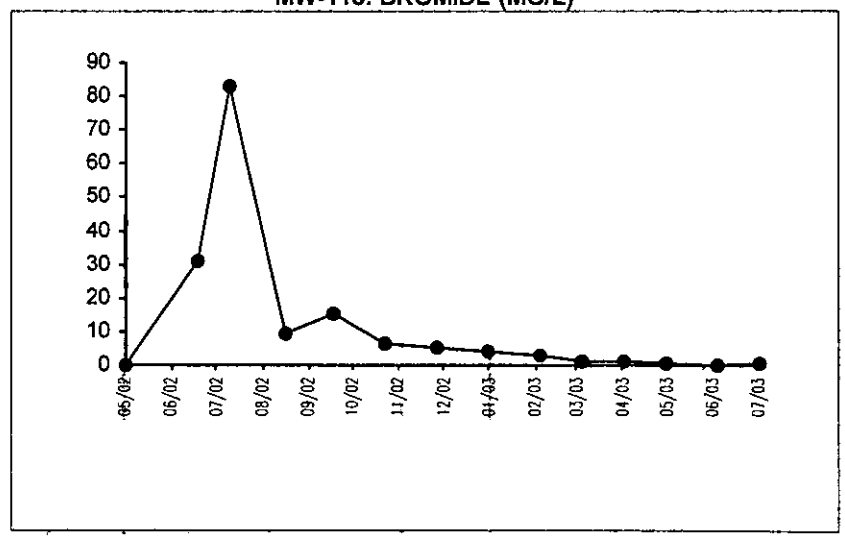
MW-118: ACETIC ACID (MG/L)



MW-118: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-118: BROMIDE (MG/L)



* Nondetects shown as 0.

7941069

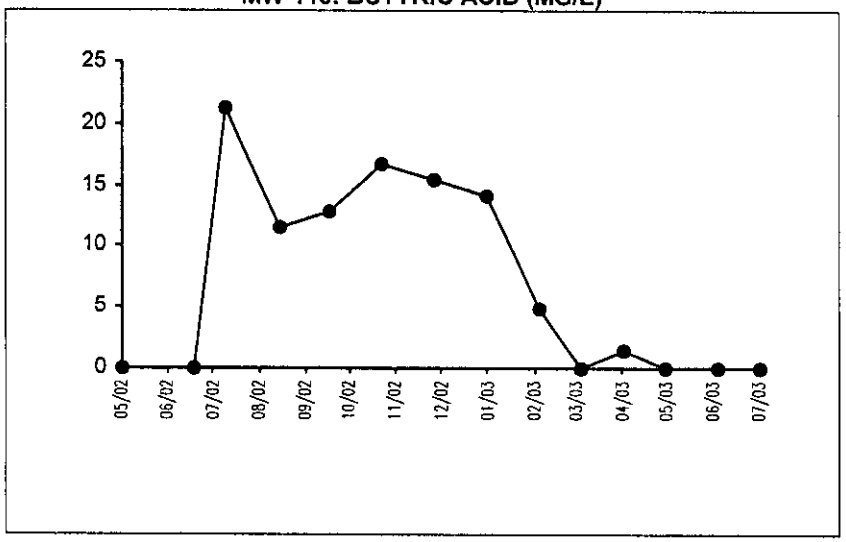
Location Purpose : Remediation

Remediation MW-118

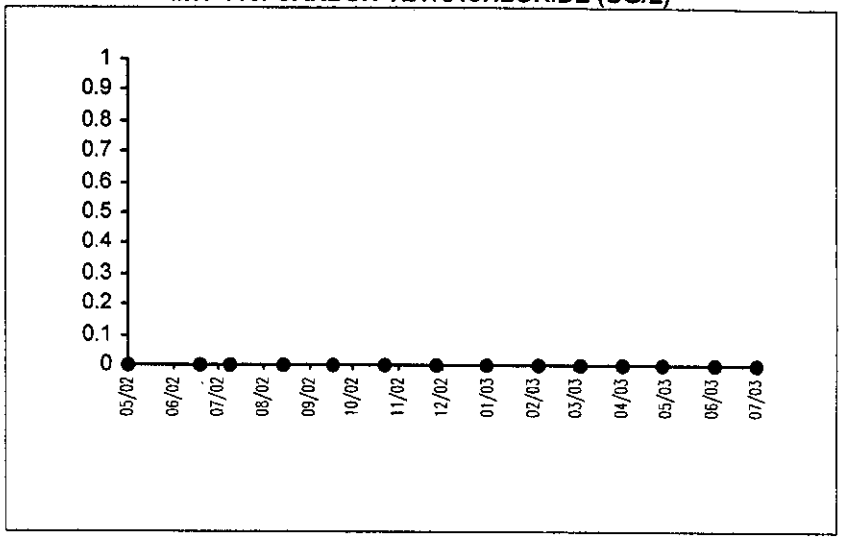
Concentration vs Time

7941070

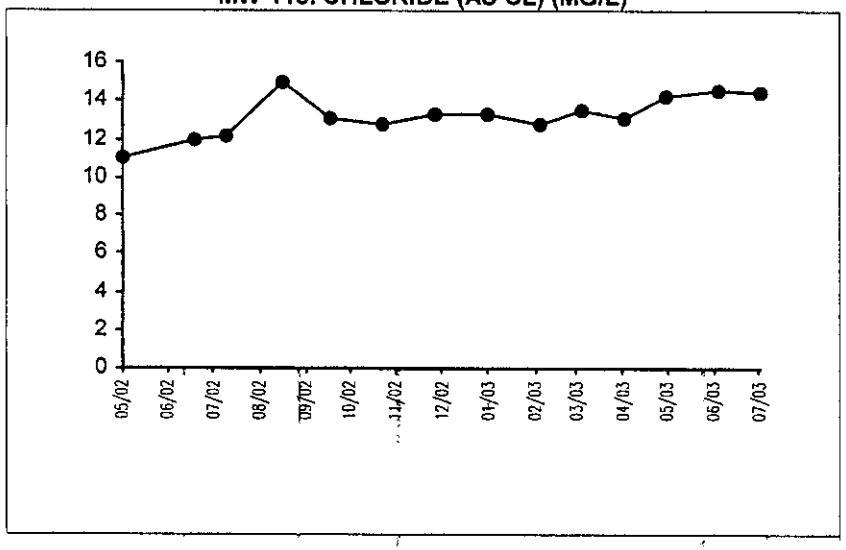
MW-118: BUTYRIC ACID (MG/L)



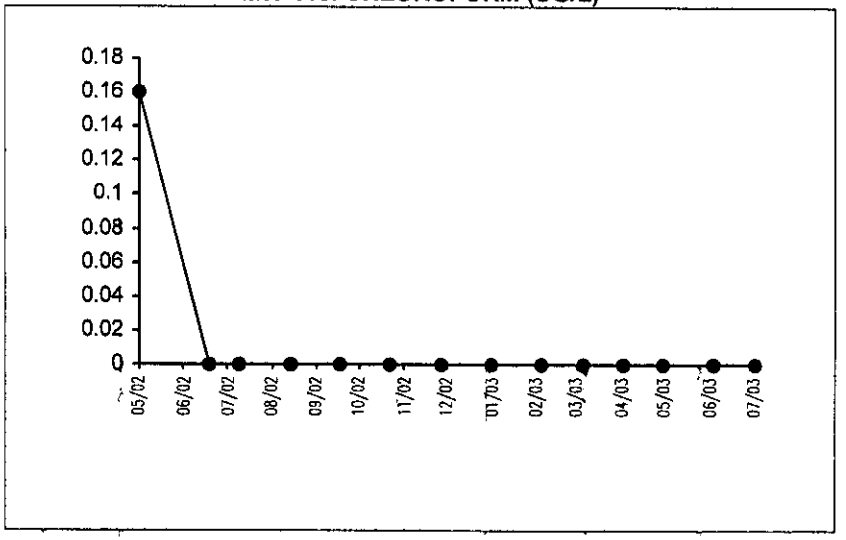
MW-118: CARBON TETRACHLORIDE (UG/L)



MW-118: CHLORIDE (AS CL) (MG/L)



MW-118: CHLOROFORM (UG/L)



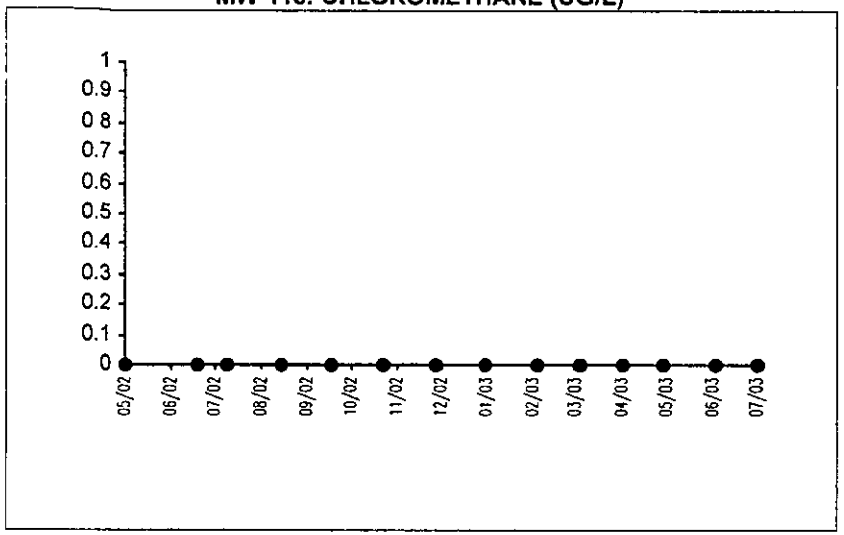
* Non[illegible]ts shown as 0.

Location Purpose : Remediation

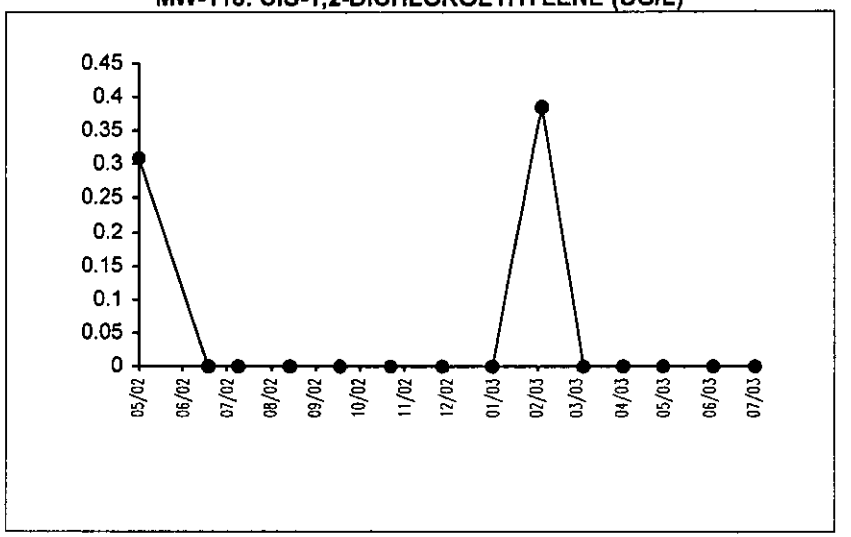
Remediation MW-118

Concentration vs Time

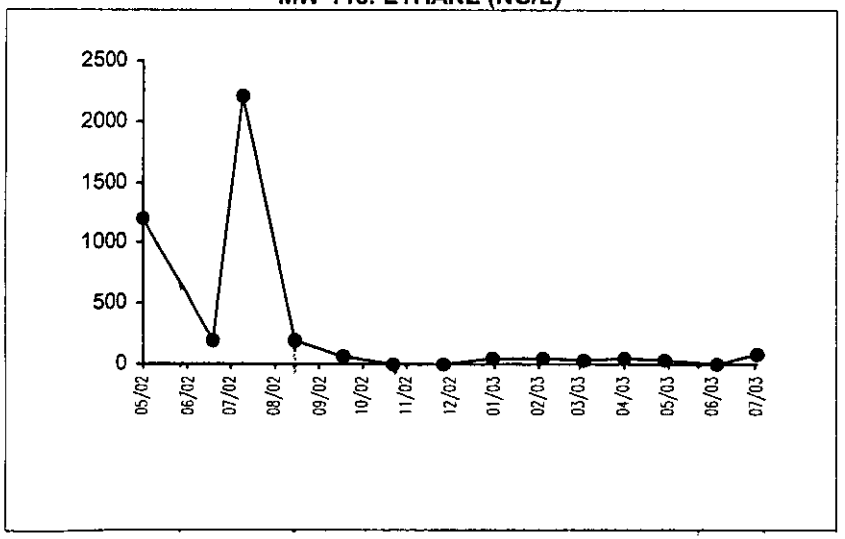
MW-118: CHLOROMETHANE (UG/L)



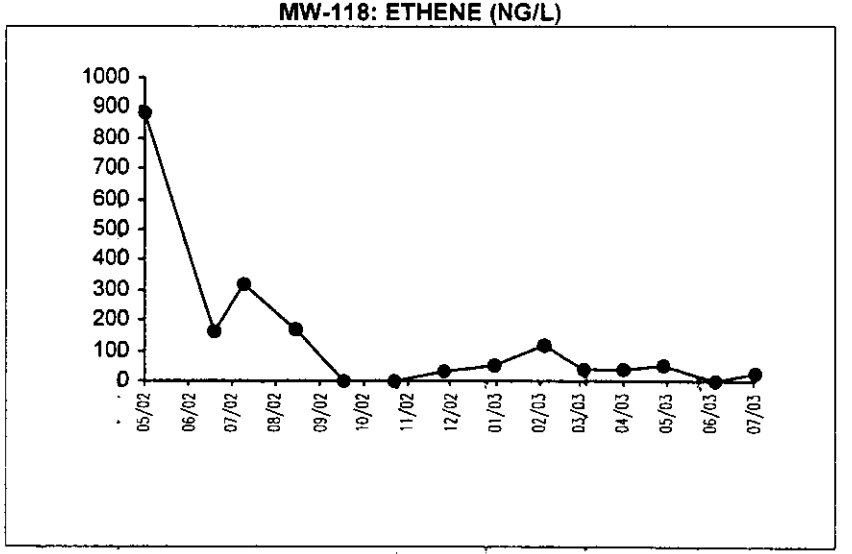
MW-118: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-118: ETHANE (NG/L)



MW-118: ETHENE (NG/L)



* Nondetects shown as 0.

79410 71

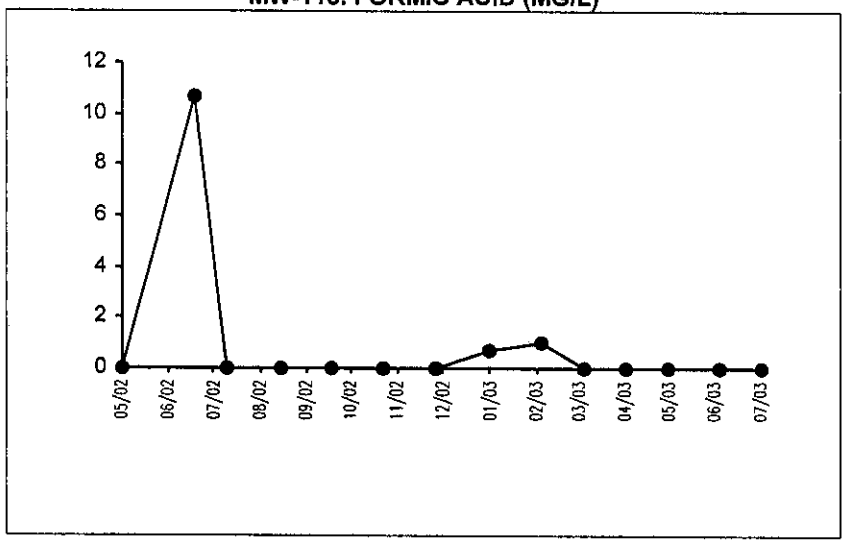
Location Purpose : Remediation

Remediation MW-118

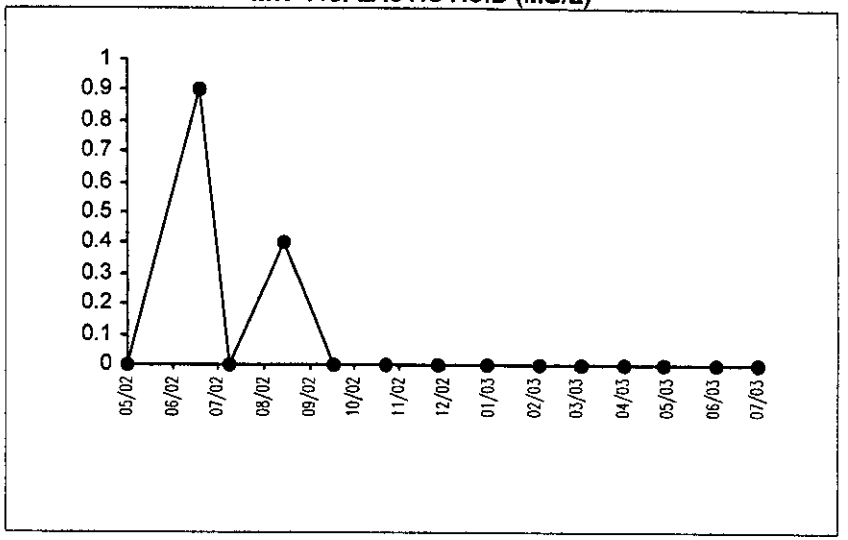
Concentration vs Time

7941072

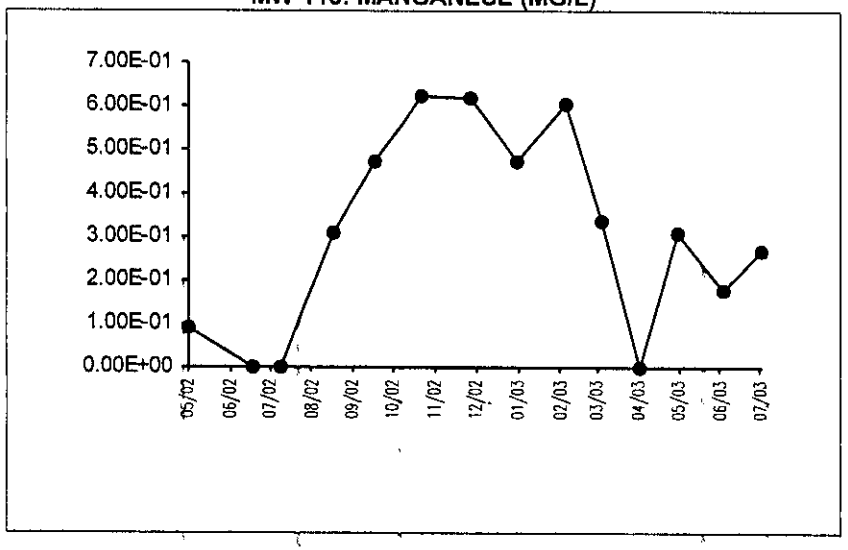
MW-118: FORMIC ACID (MG/L)



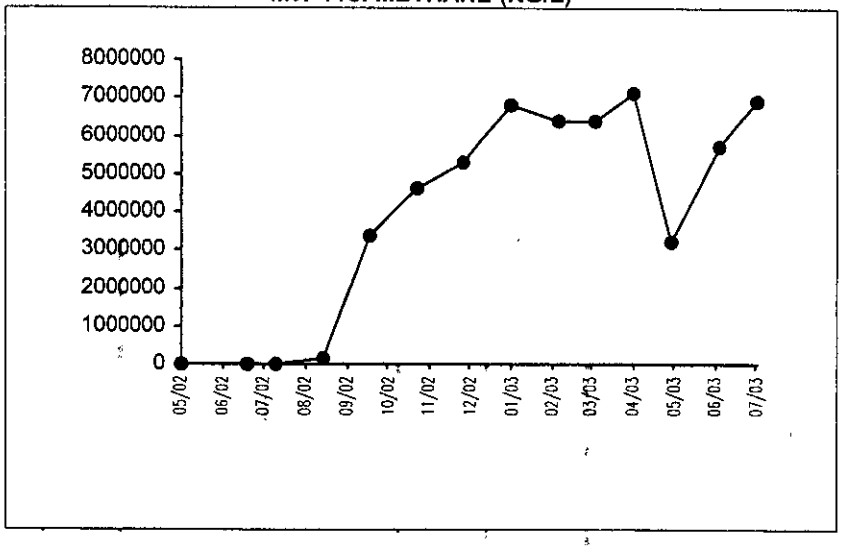
MW-118: LACTIC ACID (MG/L)



MW-118: MANGANESE (MG/L)



MW-118: METHANE (NG/L)



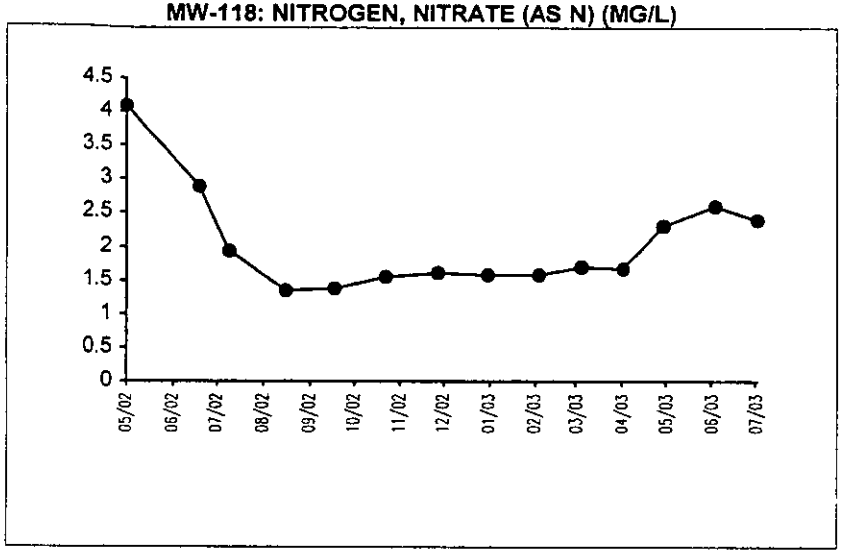
* Nondetects shown as 0.

Location Purpose : Remediation

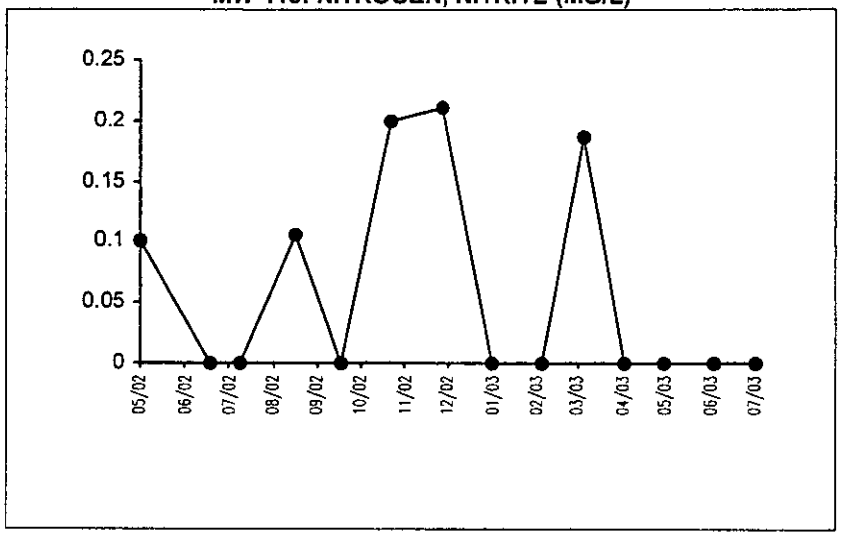
Remediation MW-118

Concentration vs Time

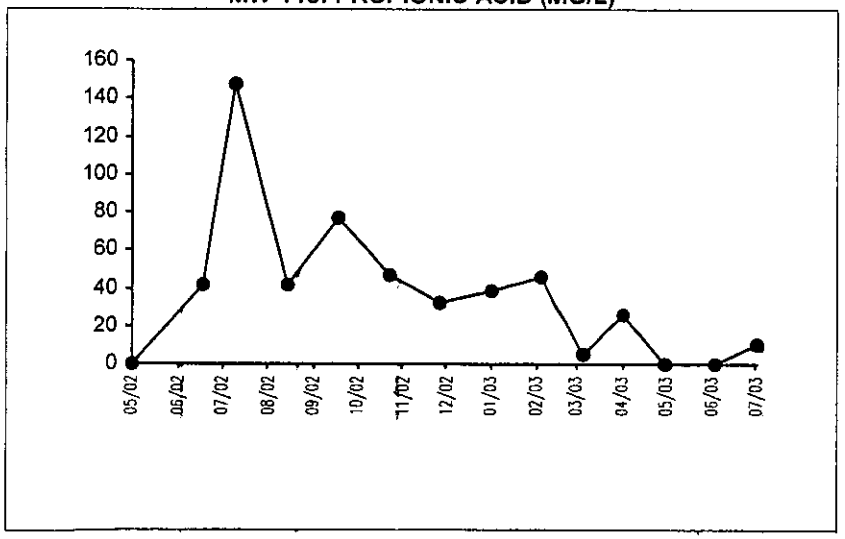
MW-118: NITROGEN, NITRATE (AS N) (MG/L)



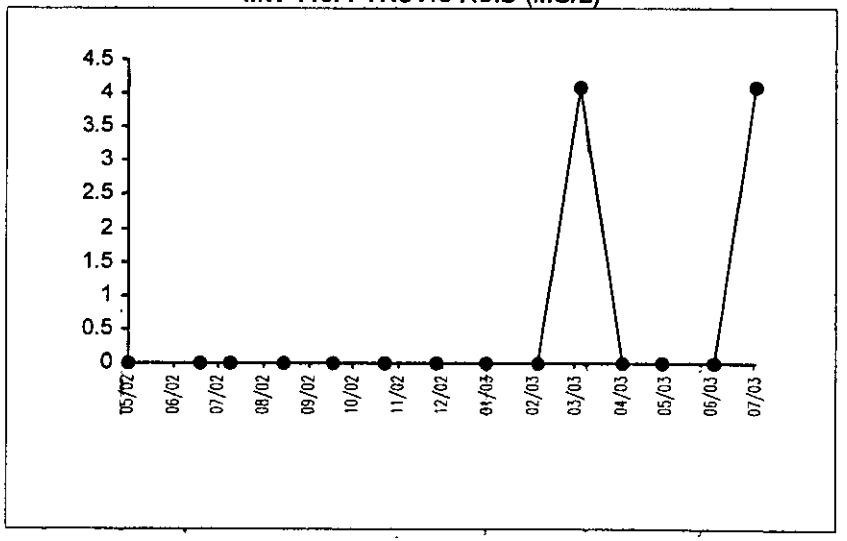
MW-118: NITROGEN, NITRITE (MG/L)



MW-118: PROPIONIC ACID (MG/L)



MW-118: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

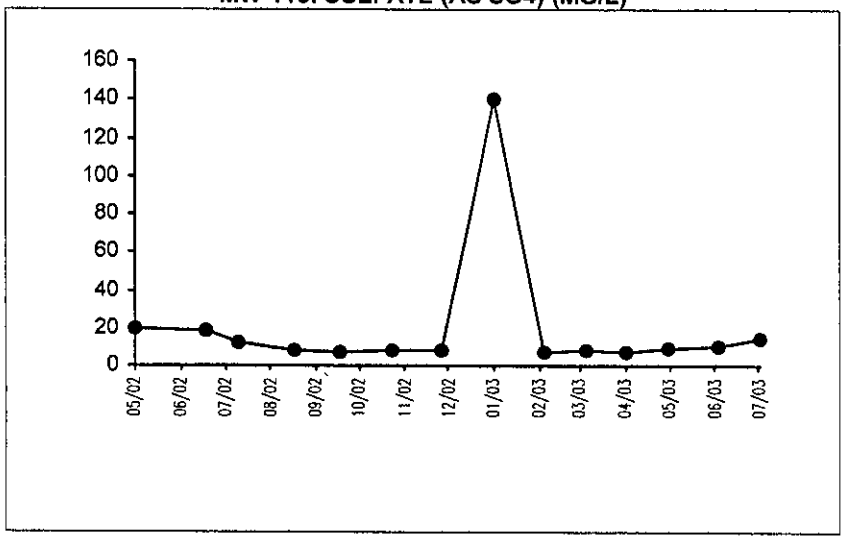
79410 73

Location Purpose : Remediation

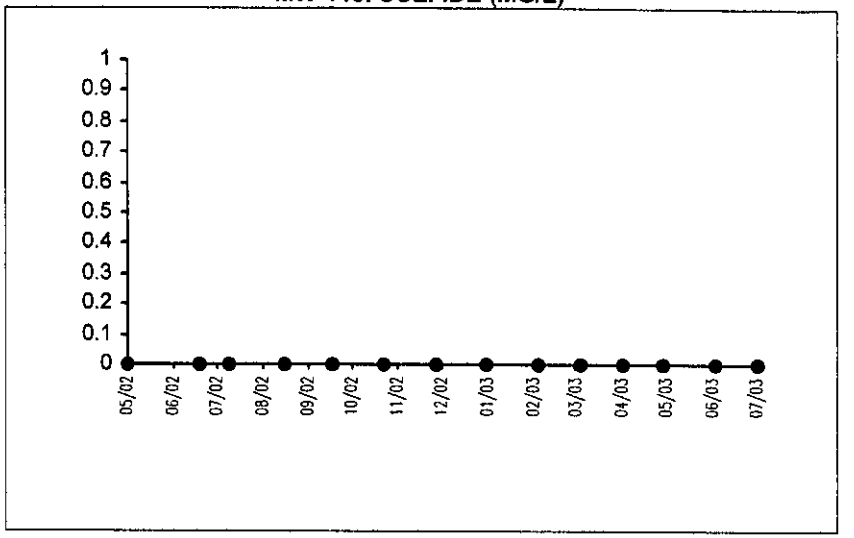
Remediation MW-118

Concentration vs Time

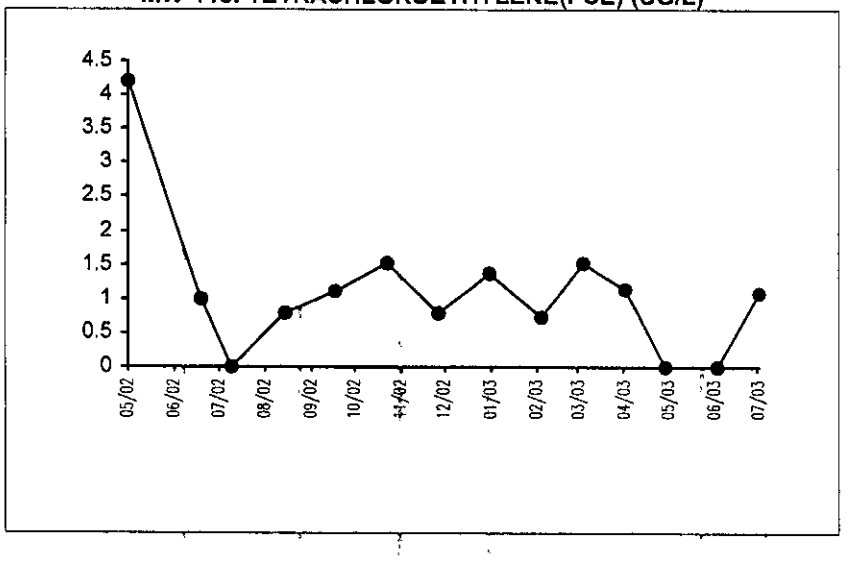
MW-118: SULFATE (AS SO4) (MG/L)



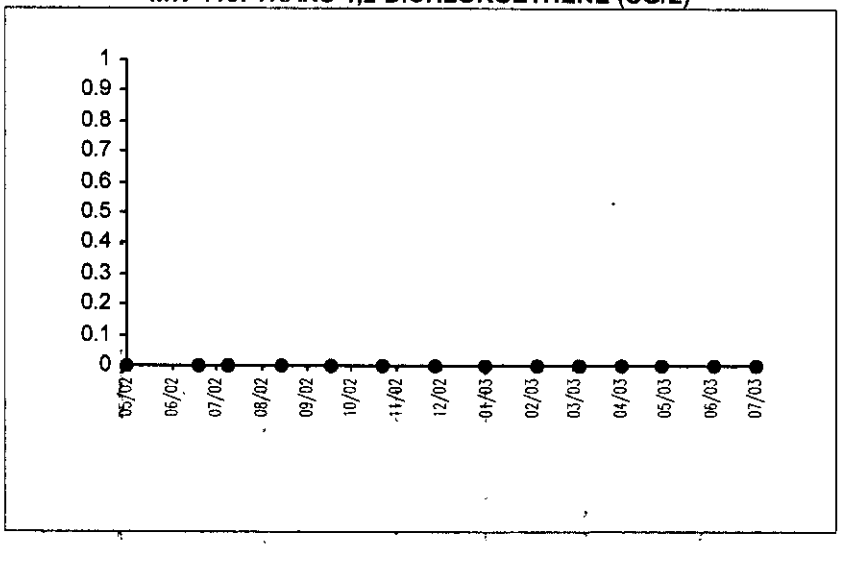
MW-118: SULFIDE (MG/L)



MW-118: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-118: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

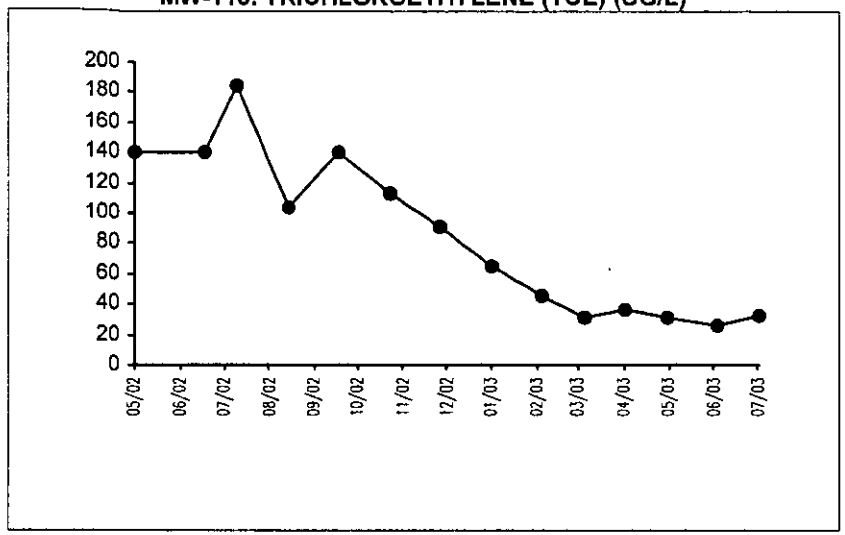
7941074

Location Purpose : Remediation

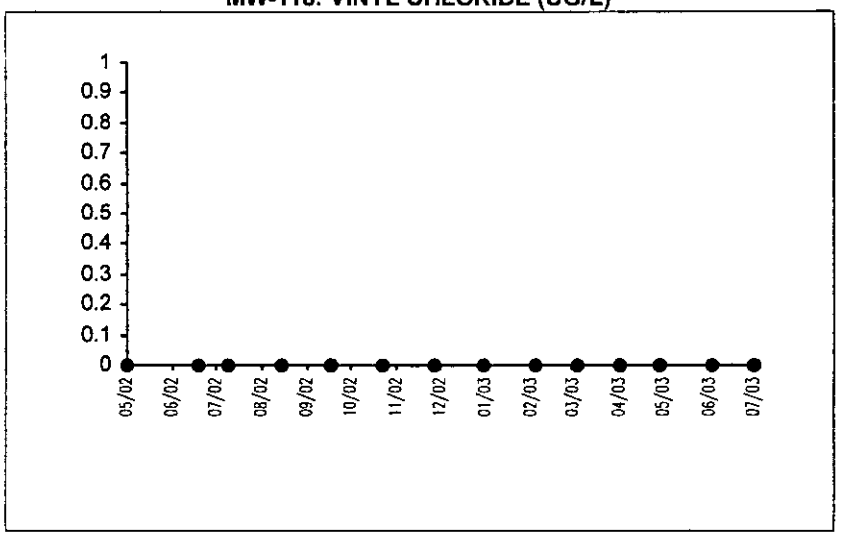
Remediation MW-118

Concentration vs Time

MW-118: TRICHLOROETHYLENE (TCE) (UG/L)



MW-118: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

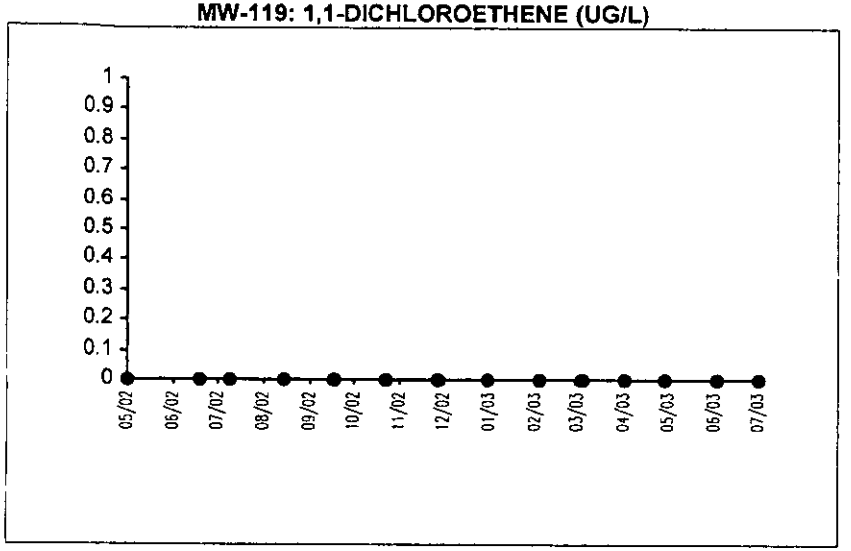
79410075

Location Purpose : Remediation

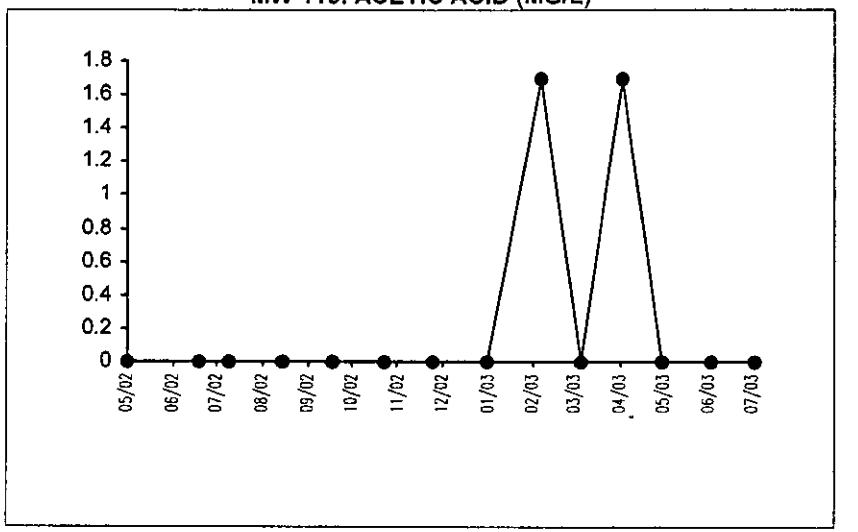
Remediation MW-119

Concentration vs Time

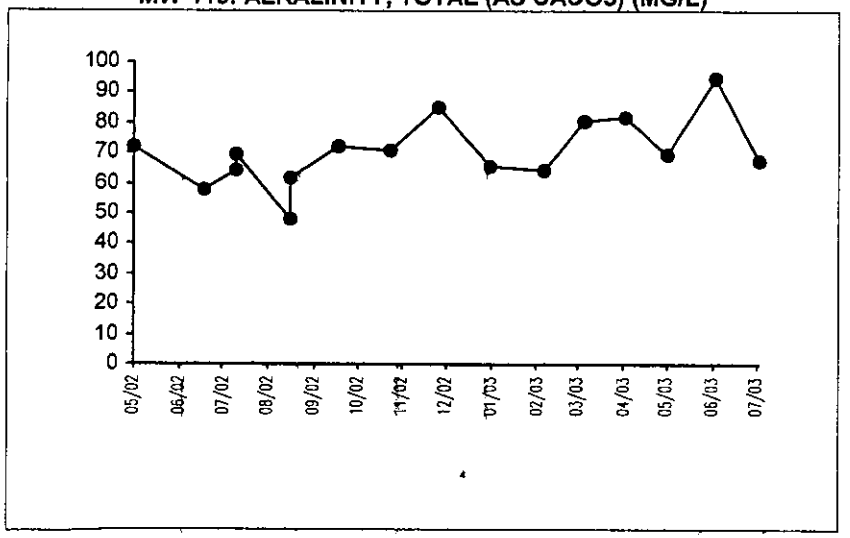
MW-119: 1,1-DICHLOROETHENE (UG/L)



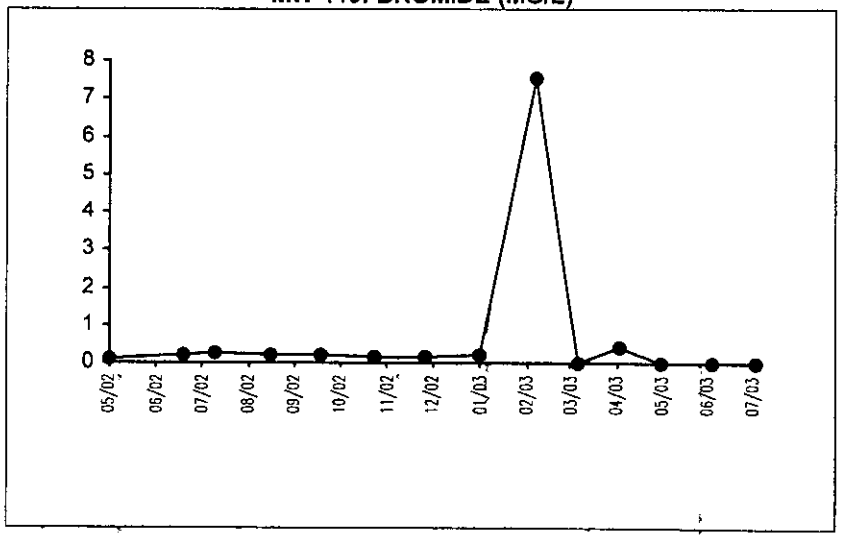
MW-119: ACETIC ACID (MG/L)



MW-119: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-119: BROMIDE (MG/L)



* Nondetects shown as 0.

7941076

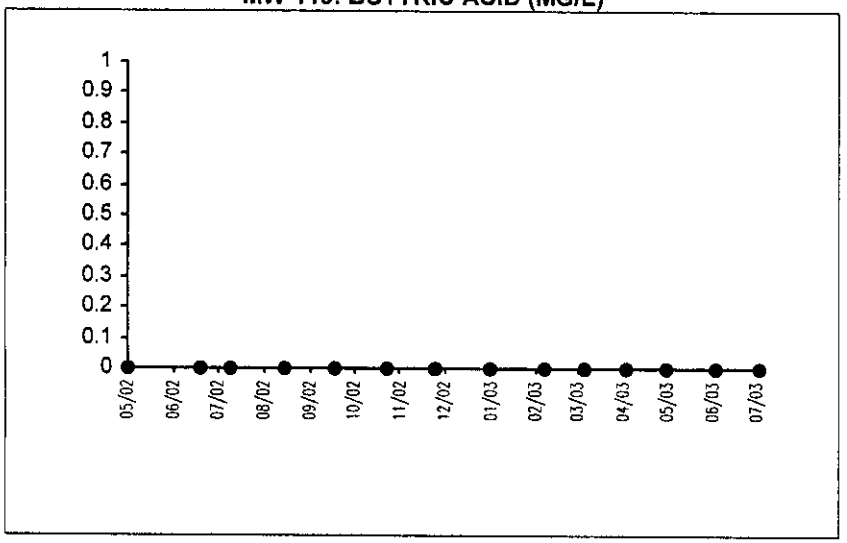
Location Purpose : Remediation

Remediation MW-119

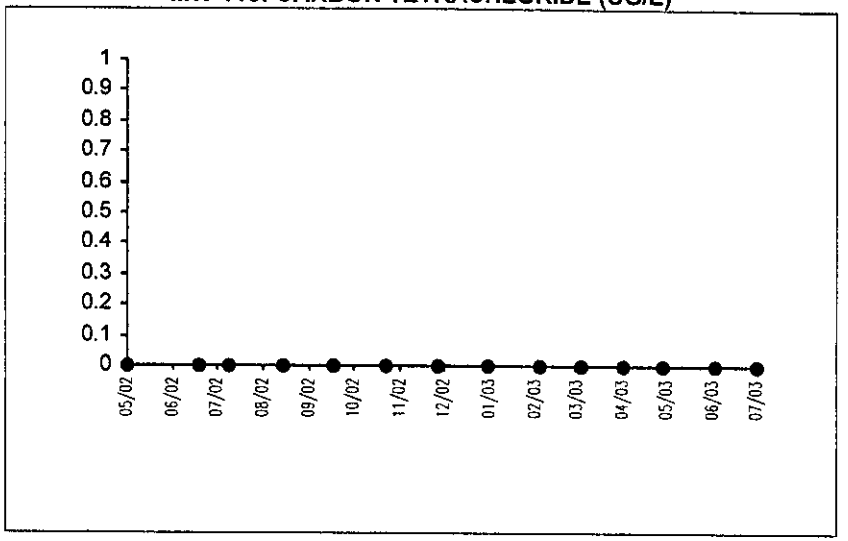
Concentration vs Time

7941077

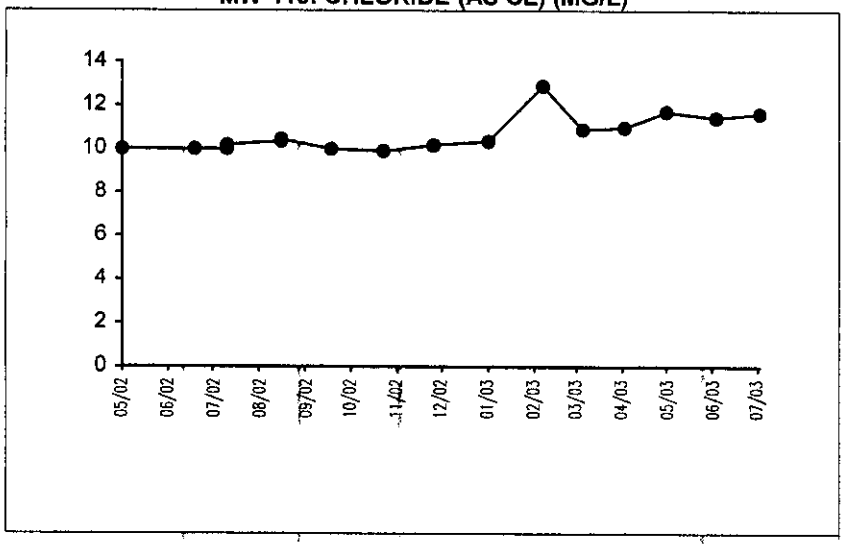
MW-119: BUTYRIC ACID (MG/L)



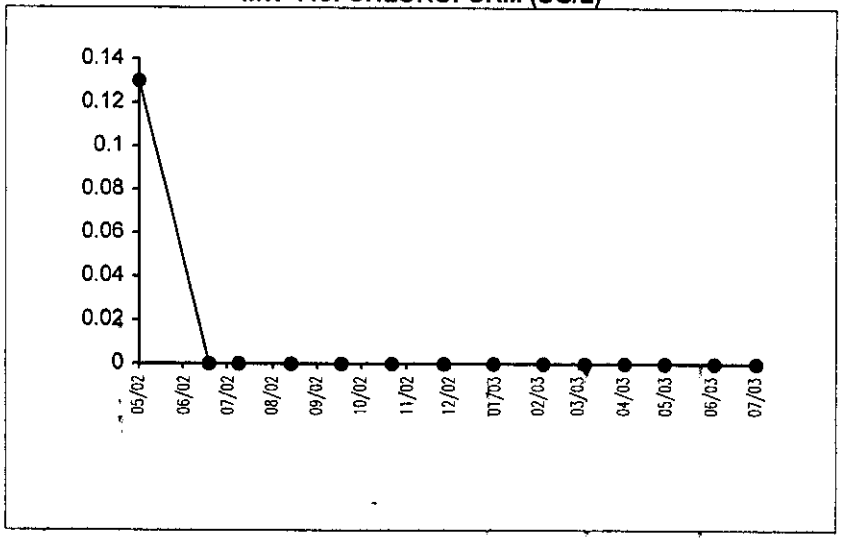
MW-119: CARBON TETRACHLORIDE (UG/L)



MW-119: CHLORIDE (AS CL) (MG/L)



MW-119: CHLOROFORM (UG/L)



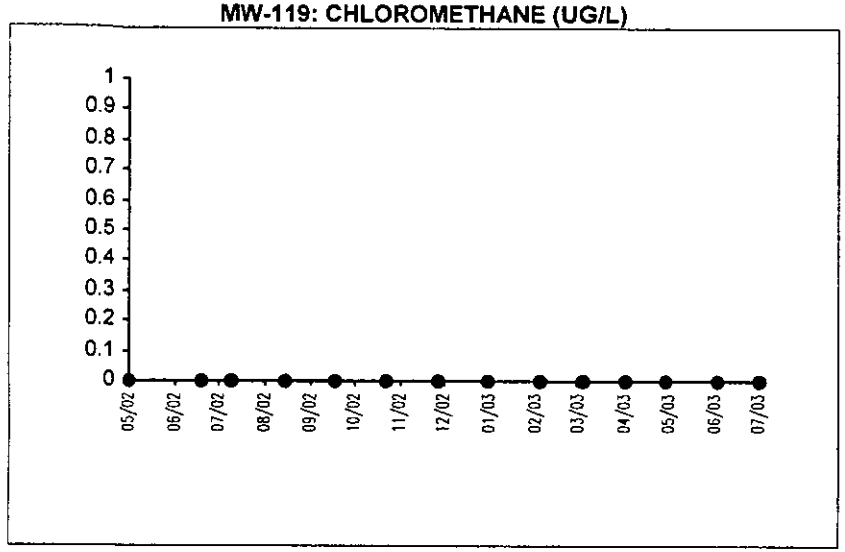
* Nondetects shown as 0.

Location Purpose : Remediation

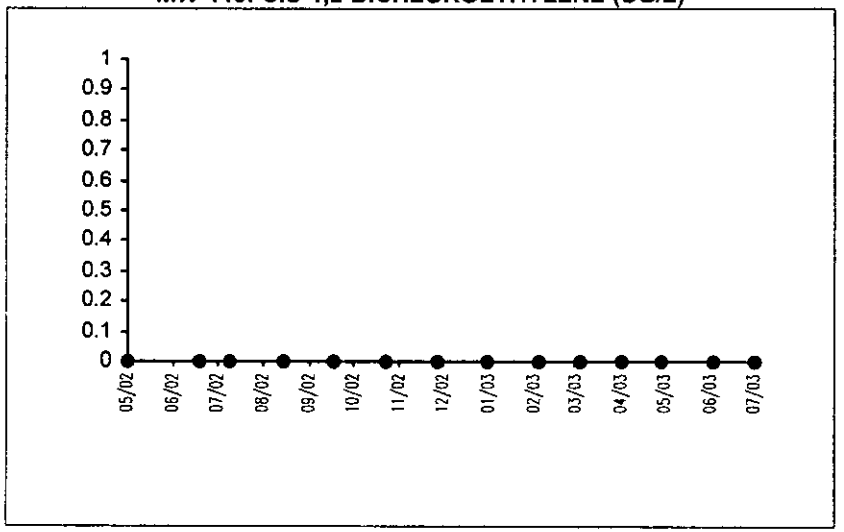
Remediation MW-119

Concentration vs Time

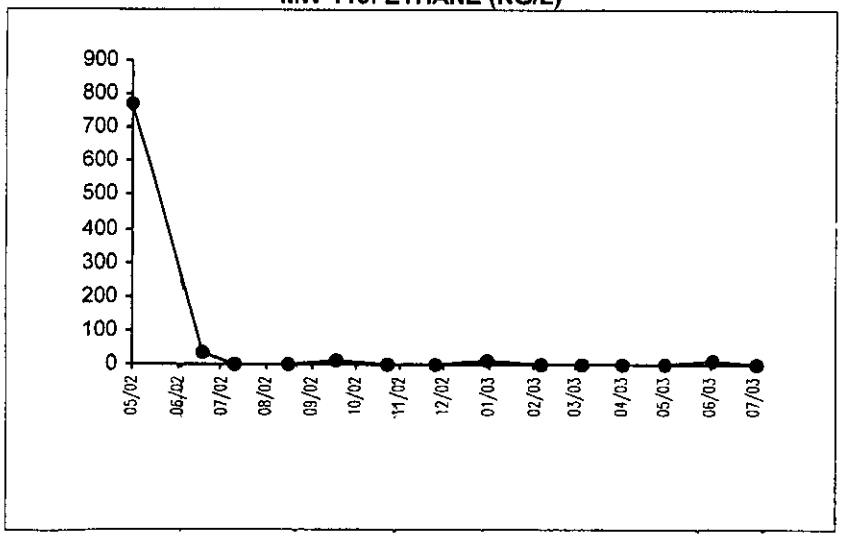
MW-119: CHLOROMETHANE (UG/L)



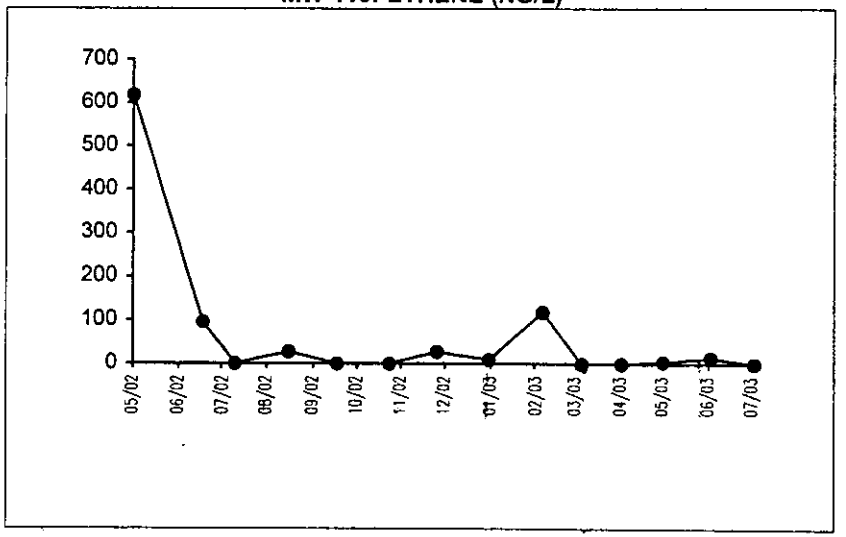
MW-119: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-119: ETHANE (NG/L)



MW-119: ETHENE (NG/L)



* Nondetects shown as 0.

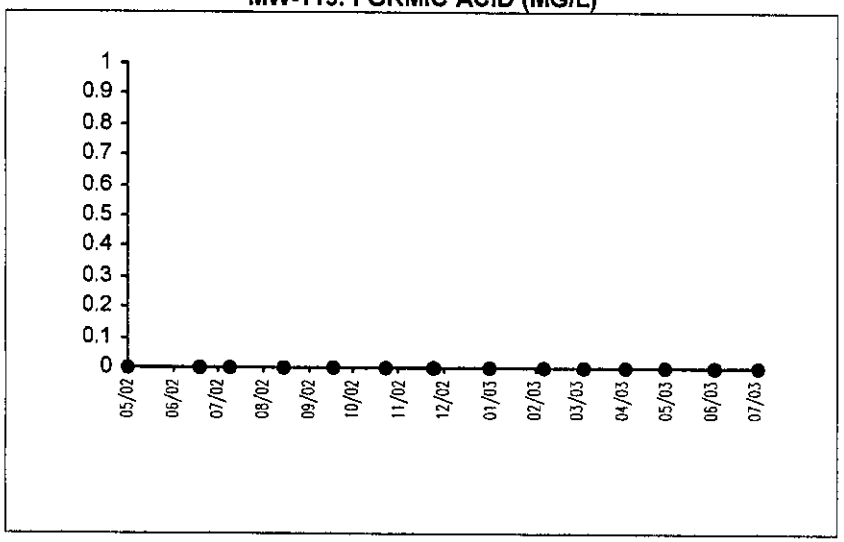
7941078

Location Purpose : Remediation

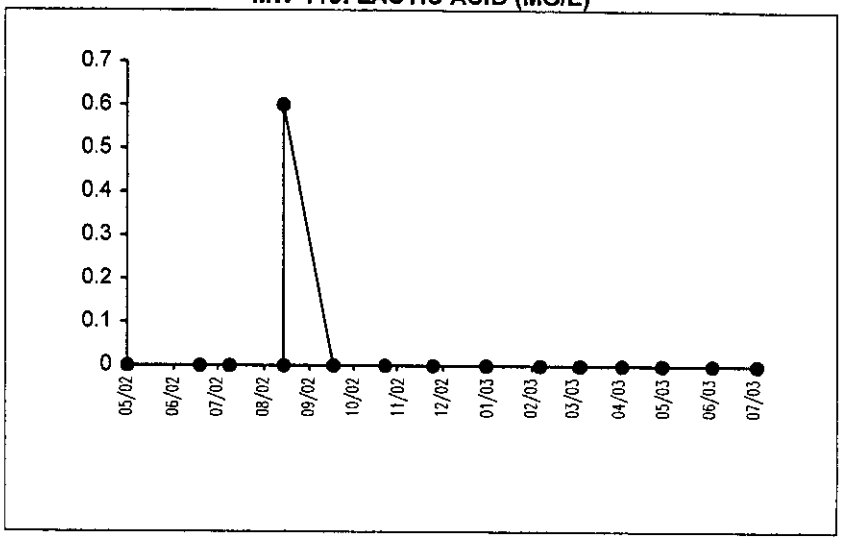
Remediation MW-119

Concentration vs Time

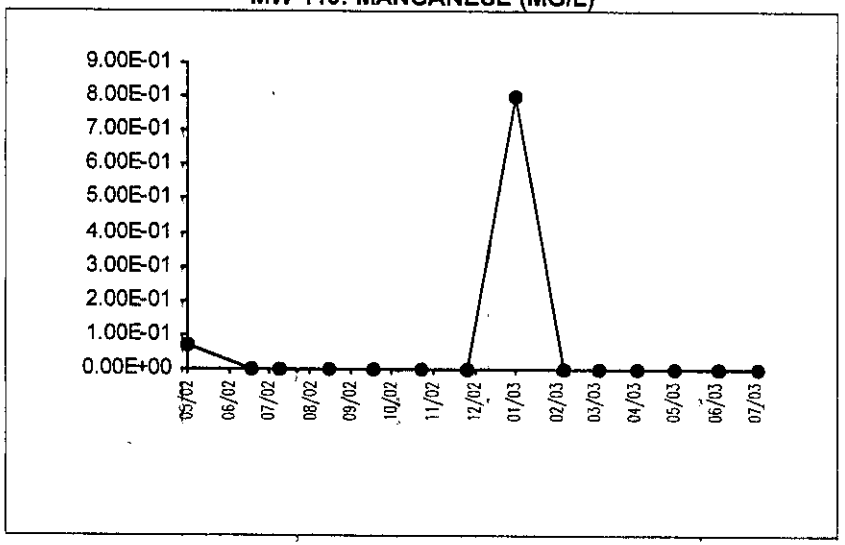
MW-119: FORMIC ACID (MG/L)



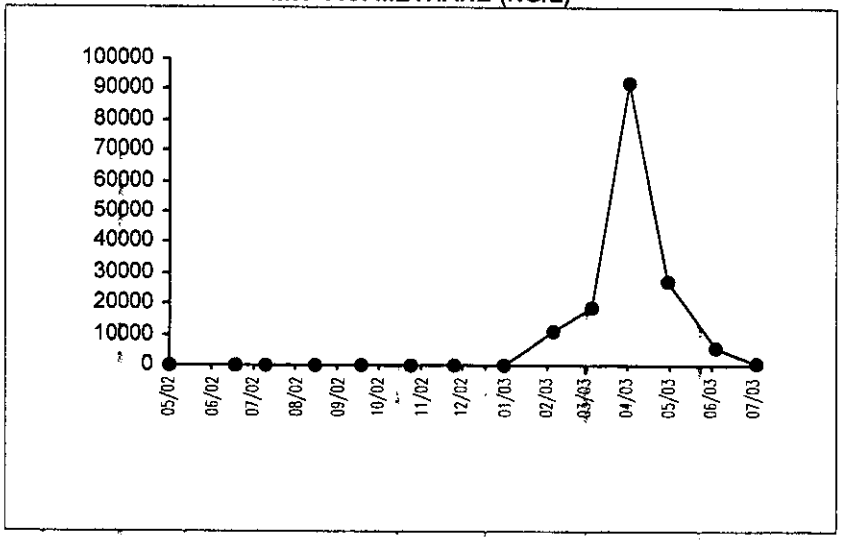
MW-119: LACTIC ACID (MG/L)



MW-119: MANGANESE (MG/L)



MW-119: METHANE (NG/L)



* Nondetects shown as 0.

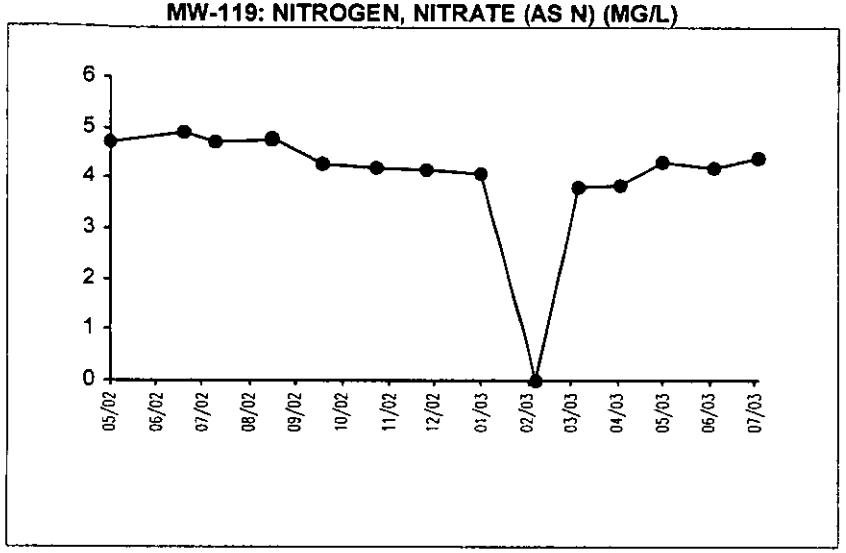
7911079

Location Purpose : Remediation

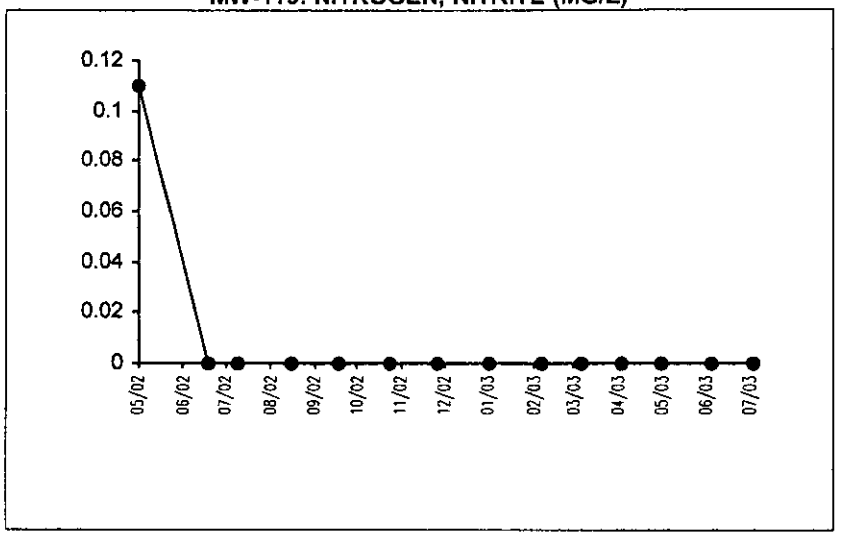
Remediation MW-119

Concentration vs Time

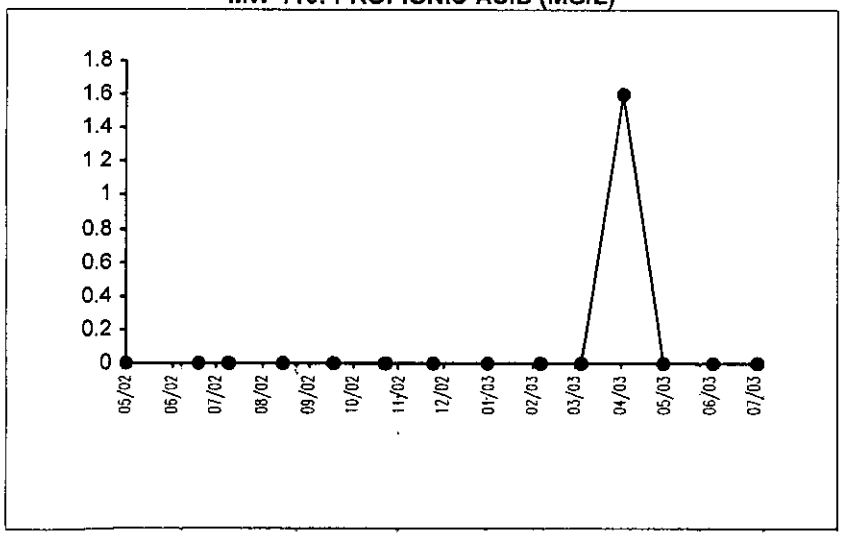
MW-119: NITROGEN, NITRATE (AS N) (MG/L)



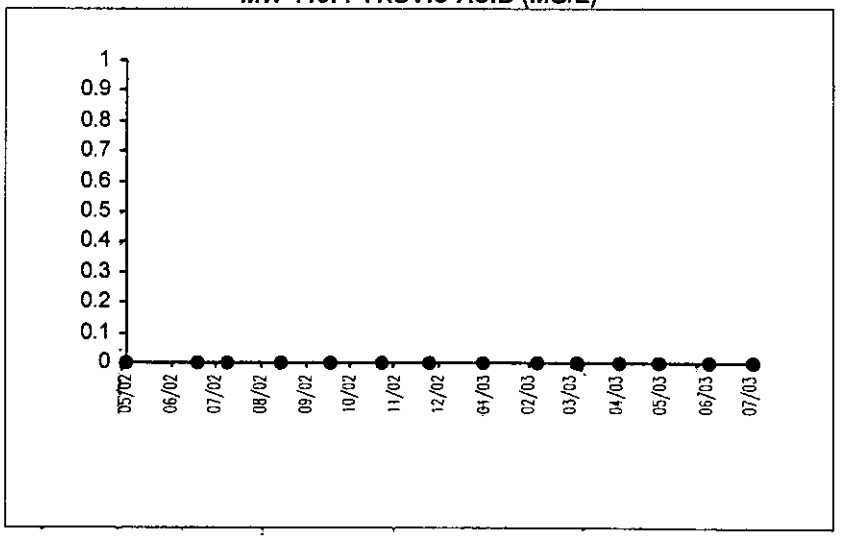
MW-119: NITROGEN, NITRITE (MG/L)



MW-119: PROPIONIC ACID (MG/L)



MW-119: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

7941080

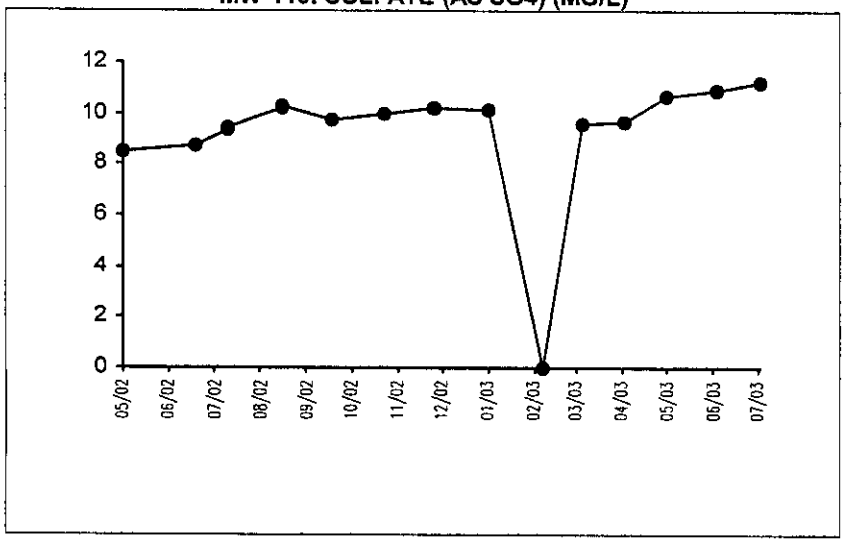
Location Purpose : Remediation

Remediation MW-119

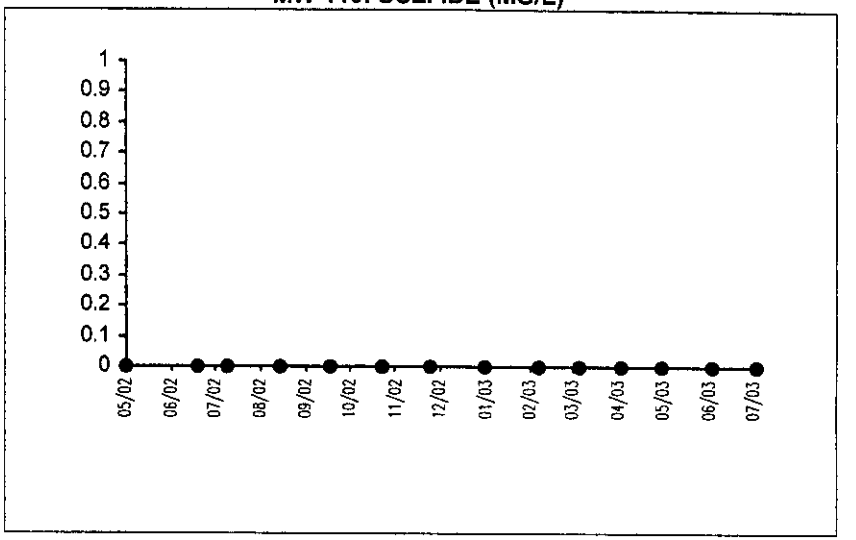
Concentration vs Time

7941081

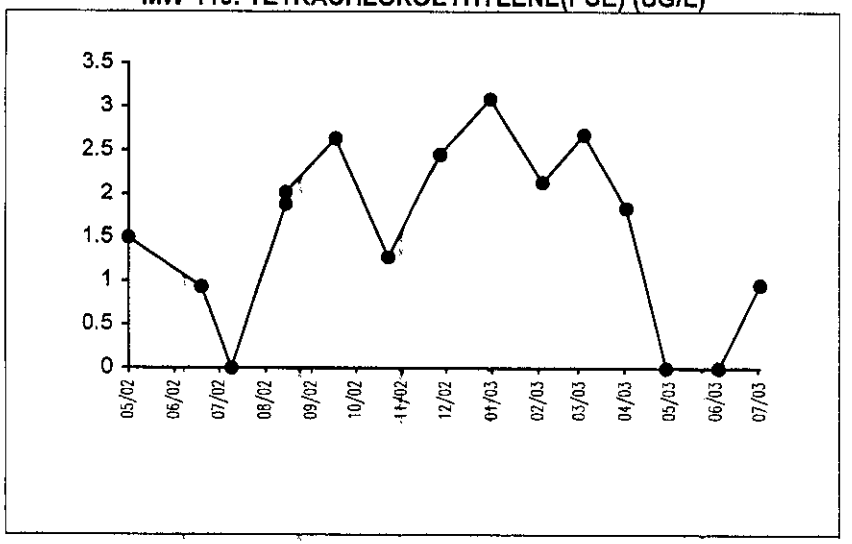
MW-119: SULFATE (AS SO4) (MG/L)



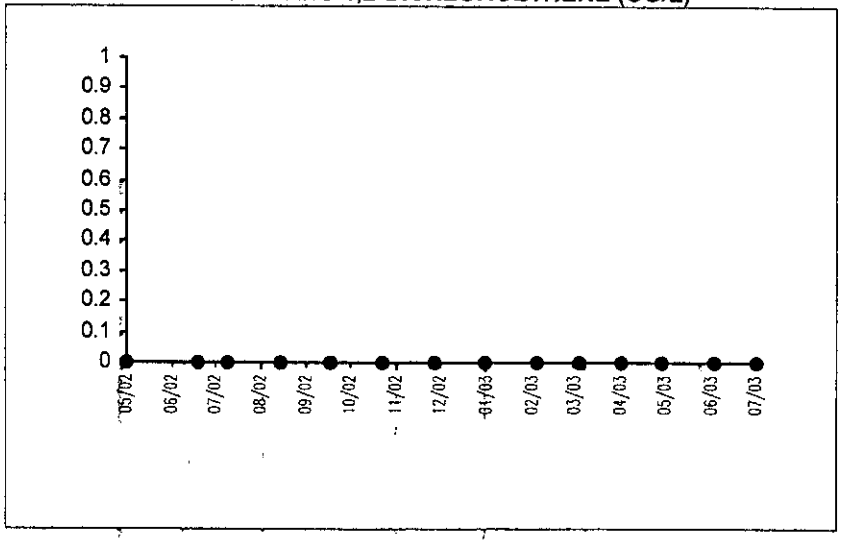
MW-119: SULFIDE (MG/L)



MW-119: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-119: TRANS-1,2-DICHLOROETHENE (UG/L)



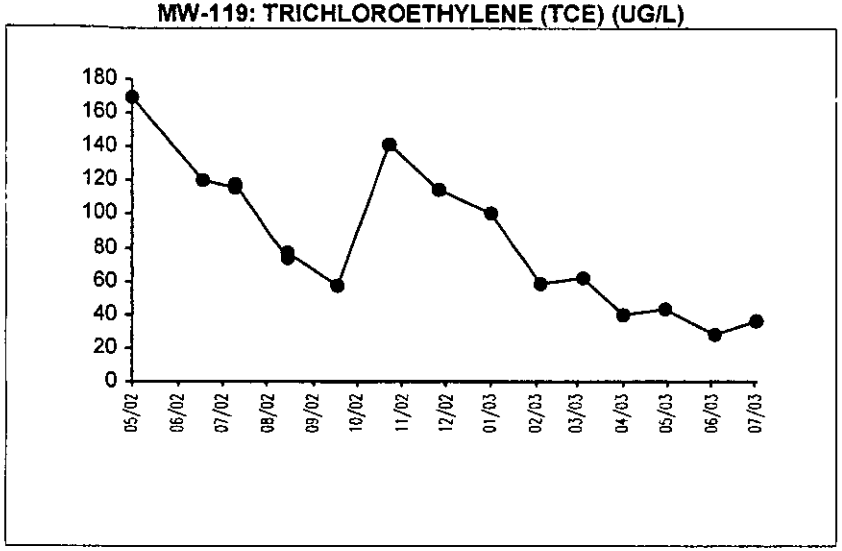
* Nondetects shown as 0.

Location Purpose : Remediation

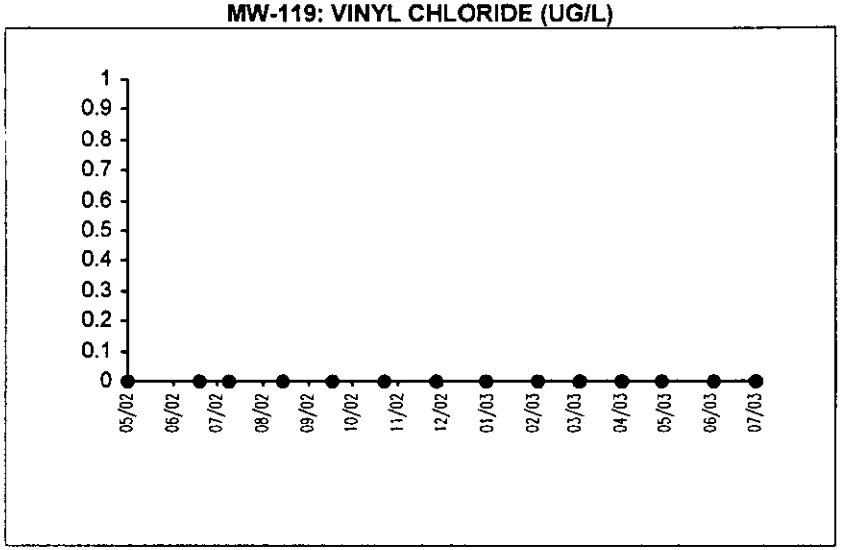
Remediation MW-119

Concentration vs Time

MW-119: TRICHLOROETHYLENE (TCE) (UG/L)



MW-119: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

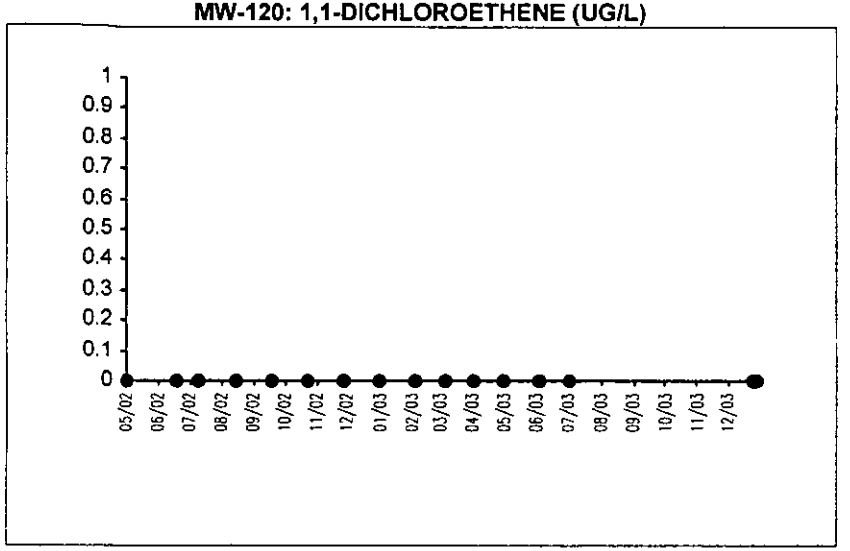
7941082

Location Purpose : Remediation

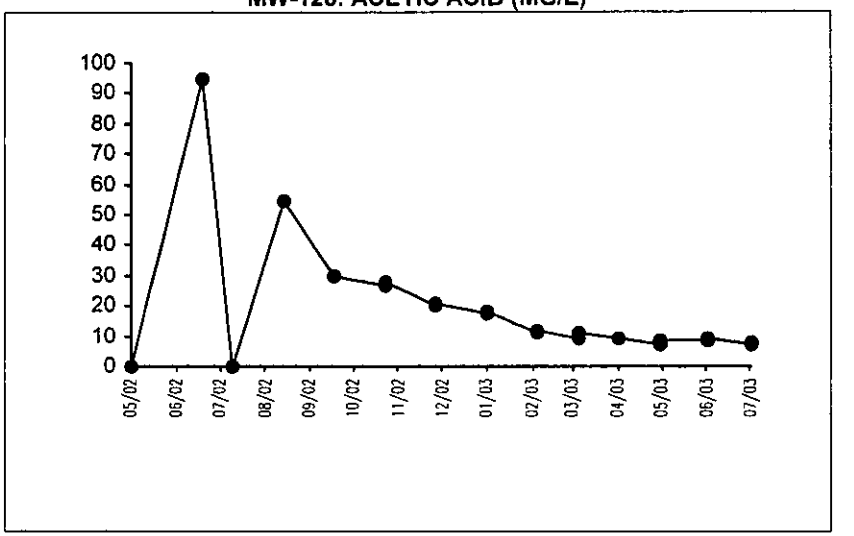
Remediation MW-120

Concentration vs Time

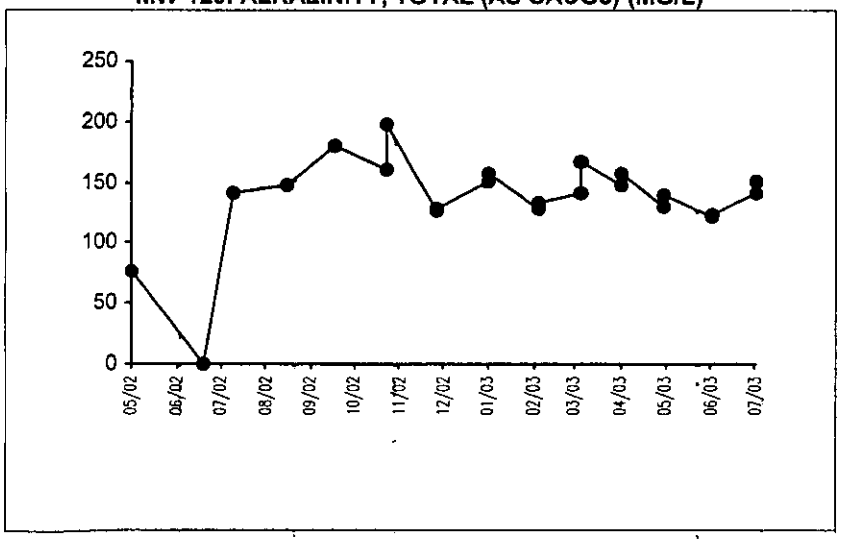
MW-120: 1,1-DICHLOROETHENE (UG/L)



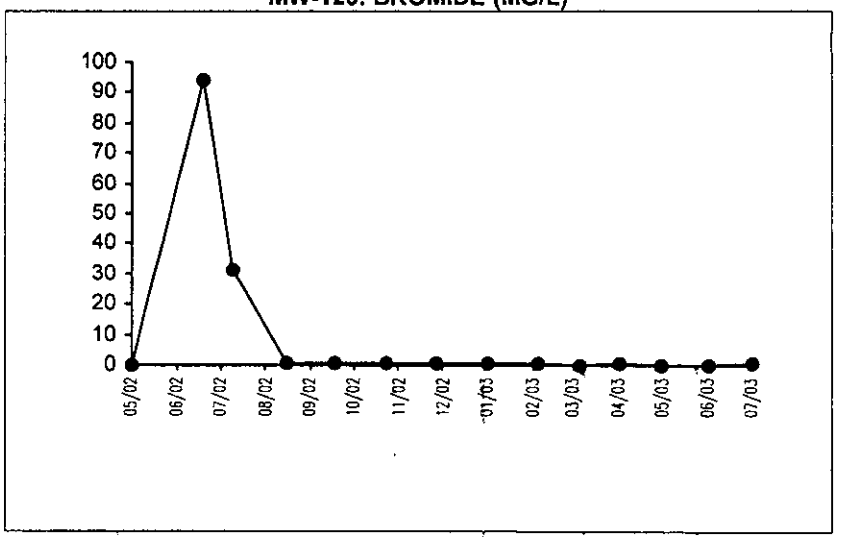
MW-120: ACETIC ACID (MG/L)



MW-120: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-120: BROMIDE (MG/L)



* Nondetects shown as 0.

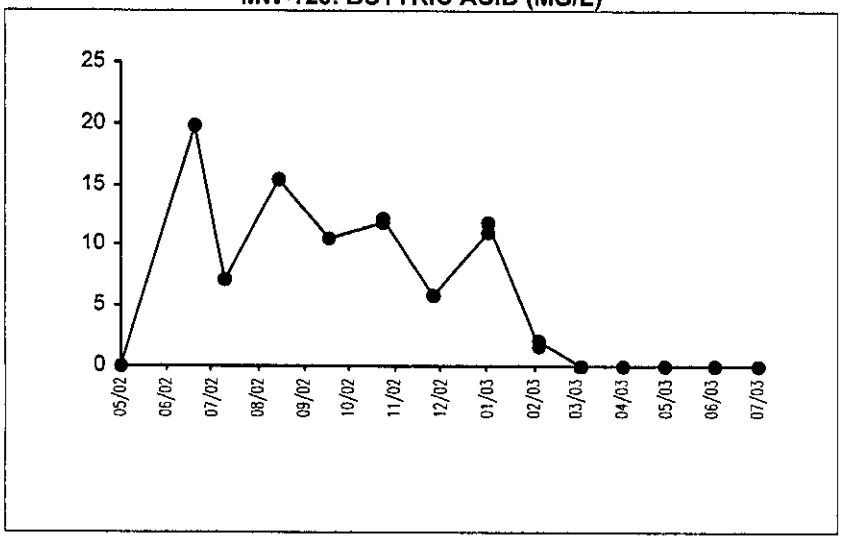
7941083

Location Purpose : Remediation

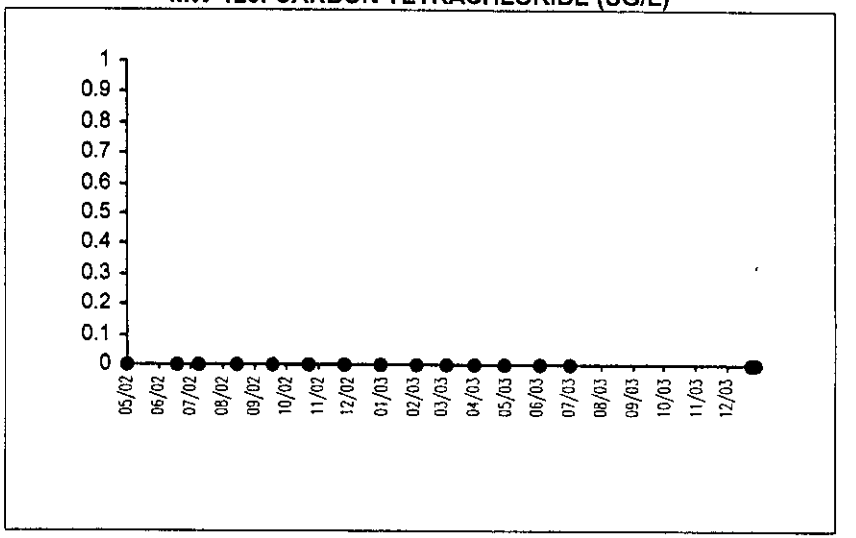
Remediation MW-120

Concentration vs Time

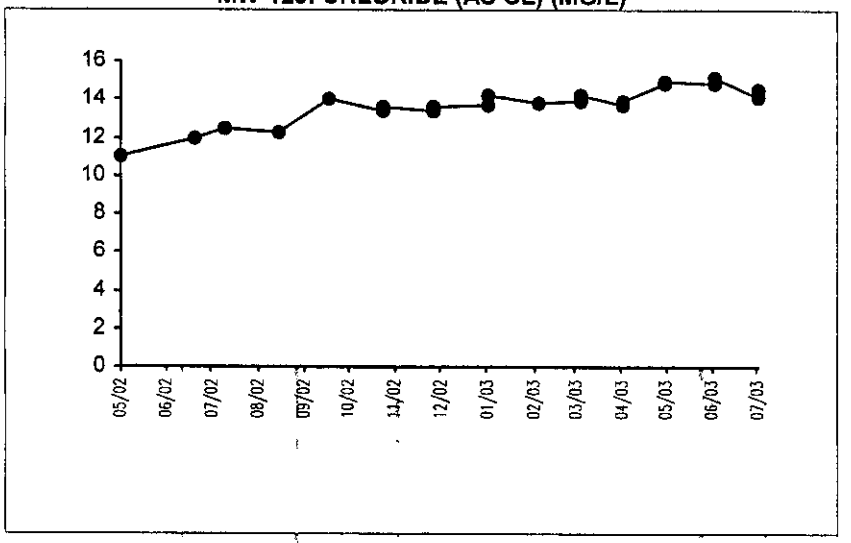
MW-120: BUTYRIC ACID (MG/L)



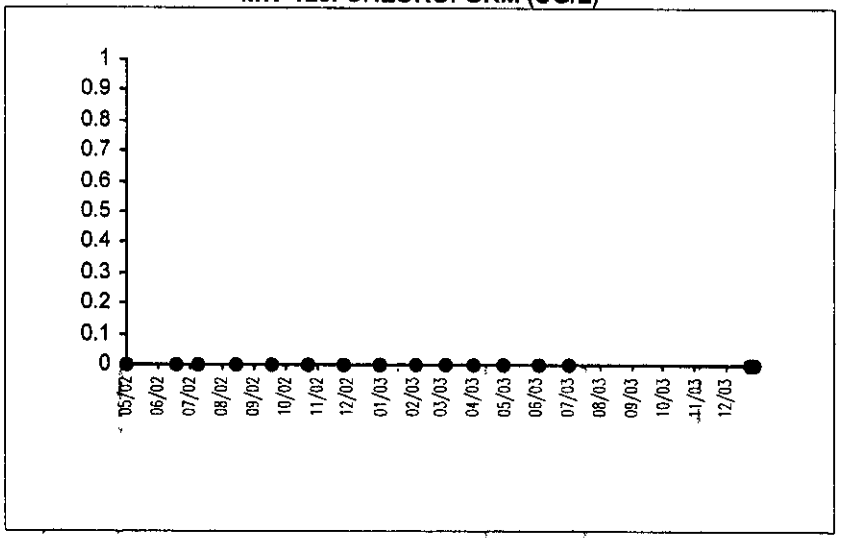
MW-120: CARBON TETRACHLORIDE (UG/L)



MW-120: CHLORIDE (AS CL) (MG/L)



MW-120: CHLOROFORM (UG/L)



* Nondetects shown as 0.

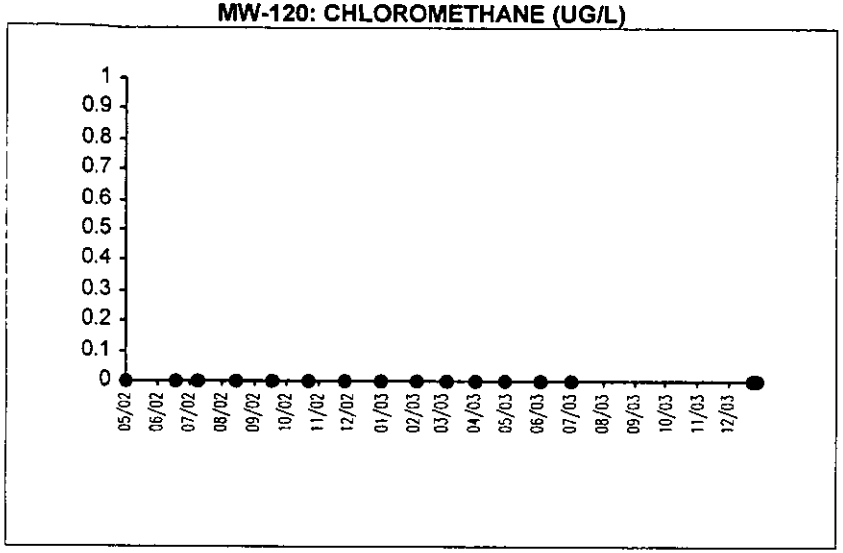
7941084

Location Purpose : Remediation

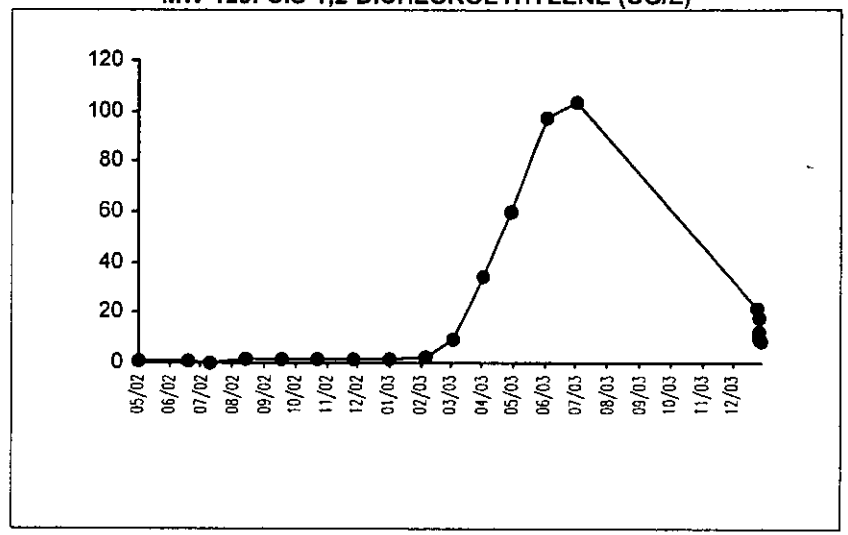
Remediation MW-120

Concentration vs Time

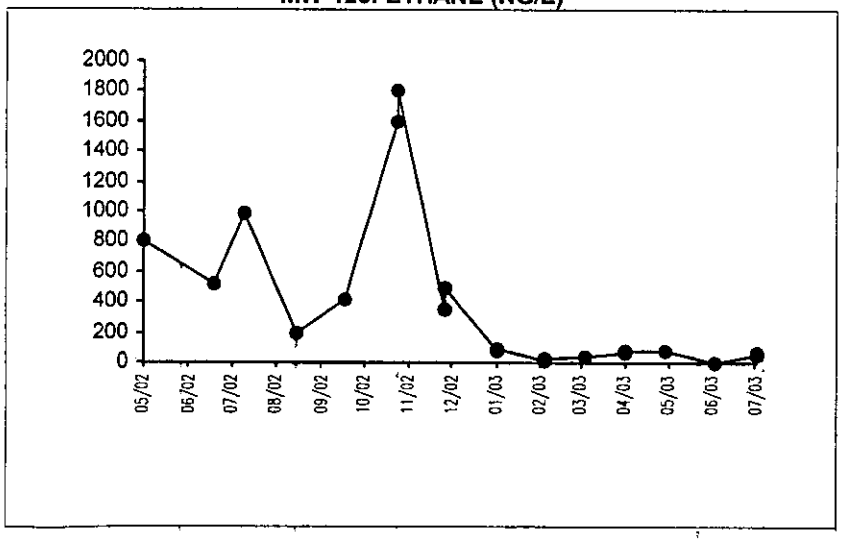
MW-120: CHLOROMETHANE (UG/L)



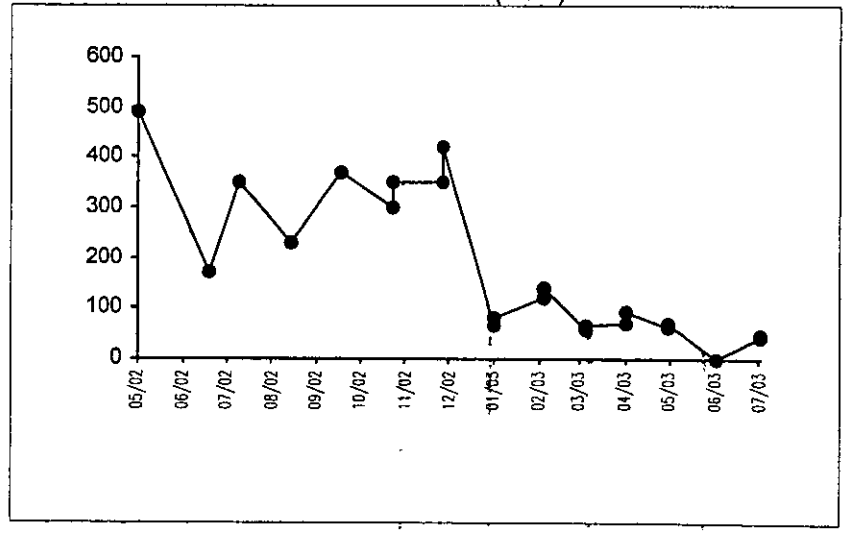
MW-120: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-120: ETHANE (NG/L)



MW-120: ETHENE (NG/L)



* Nondetects shown as 0.

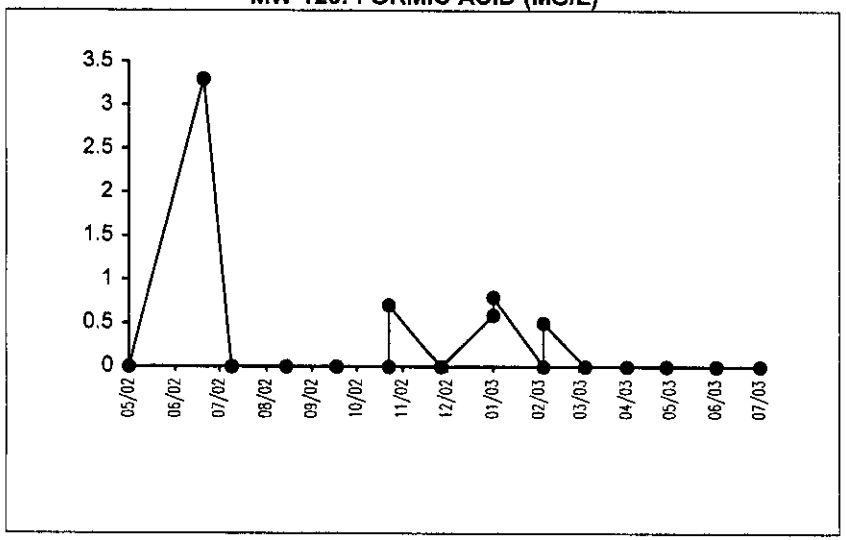
7941085

Location Purpose : Remediation

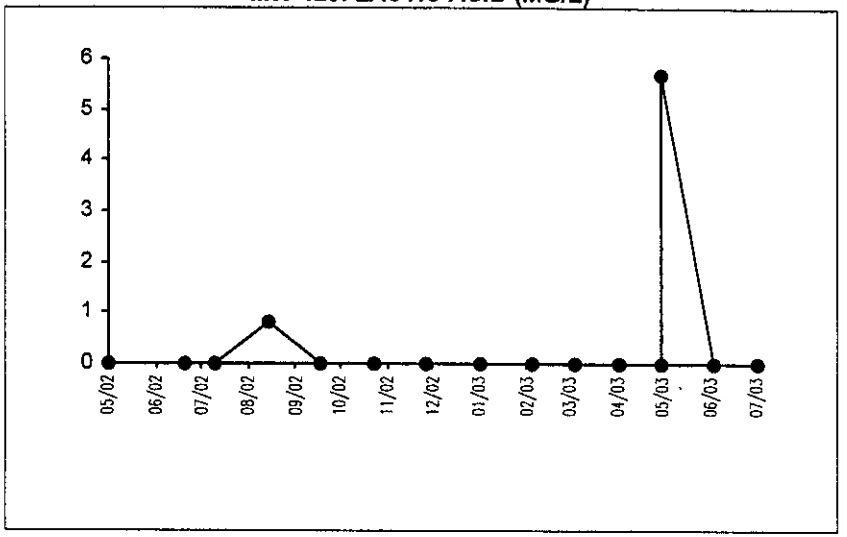
Remediation MW-120

Concentration vs Time

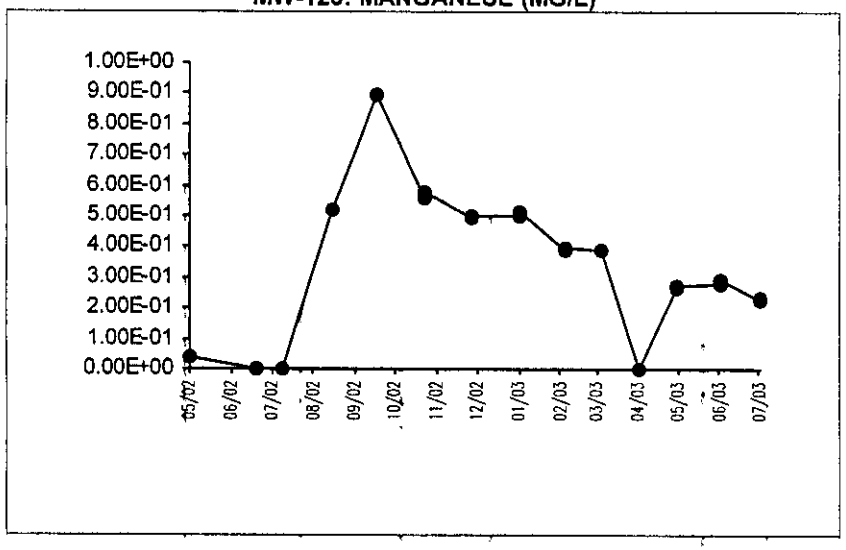
MW-120: FORMIC ACID (MG/L)



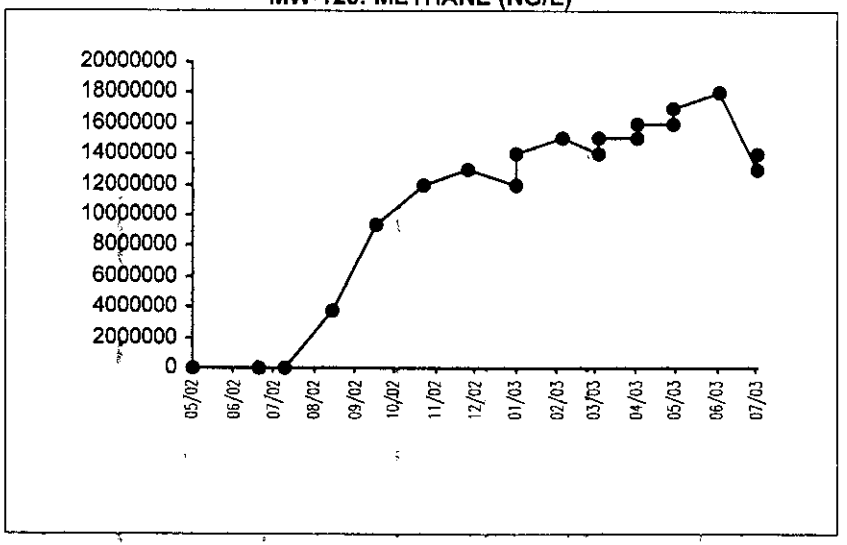
MW-120: LACTIC ACID (MG/L)



MW-120: MANGANESE (MG/L)



MW-120: METHANE (NG/L)



* Nond[illegible]ts shown as 0.

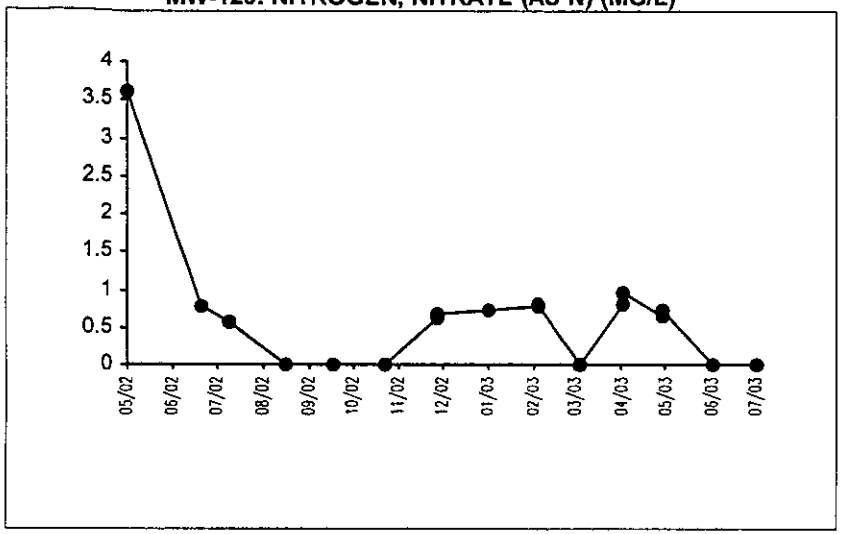
7941086

Location Purpose : Remediation

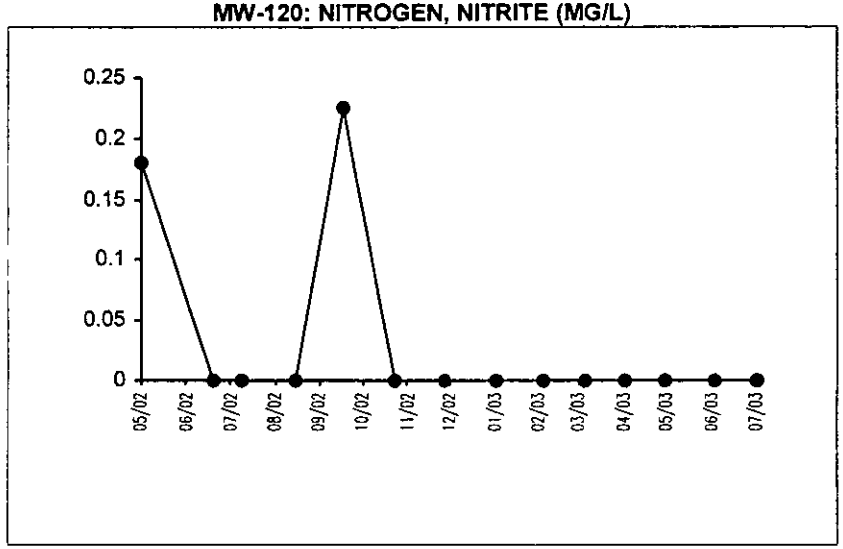
Remediation MW-120

Concentration vs Time

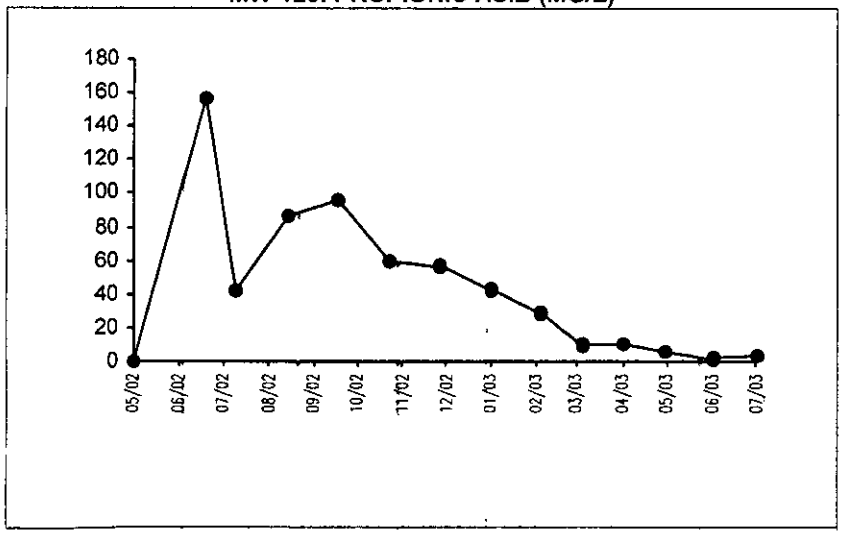
MW-120: NITROGEN, NITRATE (AS N) (MG/L)



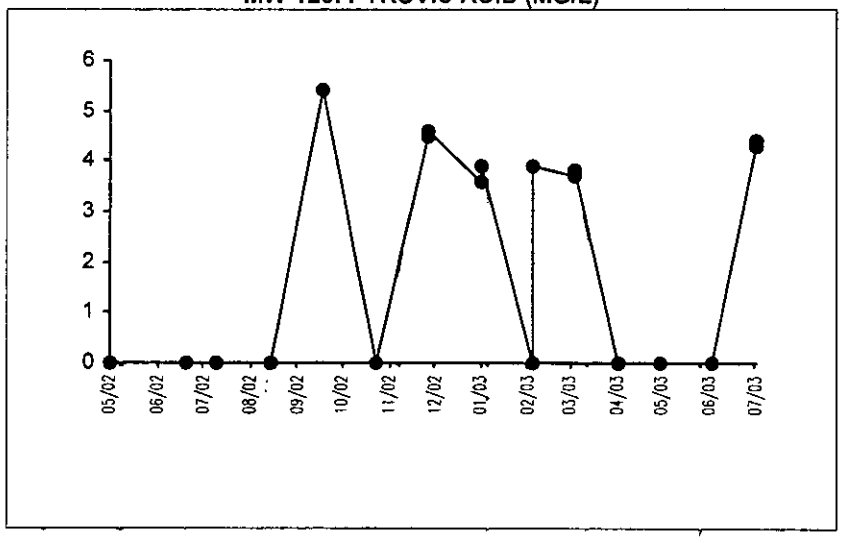
MW-120: NITROGEN, NITRITE (MG/L)



MW-120: PROPIONIC ACID (MG/L)



MW-120: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

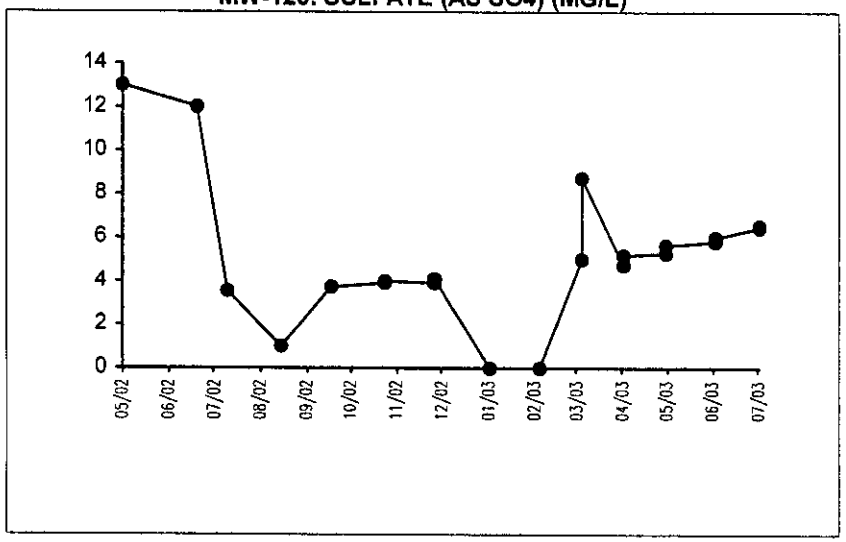
79411087

Location Purpose : Remediation

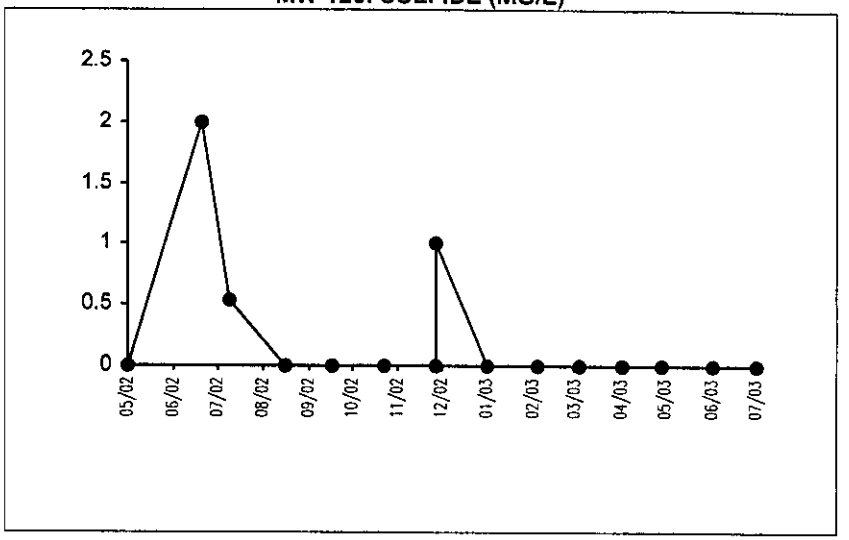
Remediation MW-120

Concentration vs Time

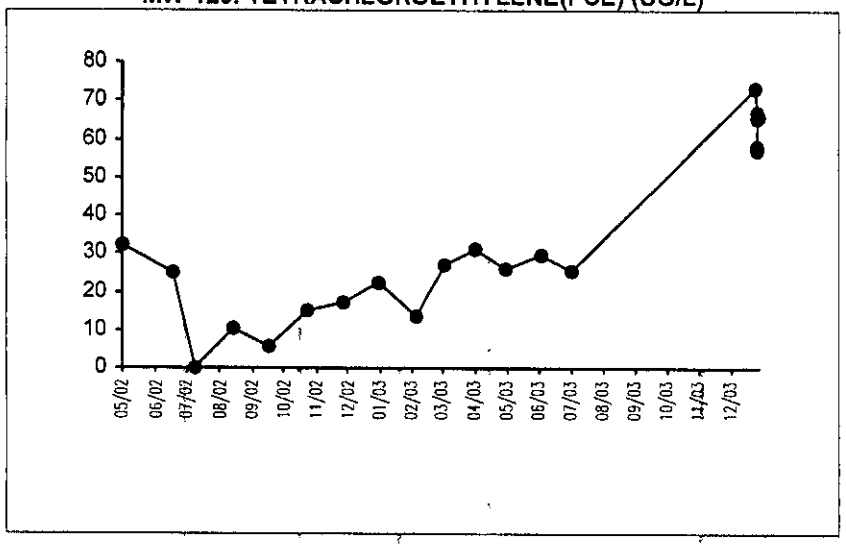
MW-120: SULFATE (AS SO4) (MG/L)



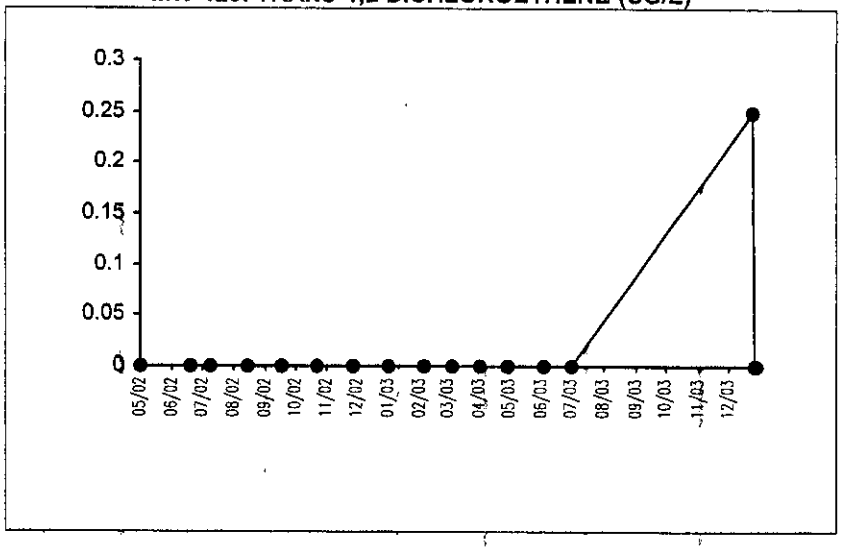
MW-120: SULFIDE (MG/L)



MW-120: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-120: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

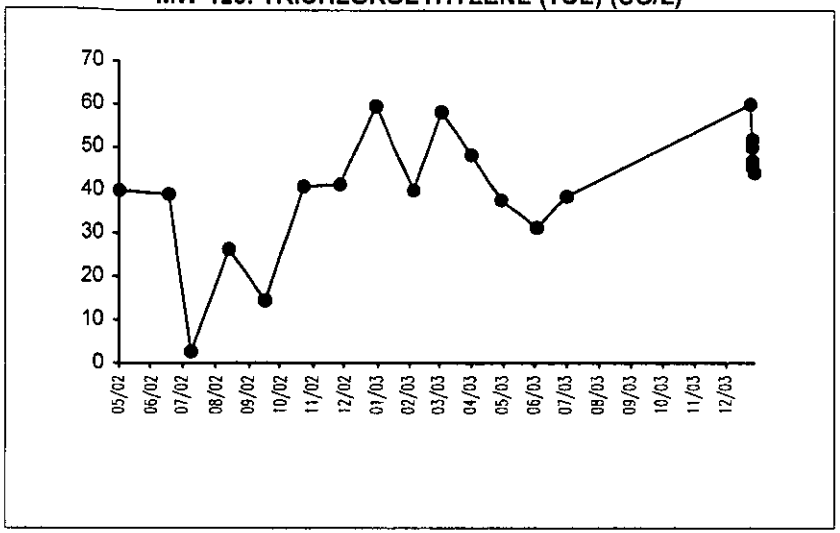
7941088

Location Purpose : Remediation

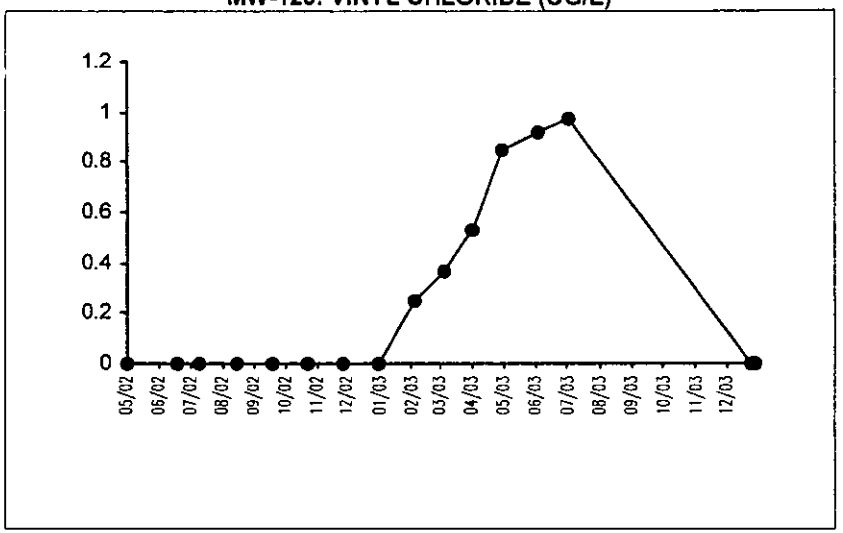
Remediation MW-120

Concentration vs Time

MW-120: TRICHLOROETHYLENE (TCE) (UG/L)



MW-120: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

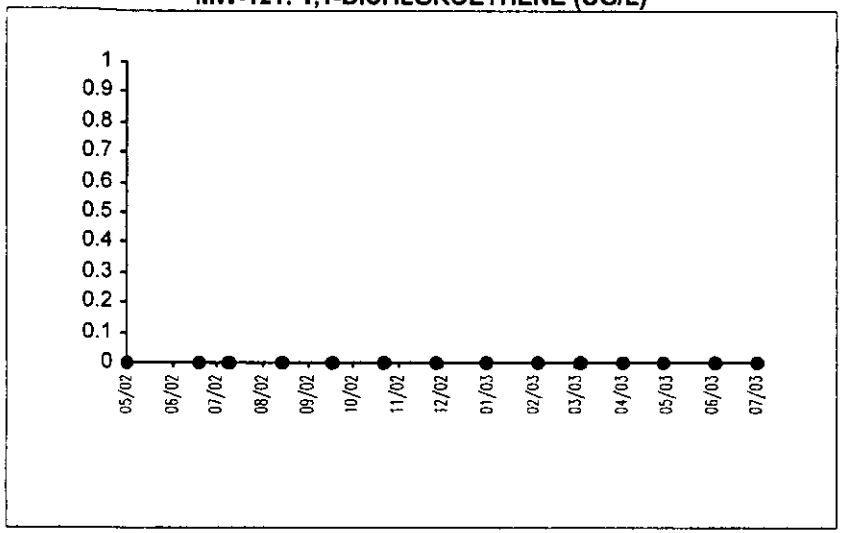
7941089

Location Purpose : Remediation

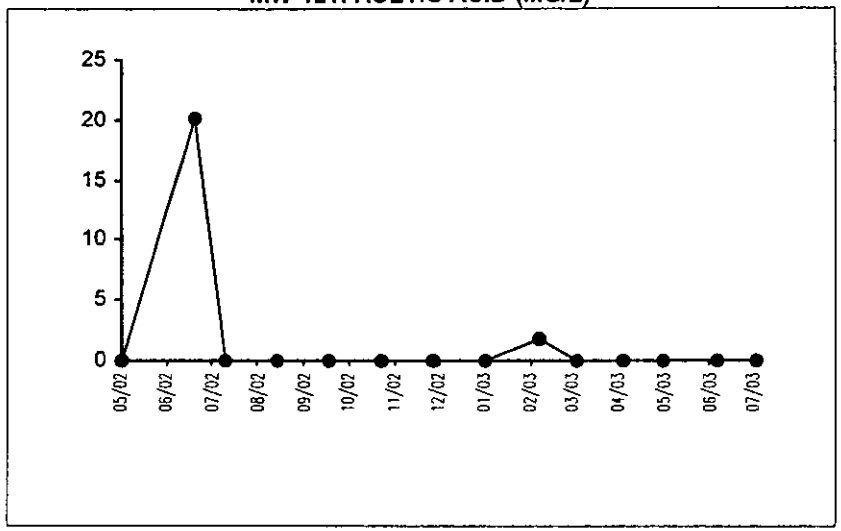
Remediation MW-121

Concentration vs Time

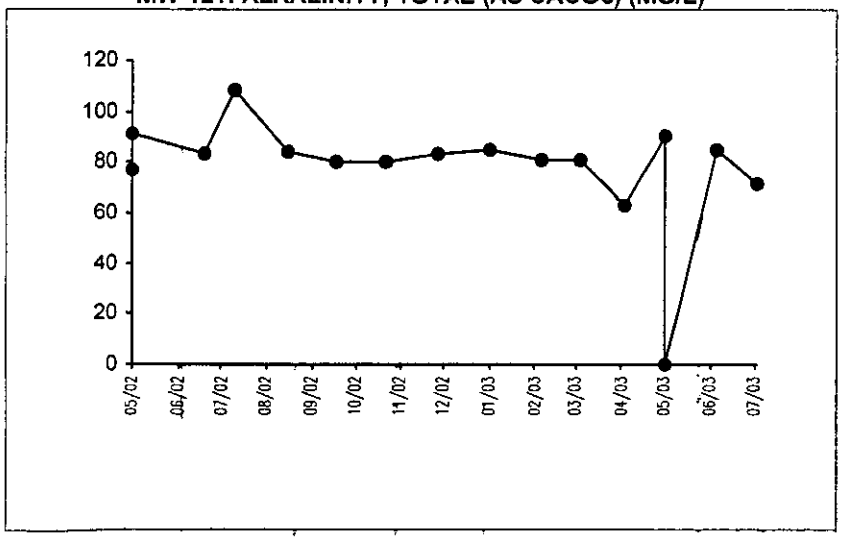
MW-121: 1,1-DICHLOROETHENE (UG/L)



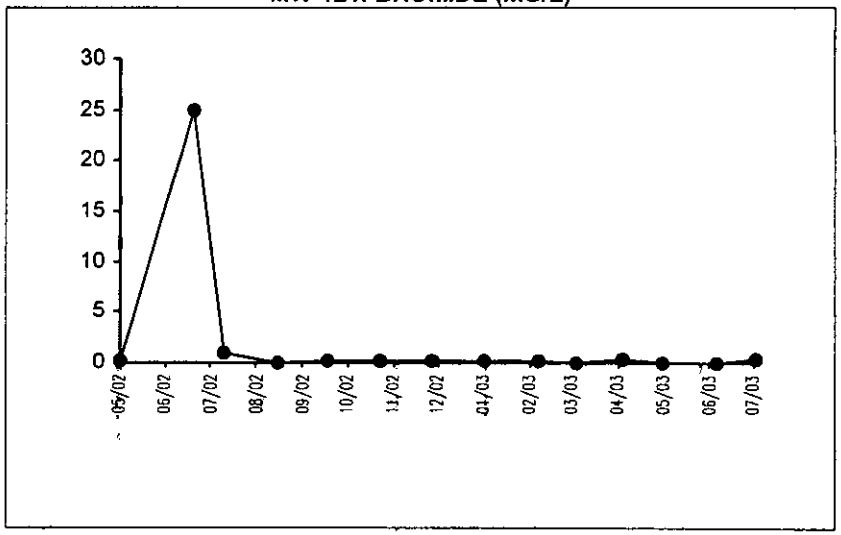
MW-121: ACETIC ACID (MG/L)



MW-121: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-121: BROMIDE (MG/L)



* Nondetects shown as 0.

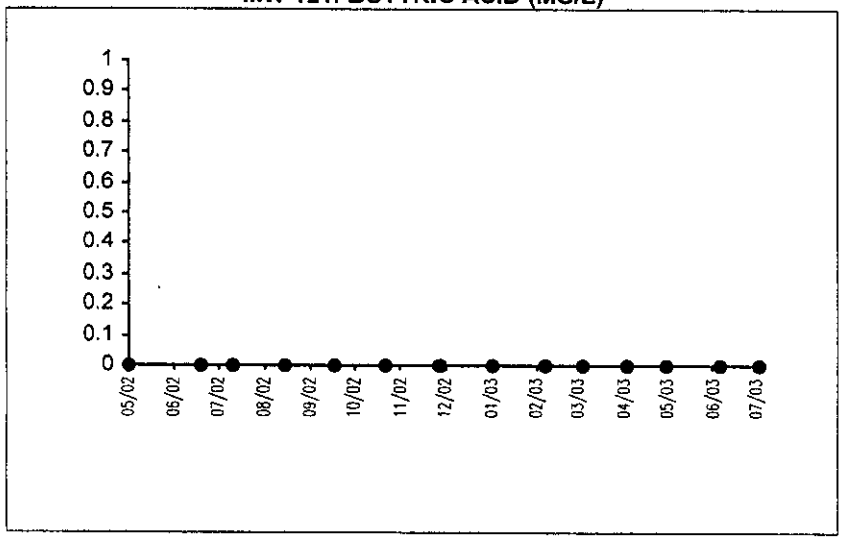
7941090

Location Purpose : Remediation

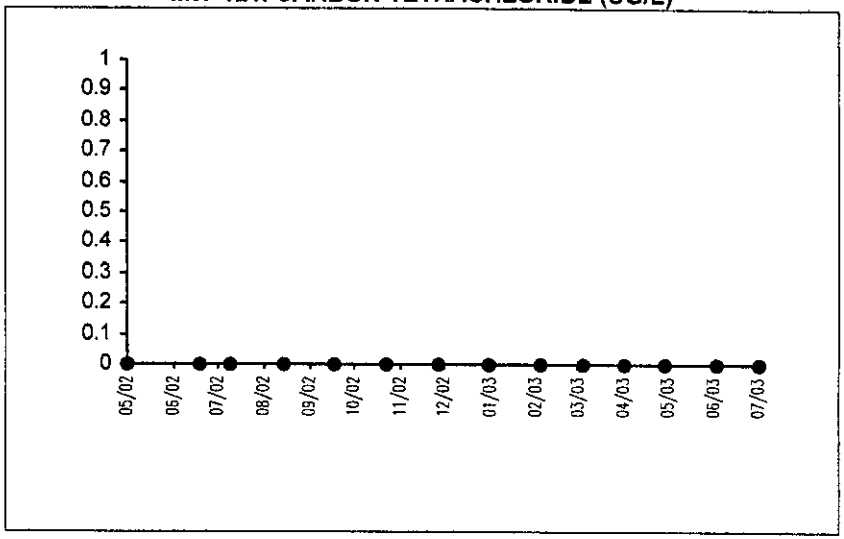
Remediation MW-121

Concentration vs Time

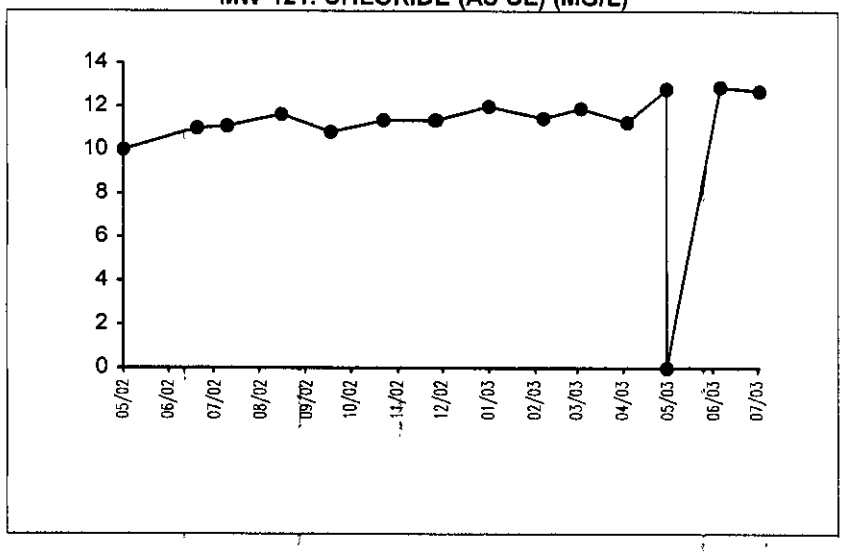
MW-121: BUTYRIC ACID (MG/L)



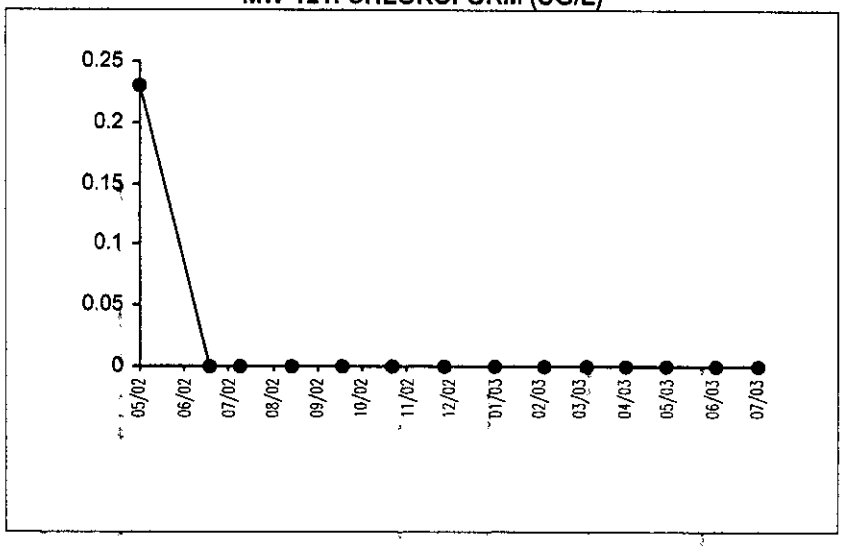
MW-121: CARBON TETRACHLORIDE (UG/L)



MW-121: CHLORIDE (AS CL) (MG/L)



MW-121: CHLOROFORM (UG/L)



* Non[illegible]ts shown as 0.

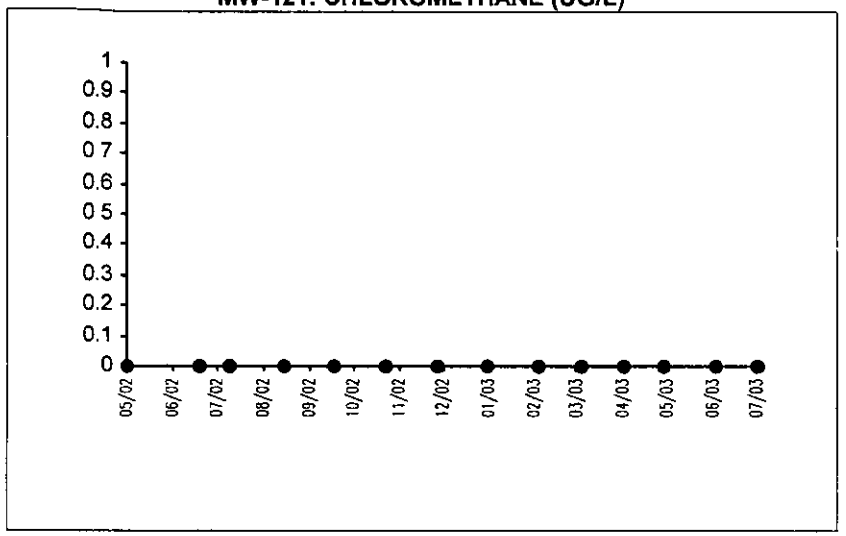
7941091

Location Purpose : Remediation

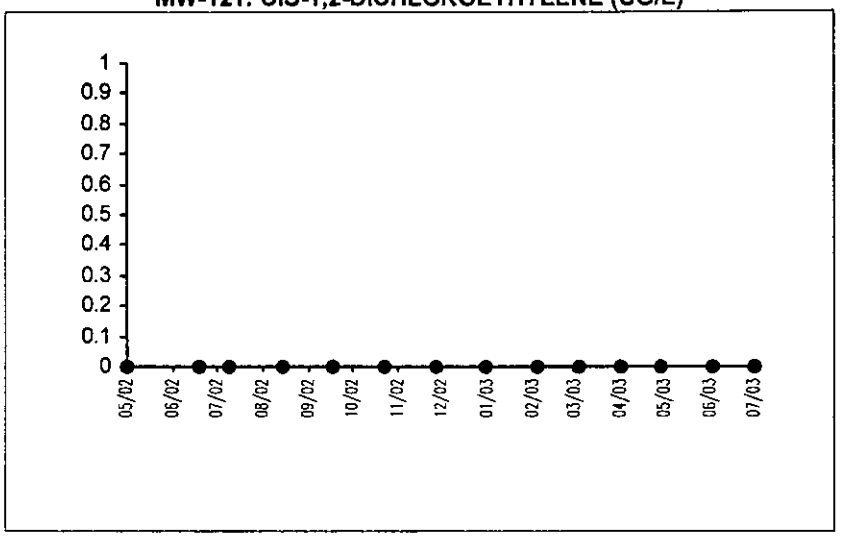
Remediation MW-121

Concentration vs Time

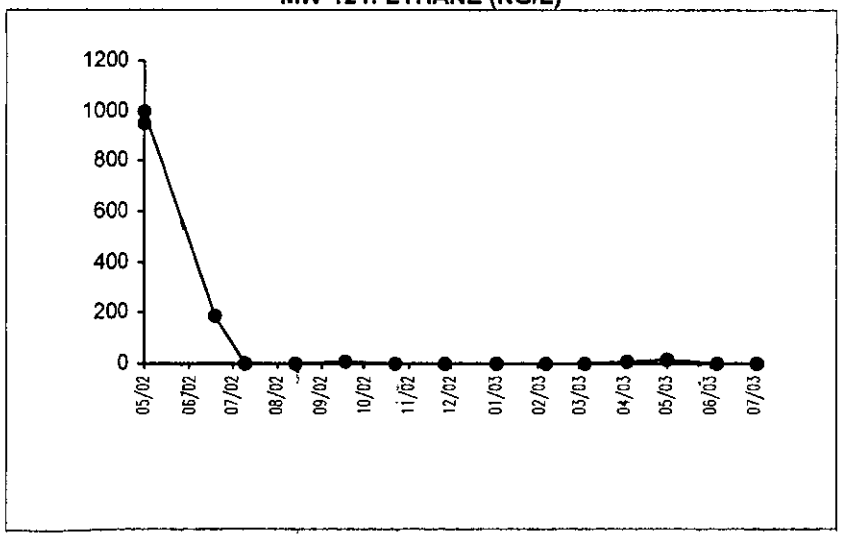
MW-121: CHLOROMETHANE (UG/L)



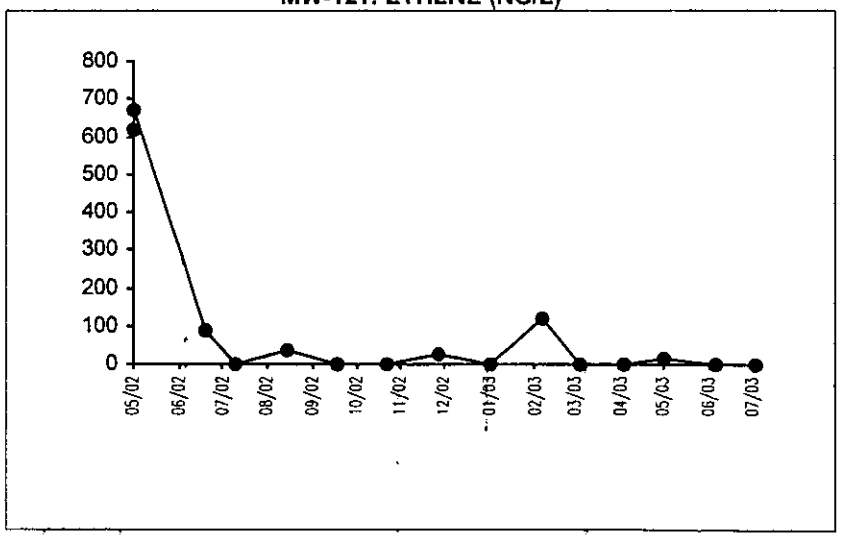
MW-121: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-121: ETHANE (NG/L)



MW-121: ETHENE (NG/L)



* Nondetects shown as 0.

7941092

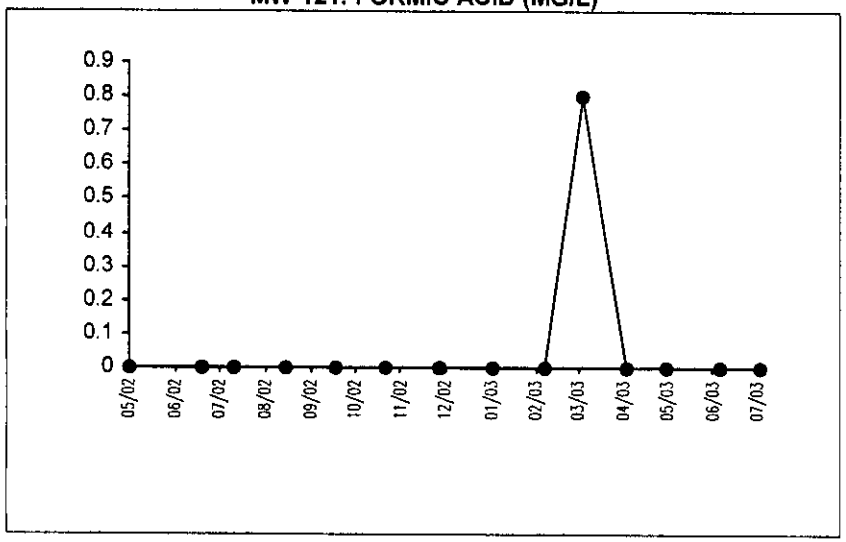
Location Purpose : Remediation

Remediation MW-121

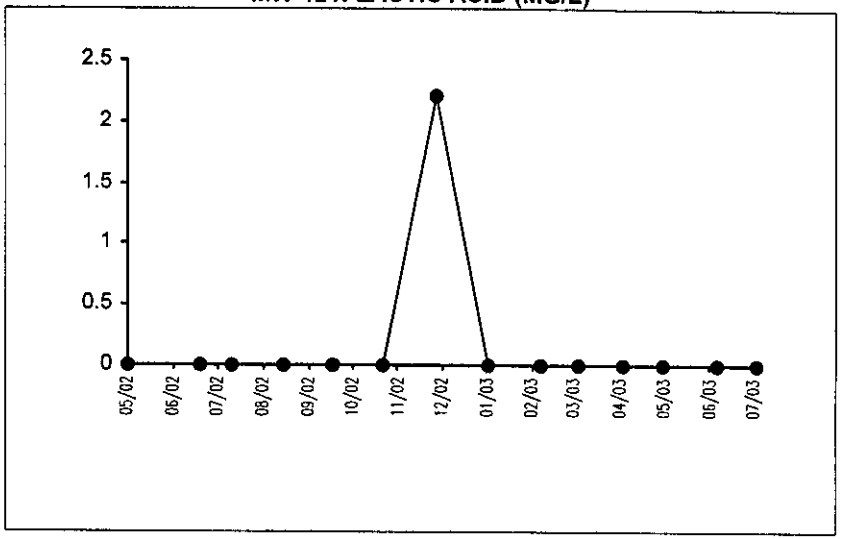
Concentration vs Time

7941093

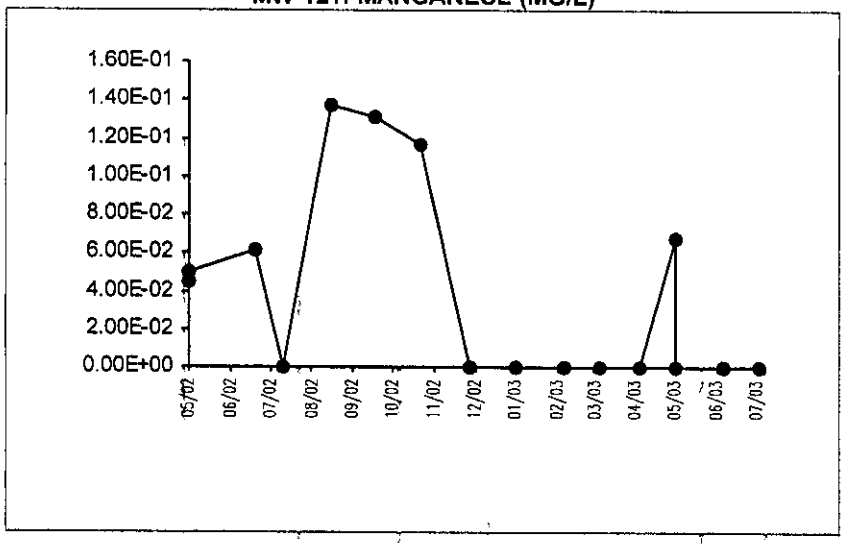
MW-121: FORMIC ACID (MG/L)



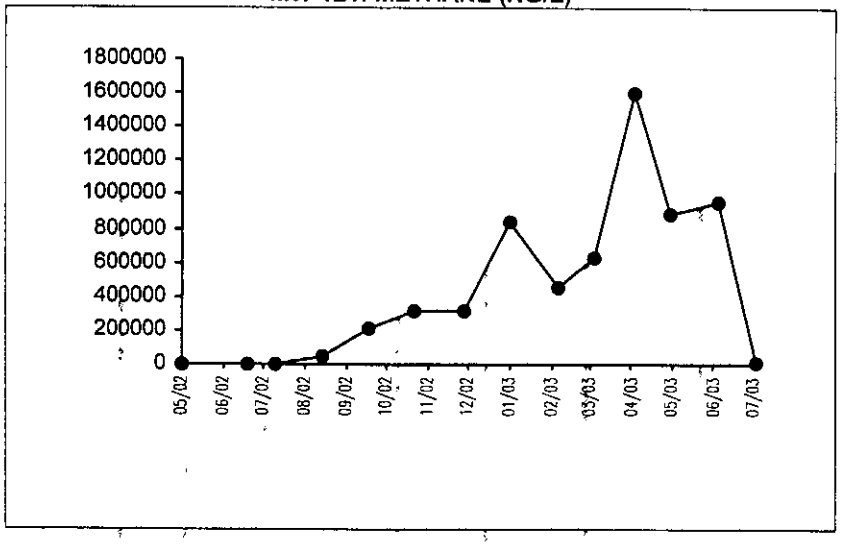
MW-121: LACTIC ACID (MG/L)



MW-121: MANGANESE (MG/L)



MW-121: METHANE (NG/L)



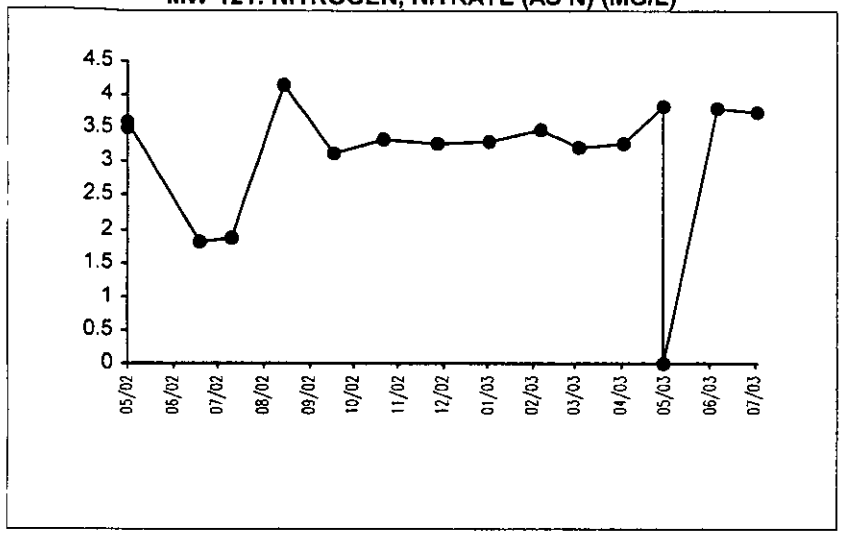
* Nondetects shown as 0.

Location Purpose : Remediation

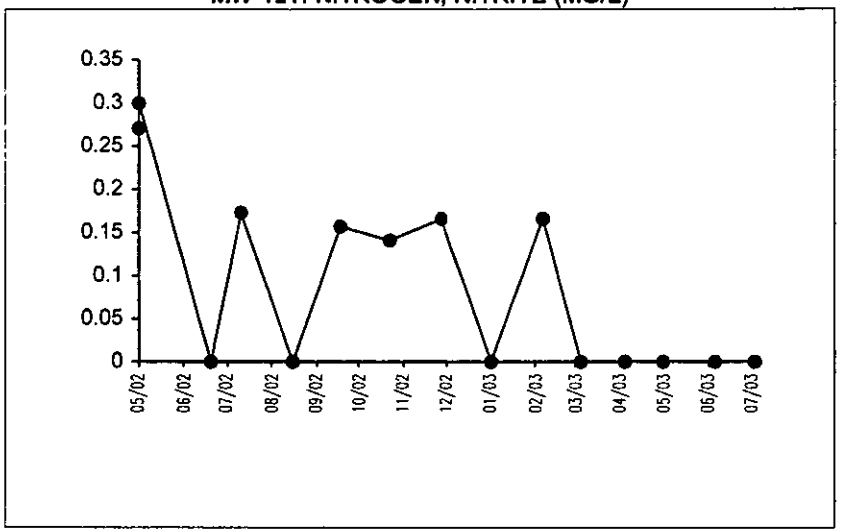
Remediation MW-121

Concentration vs Time

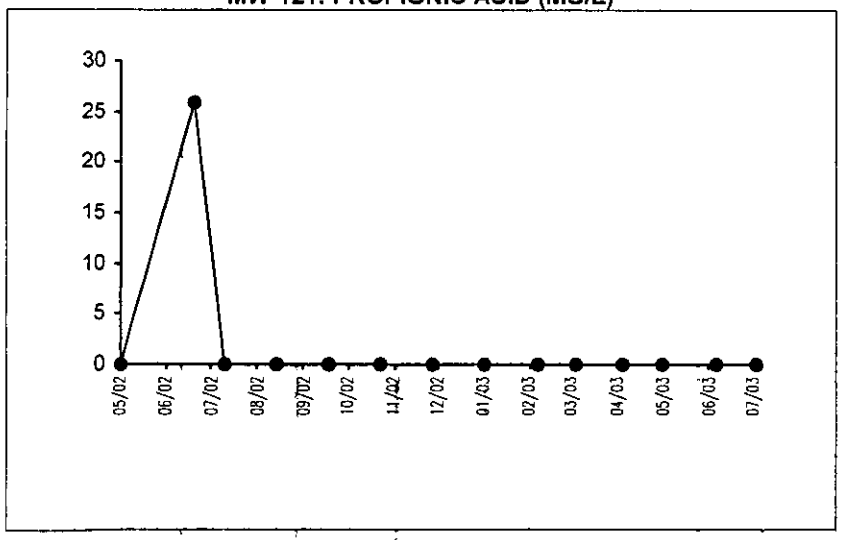
MW-121: NITROGEN, NITRATE (AS N) (MG/L)



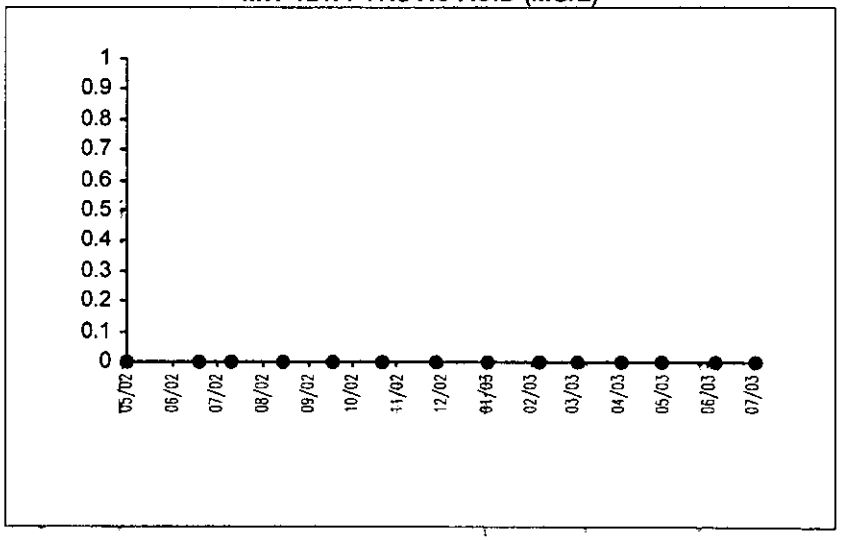
MW-121: NITROGEN, NITRITE (MG/L)



MW-121: PROPIONIC ACID (MG/L)



MW-121: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

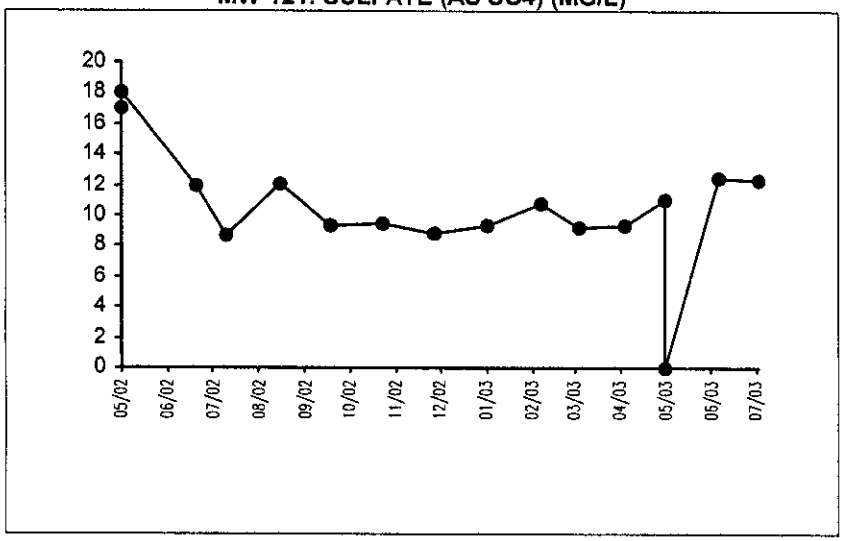
7941094

Location Purpose : Remediation

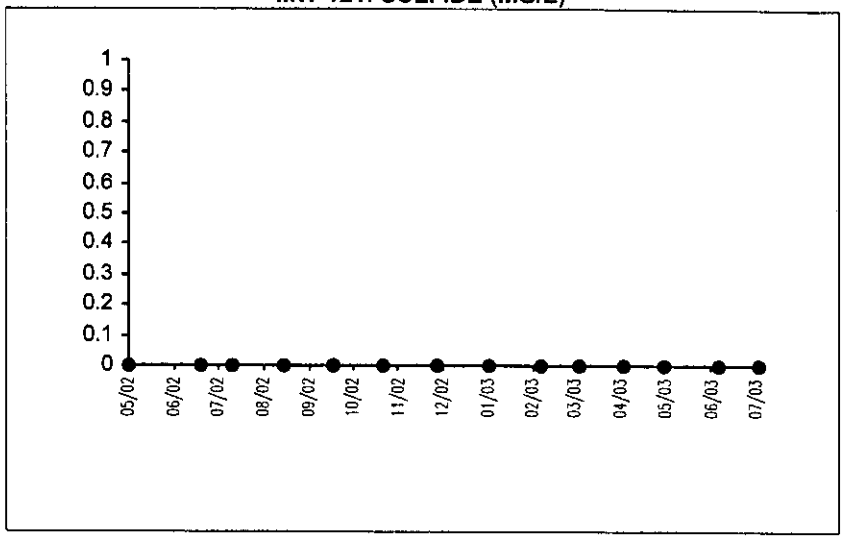
Remediation MW-121

Concentration vs Time

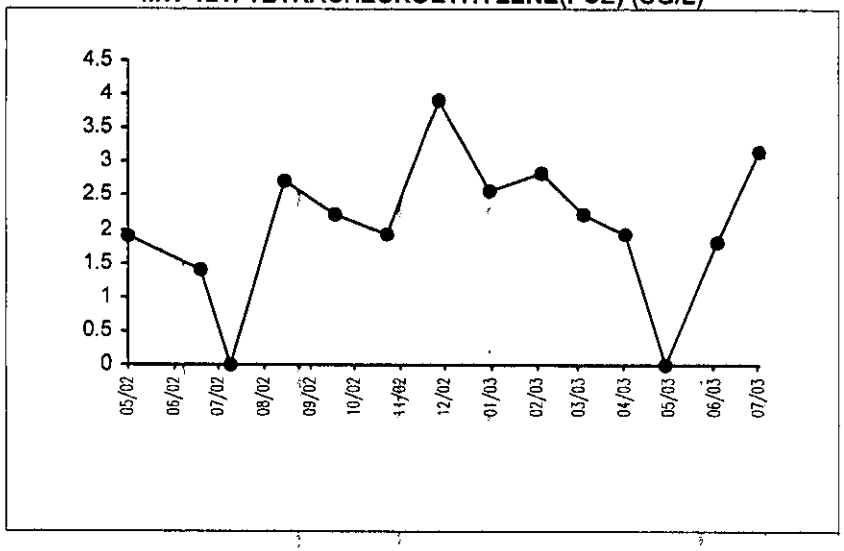
MW-121: SULFATE (AS SO4) (MG/L)



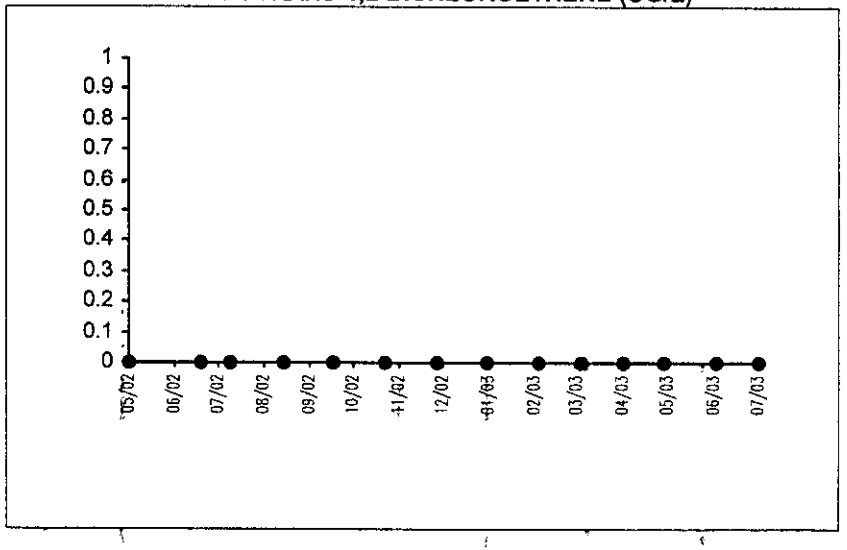
MW-121: SULFIDE (MG/L)



MW-121: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-121: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nond[illegible]ts shown as 0.

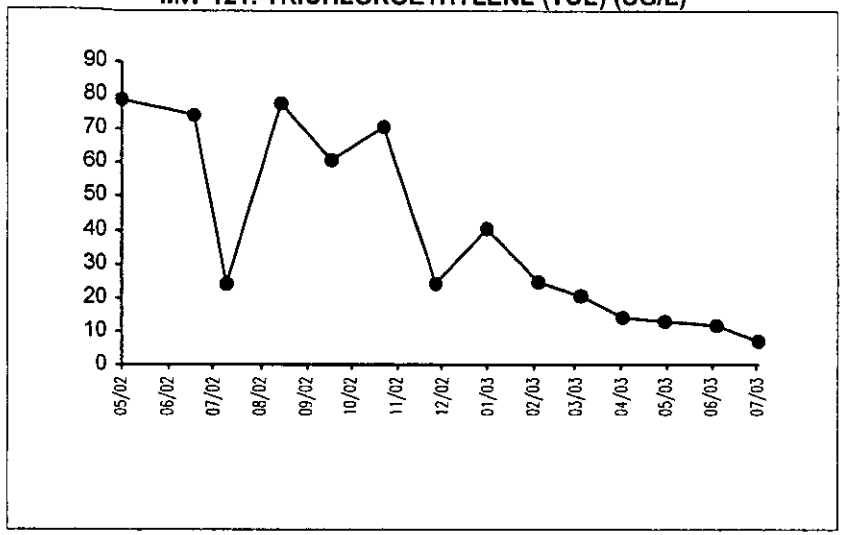
7941095

Location Purpose : Remediation

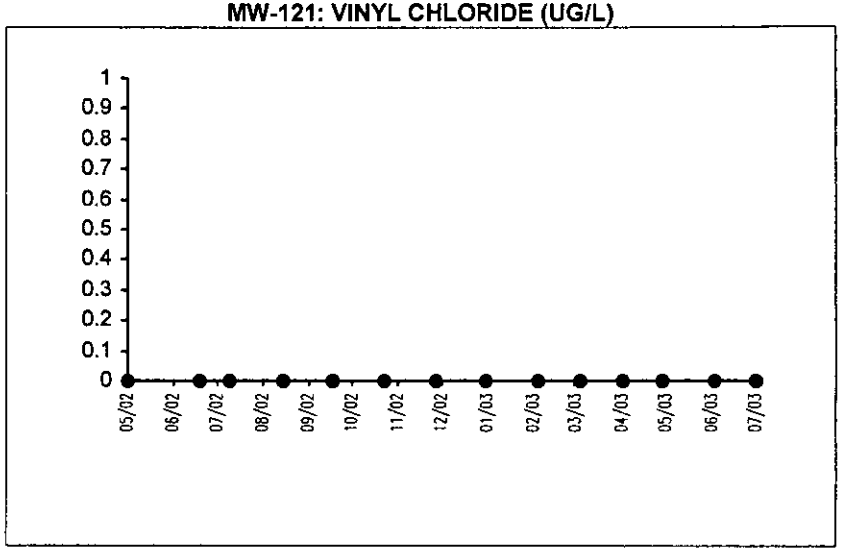
Remediation MW-121

Concentration vs Time

MW-121: TRICHLOROETHYLENE (TCE) (UG/L)



MW-121: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

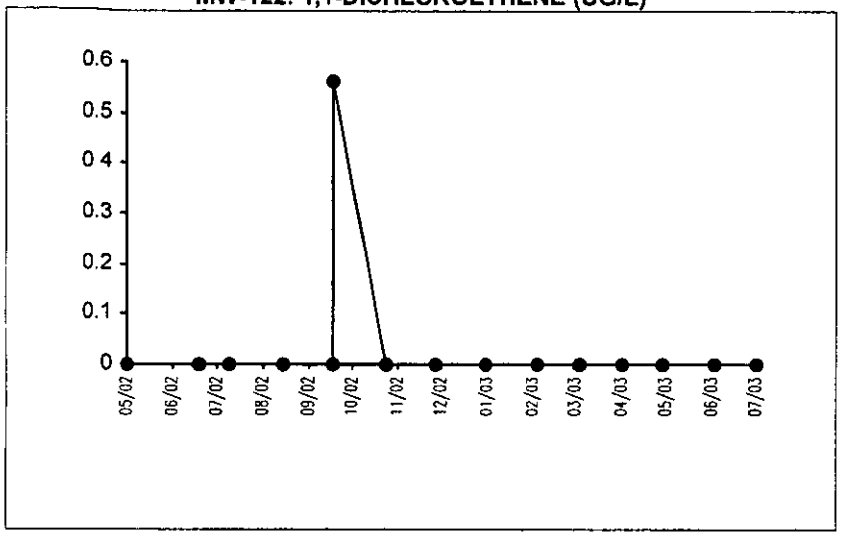
7941096

Location Purpose : Remediation

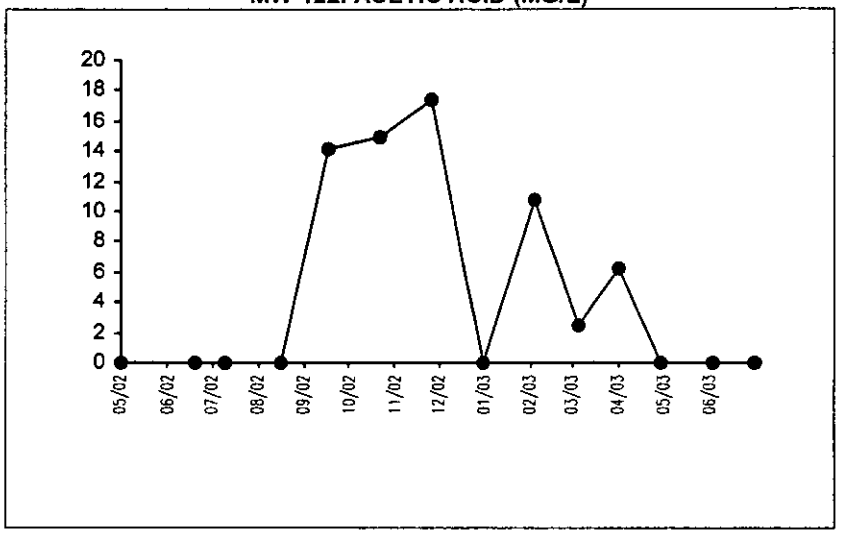
Remediation MW-122

Concentration vs Time

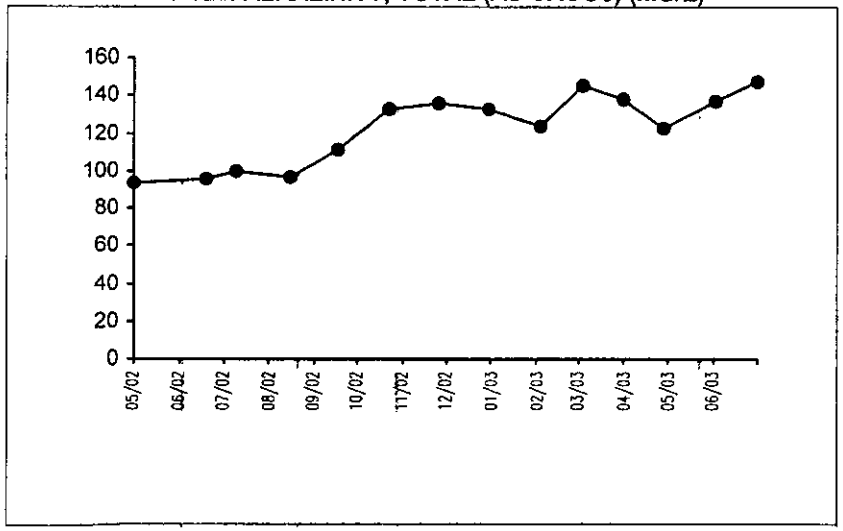
MW-122: 1,1-DICHLOROETHENE (UG/L)



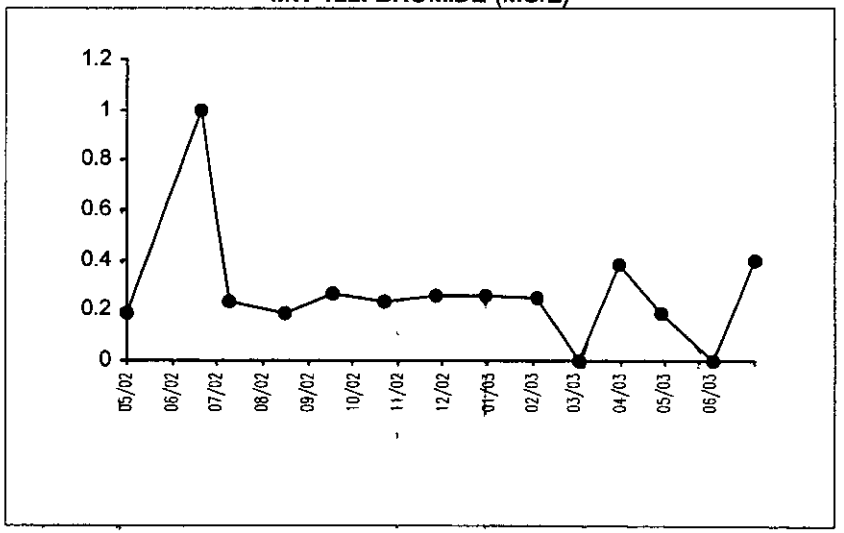
MW-122: ACETIC ACID (MG/L)



MW-122: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-122: BROMIDE (MG/L)



* Nondetects shown as 0.

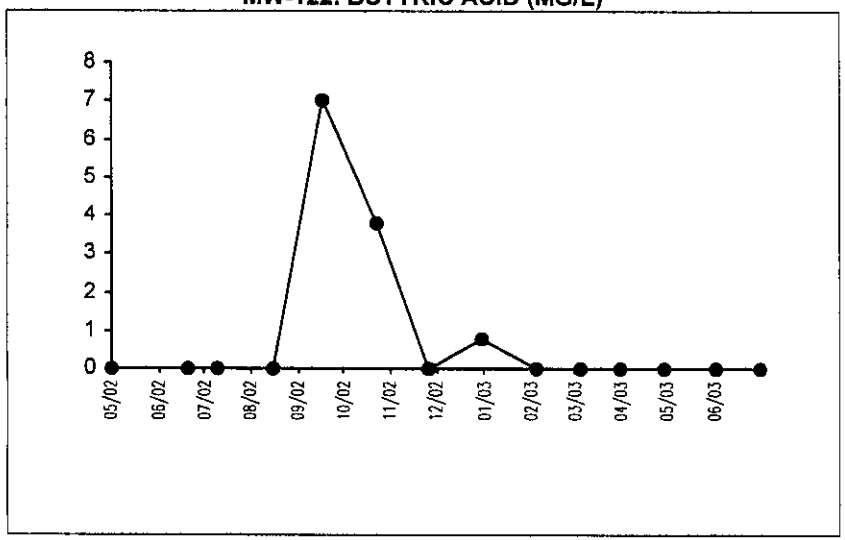
7941097

Location Purpose : Remediation

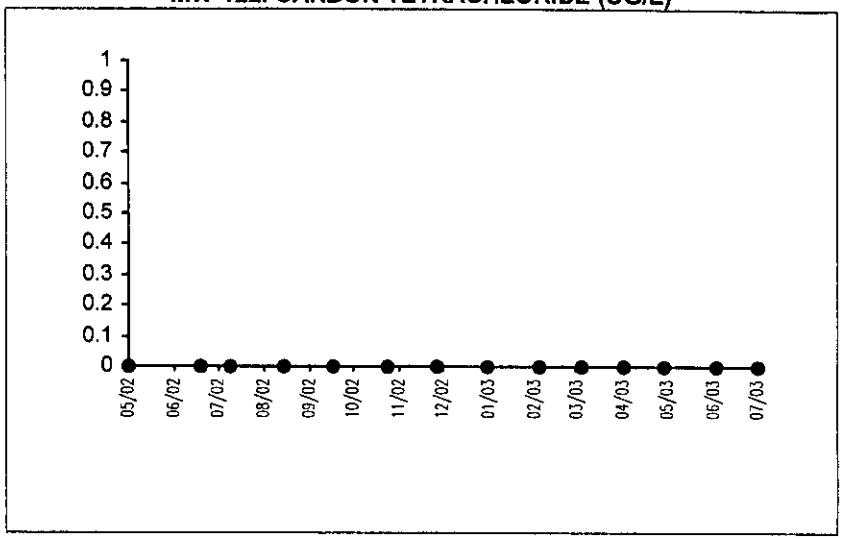
Remediation MW-122

Concentration vs Time

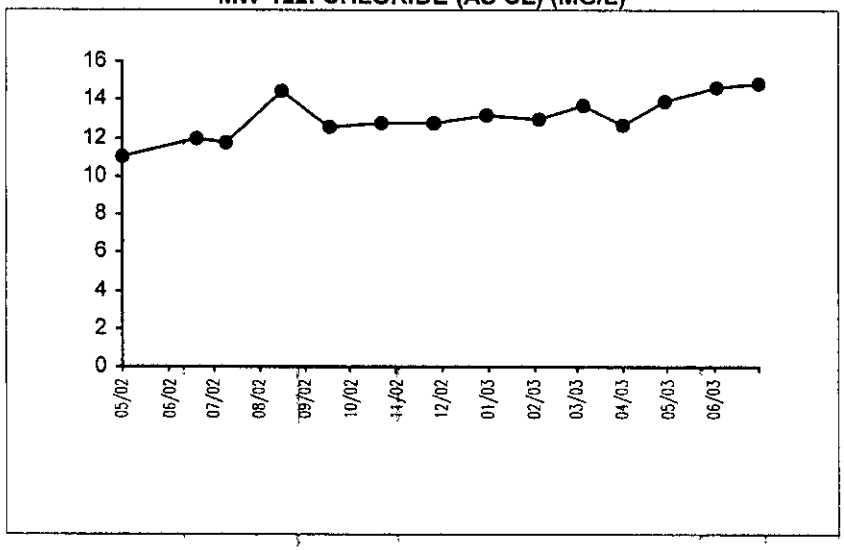
MW-122: BUTYRIC ACID (MG/L)



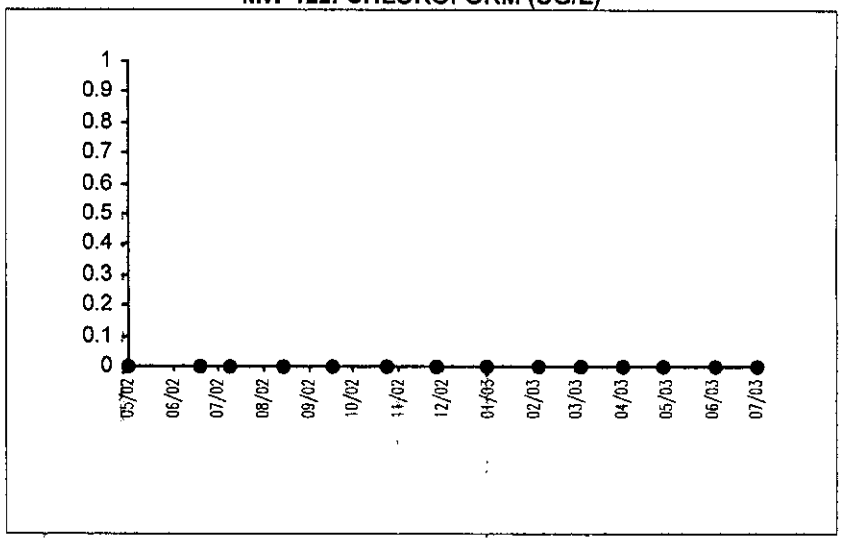
MW-122: CARBON TETRACHLORIDE (UG/L)



MW-122: CHLORIDE (AS CL) (MG/L)



MW-122: CHLOROFORM (UG/L)



* Non[illegible]ts shown as 0.

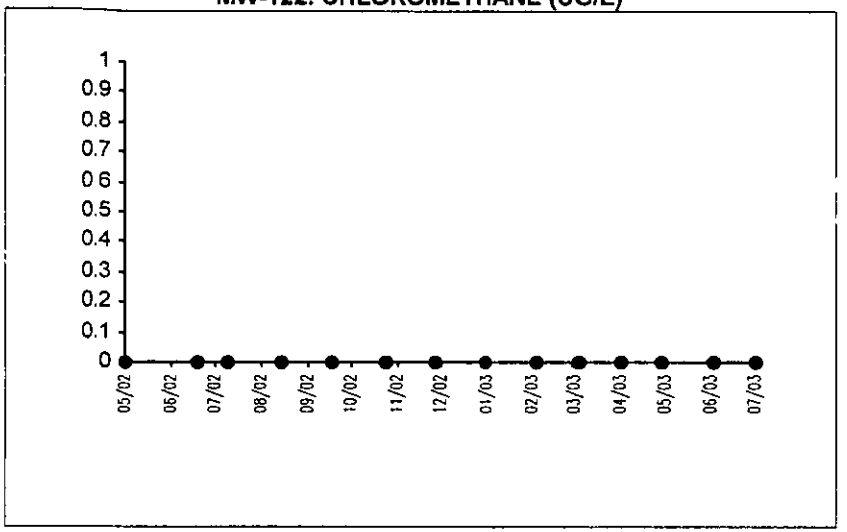
7941098

Location Purpose : Remediation

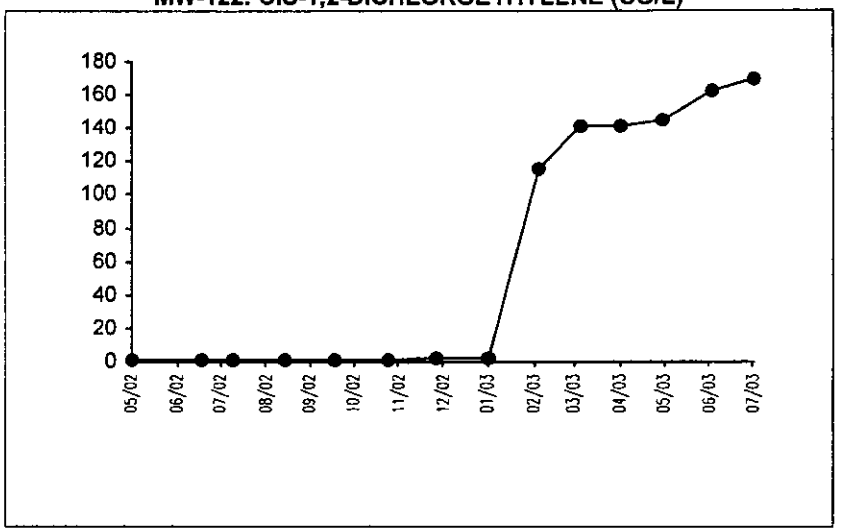
Remediation MW-122

Concentration vs Time

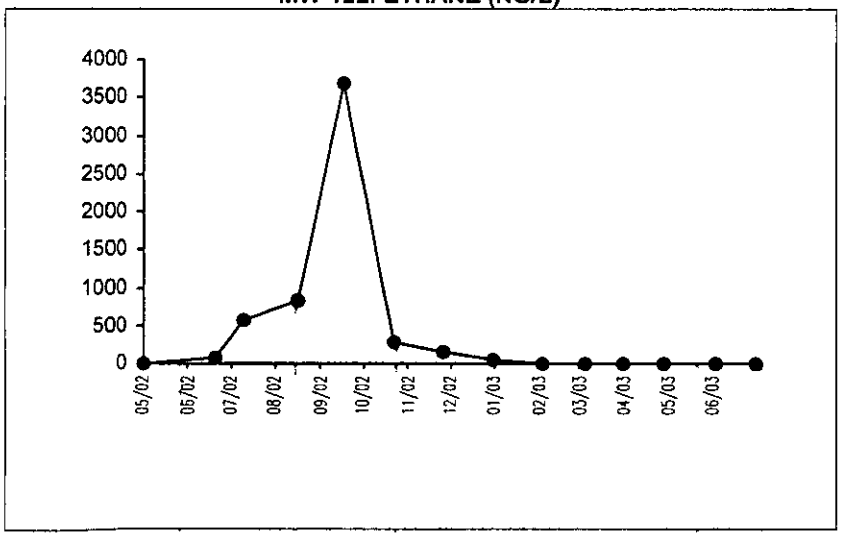
MW-122: CHLOROMETHANE (UG/L)



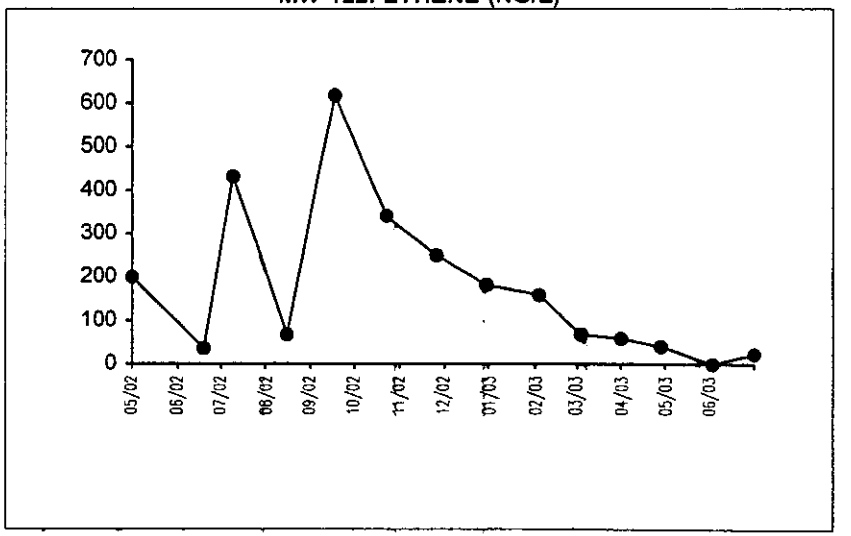
MW-122: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-122: ETHANE (NG/L)



MW-122: ETHENE (NG/L)



* Nondetects shown as 0.

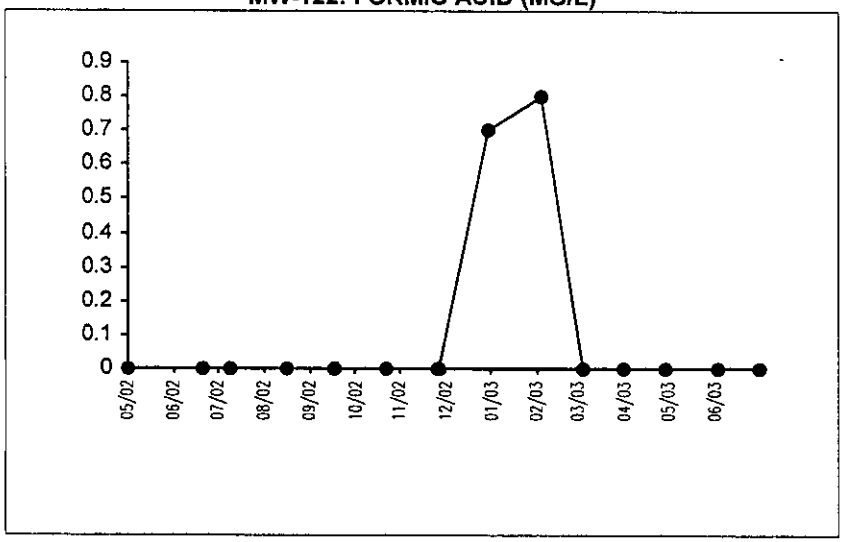
79410099

Location Purpose : Remediation

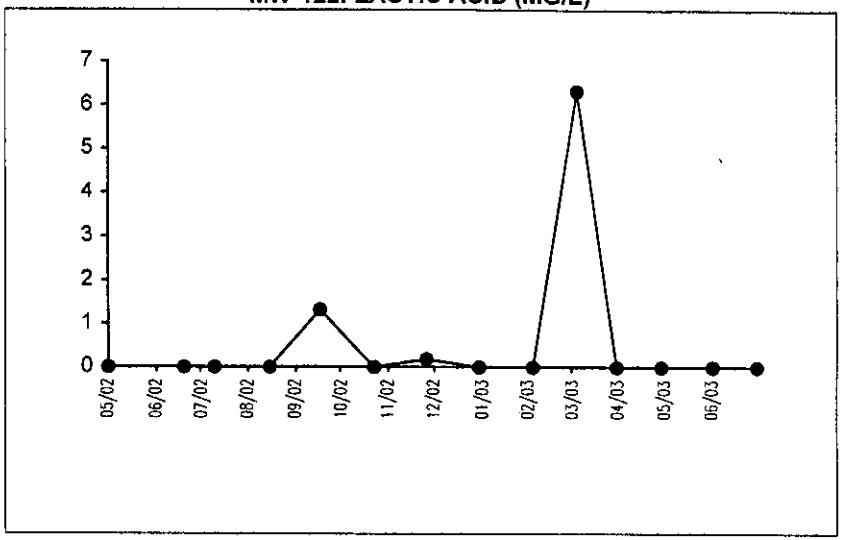
Remediation MW-122

Concentration vs Time

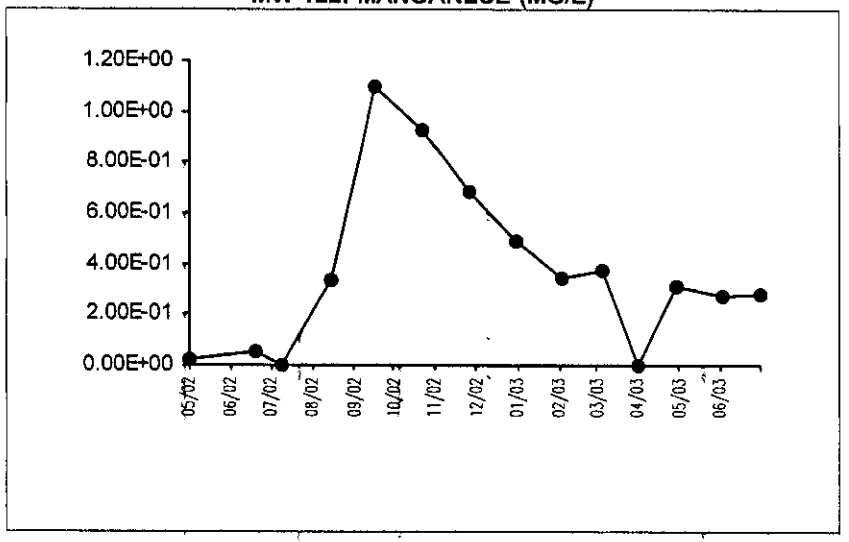
MW-122: FORMIC ACID (MG/L)



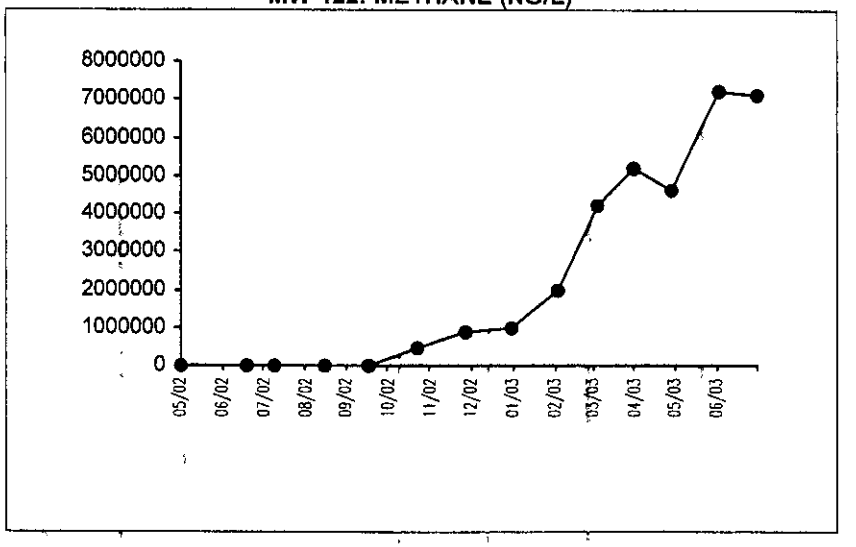
MW-122: LACTIC ACID (MG/L)



MW-122: MANGANESE (MG/L)



MW-122: METHANE (NG/L)



* Nondetects shown as 0.

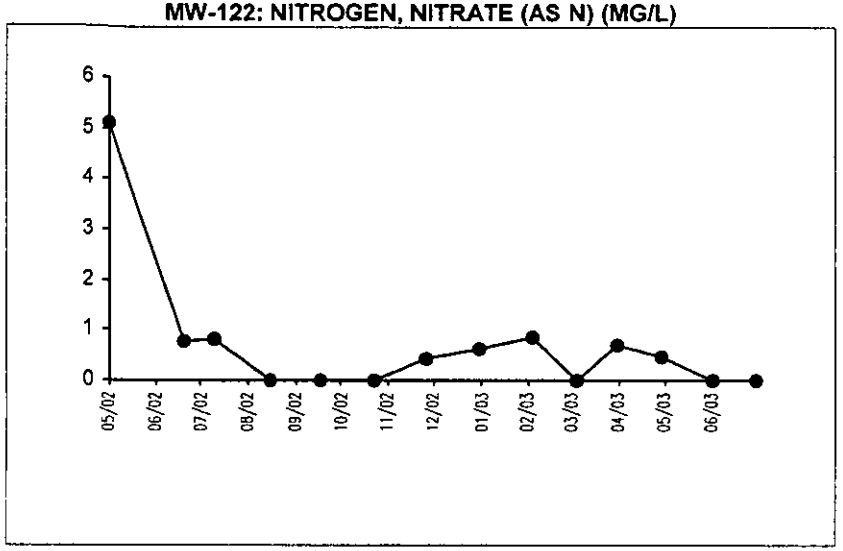
7941100

Location Purpose : Remediation

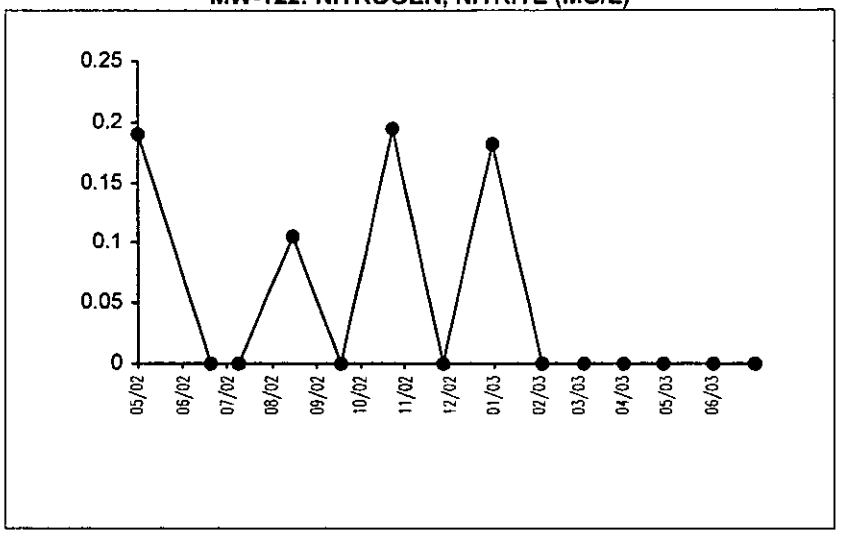
Remediation MW-122

Concentration vs Time

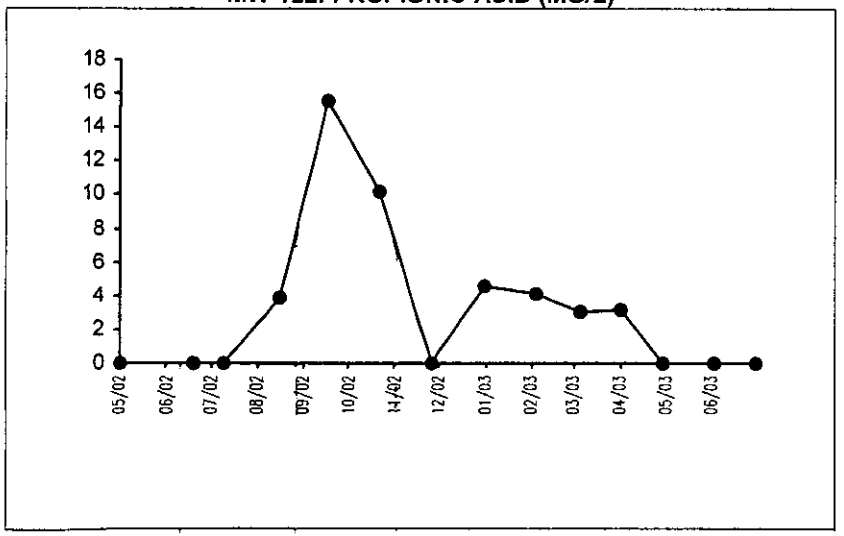
MW-122: NITROGEN, NITRATE (AS N) (MG/L)



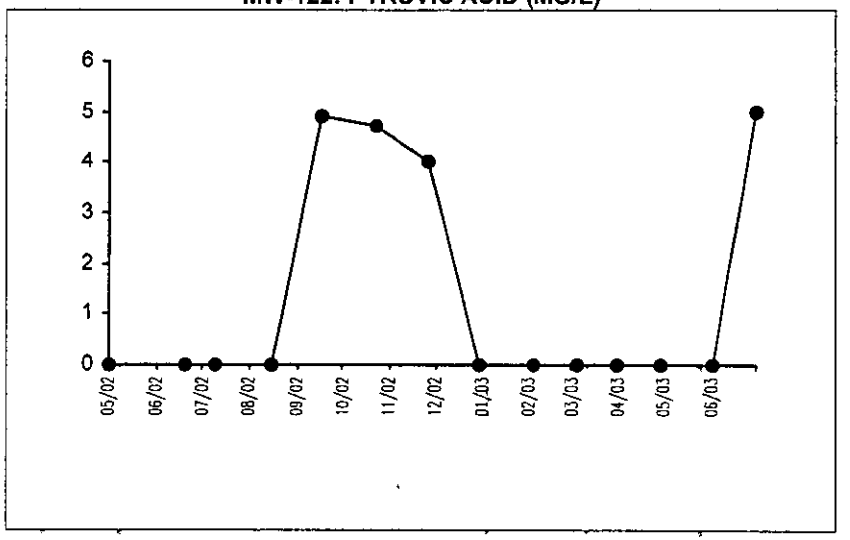
MW-122: NITROGEN, NITRITE (MG/L)



MW-122: PROPIONIC ACID (MG/L)



MW-122: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

7941101

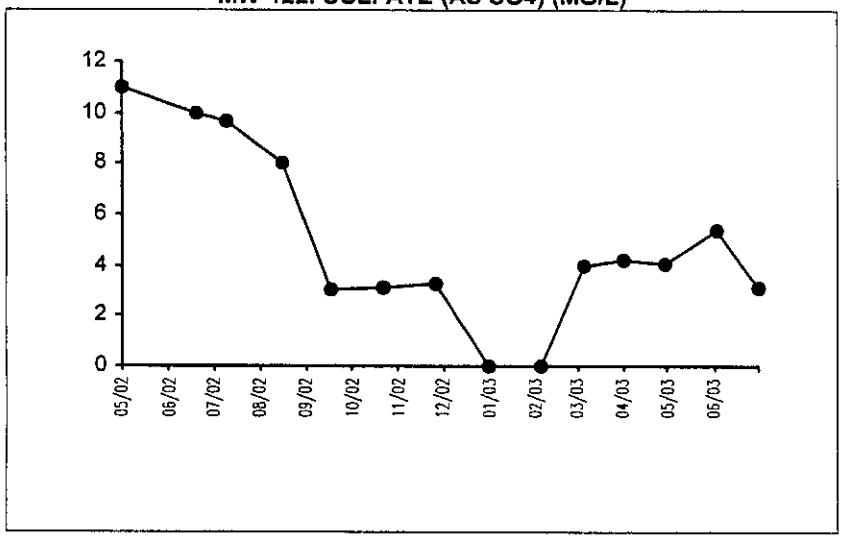
Location Purpose : Remediation

Remediation MW-122

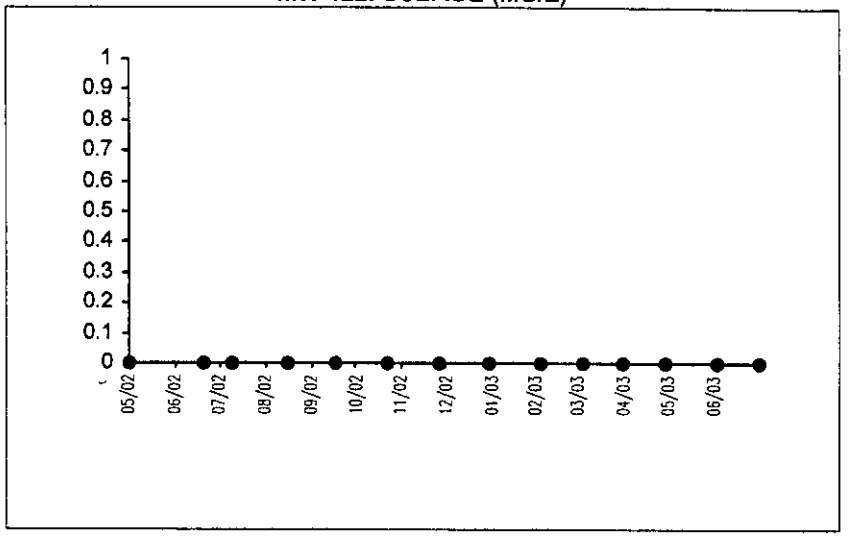
Concentration vs Time

7941102

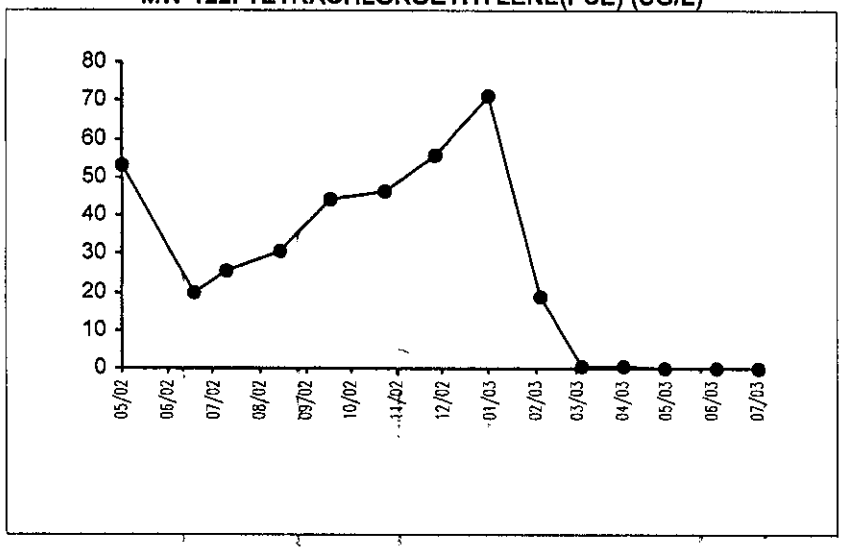
MW-122: SULFATE (AS SO4) (MG/L)



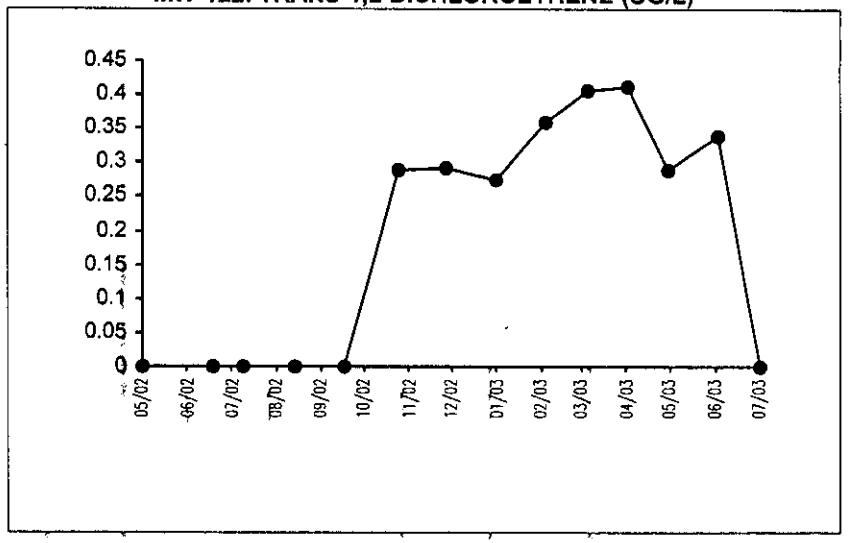
MW-122: SULFIDE (MG/L)



MW-122: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-122: TRANS-1,2-DICHLOROETHENE (UG/L)



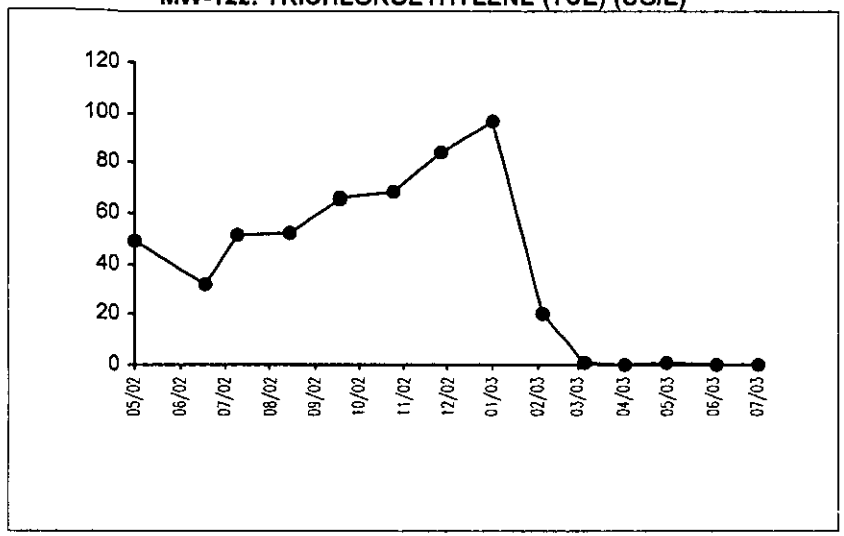
* Nond[illegible]ts shown as 0.

Location Purpose : Remediation

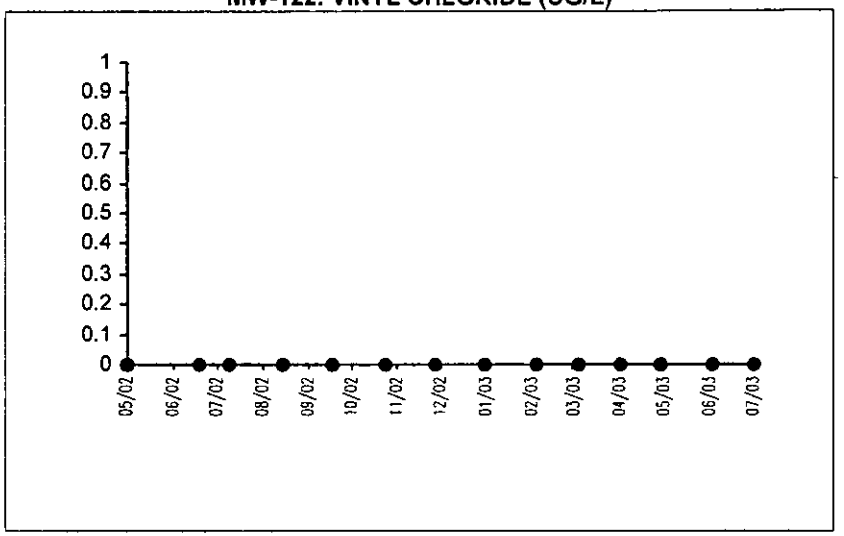
Remediation MW-122

Concentration vs Time

MW-122: TRICHLOROETHYLENE (TCE) (UG/L)



MW-122: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

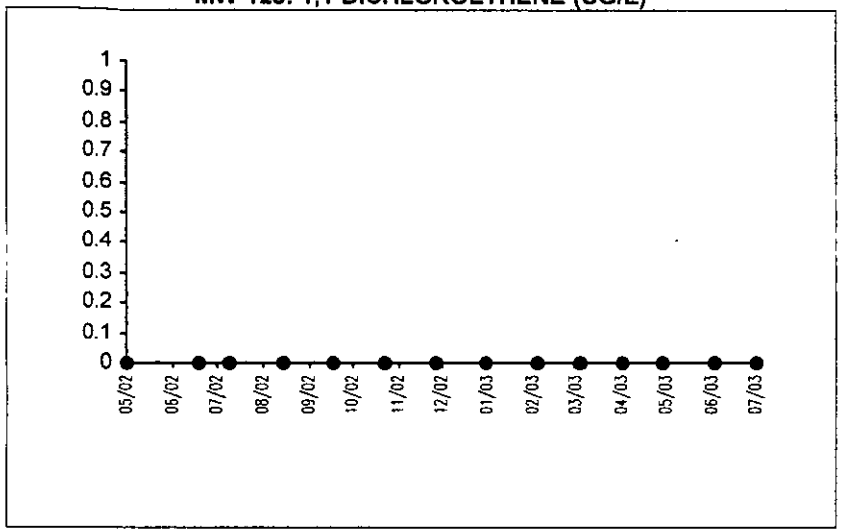
79411103

Location Purpose : Remediation

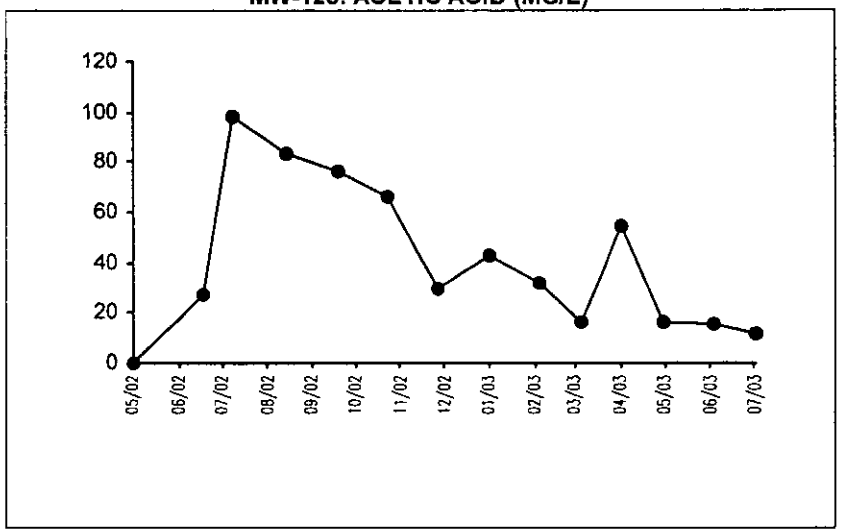
Remediation MW-123

Concentration vs Time

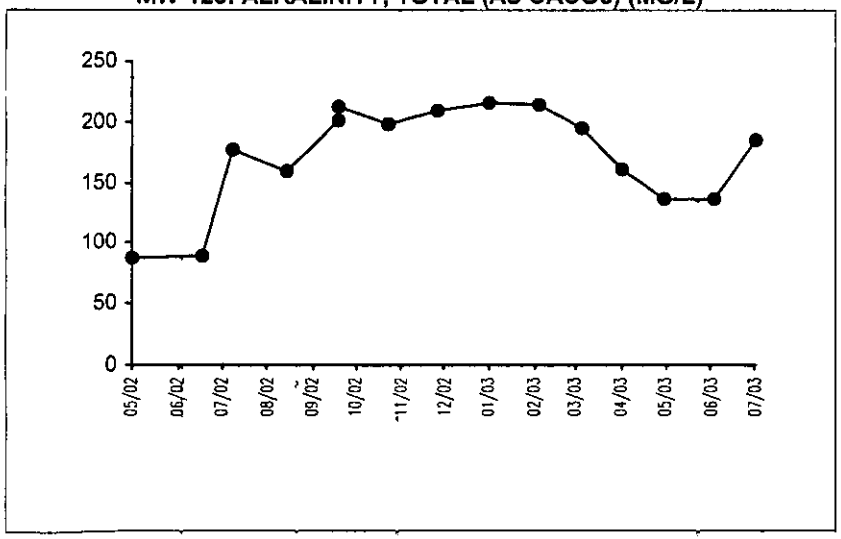
MW-123: 1,1-DICHLOROETHENE (UG/L)



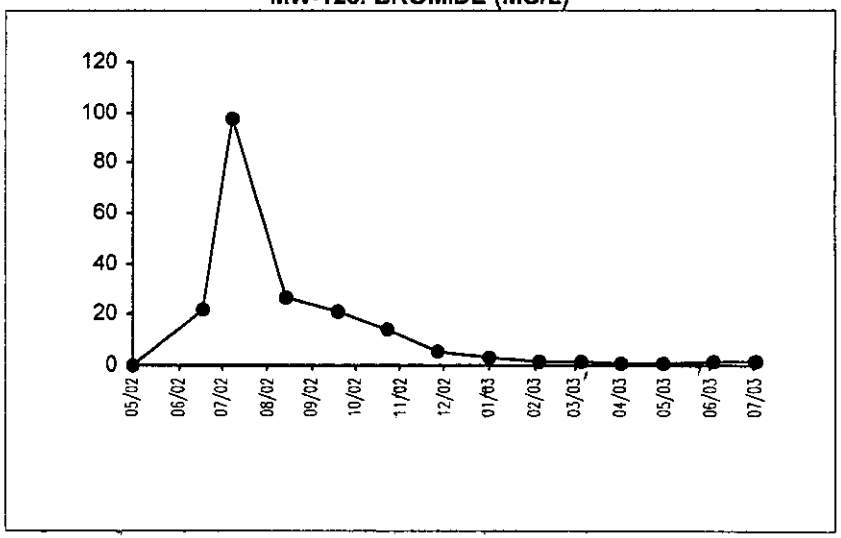
MW-123: ACETIC ACID (MG/L)



MW-123: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-123: BROMIDE (MG/L)



* Nondetects shown as 0.

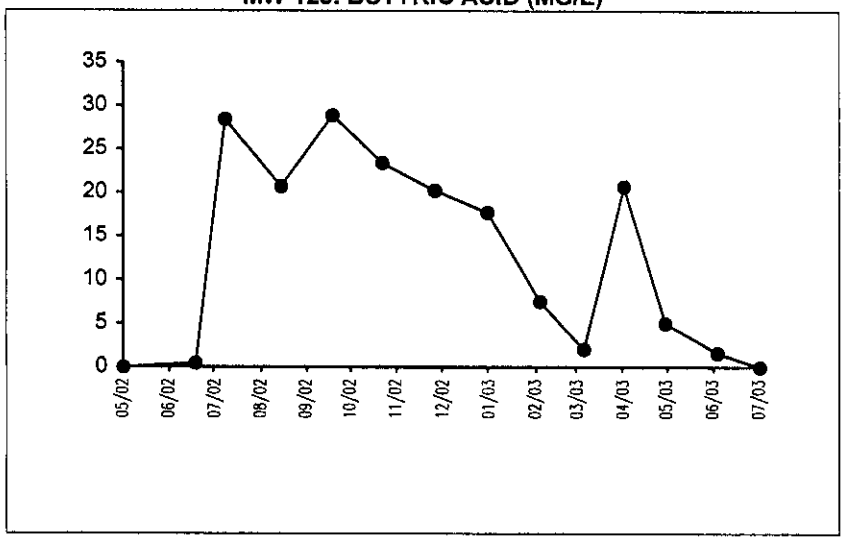
7941104

Location Purpose : Remediation

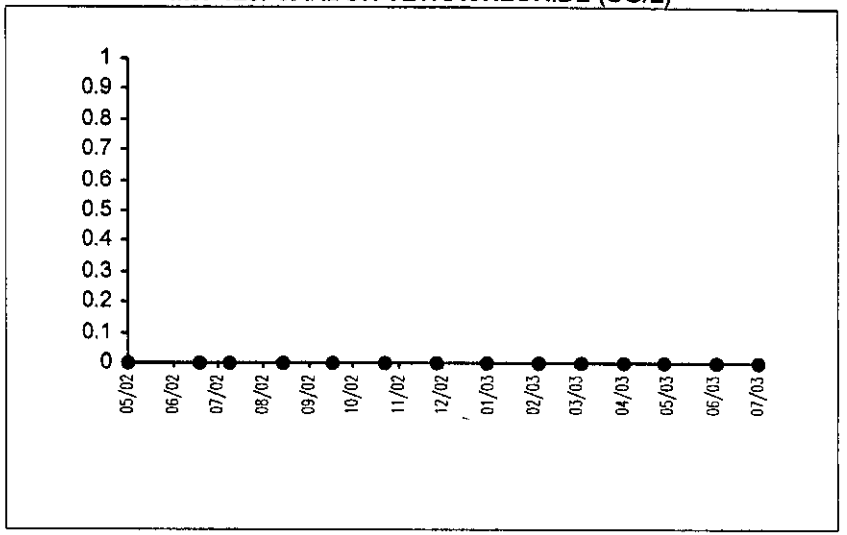
Remediation MW-123

Concentration vs Time

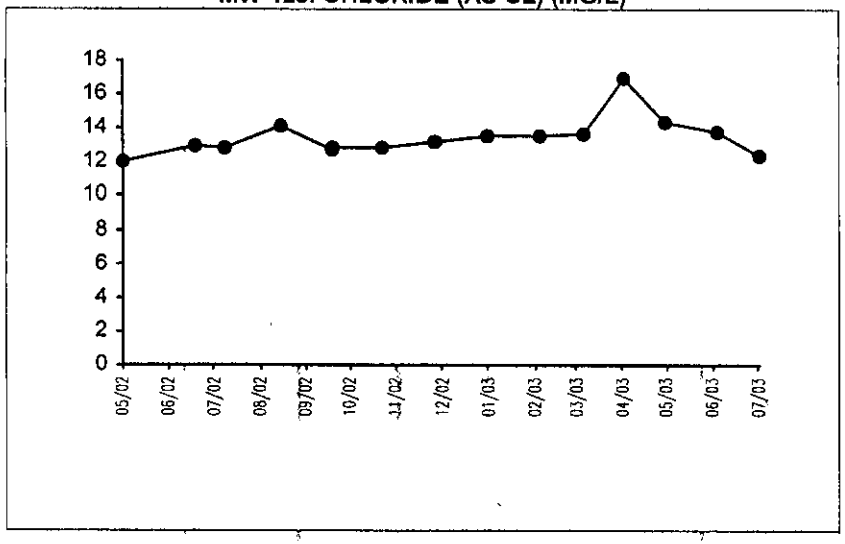
MW-123: BUTYRIC ACID (MG/L)



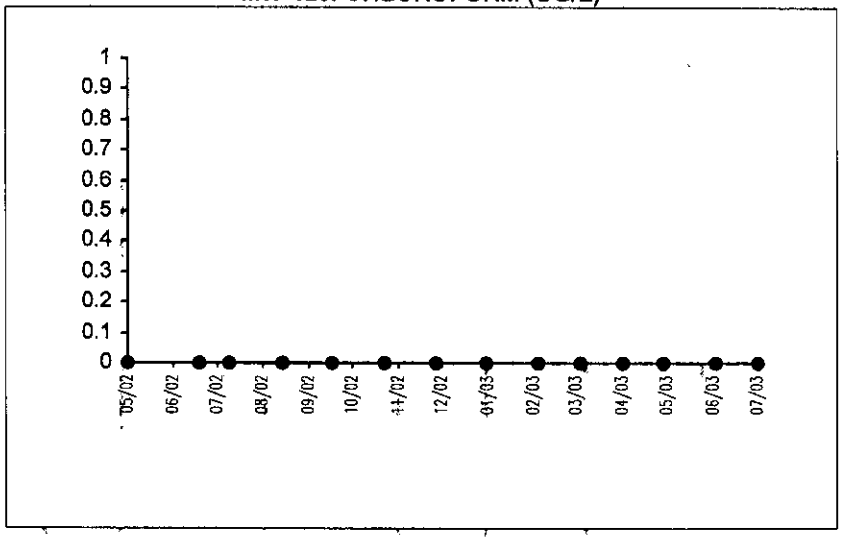
MW-123: CARBON TETRACHLORIDE (UG/L)



MW-123: CHLORIDE (AS CL) (MG/L)



MW-123: CHLOROFORM (UG/L)



* Non[illegible]sts shown as 0.

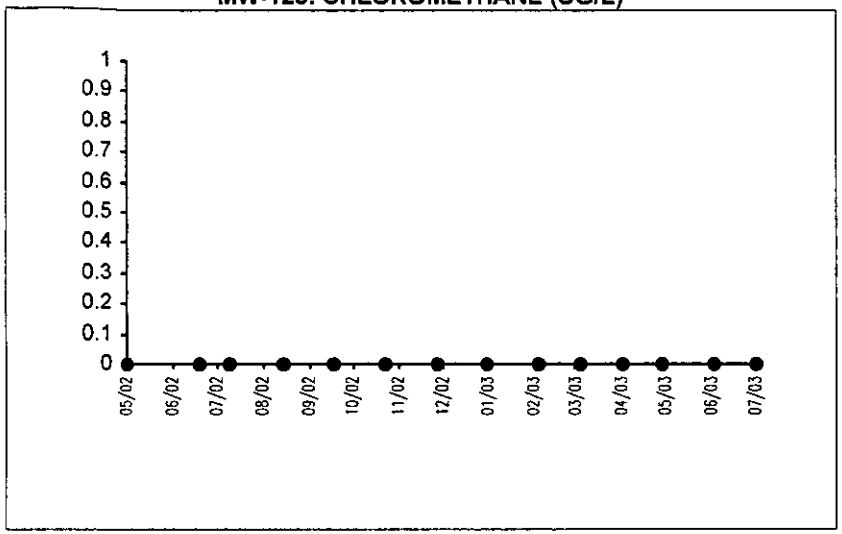
7941105

Location Purpose : Remediation

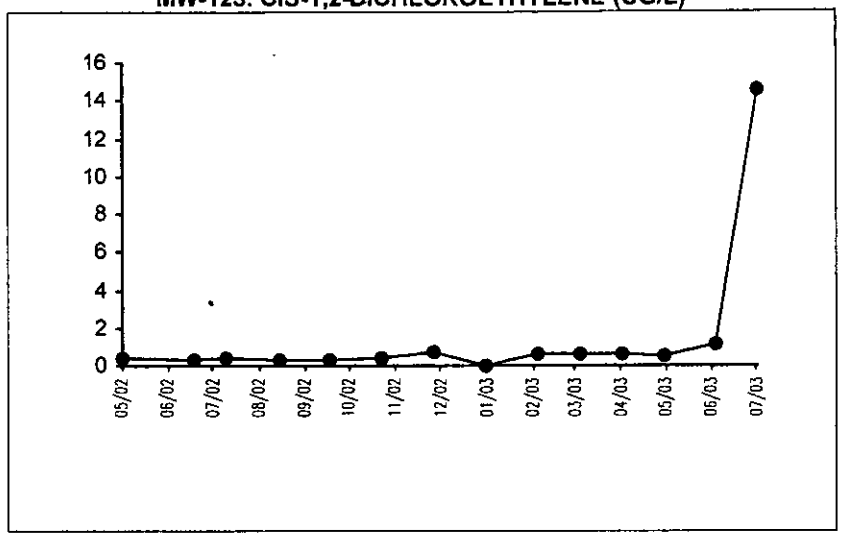
Remediation MW-123

Concentration vs Time

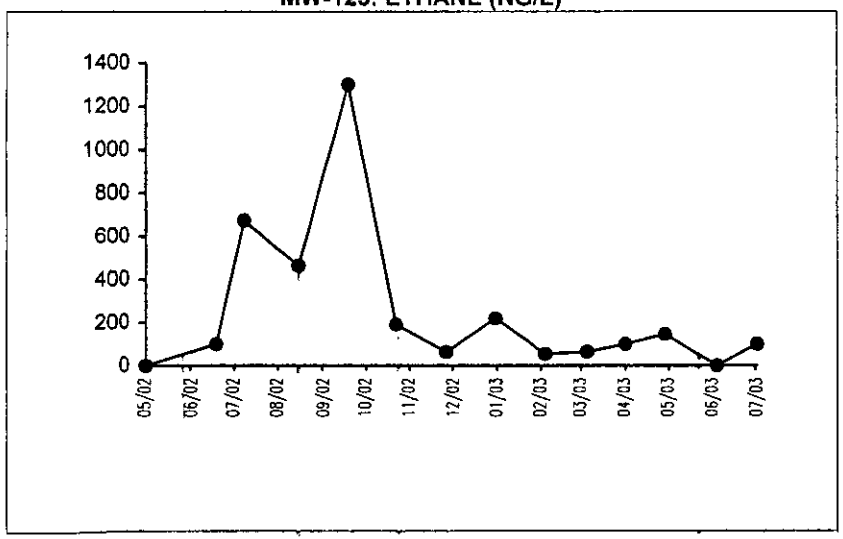
MW-123: CHLOROMETHANE (UG/L)



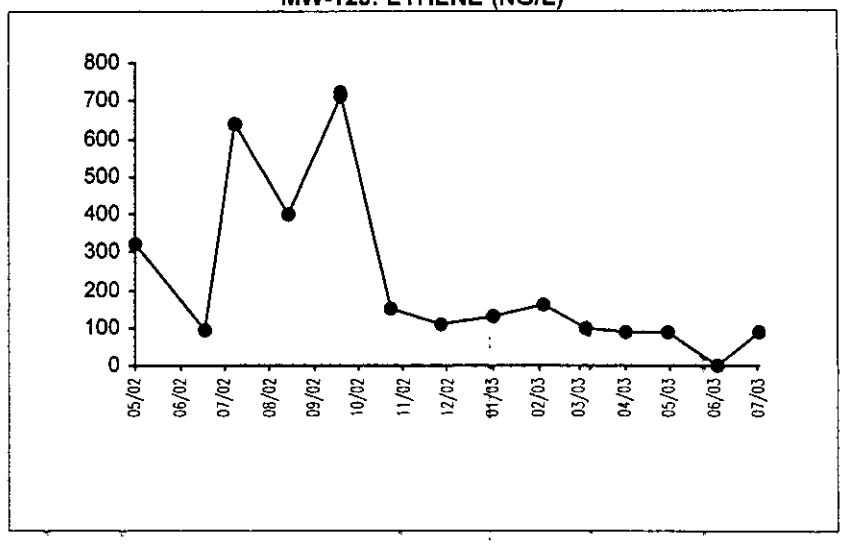
MW-123: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-123: ETHANE (NG/L)



MW-123: ETHENE (NG/L)



* Nondetects shown as 0.

7941106

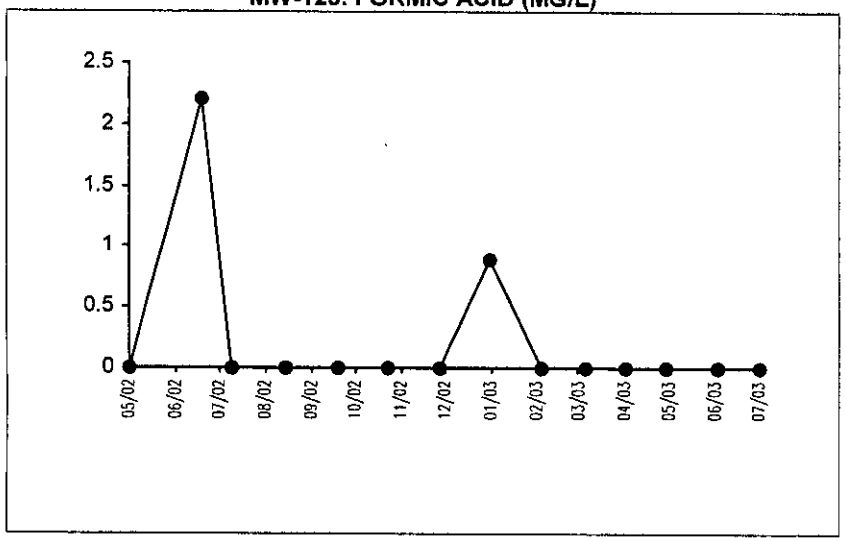
Location Purpose : Remediation

Remediation MW-123

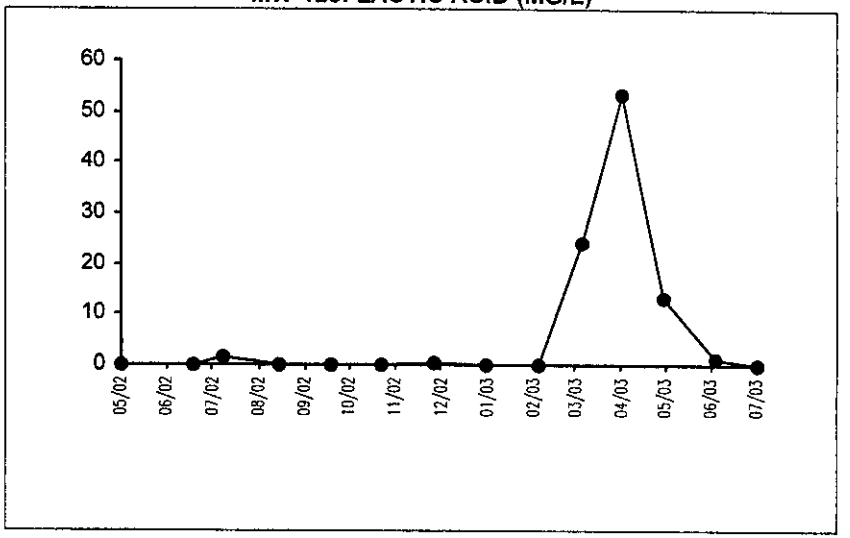
Concentration vs Time

7941107

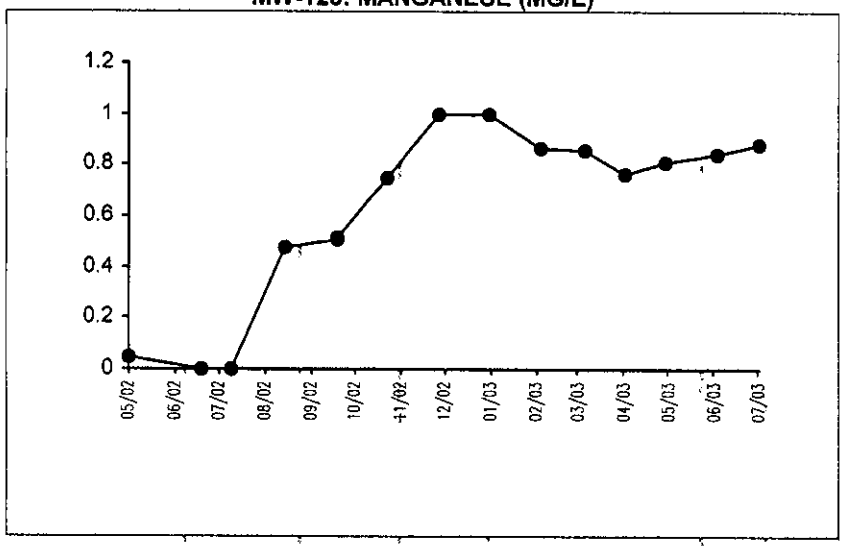
MW-123: FORMIC ACID (MG/L)



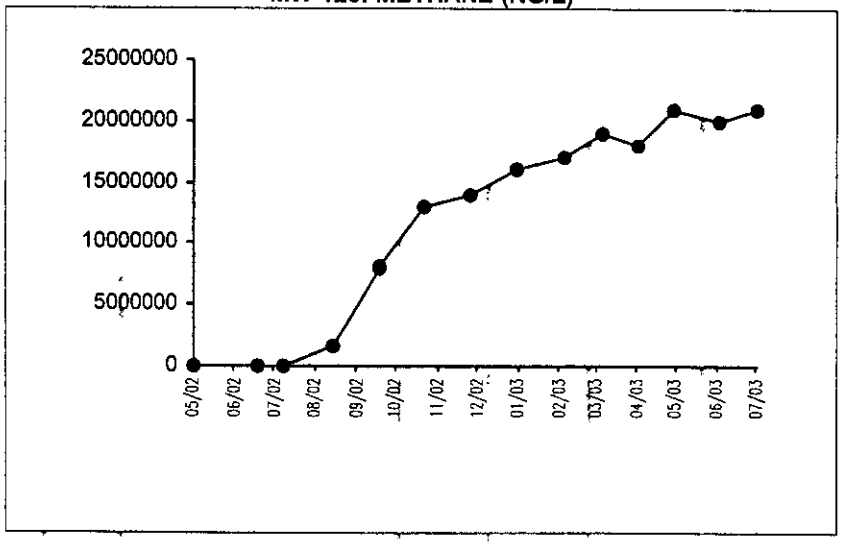
MW-123: LACTIC ACID (MG/L)



MW-123: MANGANESE (MG/L)



MW-123: METHANE (NG/L)



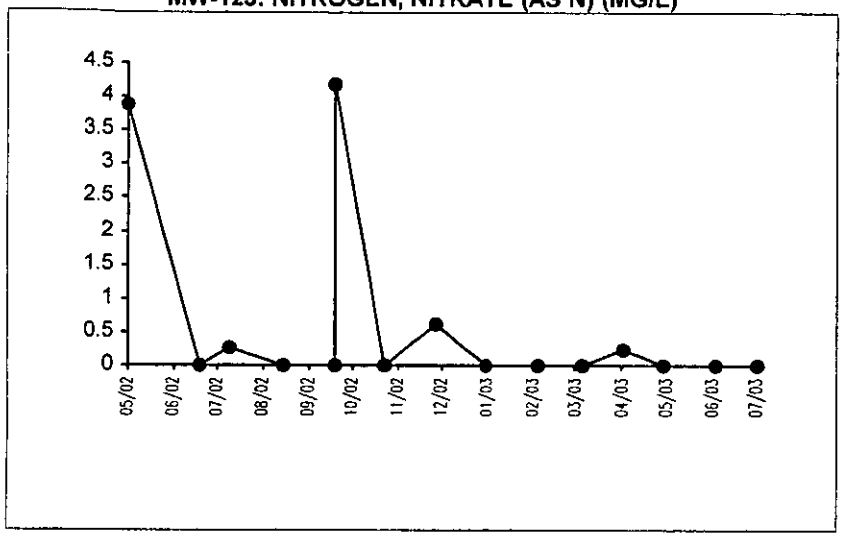
* Nondetects shown as 0.

Location Purpose : Remediation

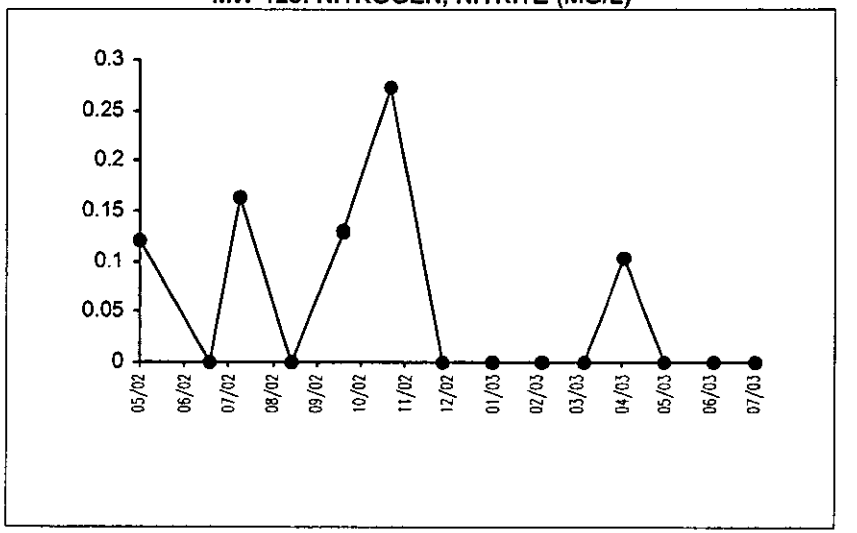
Remediation MW-123

Concentration vs Time

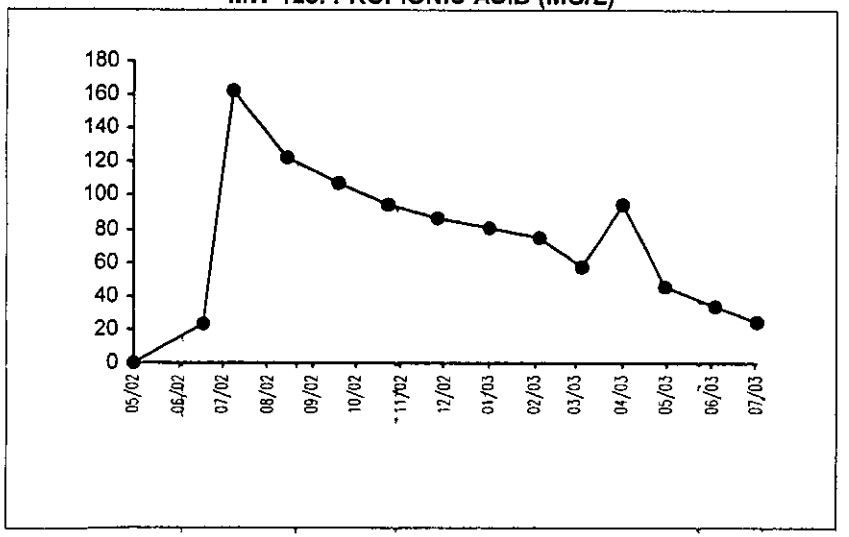
MW-123: NITROGEN, NITRATE (AS N) (MG/L)



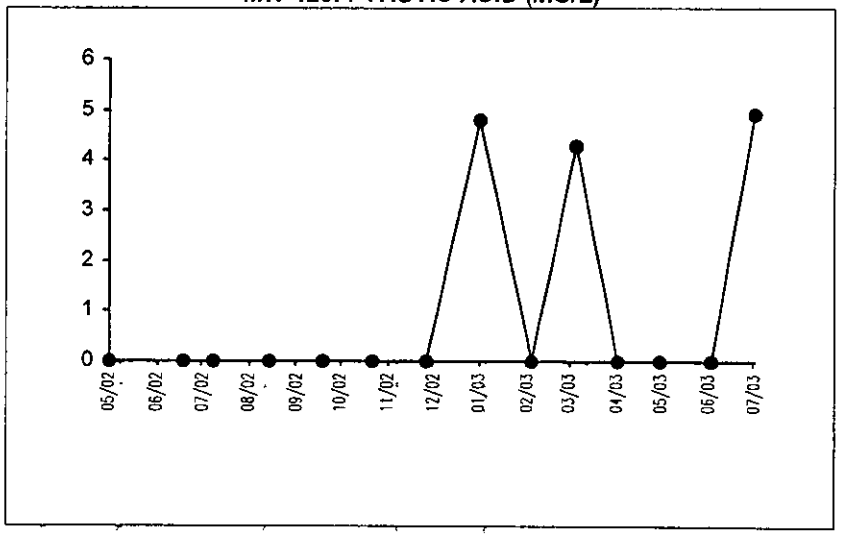
MW-123: NITROGEN, NITRITE (MG/L)



MW-123: PROPIONIC ACID (MG/L)



MW-123: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

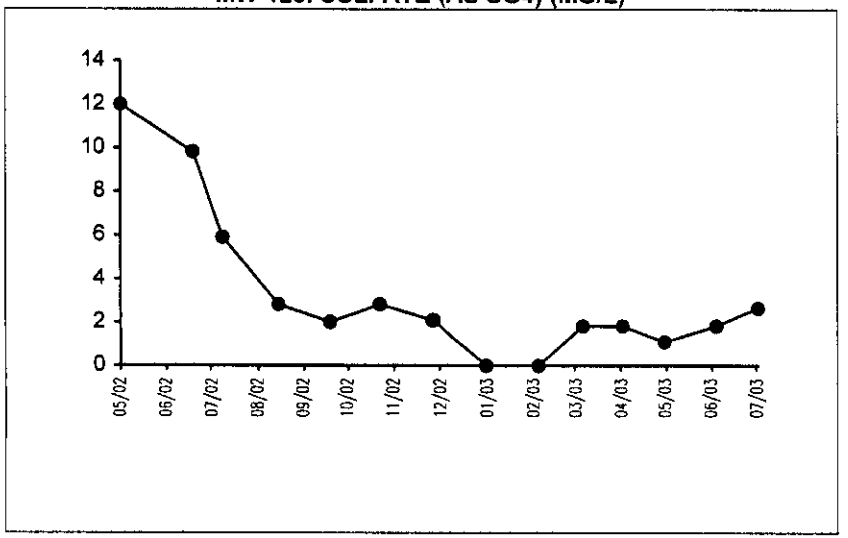
7941108

Location Purpose : Remediation

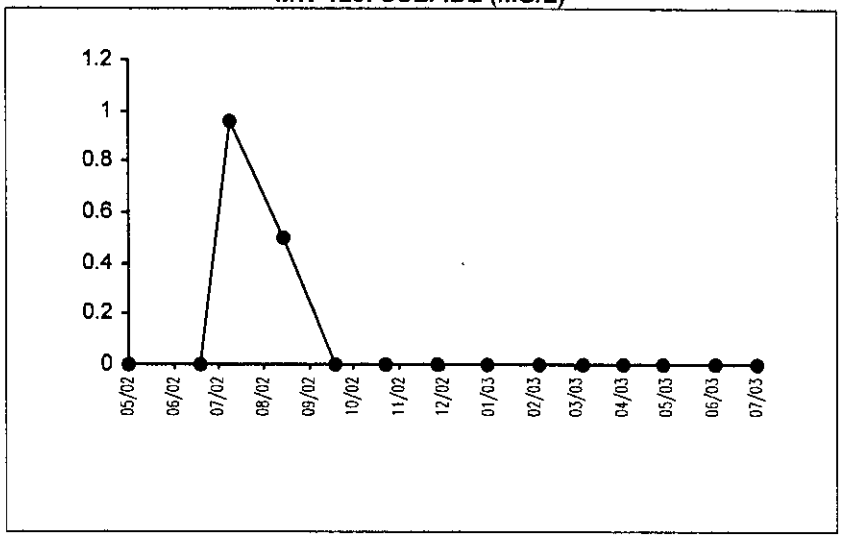
Remediation MW-123

Concentration vs Time

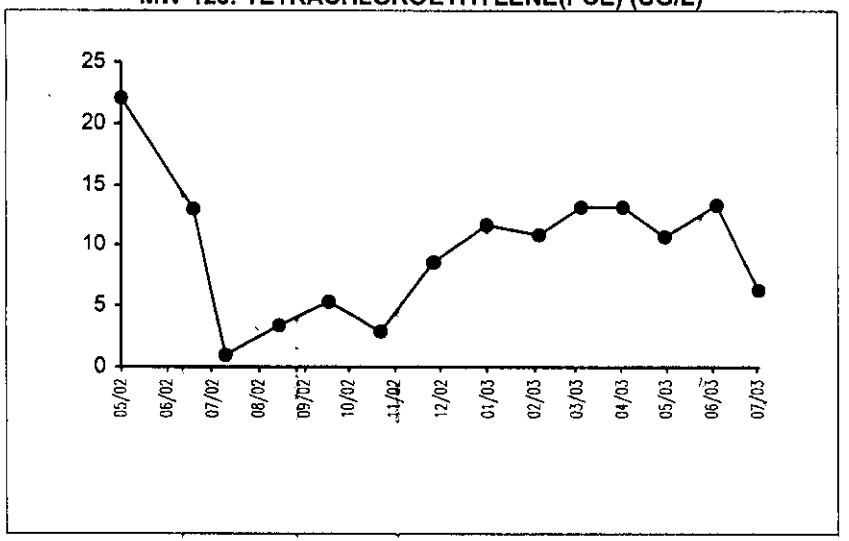
MW-123: SULFATE (AS SO4) (MG/L)



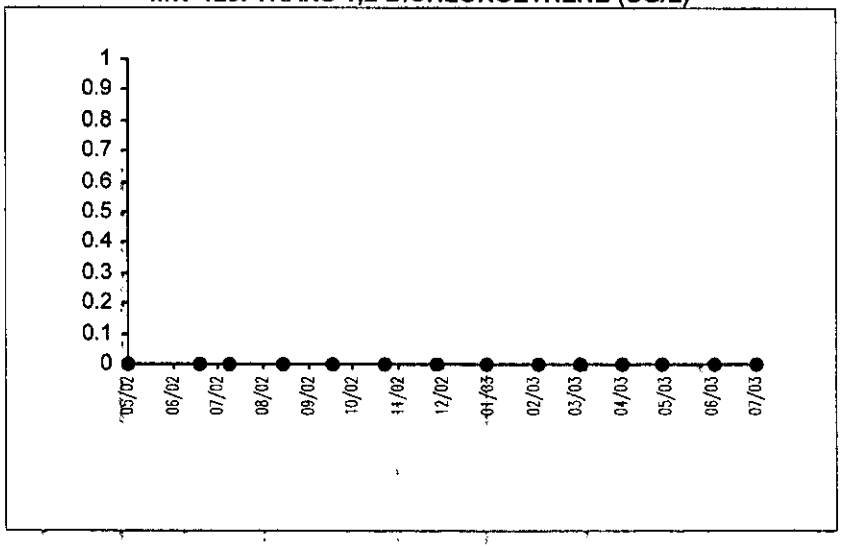
MW-123: SULFIDE (MG/L)



MW-123: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-123: TRANS-1,2-DICHLOROETHENE (UG/L)



* Non[illegible]ts shown as 0.

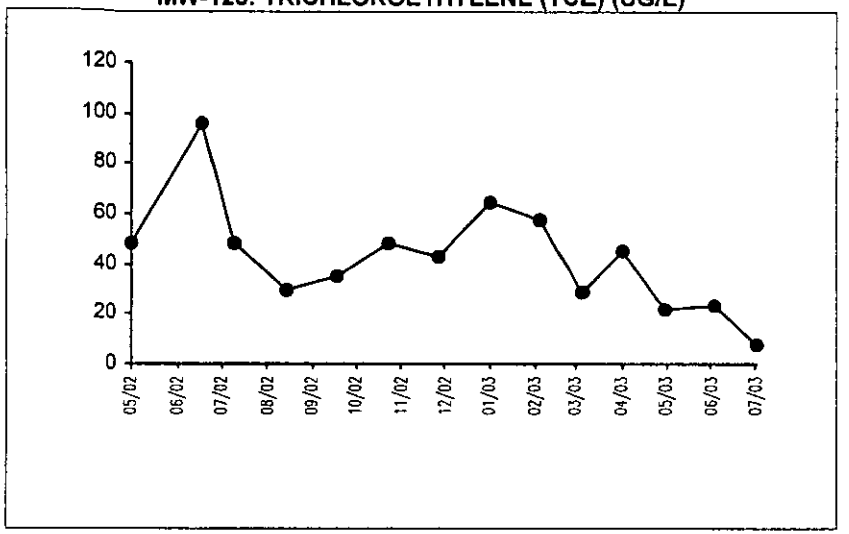
7941109

Location Purpose : Remediation

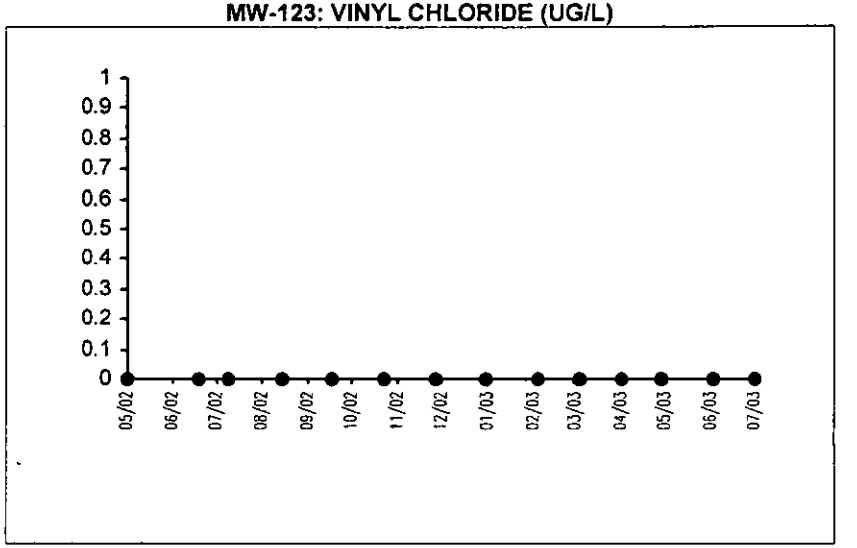
Remediation MW-123

Concentration vs Time

MW-123: TRICHLOROETHYLENE (TCE) (UG/L)



MW-123: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

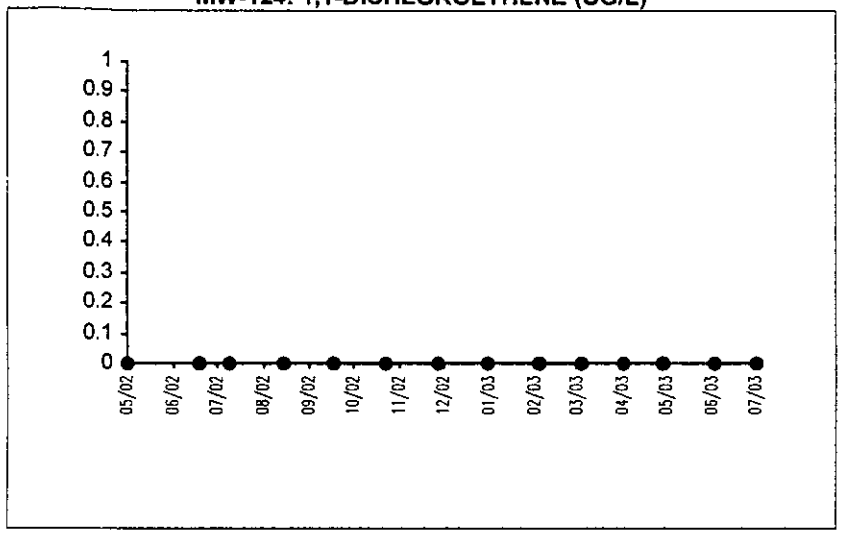
7941110

Location Purpose : Remediation

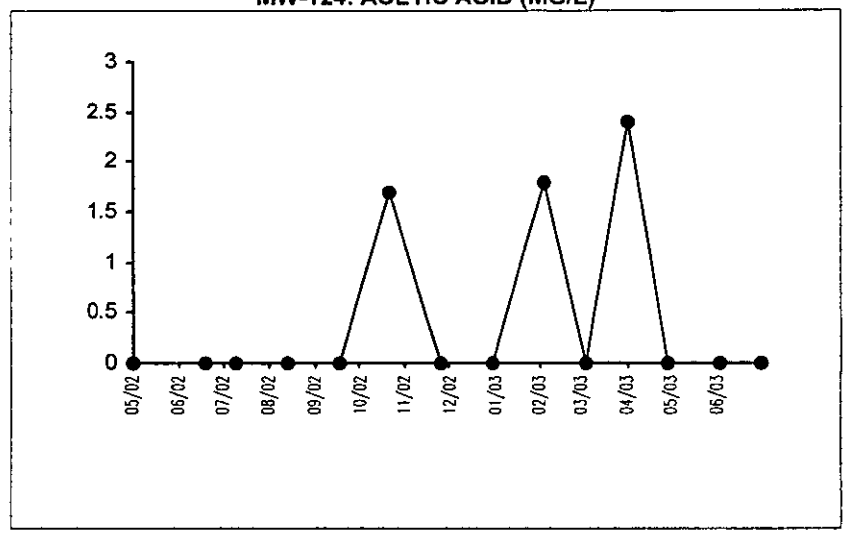
Remediation MW-124

Concentration vs Time

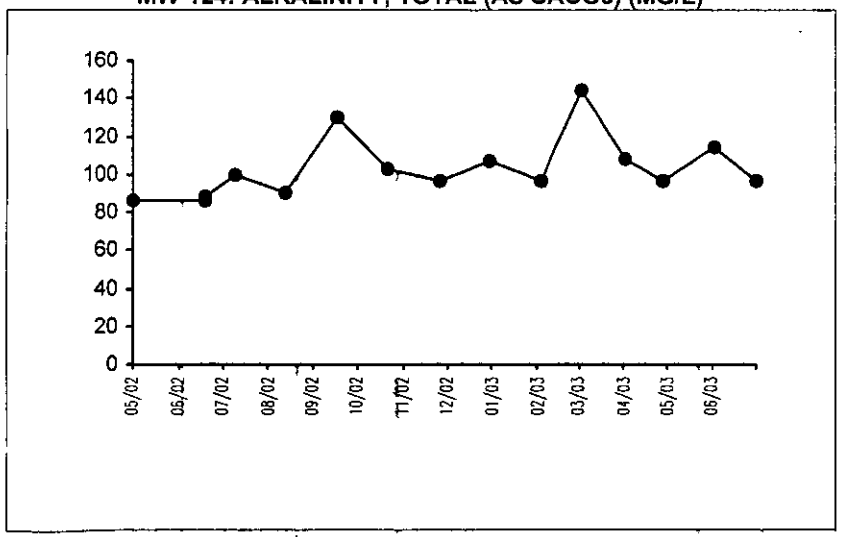
MW-124: 1,1-DICHLOROETHENE (UG/L)



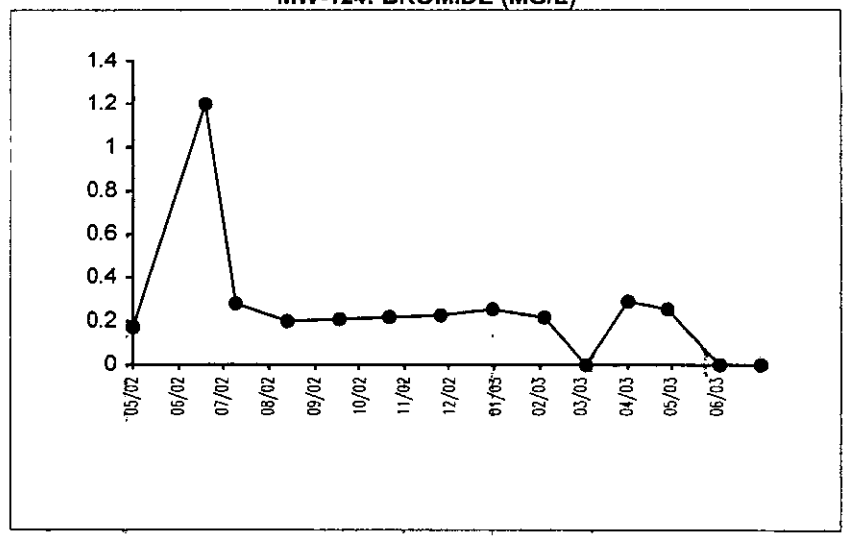
MW-124: ACETIC ACID (MG/L)



MW-124: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-124: BROMIDE (MG/L)



* Nondetects shown as 0.

79411111

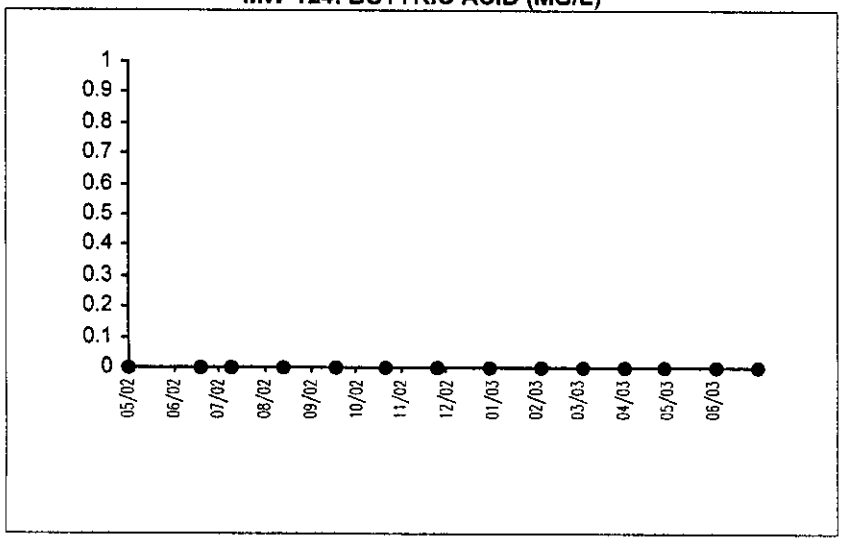
Location Purpose : Remediation

Remediation MW-124

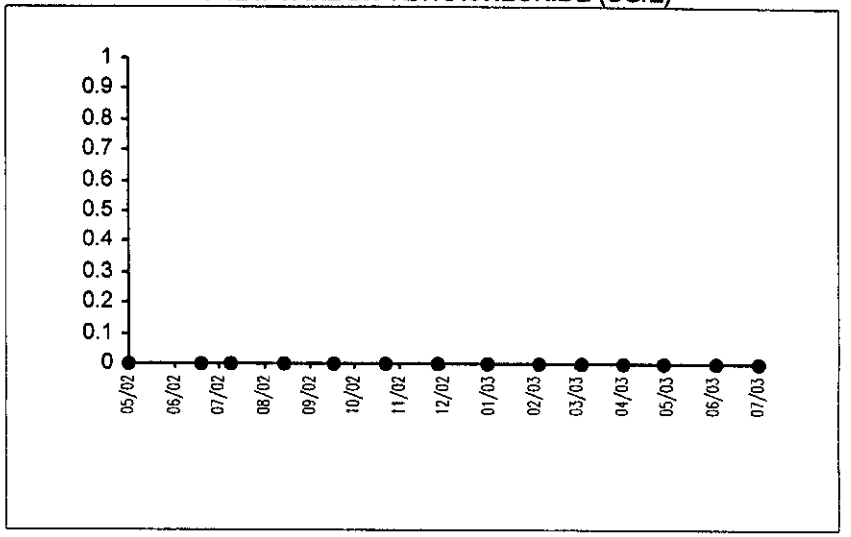
Concentration vs Time

7941112

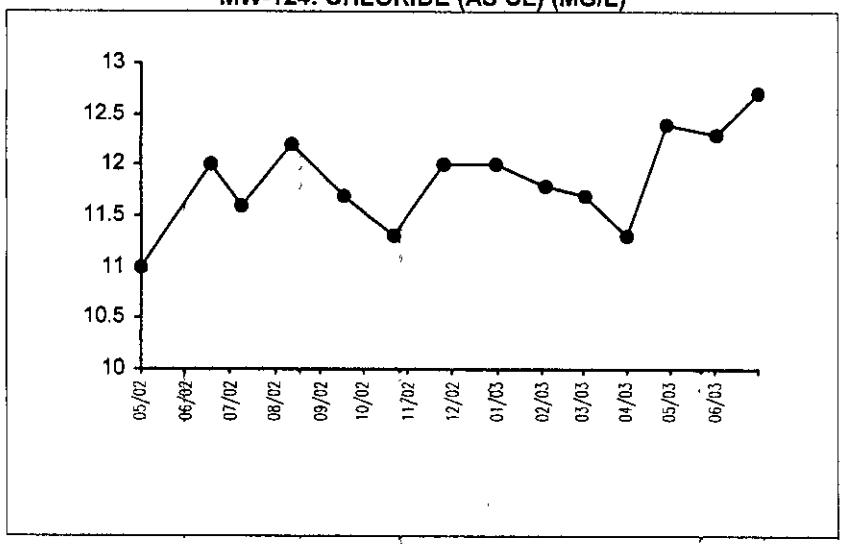
MW-124: BUTYRIC ACID (MG/L)



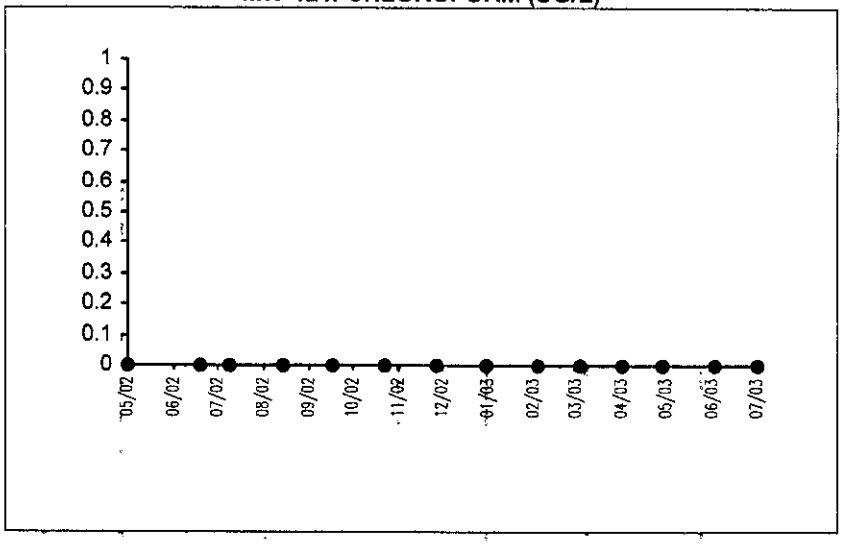
MW-124: CARBON TETRACHLORIDE (UG/L)



MW-124: CHLORIDE (AS CL) (MG/L)



MW-124: CHLOROFORM (UG/L)



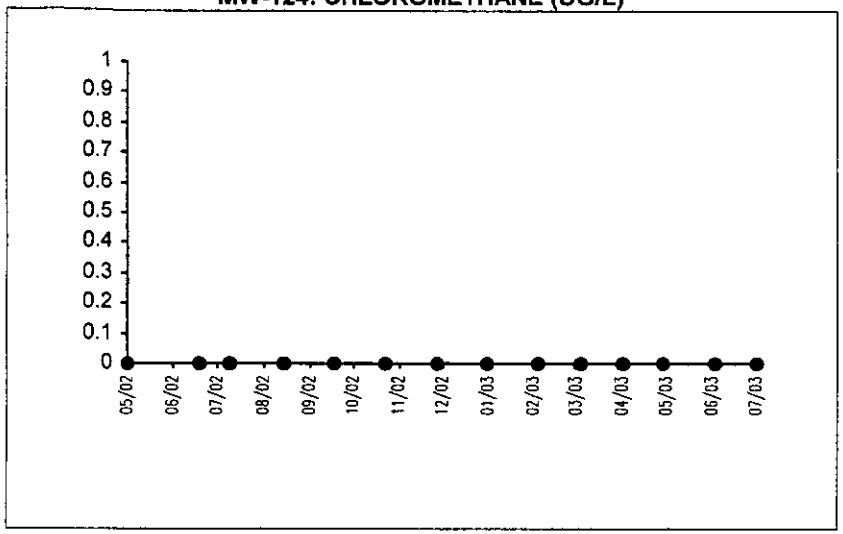
* Nondetects shown as 0.

Location Purpose : Remediation

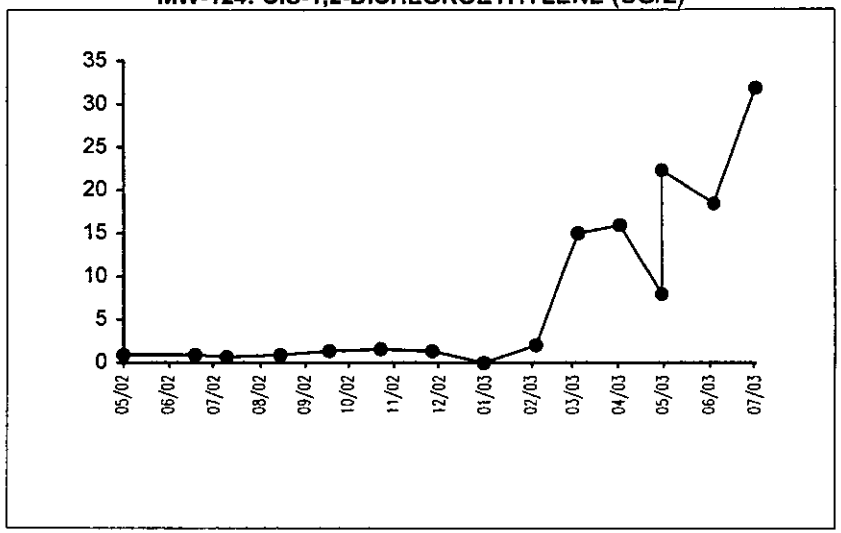
Remediation MW-124

Concentration vs Time

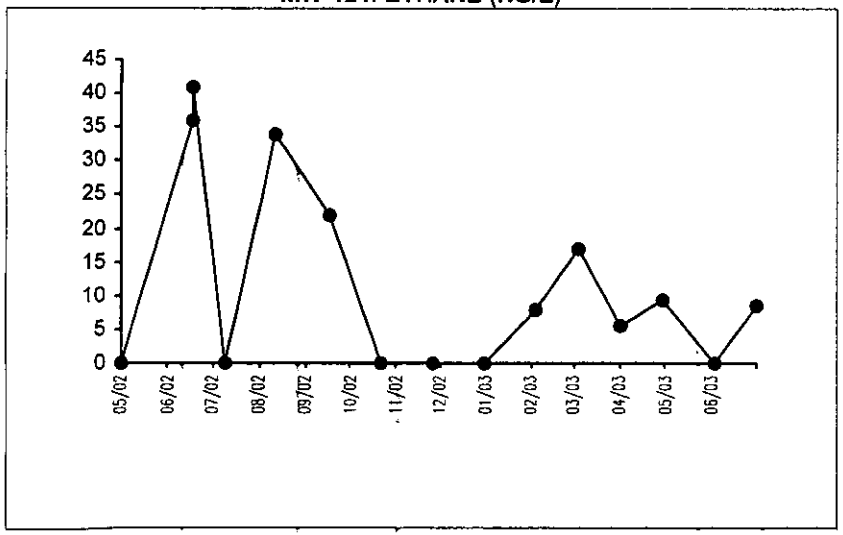
MW-124: CHLOROMETHANE (UG/L)



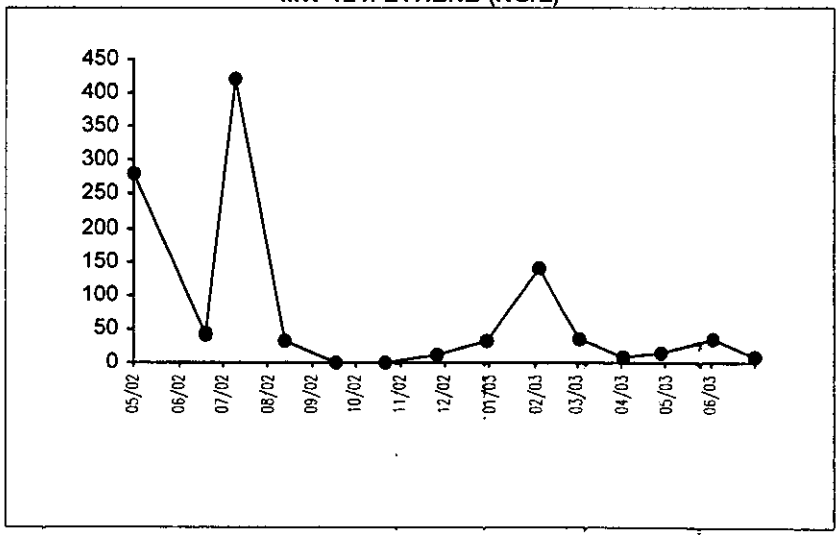
MW-124: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-124: ETHANE (NG/L)



MW-124: ETHENE (NG/L)



* Nondetects shown as 0.

79411113

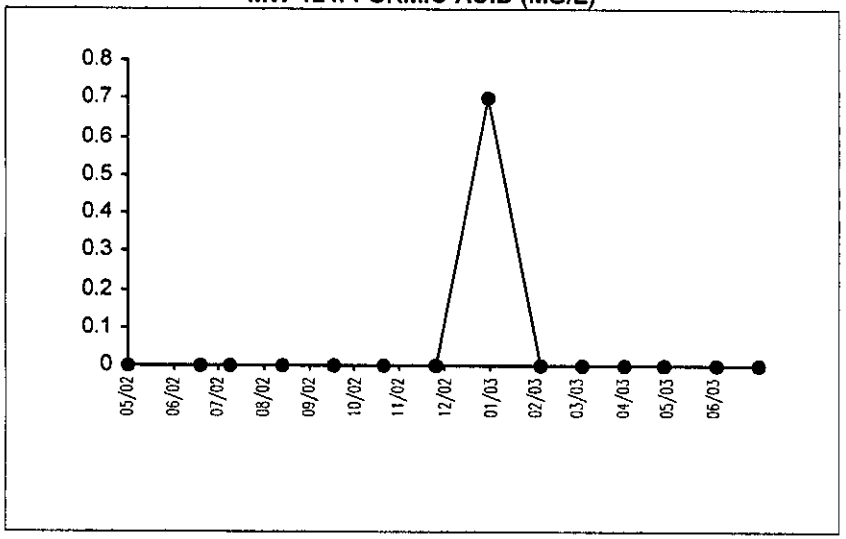
Location Purpose : Remediation

Remediation MW-124

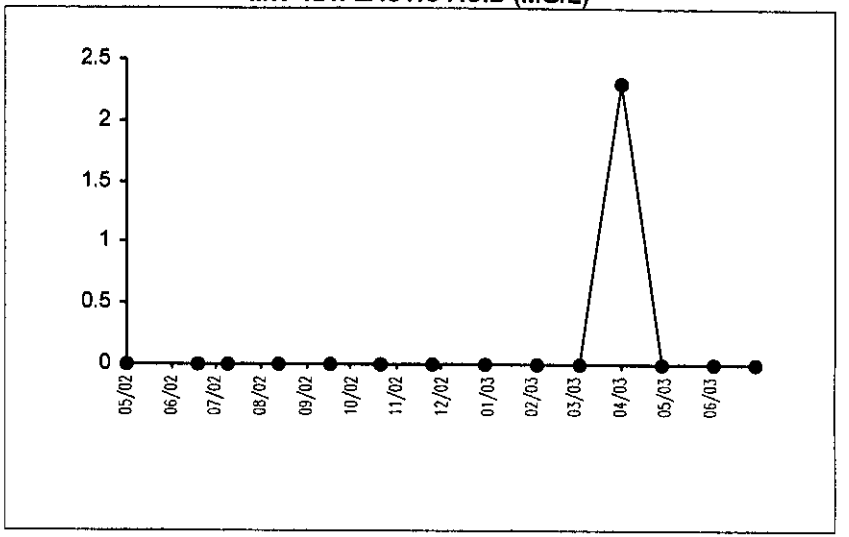
Concentration vs Time

7941114

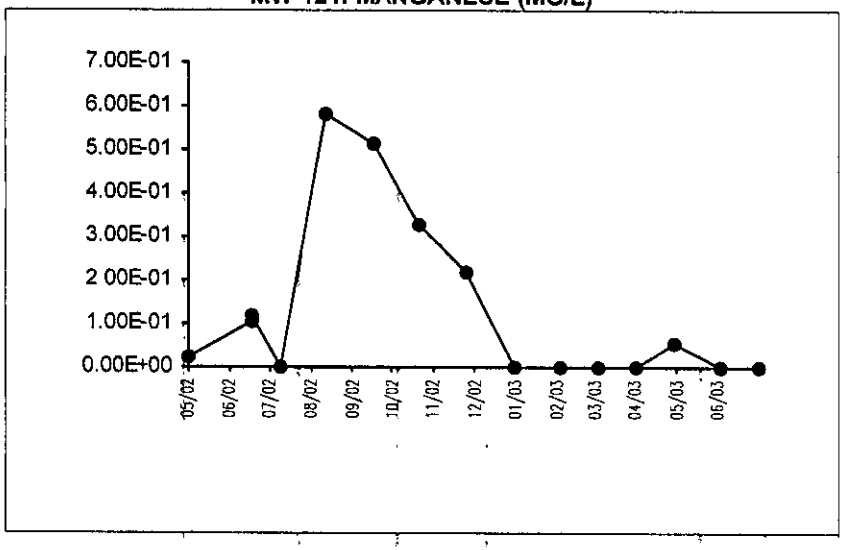
MW-124: FORMIC ACID (MG/L)



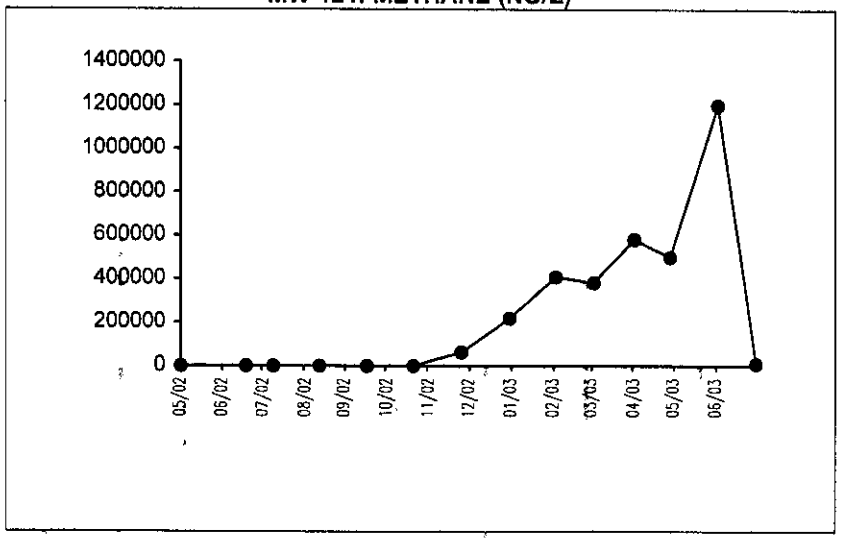
MW-124: LACTIC ACID (MG/L)



MW-124: MANGANESE (MG/L)



MW-124: METHANE (NG/L)



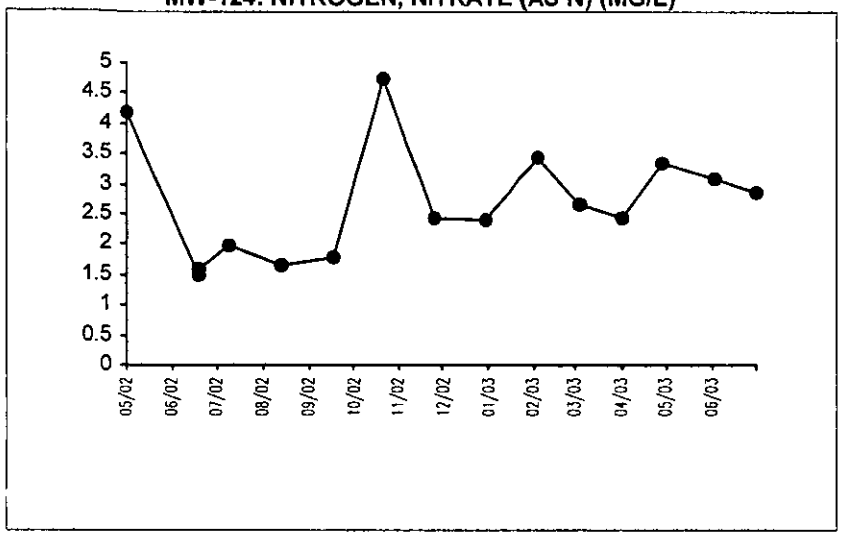
* Nondetects shown as 0.

Location Purpose : Remediation

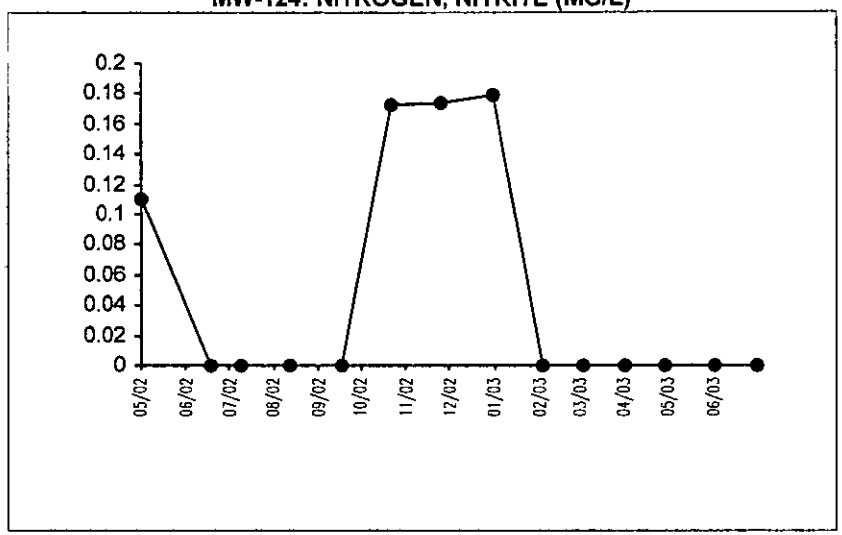
Remediation MW-124

Concentration vs Time

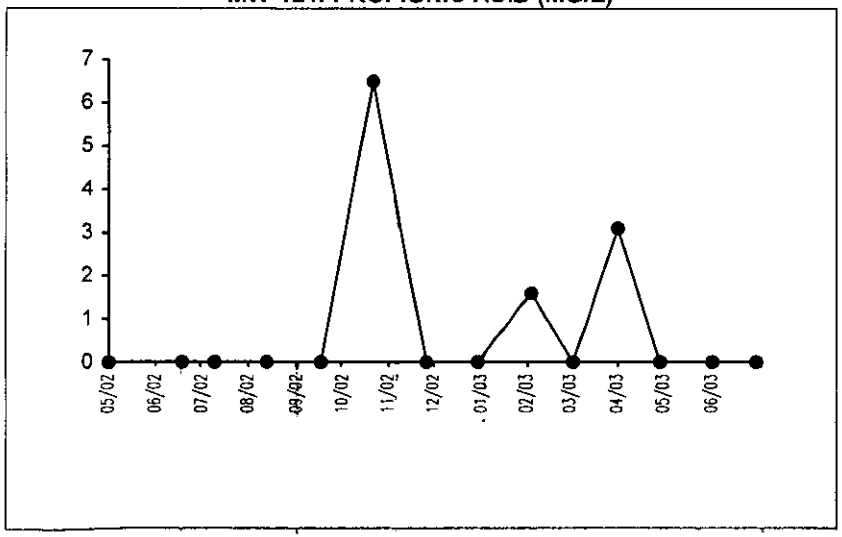
MW-124: NITROGEN, NITRATE (AS N) (MG/L)



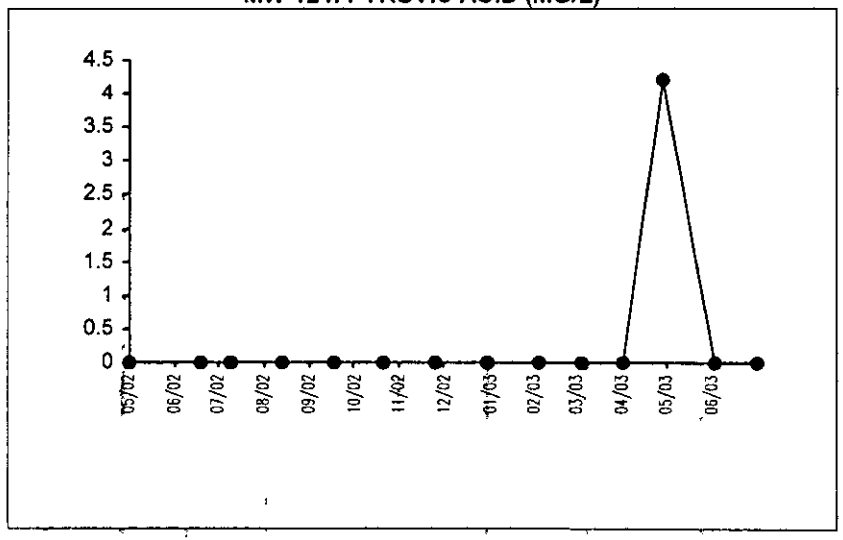
MW-124: NITROGEN, NITRITE (MG/L)



MW-124: PROPIONIC ACID (MG/L)



MW-124: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

79411115

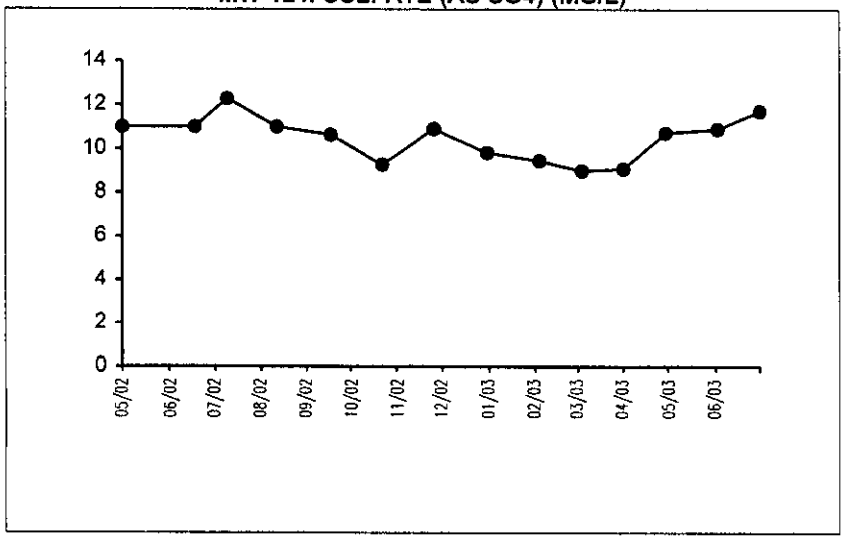
Location Purpose : Remediation

Remediation MW-124

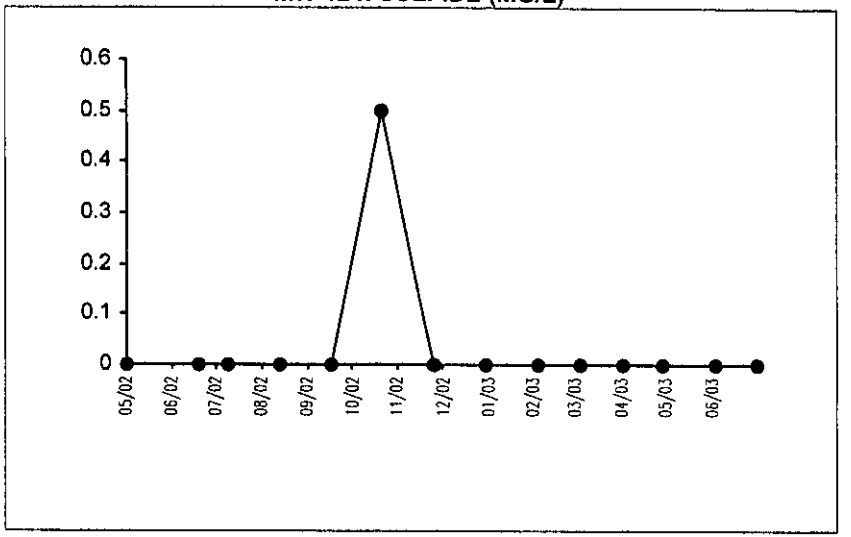
Concentration vs Time

7941116

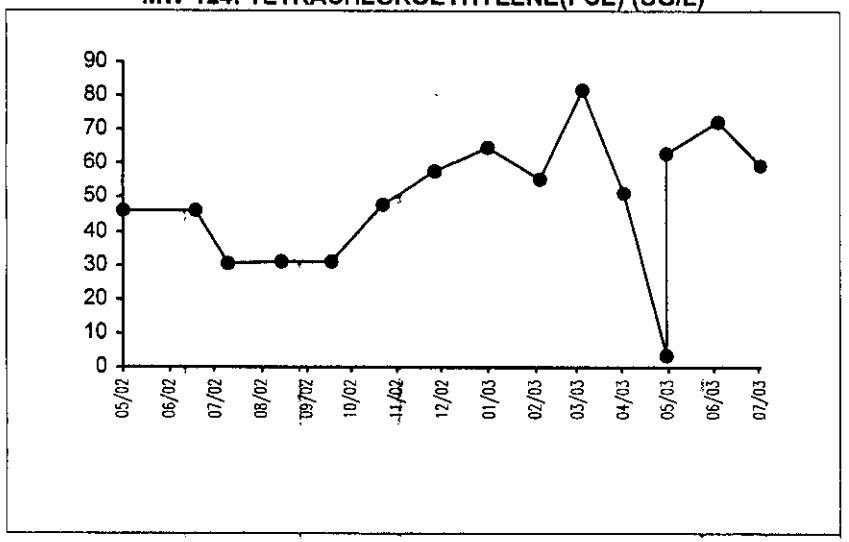
MW-124: SULFATE (AS SO4) (MG/L)



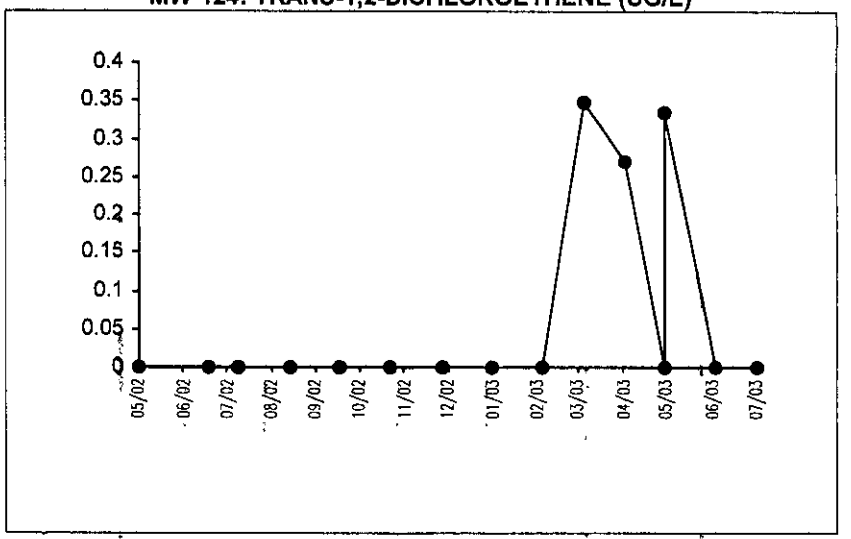
MW-124: SULFIDE (MG/L)



MW-124: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-124: TRANS-1,2-DICHLOROETHENE (UG/L)



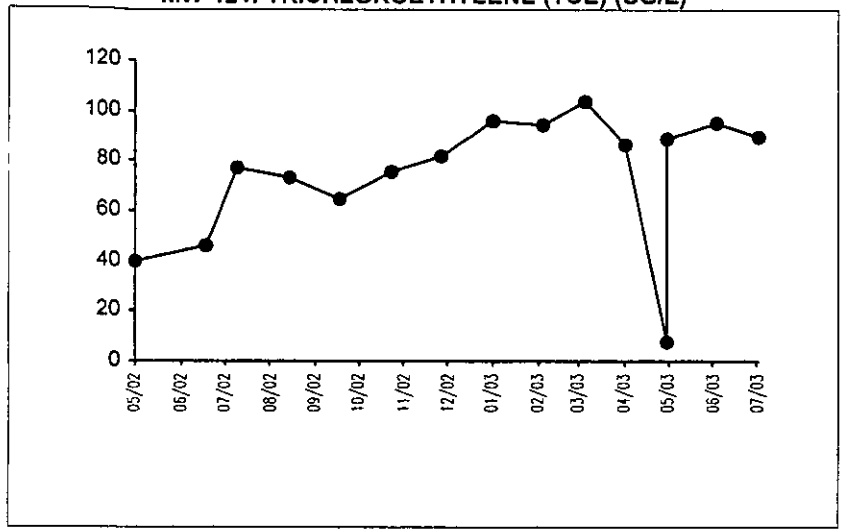
* Nondetects shown as 0.

Location Purpose : Remediation

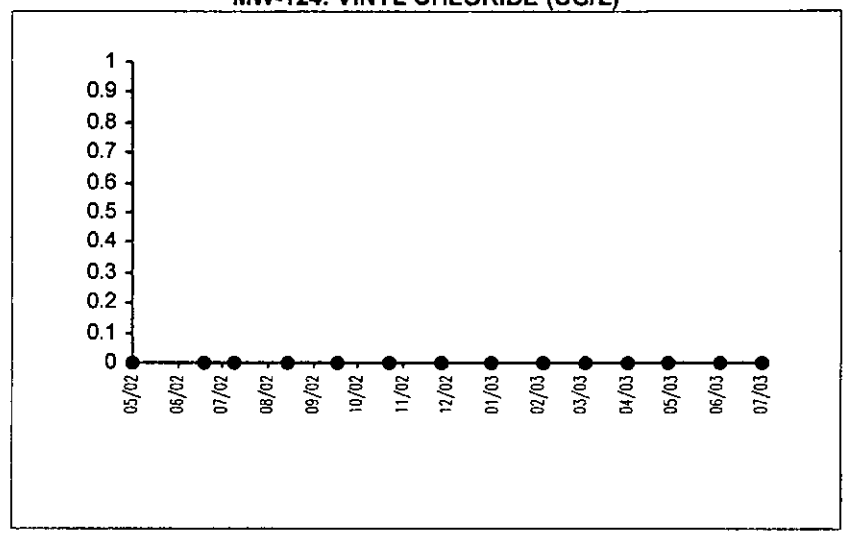
Remediation MW-124

Concentration vs Time

MW-124: TRICHLOROETHYLENE (TCE) (UG/L)



MW-124: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

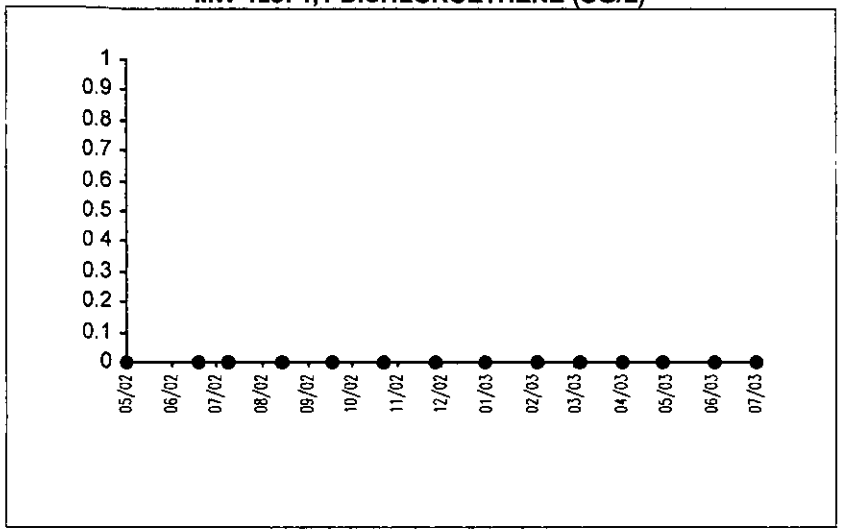
79411117

Location Purpose : Remediation

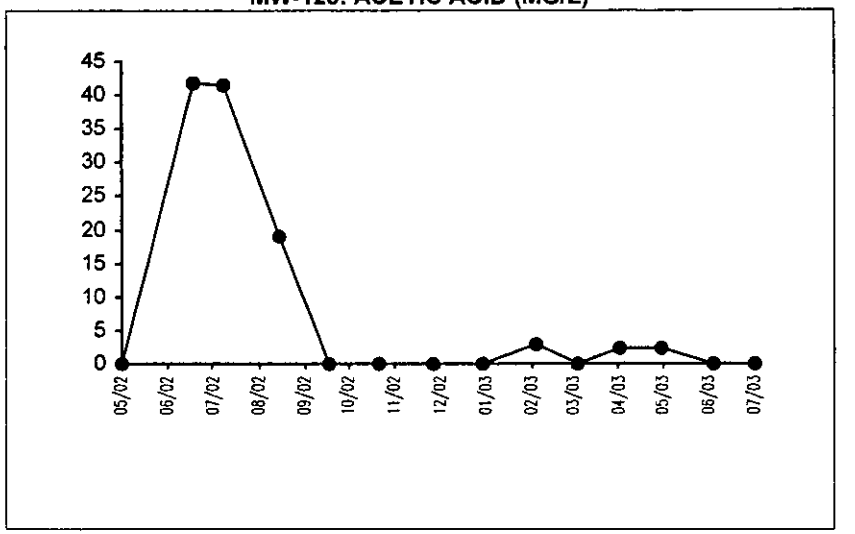
Remediation MW-125

Concentration vs Time

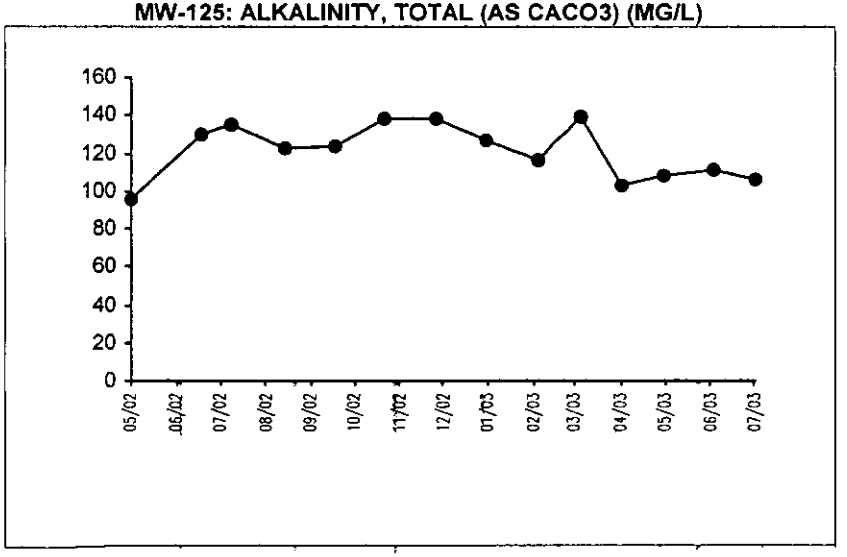
MW-125: 1,1-DICHLOROETHENE (UG/L)



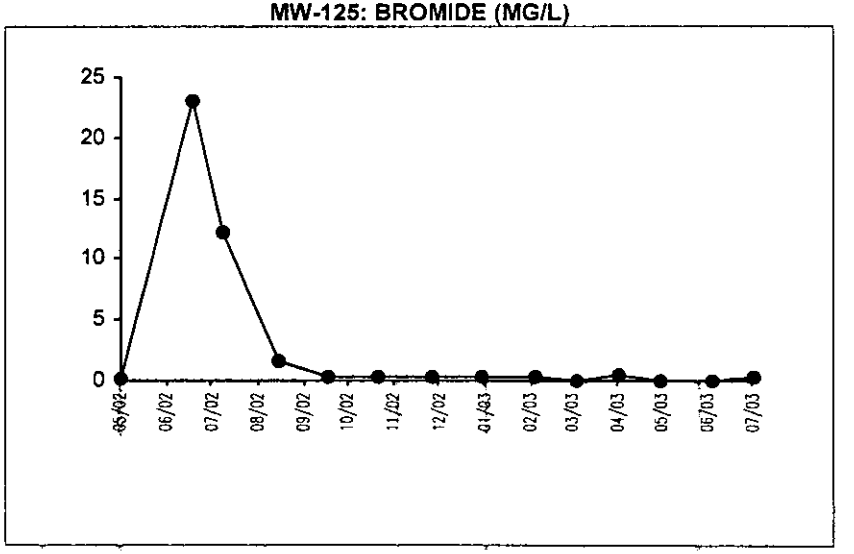
MW-125: ACETIC ACID (MG/L)



MW-125: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-125: BROMIDE (MG/L)



* Nondetects shown as 0.

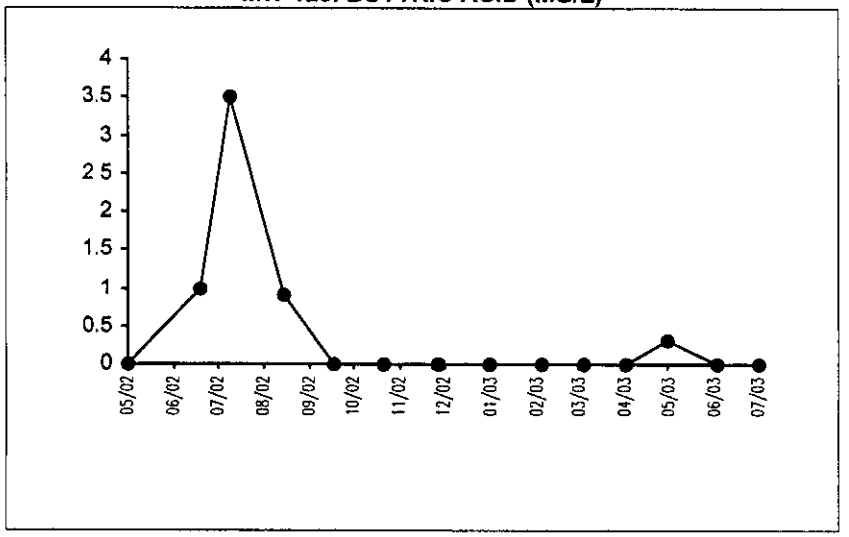
79411118

Location Purpose : Remediation

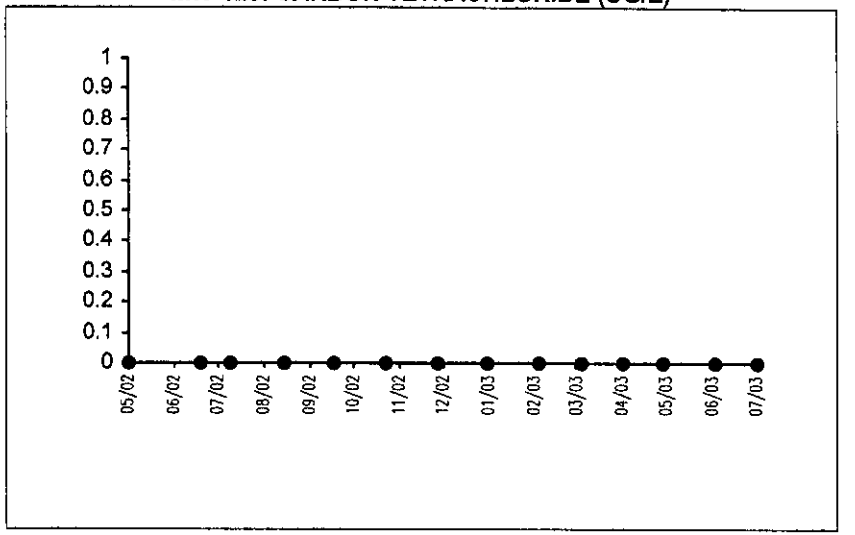
Remediation MW-125

Concentration vs Time

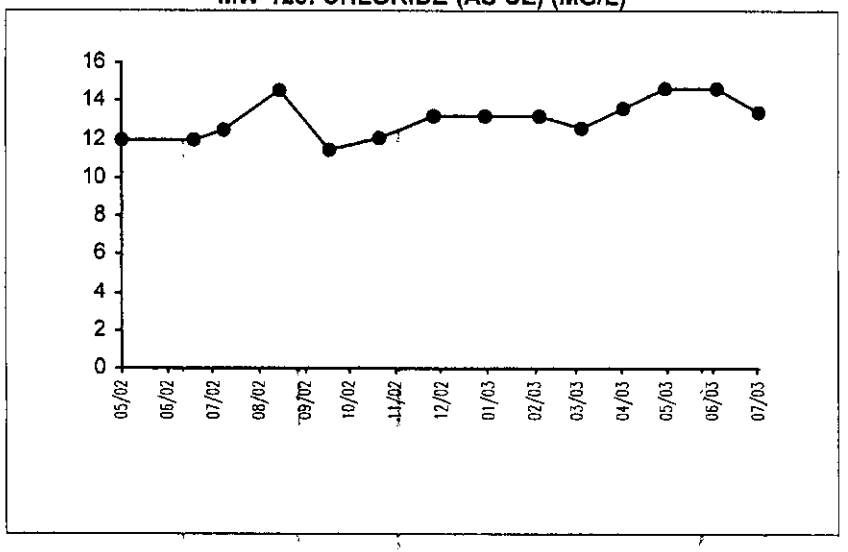
MW-125: BUTYRIC ACID (MG/L)



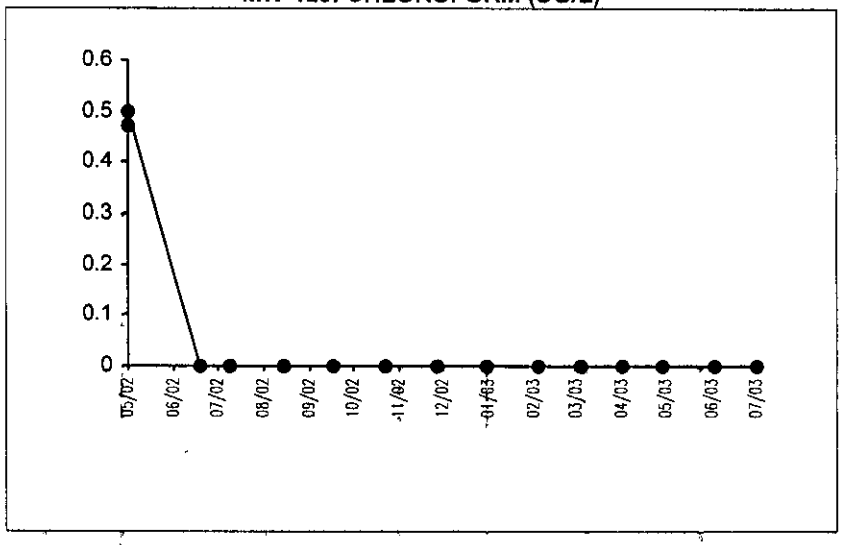
MW-125: CARBON TETRACHLORIDE (UG/L)



MW-125: CHLORIDE (AS CL) (MG/L)



MW-125: CHLOROFORM (UG/L)



* Nondetects shown as 0.

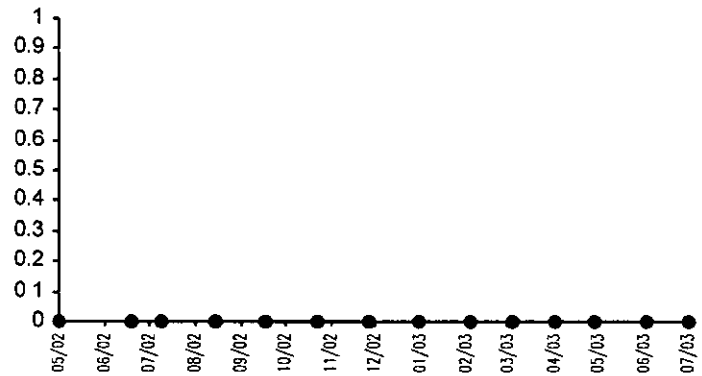
7941119

Location Purpose : Remediation

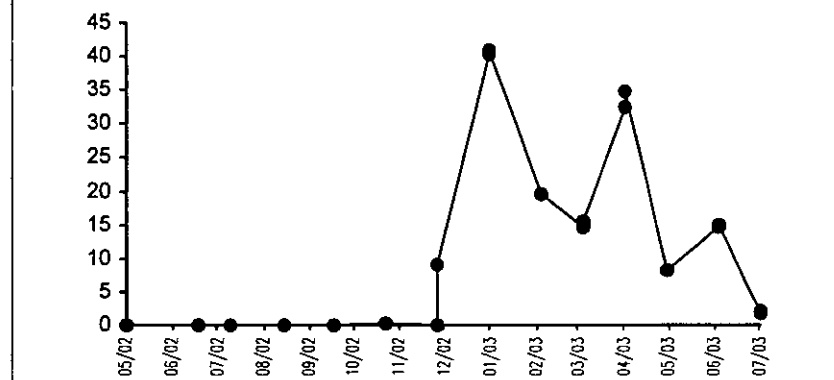
Remediation MW-125

Concentration vs Time

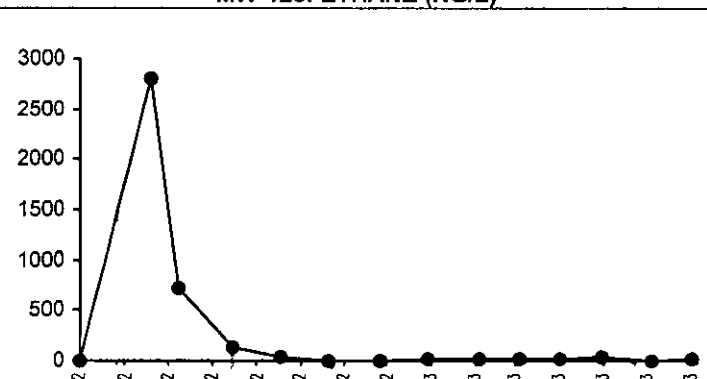
MW-125: CHLOROMETHANE (UG/L)



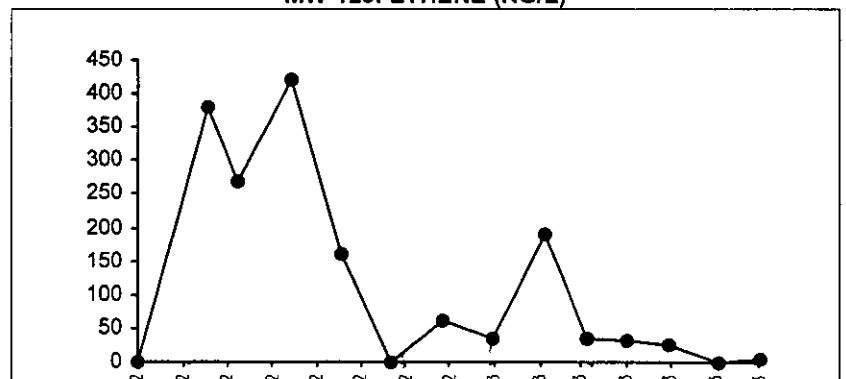
MW-125: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-125: ETHANE (NG/L)



MW-125: ETHENE (NG/L)



* Nondetects shown as 0.

7941120

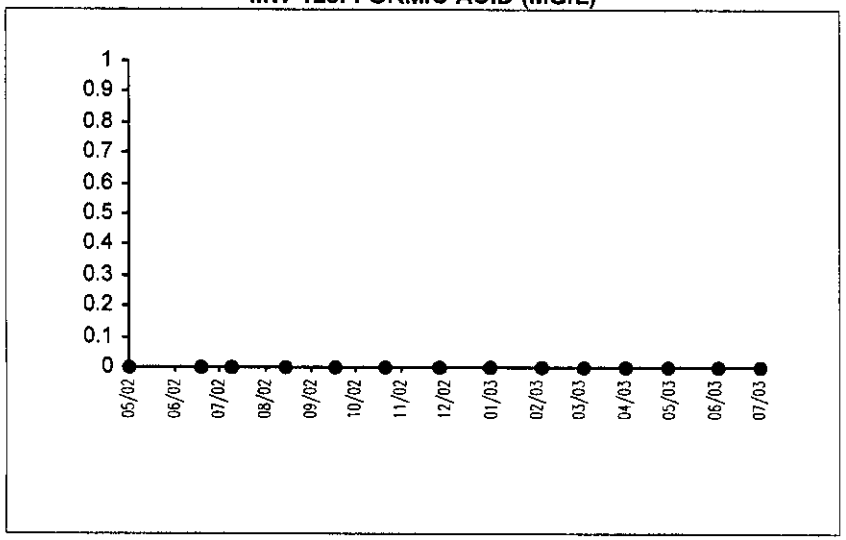
Location Purpose : Remediation

Remediation MW-125

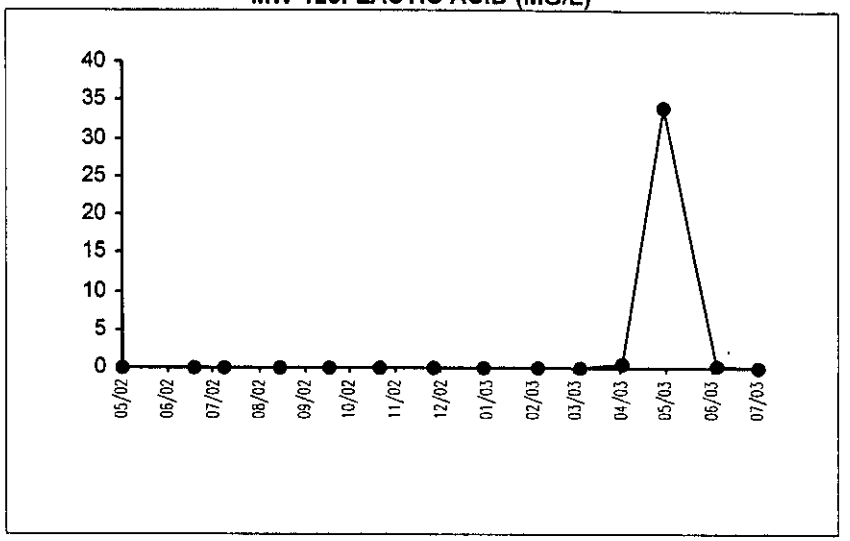
Concentration vs Time

7941121

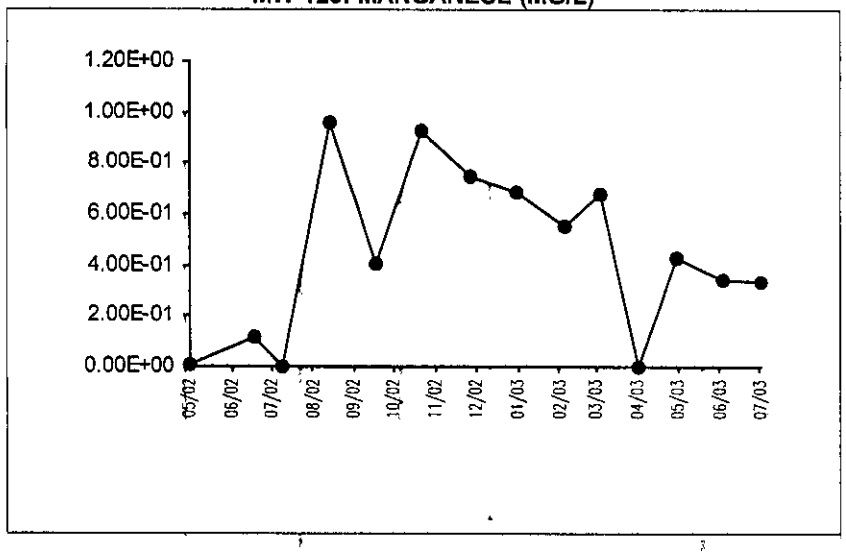
MW-125: FORMIC ACID (MG/L)



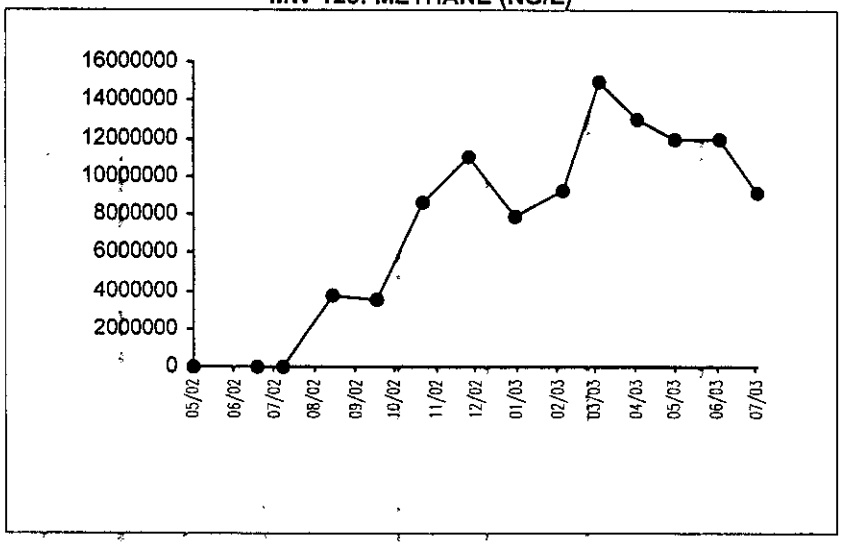
MW-125: LACTIC ACID (MG/L)



MW-125: MANGANESE (MG/L)



MW-125: METHANE (NG/L)



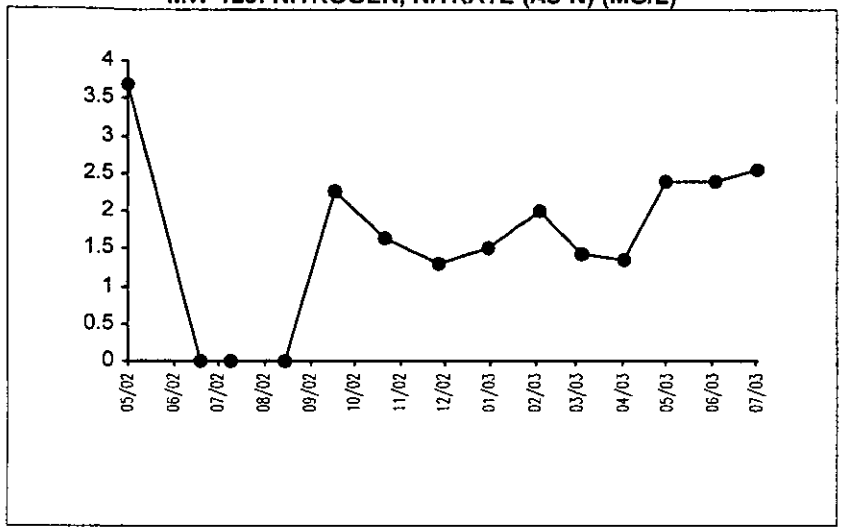
* Non[redacted]ts shown as 0.

Location Purpose : Remediation

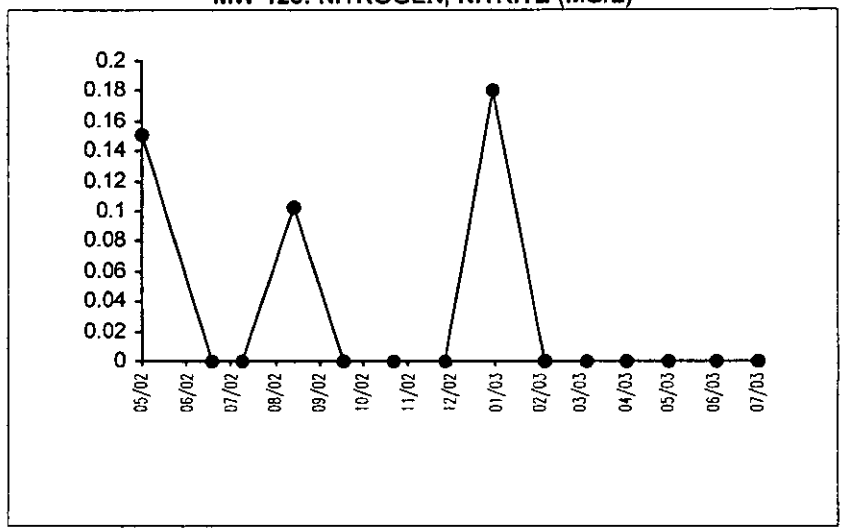
Remediation MW-125

Concentration vs Time

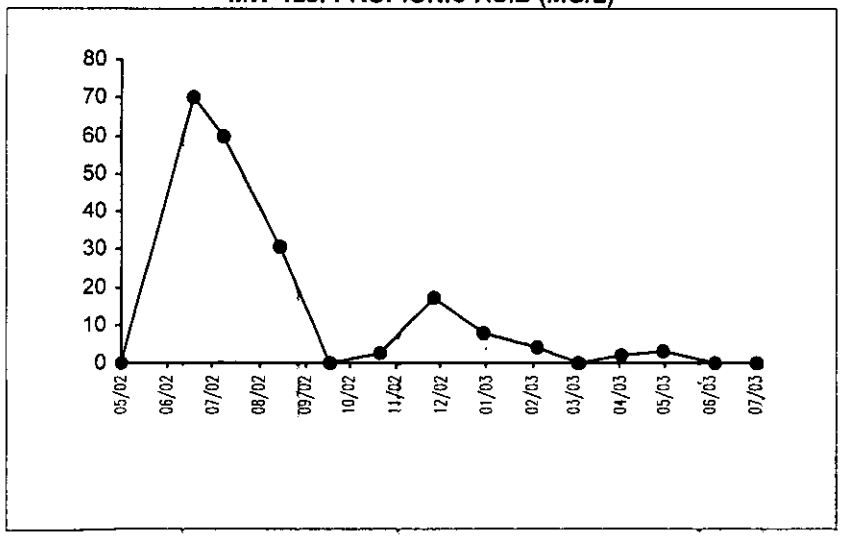
MW-125: NITROGEN, NITRATE (AS N) (MG/L)



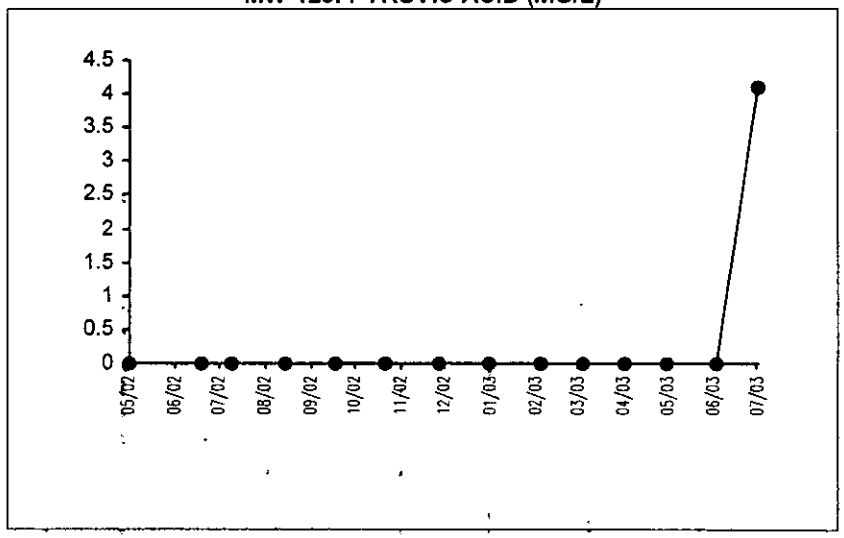
MW-125: NITROGEN, NITRITE (MG/L)



MW-125: PROPIONIC ACID (MG/L)



MW-125: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

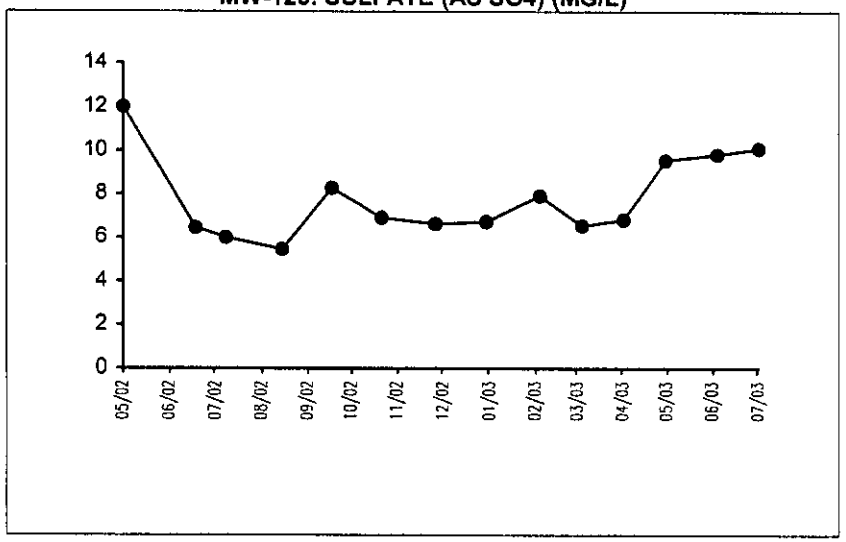
79411122

Location Purpose : Remediation

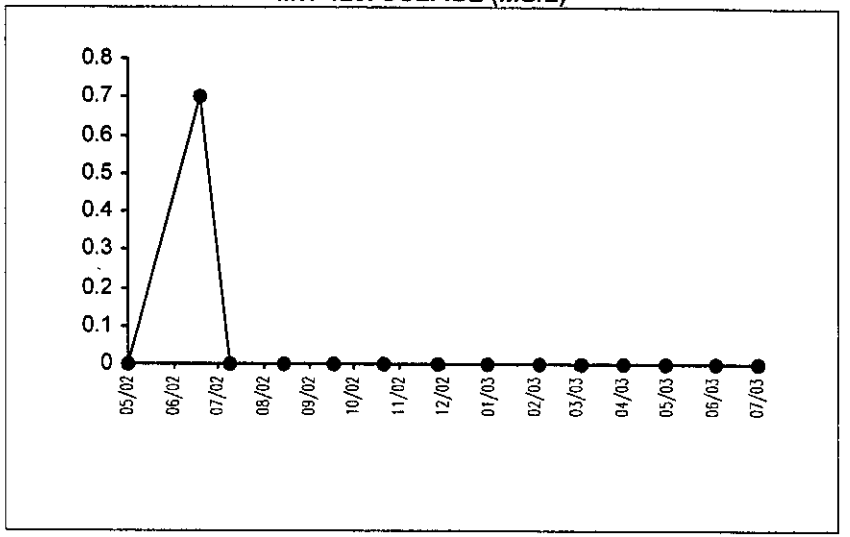
Remediation MW-125

Concentration vs Time

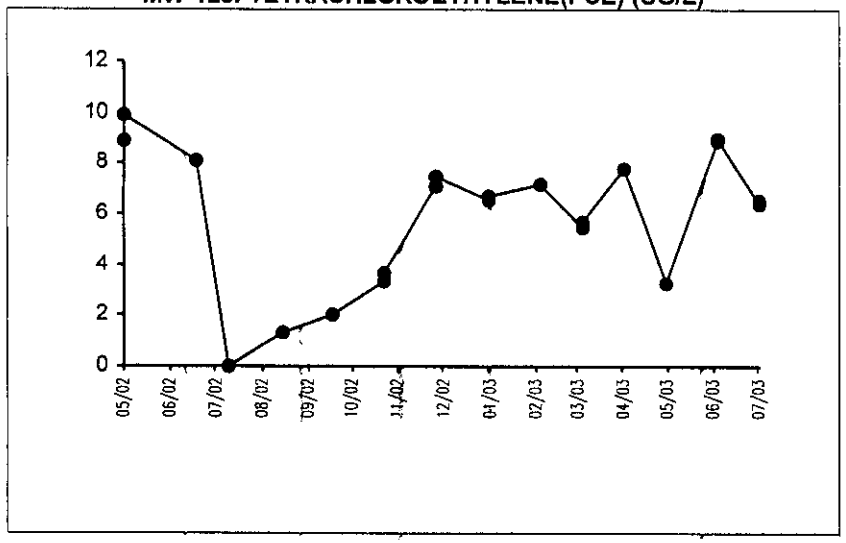
MW-125: SULFATE (AS SO4) (MG/L)



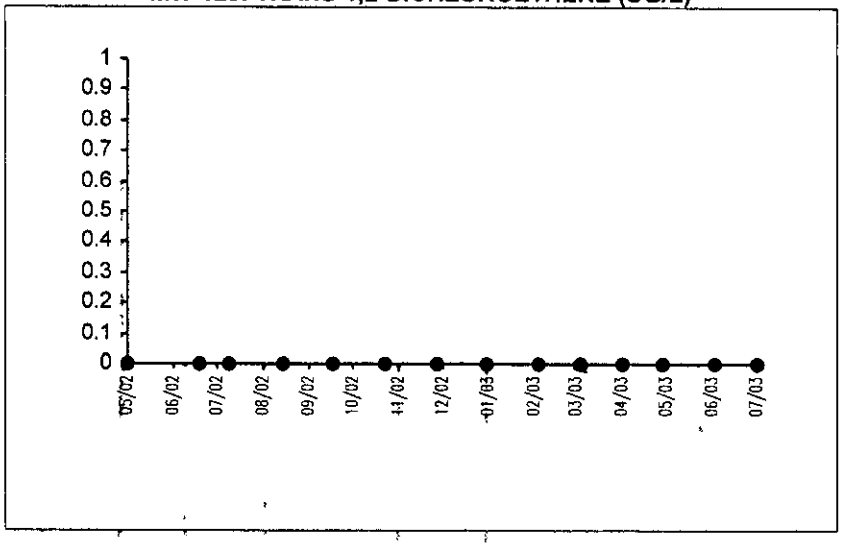
MW-125: SULFIDE (MG/L)



MW-125: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-125: TRANS-1,2-DICHLOROETHENE (UG/L)



* Non[illegible]cts shown as 0.

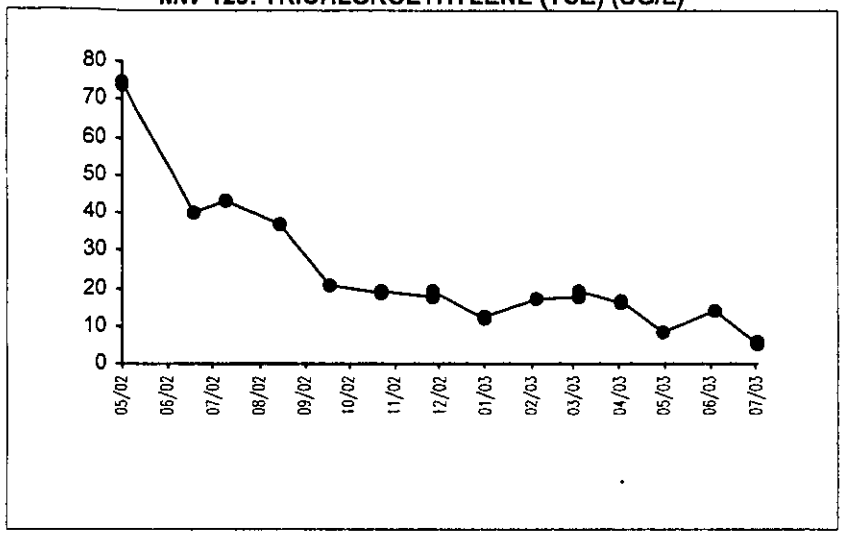
7941123

Location Purpose : Remediation

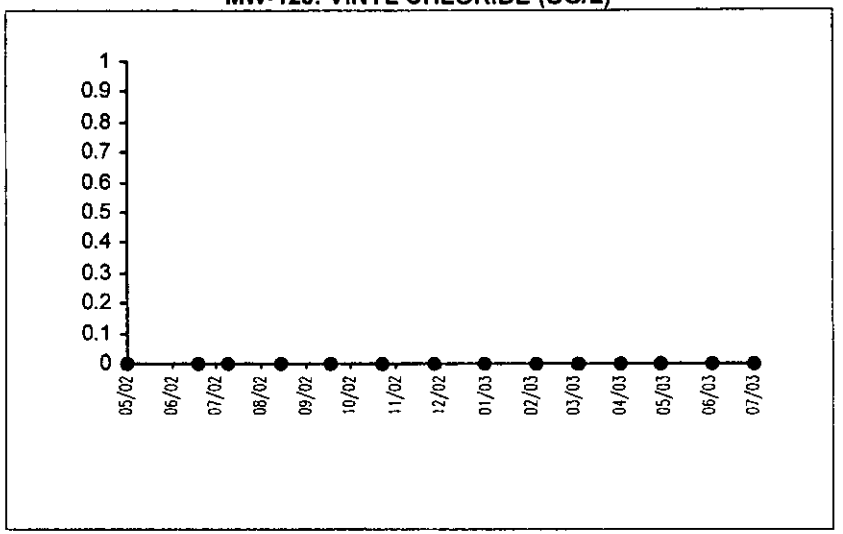
Remediation MW-125

Concentration vs Time

MW-125: TRICHLOROETHYLENE (TCE) (UG/L)



MW-125: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

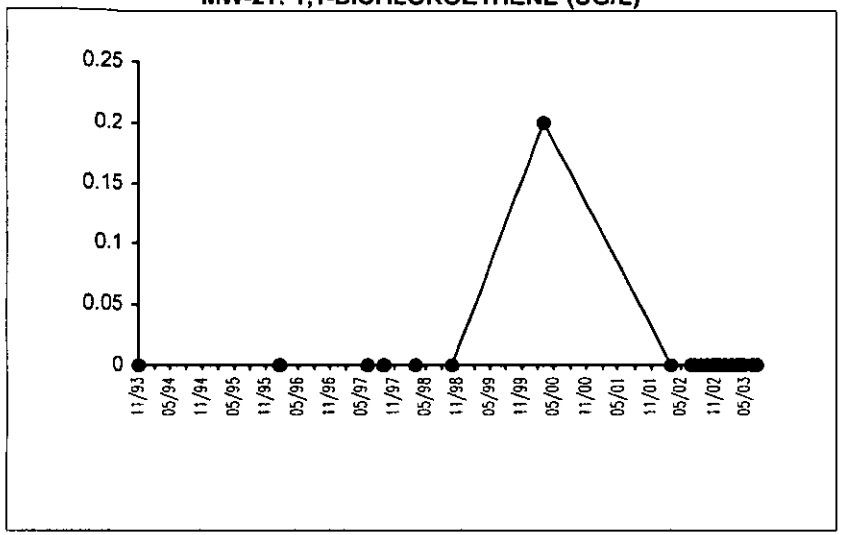
7941124

Location Purpose : Remediation

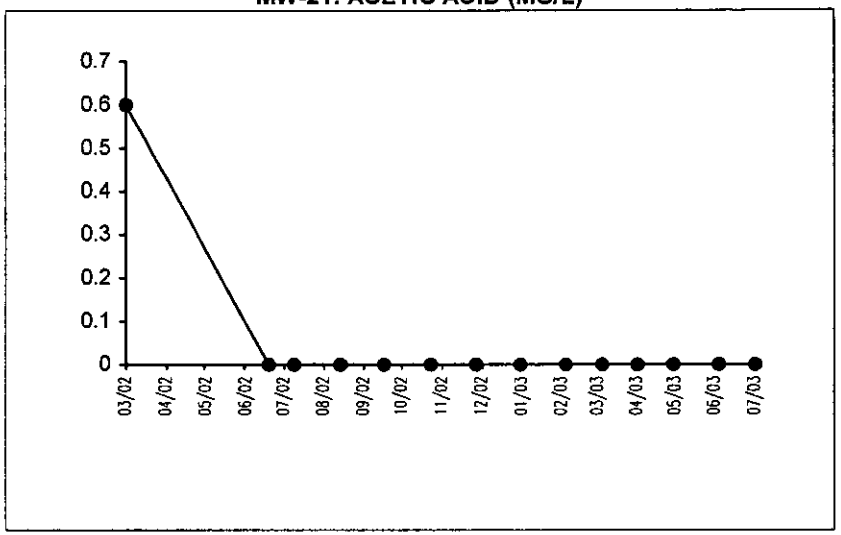
Remediation MW-21

Concentration vs Time

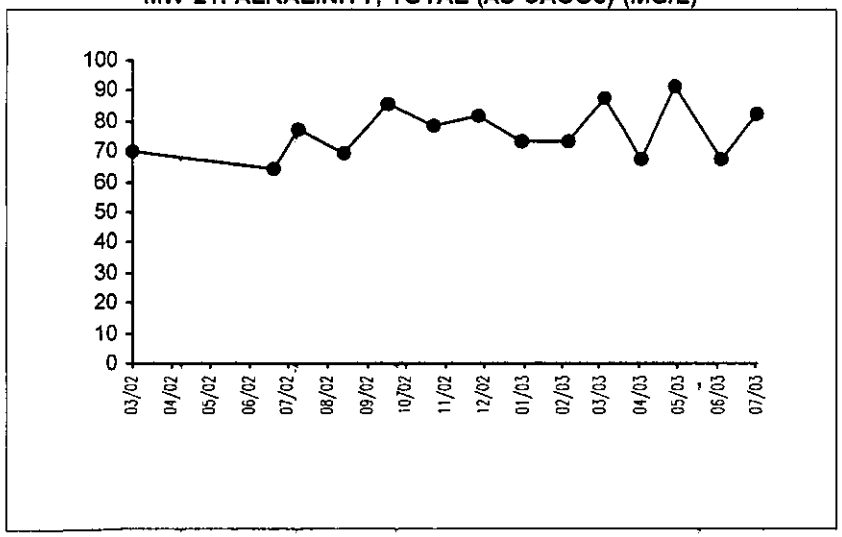
MW-21: 1,1-DICHLOROETHENE (UG/L)



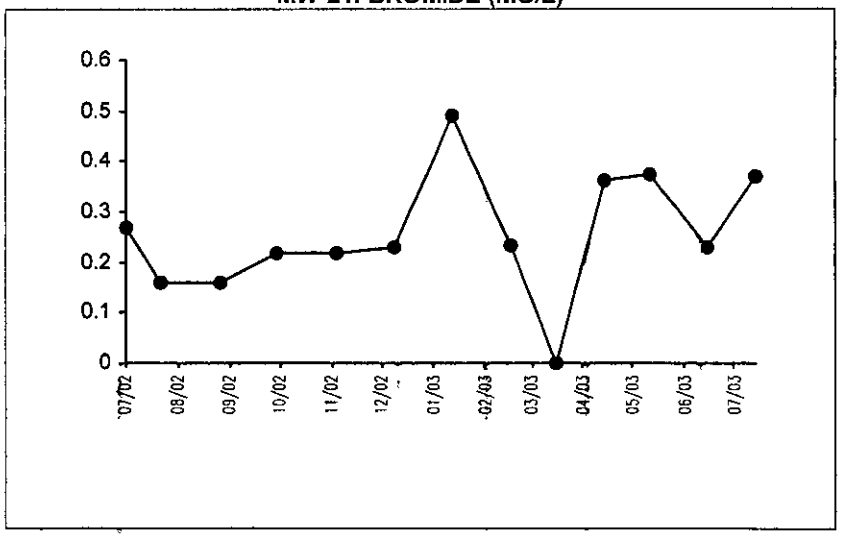
MW-21: ACETIC ACID (MG/L)



MW-21: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-21: BROMIDE (MG/L)



* Nondetects shown as 0.

79411125

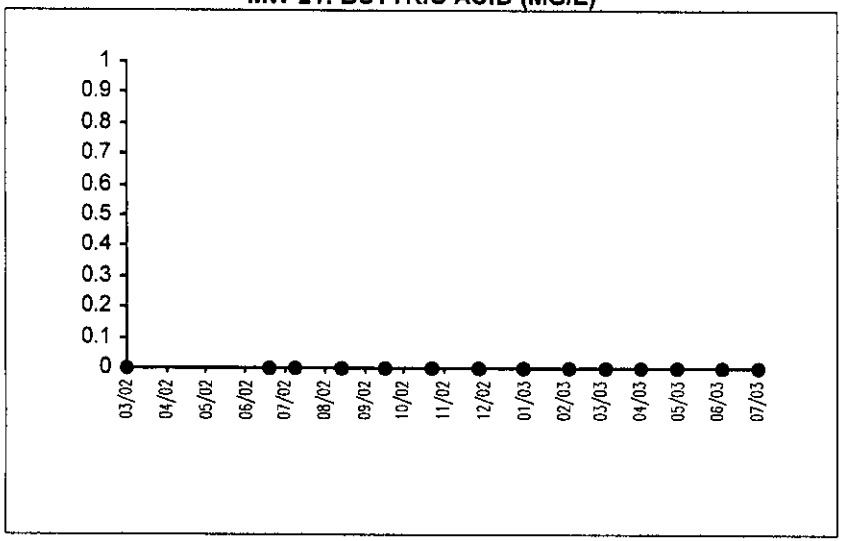
Location Purpose : Remediation

Remediation MW-21

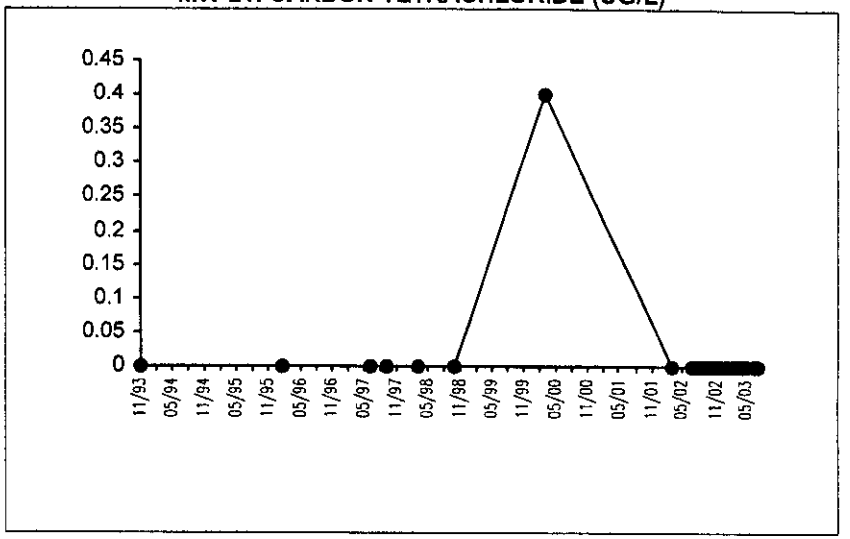
Concentration vs Time

7941126

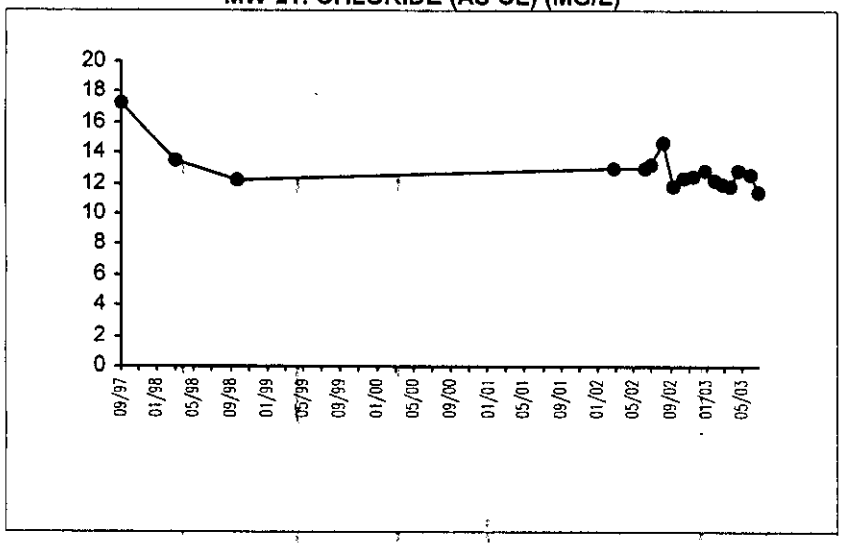
MW-21: BUTYRIC ACID (MG/L)



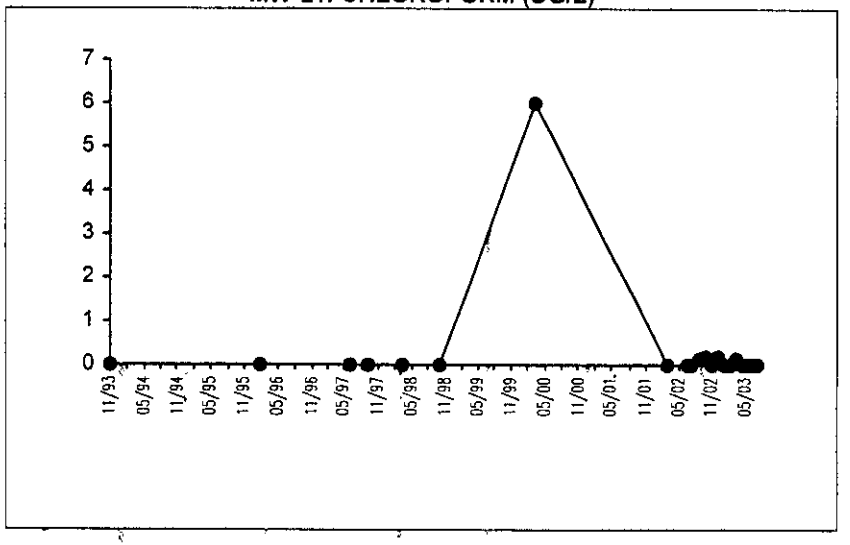
MW-21: CARBON TETRACHLORIDE (UG/L)



MW-21: CHLORIDE (AS CL) (MG/L)



MW-21: CHLOROFORM (UG/L)



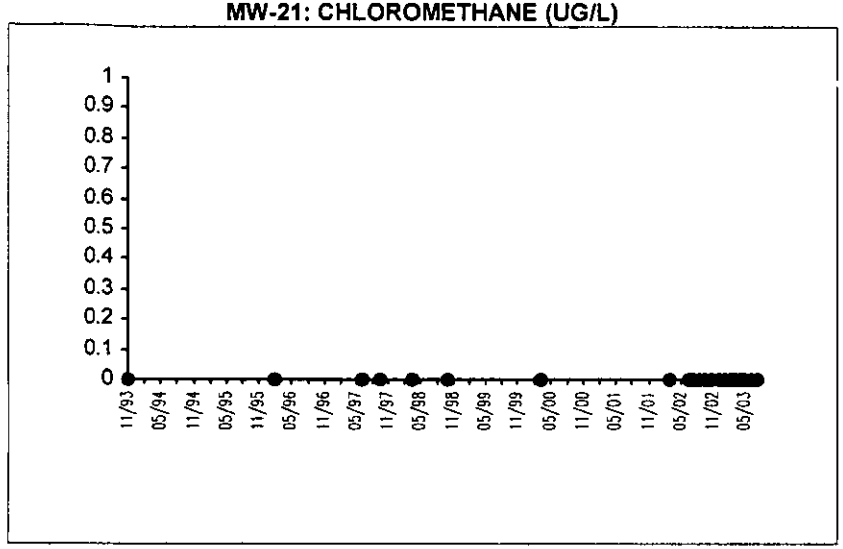
* Nondetects shown as 0.

Location Purpose : Remediation

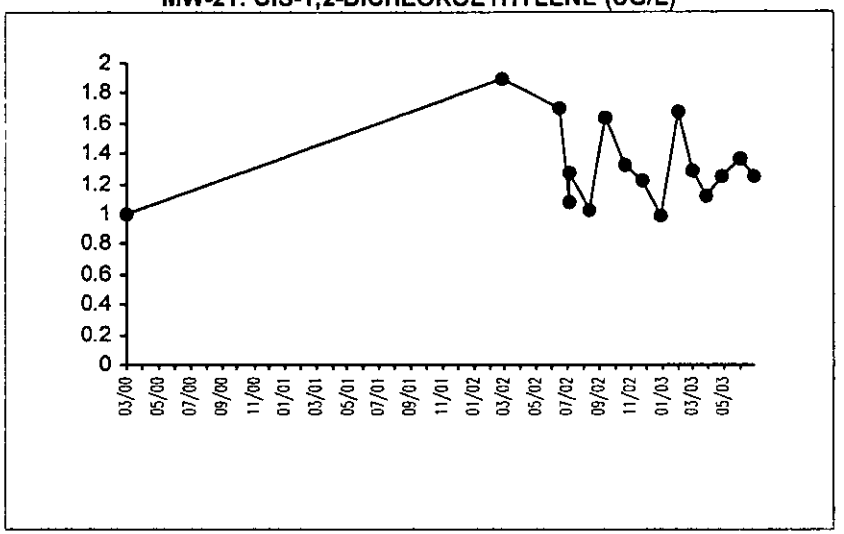
Remediation MW-21

Concentration vs Time

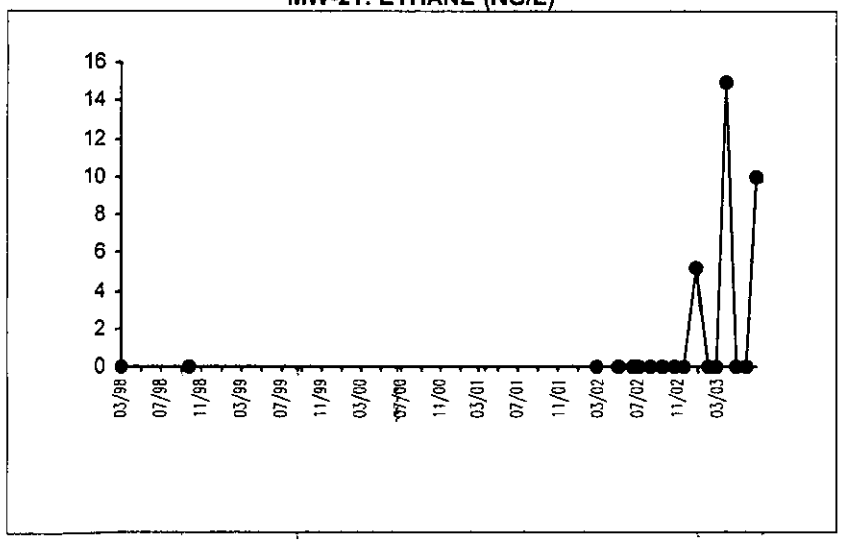
MW-21: CHLOROMETHANE (UG/L)



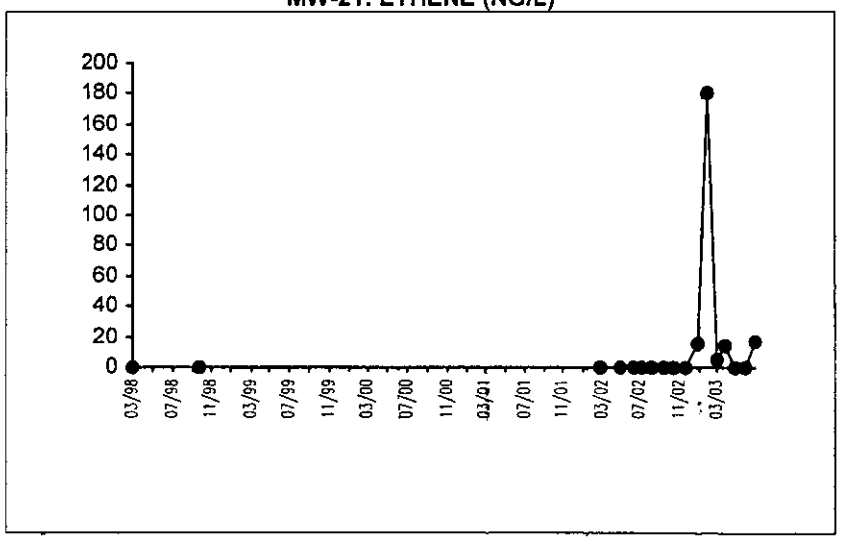
MW-21: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-21: ETHANE (NG/L)



MW-21: ETHENE (NG/L)



* Nondetects shown as 0.

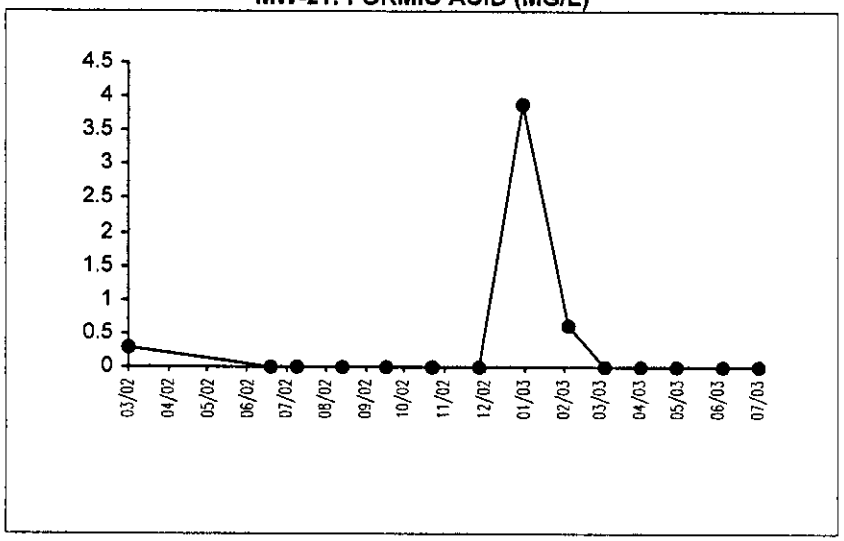
7941127

Location Purpose : Remediation

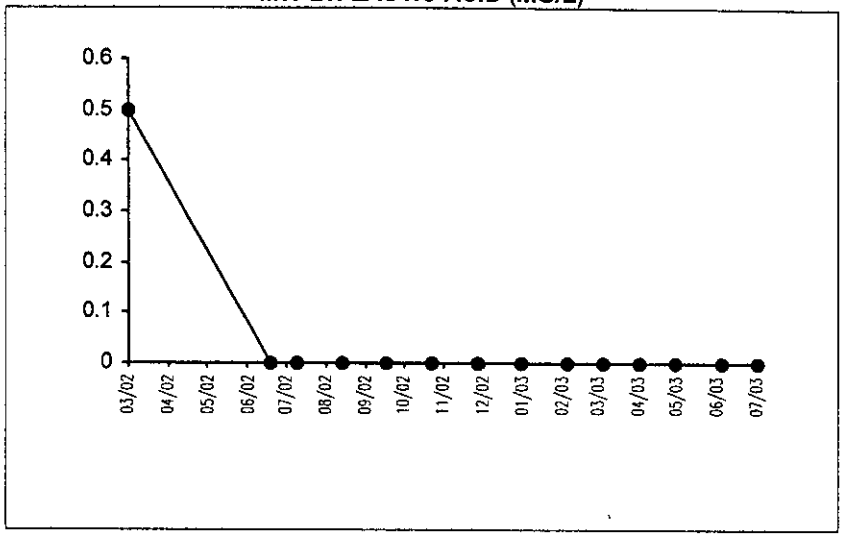
Remediation MW-21

Concentration vs Time

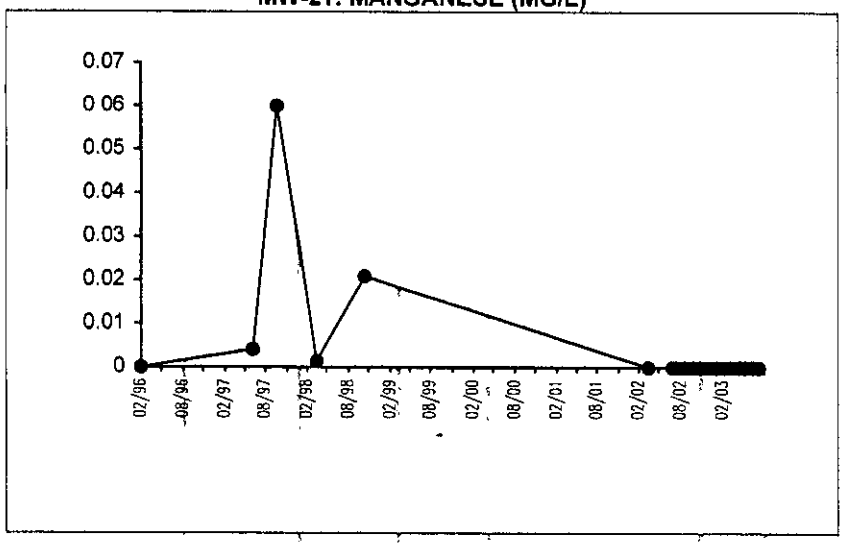
MW-21: FORMIC ACID (MG/L)



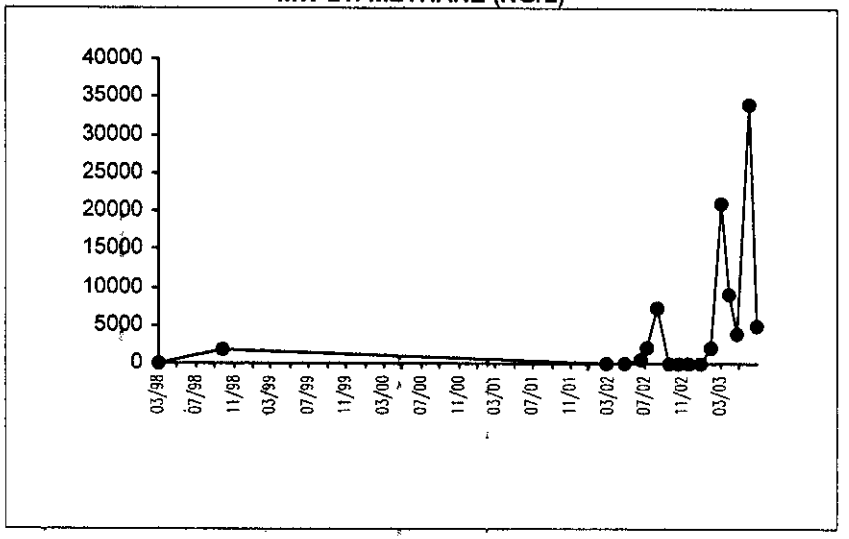
MW-21: LACTIC ACID (MG/L)



MW-21: MANGANESE (MG/L)



MW-21: METHANE (NG/L)



* Nondetects shown as 0.

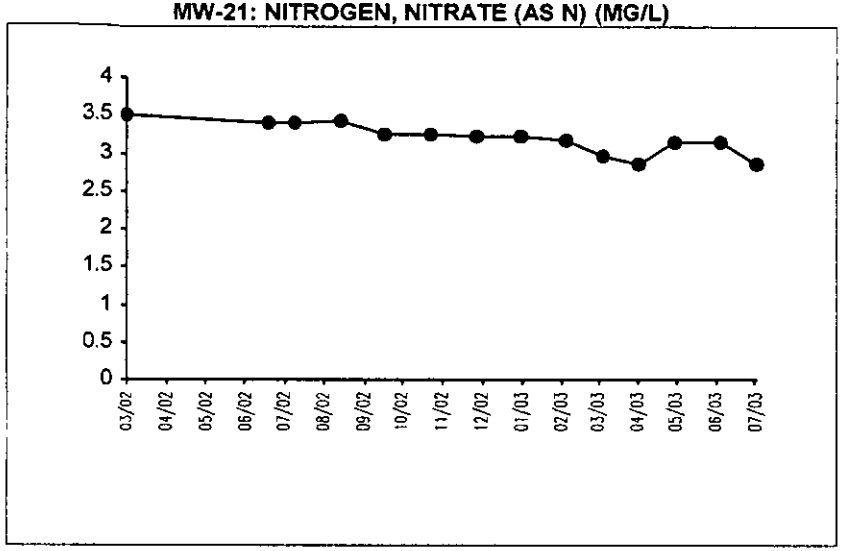
7941128

Location Purpose : Remediation

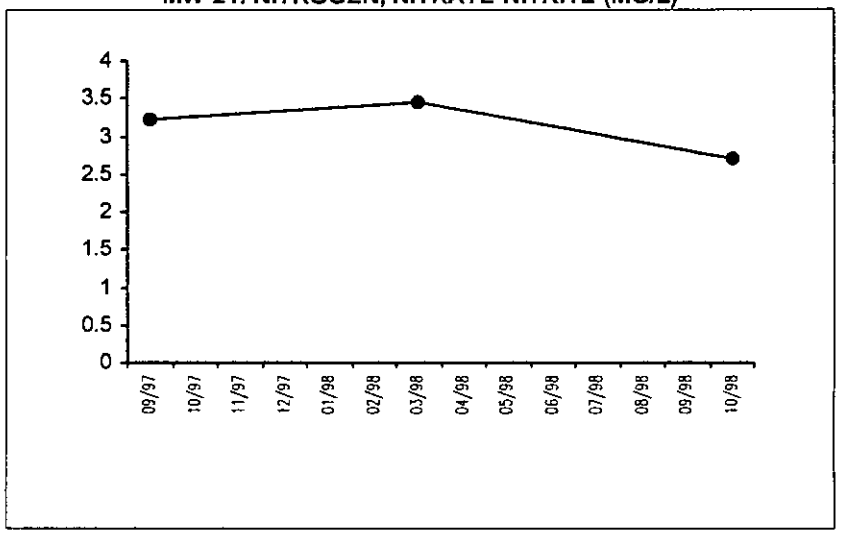
Remediation MW-21

Concentration vs Time

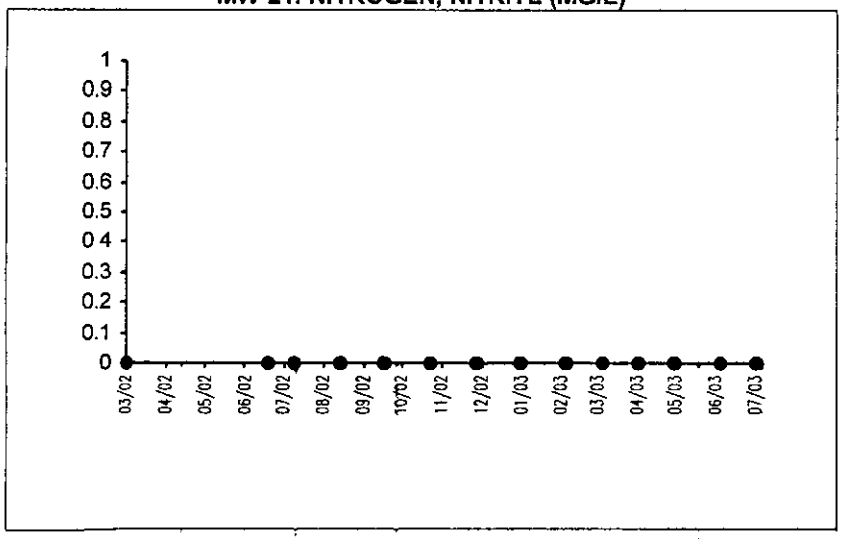
MW-21: NITROGEN, NITRATE (AS N) (MG/L)



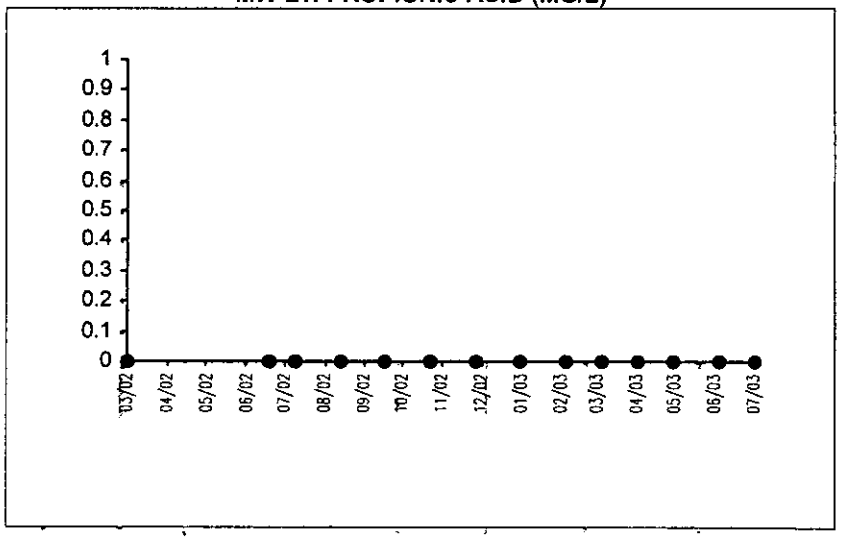
MW-21: NITROGEN, NITRATE-NITRITE (MG/L)



MW-21: NITROGEN, NITRITE (MG/L)



MW-21: PROPIONIC ACID (MG/L)



* Nondetects shown as 0.

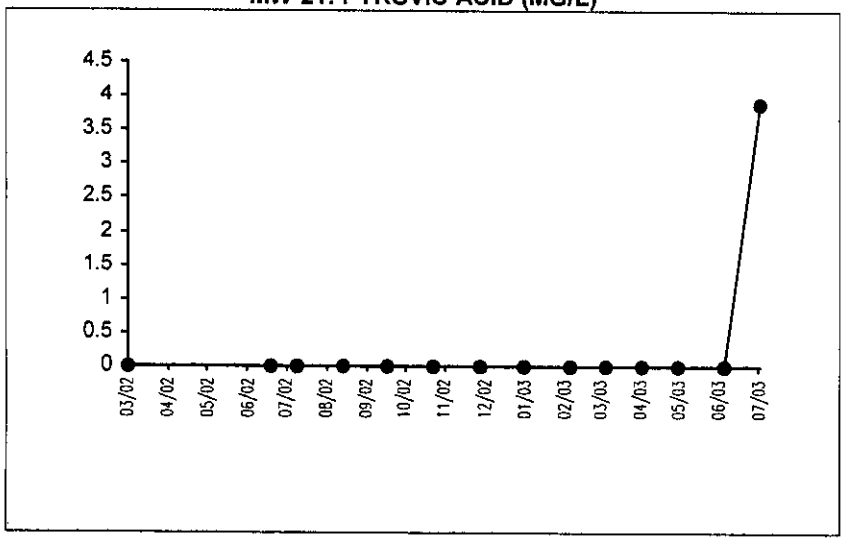
7941129

Location Purpose : Remediation

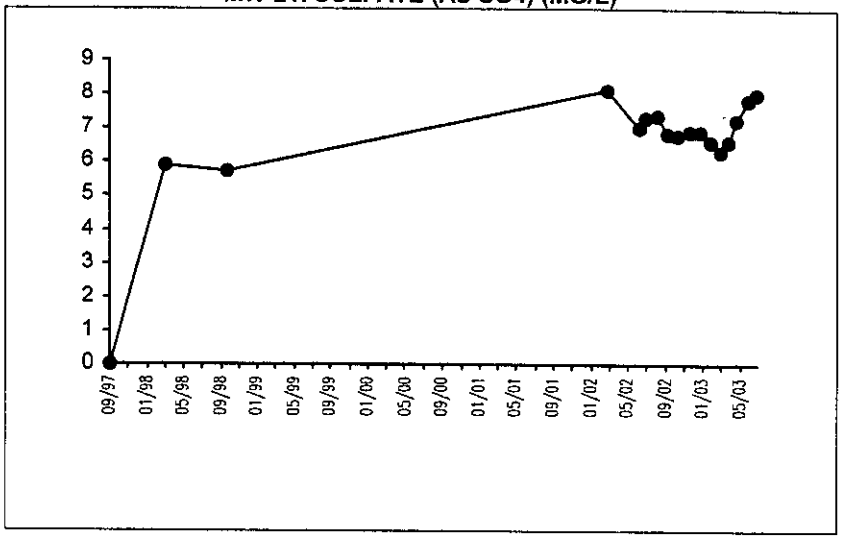
Remediation MW-21

Concentration vs Time

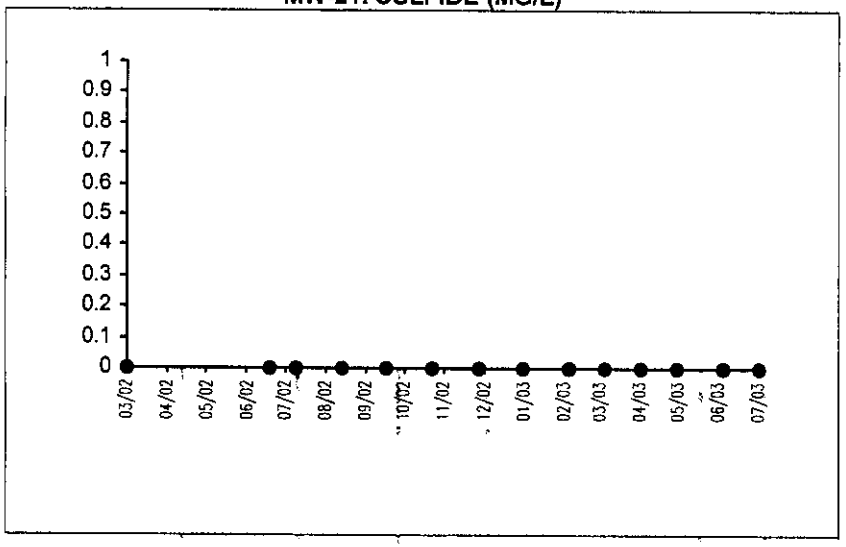
MW-21: PYRUVIC ACID (MG/L)



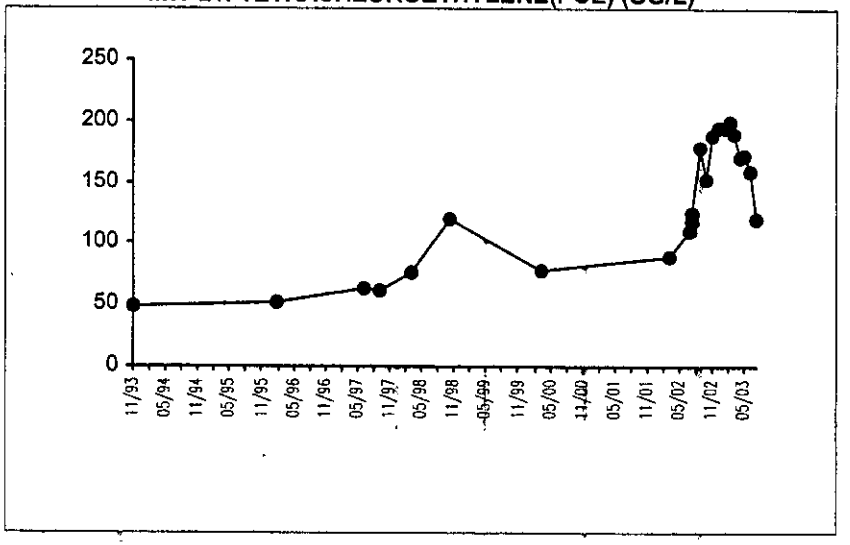
MW-21: SULFATE (AS SO4) (MG/L)



MW-21: SULFIDE (MG/L)



MW-21: TETRACHLOROETHYLENE(PCE) (UG/L)



* Nondetects shown as 0.

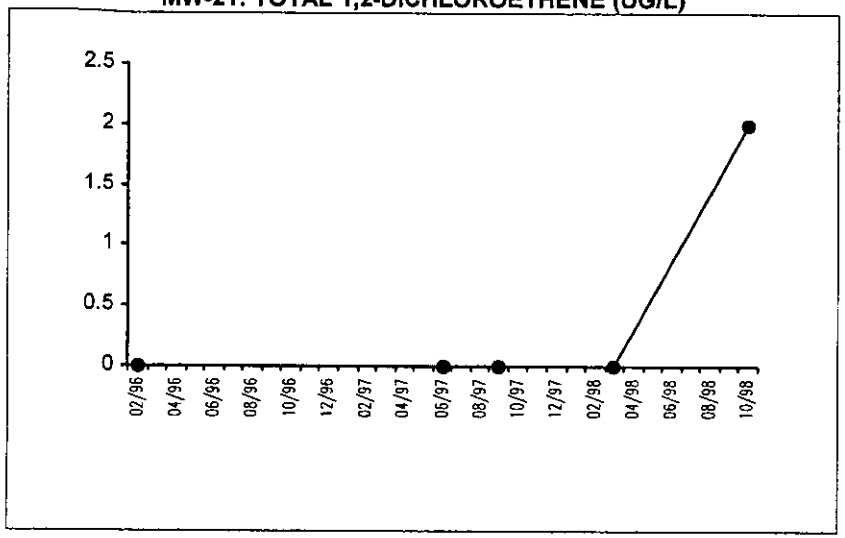
7941130

Location Purpose : Remediation

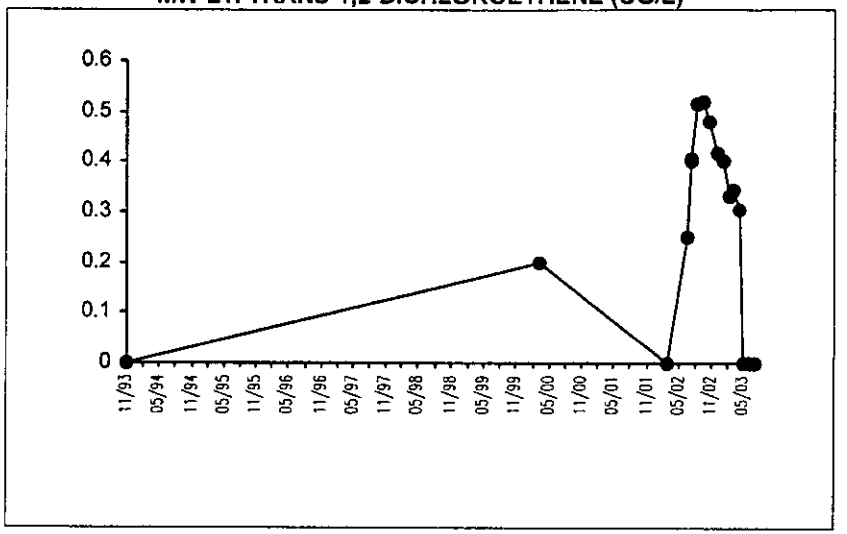
Remediation MW-21

Concentration vs Time

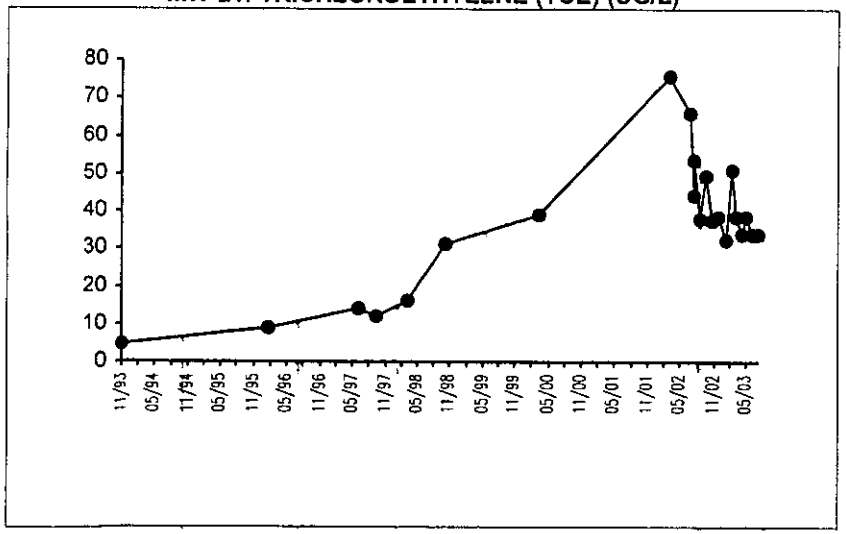
MW-21: TOTAL 1,2-DICHLOROETHENE (UG/L)



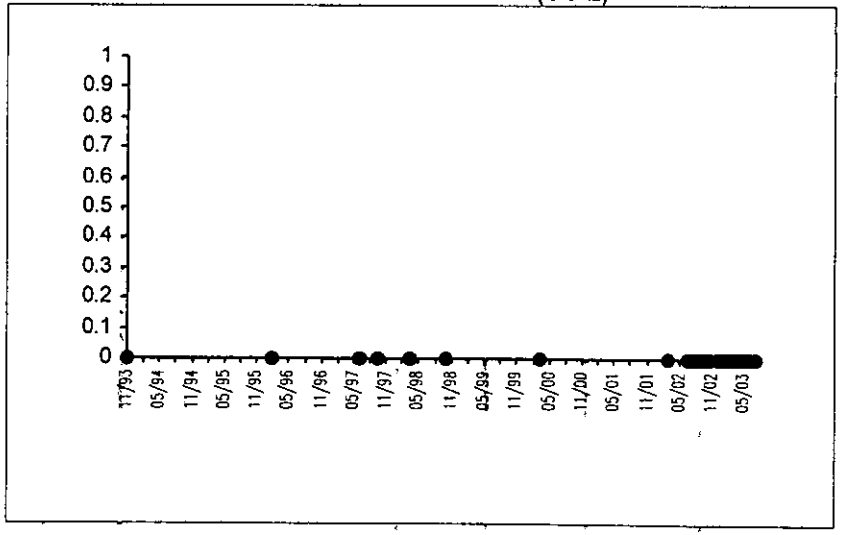
MW-21: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-21: TRICHLOROETHYLENE (TCE) (UG/L)



MW-21: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

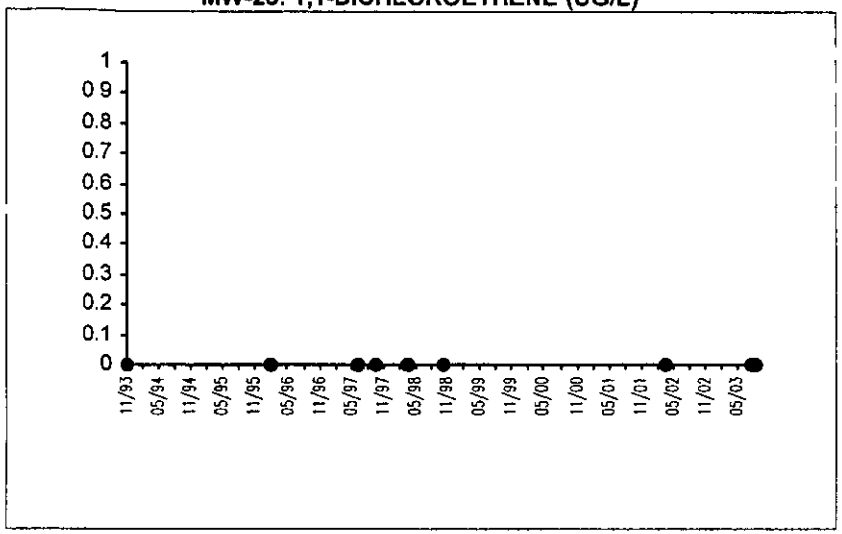
79411131

Location Purpose : Remediation

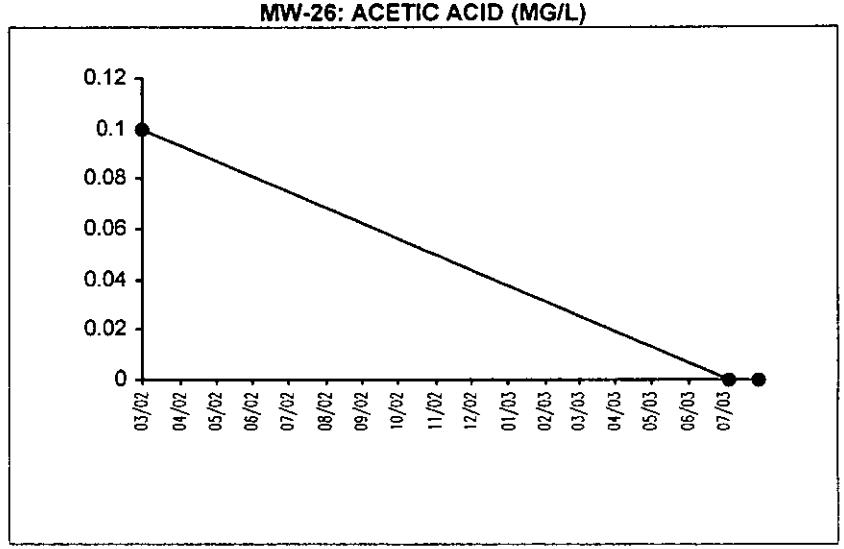
Remediation MW-26

Concentration vs Time

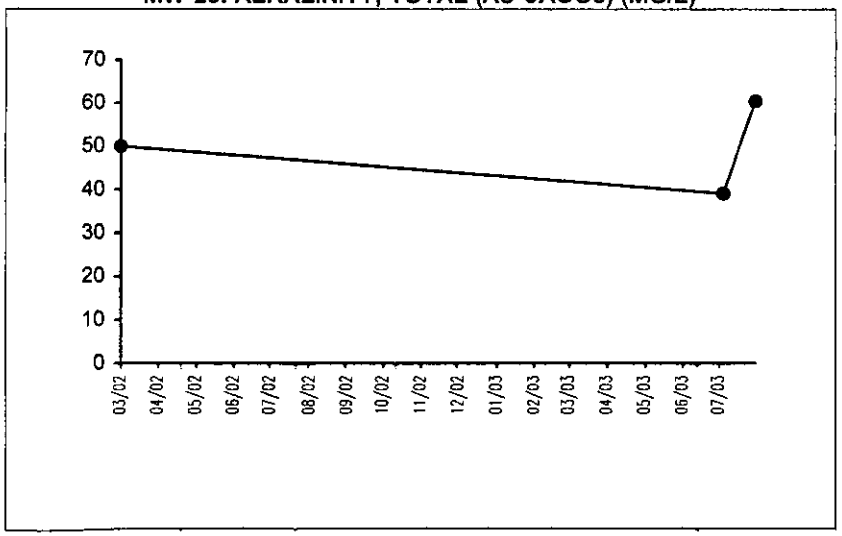
MW-26: 1,1-DICHLOROETHENE (UG/L)



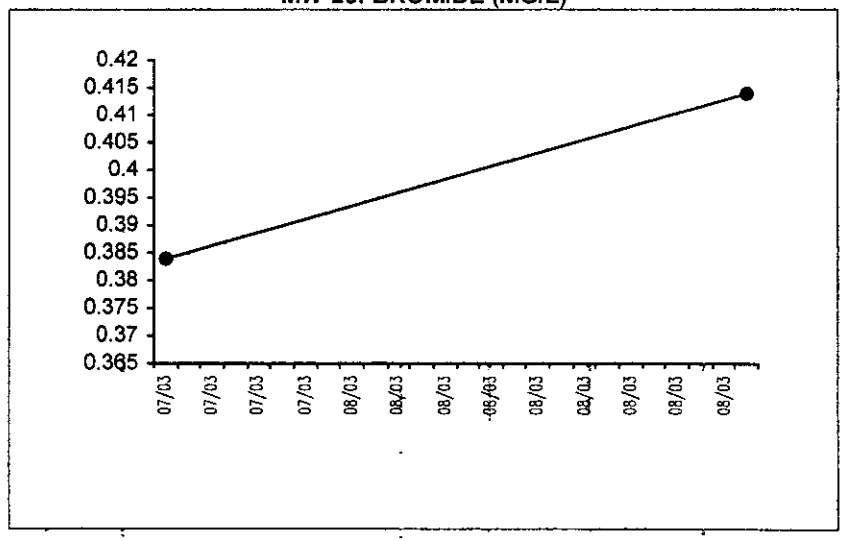
MW-26: ACETIC ACID (MG/L)



MW-26: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-26: BROMIDE (MG/L)



* Nondetects shown as 0.

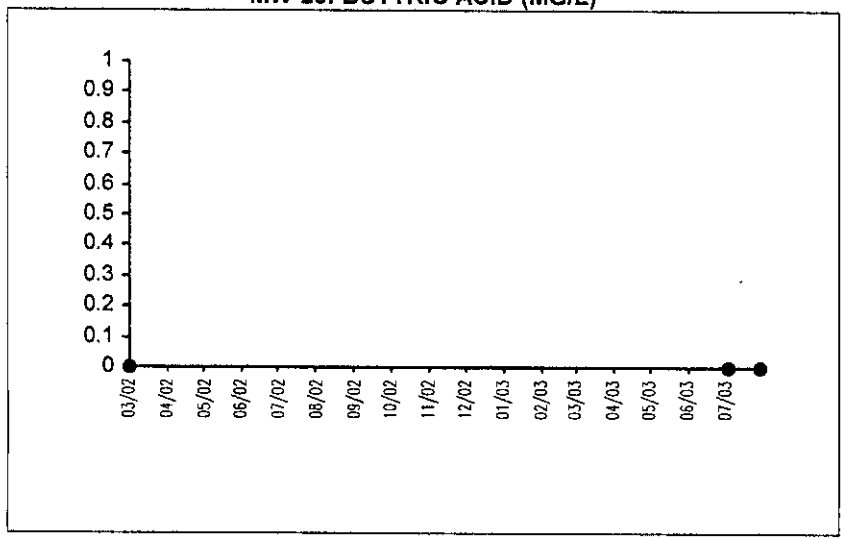
7941132

Location Purpose : Remediation

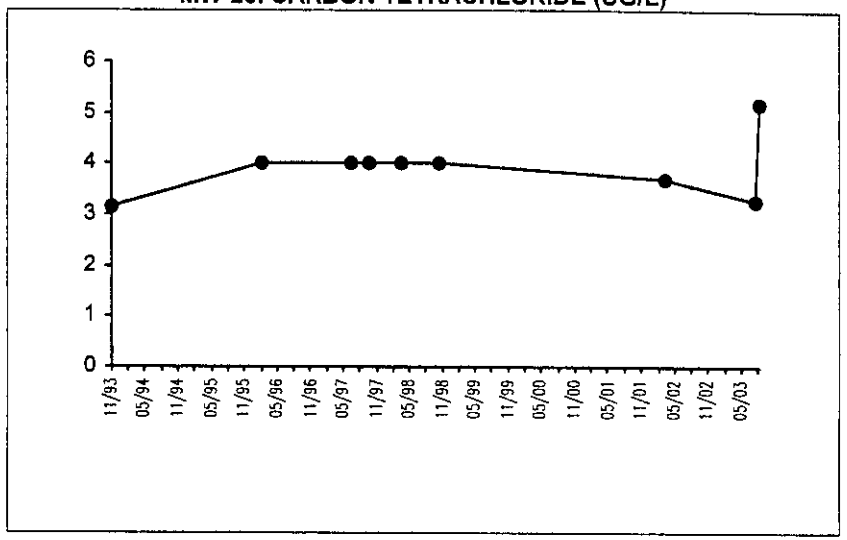
Remediation MW-26

Concentration vs Time

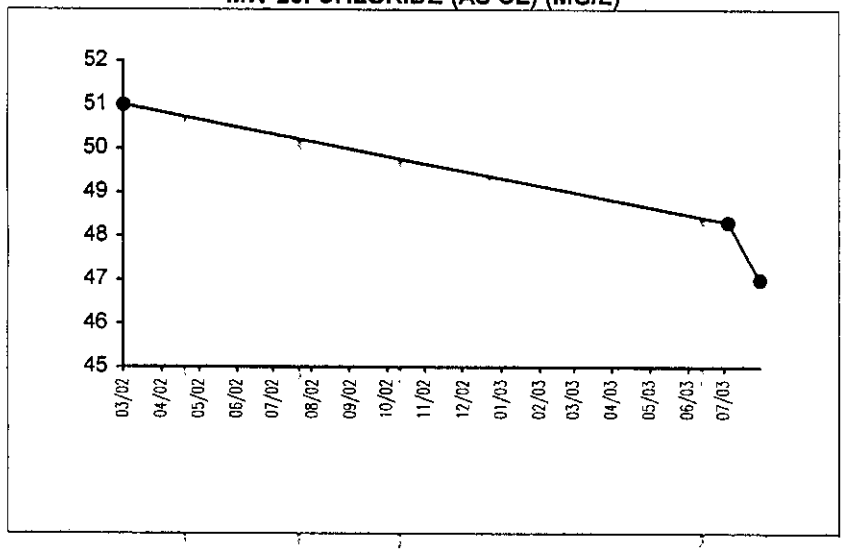
MW-26: BUTYRIC ACID (MG/L)



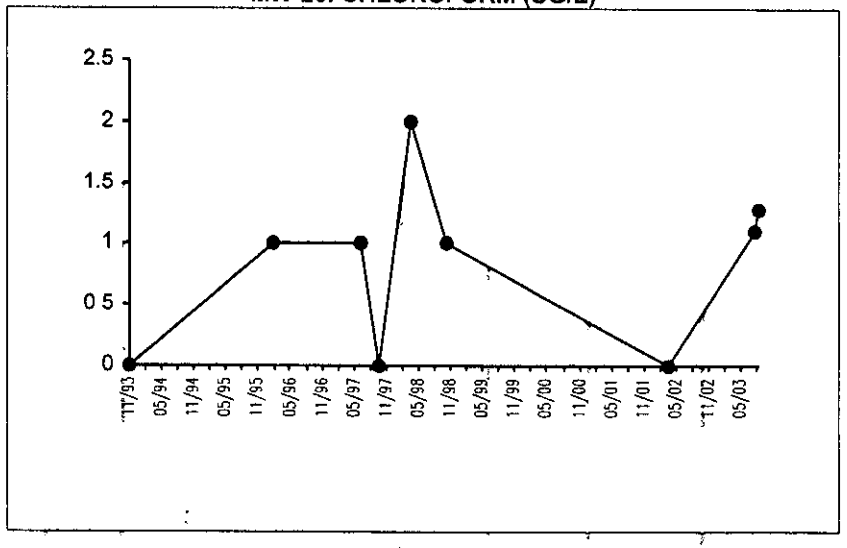
MW-26: CARBON TETRACHLORIDE (UG/L)



MW-26: CHLORIDE (AS CL) (MG/L)



MW-26: CHLOROFORM (UG/L)



* Non[illegible]ts shown as 0.

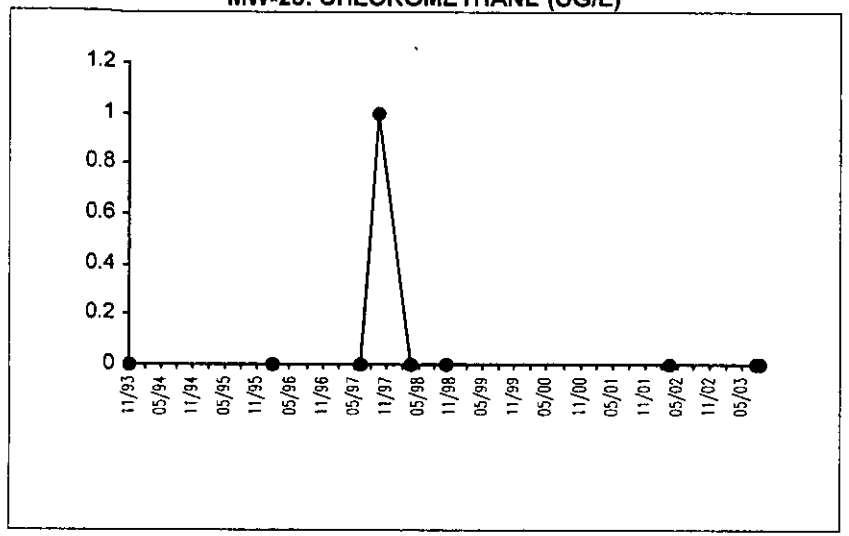
7941133

Location Purpose : Remediation

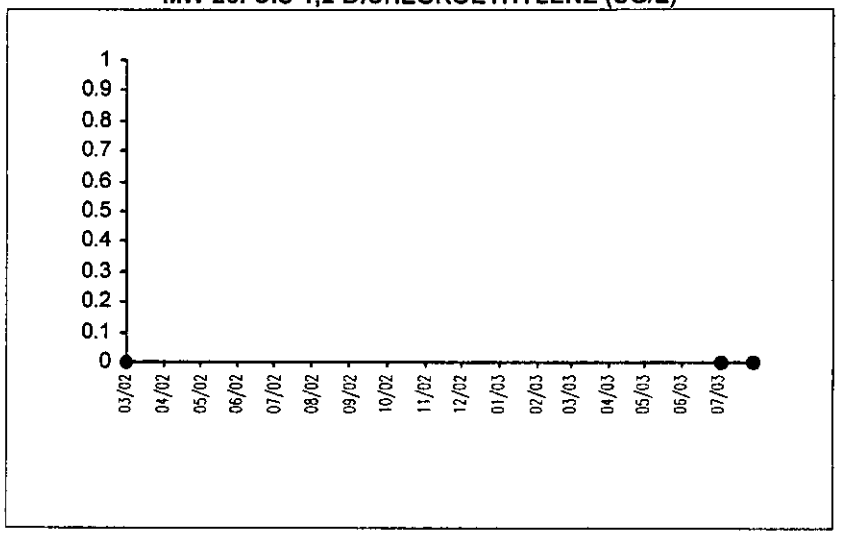
Remediation MW-26

Concentration vs Time

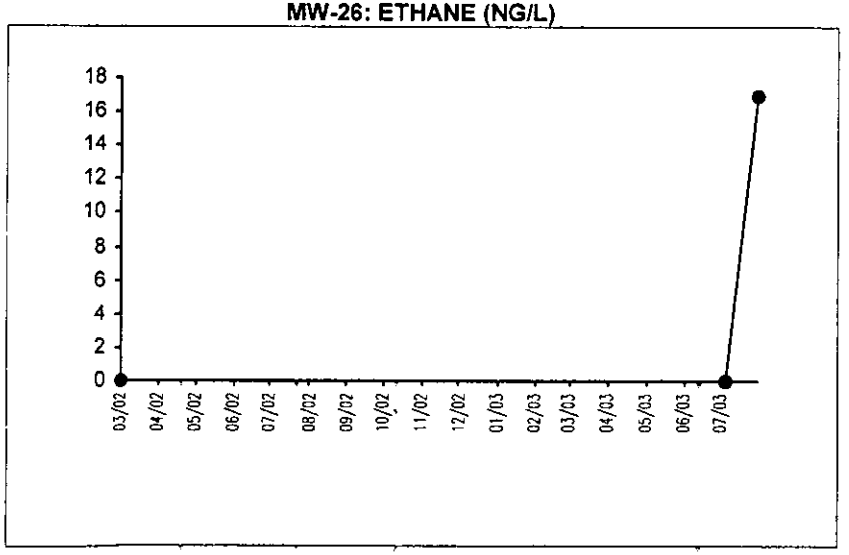
MW-26: CHLOROMETHANE (UG/L)



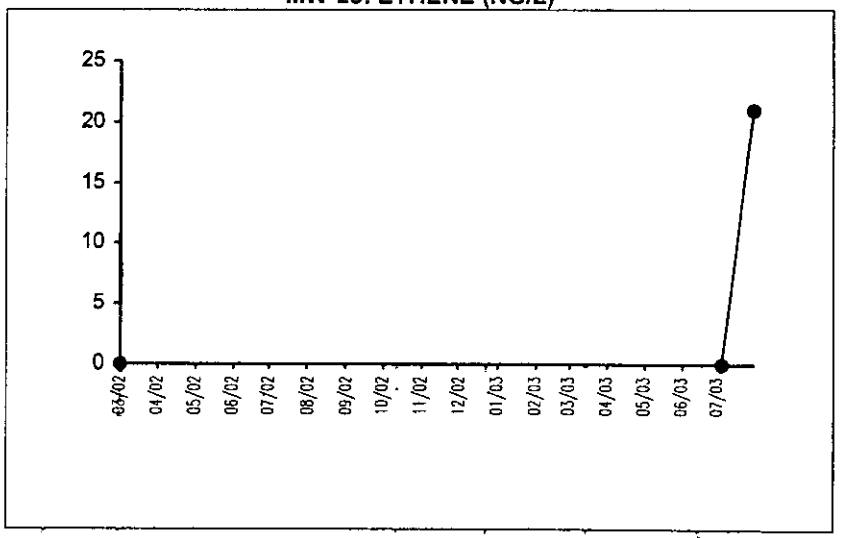
MW-26: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-26: ETHANE (NG/L)



MW-26: ETHENE (NG/L)



* Nondetects shown as 0.

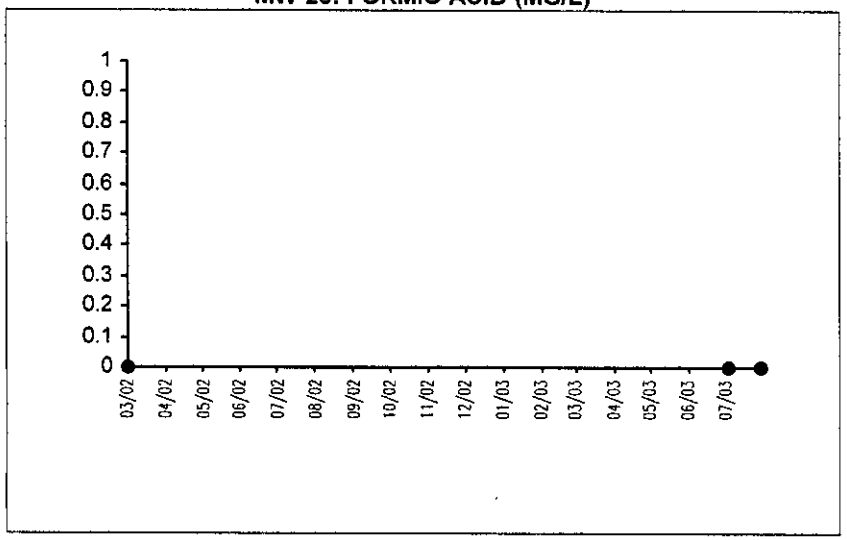
7941134

Location Purpose : Remediation

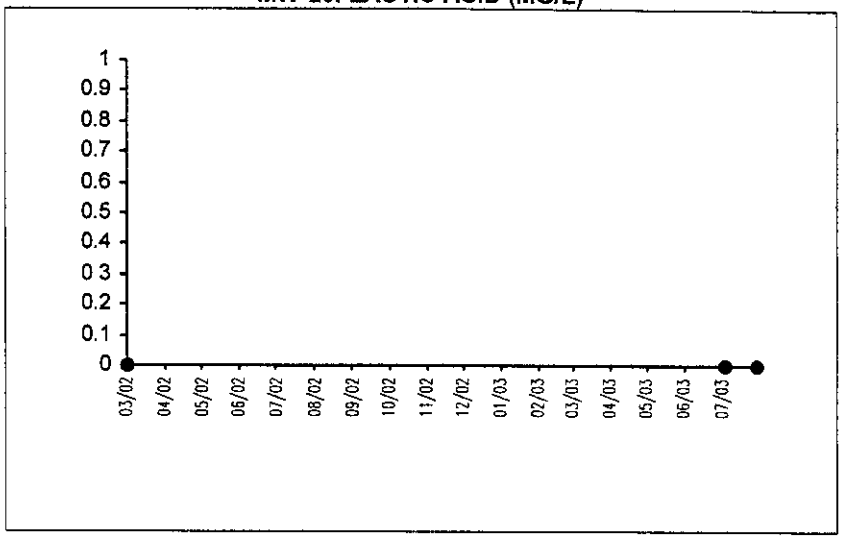
Remediation MW-26

Concentration vs Time

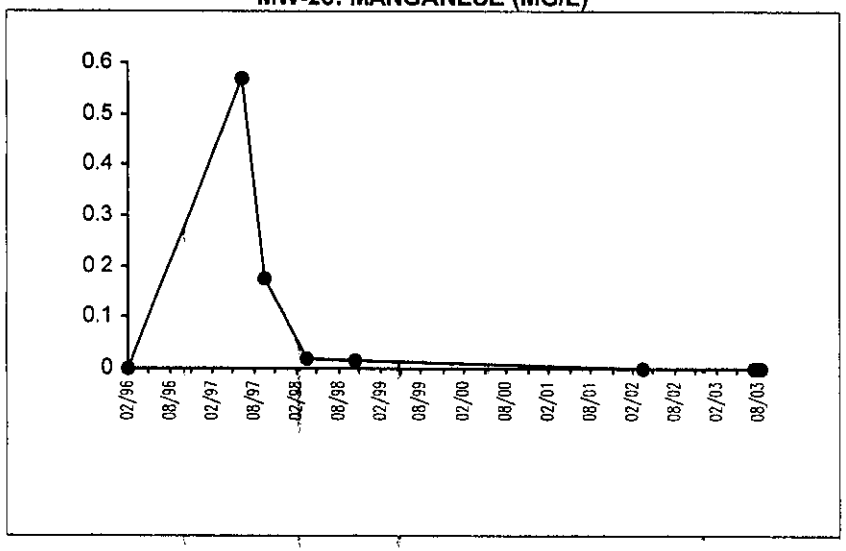
MW-26: FORMIC ACID (MG/L)



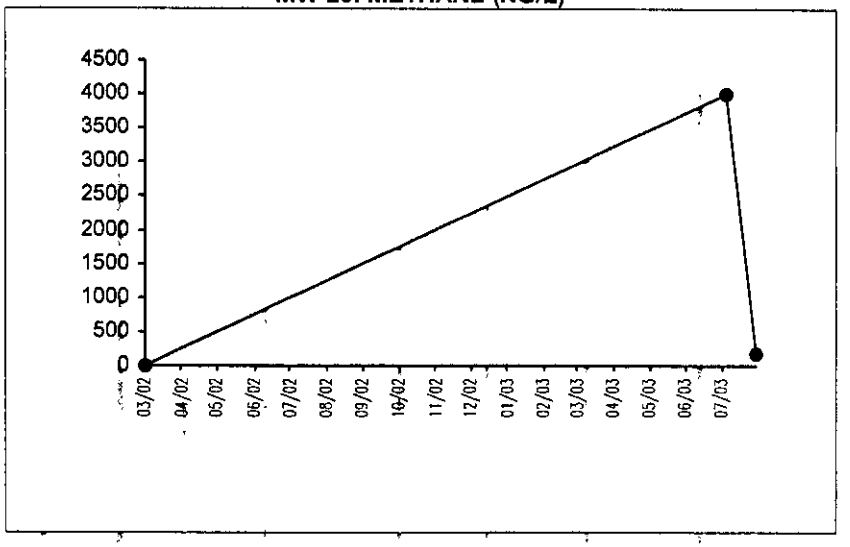
MW-26: LACTIC ACID (MG/L)



MW-26: MANGANESE (MG/L)



MW-26: METHANE (NG/L)



* Nond[illegible]ts shown as 0.

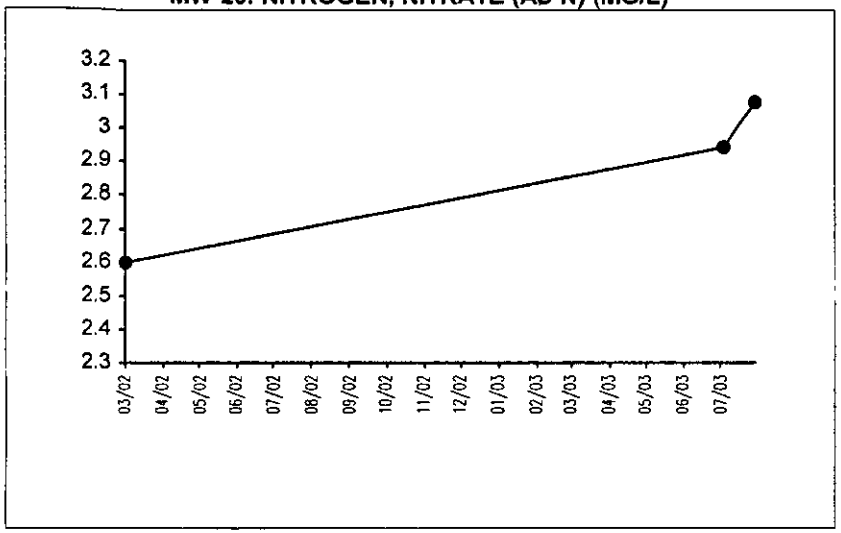
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Location Purpose : Remediation

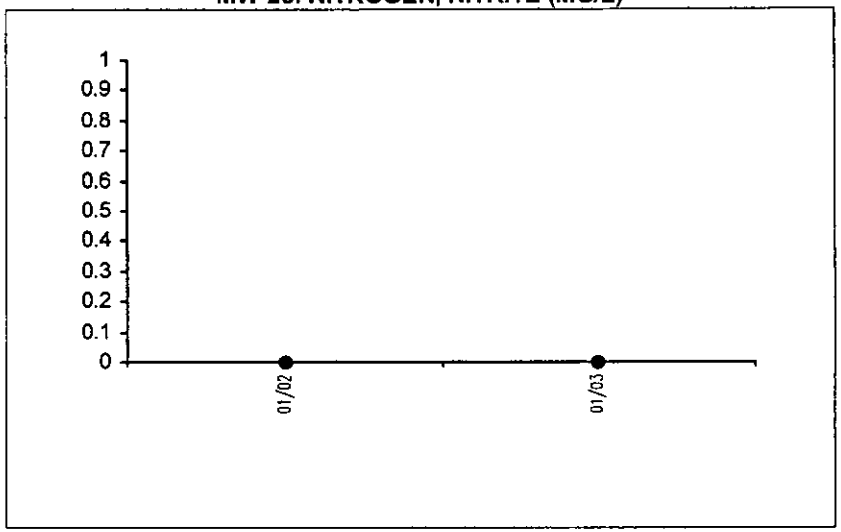
Remediation MW-26

Concentration vs Time

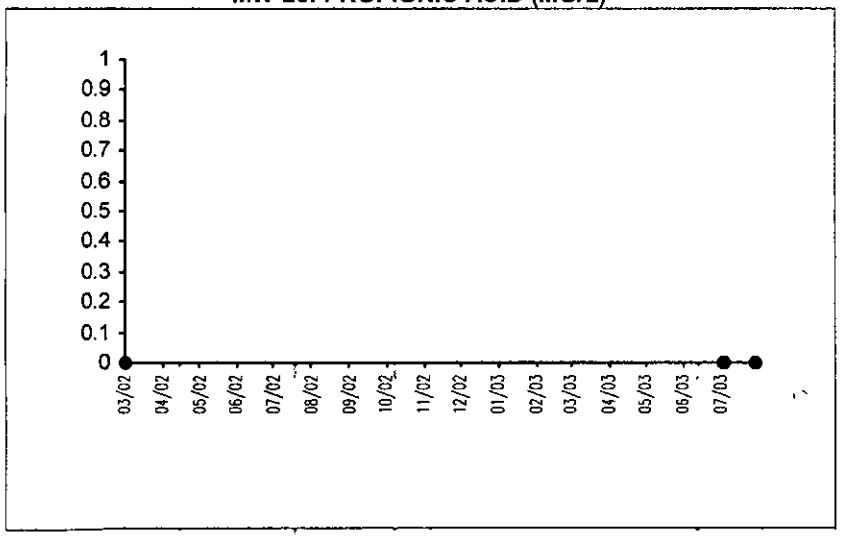
MW-26: NITROGEN, NITRATE (AS N) (MG/L)



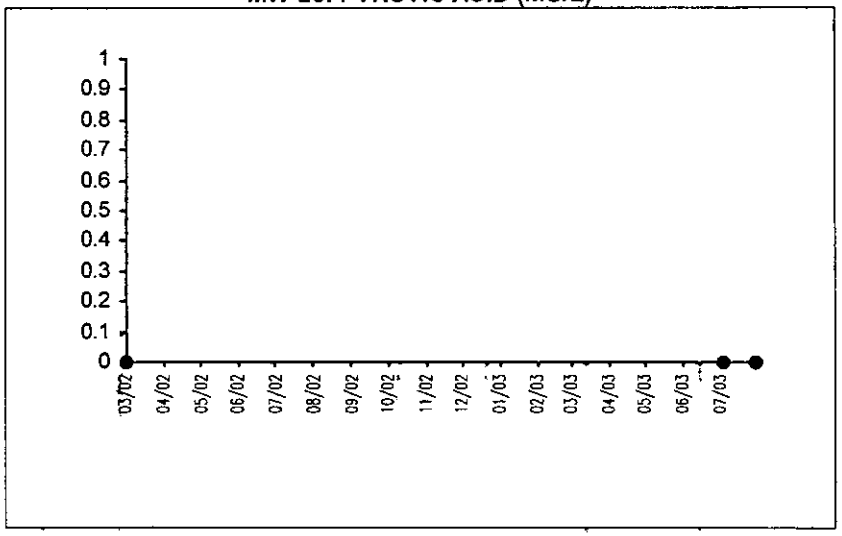
MW-26: NITROGEN, NITRITE (MG/L)



MW-26: PROPIONIC ACID (MG/L)



MW-26: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

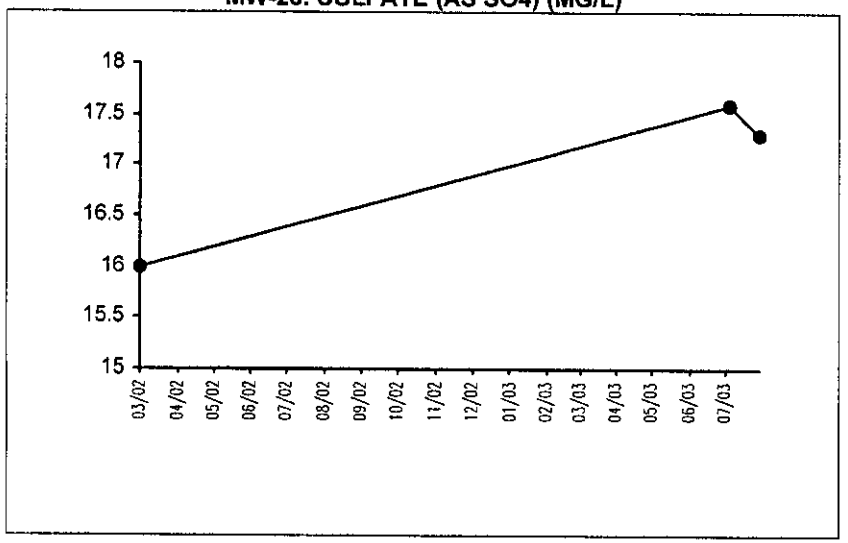
7941136

Location Purpose : Remediation

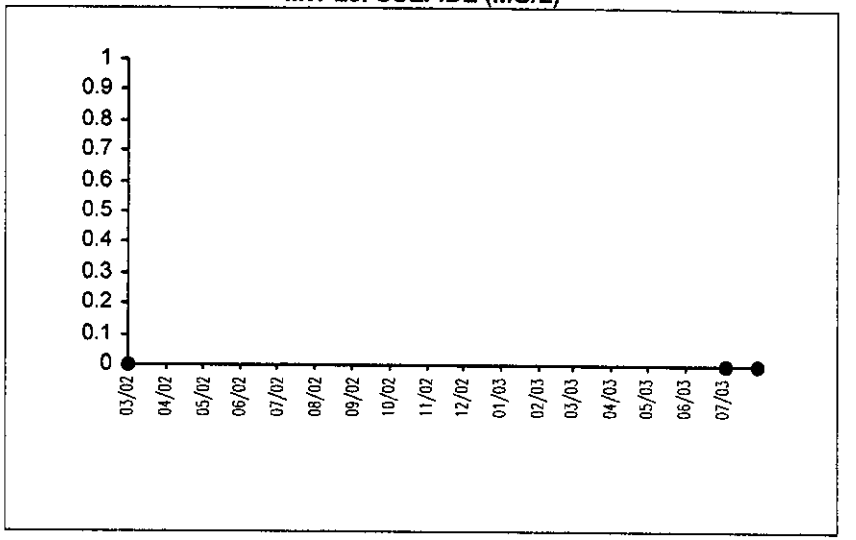
Remediation MW-26

Concentration vs Time

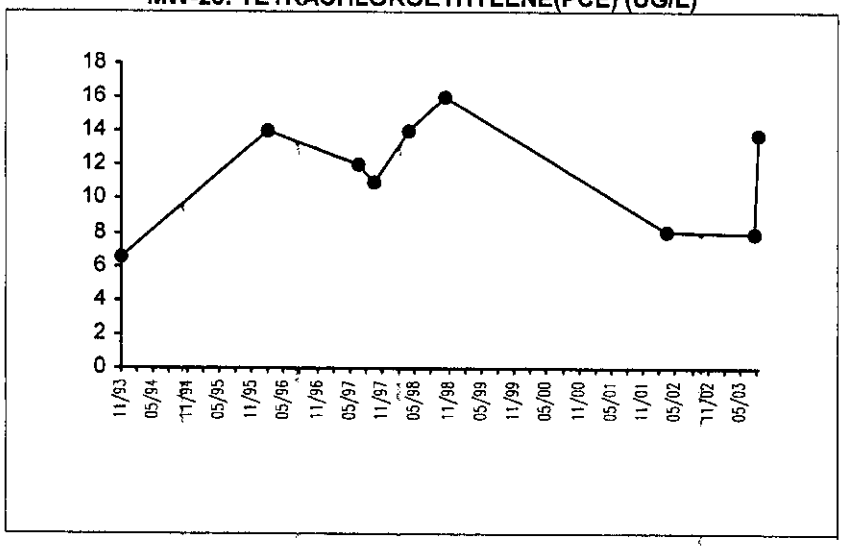
MW-26: SULFATE (AS SO4) (MG/L)



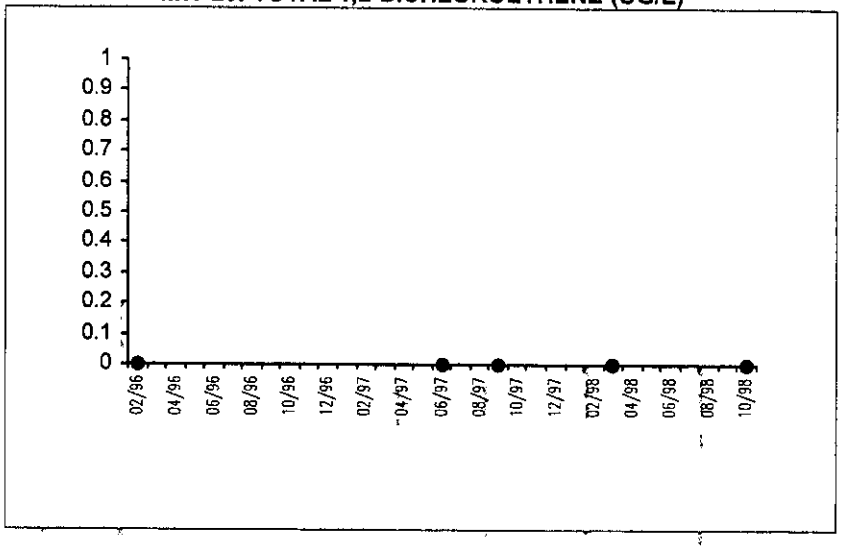
MW-26: SULFIDE (MG/L)



MW-26: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-26: TOTAL 1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

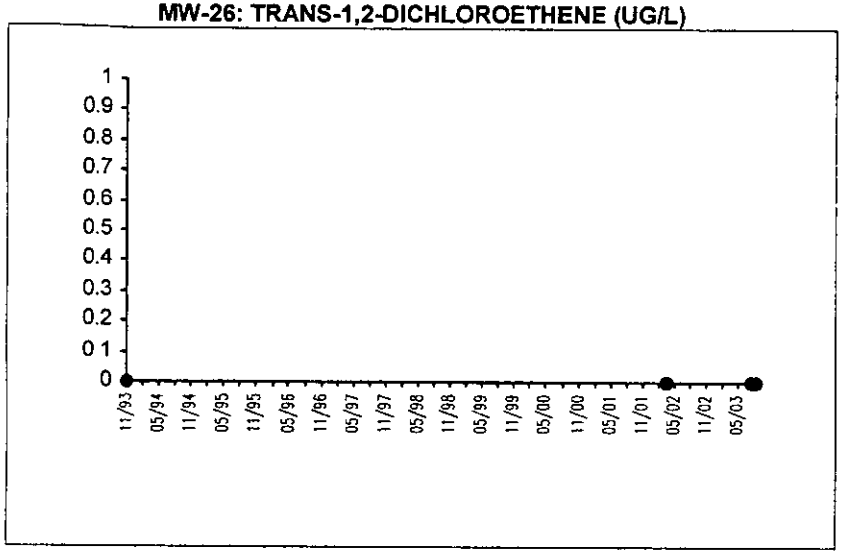
7941137

Location Purpose : Remediation

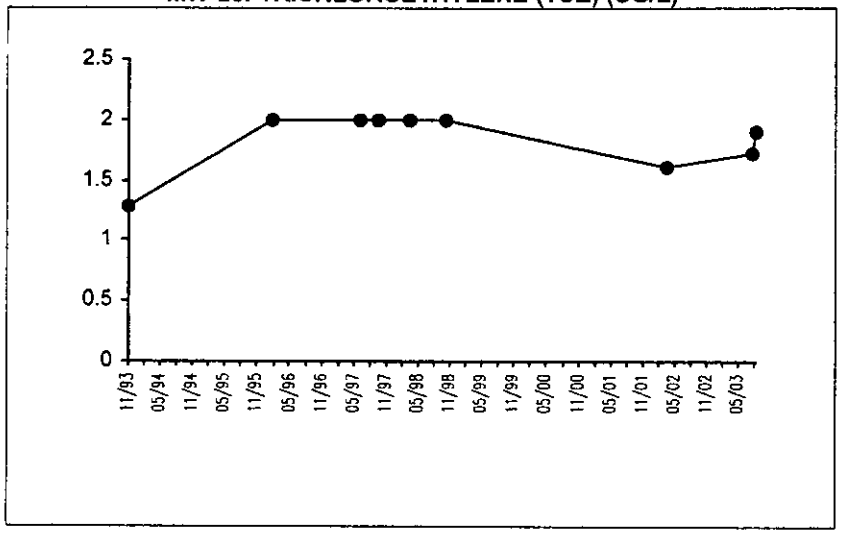
Remediation MW-26

Concentration vs Time

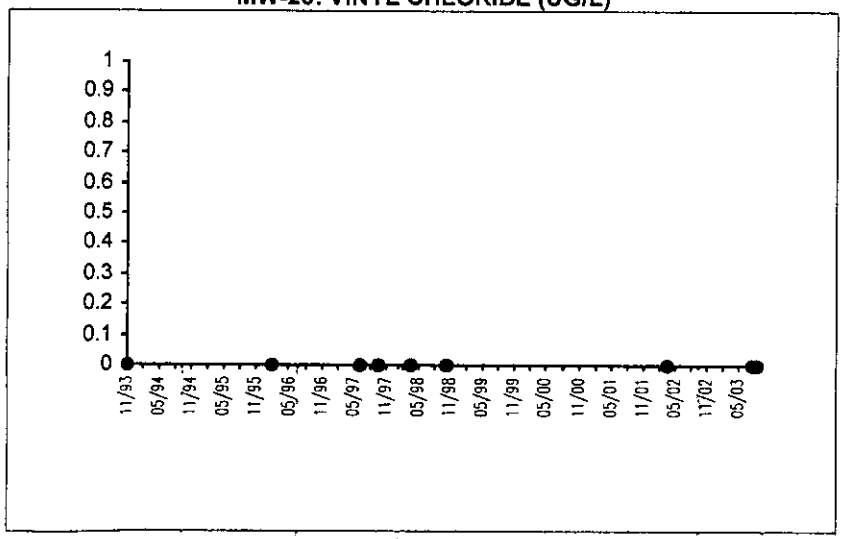
MW-26: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-26: TRICHLOROETHYLENE (TCE) (UG/L)



MW-26: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

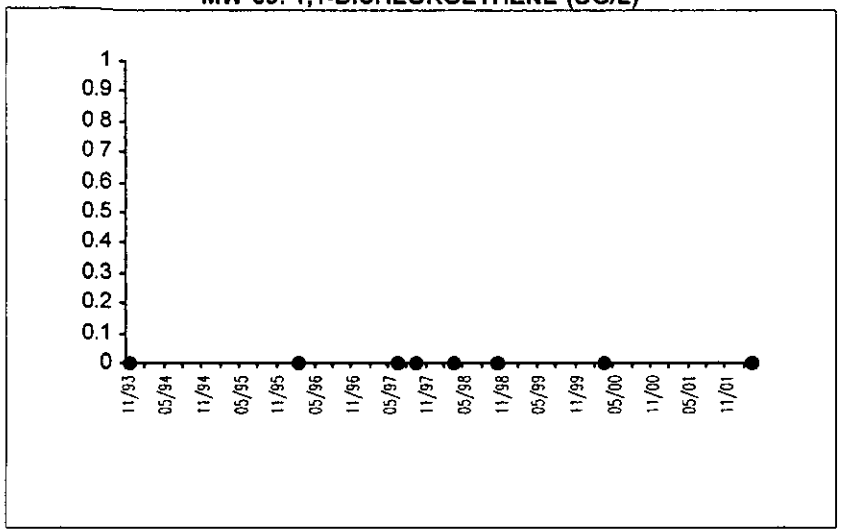
7941138

Location Purpose : Remediation

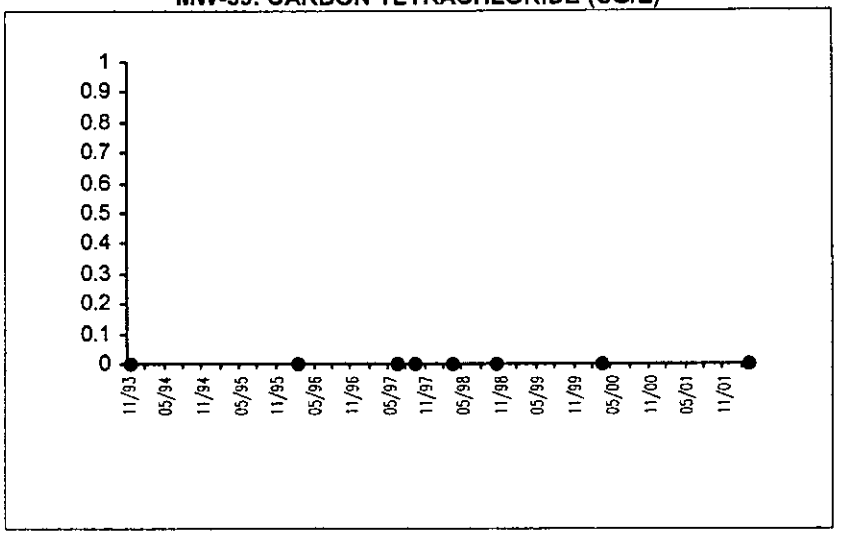
Remediation MW-39

Concentration vs Time

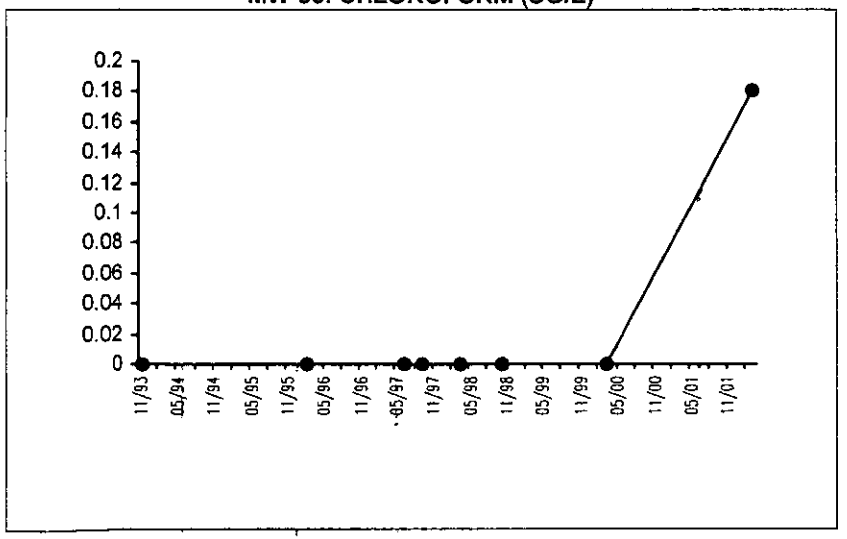
MW-39: 1,1-DICHLOROETHENE (UG/L)



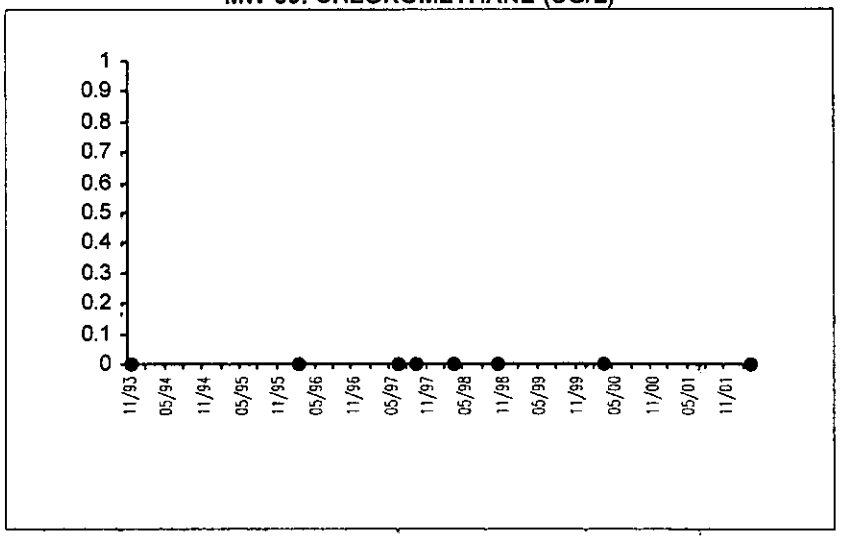
MW-39: CARBON TETRACHLORIDE (UG/L)



MW-39: CHLOROFORM (UG/L)



MW-39: CHLOROMETHANE (UG/L)



* Nondetects shown as 0.

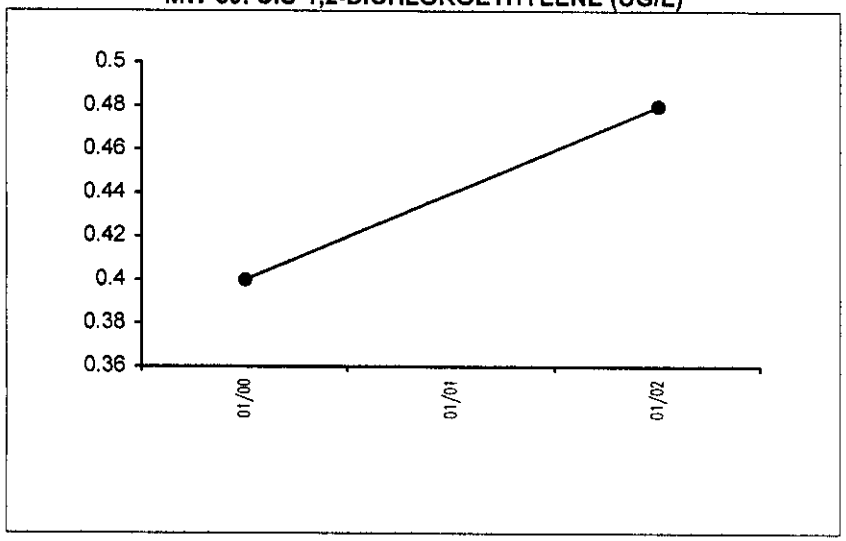
7941139

Location Purpose : Remediation

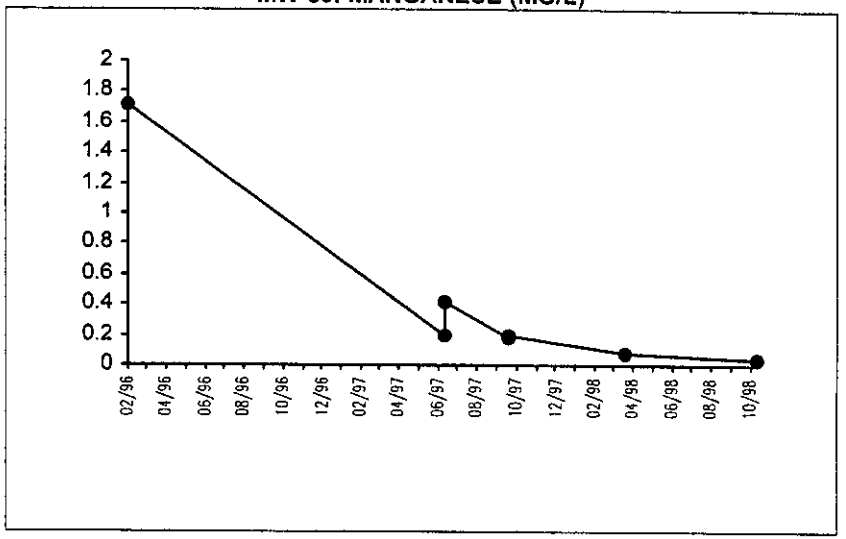
Remediation MW-39

Concentration vs Time

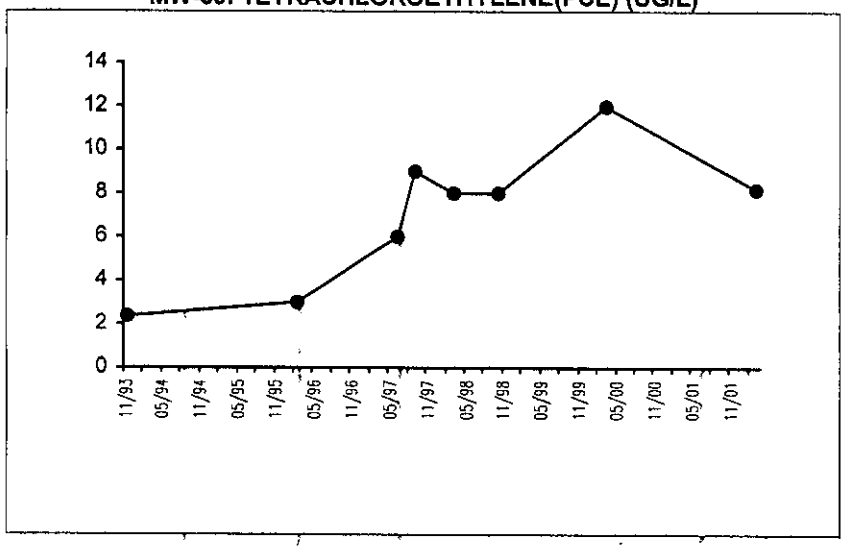
MW-39: CIS-1,2-DICHLOROETHYLENE (UG/L)



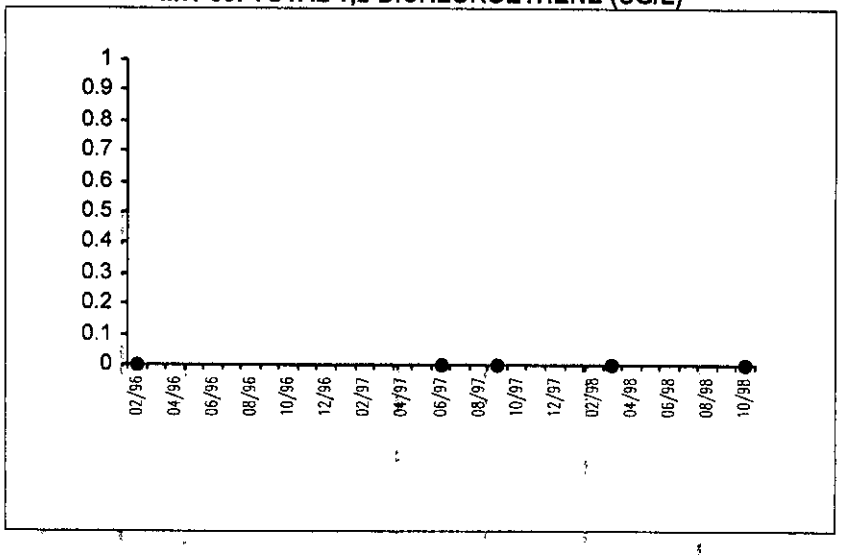
MW-39: MANGANESE (MG/L)



MW-39: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-39: TOTAL 1,2-DICHLOROETHENE (UG/L)



* Nond[illegible]ts shown as 0.

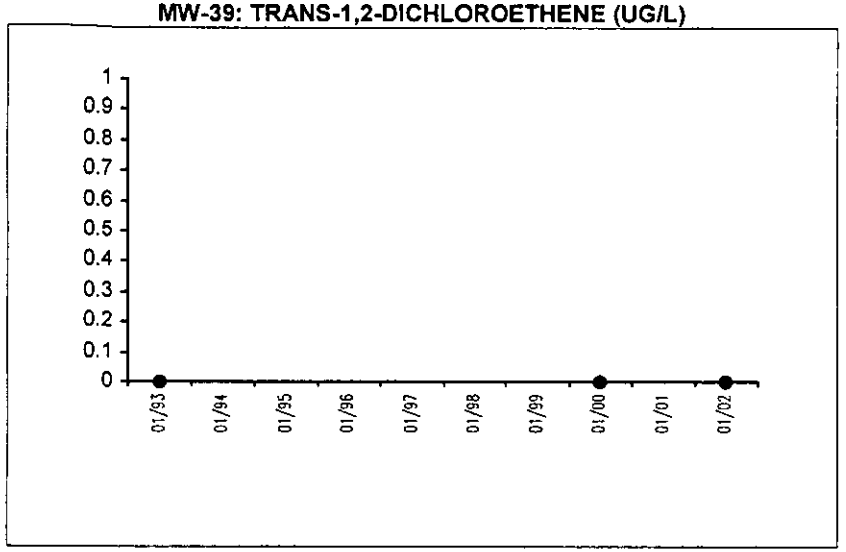
7941140

Location Purpose : Remediation

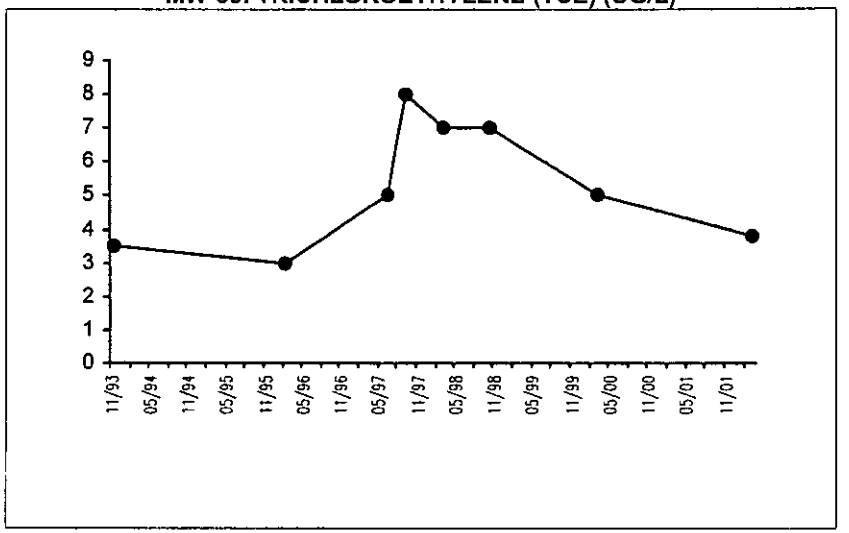
Remediation MW-39

Concentration vs Time

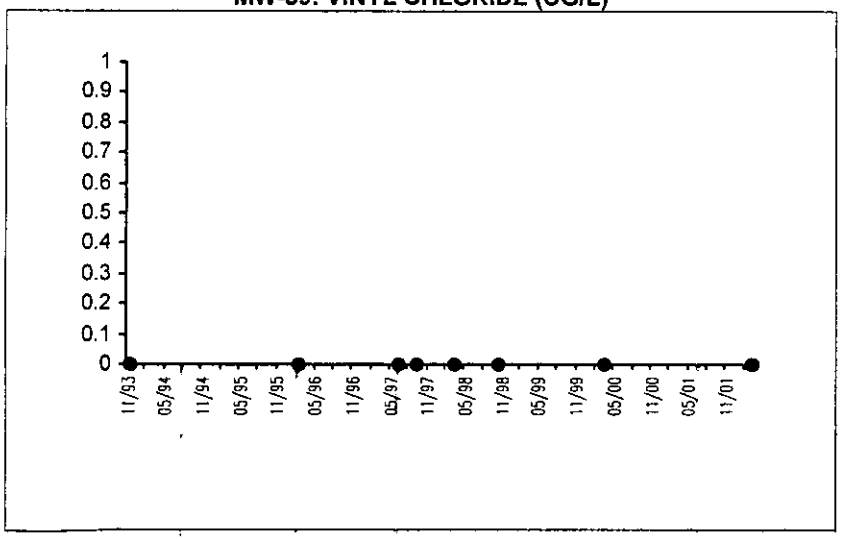
MW-39: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-39: TRICHLOROETHYLENE (TCE) (UG/L)



MW-39: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

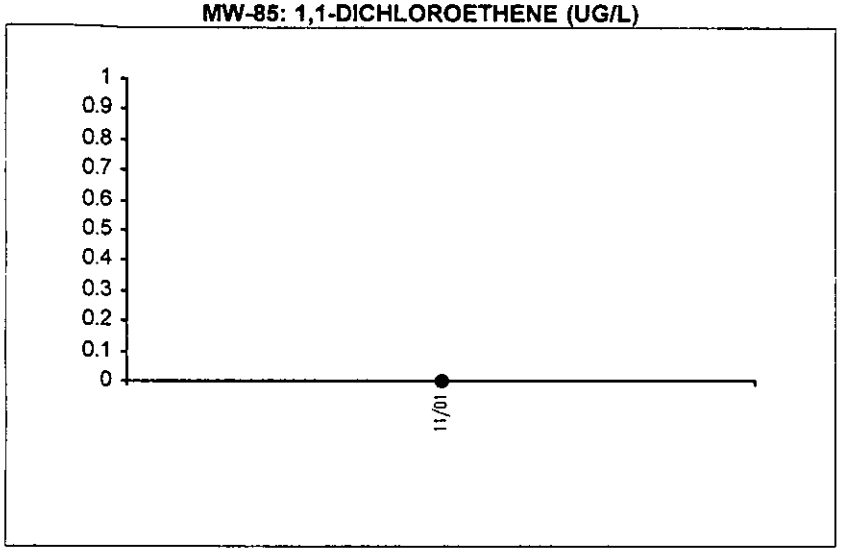
79411141

Location Purpose : Remediation

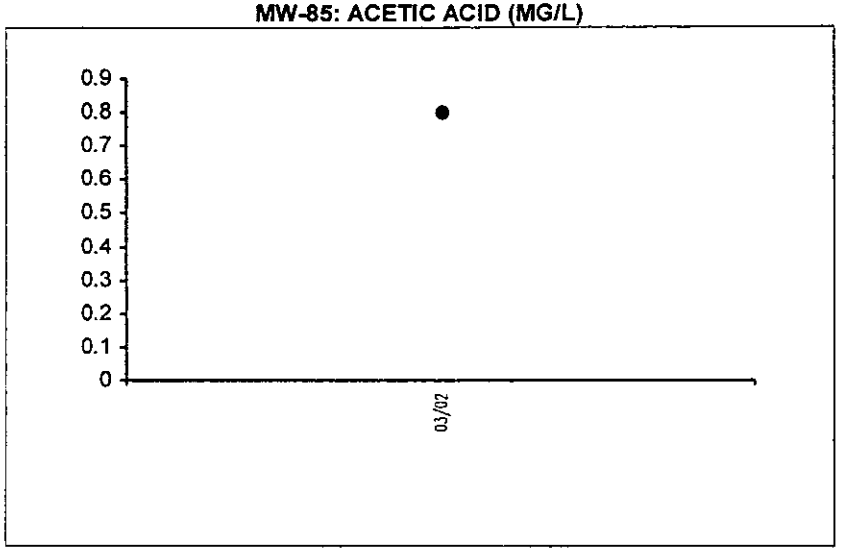
Remediation MW-85

Concentration vs Time

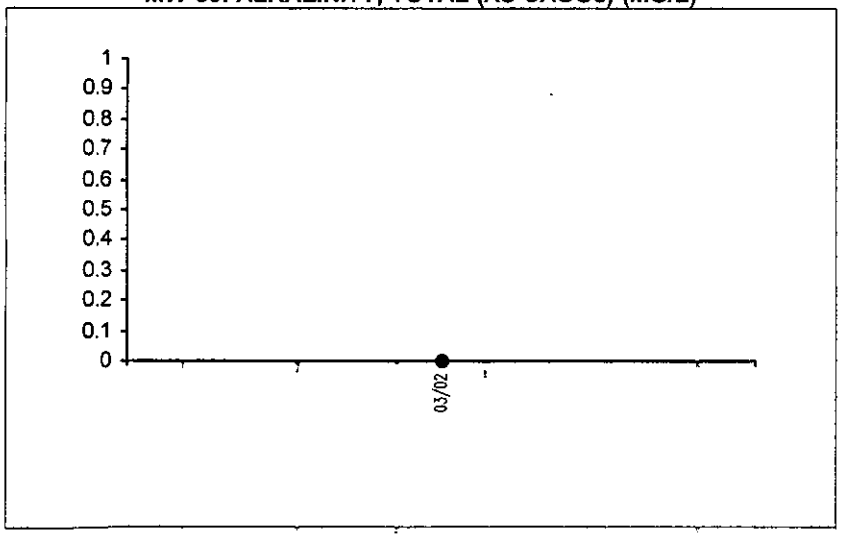
MW-85: 1,1-DICHLOROETHENE (UG/L)



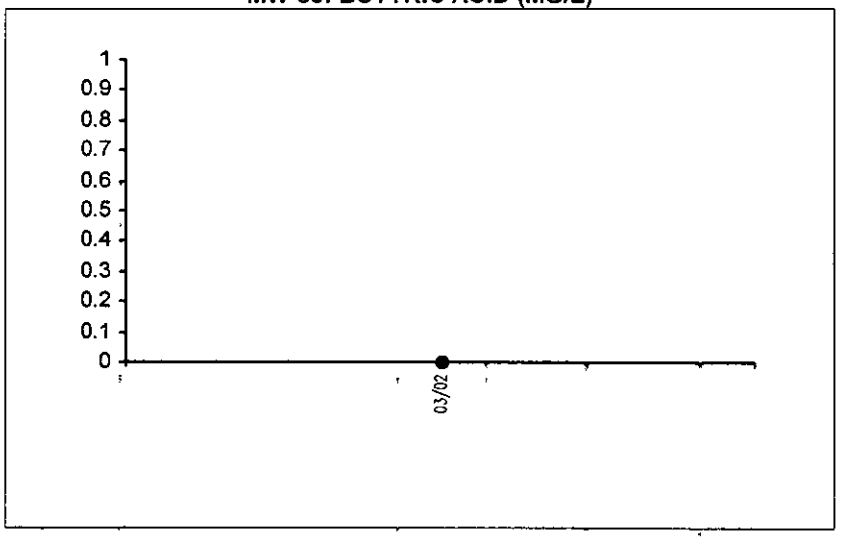
MW-85: ACETIC ACID (MG/L)



MW-85: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-85: BUTYRIC ACID (MG/L)



* Nondetects shown as 0.

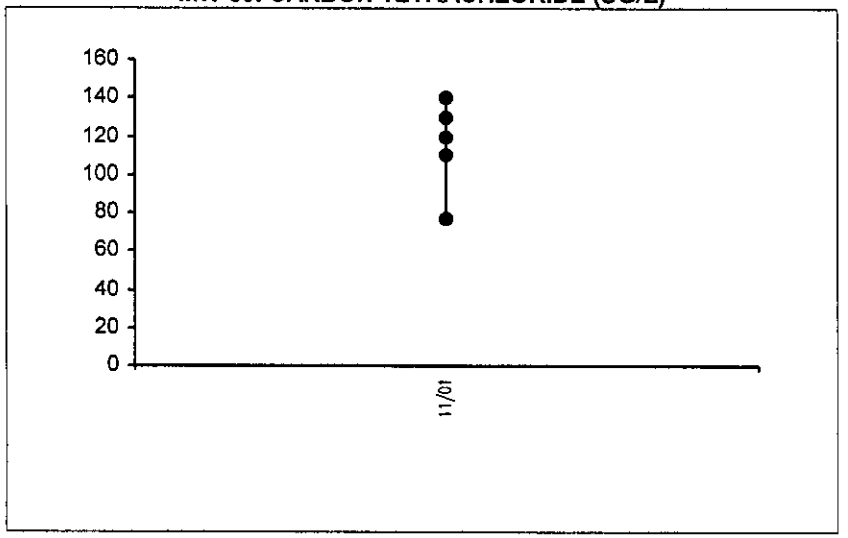
79411142

Location Purpose : Remediation

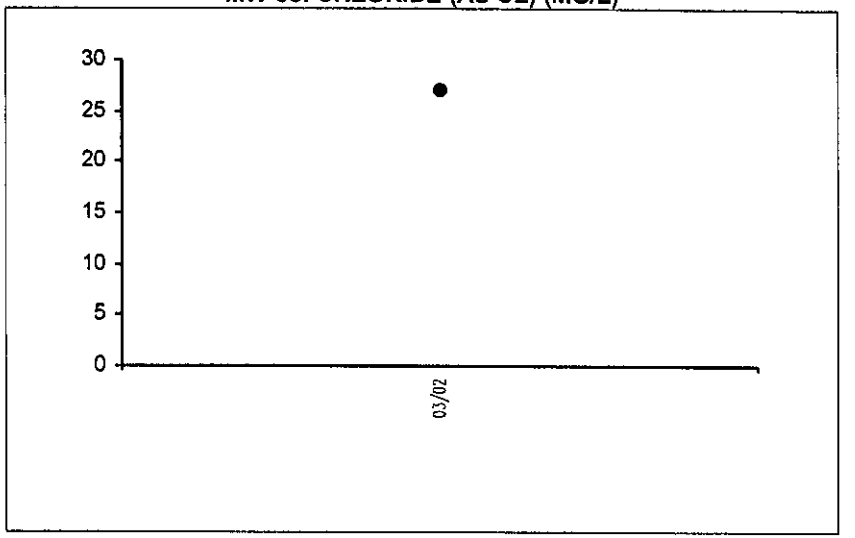
Remediation MW-85

Concentration vs Time

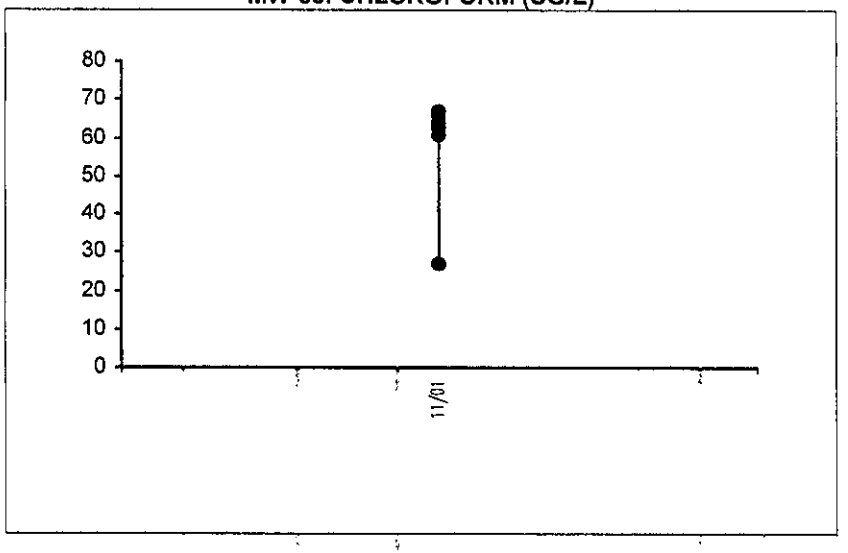
MW-85: CARBON TETRACHLORIDE (UG/L)



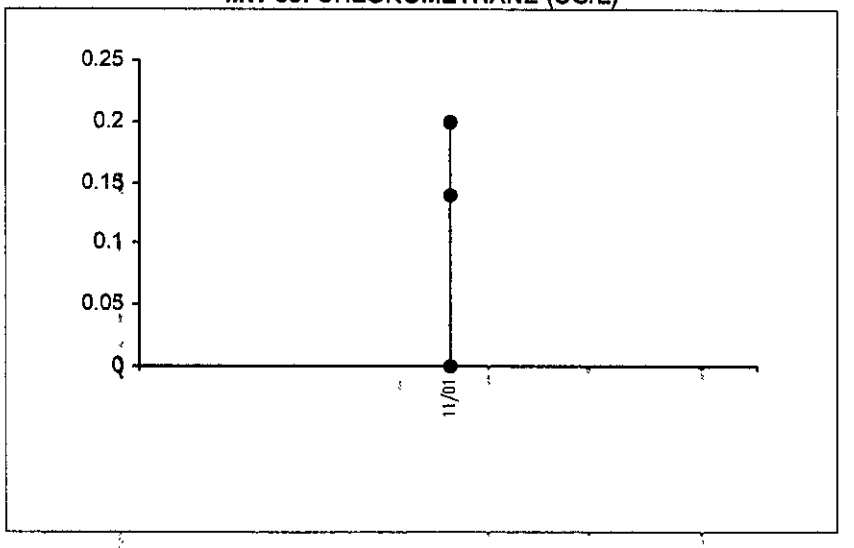
MW-85: CHLORIDE (AS CL) (MG/L)



MW-85: CHLOROFORM (UG/L)



MW-85: CHLOROMETHANE (UG/L)



* Nondetects shown as 0.

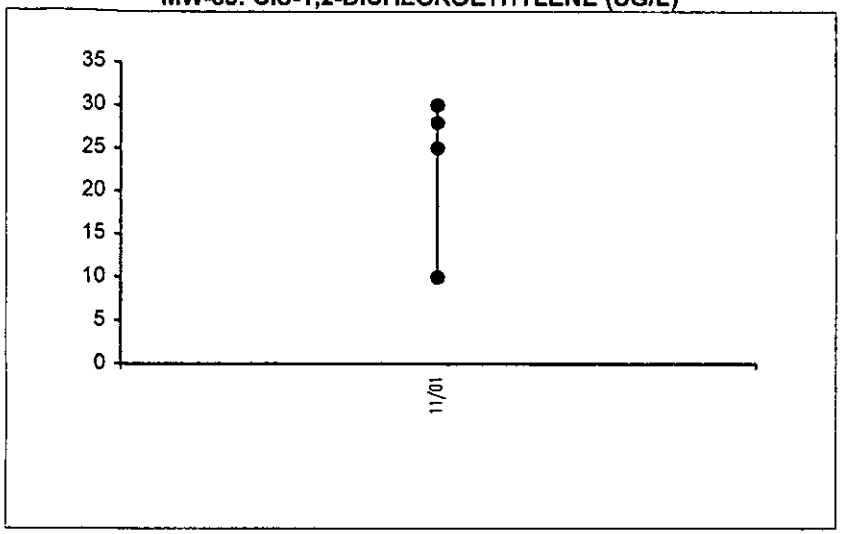
7941143

Location Purpose : Remediation

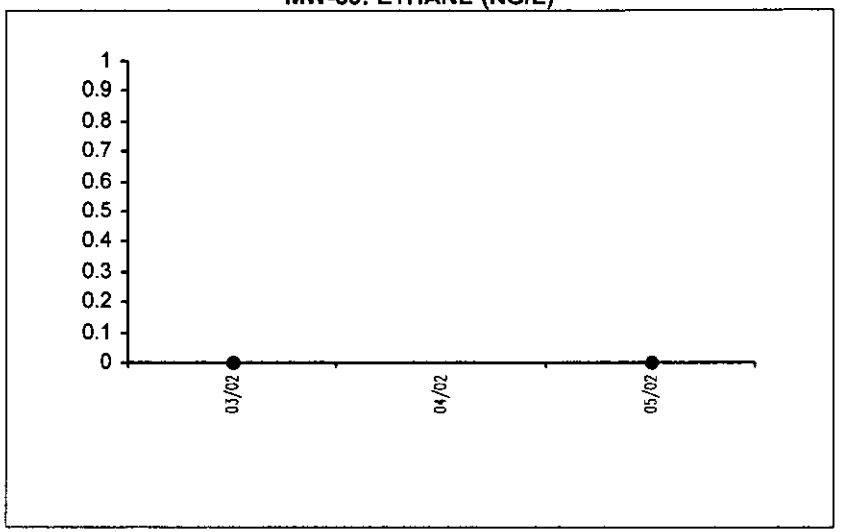
Remediation MW-85

Concentration vs Time

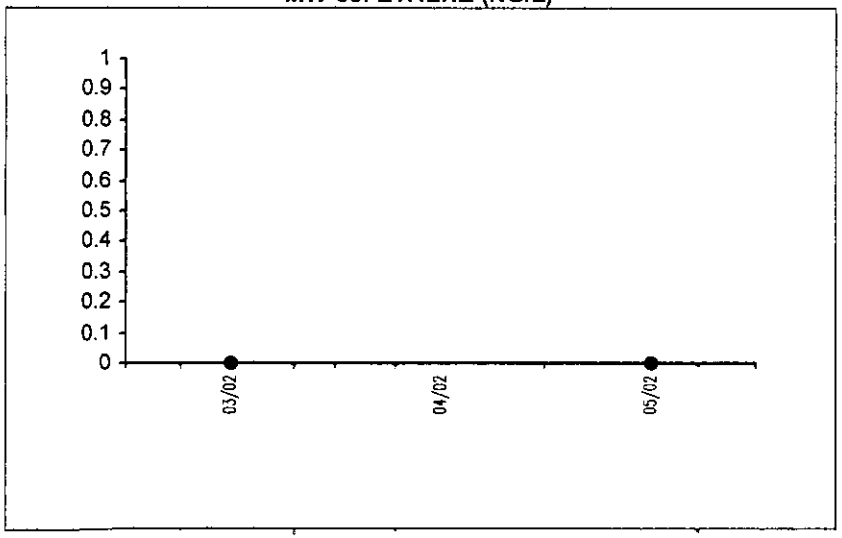
MW-85: CIS-1,2-DICHLOROETHYLENE (UG/L)



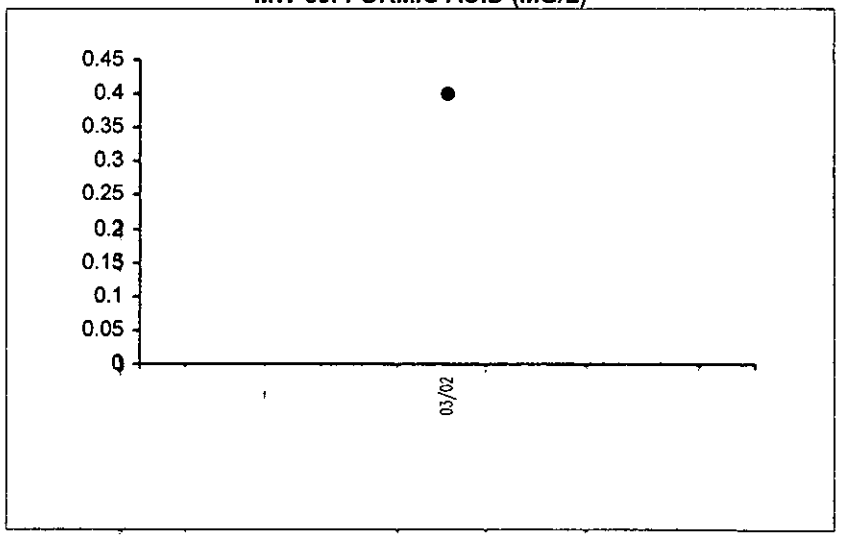
MW-85: ETHANE (NG/L)



MW-85: ETHENE (NG/L)



MW-85: FORMIC ACID (MG/L)



* Nondetects shown as 0.

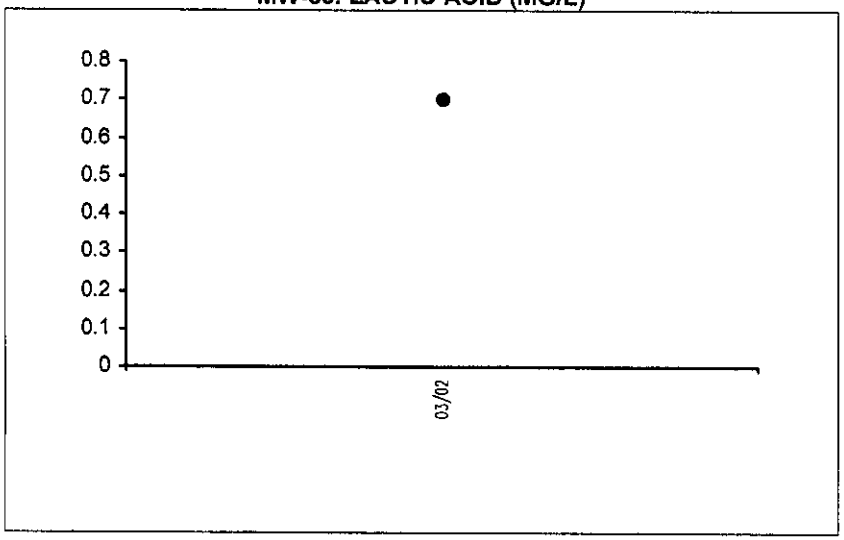
Location Purpose : Remediation

Remediation MW-85

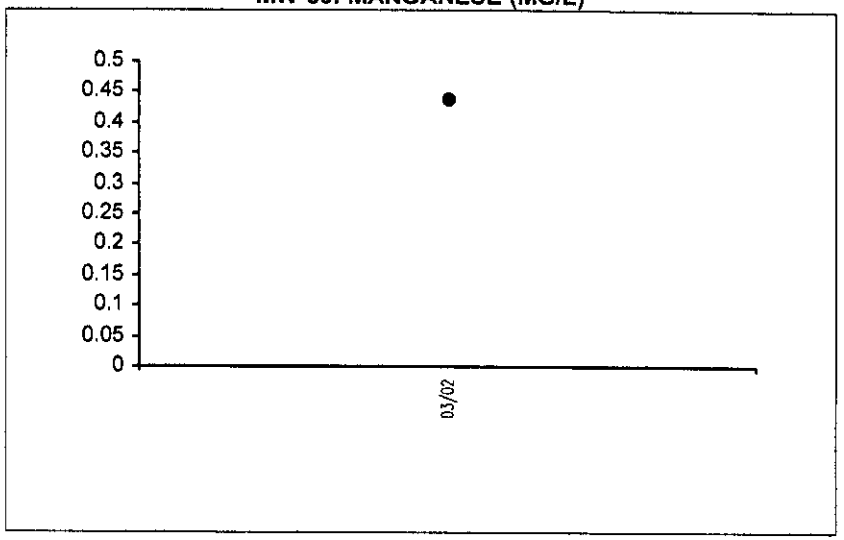
Concentration vs Time

7941145

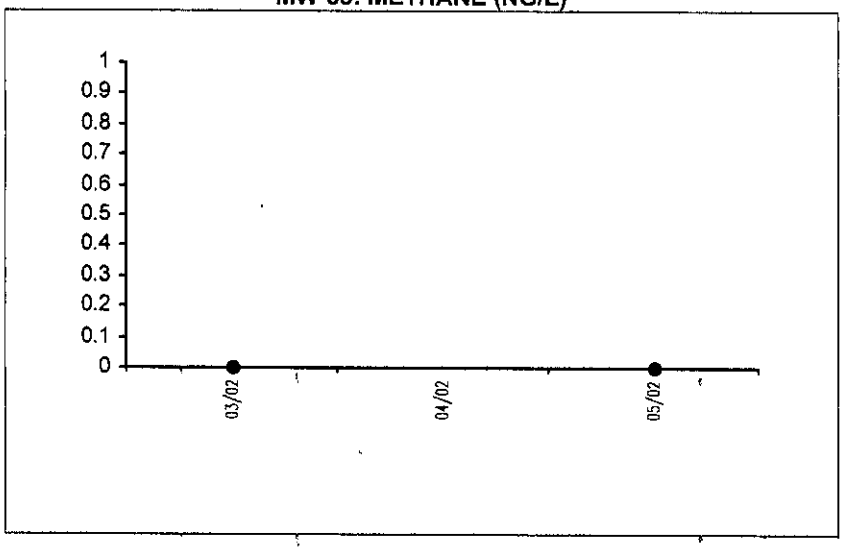
MW-85: LACTIC ACID (MG/L)



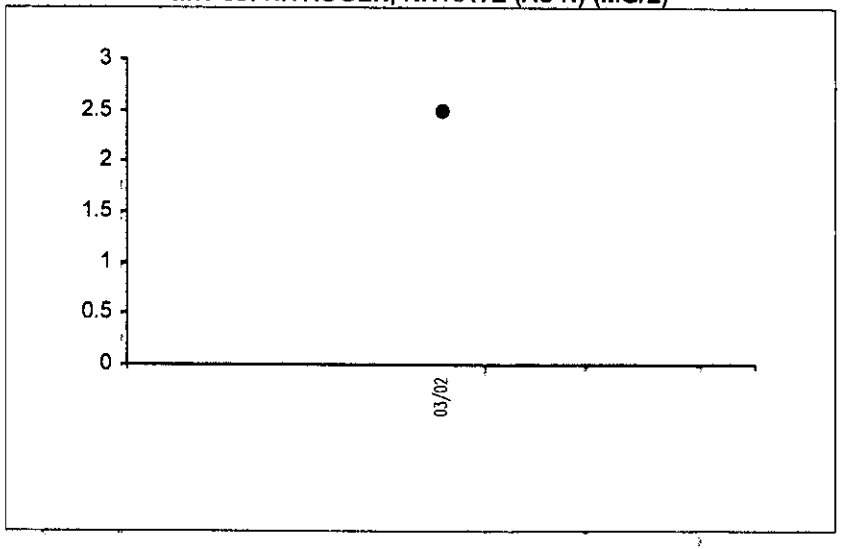
MW-85: MANGANESE (MG/L)



MW-85: METHANE (NG/L)



MW-85: NITROGEN, NITRATE (AS N) (MG/L)



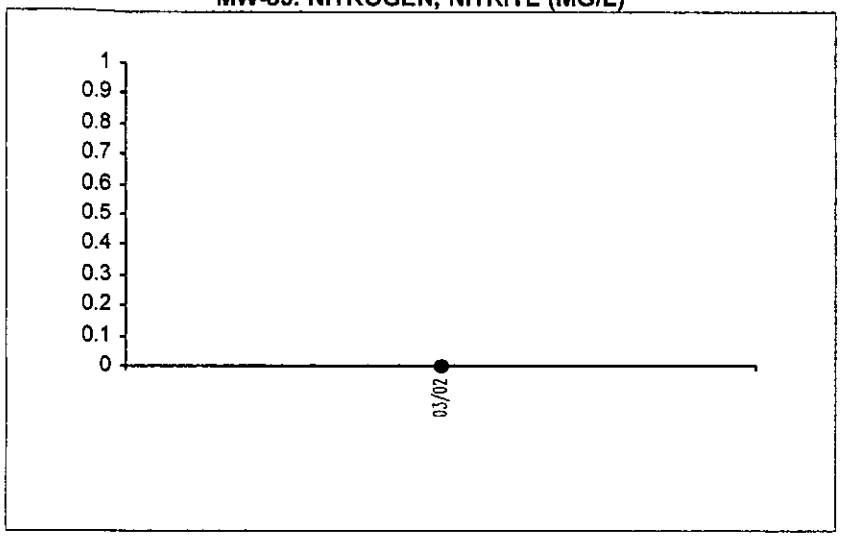
* Nond[illegible]s shown as 0.

Location Purpose : Remediation

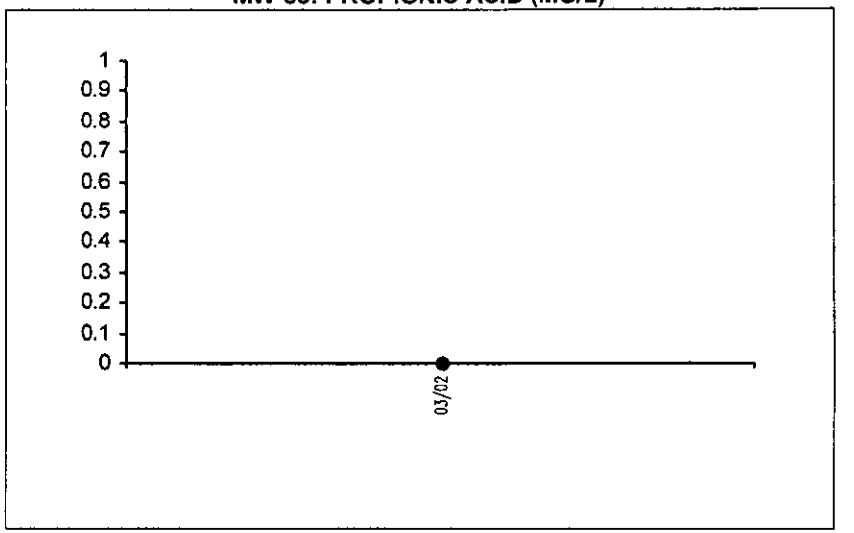
Remediation MW-85

Concentration vs Time

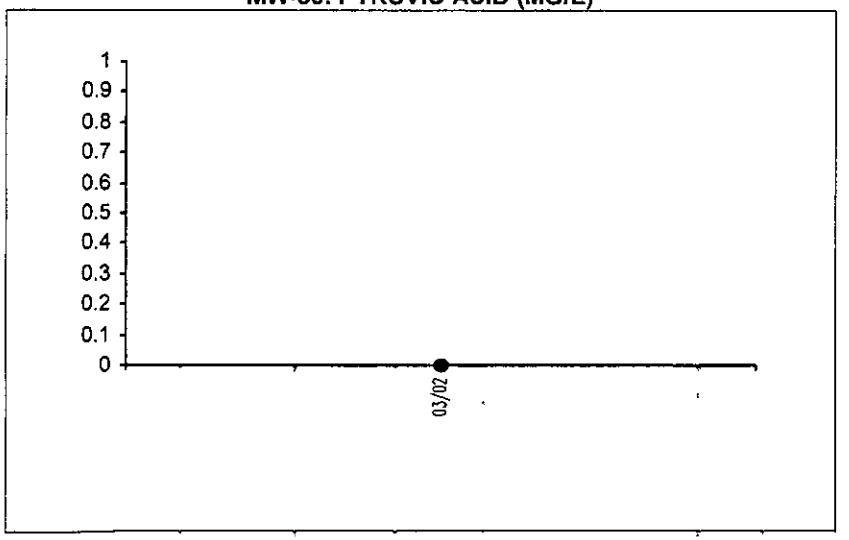
MW-85: NITROGEN, NITRITE (MG/L)



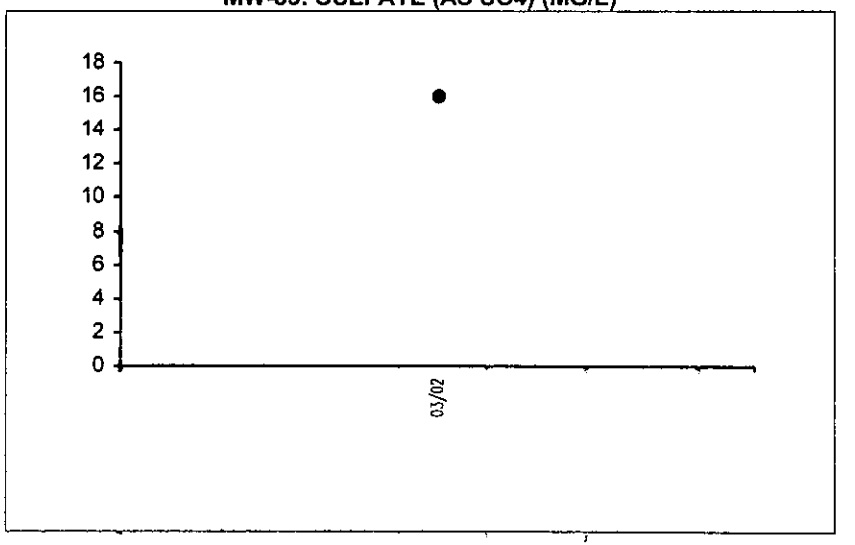
MW-85: PROPIONIC ACID (MG/L)



MW-85: PYRUVIC ACID (MG/L)



MW-85: SULFATE (AS SO4) (MG/L)



* Nondetects shown as 0.

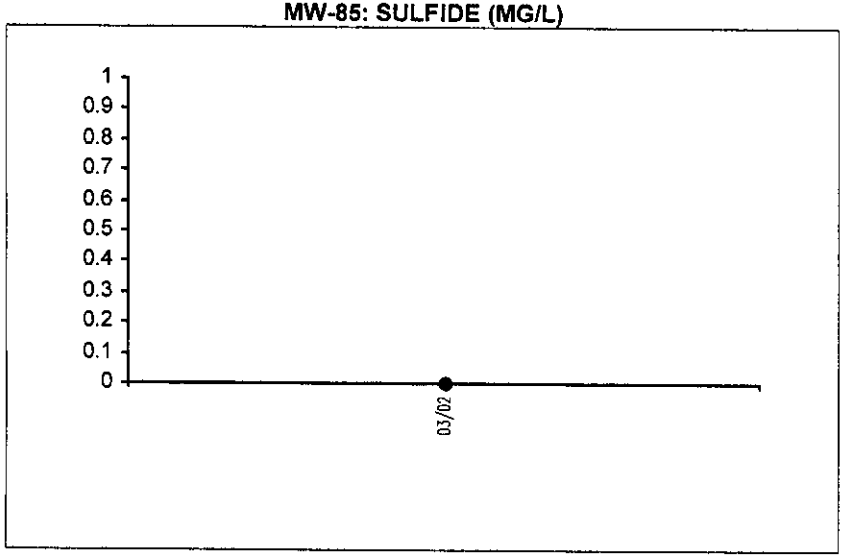
7941146

Location Purpose : Remediation

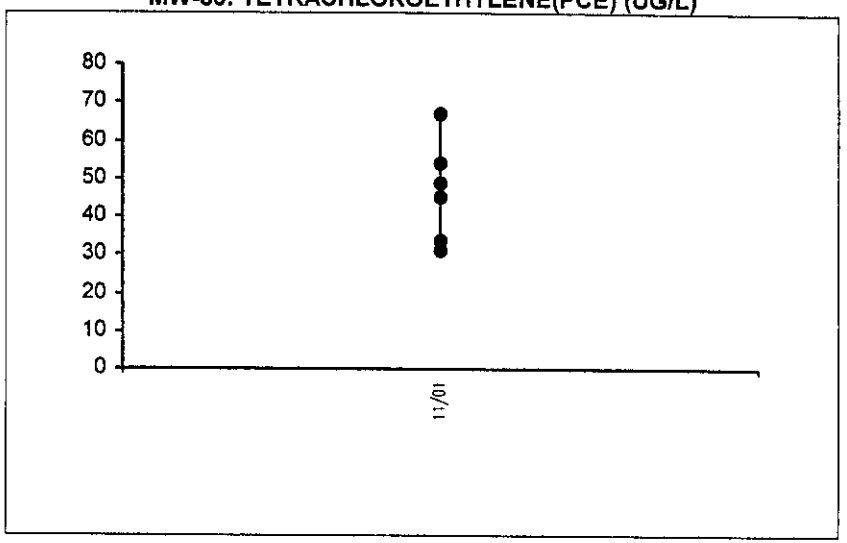
Remediation MW-85

Concentration vs Time

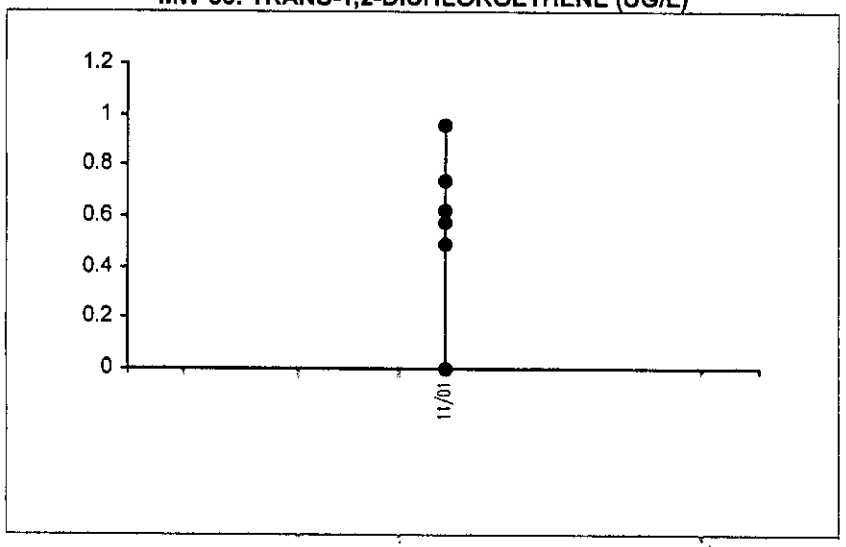
MW-85: SULFIDE (MG/L)



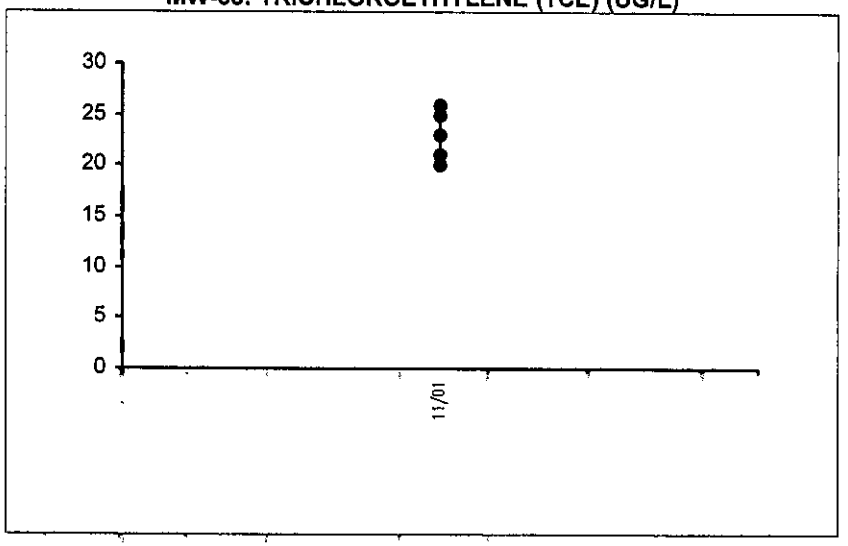
MW-85: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-85: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-85: TRICHLOROETHYLENE (TCE) (UG/L)



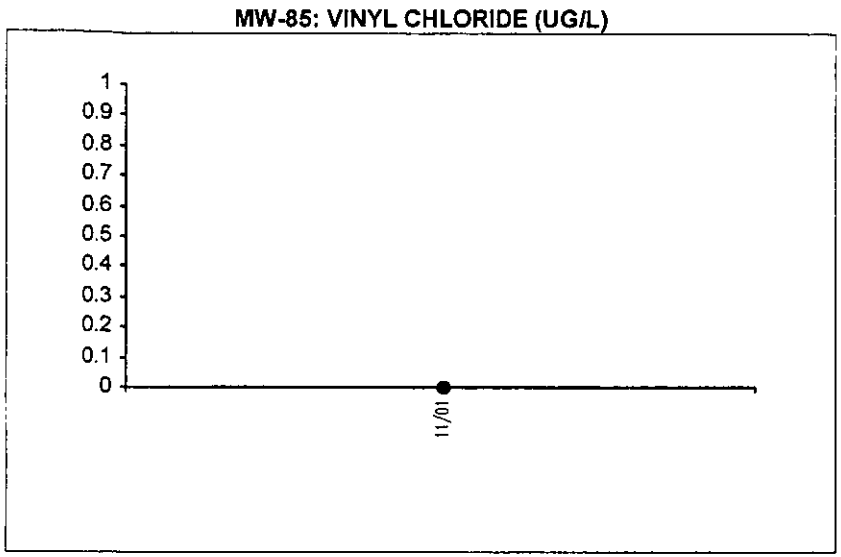
* Nond[illegible]s shown as 0.

7941147

Location Purpose : Remediation

Remediation MW-85

Concentration vs Time



* Nondetects shown as 0.

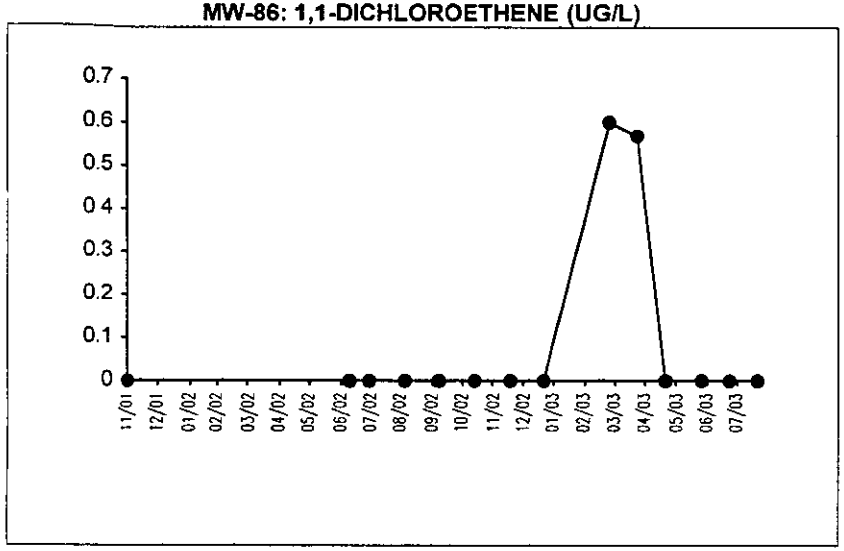
7941148

Location Purpose : Remediation

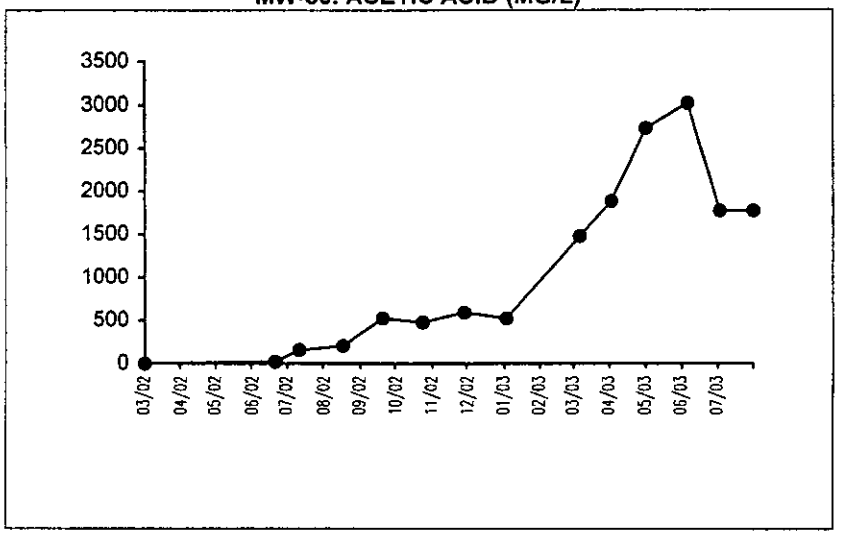
Remediation MW-86

Concentration vs Time

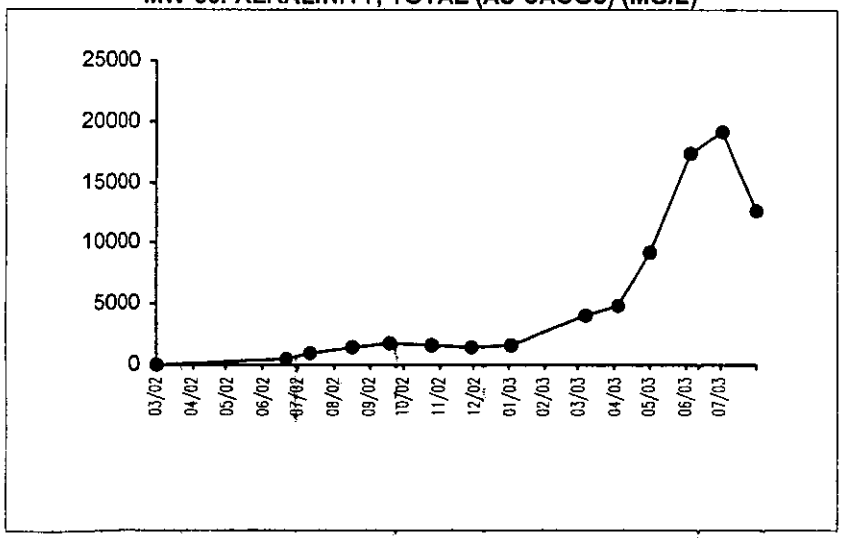
MW-86: 1,1-DICHLOROETHENE (UG/L)



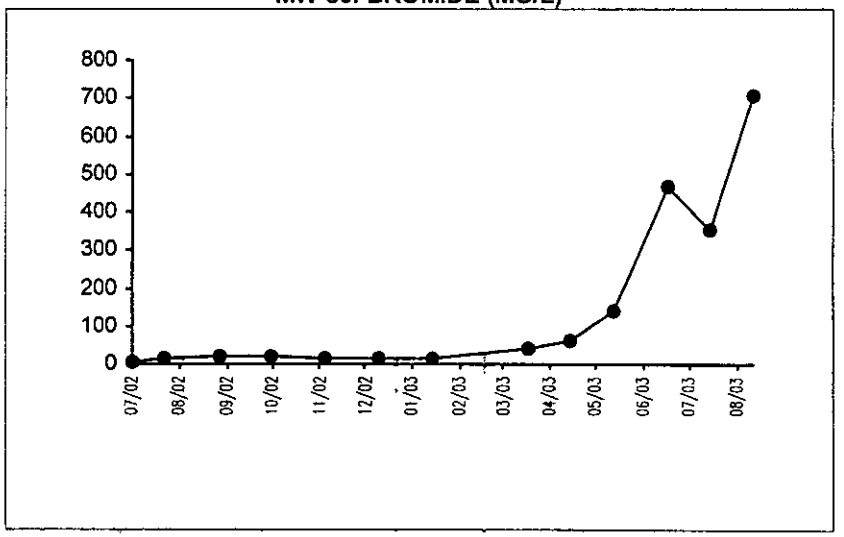
MW-86: ACETIC ACID (MG/L)



MW-86: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-86: BROMIDE (MG/L)



* Nondetects shown as 0.

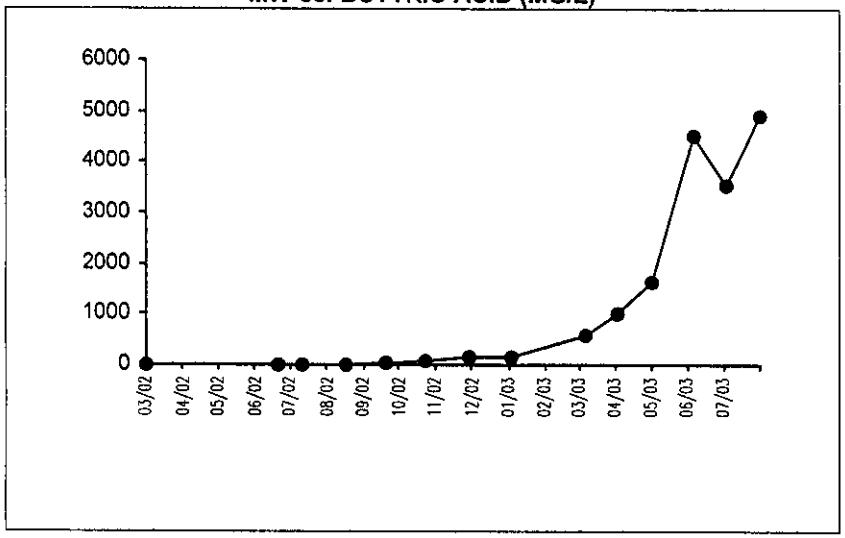
7941149

Location Purpose : Remediation

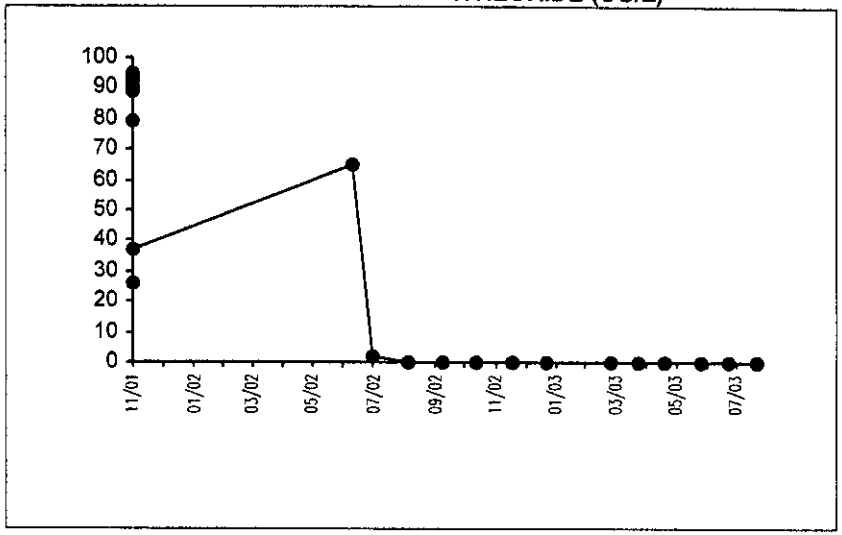
Remediation MW-86

Concentration vs Time

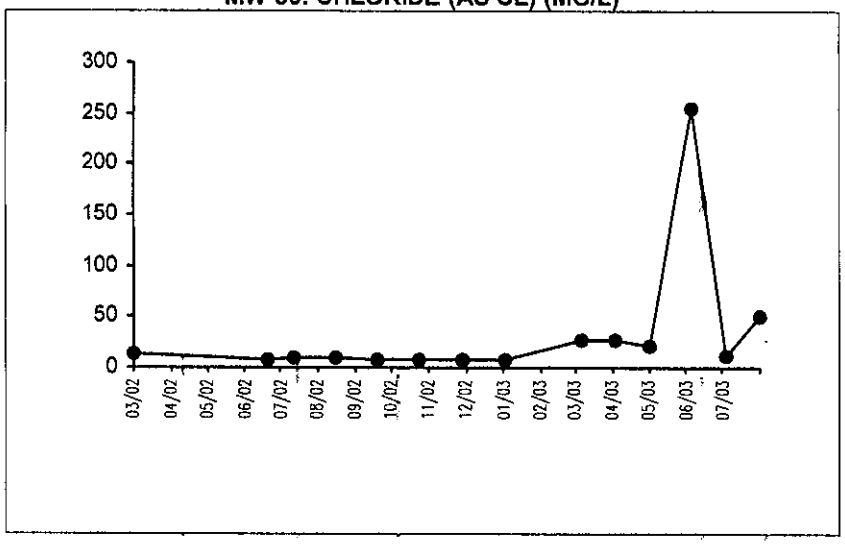
MW-86: BUTYRIC ACID (MG/L)



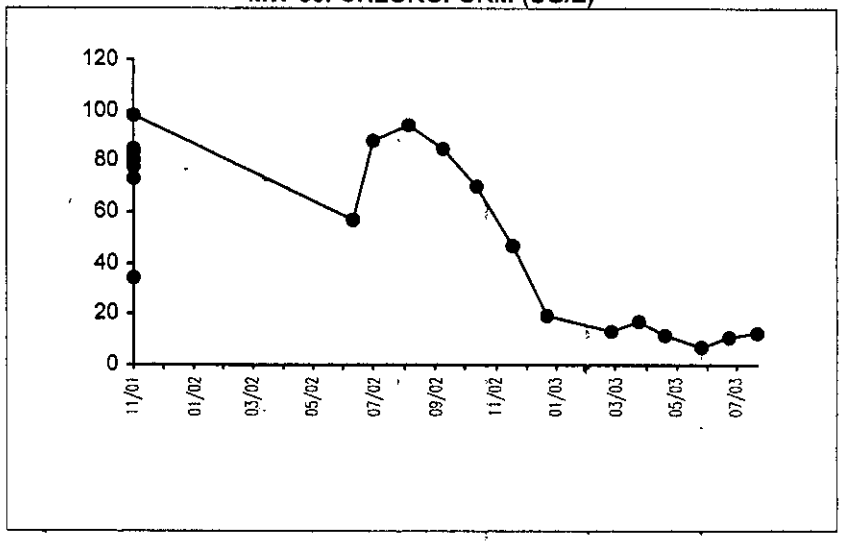
MW-86: CARBON TETRACHLORIDE (UG/L)



MW-86: CHLORIDE (AS CL) (MG/L)



MW-86: CHLOROFORM (UG/L)



* Nondetects shown as 0.

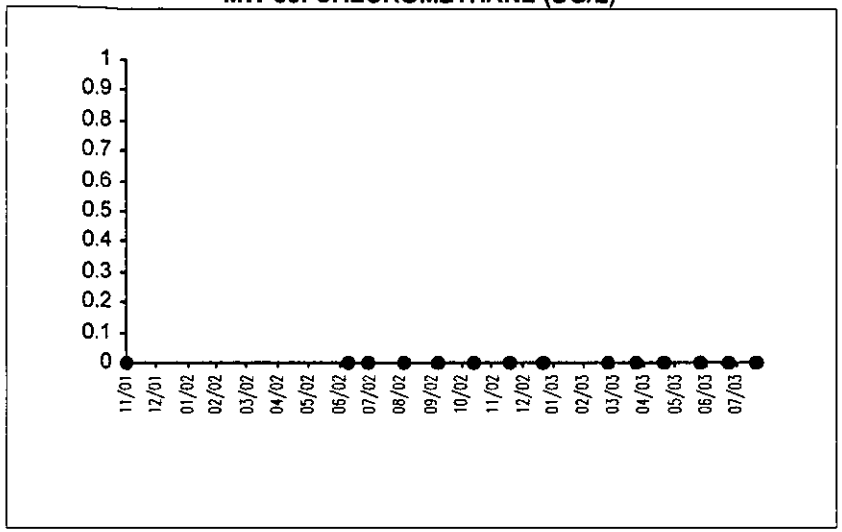
7941150

Location Purpose : Remediation

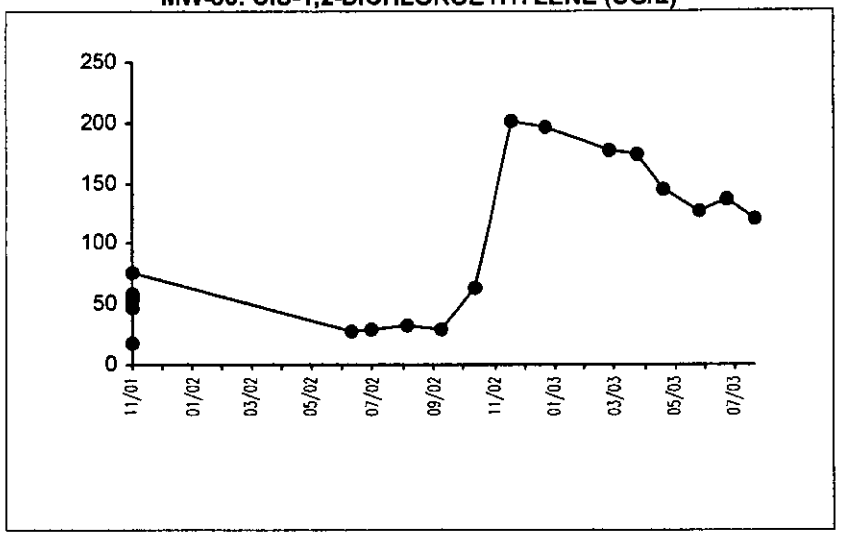
Remediation MW-86

Concentration vs Time

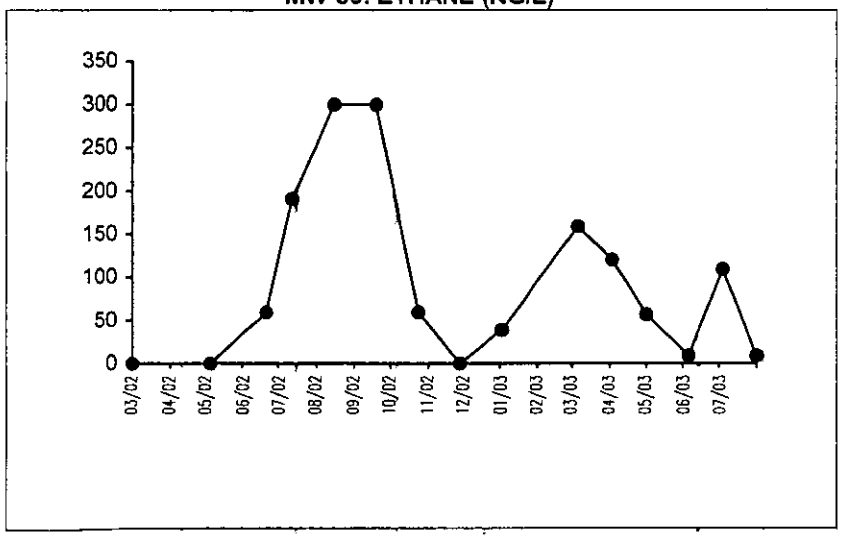
MW-86: CHLOROMETHANE (UG/L)



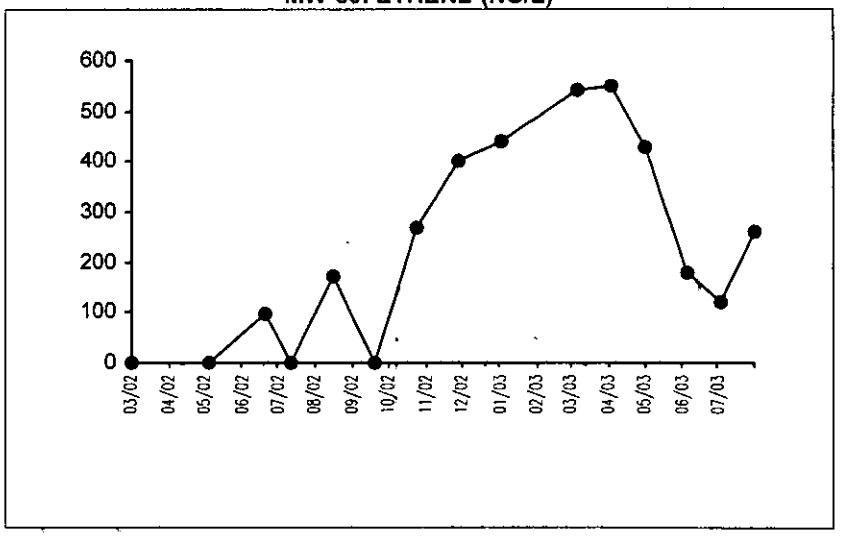
MW-86: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-86: ETHANE (NG/L)



MW-86: ETHENE (NG/L)



* Nondetects shown as 0.

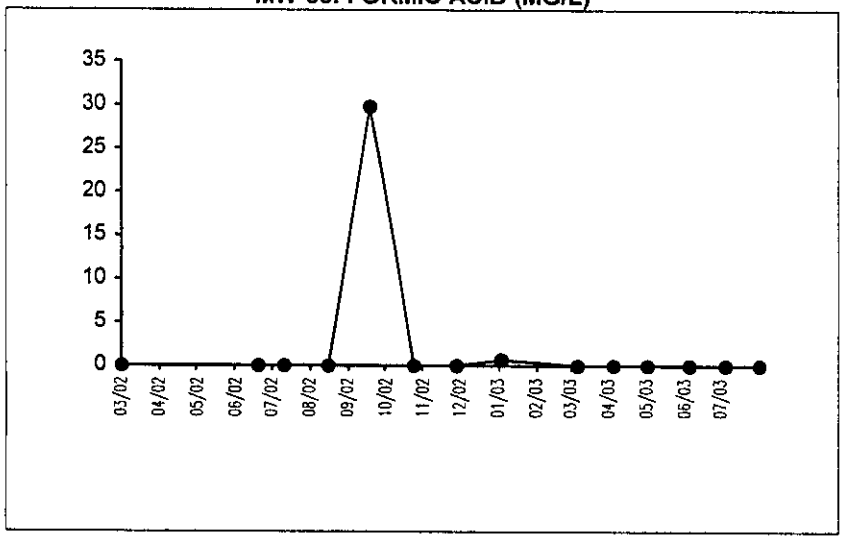
7941151

Location Purpose : Remediation

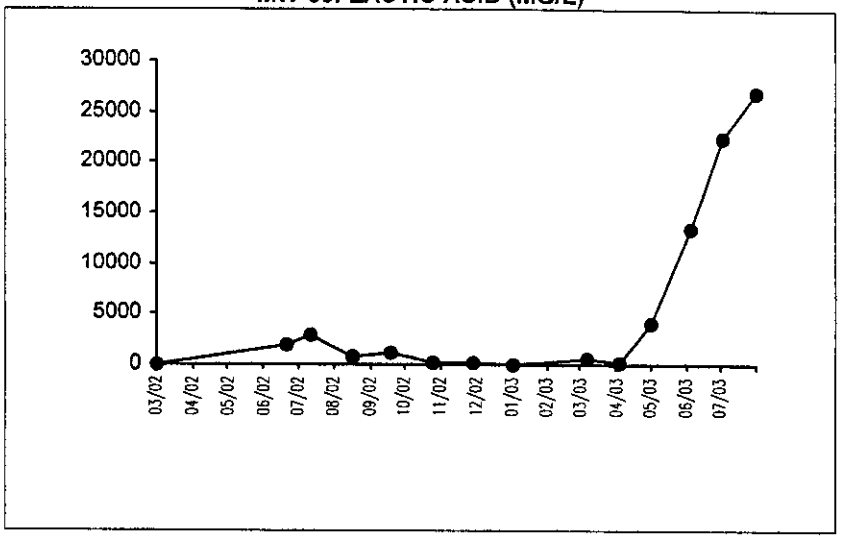
Remediation MW-86

Concentration vs Time

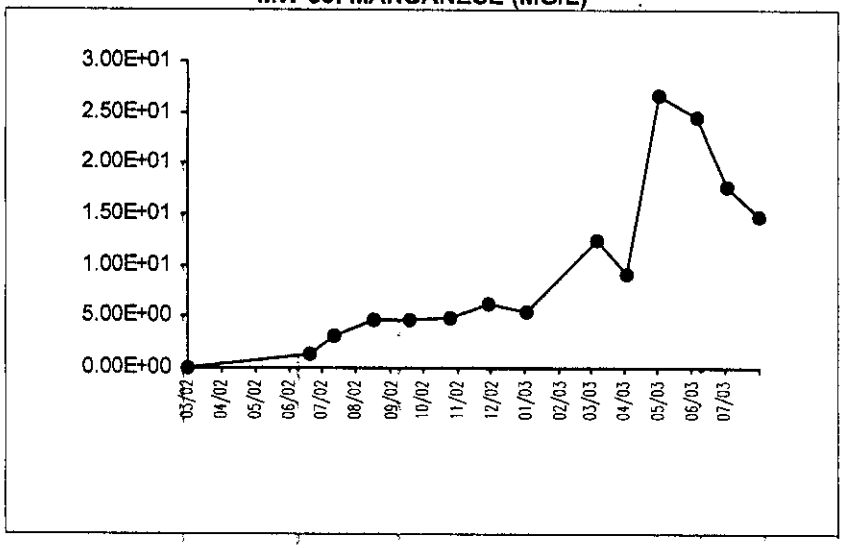
MW-86: FORMIC ACID (MG/L)



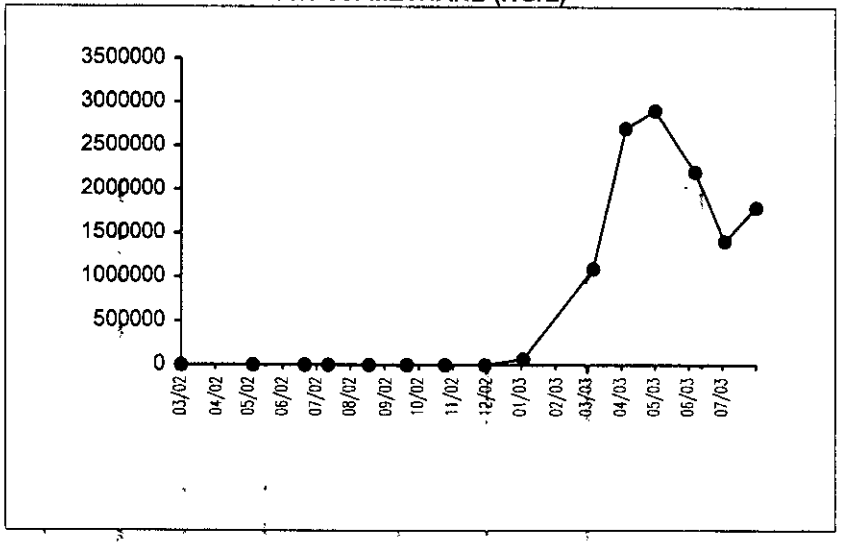
MW-86: LACTIC ACID (MG/L)



MW-86: MANGANESE (MG/L)



MW-86: METHANE (NG/L)



* Nondetects shown as 0.

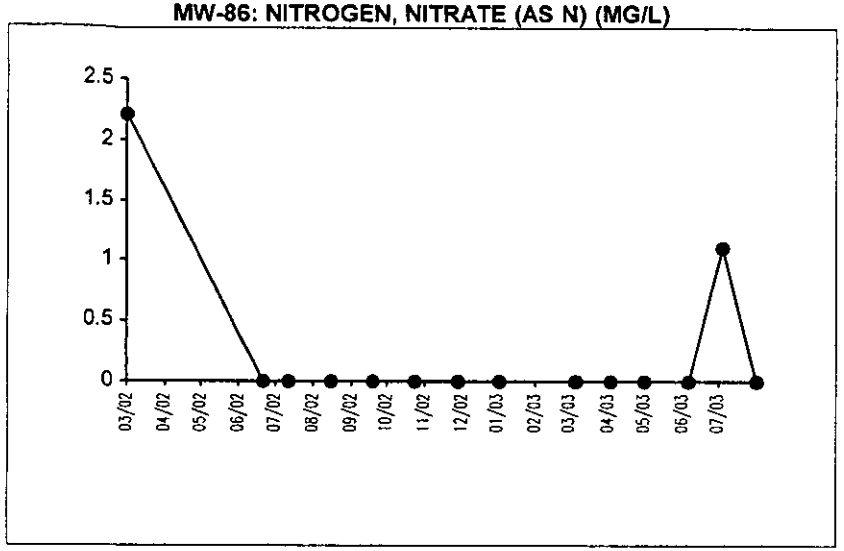
7941152

Location Purpose : Remediation

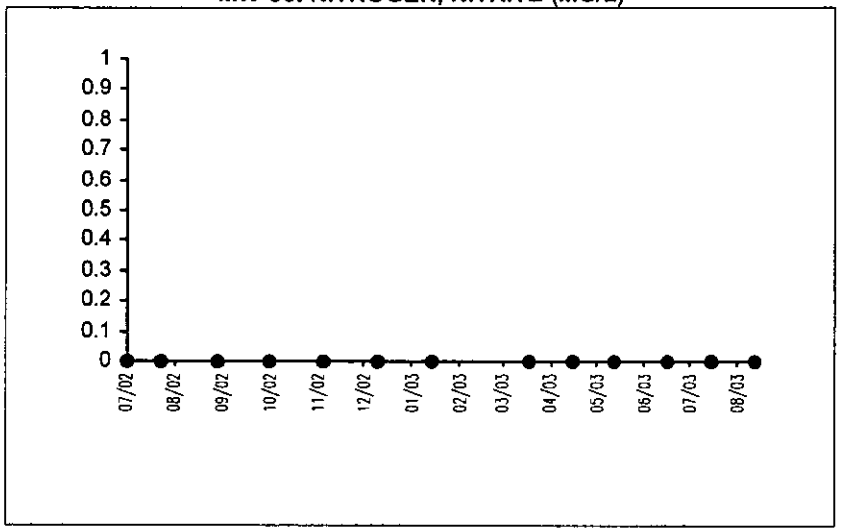
Remediation MW-86

Concentration vs Time

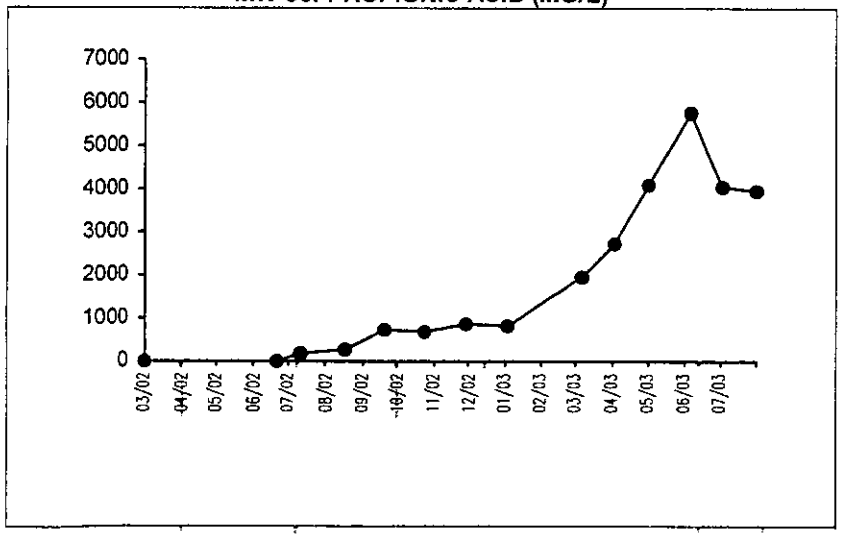
MW-86: NITROGEN, NITRATE (AS N) (MG/L)



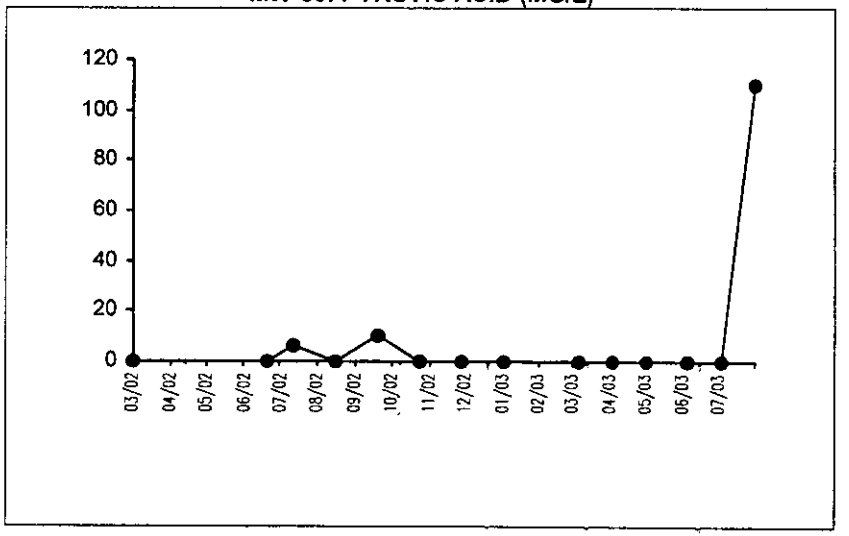
MW-86: NITROGEN, NITRITE (MG/L)



MW-86: PROPIONIC ACID (MG/L)



MW-86: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

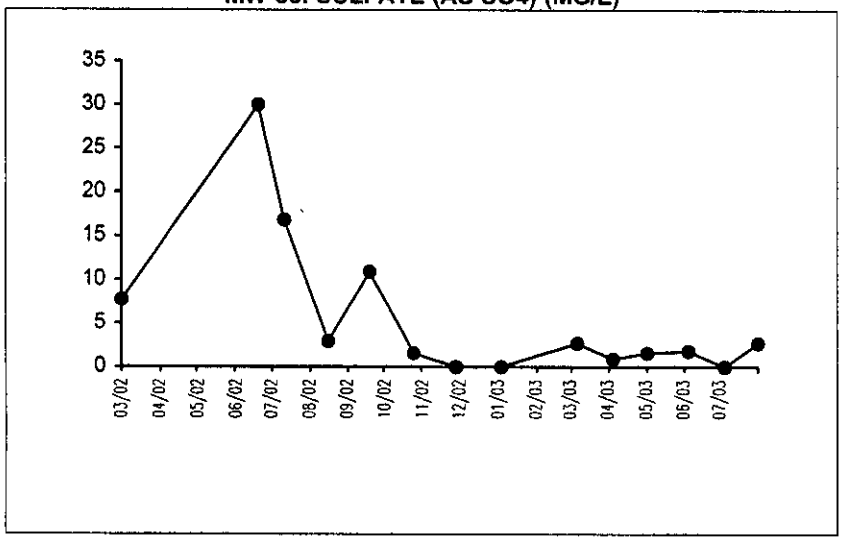
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Location Purpose : Remediation

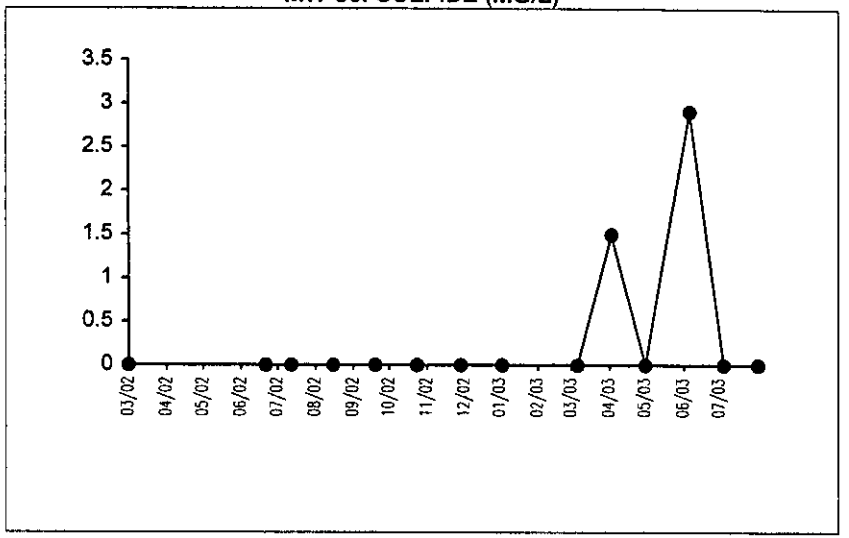
Remediation MW-86

Concentration vs Time

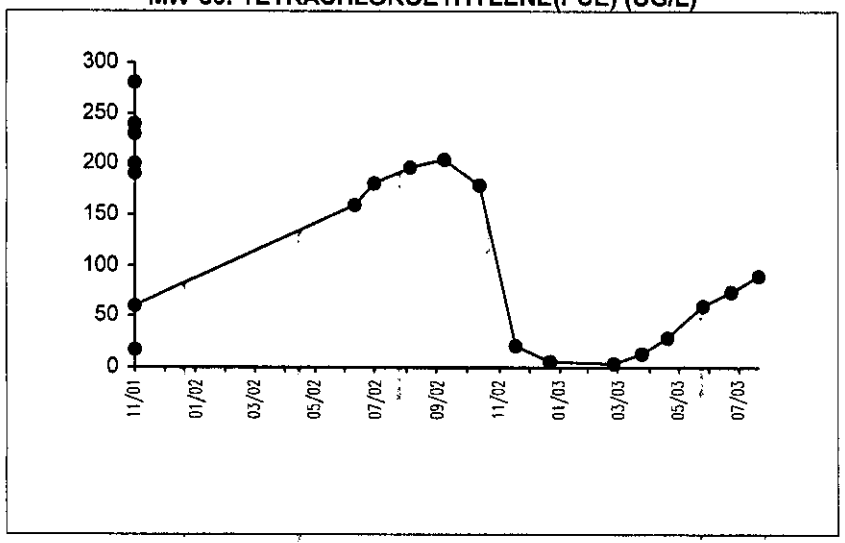
MW-86: SULFATE (AS SO4) (MG/L)



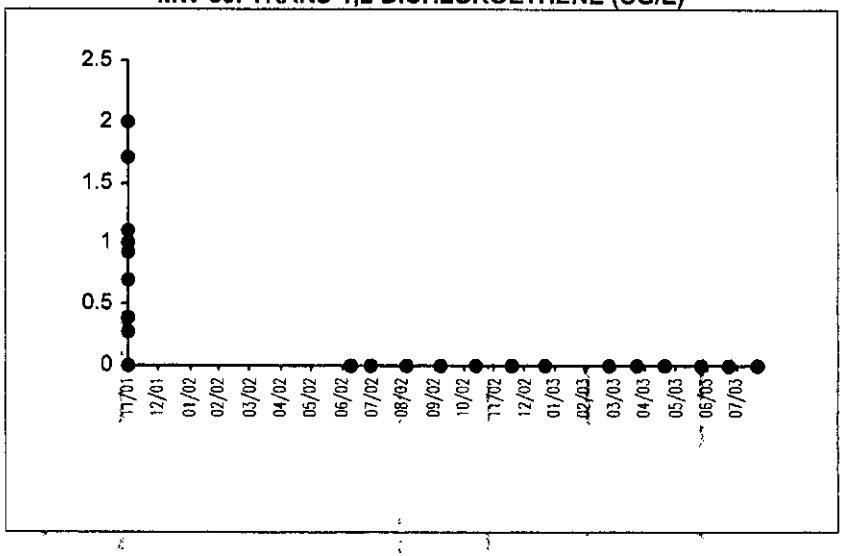
MW-86: SULFIDE (MG/L)



MW-86: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-86: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

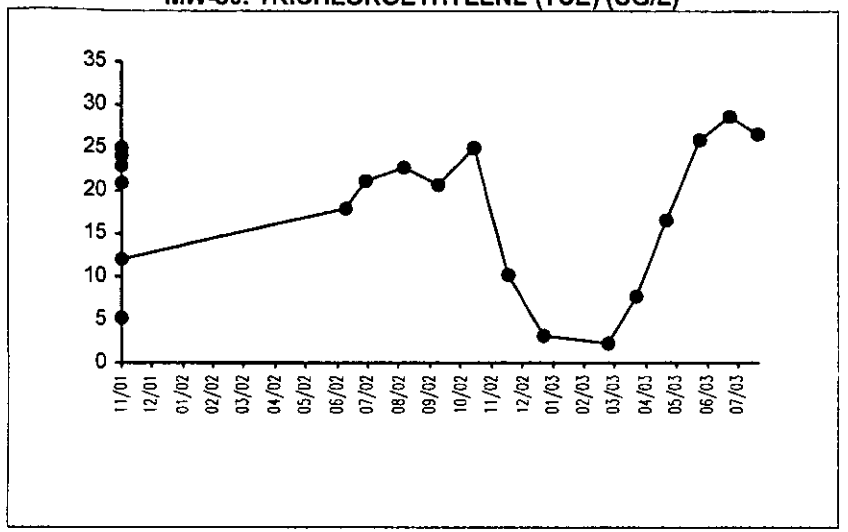
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Location Purpose : Remediation

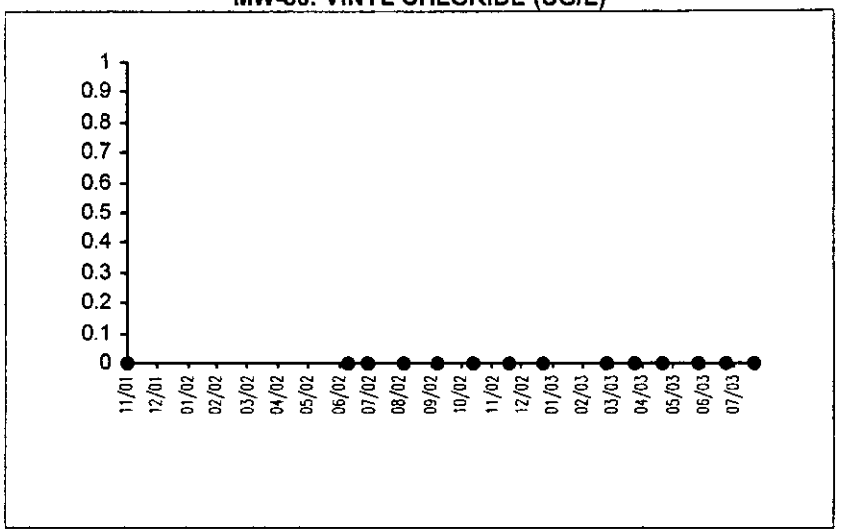
Remediation MW-86

Concentration vs Time

MW-86: TRICHLOROETHYLENE (TCE) (UG/L)



MW-86: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

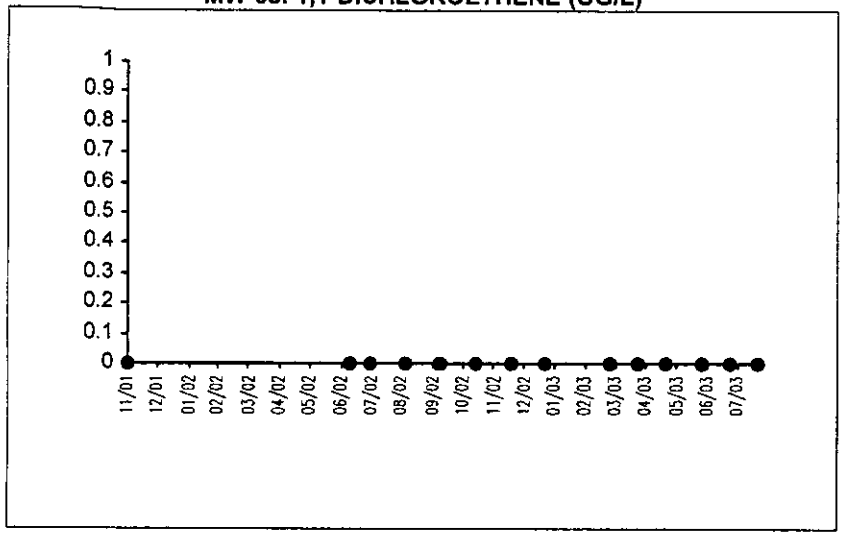
7941155

Location Purpose : Remediation

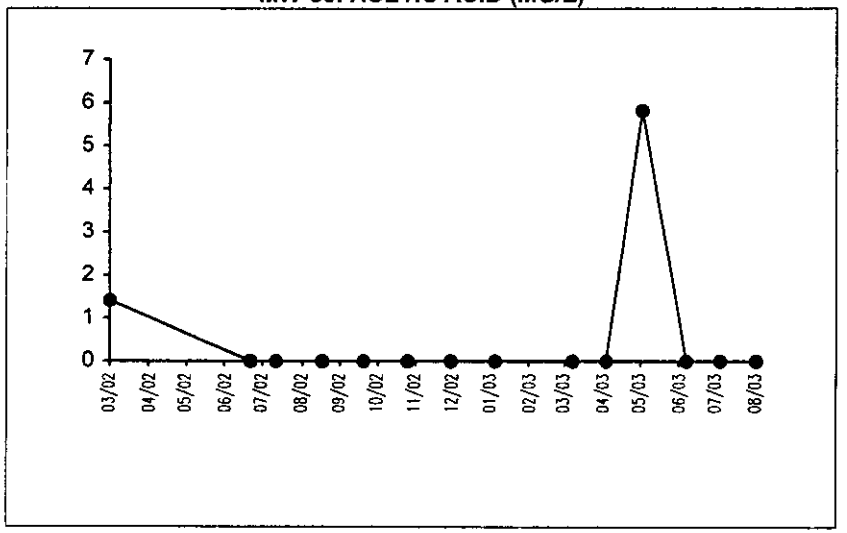
Remediation MW-88

Concentration vs Time

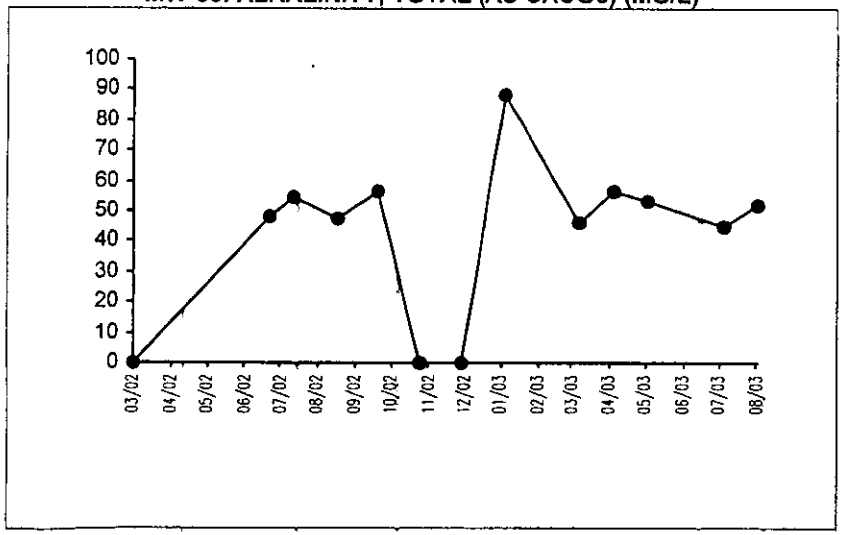
MW-88: 1,1-DICHLOROETHENE (UG/L)



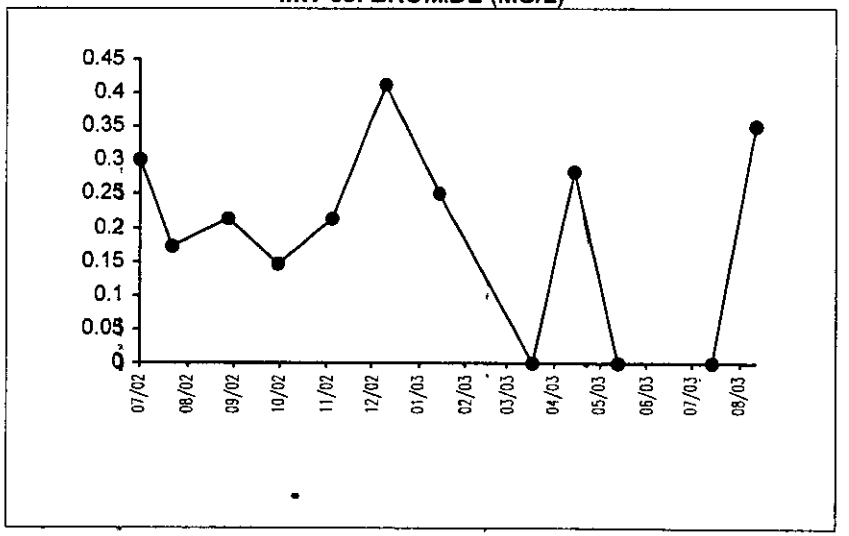
MW-88: ACETIC ACID (MG/L)



MW-88: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-88: BROMIDE (MG/L)



* Nondetects shown as 0.

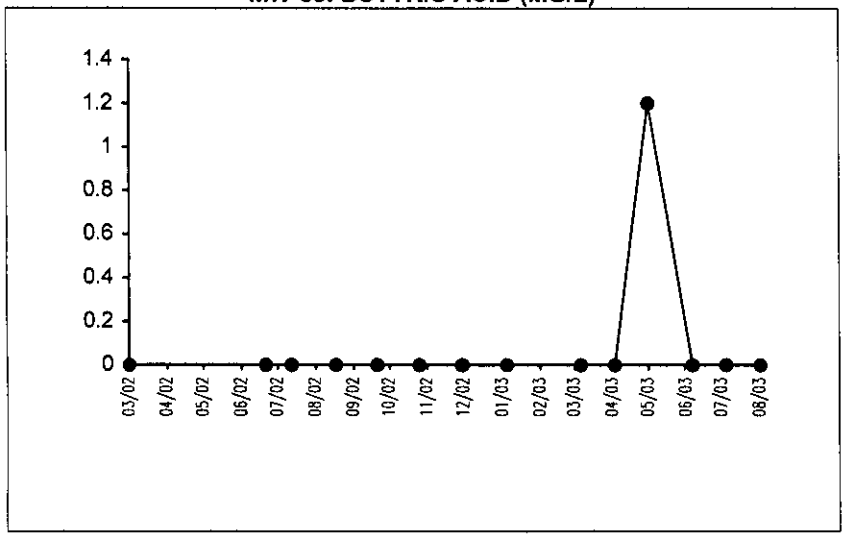
7941156

Location Purpose : Remediation

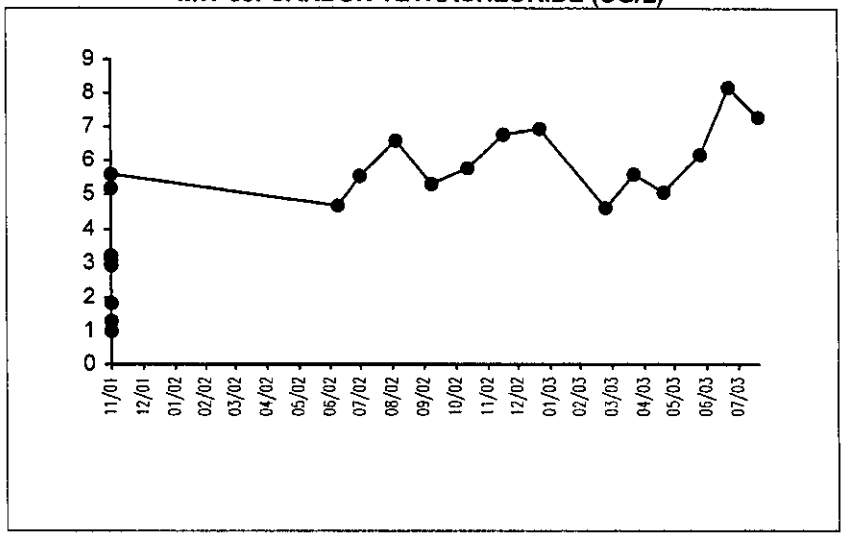
Remediation MW-88

Concentration vs Time

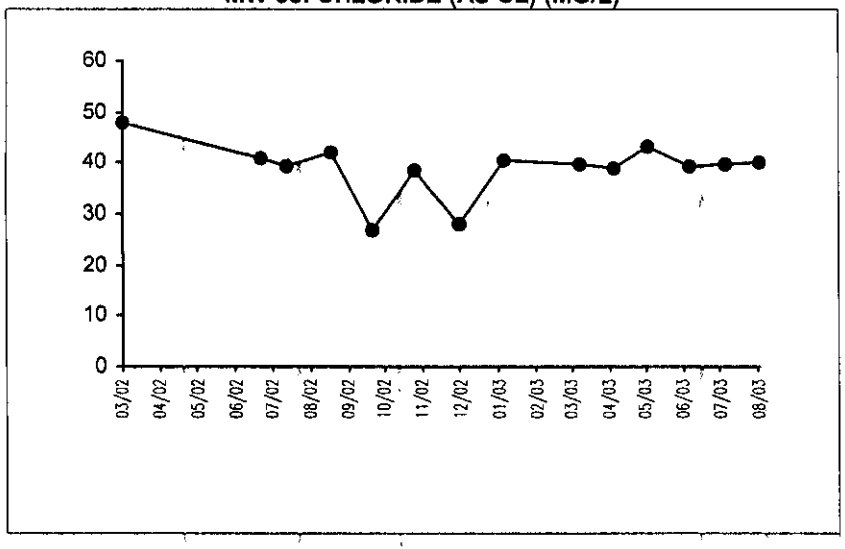
MW-88: BUTYRIC ACID (MG/L)



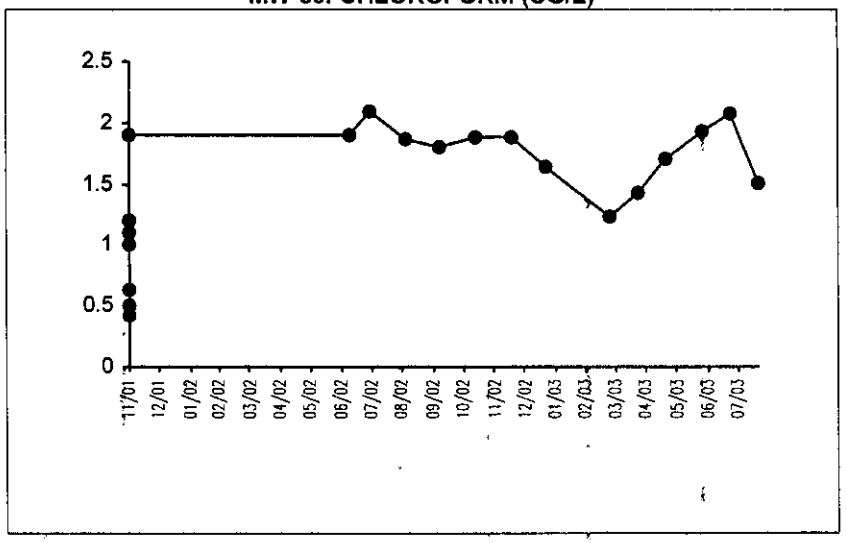
MW-88: CARBON TETRACHLORIDE (UG/L)



MW-88: CHLORIDE (AS CL) (MG/L)



MW-88: CHLOROFORM (UG/L)



* Nond[illegible]ts shown as 0.

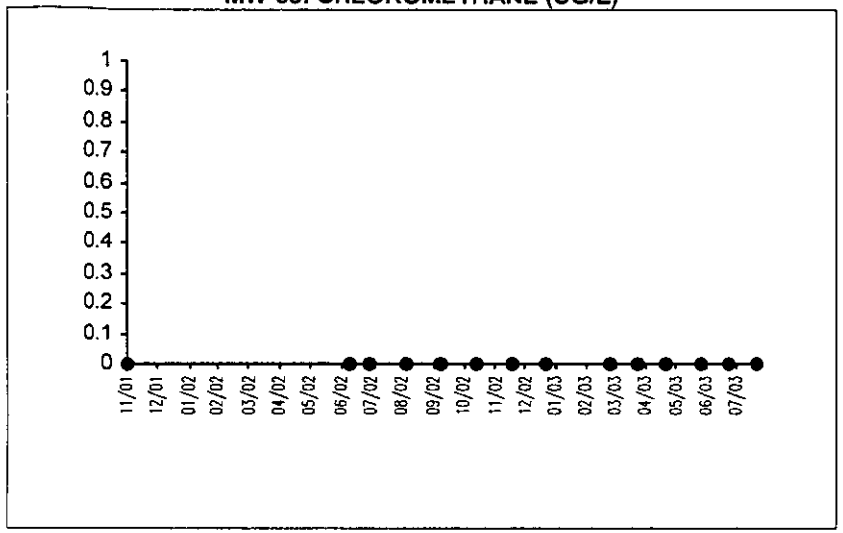
7941157

Location Purpose : Remediation

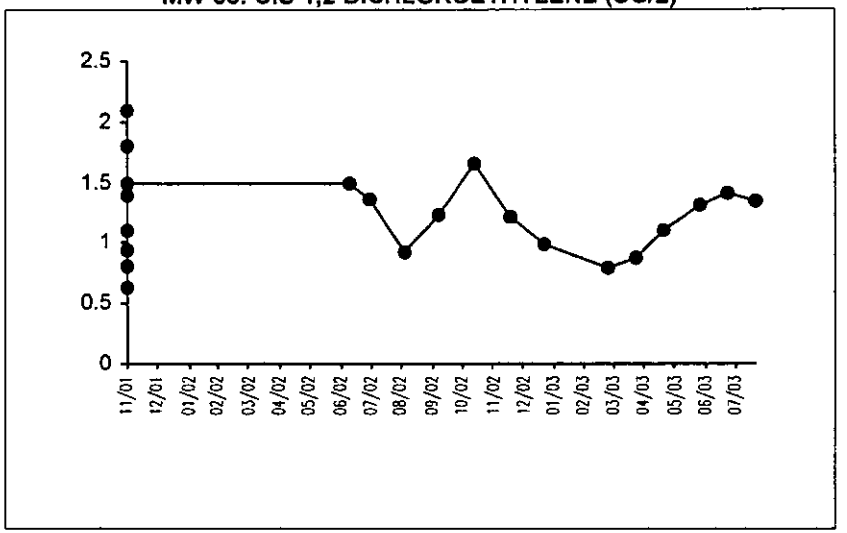
Remediation MW-88

Concentration vs Time

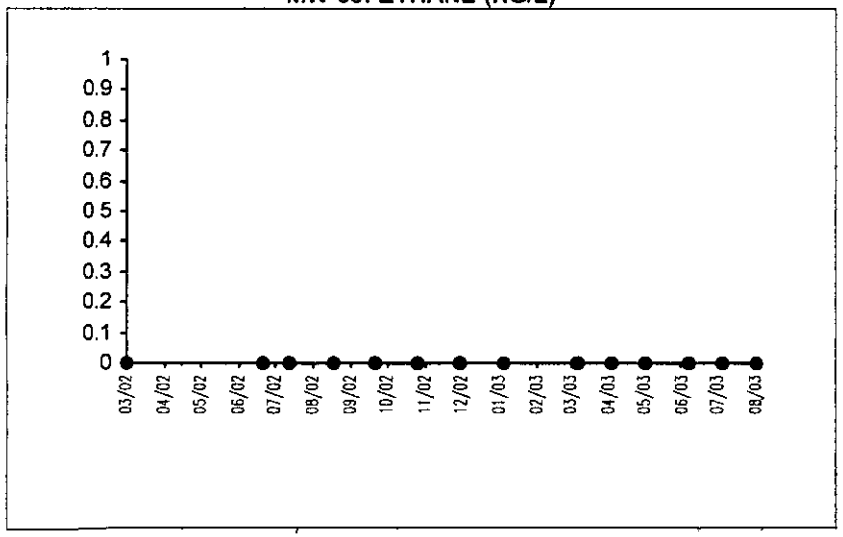
MW-88: CHLOROMETHANE (UG/L)



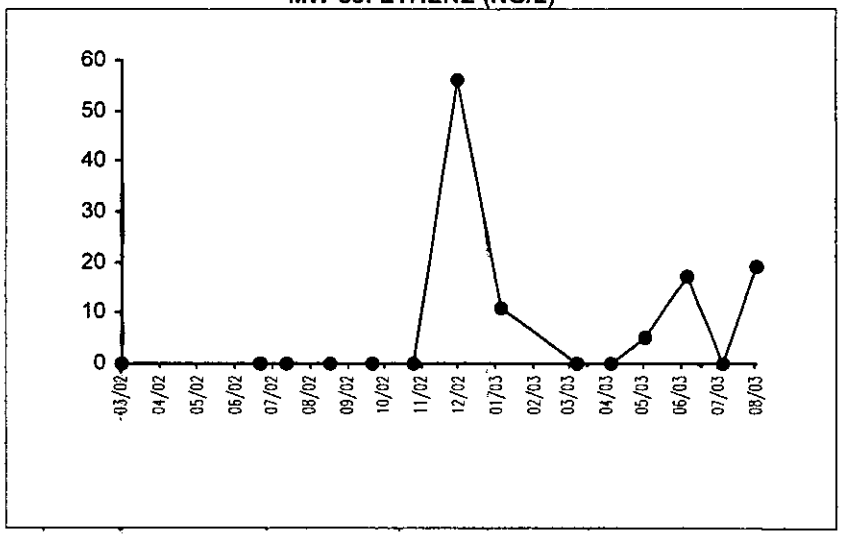
MW-88: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-88: ETHANE (NG/L)



MW-88: ETHENE (NG/L)



* Nondetects shown as 0.

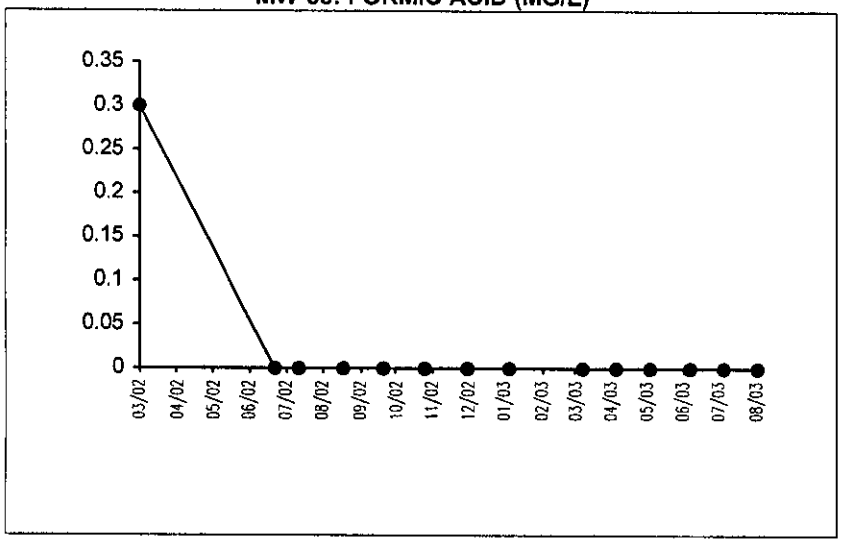
79411158

Location Purpose : Remediation

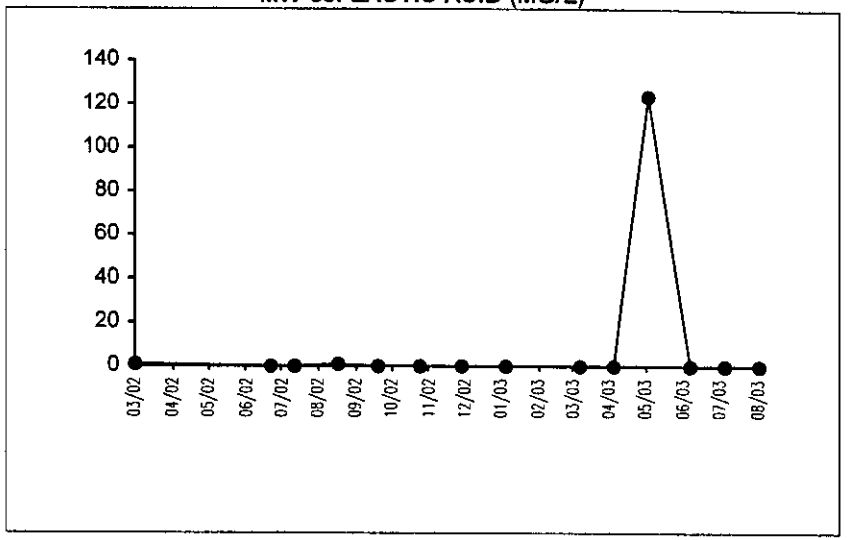
Remediation MW-88

Concentration vs Time

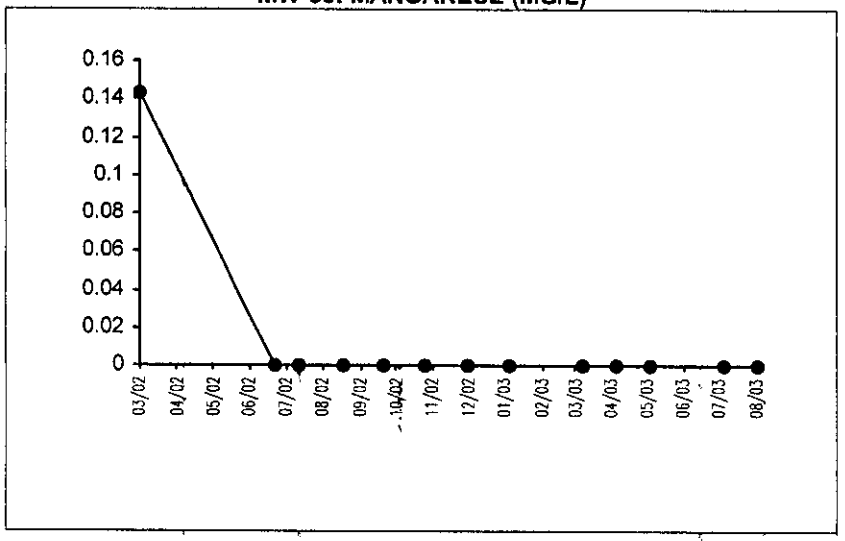
MW-88: FORMIC ACID (MG/L)



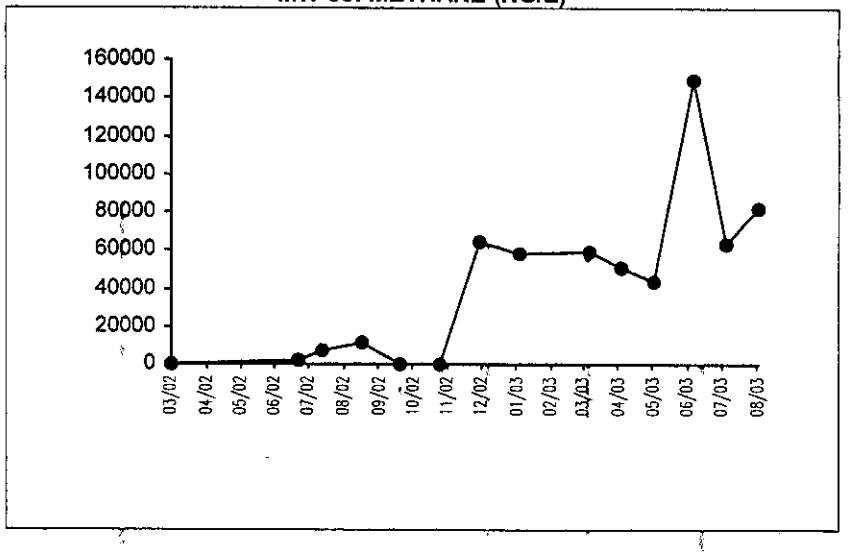
MW-88: LACTIC ACID (MG/L)



MW-88: MANGANESE (MG/L)



MW-88: METHANE (NG/L)



* Nondetects shown as 0.

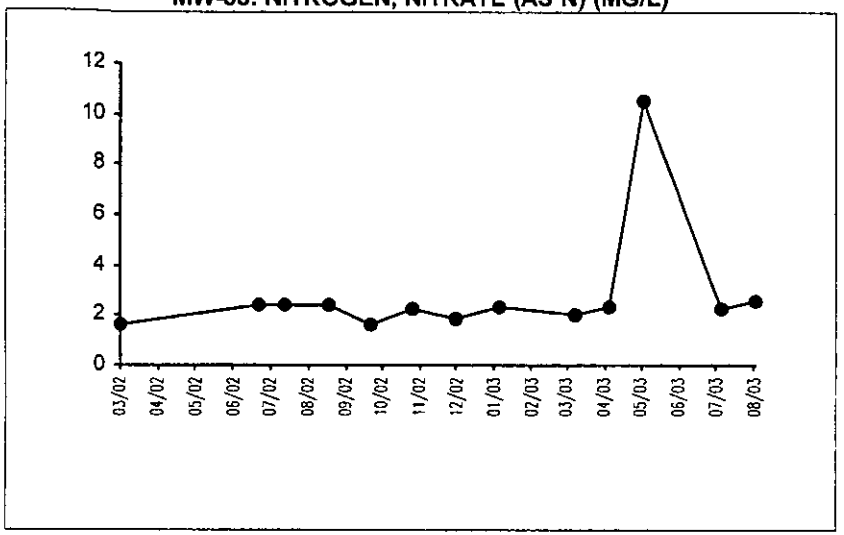
7941159

Location Purpose : Remediation

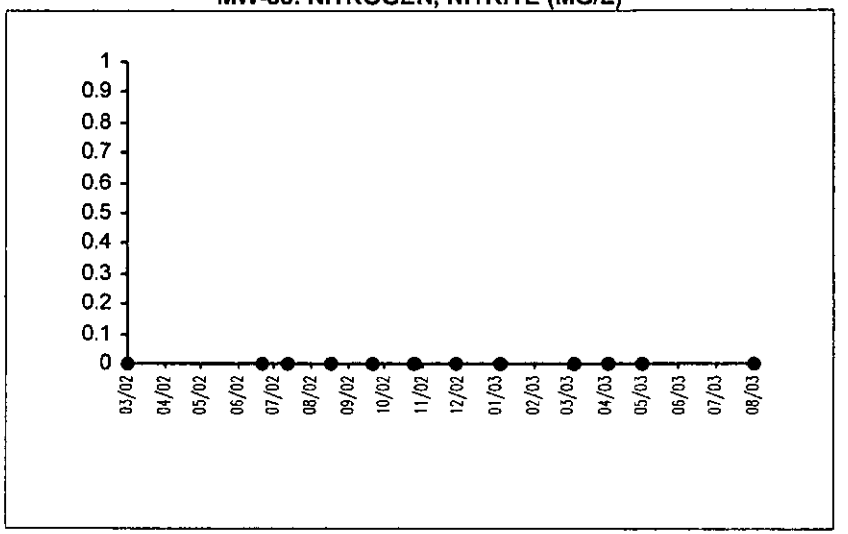
Remediation MW-88

Concentration vs Time

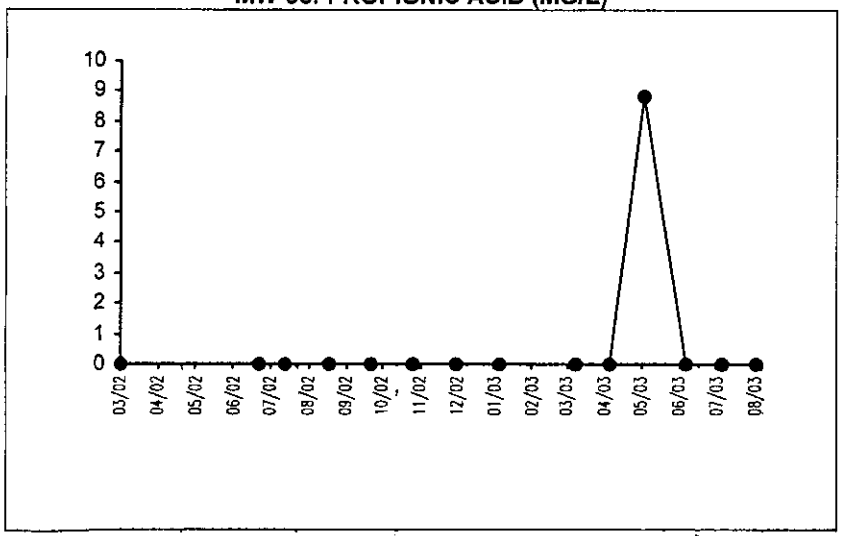
MW-88: NITROGEN, NITRATE (AS N) (MG/L)



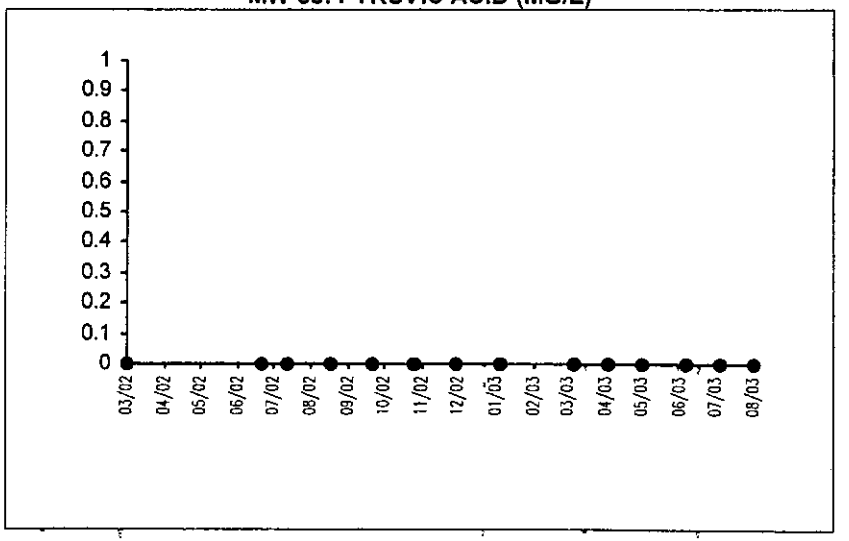
MW-88: NITROGEN, NITRITE (MG/L)



MW-88: PROPIONIC ACID (MG/L)



MW-88: PYRUVIC ACID (MG/L)



* Nondetects shown as 0.

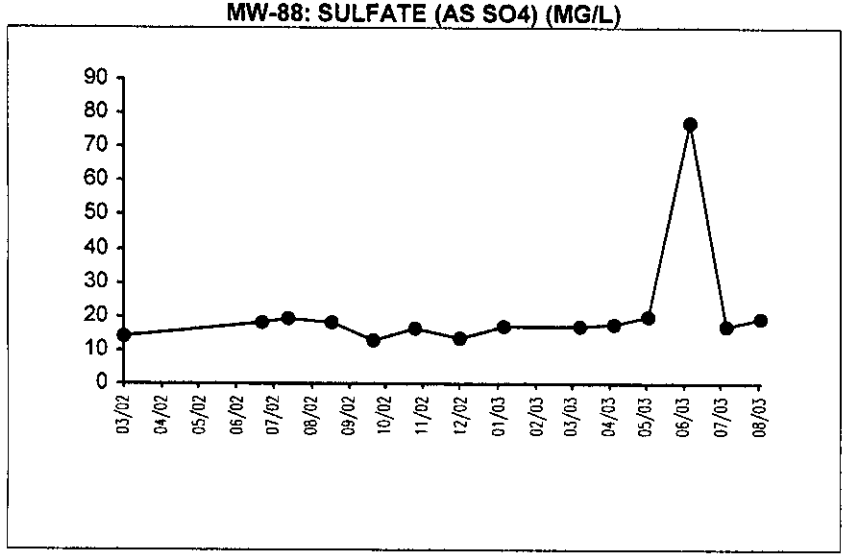
7941160

Location Purpose : Remediation

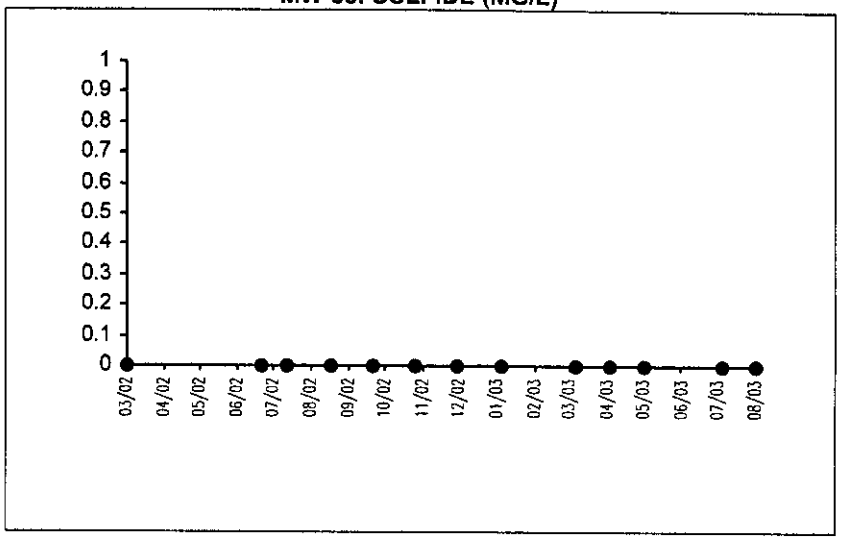
Remediation MW-88

Concentration vs Time

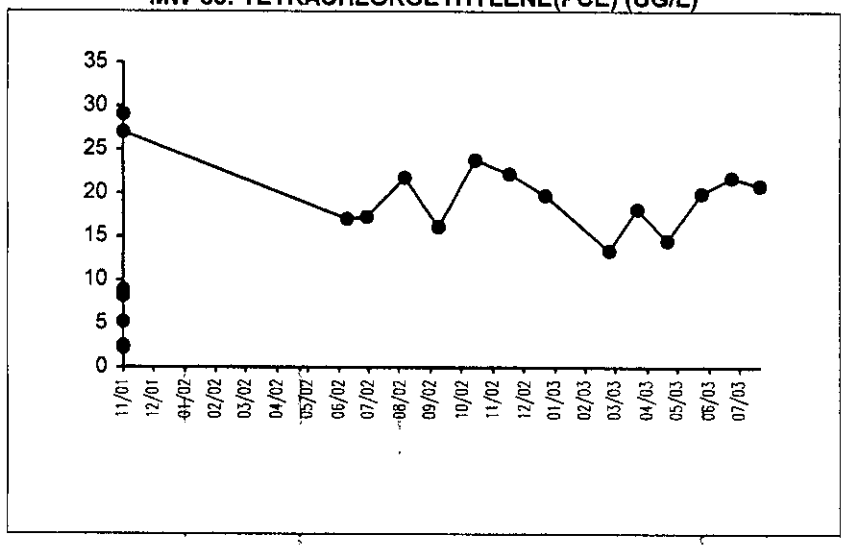
MW-88: SULFATE (AS SO4) (MG/L)



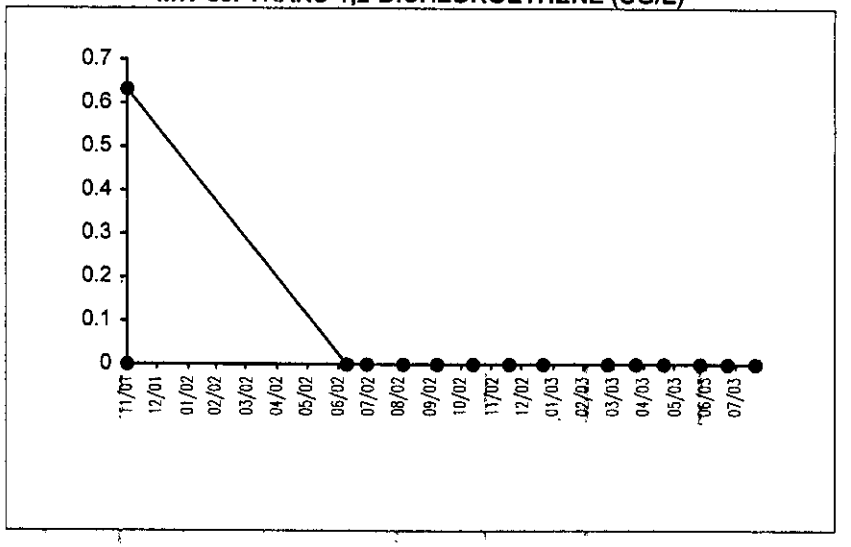
MW-88: SULFIDE (MG/L)



MW-88: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-88: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

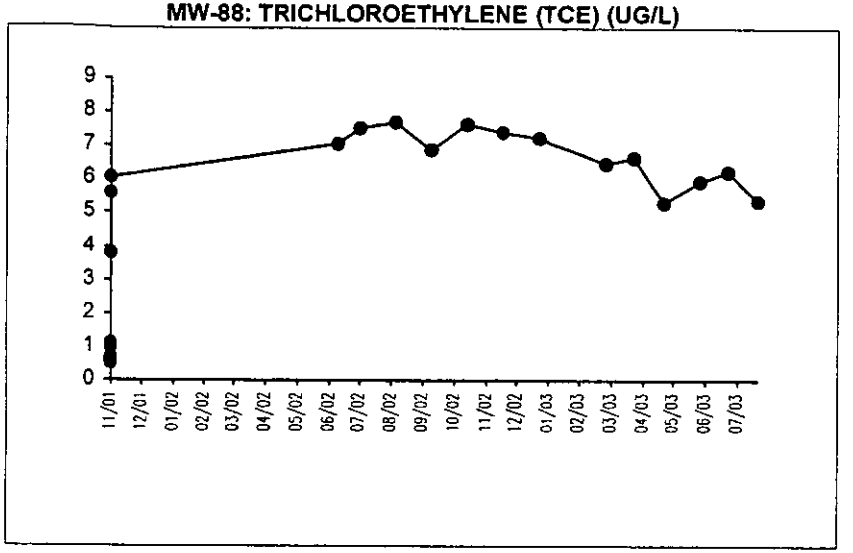
7941161

Location Purpose : Remediation

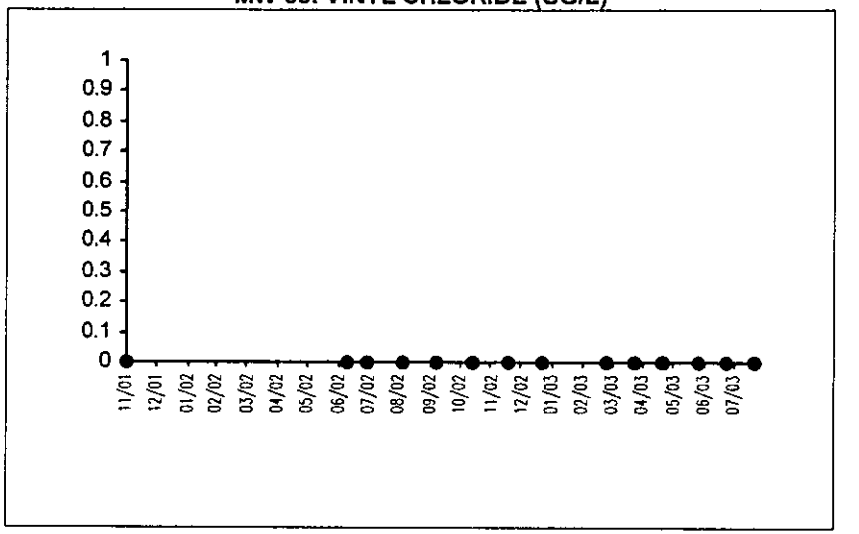
Remediation MW-88

Concentration vs Time

MW-88: TRICHLOROETHYLENE (TCE) (UG/L)



MW-88: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

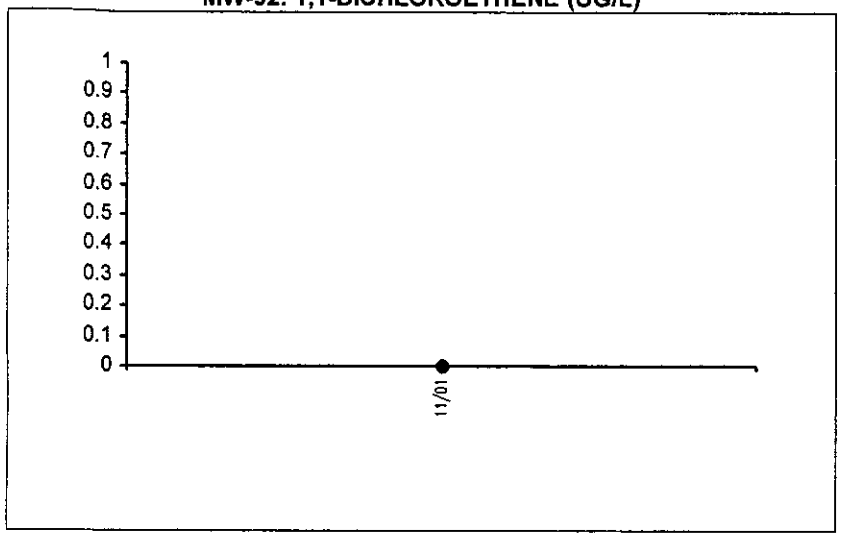
7941162

Location Purpose : Remediation

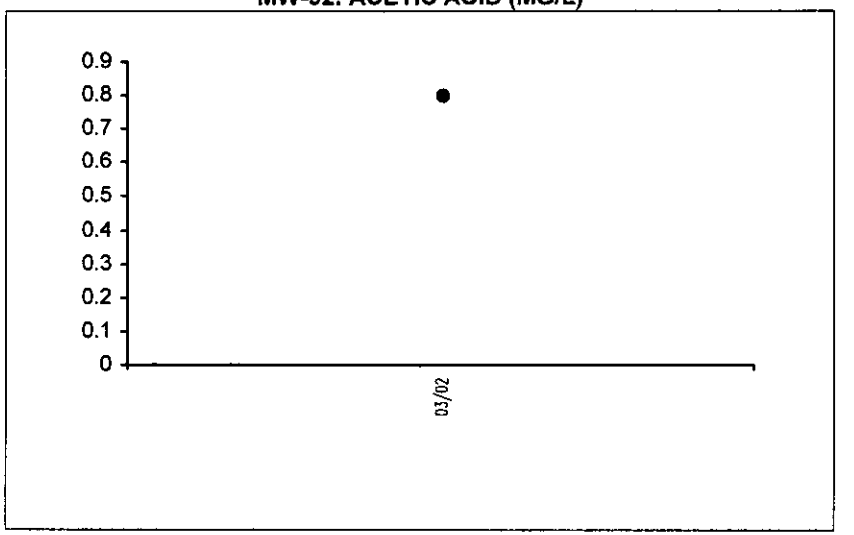
Remediation MW-92

Concentration vs Time

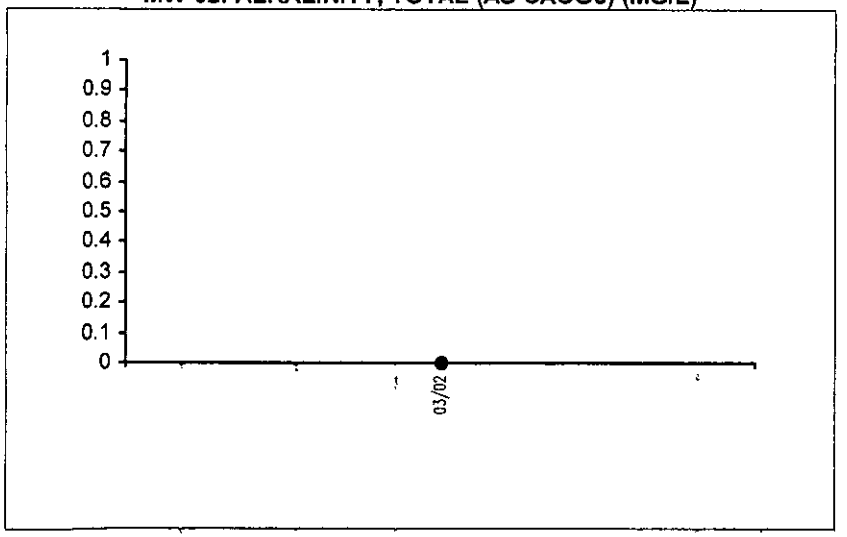
MW-92: 1,1-DICHLOROETHENE (UG/L)



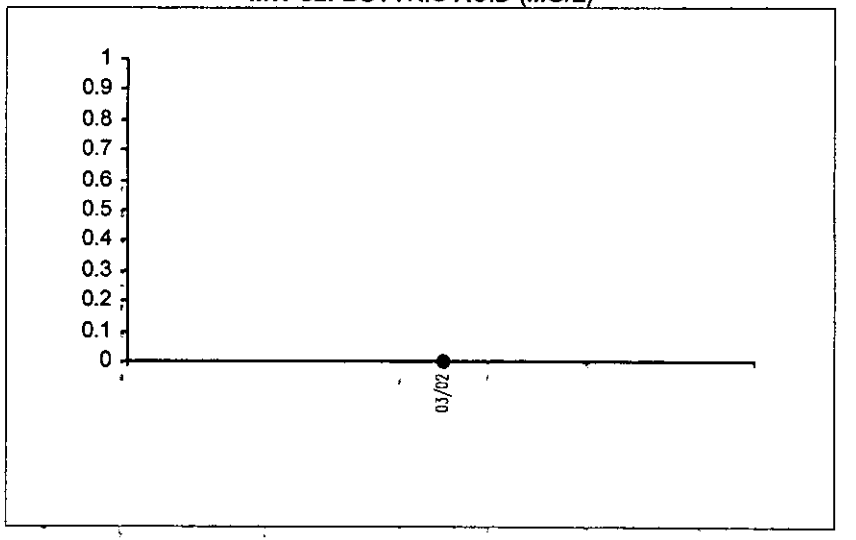
MW-92: ACETIC ACID (MG/L)



MW-92: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-92: BUTYRIC ACID (MG/L)



* Nondetects shown as 0.

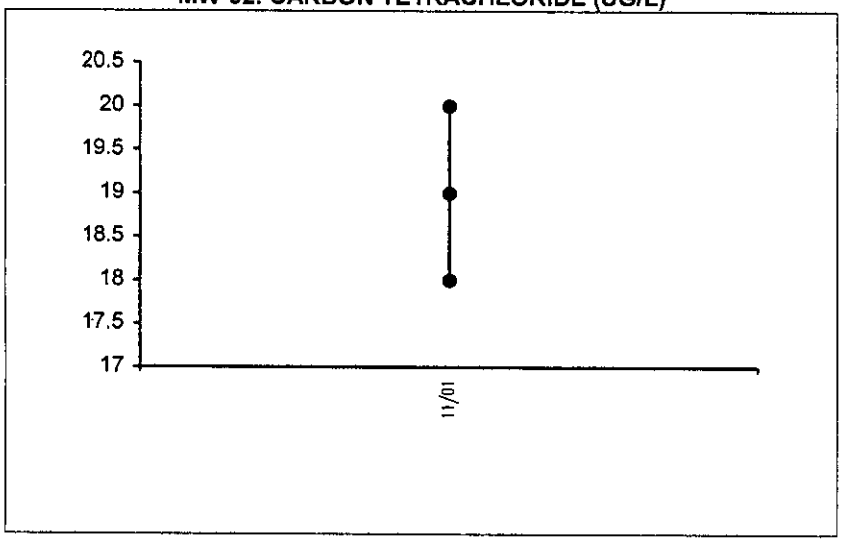
7941163

Location Purpose : Remediation

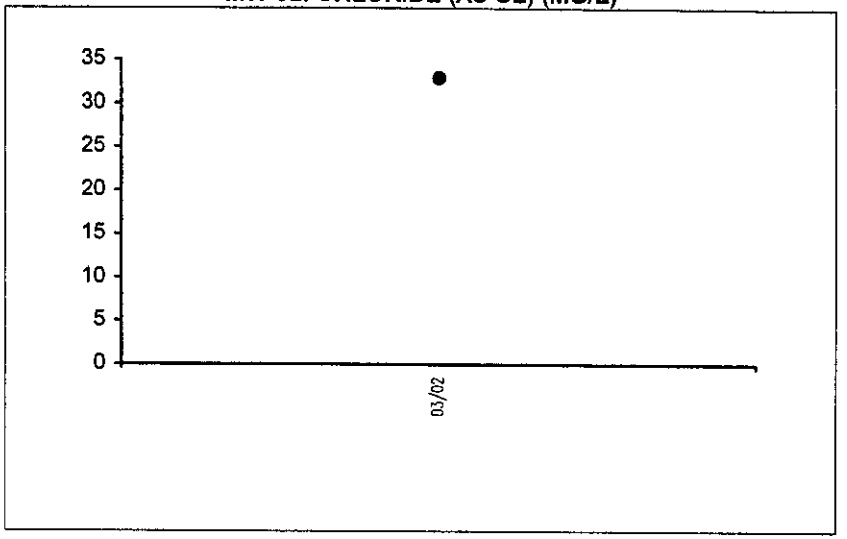
Remediation MW-92

Concentration vs Time

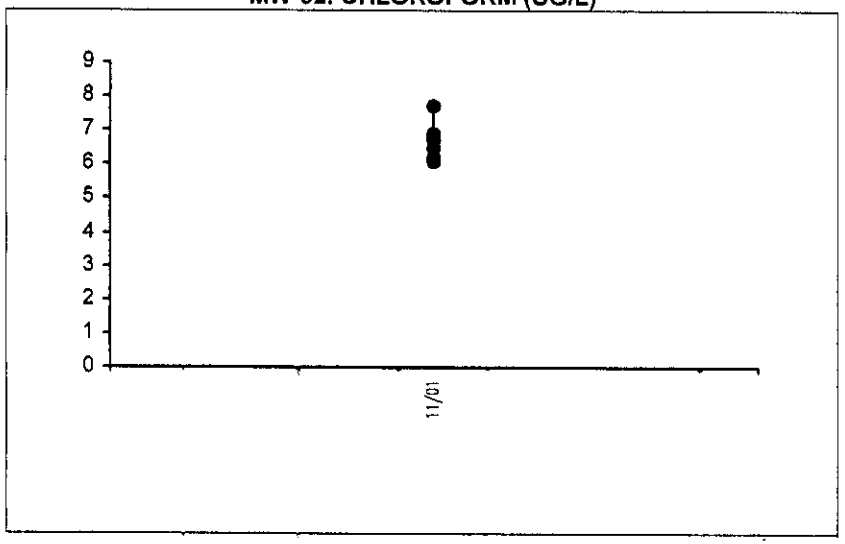
MW-92: CARBON TETRACHLORIDE (UG/L)



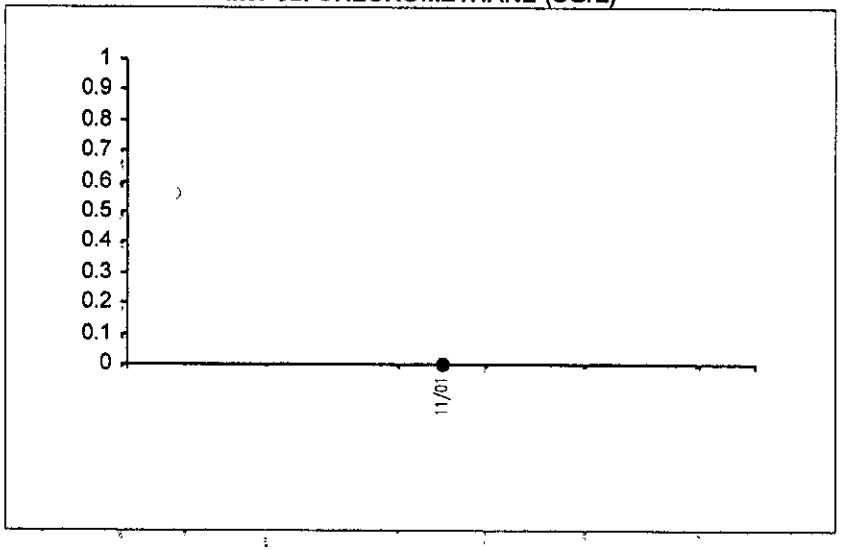
MW-92: CHLORIDE (AS CL) (MG/L)



MW-92: CHLOROFORM (UG/L)



MW-92: CHLOROMETHANE (UG/L)



* Nond[illegible]ts shown as 0.

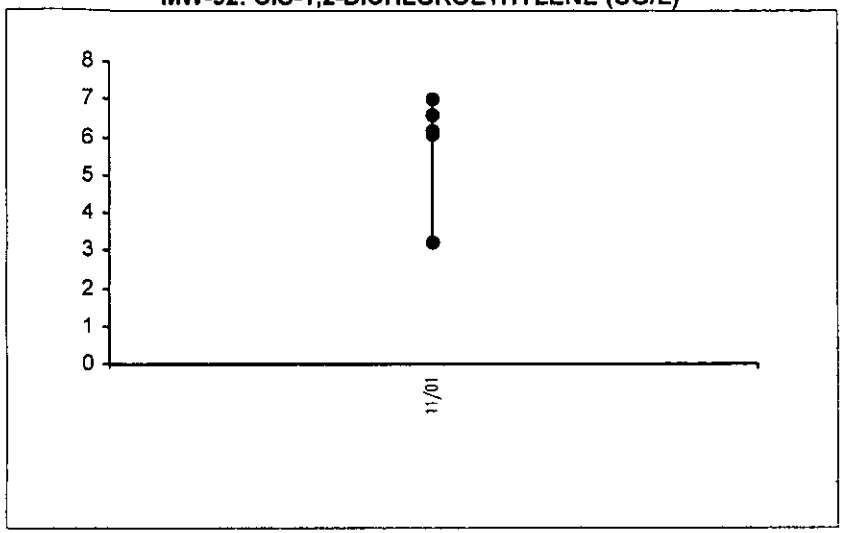
7941164

Location Purpose : Remediation

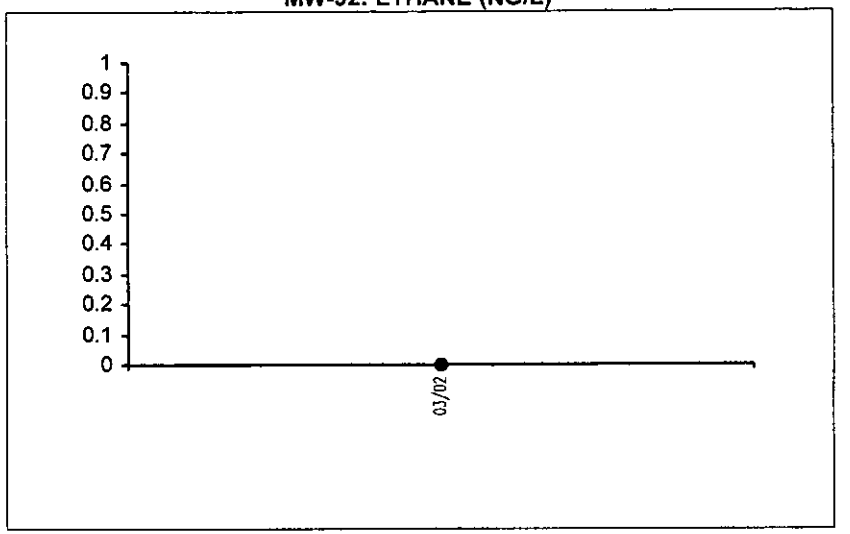
Remediation MW-92

Concentration vs Time

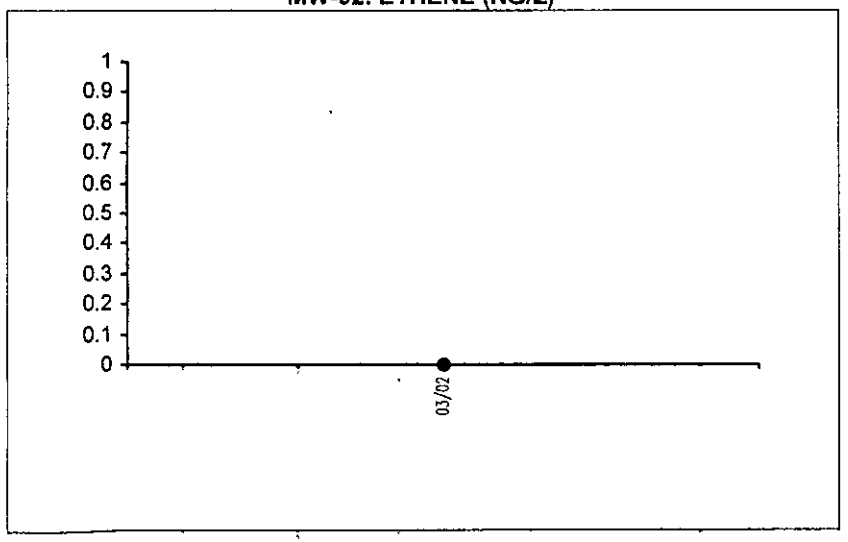
MW-92: CIS-1,2-DICHLOROETHYLENE (UG/L)



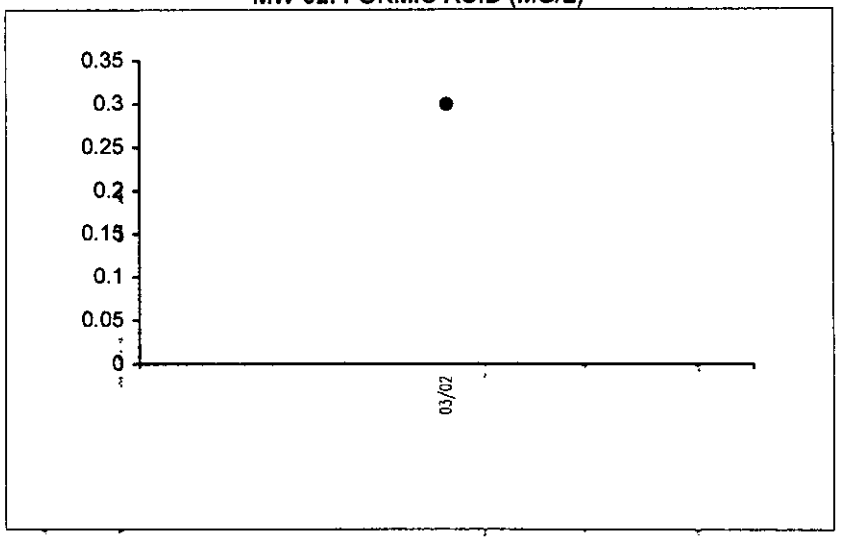
MW-92: ETHANE (NG/L)



MW-92: ETHENE (NG/L)



MW-92: FORMIC ACID (MG/L)



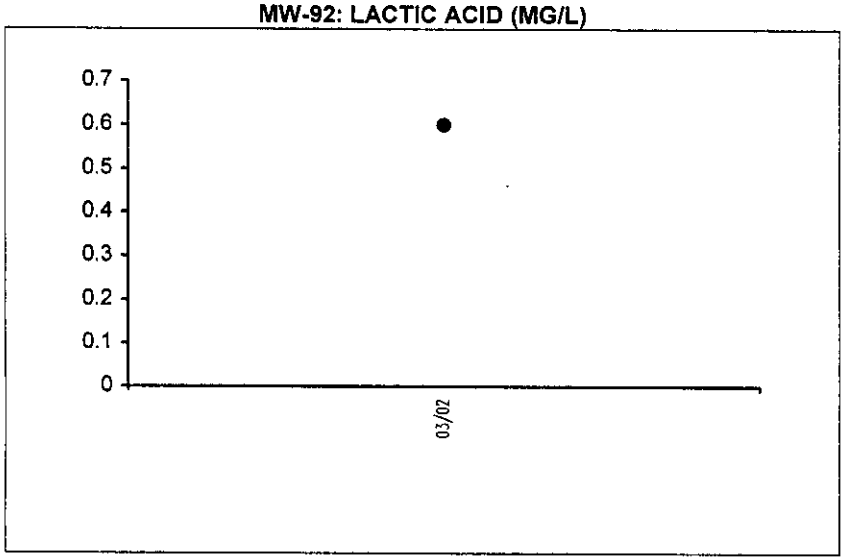
* Nondetects shown as 0.

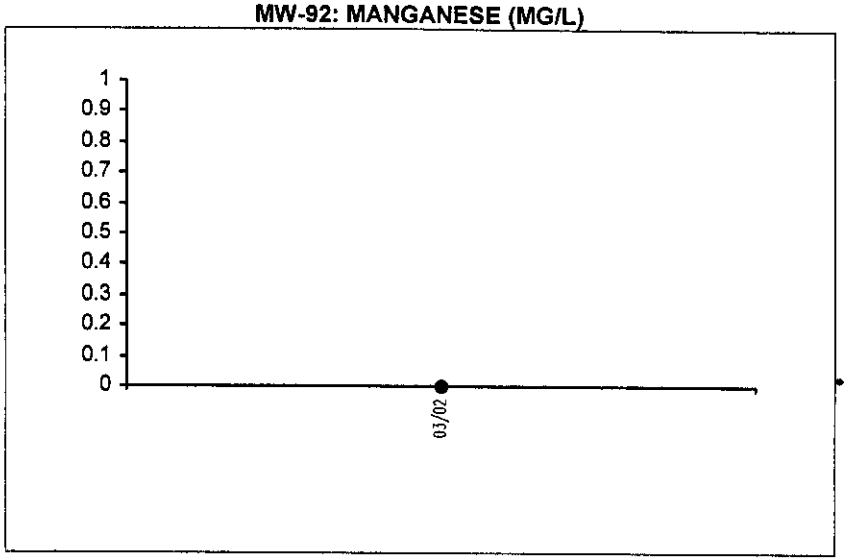
7941165

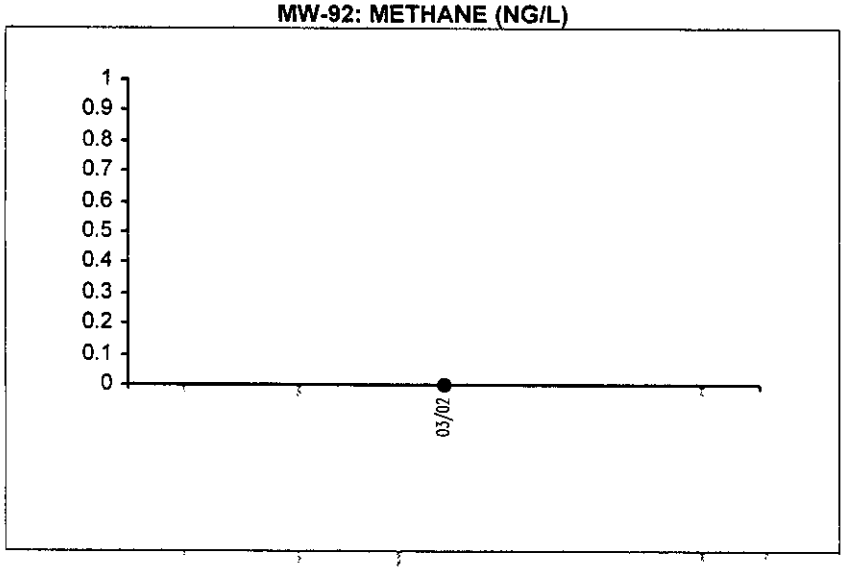
Location Purpose : Remediation

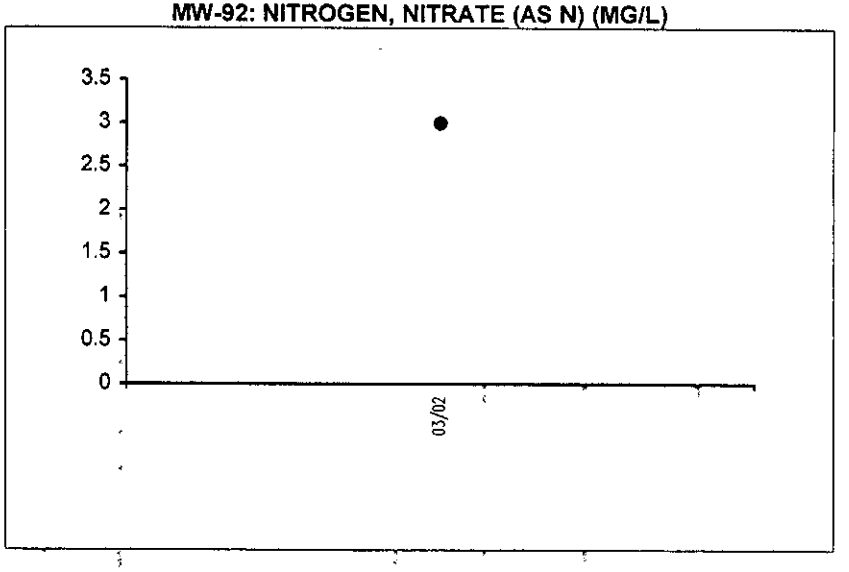
Remediation MW-92

Concentration vs Time









* Nond[illegible]ts shown as 0.

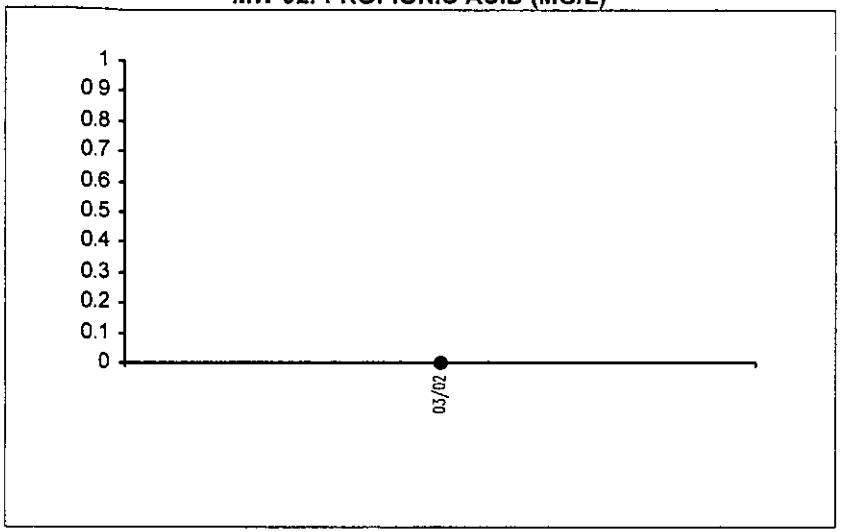
7941166

Location Purpose : Remediation

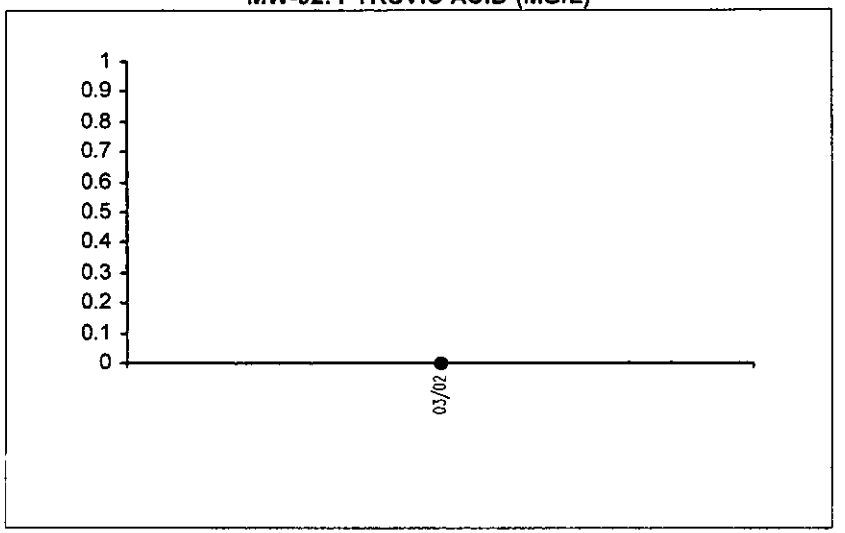
Remediation MW-92

Concentration vs Time

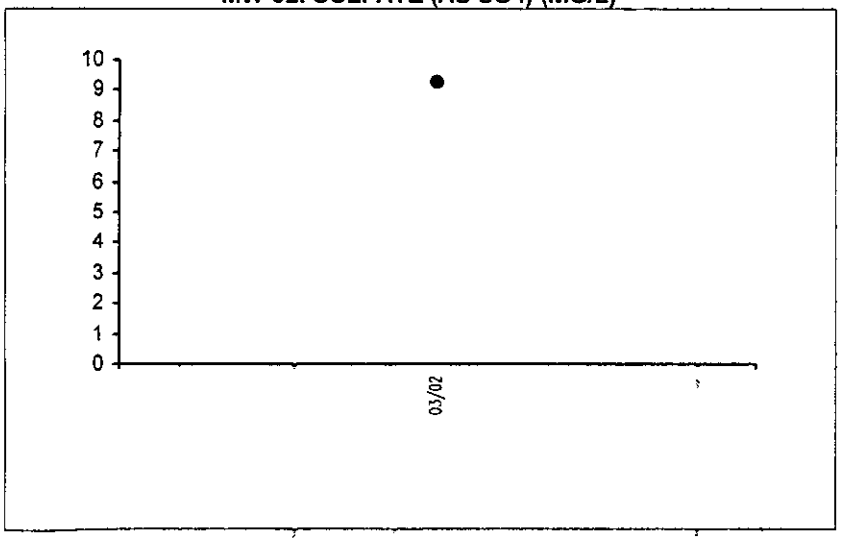
MW-92: PROPIONIC ACID (MG/L)



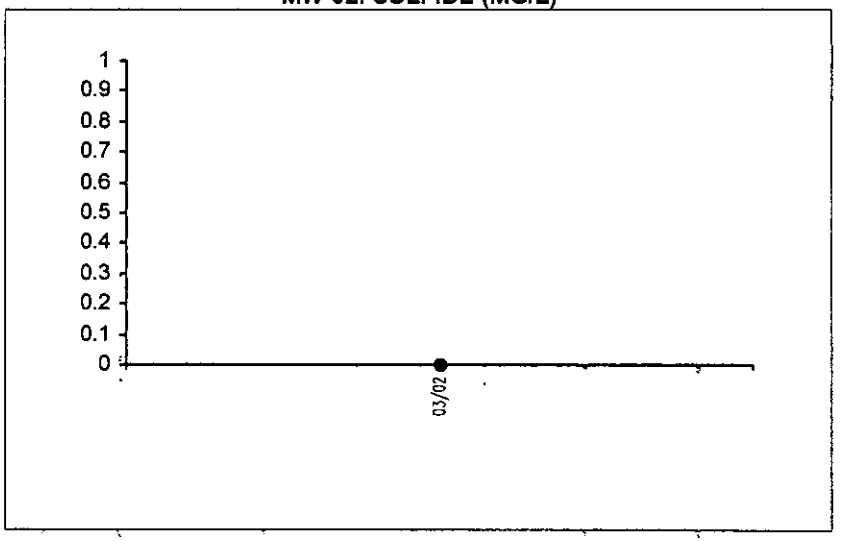
MW-92: PYRUVIC ACID (MG/L)



MW-92: SULFATE (AS SO4) (MG/L)



MW-92: SULFIDE (MG/L)



* Nondetects shown as 0.

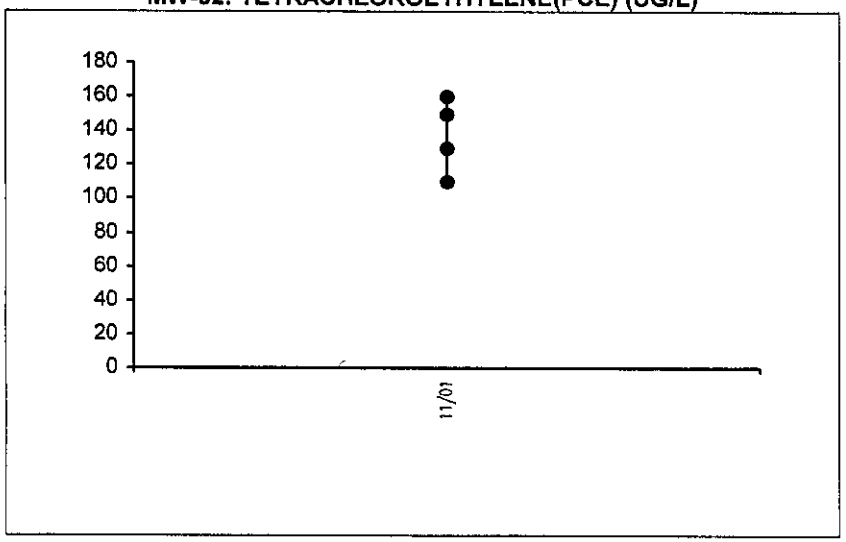
7941167

Location Purpose : Remediation

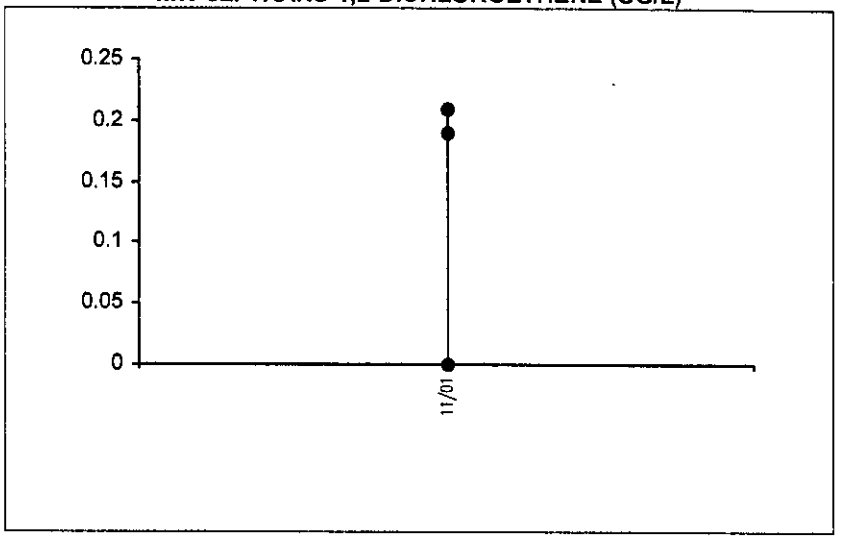
Remediation MW-92

Concentration vs Time

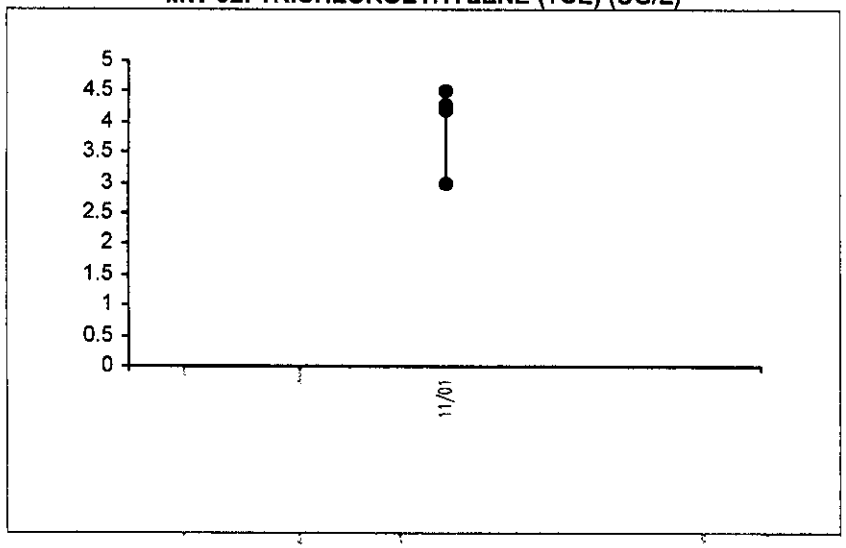
MW-92: TETRACHLOROETHYLENE(PCE) (UG/L)



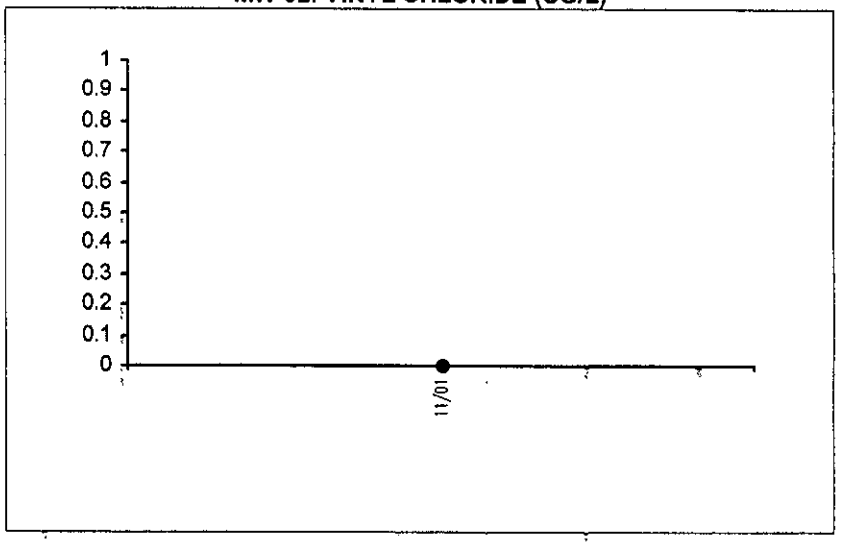
MW-92: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-92: TRICHLOROETHYLENE (TCE) (UG/L)



MW-92: VINYL CHLORIDE (UG/L)



* Nond[illegible]ts shown as 0.

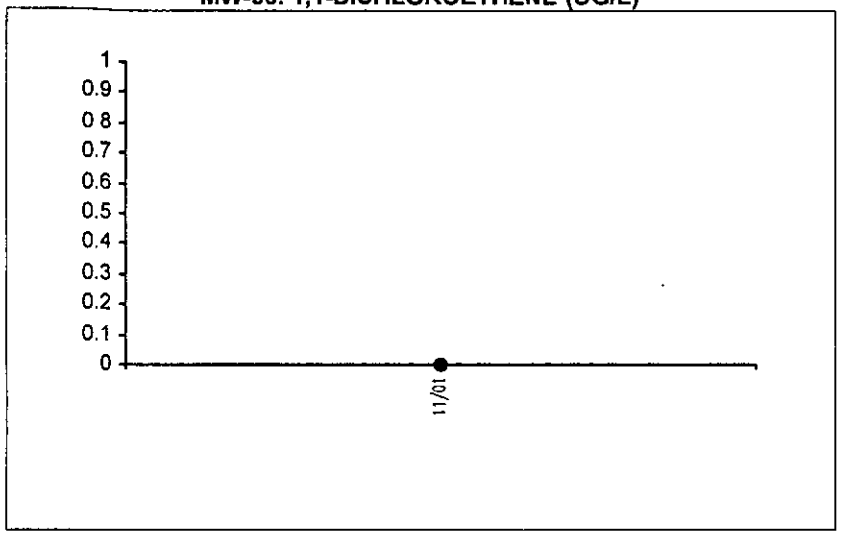
7941168

Location Purpose : Remediation

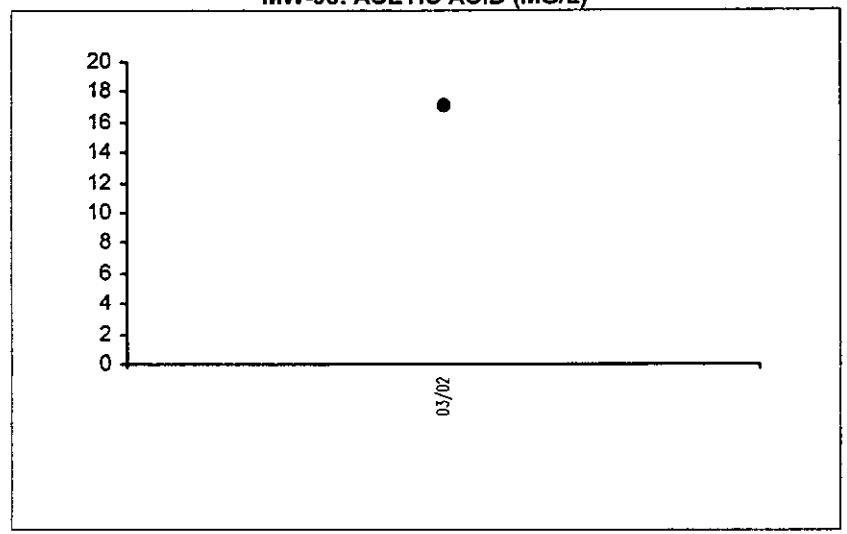
Remediation MW-96

Concentration vs Time

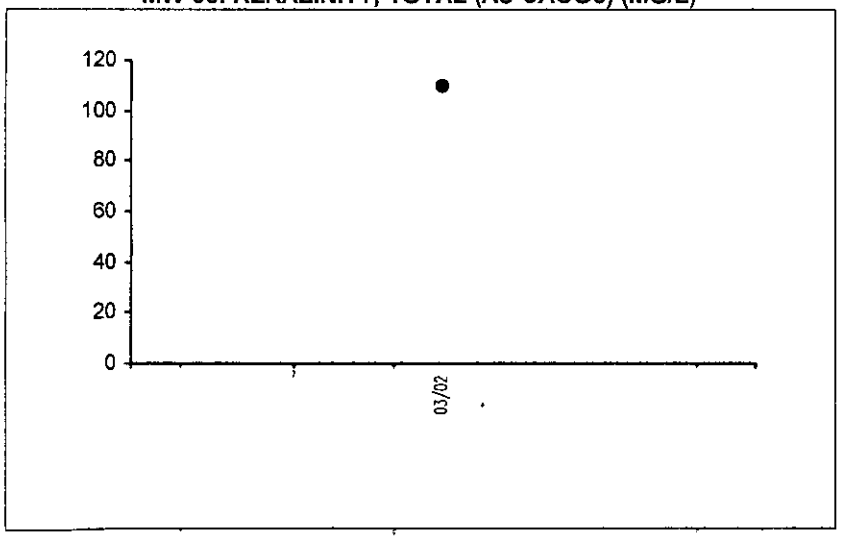
MW-96: 1,1-DICHLOROETHENE (UG/L)



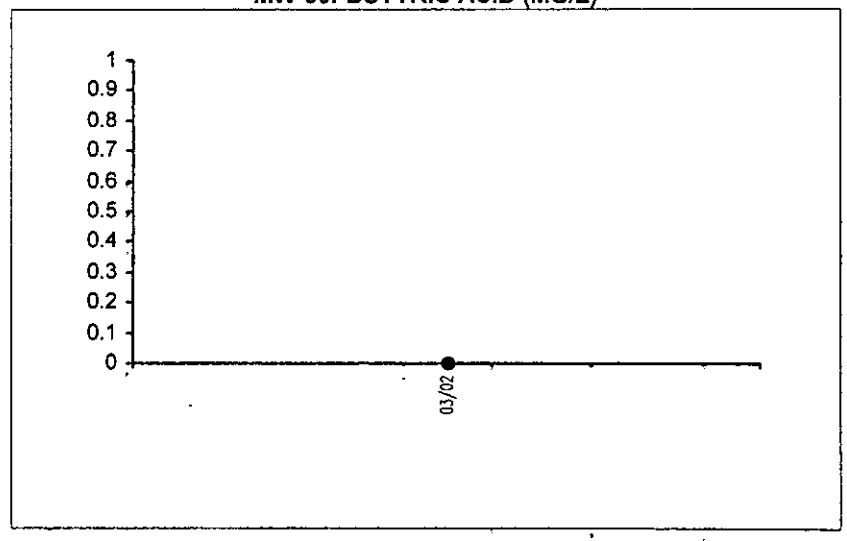
MW-96: ACETIC ACID (MG/L)



MW-96: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-96: BUTYRIC ACID (MG/L)



* Nondetects shown as 0.

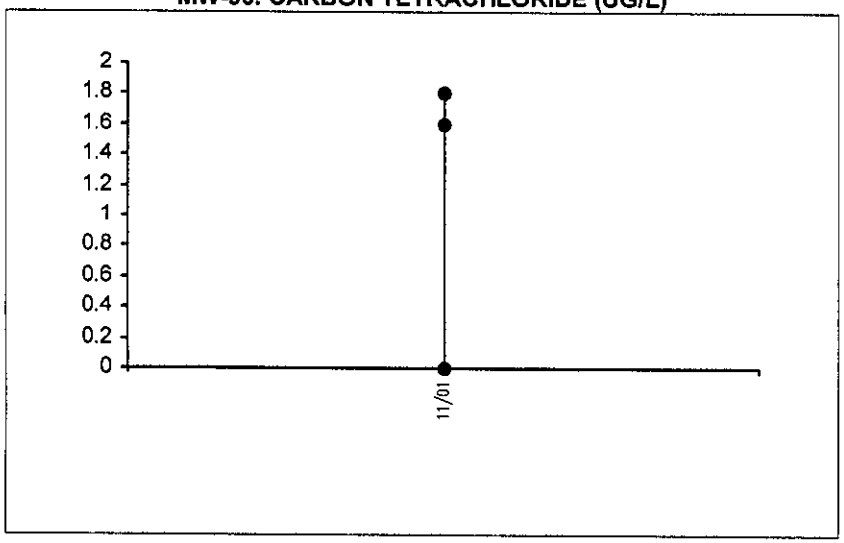
7941169

Location Purpose : Remediation

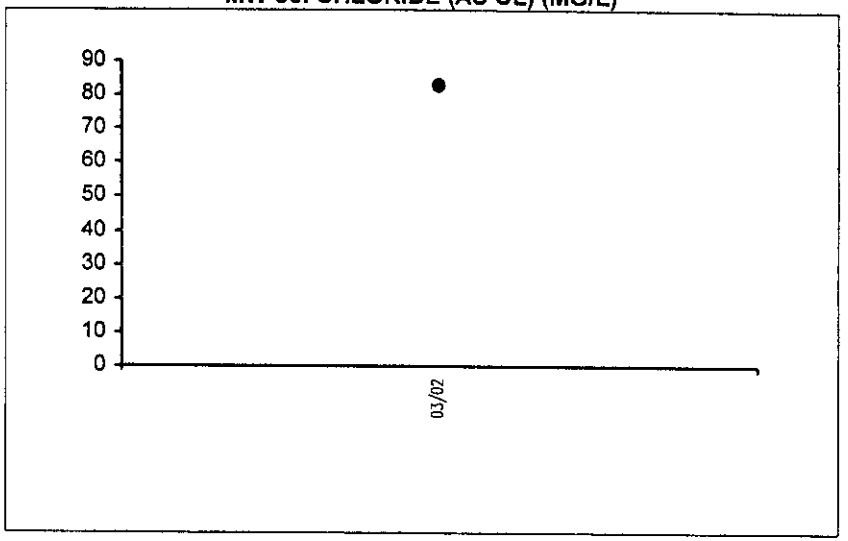
Remediation MW-96

Concentration vs Time

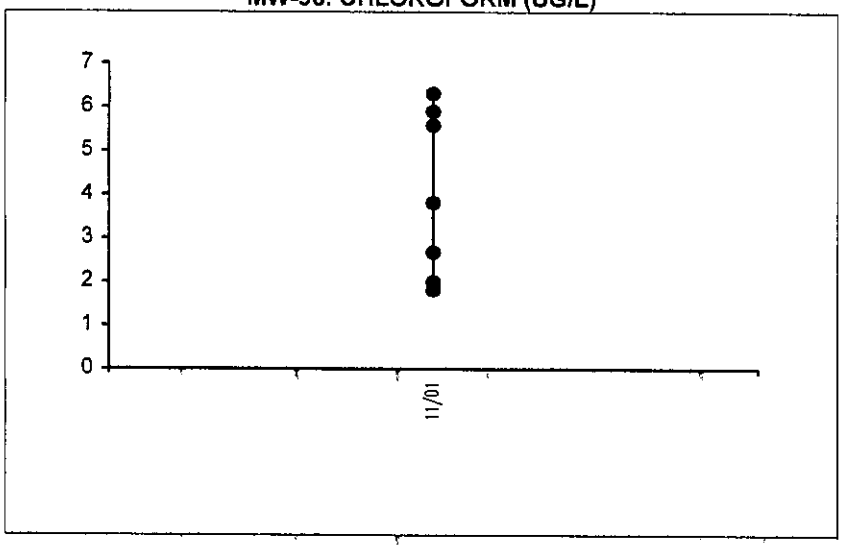
MW-96: CARBON TETRACHLORIDE (UG/L)



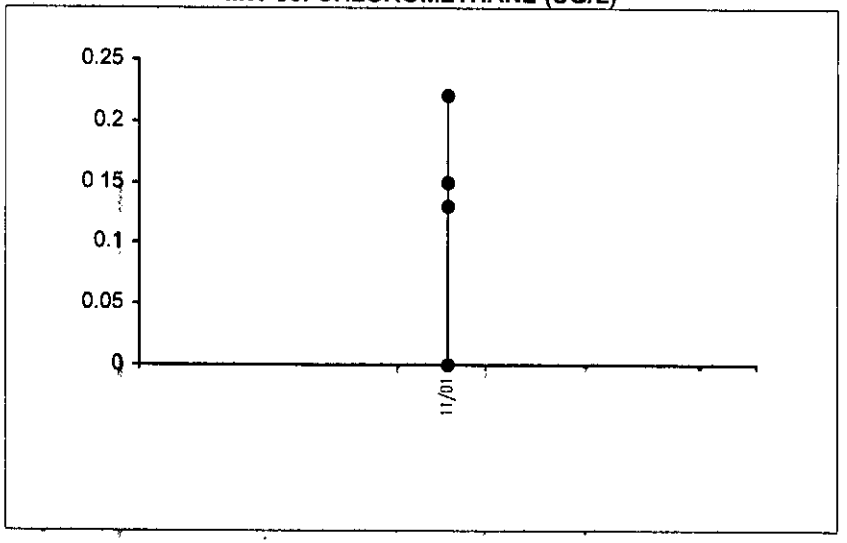
MW-96: CHLORIDE (AS CL) (MG/L)



MW-96: CHLOROFORM (UG/L)



MW-96: CHLOROMETHANE (UG/L)



* Nondetects shown as 0.

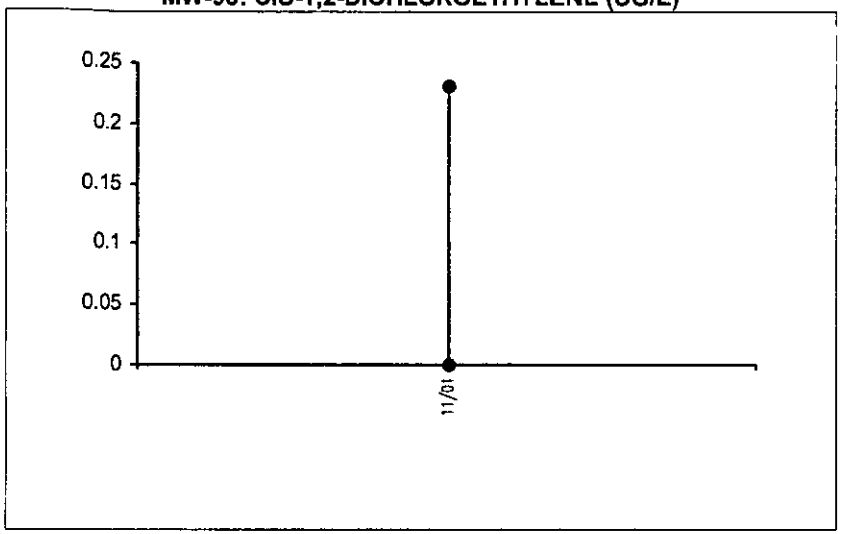
7941170

Location Purpose : Remediation

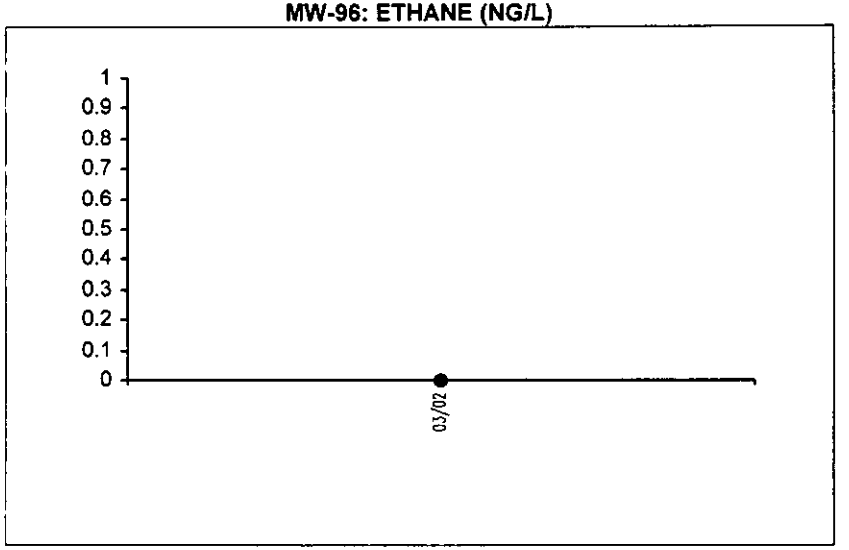
Remediation MW-96

Concentration vs Time

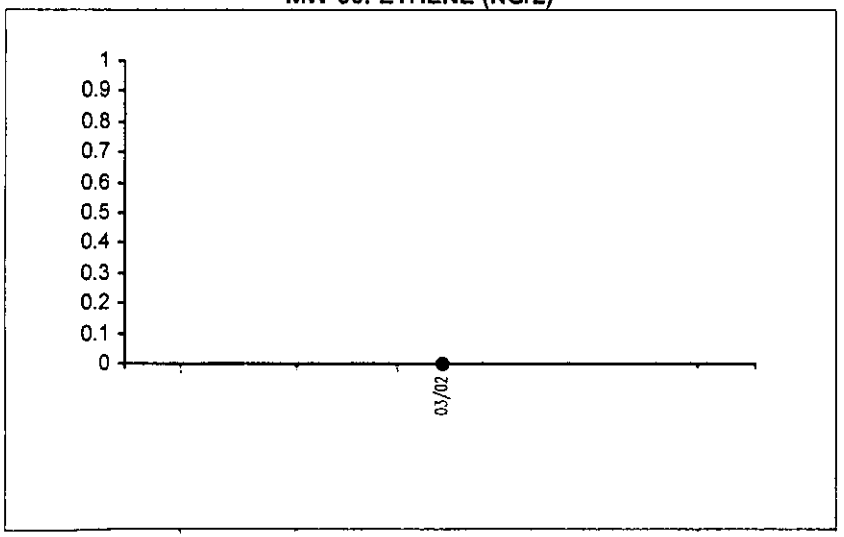
MW-96: CIS-1,2-DICHLOROETHYLENE (UG/L)



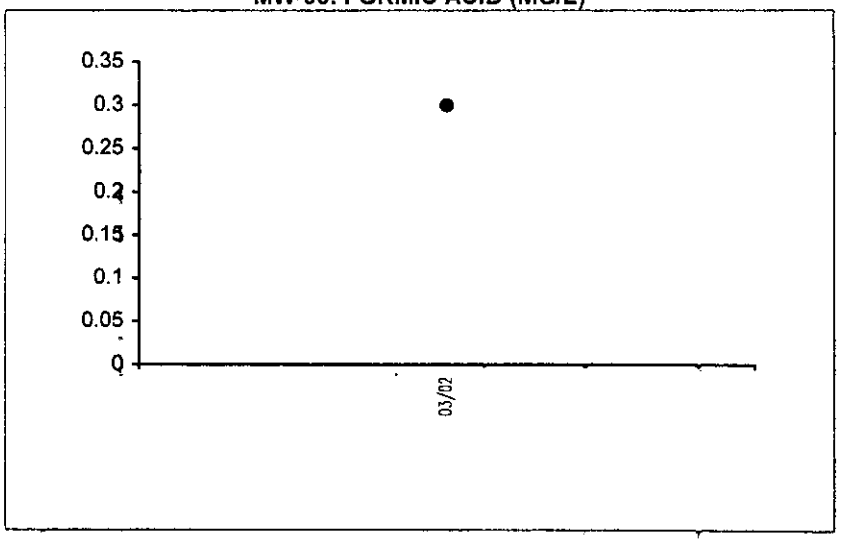
MW-96: ETHANE (NG/L)



MW-96: ETHENE (NG/L)



MW-96: FORMIC ACID (MG/L)



* Nondetects shown as 0.

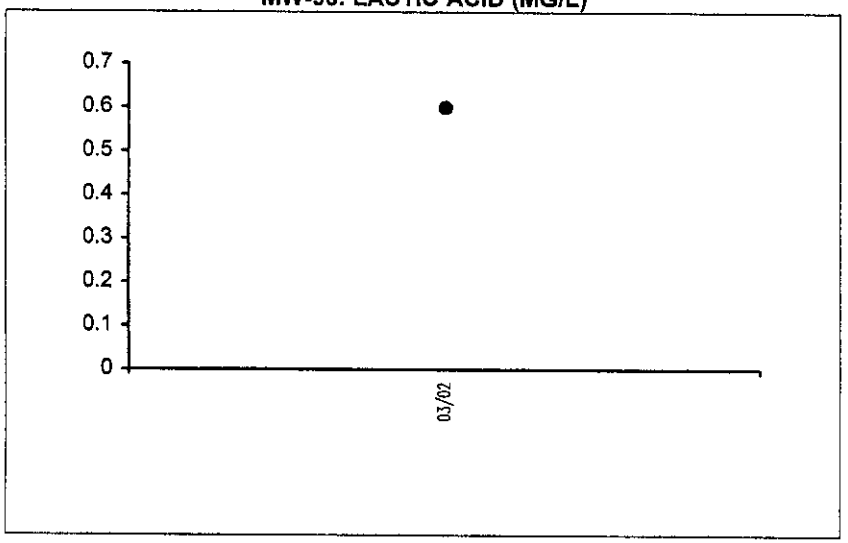
7941171

Location Purpose : Remediation

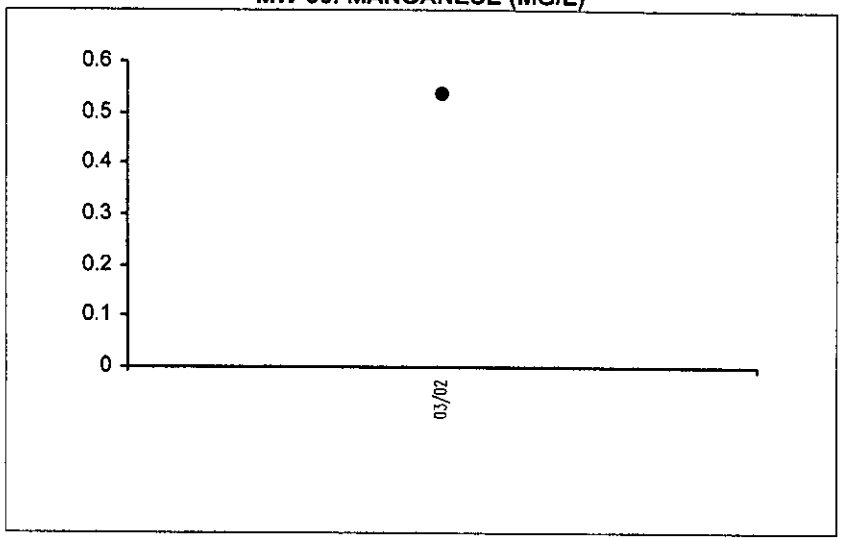
Remediation MW-96

Concentration vs Time

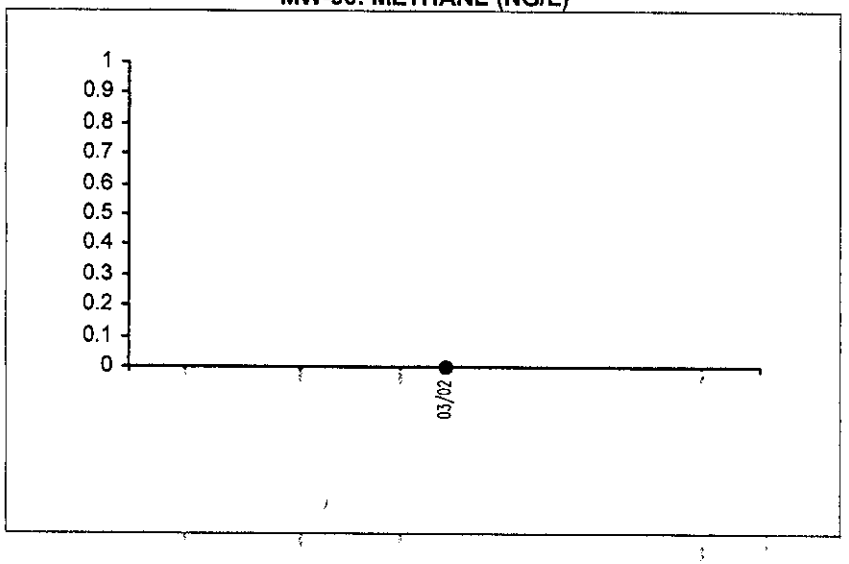
MW-96: LACTIC ACID (MG/L)



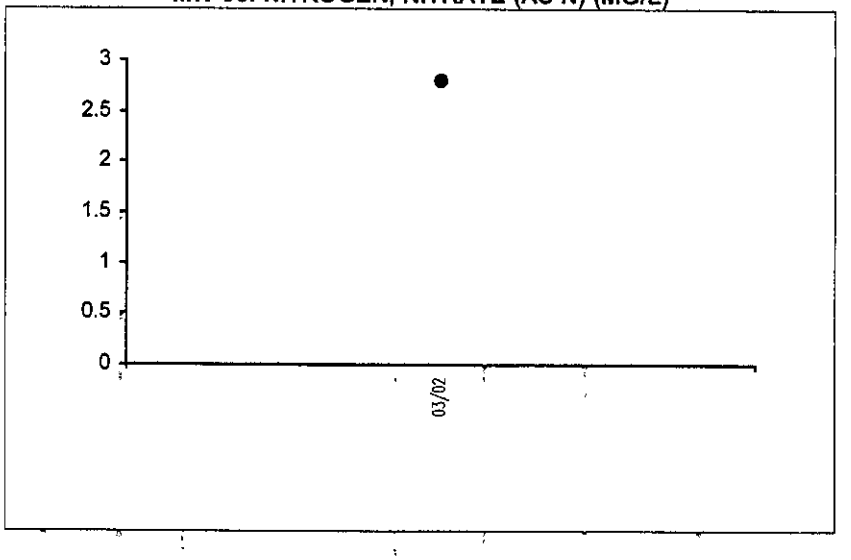
MW-96: MANGANESE (MG/L)



MW-96: METHANE (NG/L)



MW-96: NITROGEN, NITRATE (AS N) (MG/L)



* Nondetects shown as 0.

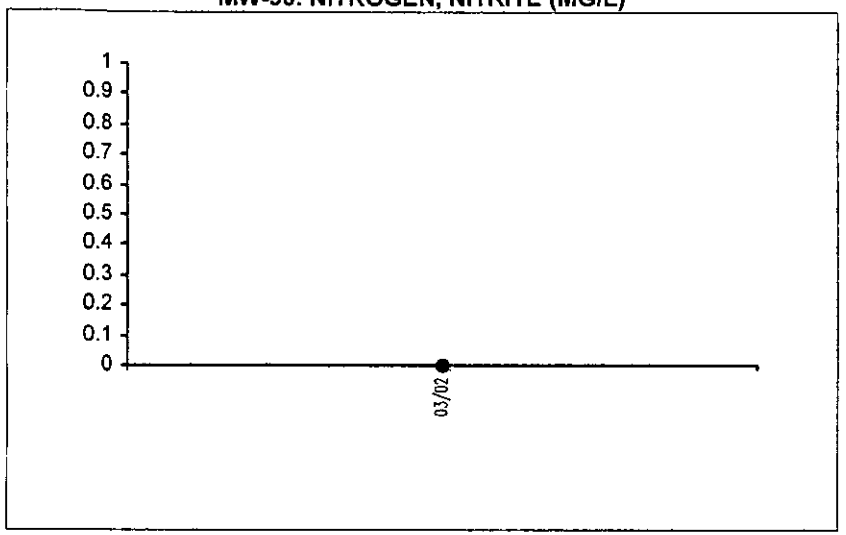
79411172

Location Purpose : Remediation

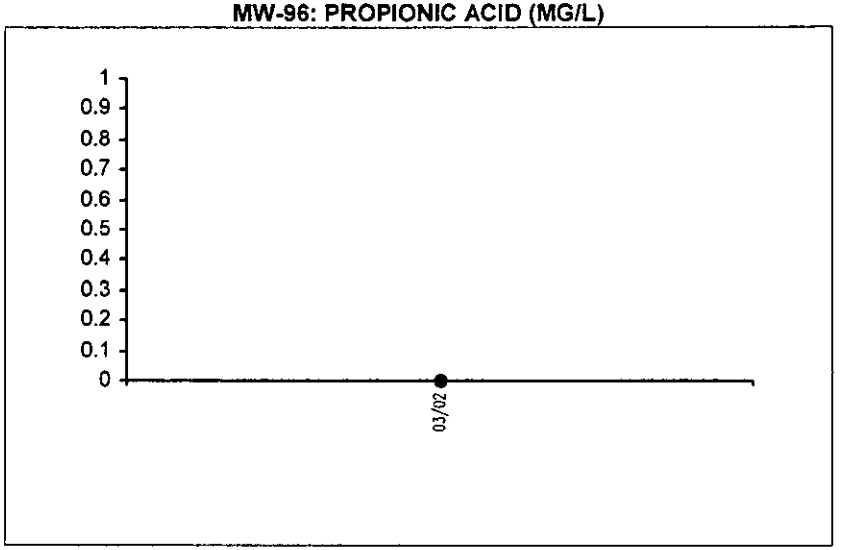
Remediation MW-96

Concentration vs Time

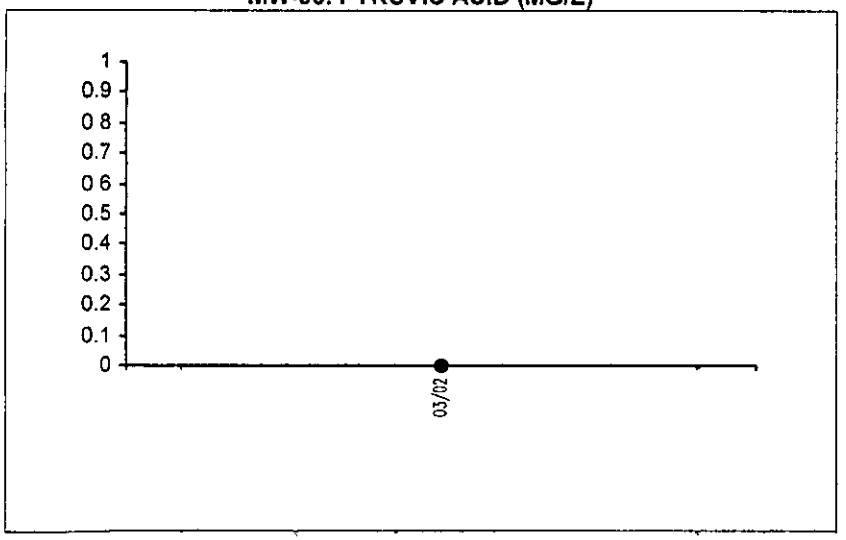
MW-96: NITROGEN, NITRITE (MG/L)



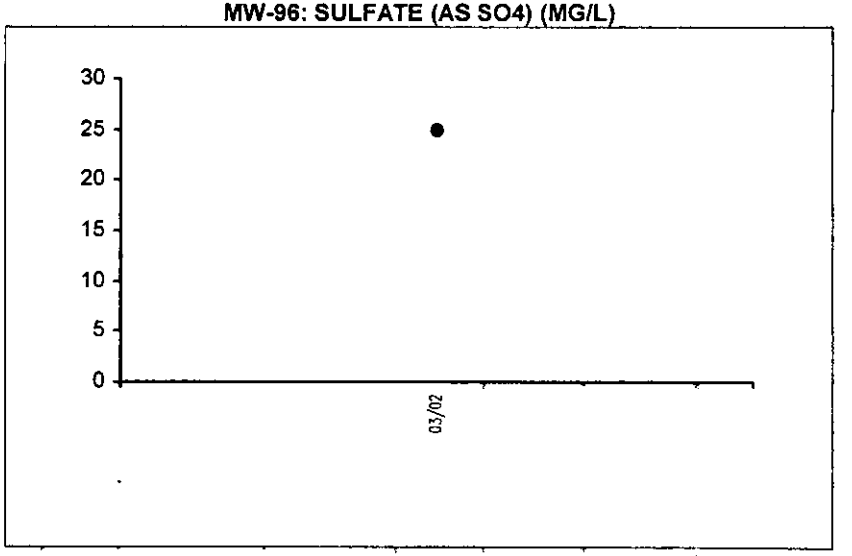
MW-96: PROPIONIC ACID (MG/L)



MW-96: PYRUVIC ACID (MG/L)



MW-96: SULFATE (AS SO4) (MG/L)



* Nondetects shown as 0.

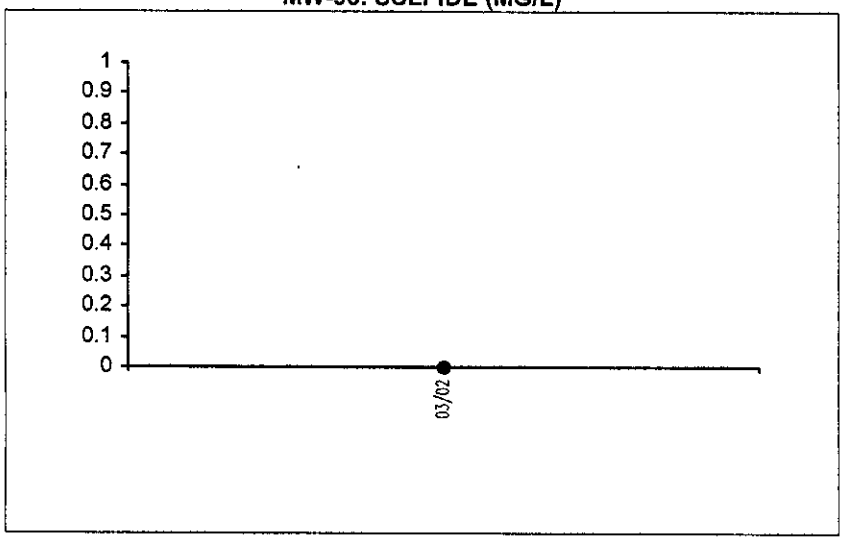
79411173

Location Purpose : Remediation

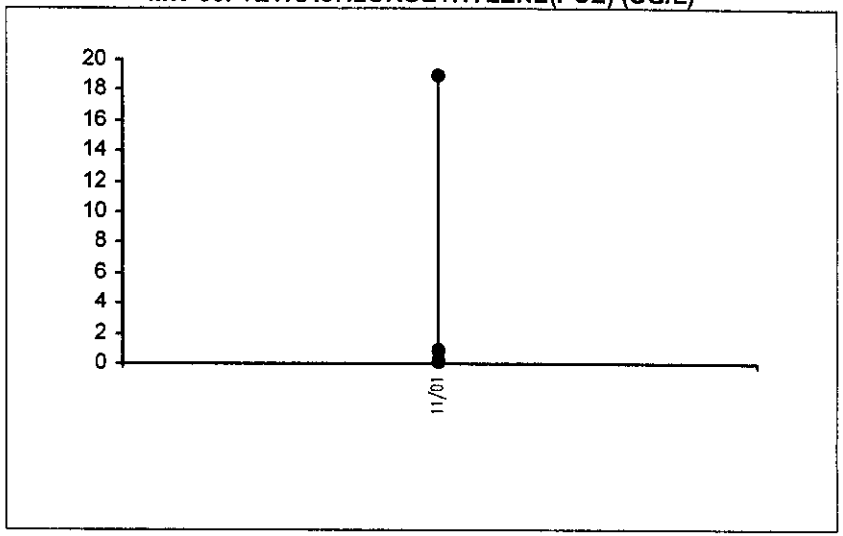
Remediation MW-96

Concentration vs Time

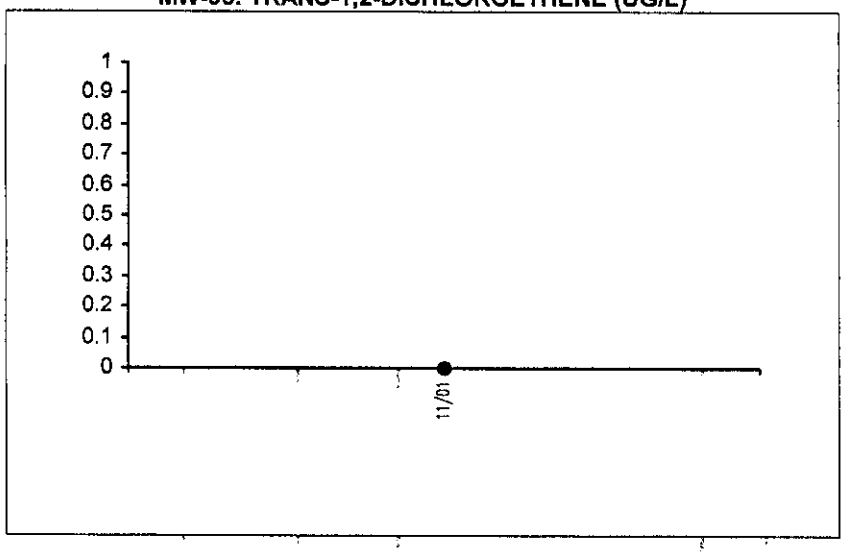
MW-96: SULFIDE (MG/L)



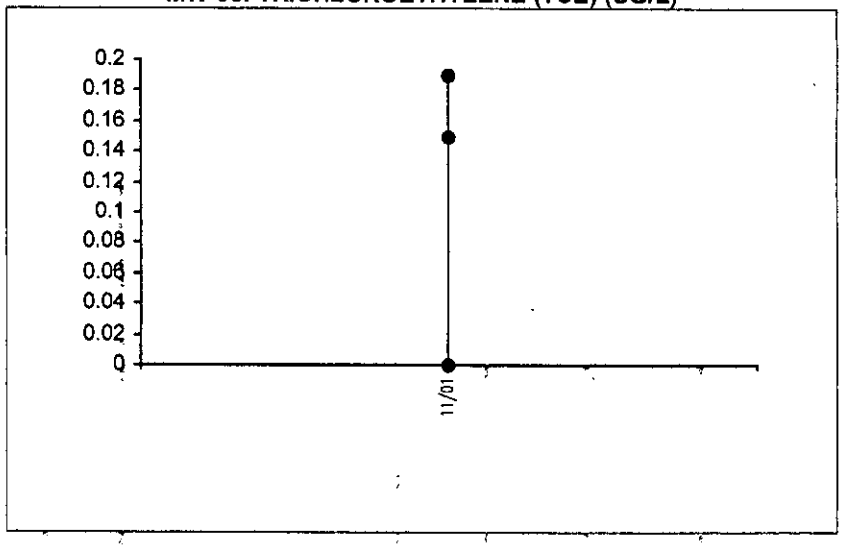
MW-96: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-96: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-96: TRICHLOROETHYLENE (TCE) (UG/L)



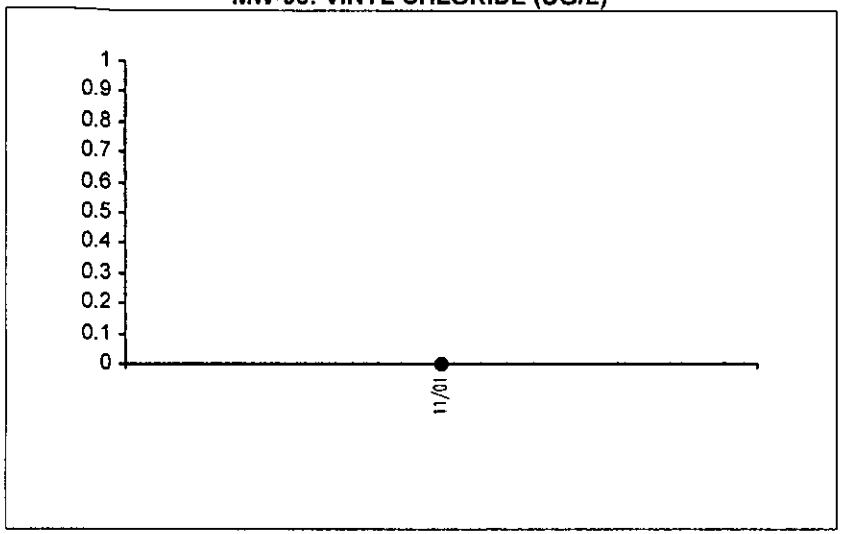
* Nondetects shown as 0.

7941174

Location Purpose : Remediation **Remediation MW-96**

Concentration vs Time

MW-96: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

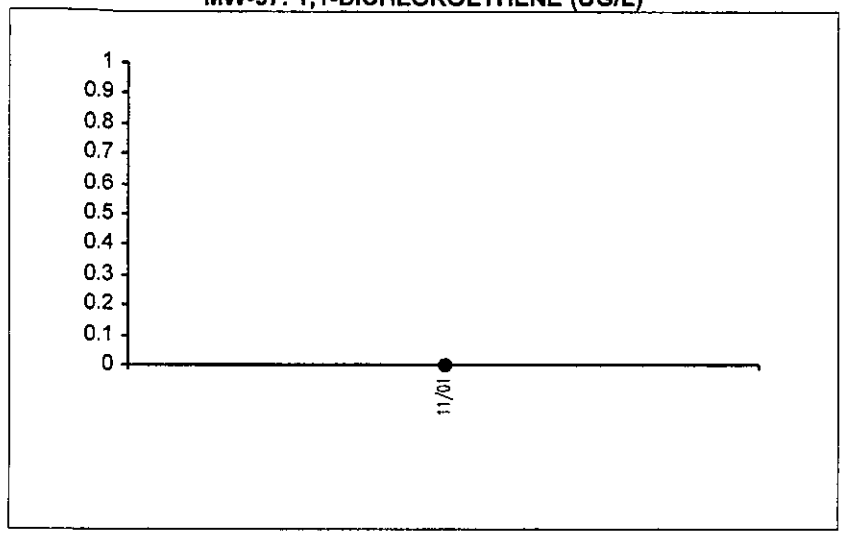
7941175

Location Purpose : Remediation

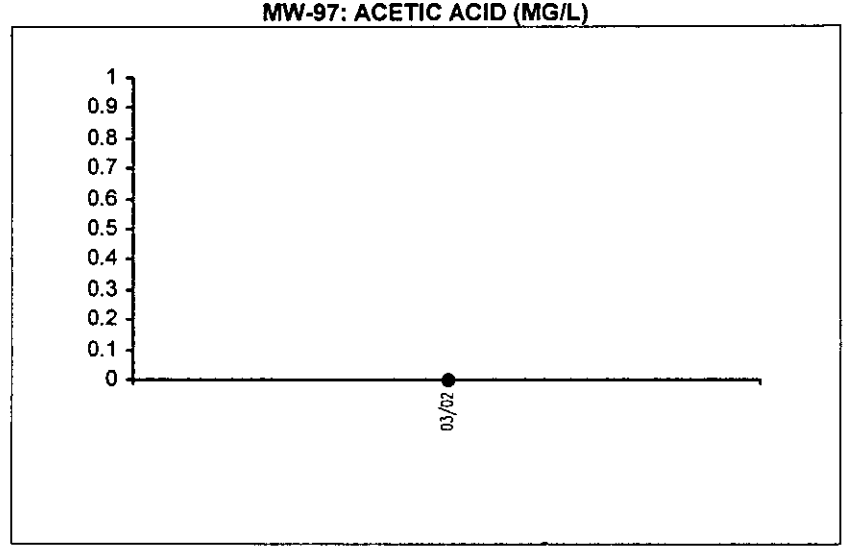
Remediation MW-97

Concentration vs Time

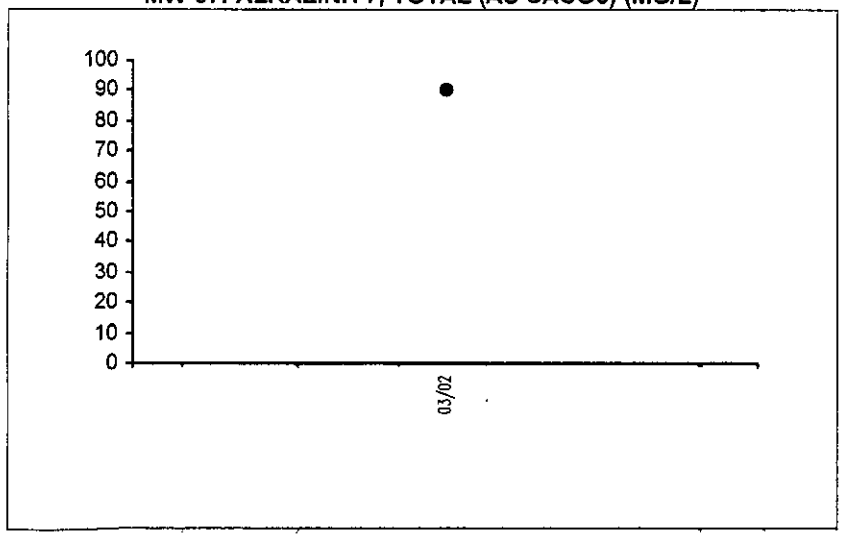
MW-97: 1,1-DICHLOROETHENE (UG/L)



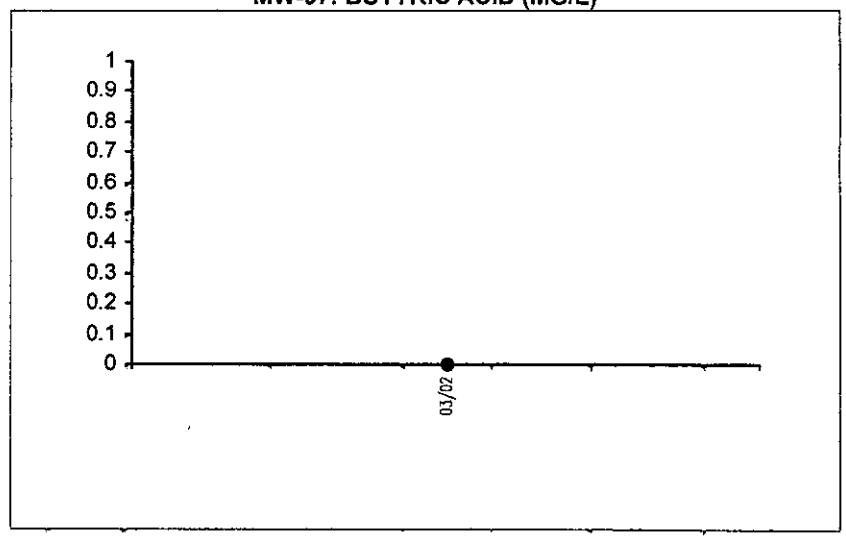
MW-97: ACETIC ACID (MG/L)



MW-97: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-97: BUTYRIC ACID (MG/L)



* Nondetects shown as 0.

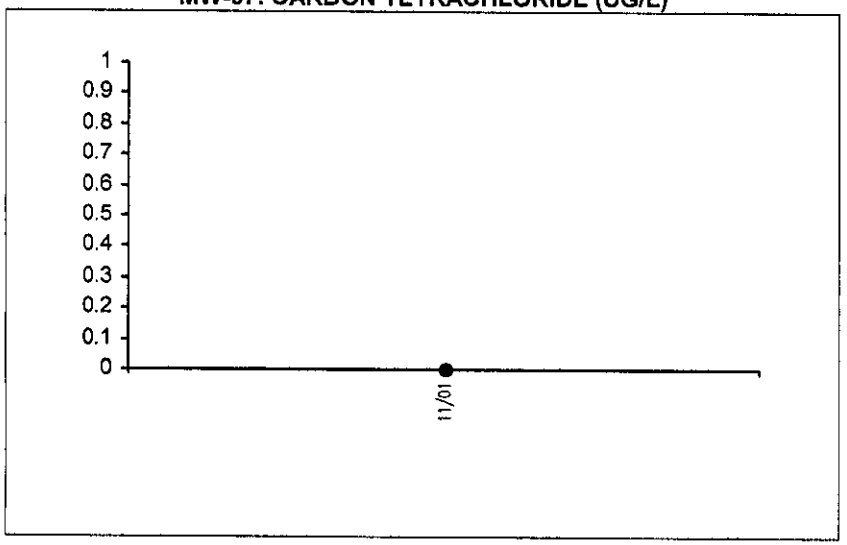
7941176

Location Purpose : Remediation

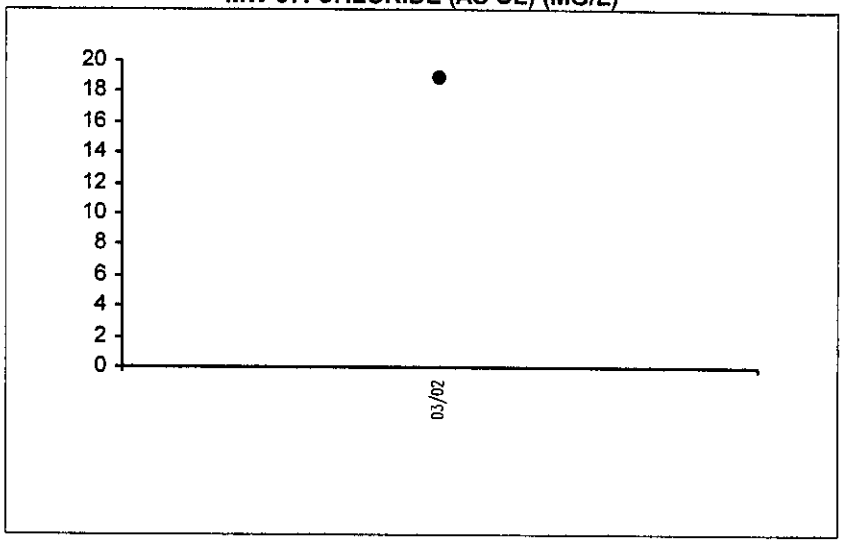
Remediation MW-97

Concentration vs Time

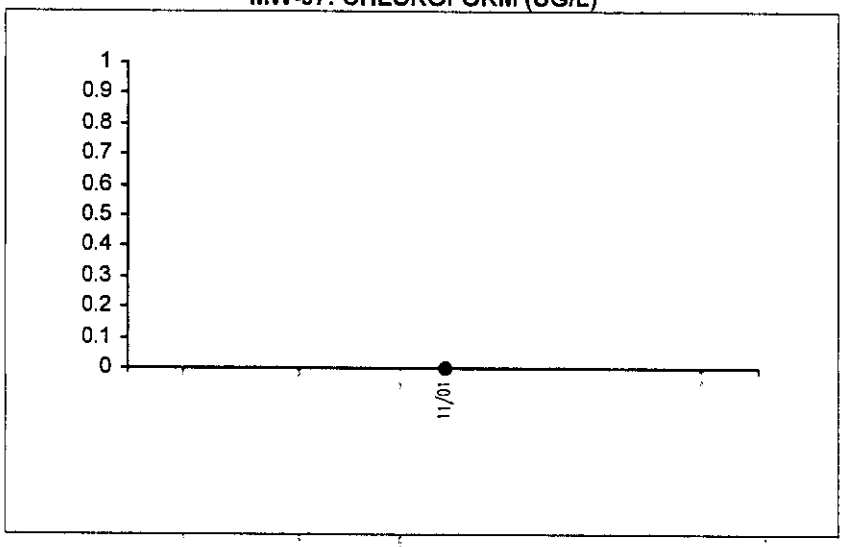
MW-97: CARBON TETRACHLORIDE (UG/L)



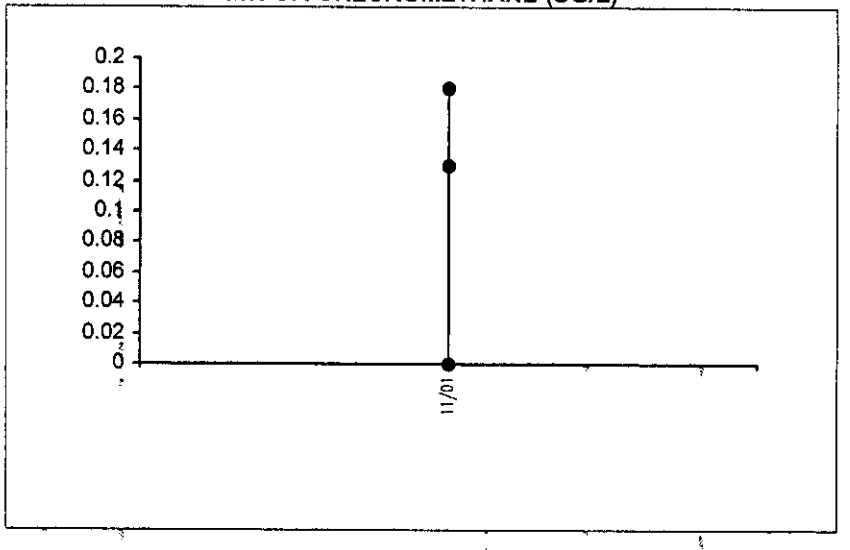
MW-97: CHLORIDE (AS CL) (MG/L)



MW-97: CHLOROFORM (UG/L)



MW-97: CHLOROMETHANE (UG/L)



7941177

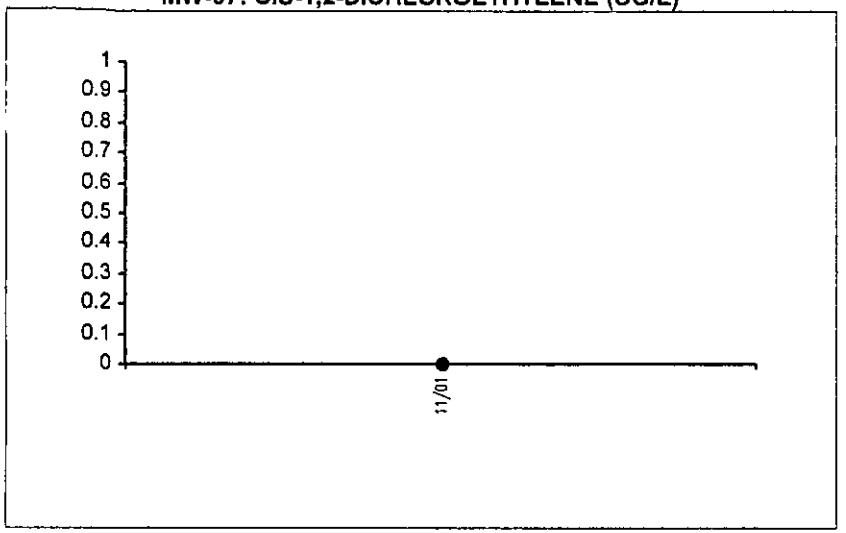
* Nondetects shown as 0.

Location Purpose : Remediation

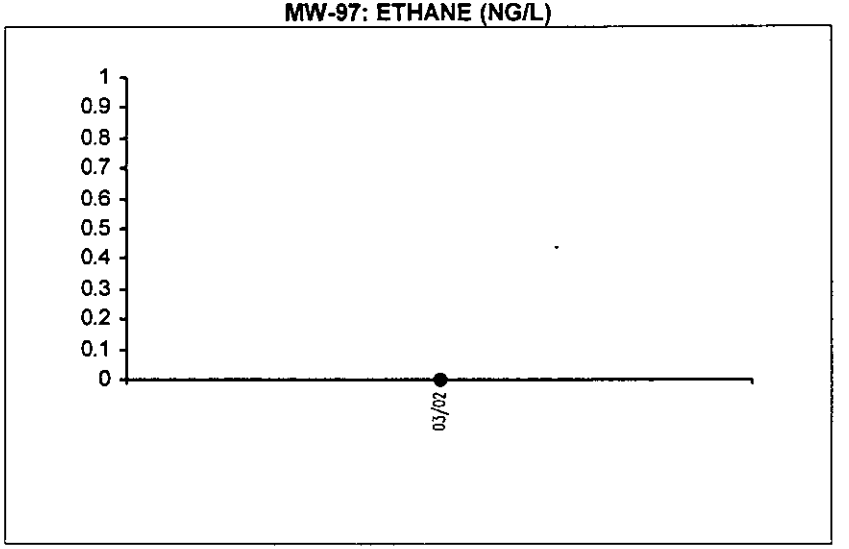
Remediation MW-97

Concentration vs Time

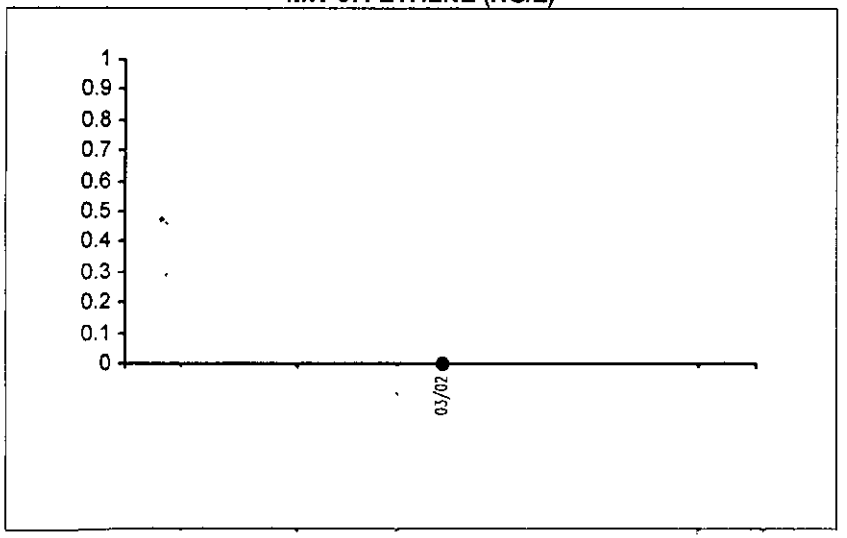
MW-97: CIS-1,2-DICHLOROETHYLENE (UG/L)



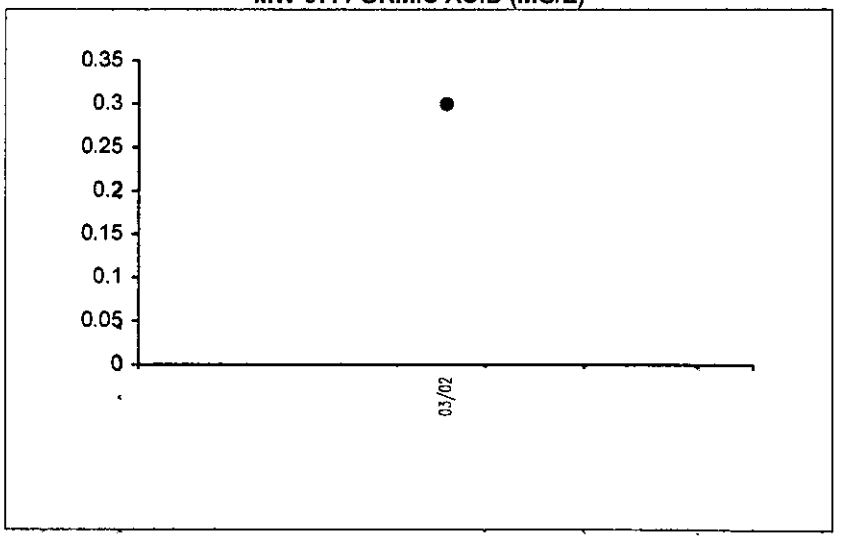
MW-97: ETHANE (NG/L)



MW-97: ETHENE (NG/L)



MW-97: FORMIC ACID (MG/L)



* Nondetects shown as 0.

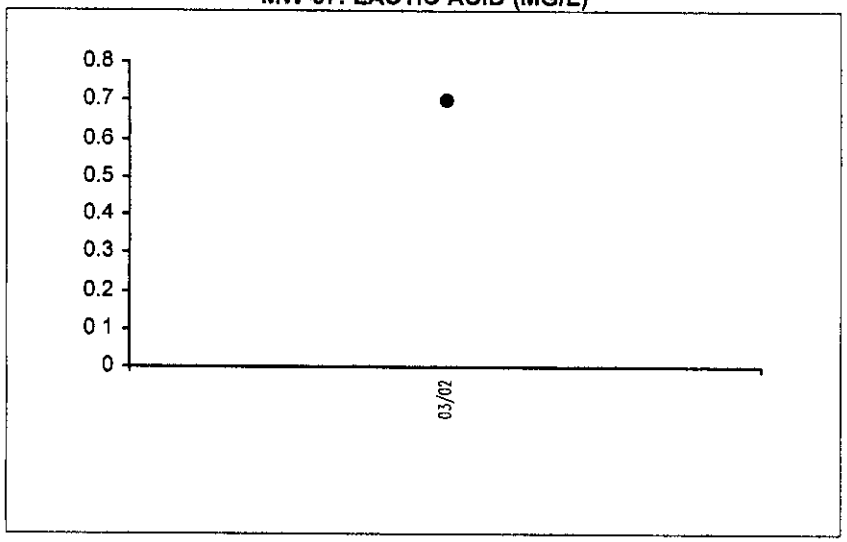
7941178

Location Purpose : Remediation

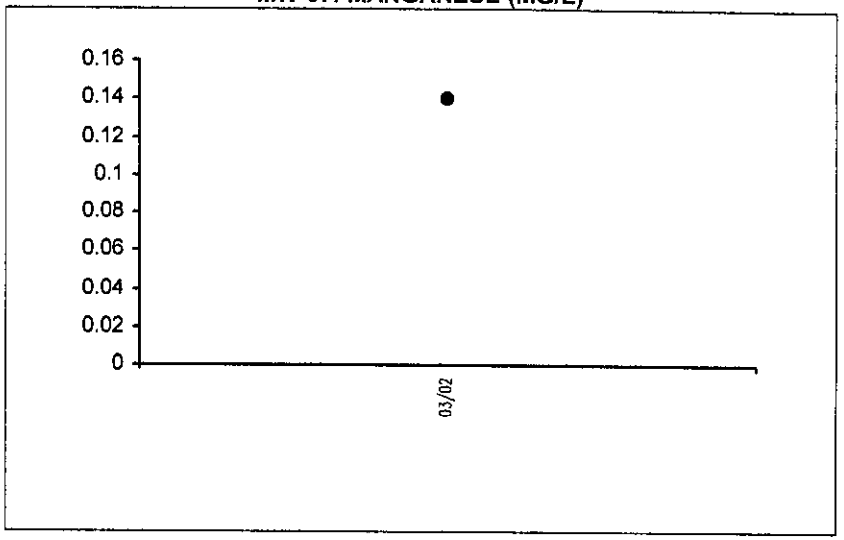
Remediation MW-97

Concentration vs Time

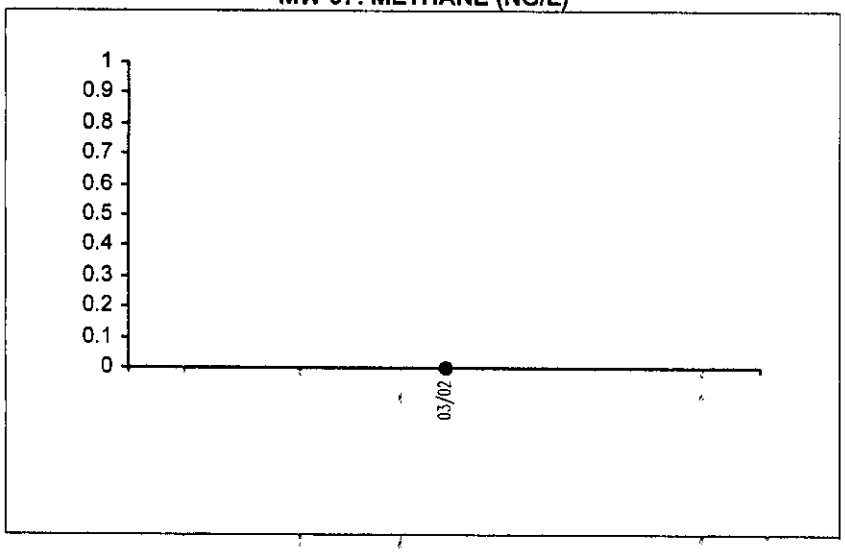
MW-97: LACTIC ACID (MG/L)



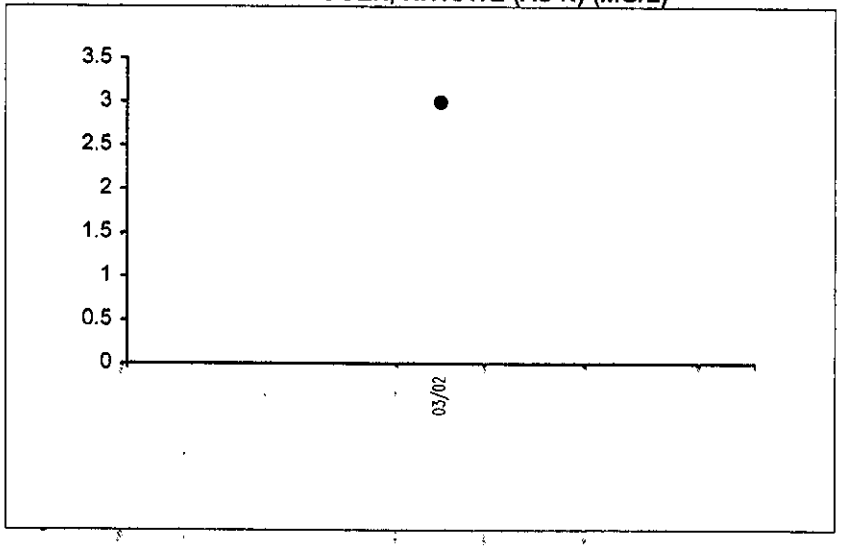
MW-97: MANGANESE (MG/L)



MW-97: METHANE (NG/L)



MW-97: NITROGEN, NITRATE (AS N) (MG/L)



* Nondetects shown as 0.

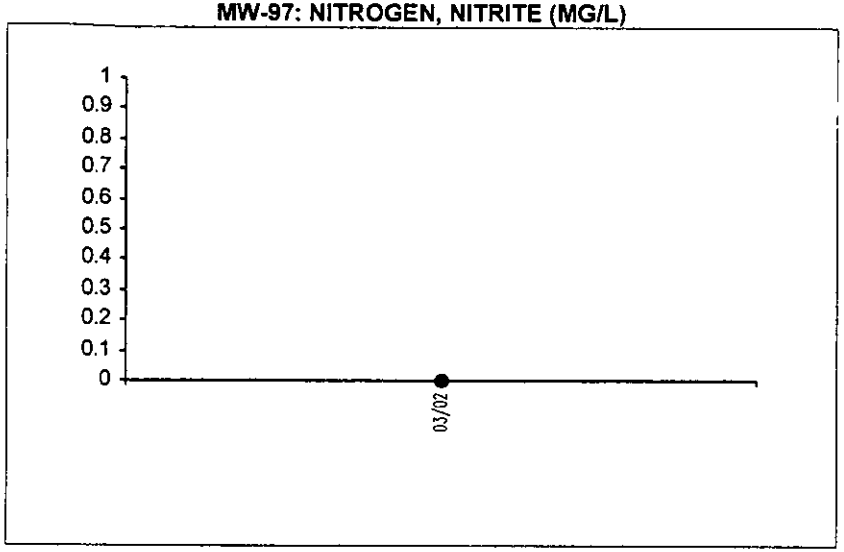
7941179

Location Purpose : Remediation

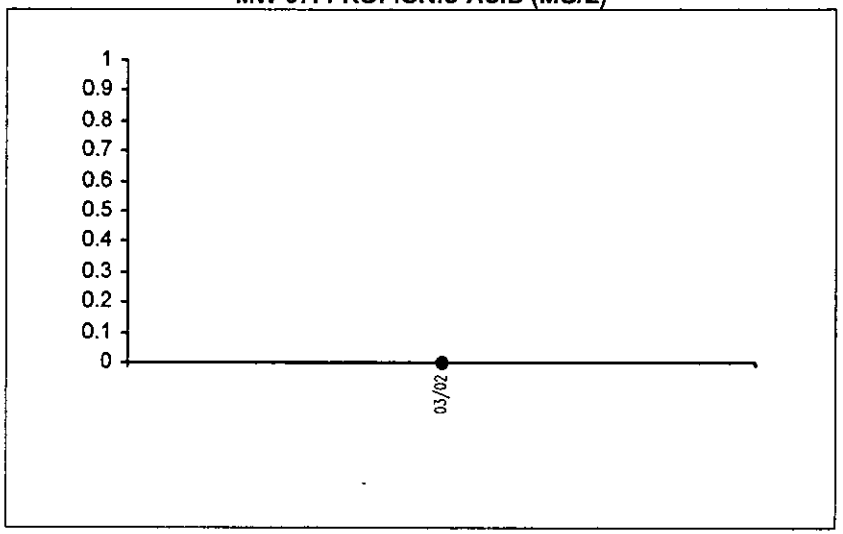
Remediation MW-97

Concentration vs Time

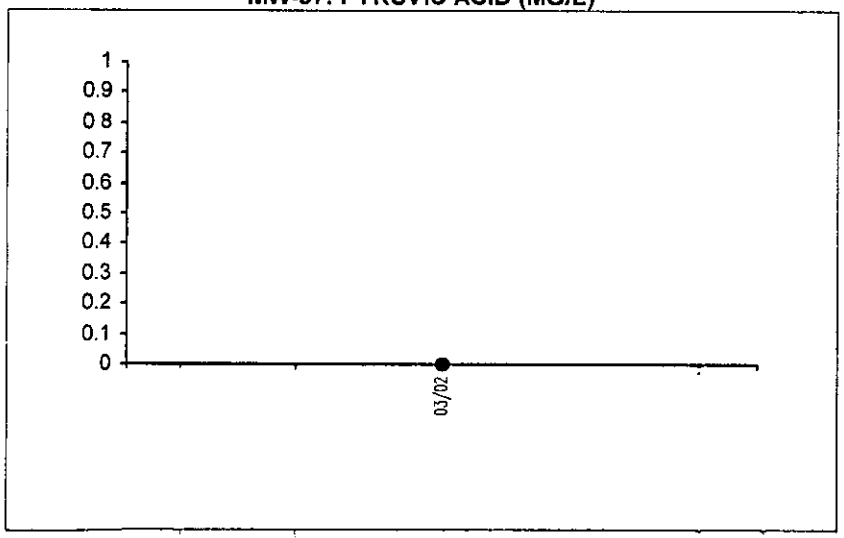
MW-97: NITROGEN, NITRITE (MG/L)



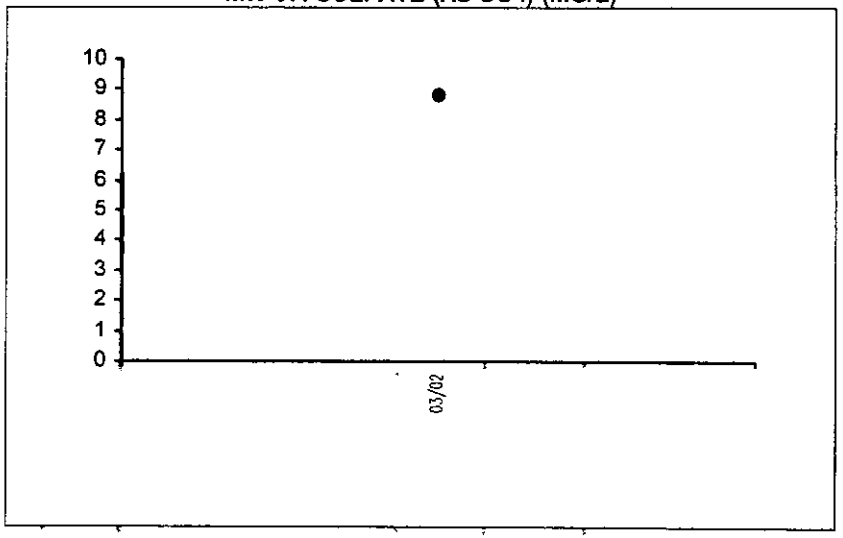
MW-97: PROPIONIC ACID (MG/L)



MW-97: PYRUVIC ACID (MG/L)



MW-97: SULFATE (AS SO4) (MG/L)



* Nondetects shown as 0.

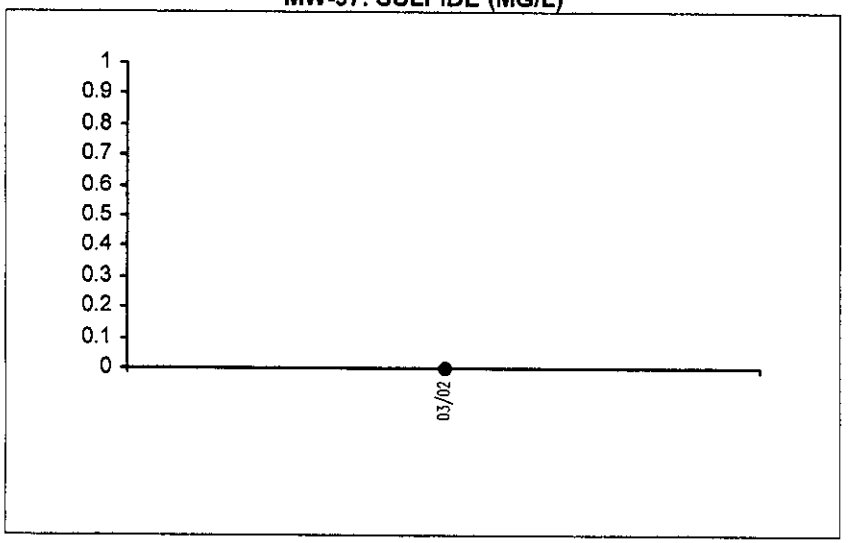
7941180

Location Purpose : Remediation

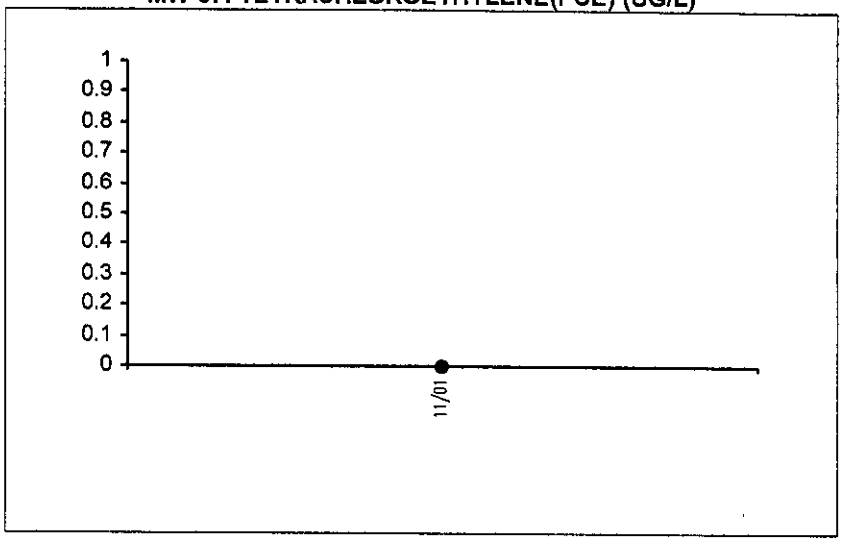
Remediation MW-97

Concentration vs Time

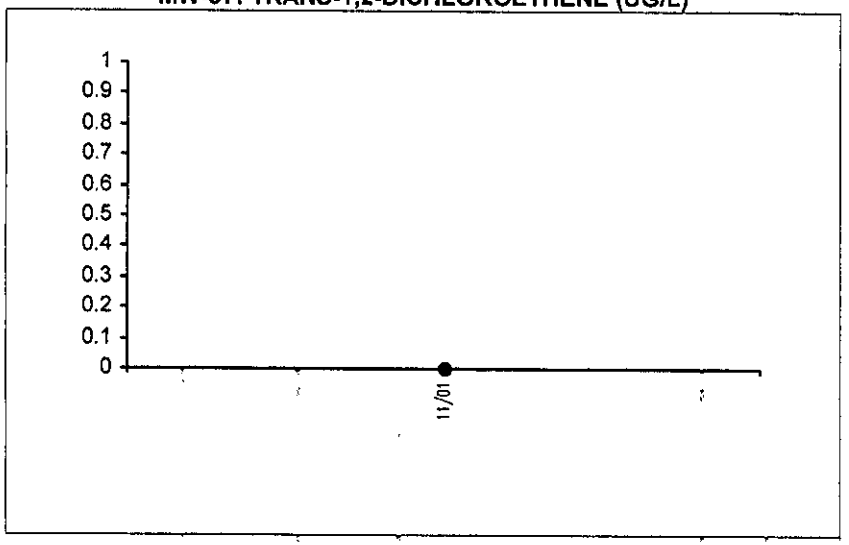
MW-97: SULFIDE (MG/L)



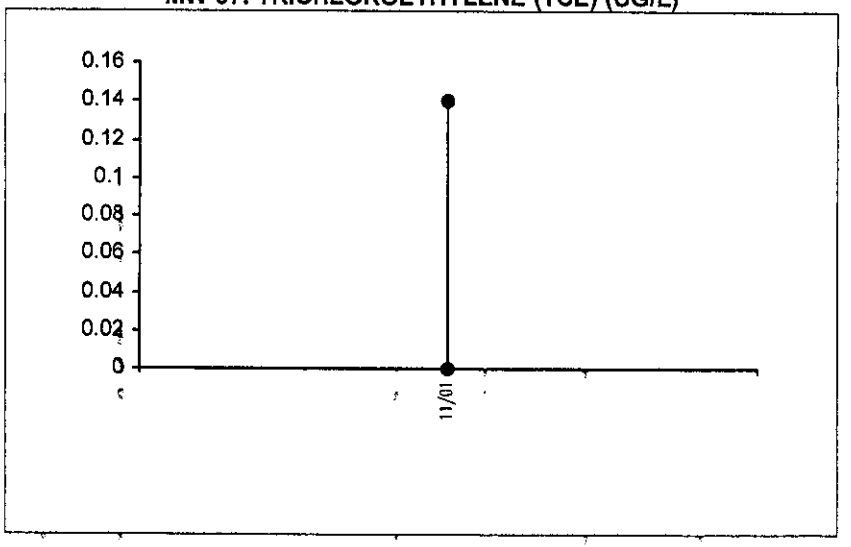
MW-97: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-97: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-97: TRICHLOROETHYLENE (TCE) (UG/L)



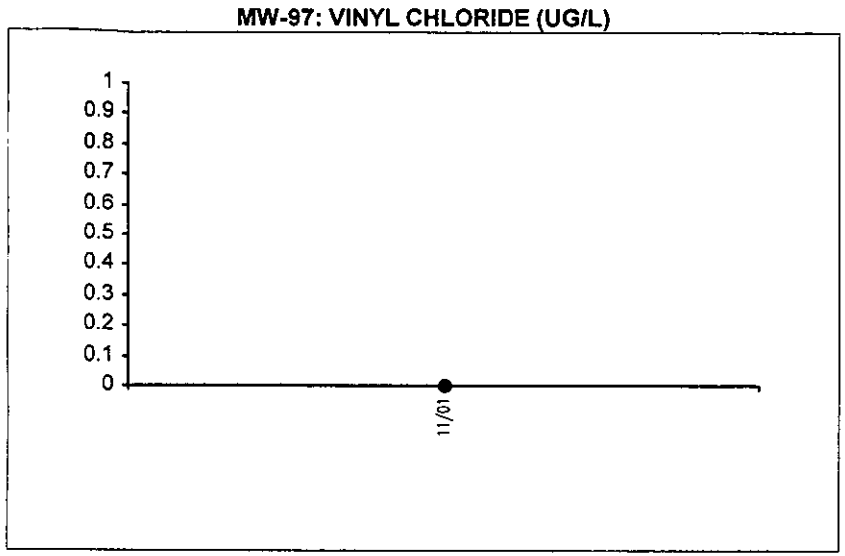
* Nondetects shown as 0.

7941181

Location Purpose : Remediation

Remediation MW-97

Concentration vs Time



* Nondetects shown as 0.

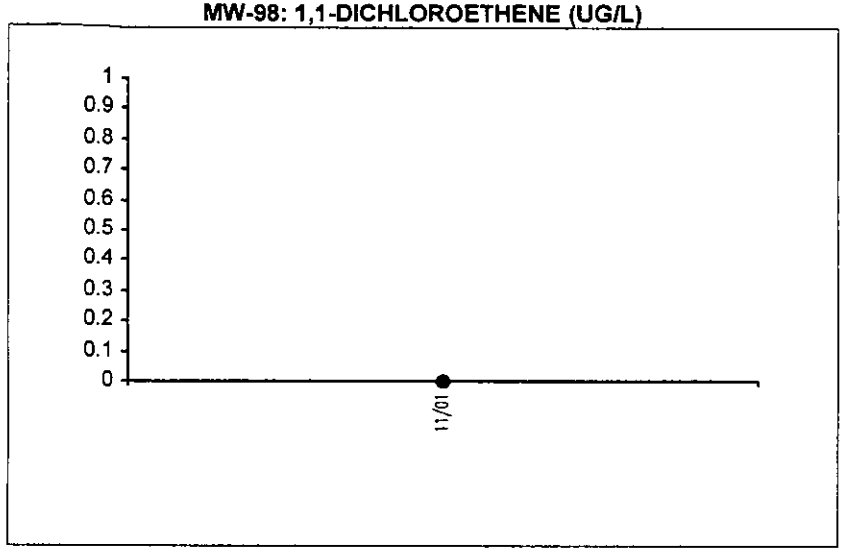
7941182

Location Purpose : Remediation

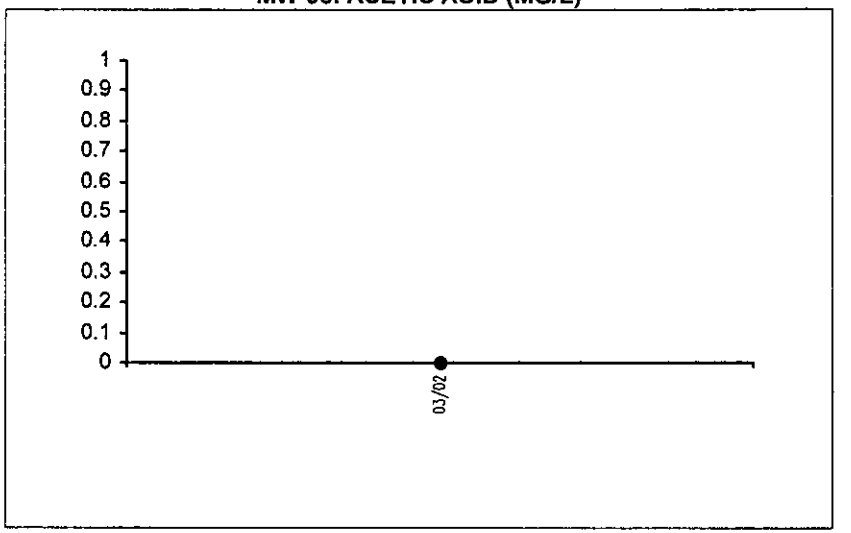
Remediation MW-98

Concentration vs Time

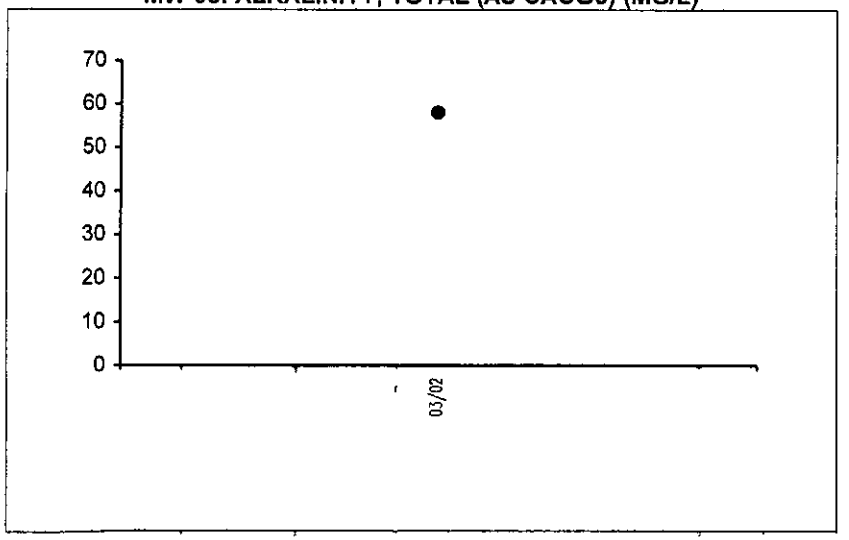
MW-98: 1,1-DICHLOROETHENE (UG/L)



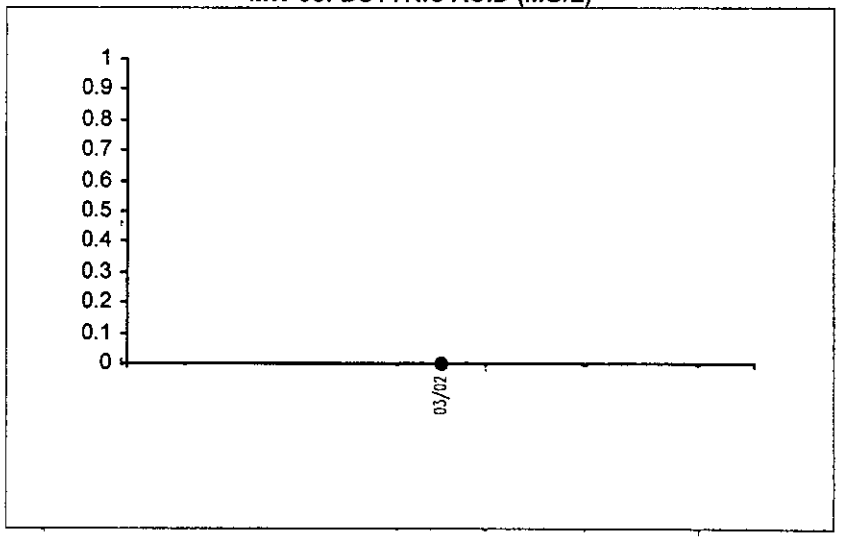
MW-98: ACETIC ACID (MG/L)



MW-98: ALKALINITY, TOTAL (AS CACO3) (MG/L)



MW-98: BUTYRIC ACID (MG/L)



* Nondetects shown as 0.

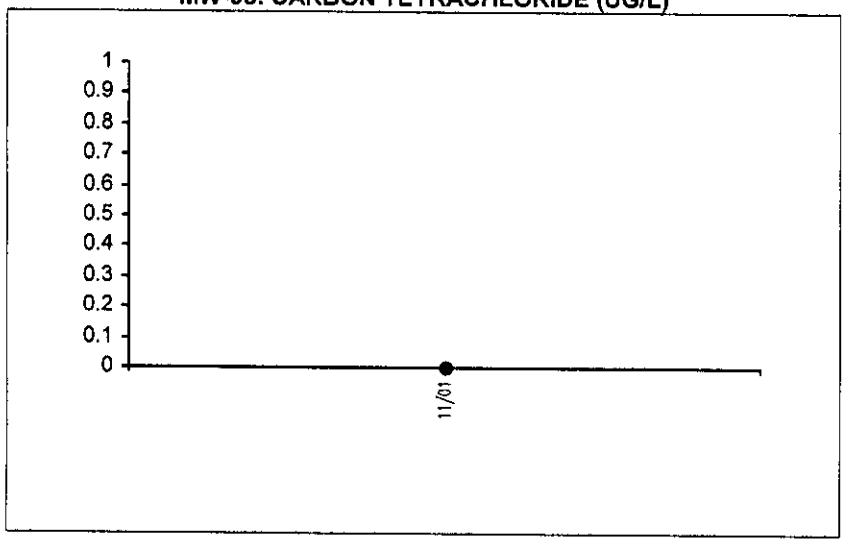
79411183

Location Purpose : Remediation

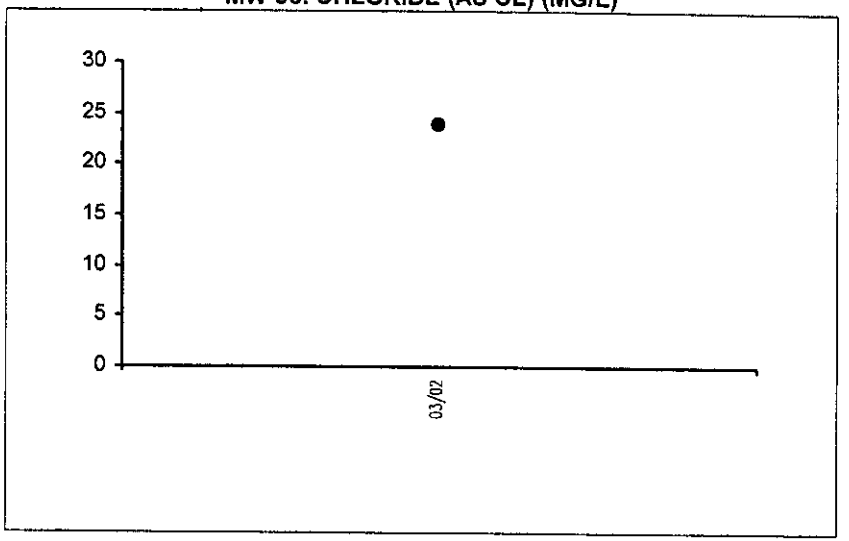
Remediation MW-98

Concentration vs Time

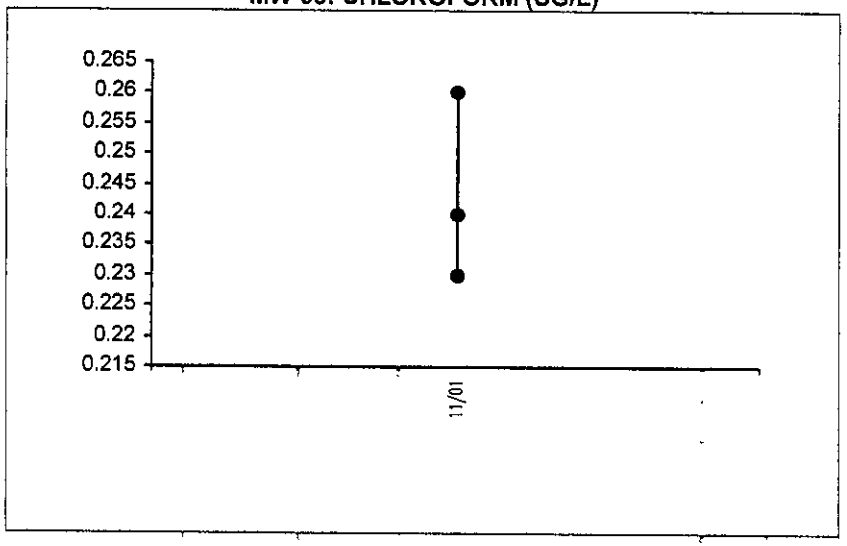
MW-98: CARBON TETRACHLORIDE (UG/L)



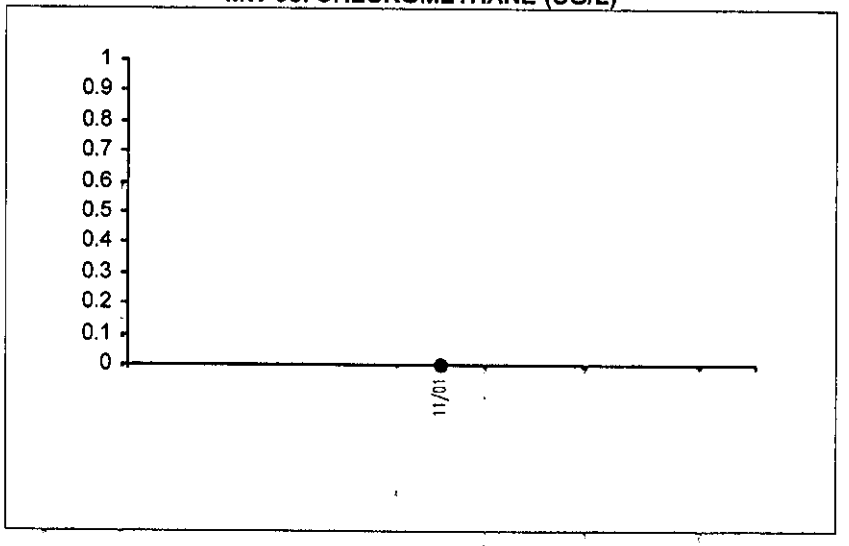
MW-98: CHLORIDE (AS CL) (MG/L)



MW-98: CHLOROFORM (UG/L)



MW-98: CHLOROMETHANE (UG/L)



* Nondetects shown as 0.

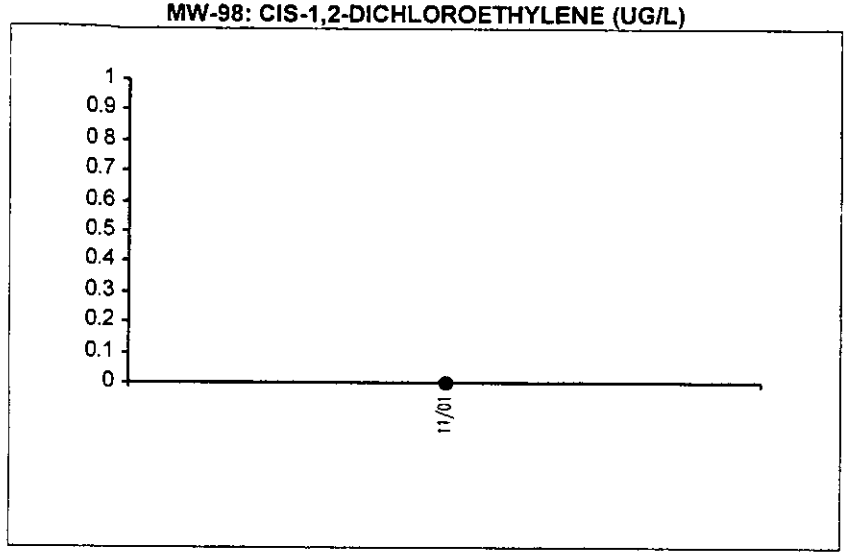
7941184

Location Purpose : Remediation

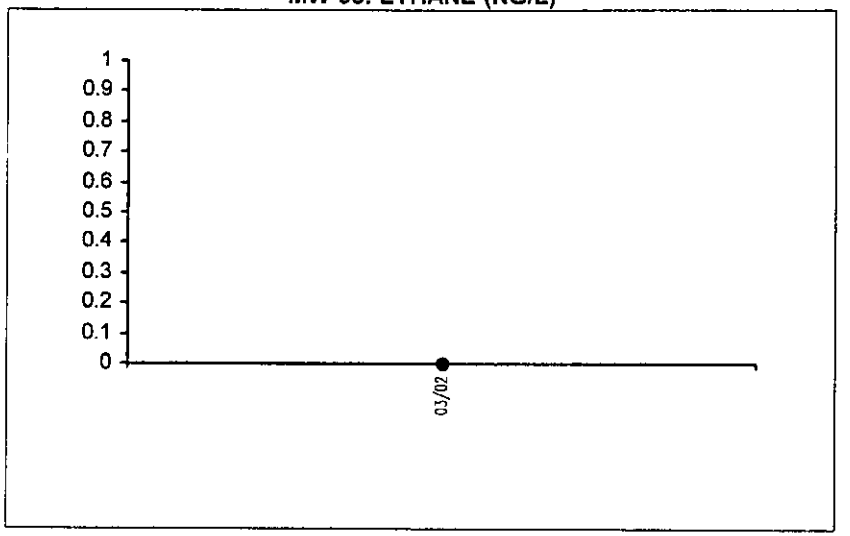
Remediation MW-98

Concentration vs Time

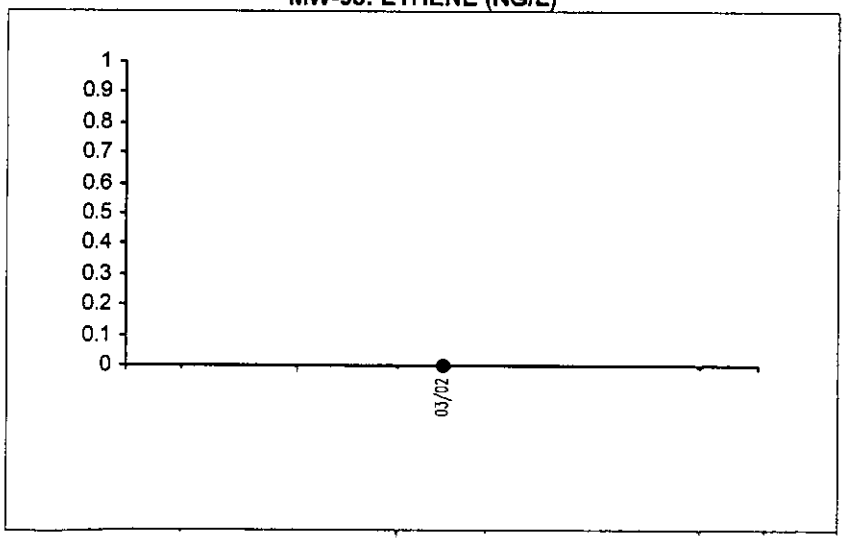
MW-98: CIS-1,2-DICHLOROETHYLENE (UG/L)



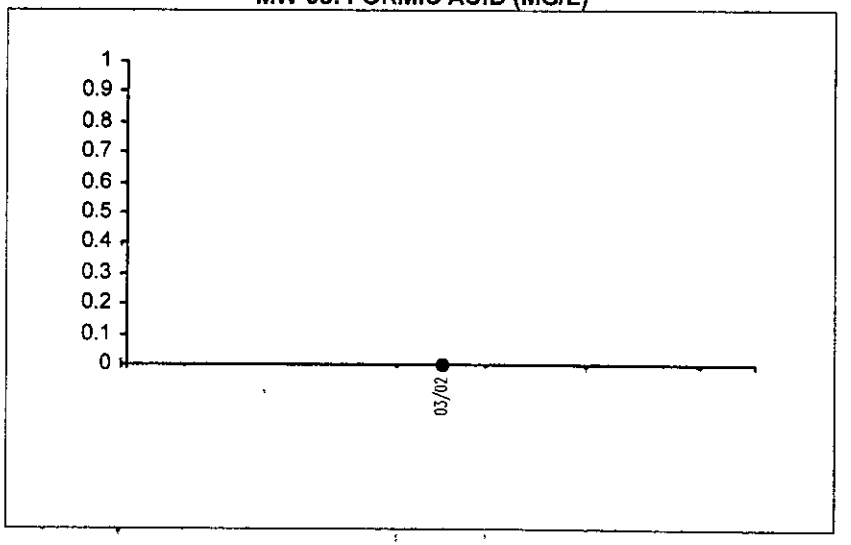
MW-98: ETHANE (NG/L)



MW-98: ETHENE (NG/L)



MW-98: FORMIC ACID (MG/L)



* Nondetects shown as 0.

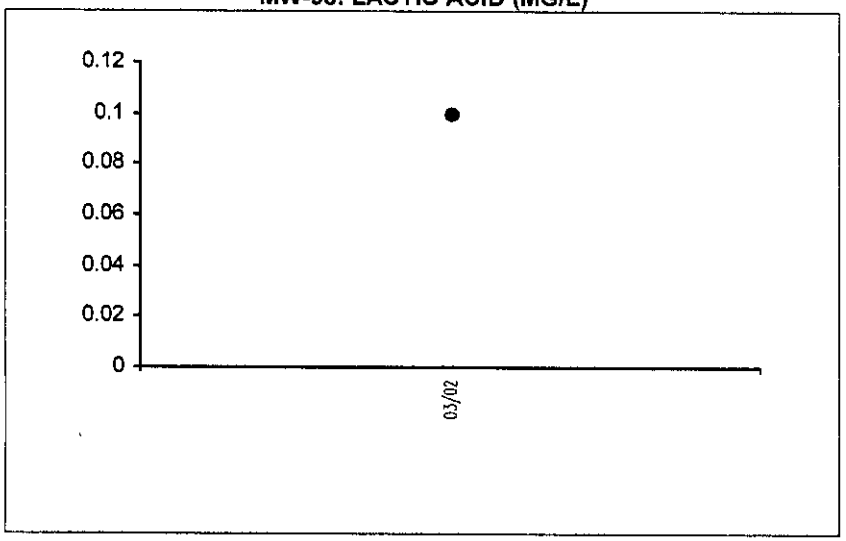
79411185

Location Purpose : Remediation

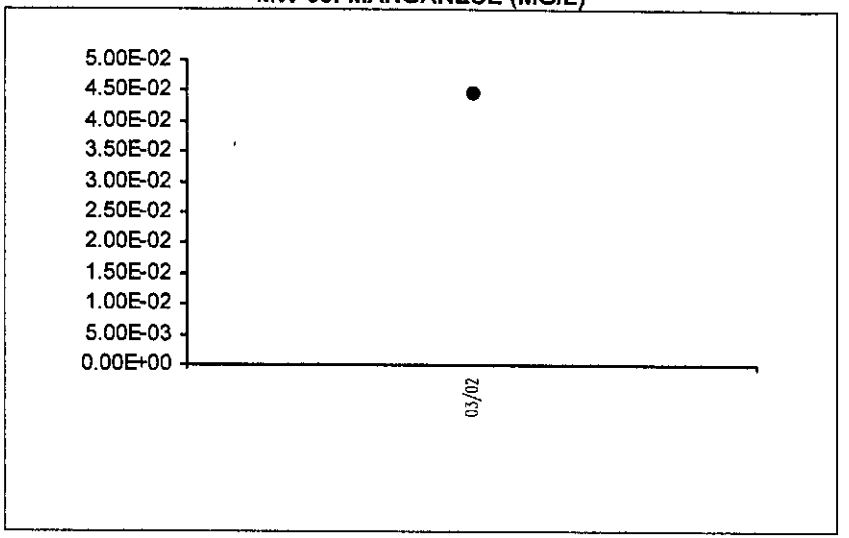
Remediation MW-98

Concentration vs Time

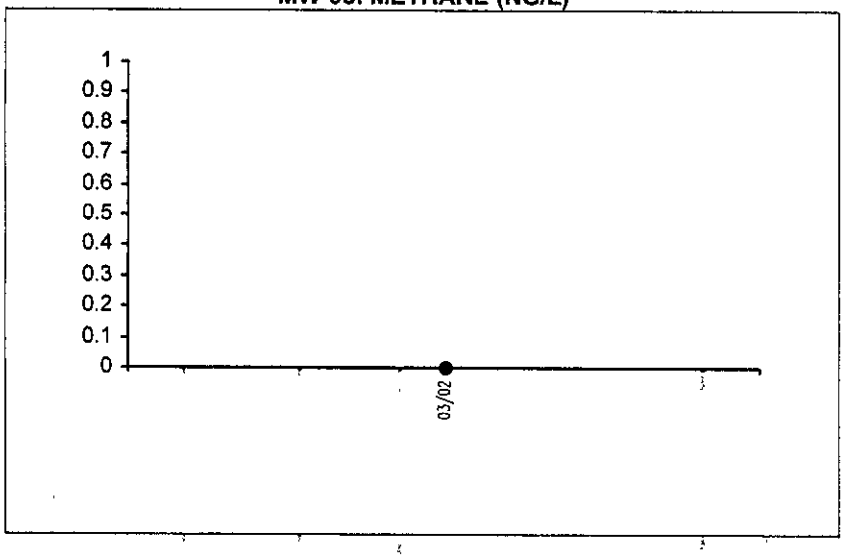
MW-98: LACTIC ACID (MG/L)



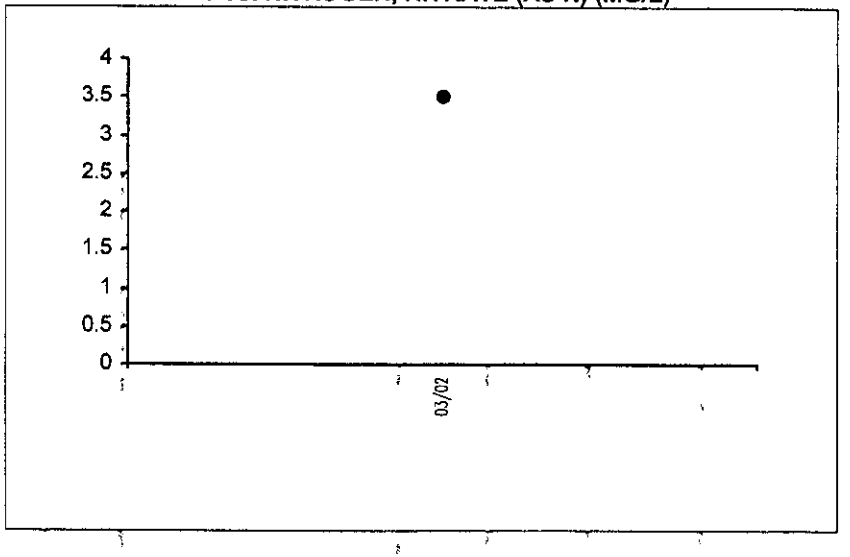
MW-98: MANGANESE (MG/L)



MW-98: METHANE (NG/L)



MW-98: NITROGEN, NITRATE (AS N) (MG/L)



* Nondetects shown as 0.

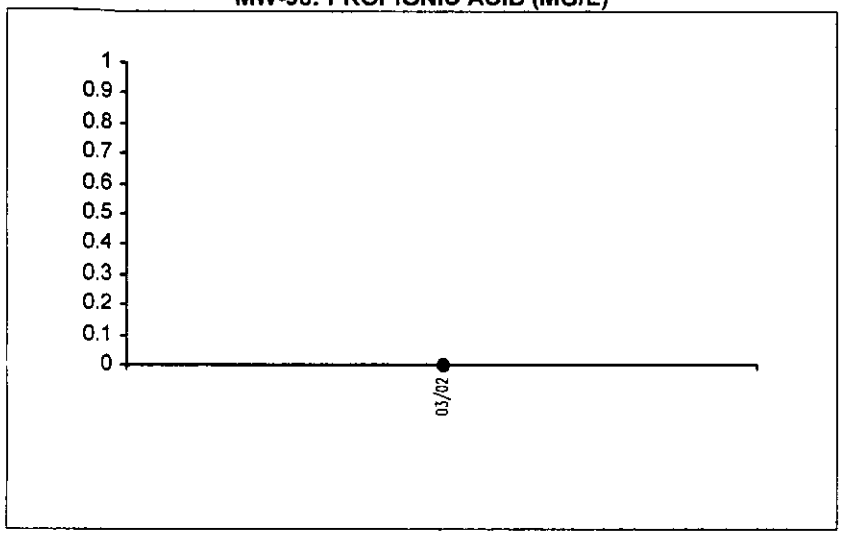
7941186

Location Purpose : Remediation

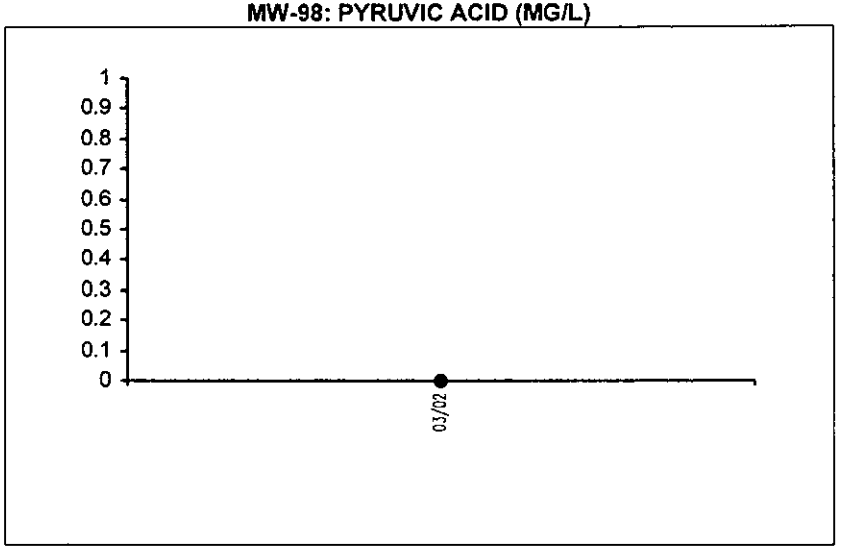
Remediation MW-98

Concentration vs Time

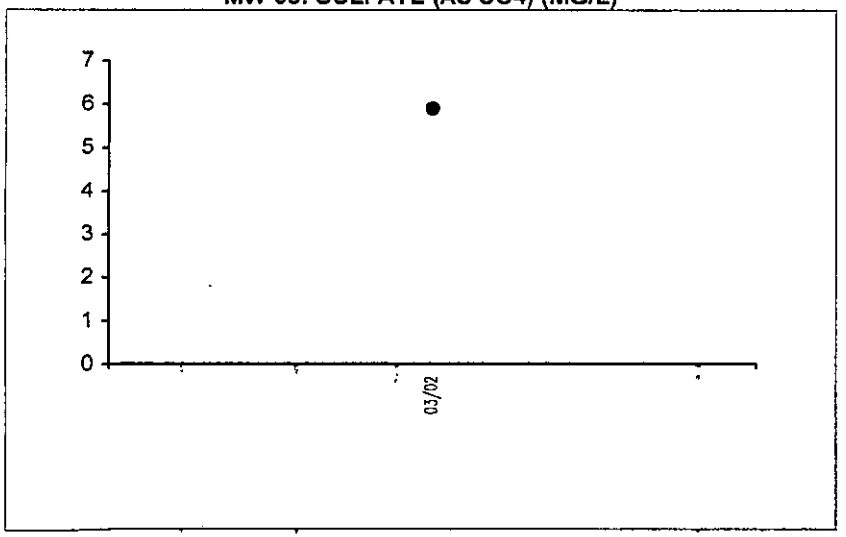
MW-98: PROPIONIC ACID (MG/L)



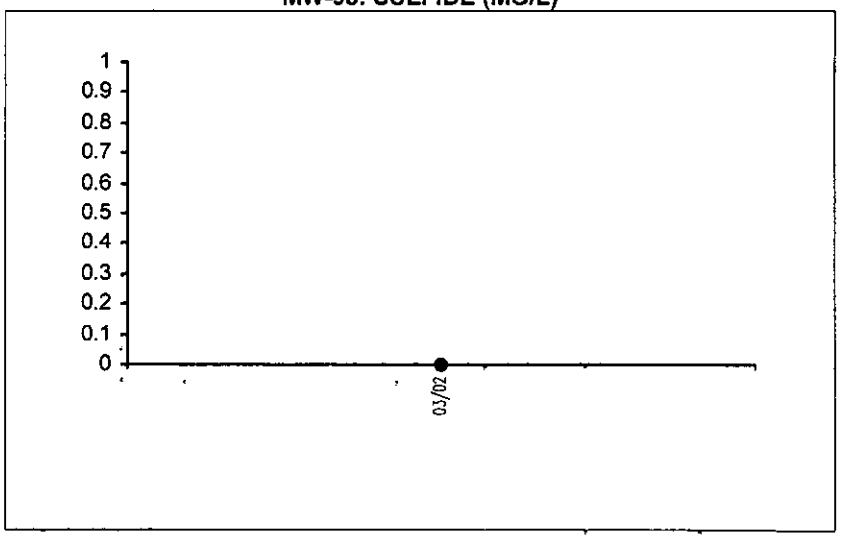
MW-98: PYRUVIC ACID (MG/L)



MW-98: SULFATE (AS SO4) (MG/L)



MW-98: SULFIDE (MG/L)



* Nondetects shown as 0.

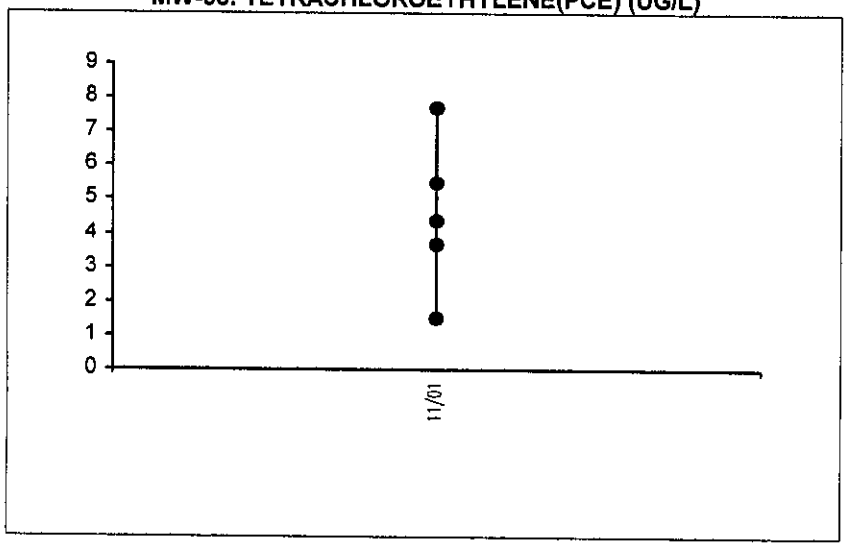
79411187

Location Purpose : Remediation

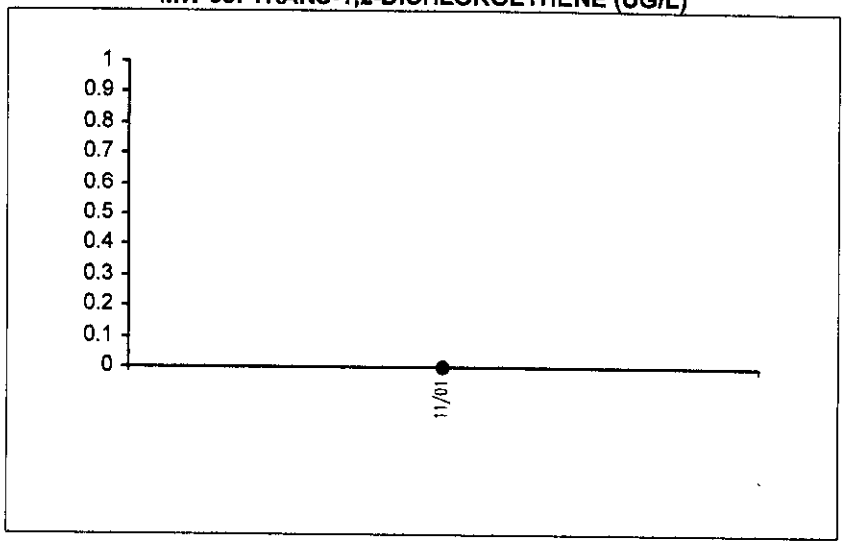
Remediation MW-98

Concentration vs Time

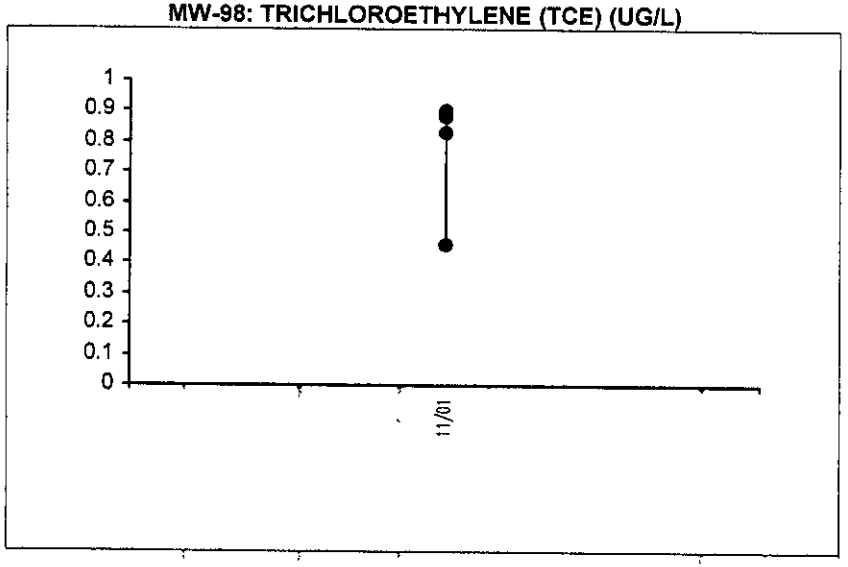
MW-98: TETRACHLOROETHYLENE(PCE) (UG/L)



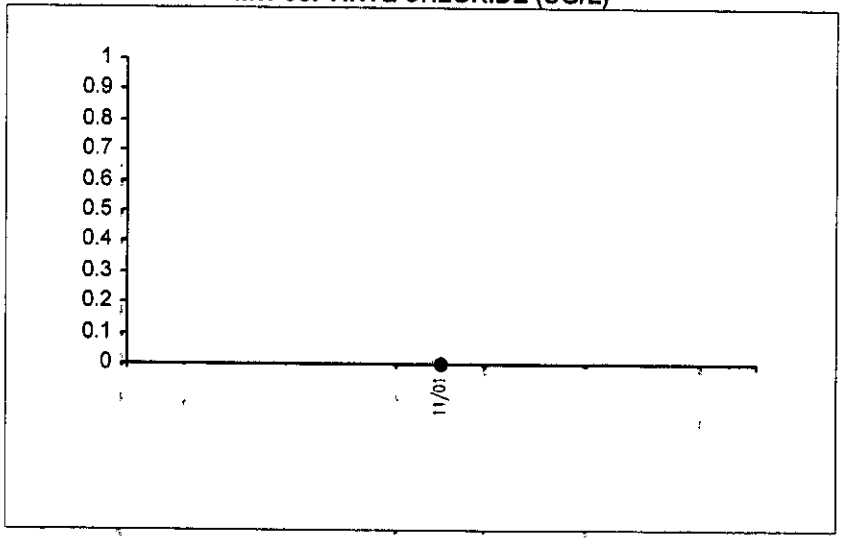
MW-98: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-98: TRICHLOROETHYLENE (TCE) (UG/L)



MW-98: VINYL CHLORIDE (UG/L)



* Nondetects shown as 0.

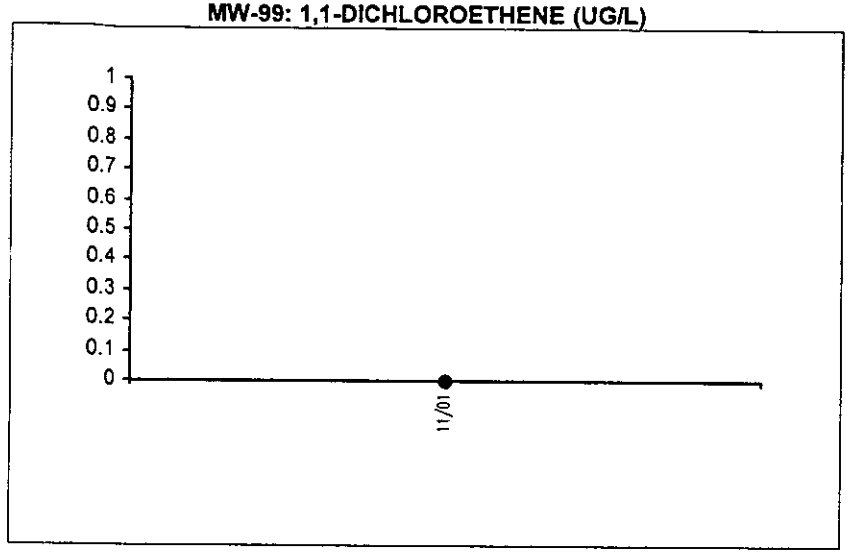
7941188

Location Purpose : Remediation

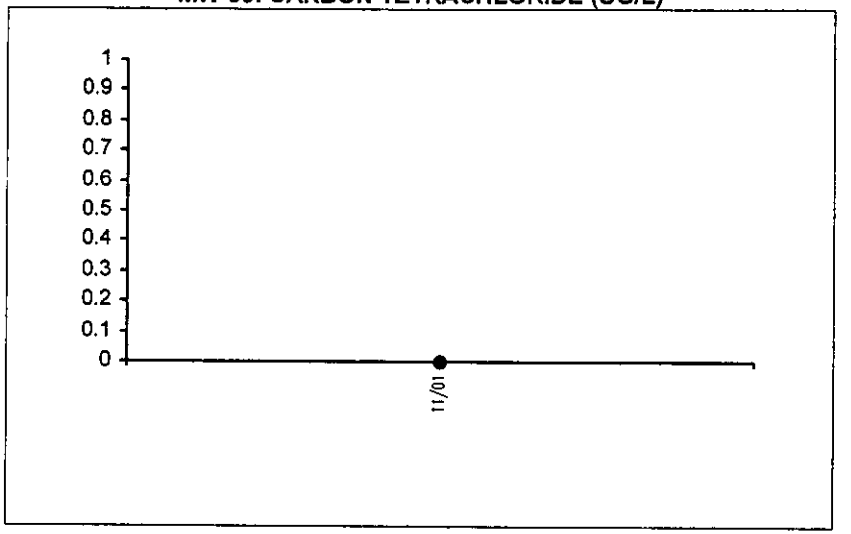
Remediation MW-99

Concentration vs Time

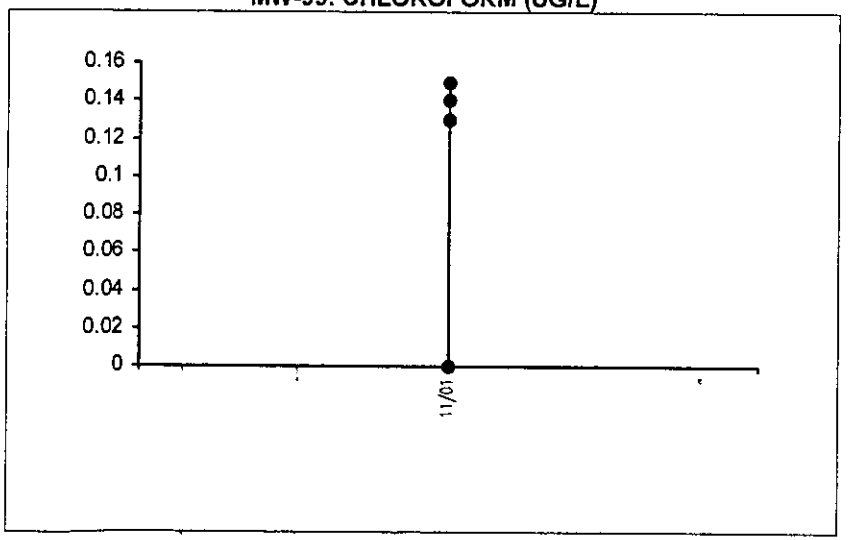
MW-99: 1,1-DICHLOROETHENE (UG/L)



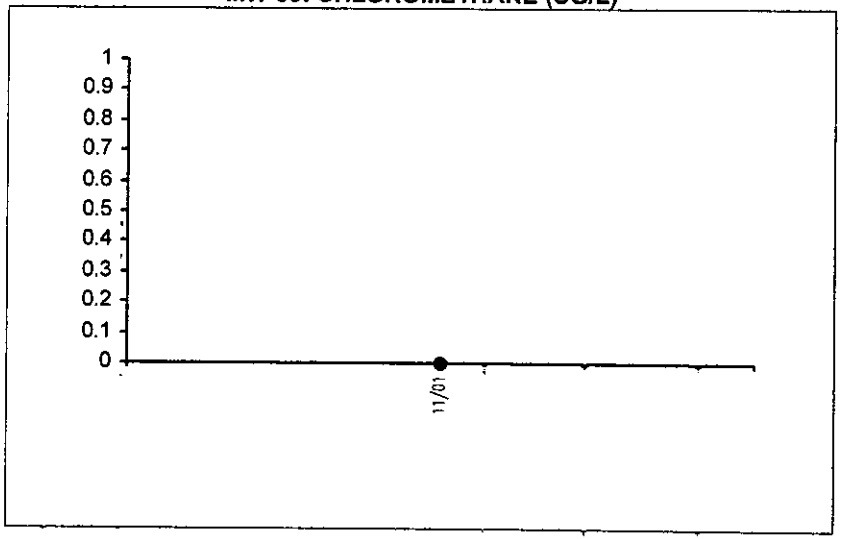
MW-99: CARBON TETRACHLORIDE (UG/L)



MW-99: CHLOROFORM (UG/L)



MW-99: CHLOROMETHANE (UG/L)



* Nondetects shown as 0.

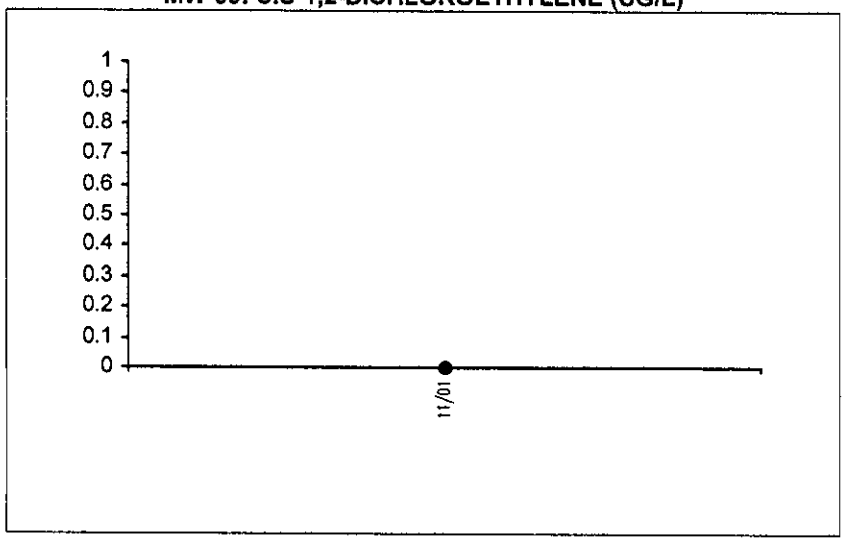
7941189

Location Purpose : Remediation

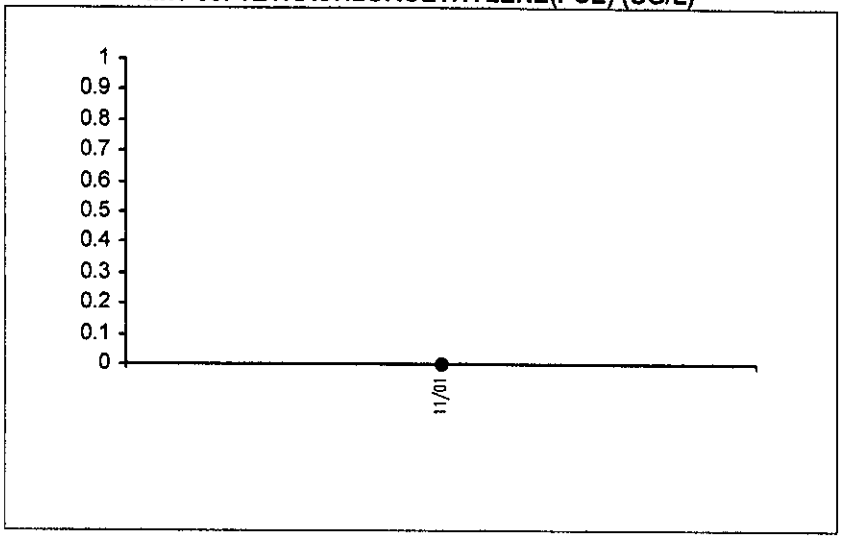
Remediation MW-99

Concentration vs Time

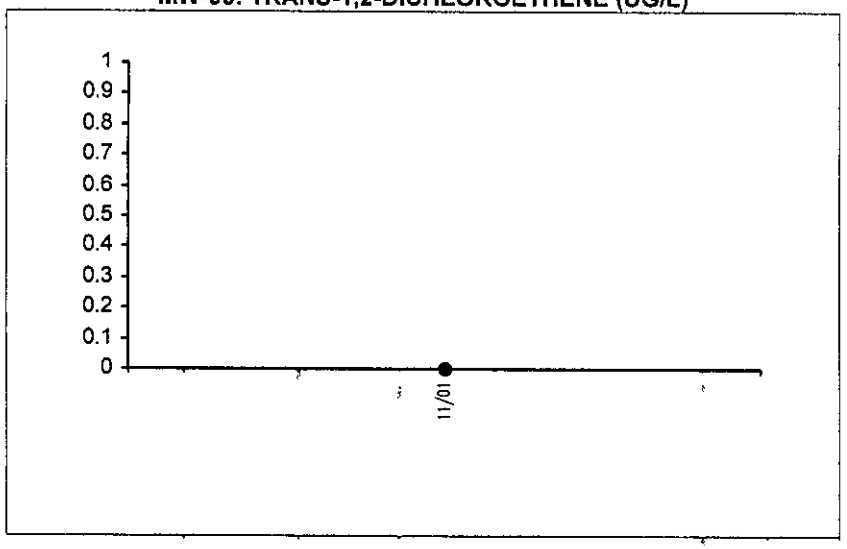
MW-99: CIS-1,2-DICHLOROETHYLENE (UG/L)



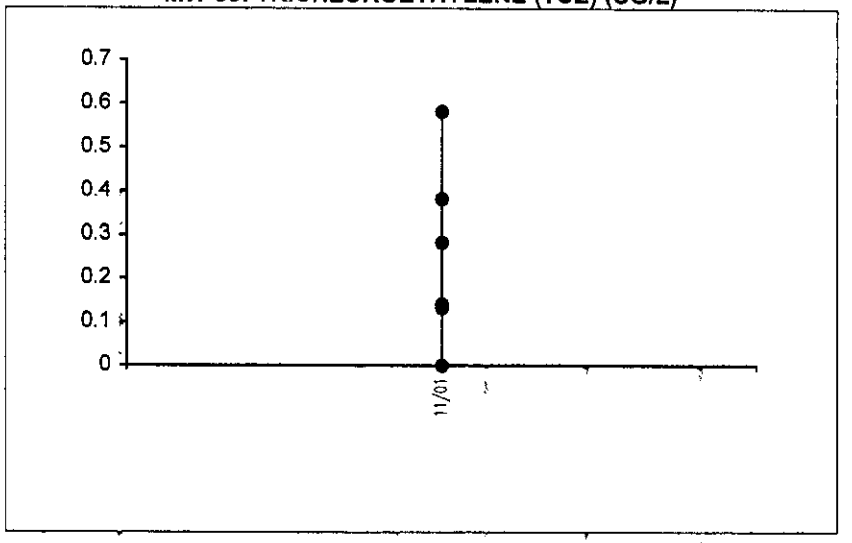
MW-99: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-99: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-99: TRICHLOROETHYLENE (TCE) (UG/L)



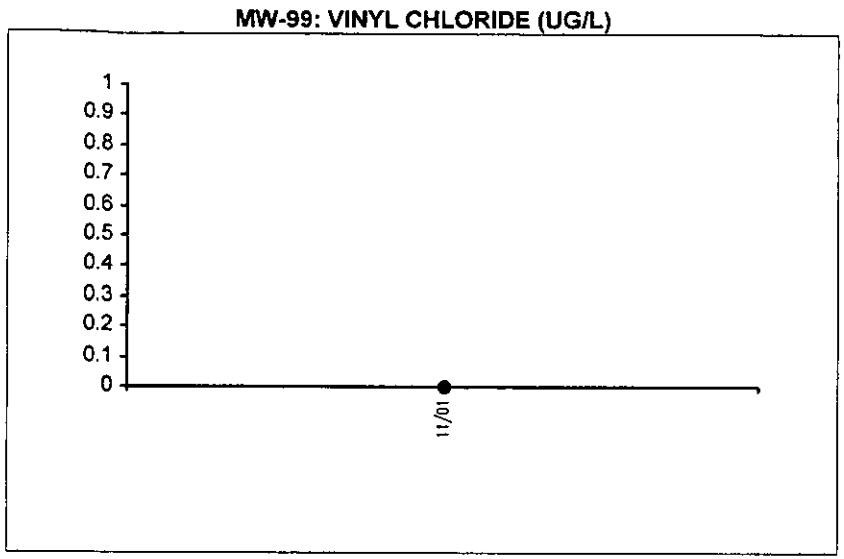
* Nondetects shown as 0.

7941190

Location Purpose : Remediation

Remediation MW-99

Concentration vs Time



* Nondetects shown as 0.

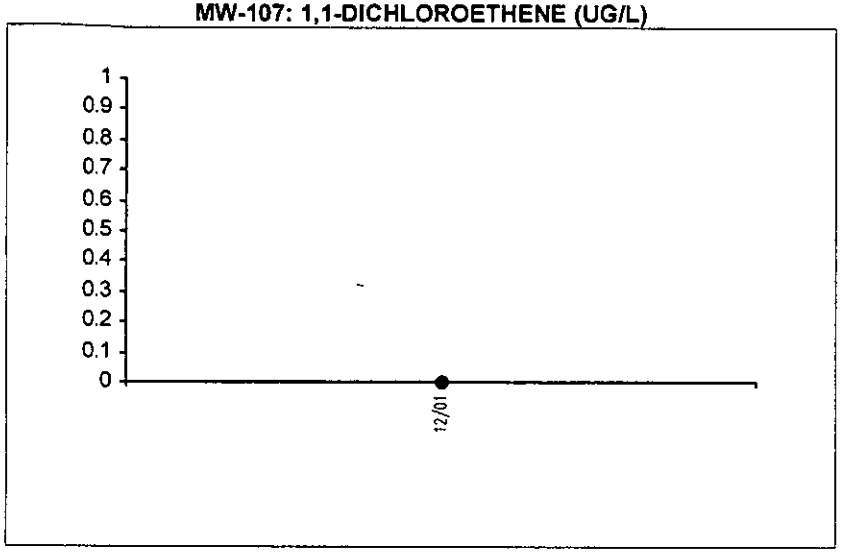
7941191

Location Purpose : Sentinel

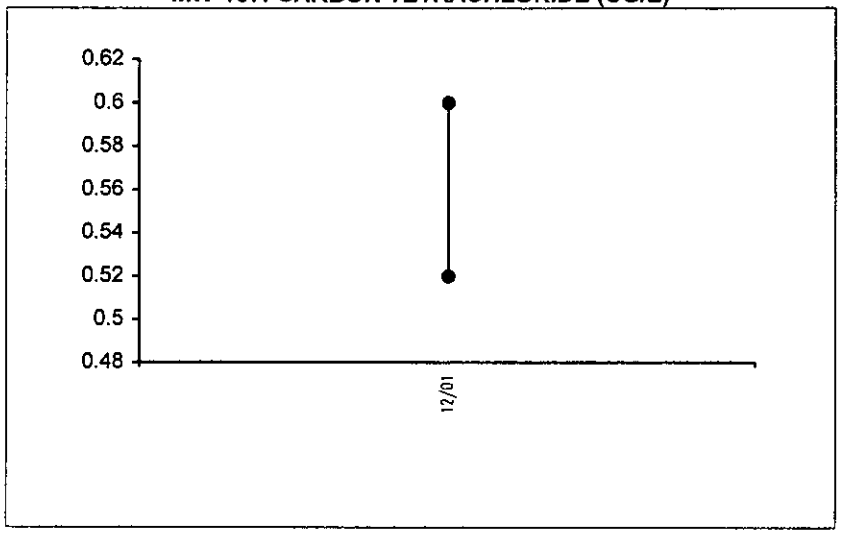
Sentinel MW-107

Concentration vs Time

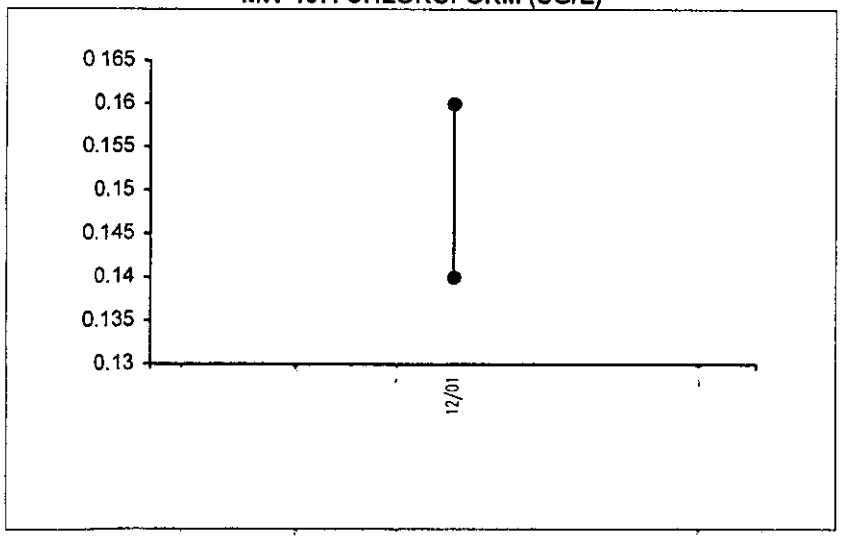
MW-107: 1,1-DICHLOROETHENE (UG/L)



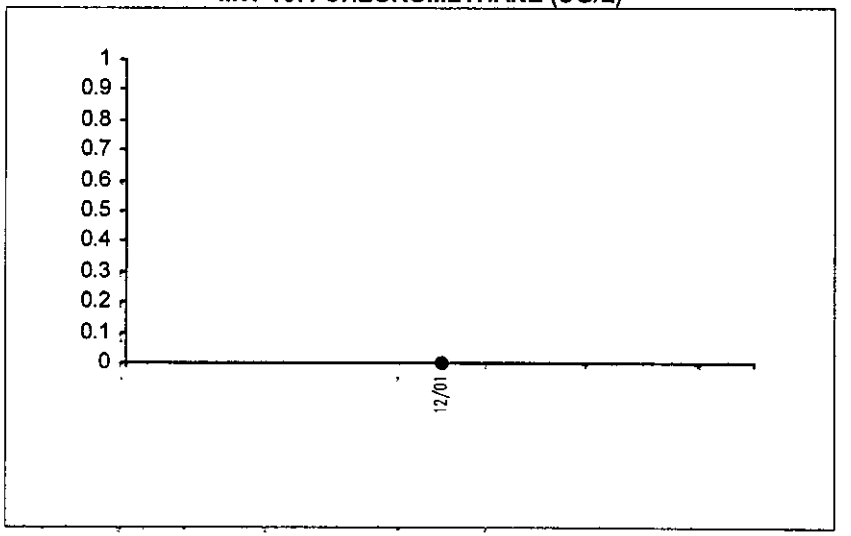
MW-107: CARBON TETRACHLORIDE (UG/L)



MW-107: CHLOROFORM (UG/L)



MW-107: CHLOROMETHANE (UG/L)



* Nondetects shown as 0.

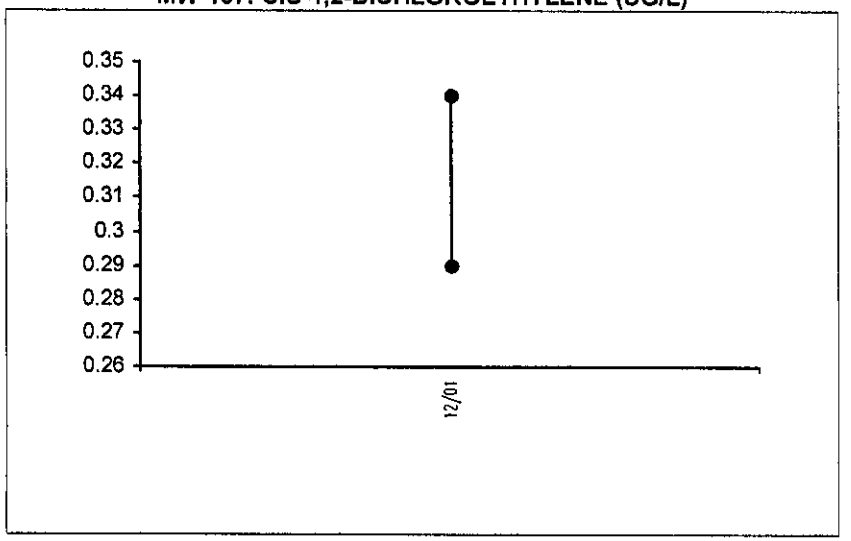
79411192

Location Purpose : Sentinel

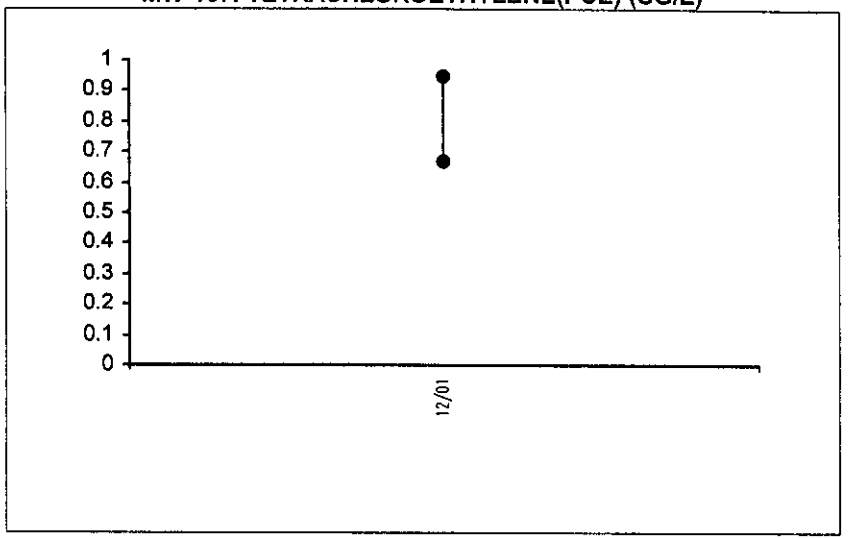
Sentinel MW-107

Concentration vs Time

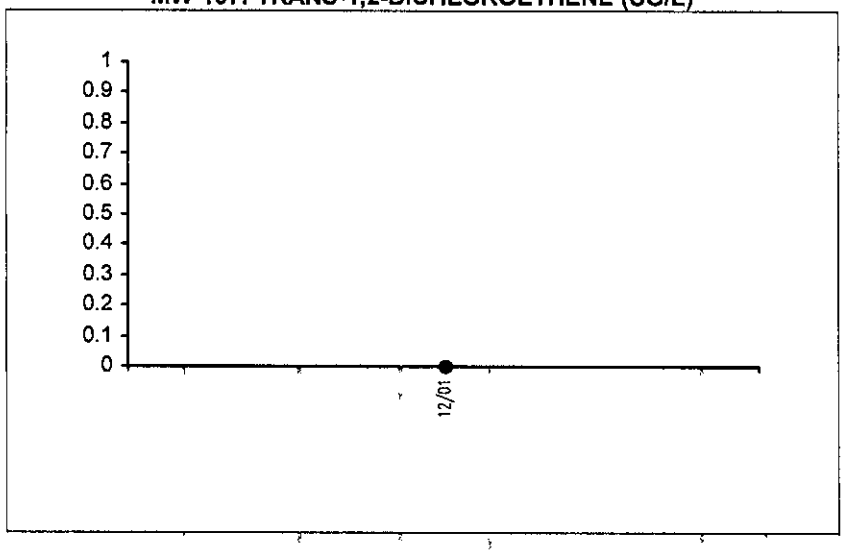
MW-107: CIS-1,2-DICHLOROETHYLENE (UG/L)



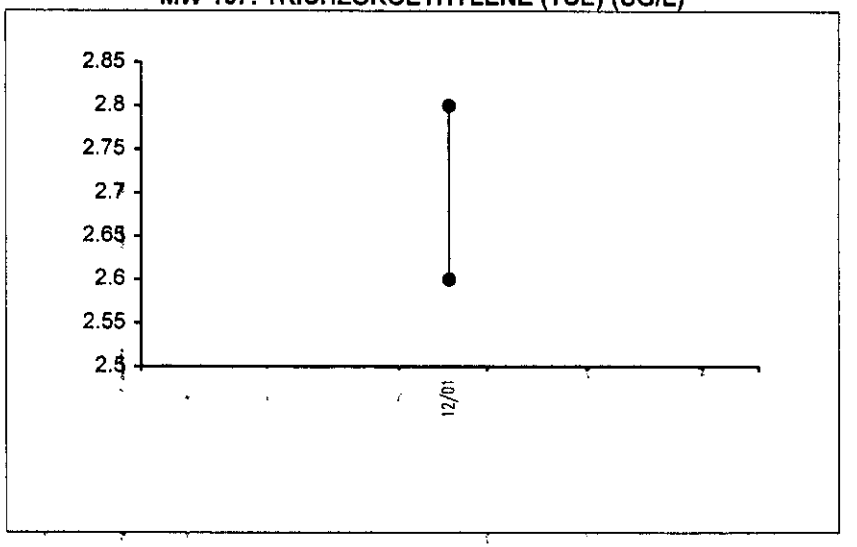
MW-107: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-107: TRANS-1,2-DICHLOROETHENE (UG/L)



MW-107: TRICHLOROETHYLENE (TCE) (UG/L)



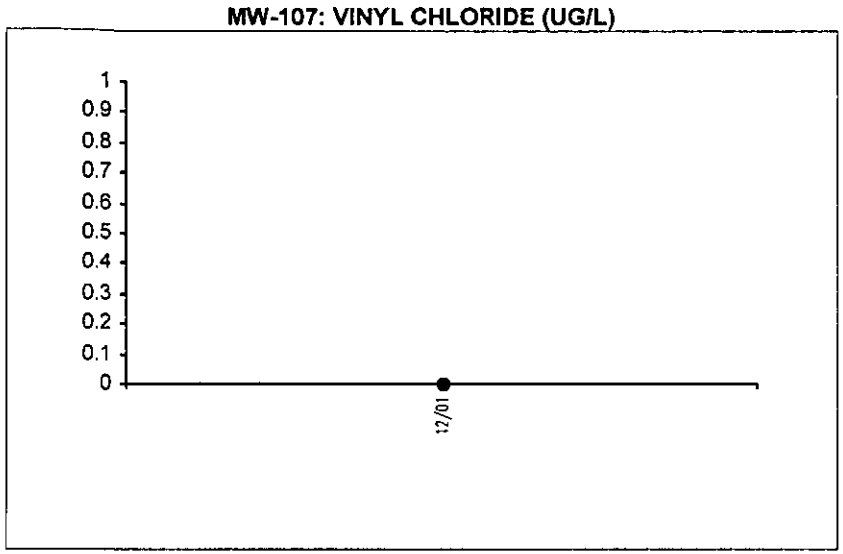
* Nondetects shown as 0.

7941193

Location Purpose : Sentinel

Sentinel MW-107

Concentration vs Time



* Nondetects shown as 0.

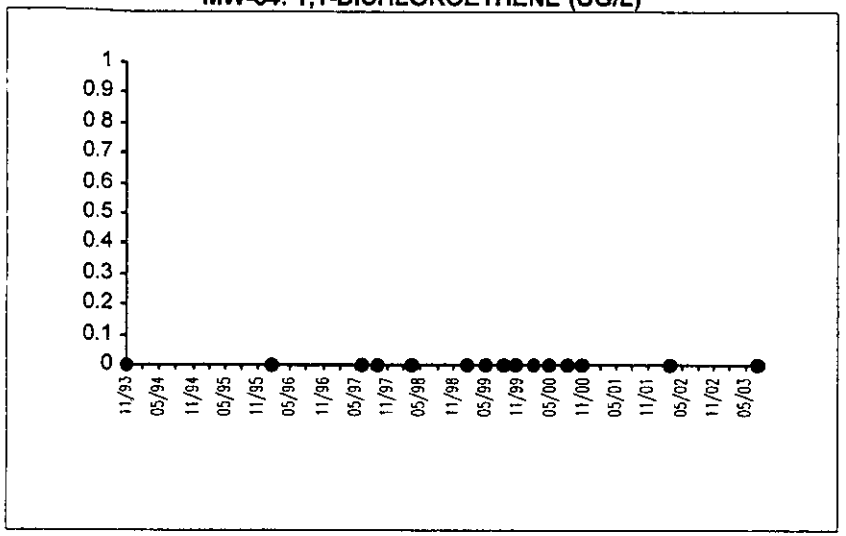
7941194

Location Purpose : Sentinel

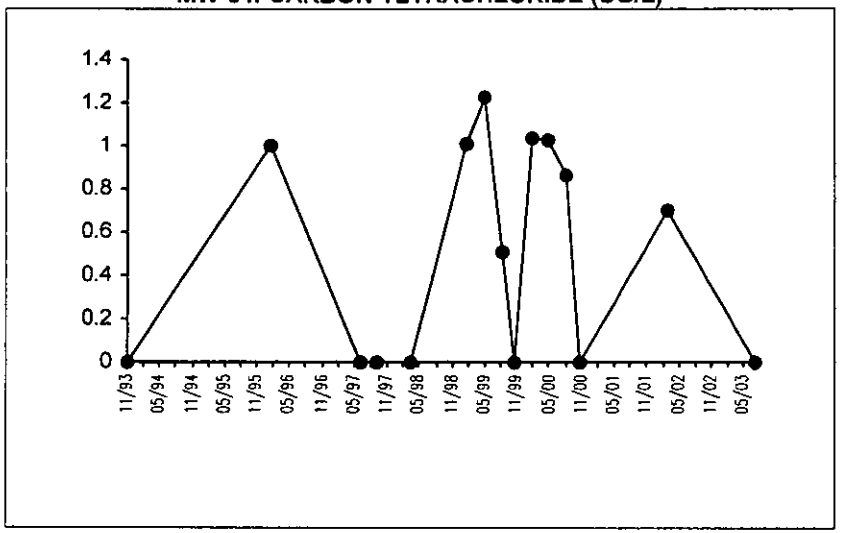
Sentinel MW-34

Concentration vs Time

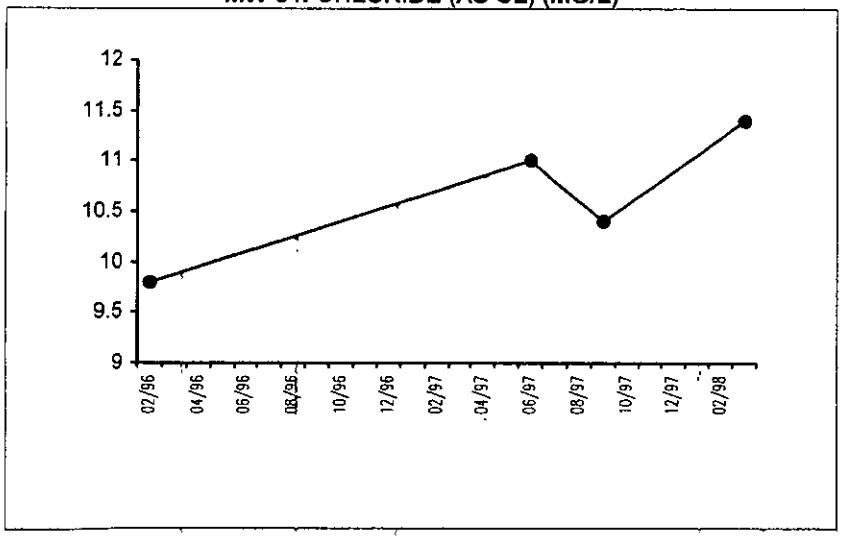
MW-34: 1,1-DICHLOROETHENE (UG/L)



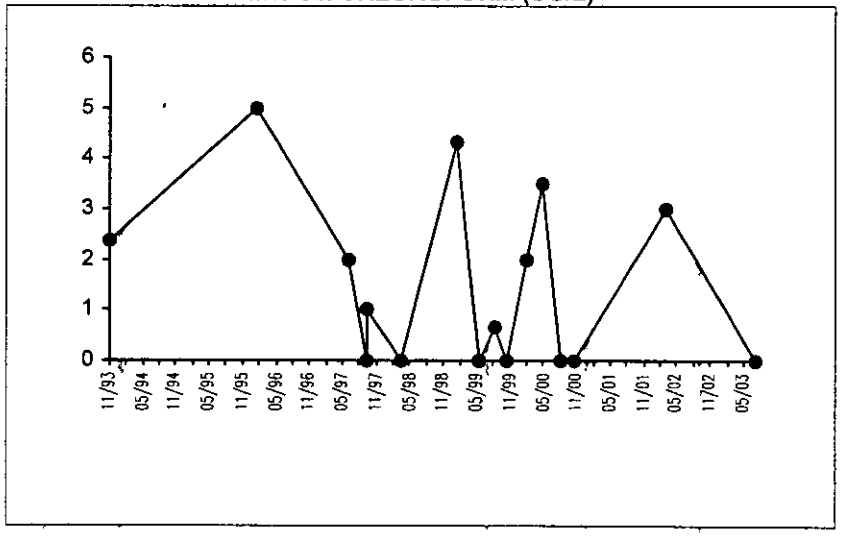
MW-34: CARBON TETRACHLORIDE (UG/L)



MW-34: CHLORIDE (AS CL) (MG/L)



MW-34: CHLOROFORM (UG/L)



* Nondetects shown as 0.

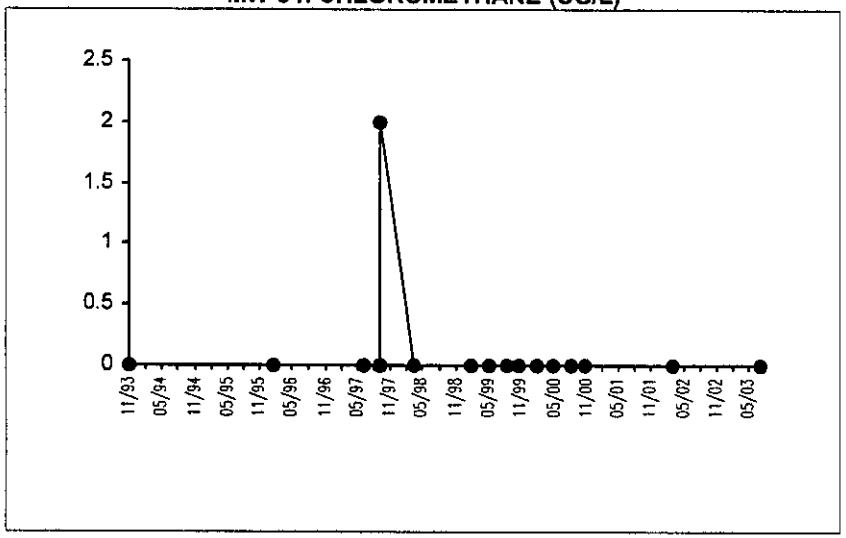
7941195

Location Purpose : Sentinel

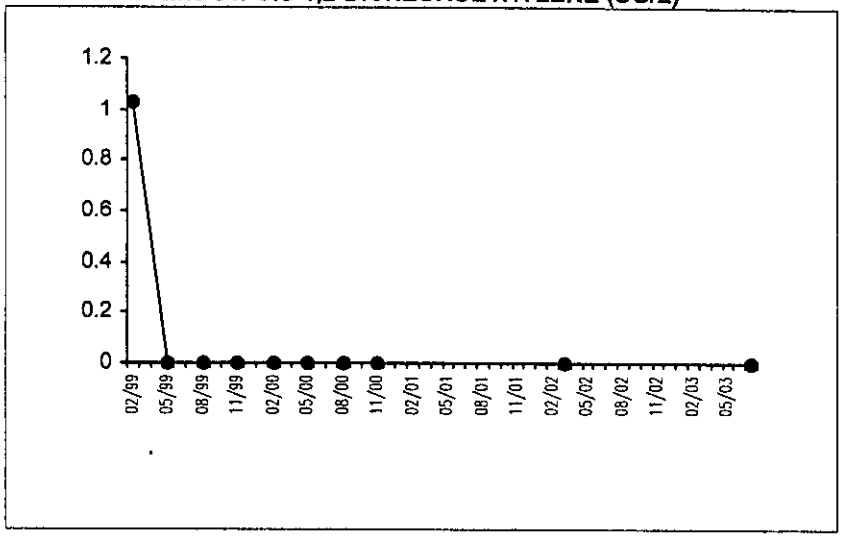
Sentinel MW-34

Concentration vs Time

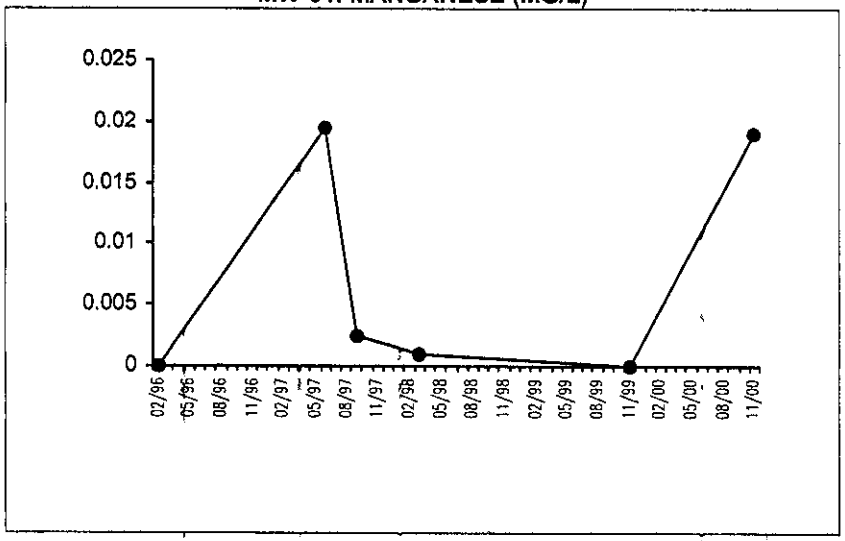
MW-34: CHLOROMETHANE (UG/L)



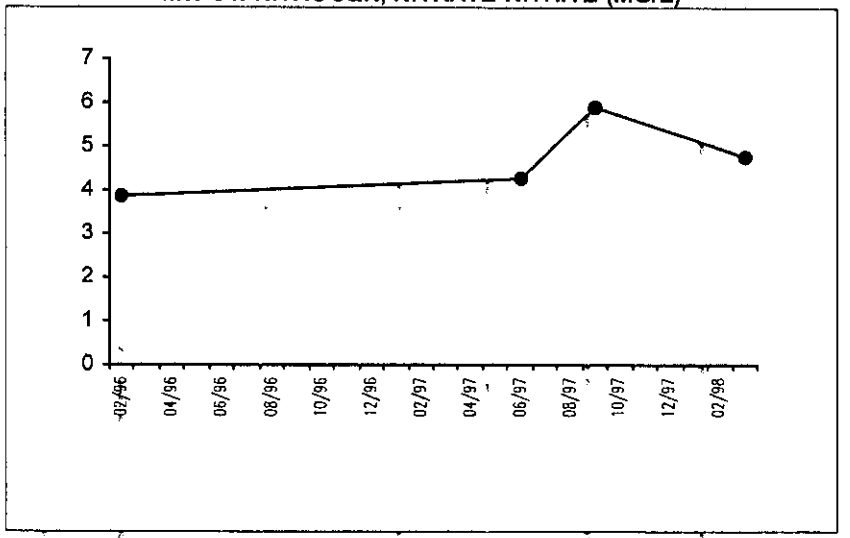
MW-34: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-34: MANGANESE (MG/L)



MW-34: NITROGEN, NITRATE-NITRITE (MG/L)



* Nondetects shown as 0.

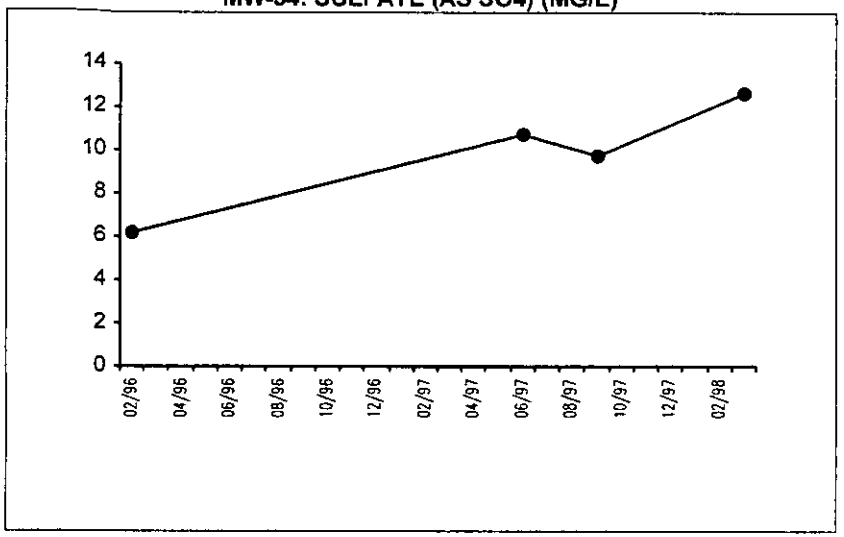
7941196

Location Purpose : Sentinel

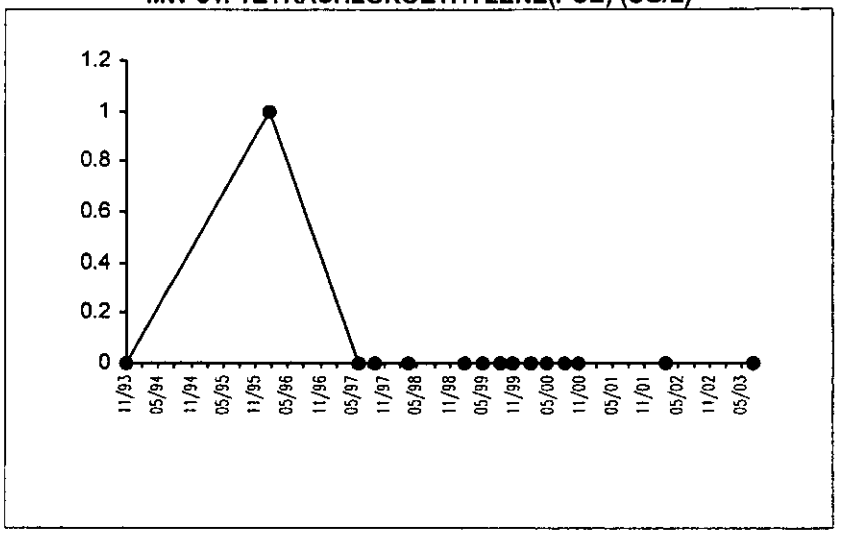
Sentinel MW-34

Concentration vs Time

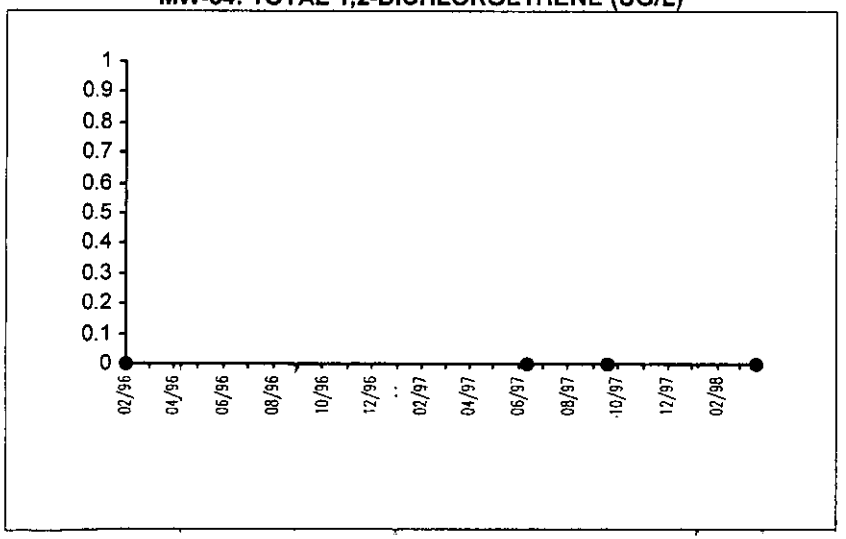
MW-34: SULFATE (AS SO4) (MG/L)



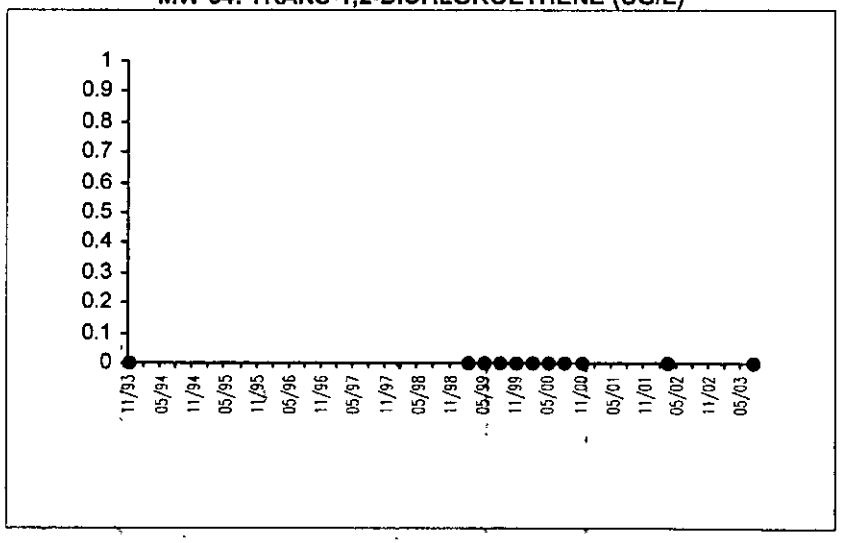
MW-34: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-34: TOTAL 1,2-DICHLOROETHENE (UG/L)



MW-34: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

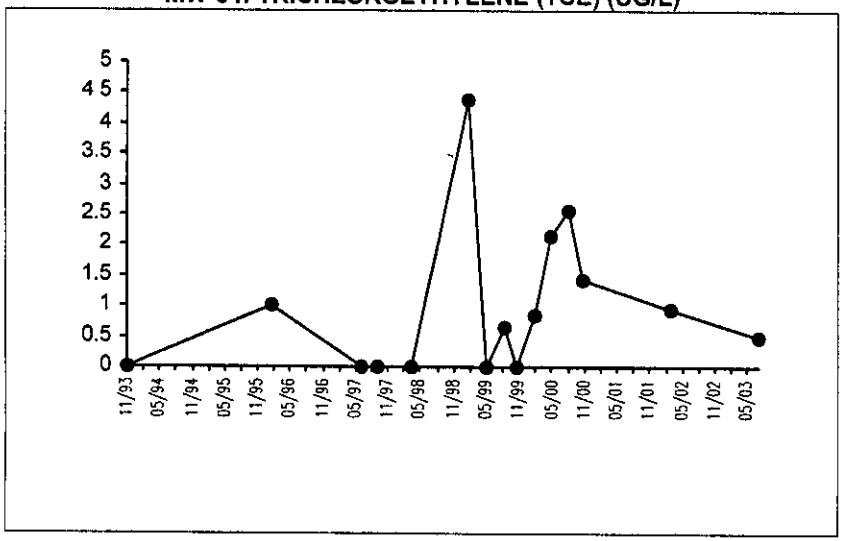
7941197

Location Purpose : Sentinel

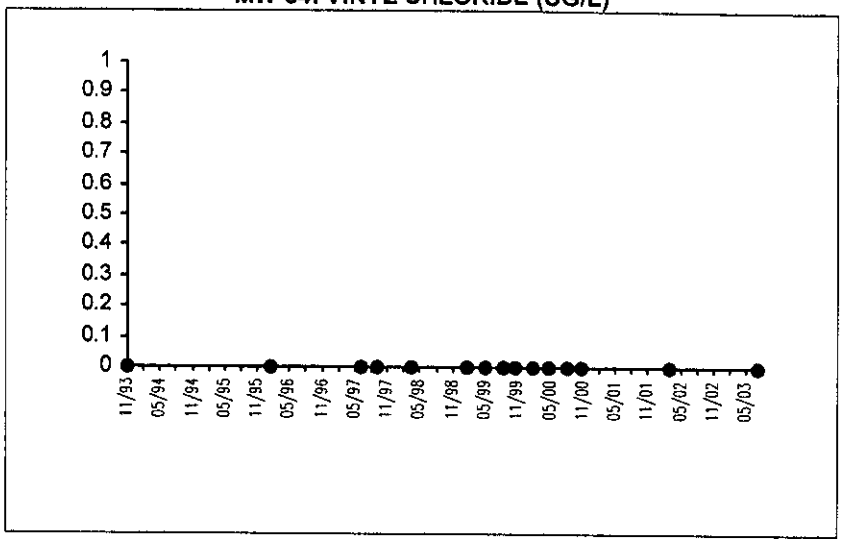
Sentinel MW-34

Concentration vs Time

MW-34: TRICHLOROETHYLENE (TCE) (UG/L)



MW-34: VINYL CHLORIDE (UG/L)



7941198

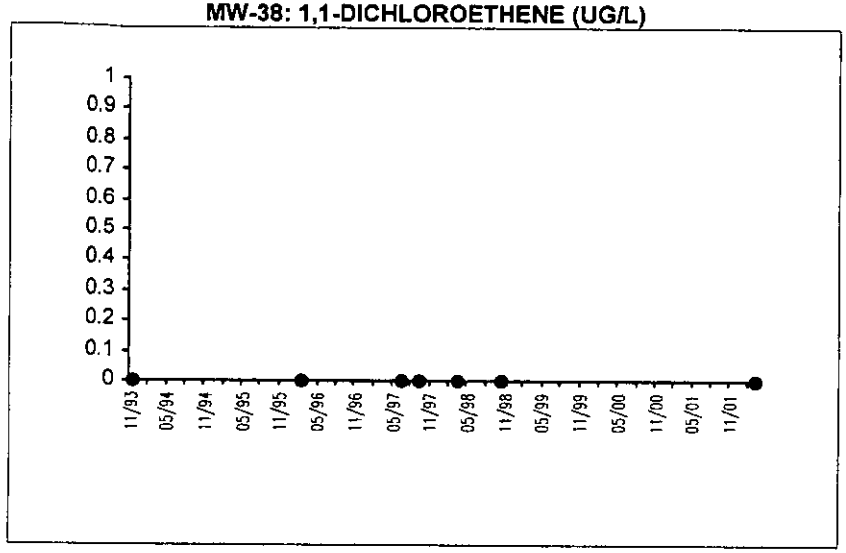
* Nondetects shown as 0.

Location Purpose : Sentinel

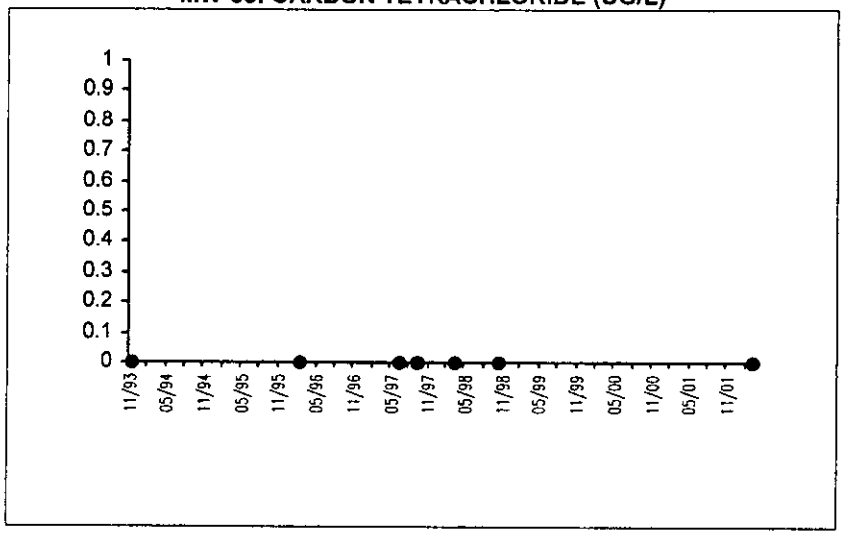
Sentinel MW-38

Concentration vs Time

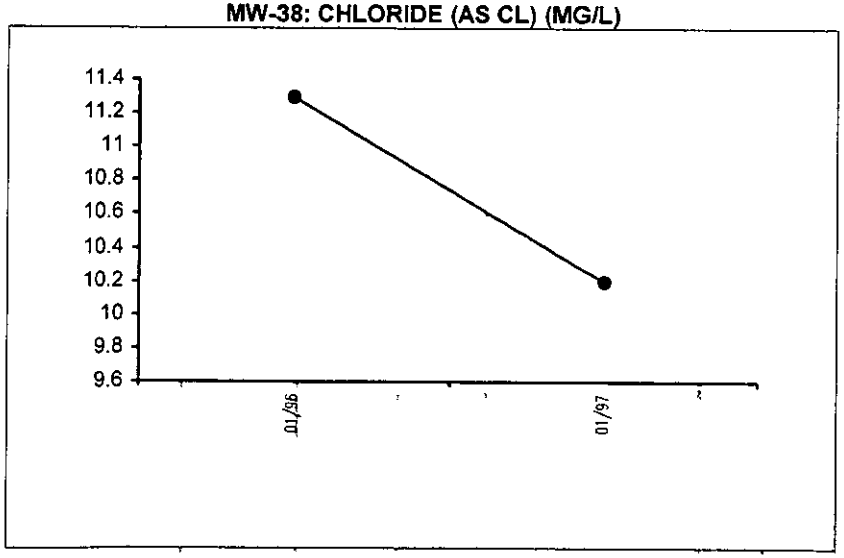
MW-38: 1,1-DICHLOROETHENE (UG/L)



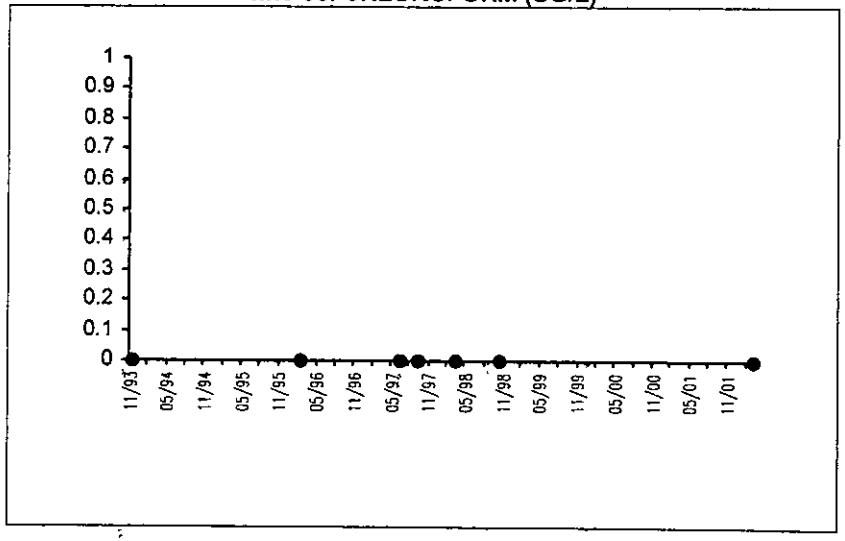
MW-38: CARBON TETRACHLORIDE (UG/L)



MW-38: CHLORIDE (AS CL) (MG/L)



MW-38: CHLOROFORM (UG/L)



* Nondetects shown as 0.

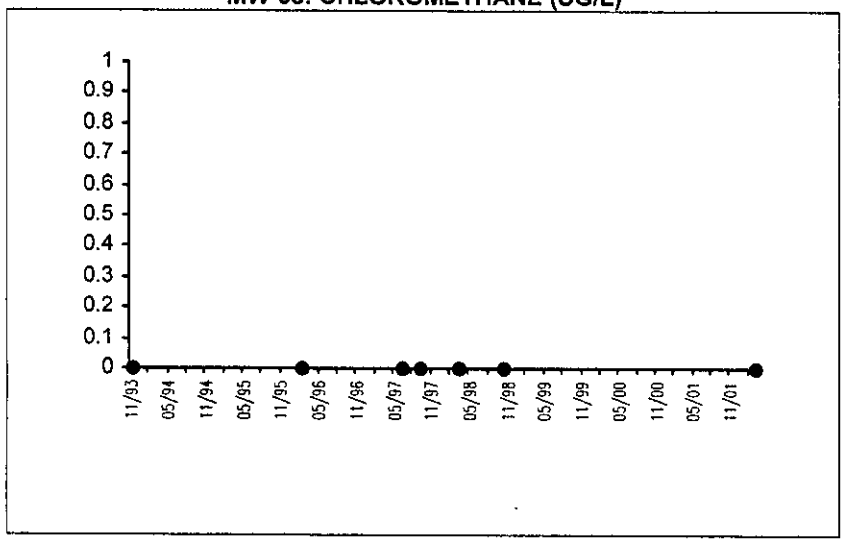
7941199

Location Purpose : Sentinel

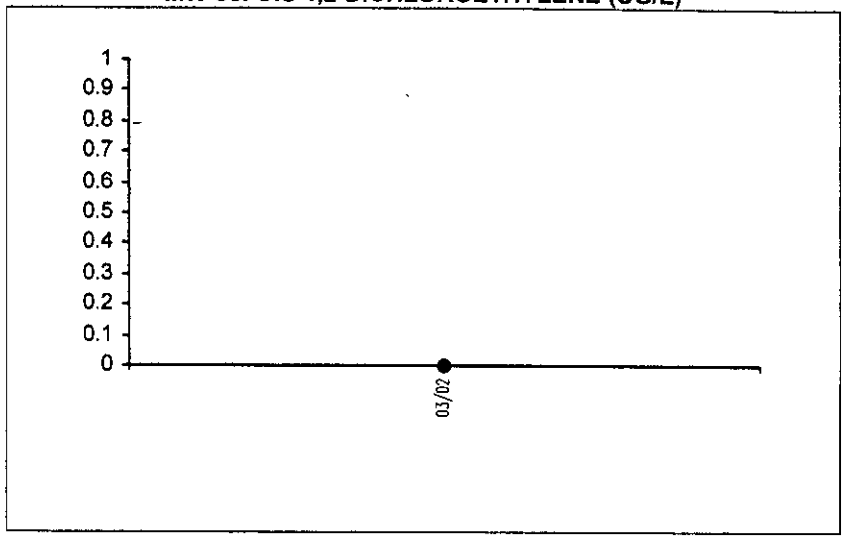
Sentinel MW-38

Concentration vs Time

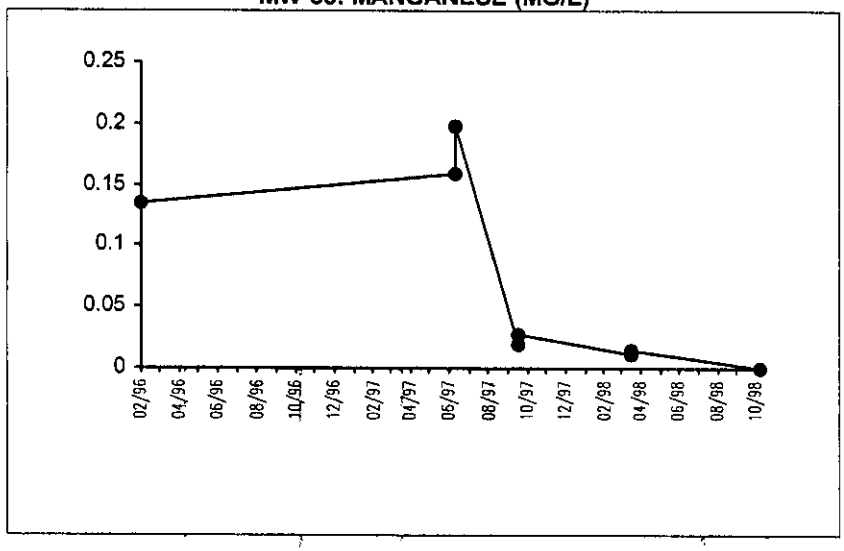
MW-38: CHLOROMETHANE (UG/L)



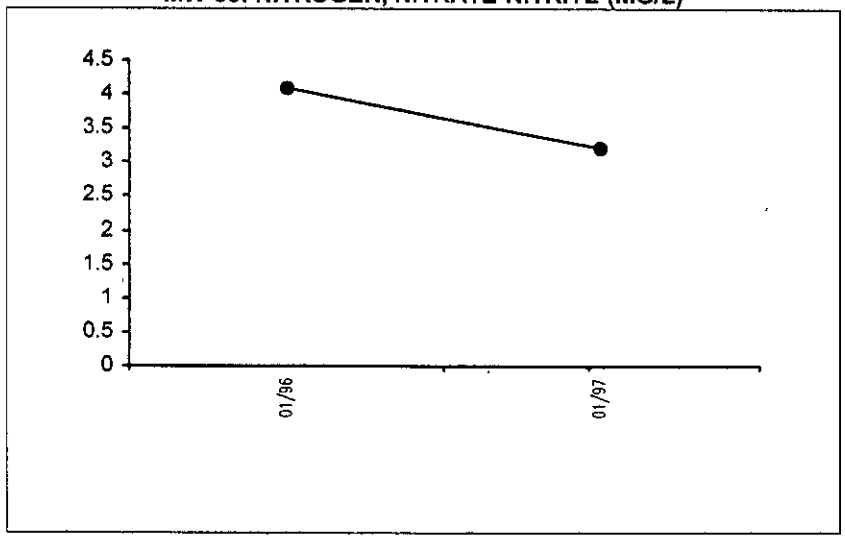
MW-38: CIS-1,2-DICHLOROETHYLENE (UG/L)



MW-38: MANGANESE (MG/L)



MW-38: NITROGEN, NITRATE-NITRITE (MG/L)



7941200

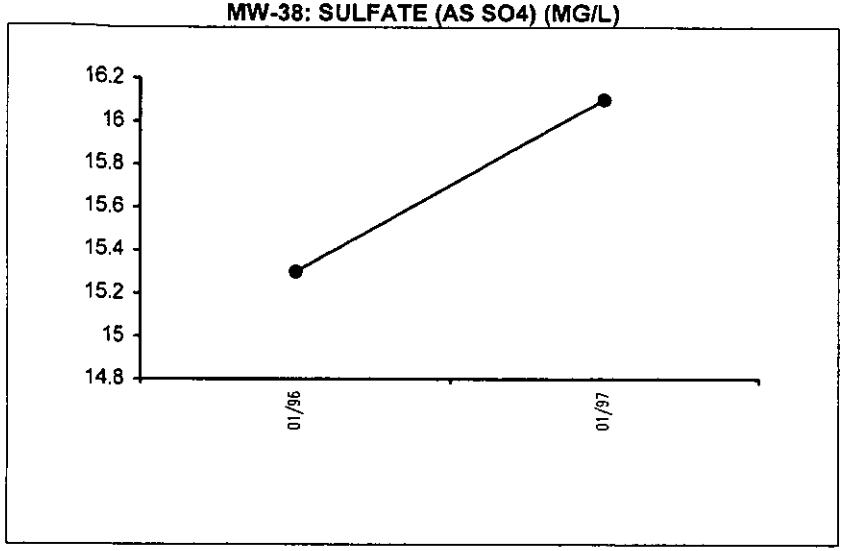
* Nond[illegible]s shown as 0.

Location Purpose : Sentinel

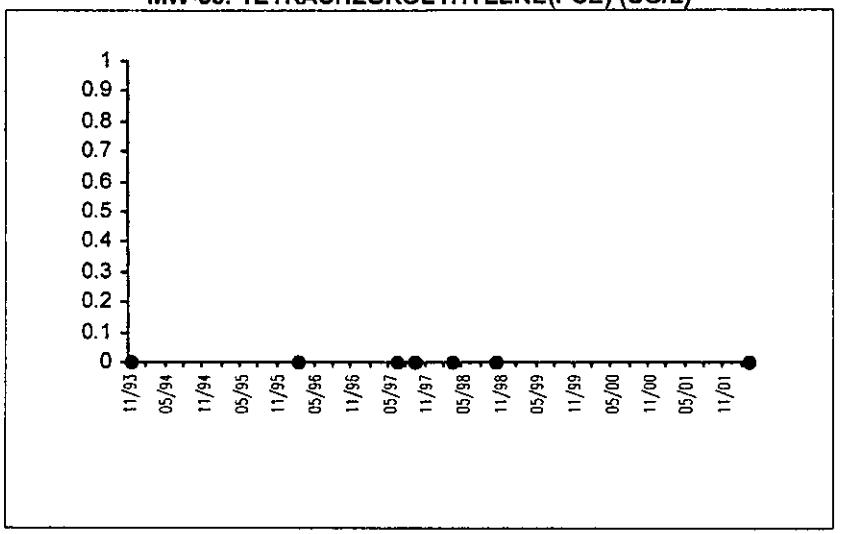
Sentinel MW-38

Concentration vs Time

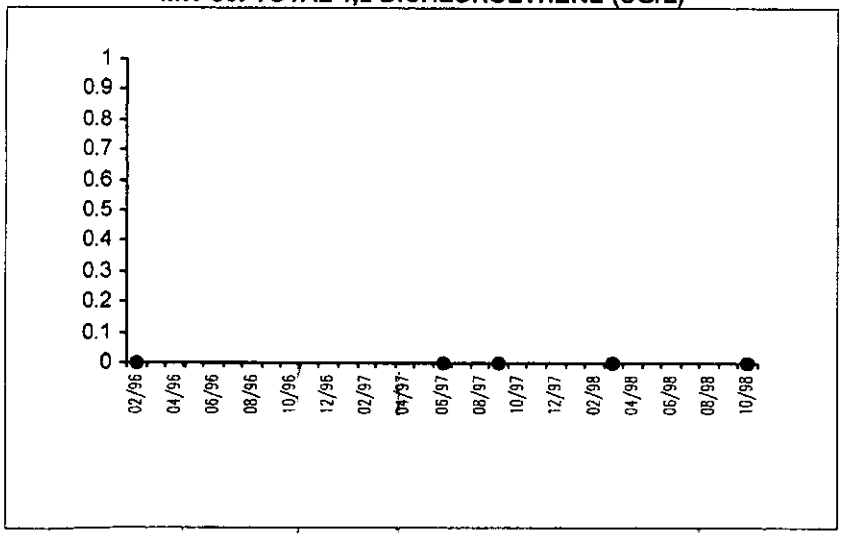
MW-38: SULFATE (AS SO4) (MG/L)



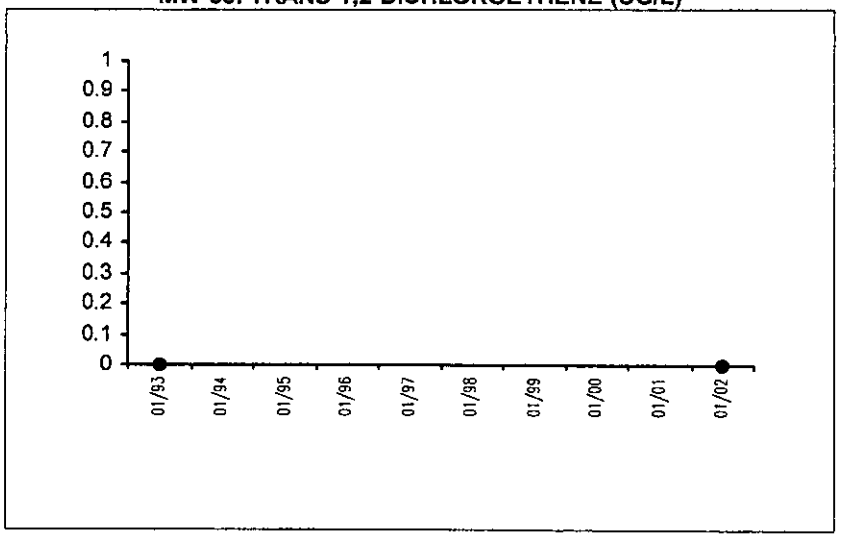
MW-38: TETRACHLOROETHYLENE(PCE) (UG/L)



MW-38: TOTAL 1,2-DICHLOROETHENE (UG/L)



MW-38: TRANS-1,2-DICHLOROETHENE (UG/L)



* Nondetects shown as 0.

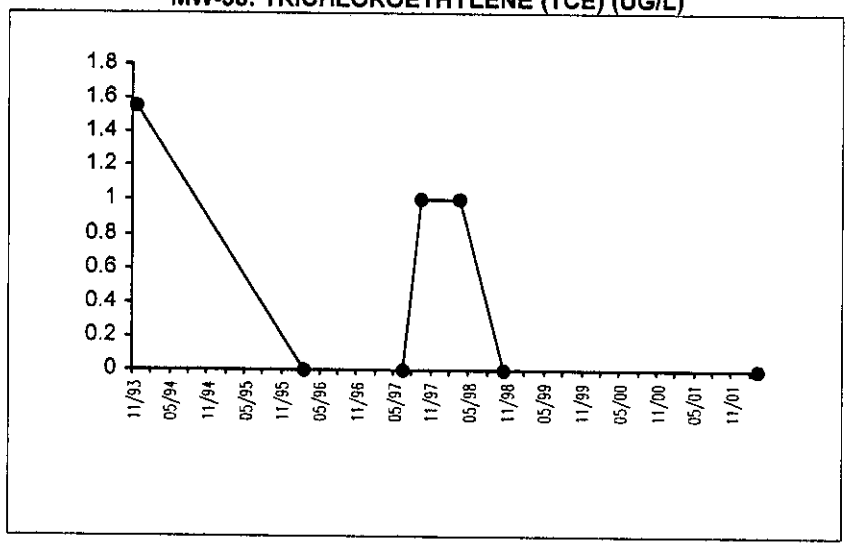
7941201

Location Purpose : Sentinel

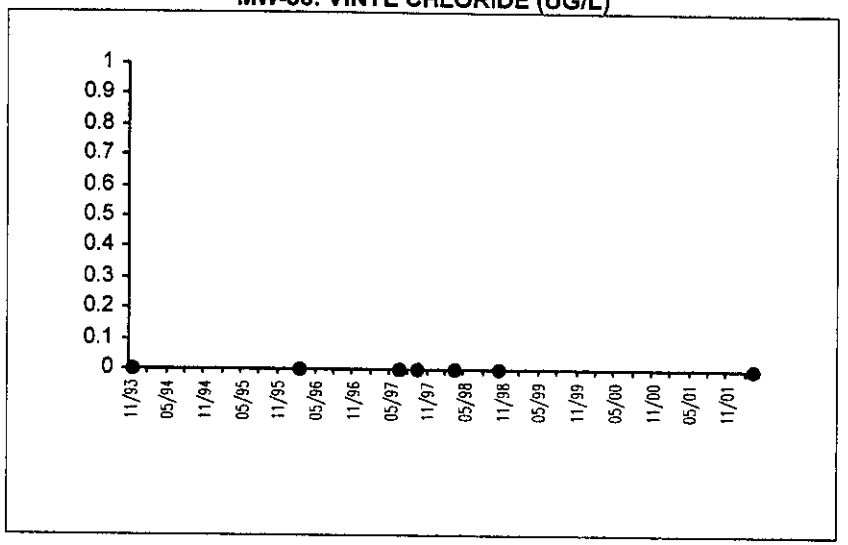
Sentinel MW-38

Concentration vs Time

MW-38: TRICHLOROETHYLENE (TCE) (UG/L)



MW-38: VINYL CHLORIDE (UG/L)



7941202

* Nondetects shown as 0.

Attachment B

Description of Decision Points on Decision Tree

The following sections are taken and adapted from the *Final Long-Term Monitoring Optimization Guide*, version 1.1, Appendix A, October 1997, AFCEE

INTRODUCTION

The purpose of the following narrative is to provide sufficient information to enable a non-technical person using the Sampling Frequency Decision Tree (SDT) to answer "Yes" or "No" to the question at each decision point in the SDT. The data supporting the Long-Term Monitoring (LTM) program should be reviewed in total by the SDT evaluator to ensure the decisions are made within the proper context of the program.

NARRATIVE DESCRIPTIONS OF SDT DECISION POINTS, STATEMENTS AND RECOMMENDATIONS

Decision Point 1. Is the well a possible contaminant conduit?

Could the well or piezometer serve as a conduit by which contaminated ground water could reach uncontaminated levels of the subsurface? For instance, if a well or piezometer has screens in both the aquifer containing the plume and an uncontaminated aquifer or is screened across the separating aquitard, contaminated ground water from the plume could move through the well to contaminate the previously uncontaminated aquifer. Other possibilities exist. A well or piezometer constructed across a confining layer in an area of dense non-aqueous phase liquid (DNAPL) contamination could allow DNAPL to contaminate a lower aquifer by gravity flow through the well's sand pack, or a poorly constructed well could allow contaminants from the surface to reach the ground water. Wells or piezometers that could act as contaminant conduits should be evaluated for abandonment, as discussed under Recommendations 6 and 17 below.

Decision Point 2. Is the well dry?

Wells or piezometers may be dry for a variety of reasons, including, but not limited to, (1) installing the well screen at the wrong depth, (2) lowering of the regional water table due to aquifer depletion, (3) localized water-table drawdown due to a nearby pumping well, (4) naturally occurring seasonal fluctuations in the water-table elevation, and (5) lowering of the regional water table by drought. Dry wells or piezometers should be evaluated for abandonment or multi-year sample intervals if sufficient data is available to support the conclusion that they will be of no further value to the LTM program.

Decision Point 3. Is the well damaged or have an object stuck?

If a well or piezometer is damaged or has an object stuck in the casing to the point where it cannot be sampled or compromises the integrity of the ground water sample, then the well or piezometer should be evaluated for abandonment, as discussed under Recommendatios 6 and 17 below.

Decision Point 4. Is the well redundant?

Are there wells or piezometers in the same spatial area but not contributing additional data to support the LTM

program? For example, wells that were installed as injection and monitoring wells during the enhanced bioremediation treatability study are located in the same spatial area. After the enhanced bioremediation treatability study is finished, many of these wells will be providing redundant data. Redundant wells or piezometers should be evaluated for abandonment, as discussed under Recommendations 6 and 17 below.

Decision Point 5. Is the well screened at an appropriate elevation?

If a well or piezometer screen is not appropriately located, the well will not serve its intended purpose in the LTM program. For example, if a well or piezometer is intended to sample the plume, the screen must be situated at an elevation that allows it to intersect the mass of contaminated ground water. If a well or piezometer is located upgradient, crossgradient, or downgradient from a plume rather than within the plume itself, the screen should still be located at an elevation that would allow the screen to intersect the plume if the plume were extended to the well. If a well or piezometer is intended to monitor a particular aquifer, whether contaminated or not, the well screen must be located within the aquifer. In some cases, a well must be screened across the water table in order to sample floating contaminants such as petroleum products, or the screen must extend deep enough to allow for seasonal water table fluctuations.

Evaluating the appropriate well or piezometer screen elevation, therefore, requires knowledge of the top and bottom elevations of the screen and plume and aquifer, respectively, in addition to a knowledge of water table elevation and fluctuations, chemicals of concern (COCs), and the subsurface geology near the well or piezometer.

Recommendation 6. Evaluate the well for abandonment.

Wells or piezometers that are (1) possible contaminant conduits, (2) permanently dry, (3) damaged or have an object stuck (4) redundant, or (5) screened at elevations that make them unusable for the LTM program should be abandoned properly to reduce maintenance expenses and to eliminate the possibility that they could allow the introduction of contaminants to the aquifer by accident or vandalism.

Well and piezometer abandonment, which generally consists of removing the well casing and grouting the borehole, is discussed in greater detail in Section 6.0. The appropriate regulations should be consulted to determine the procedure to be followed when abandoning a monitoring well or piezometer.

Decision Point 7. Was well initially sampled for 4 consecutive quarters?

Every newly installed monitoring well, existing monitoring well, or piezometer should initially be sampled for a minimum of four quarterly sampling rounds in order to provide data to serve as a baseline for future comparisons.

Decision Point 9. Is the well an off-site contingency, upgradient, or boundary well?

Off-site contingency, upgradient, or boundary wells/piezometers are used for special purposes. These wells or

piezometers are likely to have prescribed sampling frequencies. An off-site contingency, upgradient, or boundary well/piezometer is generally sampled at the frequency required by the Base Realignment and Closure Cleanup Team (BCT) authorities. (See Recommendation 11 regarding regulatory negotiations.)

Decision Point 10. Is well needed for compliance with the Record of Decision (ROD) Remedial Action Objective(ROA)?

A monitoring well or piezometer may be placed at a particular location in order to comply with the ROD ROA requirements. Such wells are generally sampled at the frequency required by the BCT (See Recommendation 11 regarding BCT negotiations.)

Recommendation 11. Negotiate with the BCT to achieve lowest sampling frequency.

Sampling frequencies that are set by the BCT for a specific purpose unrelated to LTM may be higher than needed for LTM programs. The BCT may consider another frequency based upon review of historical groundwater analytical data and site geological/hydrogeological characteristics. By negotiating with the regulators, you may be able to lower sampling frequencies to mutually satisfactory levels.

Decision Point 12. Is the well within area of influence of the Main Installation treatment area?

The "area of influence" of the treatment areas on the MI is part of the radius of influence from wells that will receive injections of the electron donor, sodium lactate. The perimeter of a well's radius of influence may vary from nearly circular to highly irregular, depending on hydrogeological conditions ~~in~~ the vicinity of the well. Groundwater and any dissolved contaminants within the radius of influence potentially ~~may~~ be reflect the biological reaction that occurs after the electron donor is injected. Monitoring wells or piezometers within the radius of influence (remediation wells) thus may provide advance notice of the biological reactions occurring and the treatment of groundwater. The size and shape of a well's radius of influence can be estimated with knowledge of the aquifer characteristics, geochemistry in the aquifer, and degradation rate of the contaminants. Techniques ranging from simple calculations to computer modeling may be required, depending on the complexity of the subsurface conditions.

Remediation wells are monitoring wells or piezometers screened in the fluvial aquifer; located within the limits of known contaminant plumes; repeatedly have contaminants within samples from location; within areas targeted for treatment during the RA. Example: MW86 is located in VOC contaminant plume in southeastern plume.

Decision Point 14. Is the well located within the plume boundary?

The delineation of plume boundaries is an important element in constructing a plume map for use with a decision tree. The basis for delineating plume boundaries should be negotiated with regulators prior to constructing a plume map. Plume maps based upon maximum

contamination levels (MCLs) depict the horizontal extent of only those parts of the plume in which concentrations are above regulatory limits. The SDT is designed to be used with a plume map that depicts as nearly as possible the maximum measurable size of the entire contaminant plume. Plume map boundaries based on MCL concentrations may satisfy regulatory requirements, but because they depict only the central mass of the plume and omit the fringes, they do not give a true picture of the full size of the plume. Thus, a well or piezometer that appears outside the plume on a map based on MCLs might appear within the plume if the boundary were based on the MDL.

The MDL is not ideally suited to represent the measurable plume boundary. This is due to variability in laboratory procedures, instruments, and samples. It is important that definitive criteria be established that allow the application of the SDT. While the cleanup boundary of the plume is represented by the MCL, a decision boundary should be established by extending the isoconcentration lines to a value that is one-half the MCL so the SDT can function effectively. This value would perform the protective functions designed into the SDT. The decision for establishment of the plume boundary for application of the SDT should be made with full regulatory approval.

Current plume maps being used for the LTM optimization should be checked against previous plume maps. Differences should be resolved before proceeding. Computer-generated contour maps should always be reviewed by a geologist or hydrogeologist.

Decision Points 15, 19, 22 and 27. Were COCs detected in the most recent sample?

A negative answer at any ~~of these DPs~~ alerts the SDT user to the possibility that, after due evaluation, the goal of optimizing the LTM ~~program might be~~ advanced by abandoning the target well or reducing its sampling frequency.

Factors to be evaluated for each monitoring well include historical detection of COCs, the well's or piezometer's location with respect to the plume, its proximity to other contaminant sources or plumes, and whether or not it could be considered redundant.

Recommendation 17. Evaluate abandonment or multi-year sampling intervals.

Abandonment should be considered ~~as a~~ possible alternative for wells that are within the contaminant plume or are upgradient or remote from the plume if no COCs were detected in the most recent sample. Abandoning a well (Recommendation 6 narrative) is the preferred alternative when it can be justified, because it eliminates the possibility that the well can become a contaminant conduit, and because it eliminates any further expense related to the well. However, if the need for continued data from the well location outweighs the perceived liabilities of maintaining the well, it may be beneficial to retain the well in the LTM program and sample it at longer intervals. Multi-year sampling intervals (e.g., 2-year, 3-year, 4-year, 5-year) still allow periodic assessments of the condition of the aquifer at the well, but

associated sampling and analytical costs are reduced.

Decision Point 18. Is the well horizontally or vertically upgradient or remote from the contaminant plume?

The locations of monitoring wells outside the plume are defined in relation to groundwater movement. Groundwater flows "downstream" along a **hydraulic gradient** from areas of higher head (i.e., upgradient areas) to areas of lower head (i.e., downgradient areas). Thus, the plume's leading edge, or "toe," is said to be downgradient from the source of contamination located at the upgradient end of the plume.

An upgradient well is located "upstream" from the plume on the hydraulic gradient. They provide background information on the composition of the ground water before it reaches the contaminant source.

A remote well is located farther from the plume than the estimated maximum distance that the plume can travel in a year. The dividing line between near and remote wells should be based on site-specific aquifer and contaminant characteristics.

All plumes are three-dimensional and have both vertical and horizontal components to their migration. Decisions based on the relationship of a well screen to a plume's migration pathway must include consideration of the three-dimensional aspects of plume migration. Both background and boundary wells can be located horizontally upgradient or remote from the contamination plumes.

Background wells are monitoring wells or piezometers screened in the fluvial or Memphis aquifer; located along or outside of the MI boundary; located upgradient to or at a distance from contaminant plumes on the MI and Dunn Field; low or ~~no previous detection of~~ site contaminants in well samples. Example: MW16 is a background well because of upgradient ~~location and there~~ has been only one low level VOC detection in the well to date.

Boundary wells are defined as monitoring wells or piezometers screened in the fluvial aquifer; marking the limit of the known contamination plume or treatment area; or located along or outside the MI boundary. Example: MW102B located along the southwestern corner of the site is considered a boundary well because of the well location.

Recommendation 20. Evaluate the need for additional investigation.

The detection of COCs ~~in an upgradient~~ or crossgradient well or a well remote from the plume is a potential indication that an unknown source may be operating or that the well has been impacted by a second plume. The need for an investigation to determine the reason for the appearance of the COCs in the well should be evaluated.

Decision Point 21. Is the well crossgradient from the contaminant plume?

Crossgradient wells are located adjacent to the plume and perpendicular to its three-dimensional direction of migration. They may become contaminated if the plume branches or changes direction due to a shift in the direction of the hydraulic gradient. Such a directional shift can be caused by, for

example, the startup of an adjacent injection well. Boundary wells can be located cross gradient from the contamination plumes. See Decision Point 18 for an explanation of boundary wells.

Statement26. The well is horizontally or vertically downgradient from the contaminant plume.

Downgradient wells are located "downstream" from the plume on the three-dimensional hydraulic gradient. They are in the path of the plume as it migrates downgradient and will become contaminated when/if the plume reaches them. Downgradient wells on receptor pathways can give advance notice when the target plume approaches an active production well and can also be affected by unknown sources. However, it is generally assumed that the detection of COCs in a previously uncontaminated downgradient well indicates that the leading edge of the target plume has reached the well location to be confirmed in future sampling events.

Analytical results in wells downgradient of treatment areas may be used to trigger a corrective action, as necessary; however, the concentrations should be considered in light of the remedial method being used in the treatment areas. For example, an increase in *cis*-1,2-DCE may be a result of the degradation of PCE and TCE and may be temporary as the contaminants degrade to methane. Review of potential corrective action may be required, for example, if concentrations of COCs increase in three consecutive events in a downgradient well. The actual scope of the action will depend on site conditions and consultations with regulatory agencies.

Boundary wells can be located downgradient from the contamination plumes. See Decision Point 18 for an explanation of boundary wells.

Decision Point 23. Is the well considered a sentinel well?

Sentinel wells are monitoring wells or piezometers screened within the intermediate aquifer interpreted to be within the Jackson Formation/Upper Claiborne Group; located adjacent or within window to intermediate aquifer. Example: MW38 is screened within the intermediate aquifer and is located within window to intermediate aquifer.

Attachment C

Example Standard Detection Limits for VOCs and Other Parameters

7941211

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8260
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:01

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
1,1,1,2-TETRACHLOROETHANE	.5		20	20		71	137	71	137			40	ug/kg
1,1,1-TRICHLOROETHANE	.5		20	20		68	133	68	133			40	ug/kg
1,1,2,2-TETRACHLOROETHANE	.5		20	20		62	132	62	132			43	ug/kg
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHA	1												
1,1,2-TRICHLOROETHANE	.5		20	20		67	129	67	129			38	ug/kg
1,1-DICHLOROETHANE	1		20	20		73	130	73	130			32	ug/kg
1,1-DICHLOROETHENE	.5		20	20		61	133	61	133			44	ug/kg
1,1-DICHLOROPROPENE	.5		20	20		57	138	57	138			49	ug/kg
1,2,3-TRICHLOROBENZENE	.5		20	20		52	142	52	142			55	ug/kg
1,2,3-TRICHLOROPROPANE	.64		20	20		64	134	64	134			43	ug/kg
1,2,4-TRICHLOROBENZENE	.5		20	20		71	133	71	133			38	ug/kg
1,2,4-TRIMETHYLBENZENE	.5		20	20		75	132	75	132			35	ug/kg
1,2-DIBROMO-3-CHLOROPROPANE	.5		20	20		49	127	49	127			48	ug/kg
1,2-DIBROMOETHANE	.5		20	20		69	128	69	128			36	ug/kg
1,2-DICHLOROBENZENE	.5		20	20		70	130	70	130			29	ug/kg
1,2-DICHLOROETHANE	.5		20	20		63	133	63	133			43	ug/kg
-DICHLOROETHANE-D4					50					80	120		
-DICHLOROETHENE	.5		40	40		74	127	74	127			32	ug/kg
2-DICHLOROPROPANE	.5		20	20		70	130	70	130			31	ug/kg
1,3,5-TRIMETHYLBENZENE	.5		20	20		74	133	74	133			36	ug/kg
1,3-DICHLOROBENZENE	.5		20	20		70	130	70	130			29	ug/kg
1,3-DICHLOROPROPANE	.5		20	20		65	128	65	128			38	ug/kg
1,4-DICHLOROBENZENE	.5		20	20		70	130	70	130			28	ug/kg
1,4-DIOXANE	50												
1-BUTANOL	25												
1-CHLOROHEXANE	.5		20	20		40	160	40	160			105	ug/kg
2,2-DICHLOROPROPANE	.5		20	20		66	135	66	135			42	ug/kg
2-BUTANONE	2.5		20	20		37	172	37	172			82	ug/kg
2-CHLORO-1,3-BUTADIENE	2.5												
2-CHLOROETHYL VINYL ETHER	.5		20	20		10	239	10	239			152	ug/kg
2-CHLOROTOLUENE	.5		20	20		63	147	63	147			52	ug/kg
2-HEXANONE	2.5		20	20		39	139	39	139			62	ug/kg
2-NITROPROPANE	25												
3-CHLORO-1-PROPENE													ug/kg
4-CHLOROTOLUENE	.5		20	20		70	138	70	138			42	ug/kg
4-METHYL-2-PENTANONE	2.5		20	20		47	146	47	146			61	ug/kg
A-METHYLSTYRENE	.5		20	20									
ACETONE	5					20	176	20	176			96	ug/kg
ACETONITRILE	5												
ACROLEIN	20												
ACRYLONITRILE	2.5												
BENZENE	.5		20	20		70	139	70	139			29	ug/kg
BROMOBENZENE	.5		20	20		72	131	72	131			36	ug/kg
BROMOCHLOROMETHANE	.5		20	20		70	130	70	130			30	ug/kg
BROMODICHLOROMETHANE	.5		20	20		72	137	72	137			40	ug/kg
BROMOFORM	.5		20	20		49	136	49	136			53	ug/kg
BROMOMETHANE	1		20	20		37	143	37	143			64	ug/kg
CARBON DISULFIDE	.5		20	20		39	139	39	139			61	ug/kg
CARBON TETRACHLORIDE	.5		20	20		59	136	59	136			47	ug/kg
CHLOROBENZENE	.5		20	20		70	130	70	130			28	ug/kg
LOROETHANE	1		20	20		52	135	52	135			51	ug/kg
LOROFORM	.5		20	20		74	129	74	129			33	ug/kg
LOROMETHANE	2		20	20		30	131	30	131			62	ug/kg
CIS-1,2-DICHLOROETHENE	.5		20	20		70	130	70	130			30	ug/kg
CIS-1,3-DICHLOROPROPENE	.5		20	20		70	142	70	142			44	ug/kg
CYCLOHEXANE	.5		20	20									
CYCLOHEXANONE	25												

7941212

Method Class: 8260
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:01

Parameter	MDL	RDL	True Values LCS	MS	SURR	Control Limits LCS		MS		SURR		RPD	Units
DIBROMOCHLOROMETHANE	.5		20	20		59	136	59	136			47	ug/kg
DIBROMOFLUOROMETHANE					50					80	120		
DIBROMOMETHANE	.5		20	20		69	130	69	130			38	ug/kg
DICHLORODIFLUOROMETHANE	1		20	20		25	130	25	130			84	ug/kg
DIMETHYL DISULFIDE	.5		20	20									
DIMETHYL SULFIDE	.5		20	20									
ETHYL ACETATE	25												
ETHYL ETHER	25												
ETHYL METHACRYLATE	.5		20	20									
ETHYLBENZENE	.5		20	20		70	130	70	130			29	ug/kg
HEXACHLOROBUTADIENE	.5		20	20		65	135	65	135			43	ug/kg
IODOMETHANE	1		20	20		20	288	20	288			185	ug/kg
ISOBUTYL ALCOHOL	50												
ISOPRENE	1		20	20									
ISOPROPYLBENZENE	.5		20	20		68	129	68	129			36	ug/kg
M-,P-XYLENE	.5		40	40		70	130	70	130			30	ug/kg
METHACRYLONITRILE	2.5												
METHYL METHACRYLATE	2.5												
METHYLENE CHLORIDE	1		20	20		74	128	74	128			33	ug/kg
METHYLTERT-BUTYL ETHER	.5		20	20		54	151	54	151			60	ug/kg
N-BUTYLBENZENE	.5		20	20		70	136	70	136			37	ug/kg
N-HEXANE	.5		20	20		24	167	24	167			87	ug/kg
N-PROPYLBENZENE	.5		20	20		72	136	72	136			39	ug/kg
NAPHTHALENE	.5		20	20		50	146	50	146			59	ug/kg
O-XYLENE	.5		20	20		70	130	70	130			31	ug/kg
P-BROMOFLUOROBENZENE					50					74	121		
P-ISOPROPYLTOLUENE	.5		20	20		72	128	72	128			34	ug/kg
P-XYLENE			20	20		65	135	65	135			30	ug/kg
PROPIONITRILE	2.5												
SEC-BUTYLBENZENE	.5		20	20		71	132	71	132			38	ug/kg
STYRENE	.5		20	20		74	130	74	130			35	ug/kg
TERT-BUTYLBENZENE	.5		20	20		72	130	72	130			36	ug/kg
TETRACHLOROETHENE	.5		20	20		72	130	72	130			32	ug/kg
TOLUENE	.5		20	20		77	126	77	126			29	ug/kg
TOLUENE-D8					50					81	117		
TRANS-1,2-DICHLOROETHENE	.5		20	20		72	127	72	127			34	ug/kg
TRANS-1,3-DICHLOROPROPENE	.5		20	20		65	139	65	139			45	ug/kg
TRANS-1,4-DICHLORO-2-BUTENE	.5												
TRICHLOROETHENE	.5		20	20		72	126	72	126			33	ug/kg
TRICHLOROFLUOROMETHANE	1		20	20		48	154	48	154			65	ug/kg
VINYL ACETATE	2.5		20	20		25	200	25	200			50	ug/kg
VINYL CHLORIDE	2		20	20		25	130	25	130			60	ug/kg
XYLENES	.5		60	60		70	130	70	130			29	ug/kg

7941213

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8260
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:02

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
1,1,1,2-TETRACHLOROETHANE	.25	.5	20	20		80	130	80	130			25	ug/L
1,1,1-TRICHLOROETHANE	.25	.5	20	20		80	134	80	134			28	ug/L
1,1,2,2-TETRACHLOROETHANE	.125	.5	20	20		79	125	79	125			28	ug/L
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHA	2	.5											ug/L
1,1,2-TRICHLOROETHANE	.25	.5	20	20		80	125	80	125			20	ug/L
1,1-DICHLOROETHANE	.125	.5	20	20		80	125	80	125			21	ug/L
1,1-DICHLOROETHENE	.5	.5	20	20		80	132	80	132			26	ug/L
1,1-DICHLOROPROPENE	.25	.5	20	20		74	139	74	139			40	ug/L
1,2,3-TRICHLOROBENZENE	.125	.5	20	20		62	140	62	140			48	ug/L
1,2,3-TRICHLOROPROPANE	.5	.5	20	20		80	126	80	126			25	ug/L
1,2,4-TRICHLOROBENZENE	.2	.5	20	20		77	131	77	131			33	ug/L
1,2,4-TRIMETHYLBENZENE	.25	.5	20	20		80	125	80	125			26	ug/L
1,2-DIBROMO-3-CHLOROPROPANE	1	1	20	20		65	129	65	129			39	ug/L
1,2-DIBROMOETHANE	.25	.5	20	20		80	125	80	125			20	ug/L
1,2-DICHLOROBENZENE	.125	.5	20	20		80	125	80	125			15	ug/L
1,2-DICHLOROETHANE	.25	.5	20	20		80	129	80	129			29	ug/L
[illegible]-DICHLOROETHANE-D4					25					80	120		ug/L
[illegible]-DICHLOROETHENE	.25	.5	40	40		80	124	80	124			21	ug/L
1,2-DICHLOROPROPANE	.125	.5	20	20		80	120	80	120			20	ug/L
1,3,5-TRIMETHYLBENZENE	.25	.5	20	20		80	127	80	127			25	ug/L
1,3-DICHLOROBENZENE	.25	.5	20	20		80	120	80	120			16	ug/L
1,3-DICHLOROPROPANE	.2	.5	20	20		80	120	80	120			20	ug/L
1,4-DICHLOROBENZENE	.125	.5	20	20		80	120	80	120			15	ug/L
1,4-DIOXANE	50	100	20	20		70	130	70	130			30	ug/L
1-BUTANOL	25												
1-CHLOROHEXANE	.125	.5	20	20		80	127	80	127			26	ug/L
2,2-DICHLOROPROPANE	.25	.5	20	20		80	133	80	133			29	ug/L
2-BUTANONE	2.5	5	20	20		58	149	58	149			56	ug/L
2-CHLORO-1,3-BUTADIENE	2.5	10	20	20								20	ug/L
2-CHLOROETHYL VINYL ETHER	2	10	20	20		10	211	10	211			125	ug/L
2-CHLOROTOLUENE	.125	.5	20	20		80	127	80	127			28	ug/L
2-HEXANONE	2.5	.5	20	20		56	136	56	136			49	ug/L
2-NITROPROPANE	25												
3-CHLORO-1-PROPENE	2.5	10	20	20								20	ug/L
4-CHLOROTOLUENE	.25	.5	20	20		80	126	80	126			26	ug/L
4-METHYL-2-PENTANONE	2.5	5	20	20		64	140	64	140			47	ug/L
A-METHYLSTYRENE	.25	.5											
ACETONE	2.5	5	20	20		40	142	40	142			63	ug/L
ACETONITRILE	2.5	50	20	20									ug/L
ACROLEIN	20	100	20	20									ug/L
ACRYLONITRILE	2.5	10	20	20									ug/L
BENZENE	.125	.5	20	20		80	121	80	121			21	ug/L
BROMOBENZENE	.125	.5	20	20		80	120	80	120			18	ug/L
BROMOCHLOROMETHANE	.2	.5	20	20		80	124	80	124			20	ug/L
BROMODICHLOROMETHANE	.25	.5	20	20		80	131	80	131			25	ug/L
BROMOFORM	.54	1	20	20		74	130	74	130			35	ug/L
BROMOMETHANE	.5	.5	20	20		61	151	61	151			56	ug/L
CARBON DISULFIDE	.5	.5	20	20		58	138	58	138			49	ug/L
CARBON TETRACHLORIDE	.25	.5	20	20		80	137	80	137			32	ug/L
CHLOROBENZENE	.125	.5	20	20		80	120	80	120			16	ug/L
[illegible]HLOROETHANE	.5	.5	20	20		77	133	77	133			34	ug/L
[illegible]LOROFORM	.125	.5	20	20		80	125	80	125			23	ug/L
[illegible]HLOROMETHANE	.25	.5	20	20		60	130	60	130			43	ug/L
CIS-1,2-DICHLOROETHENE	.25	.5	20	20		80	121	80	121			19	ug/L
CIS-1,3-DICHLOROPROPENE	.25	.5	20	20		80	132	80	132			26	ug/L
CYCLOHEXANE	.58	5	20	20									ug/L
CYCLOHEXANONE	25												

7941214

Method Class: 8260
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:02

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
DIBROMOCHLOROMETHANE	.25	.5	20	20		80	127	80	127			26	ug/L
DIBROMOFLUOROMETHANE					25					86	118		ug/L
DIBROMOMETHANE	.25	1	20	20		80	126	80	126			24	ug/L
DICHLORODIFLUOROMETHANE	.25	.5	20	20		50	133	50	133			51	ug/L
DIMETHYL DISULFIDE	.25	5	20	20								20	ug/L
DIMETHYL SULFIDE	.5	5	20	20									ug/L
ETHYL ACETATE	25												
ETHYL ETHER	25												
ETHYL METHACRYLATE	.61	5	20	20									ug/L
ETHYLBENZENE	.25	.5	20	20		80	122	80	122			20	ug/L
HEXACHLOROBUTADIENE	.25	1	20	20		72	132	72	132			36	ug/L
IODOMETHANE	.5	5	20	20		10	308	10	308			186	ug/L
ISOBUTYL ALCOHOL	50	100	20	20									ug/L
ISOPRENE	.53	5	20	20									ug/L
ISOPROPYLBENZENE	.25	.5	20	20		80	122	80	122			24	ug/L
M-,P-XYLENE	.5	.5	40	40		80	122	80	122			21	ug/L
METHACRYLONITRILE	2.5	10	20	20									ug/L
METHYL METHACRYLATE	2.5	.5	20	20									ug/L
METHYLENE CHLORIDE	.25	1	20	20		80	123	80	123			22	ug/L
METHYLTERT-BUTYL ETHER	.5	.5	20	20		77	138	77	138			37	ug/L
N-BUTYLBENZENE	.25	.5	20	20		80	131	80	131			29	ug/L
N-HEXANE	.56	1	20	20		55	156	55	156			62	ug/L
N-PROPYLBENZENE	.125	.5	20	20		80	129	80	129			27	ug/L
NAPHTHALENE	.2	.5	20	20		59	149	59	149			55	ug/L
O-XYLENE	.25	.5	20	20		80	122	80	122			18	ug/L
P-BROMOFLUOROBENZENE					25					86	115		ug/L
P-ISOPROPYLTOLUENE	.25	.5	20	20		80	122	80	122			24	ug/L
P-XYLENE		.5	20	20								20	ug/L
PROPIONITRILE	2.5	10	20	20									ug/L
SEC-BUTYLBENZENE	.25	.5	20	20		80	127	80	127			28	ug/L
STYRENE	.125	.5	20	20		80	123	80	123			20	ug/L
TERT-BUTYLBENZENE	.25	.5	20	20		80	126	80	126			27	ug/L
TETRACHLOROETHENE	.25	.5	20	20		80	124	80	124			22	ug/L
TOLUENE	.25	.5	20	20		80	124	80	124			22	ug/L
TOLUENE-D8					25					88	110		ug/L
TRANS-1,2-DICHLOROETHENE	.25	.5	20	20		80	127	80	127			24	ug/L
TRANS-1,3-DICHLOROPROPENE	.5	.5	20	20		80	130	80	130			25	ug/L
TRANS-1,4-DICHLORO-2-BUTENE	1.02	10	20	20									ug/L
TRICHLOROETHENE	.25	.5	20	20		80	122	80	122			21	ug/L
TRICHLOROFLUOROMETHANE	.25	.5	20	20		62	151	62	151			55	ug/L
VINYL ACETATE	2.5	10	20	20		10	285	10	285			201	ug/L
VINYL CHLORIDE	.25	.5	20	20		65	140	65	140			46	ug/L
XYLENES	.5	.5	60	60		80	121	80	121			20	ug/L

7941215

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: RSK175
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:03

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS	Control Limits LCS	Control Limits MS	Control Limits MS	Control Limits SURR	Control Limits SURR	RPD	Units
ETHANE		.5	19.3	19.3		65	130	65	130			40	ug/L
ETHENE		.5	18	18		65	130	65	130			40	ug/L
METHANE		.5	10.3	10.3		65	130	65	130			40	ug/L

7941216

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 9056
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:04

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
BROMIDE	.1	.2	6	6		90	110	80	120			20	
CHLORIDE	.1	.2	6	6		90	110	80	120			20	
FLUORIDE	.1	.2	6	6		90	110	80	120			20	
NITRATE	.1	.6	4.06	4.06		90	110	80	120			20	
NITRITE	.1	.4	3.65	3.65		90	110	80	120			20	
ORTHOPHOSPHATE	.2	1	9.78	9.78		90	110	80	120			20	mg/L
SULFATE	.5	1	30	30		90	110	80	120			20	

7941217

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 300
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:05

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
ACIDITY	5	10	100			75	125					25	mg/L
ALKALINITY	5	10	200	100		85	115	85	115			20	mg/L
ALKALINITY, BICARBONATE	5	10	200	200		86	106	86	106			12	mg/L
ALKALINITY, CARBONATE	5	10	200	200		86	106	86	106			12	mg/L
ALKALINITY, HYDROXIDE	5	10	200	200		86	106	86	106			12	mg/L
AMMONIA	.05	.1	2	1		70	125	70	125			25	mg/L
BROMIDE	1	2	20	10		80	120	80	120			20	mg/L
CHLORIDE	1	2	50	20		91	109	91	109			13	mg/L
CYANIDE	.005	.01	.4	.2		90	110	80	120			20	mg/L
FLUORIDE	.05	.1	2	.4		85	115	85	115			20	mg/L
IODIDE	1	2	20	10		75	125	75	125			25	
NITRATE	.025	.05	1	.5		90	110	90	110			10	mg/L
NITRITE	.005	.01	.1	.1		84	111	84	111			8	mg/L
NITROGEN		.1	1	1		80	120	80	120				mg/L
ORTHOPHOSPHATE	.025	.05	1	.4		85	115	85	115			20	mg/L
PHOSPHORUS	.05	.1	2	.5		70	130	70	130			25	mg/L
SILICA		2	20	10		80	120	80	120				mg/L
SULFATE	2.5	5	20	20		92	113	92	113			13	mg/L
SULFIDE	.5	1	20	20		86	109	86	109			5	mg/L
SULFITE		2	200	200									mg/L
TOTAL KJELDAHL NITROGEN	.05	.1	1	.5		60	125	60	125			25	mg/L

7941218

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 9000
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:06

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
1												20	
BROMIDE	1	2	20	20		80	120	80	120			20	
CHLORIDE	1	2	50	20		91	109	91	109			13	
CYANIDE	.005	.01	.4	.2		90	110	80	120			20	
FLUORIDE	.05	.1	2	.4		90	114	90	114			14	
NITRATE	.025	.05	1	.5		90	110	90	110			10	
NITRITE	.005	.01	.1	.1		84	111	84	111			8	
ORTHOPHOSPHATE	.025	.05	1	.4		85	115	85	115			20	
PERCHLORATE	2	4				90	110	90	110			25	ug/L
PHENOLICS, TOTAL	.003	.005	.5	.5		82	113	82	113			15	
SPECIFIC CONDUCTIVITY	.5	1	1412			92	111	92	111			9	
SULFATE	2.5	5	20	10		92	113	92	113			13	
SULFIDE	.5	1	20			86	109	86	109			3	
TOTAL ORGANIC CARBON	.5	1	5	5		90	110	74	119			12	

7941219

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 6010
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:09

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
ALUMINUM	.05	.1	10	10		80	120	75	125			20	mg/L
ANTIMONY	.01	.2	1	1		80	120	75	125			20	mg/L
ARSENIC	.01	.1	1	1		80	120	75	125			20	mg/L
BARIUM	.0025	.01	10	10		80	120	75	125			20	mg/L
BERYLLIUM	.00025	.01	1	1		80	120	75	125			20	mg/L
BORON	.033	.1	1	1		80	120	75	125			20	mg/L
CADMIUM	.0025	.01	1	1		80	120	75	125			20	mg/L
CALCIUM	.1	.2	10	10		80	120	75	125			20	mg/L
CHROMIUM	.0025	.02	1	1		80	120	75	125			20	mg/L
COBALT	.0025	.02	1	1		80	120	75	125			20	mg/L
COPPER	.005	.02	1	1		80	120	75	125			20	mg/L
IRON	.02	.04	1	1		80	120	75	125			20	mg/L
LEAD	.01	.1	1	1		80	120	75	125			20	ug/L
LITHIUM	.05	.1				80	120	75	125			20	mg/L
MAGNESIUM	.25	.5	10	10		80	120	75	125			20	mg/L
MANGANESE	.001	.01	1	1		80	120	75	125			20	mg/L
MOLYBDENUM	.005	.1	1	1		80	120	75	125			20	mg/L
[illegible]EL	.005	.04	1	1		80	120	75	125			20	mg/L
[illegible]SSIUM	.25	1	50	50		80	120	75	125			20	mg/L
SELENIUM	.05	.1	1	1		80	120	75	125			20	mg/L
SILICON	.25	1				80	120	75	125			20	mg/L
SILVER	.005	.01	.2	.2		80	120	75	125			20	mg/L
SODIUM	.25	.5	50	50		80	120	75	125			20	mg/L
STRONTIUM	.005	.01				80	120	75	125			20	mg/L
THALLIUM	.05	1	1	1		80	120	75	125			20	mg/L
TIN	.05	.5	1	1		80	120	75	125			20	mg/L
TITANIUM	.005	.03	1	1		80	120	75	125			20	mg/L
VANADIUM	.005	.01	1	1		80	120	75	125			20	mg/L
ZINC	.005	.02	1	1		80	120	75	125			20	mg/L

7941220

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 6010
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:10

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
ALUMINUM	10	20	500	500		80	120	75	125			20	mg/kg
ANTIMONY	.5	10	50	50		80	120	75	125			20	mg/kg
ARSENIC	.5	5	50	50		80	120	75	125			20	mg/kg
BARIUM	.1	.5	500	500		80	120	75	125			20	mg/kg
BERYLLIUM	.012	.5	50	50		80	120	75	125			20	mg/kg
BORON	10	25	50	50		80	120	75	125			20	mg/kg
CADMIUM	.05	.5	50	50		80	120	75	125			20	mg/kg
CALCIUM	5	10	500	500		80	120	75	125			20	mg/kg
CHROMIUM	.12	1	50	50		80	120	75	125			20	mg/kg
COBALT	.12	1	50	50		80	120	75	125			20	mg/kg
COPPER	.5	1	50	50		80	120	75	125			20	mg/kg
IRON	1	2	50	50		80	120	75	125			20	mg/kg
LEAD	.5	5	50	50		80	120	75	125			20	mg/kg
LITHIUM	2.5	5	500	500		80	120	75	125			20	mg/kg
MAGNESIUM	12	25	500	500		80	120	75	125			20	mg/kg
MANGANESE	.1	.5	50	50		80	120	75	125			20	mg/kg
MOLYBDENUM	1.5	5	50	50		80	120	75	125			20	mg/kg
NICKEL	.5	2	50	50		80	120	75	125			20	mg/kg
POTASSIUM	25	50	2500	2500		80	120	75	125			20	mg/kg
SELENIUM	.5	5	50	50		80	120	75	125			20	mg/kg
SILVER	.25	2	10	10		80	120	75	125			20	mg/kg
SODIUM	5	25	2500	2500		80	120	75	125			20	mg/kg
STRONTIUM	.25	.5	50	50		80	120	75	125			20	mg/kg
THALLIUM	1	25	50	50		80	120	75	125			20	mg/kg
TIN	5	25	50	50		80	120	75	125			20	mg/kg
TITANIUM	.5	2	50	50		80	120	75	125			20	mg/kg
VANADIUM	.25	.5	50	50		80	120	75	125			20	mg/kg
ZINC	.5	1	50	50		80	120	75	125			20	mg/kg

7941221

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8270
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:11

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
0,0,0-TRIETHYL PHOSPHOROTHIOATE	82.5	170											ug/kg
1,2,4,5-TETRACHLOROBENZENE	82.5	170											ug/kg
1,2,4-TRICHLOROBENZENE	82.5	170	1670	1670		13	88	13	88			46	ug/kg
1,2-DICHLOROBENZENE	82.5	170	1670	1670		16	85	16	85			42	ug/kg
1,2-DIPHENYLHYDRAZINE	82.5	170	1670	1670		25	150	25	150				ug/kg
1,3-DICHLOROBENZENE	82.5	170	1670	1670		16	84	16	84			42	ug/kg
1,3-DINITROBENZENE	82.5	170											ug/kg
1,4-DICHLOROBENZENE	82.5	170	1670	1670		13	84	13	84			43	ug/kg
1,4-NAPHTHOQUINONE	82.5	170											ug/kg
1-METHYLNAPHTHALENE	82.5	170	1670	1670		5	150	5	150				ug/kg
1-NAPHTHYLAMINE	82.5	170											ug/kg
2,3,4,6-TETRACHLOROPHENOL	82.5	170											ug/kg
2,4,5-TRICHLOROPHENOL	82.5	170	1670	1670		13	116	13	116			63	ug/kg
2,4,6-TRIBROMOPHENOL					3333					19	122		ug/kg
2,4,6-TRICHLOROPHENOL	82.5	170	1670	1670		12	114	12	114			63	ug/kg
2,4-DICHLOROPHENOL	82.5	170	1670	1670		14	100	14	100			53	ug/kg
[illegible]-DIMETHYLPHENOL	82.5	170	1670	1670		14	107	14	107			57	ug/kg
[illegible]-DINITROPHENOL	330	830	1670	1670		11	127	11	127			72	ug/kg
[illegible]-DINITROTOLUENE	82.5	170	1670	1670		24	146	24	146			75	ug/kg
2,6-DICHLOROPHENOL	82.5	170											ug/kg
2,6-DINITROTOLUENE	82.5	170	1670	1670		14	126	14	126			69	ug/kg
2-ACETYLAMINOFLUORENE	82.5	170											ug/kg
2-CHLORONAPHTHALENE	82.5	170	1670	1670		15	96	15	96			50	ug/kg
2-CHLOROPHENOL	82.5	170	1670	1670		13	90	13	90			47	ug/kg
2-FLUOROBIPHENYL					1667					30	115		ug/kg
2-FLUOROPHENOL					3333					25	121		ug/kg
2-METHYLNAPHTHALENE	82.5	170	1670	1670		10	103	10	103			49	ug/kg
2-METHYLPHENOL	82.5	170	1670	1670		13	99	13	99			52	ug/kg
2-NAPHTHYLAMINE	170	330											ug/kg
2-NITROANILINE	330	830	1670	1670		15	123	15	123			57	ug/kg
2-NITROPHENOL	82.5	170	1670	1670		10	102	10	102			50	ug/kg
2-PICOLINE	82.5	170											ug/kg
2-SEC-BUTYL-4,6-DINITROPHENOL	82.5	170											ug/kg
3,3'-DICHLOROBENZIDINE	165	330	1670	1670		10	209	10	209			135	ug/kg
3,3-DIMETHYLBENZIDINE	500	1000											ug/kg
3-,4-METHYLPHENOL	82.5	170	1670	1670		25	135	25	135			52	ug/kg
3-METHYLCHOLANTHRENE	82.5	170											ug/kg
3-NITROANILINE	330	830	1670	1670		13	153	13	153			86	ug/kg
4,6-DINITRO-2-METHYLPHENOL	330	830	1670	1670		11	152	11	152			86	ug/kg
4-AMINOBIPHENYL	82.5	170											ug/kg
4-BROMOPHENYL PHENYL ETHER	82.5	170	1670	1670		17	112	17	112			58	ug/kg
4-CHLORO-3-METHYLPHENOL	82.5	170	1670	1670		14	116	14	116			62	ug/kg
4-CHLOROANILINE	82.5	170	1670	1670		10	110	10	110			73	ug/kg
4-CHLOROPHENYL PHENYL ETHER	82.5	170	1670	1670		14	119	14	119			64	ug/kg
4-METHYLPHENOL	82.5	170	1670	1670		13	99	13	99			53	ug/kg
4-NITROANILINE	330	830	1670	1670		14	169	14	169			95	ug/kg
4-NITROPHENOL	330	830	1670	1670		10	165	10	165			99	ug/kg
4-NITROQUINOLINE 1-OXIDE	82.5	170											ug/kg
5-NITRO-O-TOLUIDINE	170	330											ug/kg
7,12-DIMETHYLBENZ(A)ANTHRACENE	82.5	170											ug/kg
[illegible]ENAPHTHENE	82.5	170	1670	1670		10	123	10	123			70	ug/kg
[illegible]NAPHTHYLENE	82.5	170	1670	1670		10	109	10	109			53	ug/kg
[illegible]ETOPHENONE	82.5												ug/kg
ANILINE	330	670	1670	1670		10	83	10	83			52	ug/kg
ANTHRACENE	82.5	170	1670	1670		10	149	10	149			72	ug/kg
ARAMITE	170	330											ug/kg
AZOBENZENE	82.5	170	1670	1670		25	150	25	150				ug/kg

7941222

Method Class: 8270
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:11

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
BENZIDINE	12.5	25										30	ug/kg
BENZO(A)ANTHRACENE	82.5	170	1670	1670		10	159	10	159			83	ug/kg
BENZO(A)PYRENE	82.5	170	1670	1670		10	152	10	152			72	ug/kg
BENZO(B)FLUORANTHENE	82.5	170	1670	1670		10	161	10	161			76	ug/kg
BENZO(GHI)PERYLENE	82.5	170	1670	1670		10	160	10	160			85	ug/kg
BENZO(K)FLUORANTHENE	82.5	170	1670	1670		10	165	10	165			79	ug/kg
BENZOIC ACID	330	830	1670	1670		10	95	10	95			61	ug/kg
BENZYL ALCOHOL	82.5	170	1670	1670		13	96	13	96			51	ug/kg
BIS(2-CHLOROETHOXY)METHANE	82.5	170	1670	1670		12	99	12	99			53	ug/kg
BIS(2-CHLOROETHYL)ETHER	82.5	170	1670	1670		10	93	10	93			52	ug/kg
BIS(2-CHLOROISOPROPYL)ETHER	82.5	170	1670	1670		10	84	10	84			49	ug/kg
BIS(2-ETHYLHEXYL)PHTHALATE	82.5	170	1670	1670		22	157	22	157			83	ug/kg
BUTYL BENZYL PHTHALATE	82.5	170	1670	1670		22	162	22	162			86	ug/kg
CARBAZOLE	82.5	170	1670	1670		18	179	18	179			99	ug/kg
CHLOROBENZILATE	82.5	170											ug/kg
CHRYSENE	82.5	170	1670	1670		10	153	10	153			72	ug/kg
DI-N-BUTYLPHTHALATE	82.5	170	1670	1670		22	156	22	156			82	ug/kg
DI-N-OCTYL PHTHALATE	82.5	170	1670	1670		17	173	17	173			96	ug/kg
DIALLATE	82.5	170											ug/kg
DIBENZ(A,H)ANTHRACENE	82.5	170	1670	1670		10	169	10	169			88	ug/kg
DIBENZOFURAN	82.5	170	1670	1670		18	108	18	108			55	ug/kg
DIETHYLPHTHALATE	82.5	170	1670	1670		26	140	26	140			70	ug/kg
DIMETHOATE	82.5	170											ug/kg
DIMETHYLPHTHALATE	82.5	170	1670	1670		20	122	20	122			63	ug/kg
DIPHENYLAMINE	82.5	170											ug/kg
DISULFOTON	82.5	170											ug/kg
ETHYL METHANESULFONATE	82.5	170											ug/kg
FAMPHUR	830	1670											ug/kg
FLUORANTHENE	82.5	170	1670	1670		10	158	10	158			80	ug/kg
FLUORENE	82.5	170	1670	1670		10	122	10	122			65	ug/kg
HEXACHLOROBENZENE	82.5	170	1670	1670		25	136	25	136			68	ug/kg
HEXACHLOROBUTADIENE	82.5	170	1670	1670		15	100	15	100			62	ug/kg
HEXACHLOROCYCLOPENTADIENE	82.5	170	1670	1670		10	92	10	92			60	ug/kg
HEXACHLOROETHANE	82.5	170	1670	1670		10	87	10	87			47	ug/kg
HEXACHLOROPHENE	330	670											ug/kg
HEXACHLOROPROPENE	82.5	170											ug/kg
INDENO(1,2,3-CD)PYRENE	82.5	170	1670	1670		10	162	10	162			84	ug/kg
ISODRIN	82.5	170											ug/kg
ISOPHORONE	82.5	170	1670	1670		13	114	13	114			62	ug/kg
ISOSAFROLE	82.5	170											ug/kg
KEPONE	670	1330											ug/kg
METHAPYRILENE	82.5	170											
METHYL METHANESULFONATE	82.5	170											ug/kg
N-NITROSODI-N-BUTYLAMINE	82.5	170											ug/kg
N-NITROSODIETHYLAMINE	82.5	170											ug/kg
N-NITROSODIMETHYLAMINE	82.5	165	1670	1670		11	91	11	91			49	ug/kg
N-NITROSODIPHENYLAMINE	82.5	170	1670	1670		21	127	21	127			65	ug/kg
N-NITROSODIPROPYLAMINE	82.5	170	1670	1670		10	103	10	103			59	ug/kg
N-NITROSOMETHYLETHYLAMINE	82.5	170											ug/kg
N-NITROSOMORPHOLINE	82.5	170											ug/kg
N-NITROSOPIPERIDINE	82.5	170											ug/kg
N-NITROSOPYRROLIDINE	82.5	170											ug/kg
NAPHTHALENE	82.5	170	1670	1670		10	95	10	95			45	ug/kg
NITROBENZENE	82.5	170	1670	1670		12	93	12	93			50	ug/kg
NITROBENZENE-D5					1667					23	120		ug/kg
O-TOLUIDINE	82.5	170											ug/kg
P-DIMETHYLAMINOAZOBENZENE	82.5	170											ug/kg

7941223

Method Class: 8270
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:11

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
P-PHENYLENEDIAMINE	82.5	170											ug/kg
P-TERPHENYL-D14					1667					18	137		ug/kg
PARATHION ETHYL	82.5	170											ug/kg
PARATHION METHYL	82.5	170											ug/kg
PENTACHLOROBENZENE	82.5	170											ug/kg
PENTACHLOROETHANE	82.5	170											ug/kg
PENTACHLORONITROBENZENE	82.5	170											ug/kg
PENTACHLOROPHENOL	330	830	1670	1670		21	146	21	146			77	ug/kg
PHENACETIN	82.5	170											ug/kg
PHENANTHRENE	82.5	170	1670	1670		10	144	10	144			70	ug/kg
PHENOL	82.5	170	1670	1670		13	95	13	95			51	ug/kg
PHENOL-D5					3333					24	113		ug/kg
PHENYL-TERT-BUTYLAMINE	170	330											
PHORATE	82.5	170											ug/kg
PRONAMIDE	82.5	170											ug/kg
PYRENE	82.5	170	1670	1670		10	161	10	161			89	ug/kg
PYRIDINE	82.5	170	1670	1670		10	150	10	150			31	ug/kg
SAFROLE	82.5	170											ug/kg
SULFOTEPP	82.5	170											ug/kg
SYM-TRINITROBENZENE	330	670											ug/kg
THIONAZIN	82.5	170											ug/kg

7941224

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8270
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:11

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
0,0,0-TRIETHYL PHOSPHOROTHIOATE	2.5	5											ug/L
1,2,4,5-TETRACHLOROBENZENE	2.5	5											ug/L
1,2,4-TRICHLOROBENZENE	2.5	5	50	50		26	72	26	72			42	ug/L
1,2-DICHLOROBENZENE	2.5	5	50	50		25	66	25	66			39	ug/L
1,2-DIPHENYLHYDRAZINE	2.5	5	50	50		5	150	5	150				ug/L
1,3-DICHLOROBENZENE	2.5	5	50	50		24	62	24	62			40	ug/L
1,3-DINITROBENZENE	2.5	5											ug/L
1,4-DICHLOROBENZENE	2.5	5	50	50		24	62	24	62			37	ug/L
1,4-NAPHTHOQUINONE	2.5	5											ug/L
1-METHYLNAPHTHALENE	2.5	5	50	50		5	150	5	150			30	ug/L
1-NAPHTHYLAMINE	5	10											ug/L
2,3,4,6-TETRACHLOROPHENOL	2.5	5											ug/L
2,4,5-TRICHLOROPHENOL	2.5	5	50	50		20	116	20	116			62	ug/L
2,4,6-TRIBROMOPHENOL					100					10	123		
2,4,6-TRICHLOROPHENOL	2.5	5	50	50		20	103	20	103			60	ug/L
2,4-DICHLOROPHENOL	2.5	5	50	50		15	90	15	90			59	ug/L
2,4-DIMETHYLPHENOL	2.5	5	50	50		20	93	20	93			58	ug/L
2,4-DINITROPHENOL	12.5	50	50	50		20	118	20	118			67	ug/L
2,4-DINITROTOLUENE	2.5	5	50	50		36	126	36	126			56	ug/L
2,6-DICHLOROPHENOL	2.5	5											ug/L
2,6-DINITROTOLUENE	2.5	5	50	50		28	112	28	112			56	ug/L
2-ACETYLAMINOFLUORENE	10	20											ug/L
2-CHLORONAPHTHALENE	2.5	5	50	50		34	95	34	95			48	ug/L
2-CHLOROPHENOL	2.5	5	50	50		15	78	15	78			51	ug/L
2-FLUOROBIPHENYL					50					43	116		
2-FLUOROPHENOL					100					21	100		
2-METHYLNAPHTHALENE	2.5	5	50	50		27	77	27	77			49	ug/L
2-METHYLPHENOL	2.5	5	50	50		15	86	15	86			50	ug/L
2-NAPHTHYLAMINE	10	20											ug/L
2-NITROANILINE	12.5	25	50	50		21	101	21	101			62	ug/L
2-NITROPHENOL	2.5	5	50	50		19	86	19	86			55	ug/L
2-PICOLINE	5	10											ug/L
2-SEC-BUTYL-4,6-DINITROPHENOL	2.5	5											ug/L
3,3'-DICHLOROBENZIDINE	2.5		50	50		15	142	15	142			119	ug/L
3,3-DIMETHYLBENZIDINE	200	400											ug/L
3-,4-METHYLPHENOL	2.5	5	50	50		10	90	10	90			35	ug/L
3-METHYLCHOLANTHRENE	5	10											ug/L
3-NITROANILINE	12.5	25	50	50		10	121	10	121			115	ug/L
4,6-DINITRO-2-METHYLPHENOL	12.5	5	50	50		30	125	30	125			70	ug/L
4-AMINOBIPHENYL	10	20											ug/L
4-BROMOPHENYL PHENYL ETHER	2.5	5	50	50		42	101	42	101			48	ug/L
4-CHLORO-3-METHYLPHENOL	2.5	5	50	50		20	113	20	113			66	ug/L
4-CHLOROANILINE	2.5	5	50	50		20	85	20	85			70	ug/L
4-CHLOROPHENYL PHENYL ETHER	2.5	5	50	50		38	101	38	101			55	ug/L
4-METHYLPHENOL	2.5	5	50	50		19	95	19	95			56	ug/L
4-NITROANILINE	12.5	25	50	50		40	136	40	136			95	ug/L
4-NITROPHENOL	12.5	25	50	50		10	139	10	139			29	ug/L
4-NITROQUINOLINE 1-OXIDE	5	10											ug/L
5-NITRO-O-TOLUIDINE	5	10											ug/L
7,12-DIMETHYLBENZ(A)ANTHRACENE	25	50											ug/L
ACENAPHTHENE	2.5	5	50	50		30	92	30	92			51	ug/L
ACENAPHTHYLENE	2.5	5	50	50		31	96	31	96			55	ug/L
ACETOPHENONE	5	10											ug/L
ANILINE	5	10				10	86	10	86			71	ug/L
ANTHRACENE	2.5	5	50	50		59	118	59	118			65	ug/L
ARAMITE	10	20											ug/L
AZOBENZENE	2.5	5	50	50		40	84	40	84			40	ug/L

7941225

Method Class: 8270
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:11

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
BENZIDINE	10	25	50	50		0	155	0	155			365	ug/L
BENZO(A)ANTHRACENE	2.5	5	50	50		54	124	54	124			55	ug/L
BENZO(A)PYRENE	2.5	5	50	50		63	124	63	124			62	ug/L
BENZO(B)FLUORANTHENE	2.5	5	50	50		63	123	63	123			60	ug/L
BENZO(GHI)PERYLENE	2.5	5	50	50		59	124	59	124			88	ug/L
BENZO(K)FLUORANTHENE	2.5	5	50	50		62	124	62	124			60	ug/L
BENZOIC ACID	12.5	25	50	50		10	150	10	150			259	ug/L
BENZYL ALCOHOL	2.5	5	50	50		23	84	23	84			49	ug/L
BIS(2-CHLOROETHOXY)METHANE	2.5	5	50	50		30	79	30	79			55	ug/L
BIS(2-CHLOROETHYL)ETHER	2.5	5	50	50		30	77	30	77			45	ug/L
BIS(2-CHLOROISOPROPYL)ETHER	2.5	5	50	50		24	80	24	80			44	ug/L
BIS(2-ETHYLHEXYL)PHTHALATE	2.5	5	50	50		54	140	54	140			57	ug/L
BUTYL BENZYL PHTHALATE	2.5	5	50	50		51	147	51	147			62	ug/L
CARBAZOLE	2.5	5	50	50		51	136	51	136			109	ug/L
CHLOROBENZENE	2.5	5	50	50		20	120	20	120			40	ug/L
CHLOROBENZILATE	10	20											ug/L
CHRYSENE	2.5	5	50	50		55	124	55	124			55	ug/L
[illegible]-BUTYLPHTHALATE	2.5	5	50	50		65	133	65	133			61	ug/L
[illegible]-OCTYL PHTHALATE	2.5	5	50	50		66	138	66	138			66	ug/L
DIALLATE	5	10											ug/L
DIBENZ(A,H)ANTHRACENE	2.5	5	50	50		55	130	55	130			86	ug/L
DIBENZOFURAN	2.5	5	50	50		33	94	33	94			54	ug/L
DIETHYLPHTHALATE	2.5	5	50	50		35	125	35	125			59	ug/L
DIMETHOATE	2.5	5											ug/L
DIMETHYLPHTHALATE	2.5	5	50	50		27	107	27	107			57	ug/L
DIPHENYLAMINE	5	10											ug/L
DISULFOTON	5	10											ug/L
ETHYL METHANESULFONATE	5	10											ug/L
FAMPHUR	20	50											ug/L
FLUORANTHENE	2.5	5	50	50		63	128	63	128			68	ug/L
FLUORENE	2.5	5	50	50		40	104	40	104			59	ug/L
HEXACHLOROBENZENE	2.5	5	50	50		50	121	50	121			55	ug/L
HEXACHLOROBUTADIENE	2.5	5	50	50		27	76	27	76			59	ug/L
HEXACHLOROCYCLOPENTADIENE	2.5	5	50	50		10	78	10	78			47	ug/L
HEXACHLOROETHANE	2.5	5	50	50		21	90	21	90			47	ug/L
HEXACHLOROPHENE	2.5	5											ug/L
HEXACHLOROPROPENE	5	10											ug/L
INDENO(1,2,3-CD)PYRENE	2.5	5	50	50		58	123	58	123			83	ug/L
ISODRIN	5	10											ug/L
ISOPHORONE	2.5	5	50	50		20	99	20	99			71	ug/L
ISOSAFROLE	2.5	5											ug/L
KEPONE	200	500											ug/L
METHAPYRILENE	5	10											ug/L
METHYL METHANESULFONATE	5	10											ug/L
N-NITROSODI-N-BUTYLAMINE	2.5	5											ug/L
N-NITROSODIETHYLAMINE	5	10											ug/L
N-NITROSODIMETHYLAMINE	2.5	5	50	50		18	78	18	78			87	ug/L
N-NITROSODIPHENYLAMINE	2.5	5	50	50		43	122	43	122			57	ug/L
N-NITROSODIPROPYLAMINE	2.5	5	50	50		34	86	34	86			51	ug/L
N-NITROSOMETHYLETHYLAMINE	5	10											ug/L
N-NITROSOMORPHOLINE	2.5	5											ug/L
[illegible]TROSOPIPERIDINE	5	10											ug/L
[illegible]TROSOPYRROLIDINE	5	10											ug/L
NAPHTHALENE	2.5	5	50	50		25	76	25	76			45	ug/L
NITROBENZENE	2.5	5	50	50		20	78	20	78			45	ug/L
NITROBENZENE-D5					50					35	114		
O-TOLUIDINE	5	10											ug/L

7941226

Method Class: 8270
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:11

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
P-DIMETHYLAMINOAZOBENZENE	20	50											ug/L
P-PHENYLENEDIAMINE	50	100											ug/L
P-TERPHENYL-D14					50					33	141		
PARATHION ETHYL	2.5	5											ug/L
PARATHION METHYL	5	10											ug/L
PENTACHLOROBENZENE	2.5	5											ug/L
PENTACHLOROETHANE	5	10											ug/L
PENTACHLORONITROBENZENE	5	10											ug/L
PENTACHLOROPHENOL	12.5	25	50	50		30	124	30	124			60	ug/L
PHENACETIN	2.5	5											ug/L
PHENANTHRENE	2.5	5	50	50		58	120	58	120			59	ug/L
PHENOL	2.5	5	50	50		10	84	10	84			21	ug/L
PHENOL-D5					100					10	94		
PHENOL-D6					100					25	125		
PHENYL-TERT-BUTYLAMINE	20	50											ug/L
PHORATE	2.5	5											ug/L
PRONAMIDE	5	10											ug/L
PYRENE	2.5	5	50	50		54	130	54	130			53	ug/L
PYRIDINE	25	50	50	50		5	100	5	100			38	ug/L
SAFROLE	2.5	5											ug/L
SULFOTEPP	5	10											ug/L
SYM-TRINITROBENZENE	2.5	5											ug/L
THIONAZIN	5	10											ug/L

7941227

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8081
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:11

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
2,4,5,6-TETRACHLORO-M-XYLENE					16.7					39	130		ug/kg
4,4'-DDD	.825	3.3	16.7	16.7		47	151	47	151			40	ug/kg
4,4'-DDE	.825	3.3	16.7	16.7		46	151	46	151			40	ug/kg
4,4'-DDT	.825	3.3	16.7	16.7		33	175	33	175			40	ug/kg
ALDRIN	.4	1.7	16.7	16.7		27	148	27	148			40	ug/kg
ALPHA-BHC	.4	1.7	16.7	16.7		35	145	35	145			40	ug/kg
ALPHA-CHLORDANE	.4	1.7	16.7	16.7		38	154	38	154			40	ug/kg
AROCLOR-1016	8.25	16.5	83.3	83.3		64	136	64	136			40	ug/kg
AROCLOR-1221	8.25	16.5	83.3	83.3									ug/kg
AROCLOR-1232	8.25	16.5	83.3	83.3									ug/kg
AROCLOR-1242	8.25	16.5	83.3	83.3									ug/kg
AROCLOR-1248	8.25	16.5	83.3	83.3									ug/kg
AROCLOR-1254	8.25	16.5	83.3	83.3									ug/kg
AROCLOR-1260	8.25	16.5	83.3	83.3		63	137	63	137			40	ug/kg
BETA-BHC	.4	1.7	16.7	16.7		44	139	44	139			40	ug/kg
DECACHLOROBIPHENYL					16.7					33	143		ug/kg
[illegible]TA-BHC	.4	1.7	16.7	16.7		43	146	43	146			40	ug/kg
[illegible]DRIN	.825	3.3	16.7	16.7		50	147	50	147			40	ug/kg
ENDOSULFAN I	.4	1.7	16.7	16.7		29	140	29	140			40	ug/kg
ENDOSULFAN II	.825	3.3	16.7	16.7		29	132	29	132			40	ug/kg
ENDOSULFAN SULFATE	.825	3.3	16.7	16.7		16	148	16	148			40	ug/kg
ENDRIN	.825	3.3	16.7	16.7		24	185	24	185			40	ug/kg
ENDRIN ALDEHYDE	.825	3.3	16.7	16.7		11	118	11	118			40	ug/kg
ENDRIN KETONE	.825	3.3	16.7	16.7		30	144	30	144			40	ug/kg
GAMMA-BHC	.4	1.7	16.7	16.7		39	145	39	145			40	ug/kg
GAMMA-CHLORDANE	.4	1.7	16.7	16.7		46	145	46	145			40	ug/kg
HEPTACHLOR	.4	1.7	16.7	16.7		33	150	33	150			40	ug/kg
HEPTACHLOR EPOXIDE	.4	1.7	16.7	16.7		46	143	46	143			40	ug/kg
METHOXYCHLOR	.825	17	16.7	16.7		51	156	51	156			40	ug/kg
TOXAPHENE	16.7	33	83.3	83.3		25	138	25	138			40	ug/kg

7941228

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8081
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:12

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
2,4,5,6-TETRACHLORO-M-XYLENE					.5					20	180		ug/L
4,4'-DDD	.025	.1	.5	.5		50	145	50	145			40	ug/L
4,4'-DDE	.025	.1	.5	.5		50	145	50	145			40	ug/L
4,4'-DDT	.025	.1	.5	.5		45	140	45	140			40	ug/L
ALDRIN	.01	.05	.5	.5		38	130	38	130			40	ug/L
ALPHA-BHC	.01	.05	.5	.5		37	130	37	130			40	ug/L
ALPHA-CHLORDANE	.01	.05	.5	.5		60	135	60	135			40	ug/L
AROCLOR-1016	.25	.5	2.5	5		32	137	32	137			40	ug/L
AROCLOR-1221	.25	.5											ug/L
AROCLOR-1232	.25	.5											ug/L
AROCLOR-1242	.25	.5											ug/L
AROCLOR-1248	.25	.5											ug/L
AROCLOR-1254	.25	.5											ug/L
AROCLOR-1260	.25	.5	2.5	5		37	149	37	149			40	ug/L
BETA-BHC	.01	.05	.5	.5		61	131	61	131			40	ug/L
CHLORDANE	.01	.5	.5	.5									ug/L
DECACHLOROBIPHENYL					.5					25	140		ug/L
DELTA-BHC	.01	.05	.5	.5		47	140	47	140			40	ug/L
DIELDRIN	.025	.1	.5	.5		60	150	60	150			40	ug/L
ENDOSULFAN I	.01	.05	.5	.5		50	130	50	130			40	ug/L
ENDOSULFAN II	.025	.1	.5	.5		30	130	30	130			40	ug/L
ENDOSULFAN SULFATE	.025	.1	.5	.5		30	130	30	130			40	ug/L
ENDRIN	.025	.1	.5	.5		50	150	50	150			40	ug/L
ENDRIN ALDEHYDE	.025	.1	.5	.5		30	130	30	130			40	ug/L
ENDRIN KETONE	.025	.1	.5	.5		31	141	31	141			40	ug/L
GAMMA-BHC	.01	.05	.5	.5		43	122	43	122			40	ug/L
GAMMA-CHLORDANE	.01	.05	.5	.5		60	135	60	135			40	ug/L
HEPTACHLOR	.01	.05	.5	.5		40	130	40	130			40	ug/L
HEPTACHLOR EPOXIDE	.01	.05	.5	.5		60	132	60	132			40	ug/L
METHOXYCHLOR	.025	.5	.5	.5		60	150	60	150			40	ug/L
TOXAPHENE	.5	1	2.5	2		41	126	41	126			40	ug/L

7941229

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8082
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:12

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
2,4,5,6-TETRACHLORO-M-XYLENE					6.68					29	133		ug/kg
AROCLOR-1016	8.25	33	83.3	83.3		64	136	64	136			40	ug/kg
AROCLOR-1254	8	33	83.3	83.3		60	130	50	130			40	ug/kg
AROCLOR-1260	8.25	33	83.3	83.3		63	137	63	137			40	ug/kg
DECACHLOROBIPHENYL					6.68					30	173		ug/kg

7941230

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8082
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:13

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
2,4,5,6-TETRACHLORO-M-XYLENE					.2					30	132		ug/L
AROCLOR-1016	.25		2.5			32	137	32	137			40	ug/L
AROCLOR-1254	.24	.5	2.5	2.5		60	130	50	130			30	ug/L
AROCLOR-1260	.25		2.5			37	149	37	149			40	ug/L
DECACHLOROBIPHENYL					.2					36	144		ug/L

7941231

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8151
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:14

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
2,4,5-T	2	4	10	10		20	144	20	144			50	ug/kg
2,4,5-TP (SILVEX)	1.5	3	10	10		31	132	31	132			50	ug/kg
2,4-D	20	40	100	100		32	132	32	132			50	ug/kg
2,4-DB	20	40	100	100		29	134	29	134			50	ug/kg
2,4-DCPA					500					51	146		ug/kg
2-SEC-BUTYL-4,6-DINITROPHENOL	10	20	50	50		15	100	15	100			50	ug/kg
DALAPON	50	100	250	250		10	99	10	99			50	ug/kg
DICAMBA	2	4	10	10		33	146	33	146			50	ug/kg
DICHLOROPROP	20	40	100	100		35	139	35	139			50	
MCPA	2000	4000	10000	10000		19	147	19	147			50	ug/kg
MCPP	2000	4000	10000	10000		10	219	10	219			50	ug/kg
PENTACHLOROPHENOL	2	4	10	10		31	132	31	132			50	mg/kg

7941232

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 8151
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:14

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
2,4,5-T	.1	.2	.5	.5		24	133	24	133			44	ug/L
2,4,5-TP (SILVEX)	.1	.2	.5	.5		38	130	38	130			44	ug/L
2,4-D	1	2	5	5		29	133	29	133			51	ug/L
2,4-DB	1	2	5	5		29	123	29	123			52	ug/L
2,4-DCPA					5					20	144	40	ug/L
2-SEC-BUTYL-4,6-DINITROPHENOL	.5	1	2.5	2.5		28	92	28	92			73	ug/L
DALAPON	2.5	5	12.5	12.5		13	101	13	101			23	ug/L
DICAMBA	.1	.2	.5	.5		43	129	43	129			46	ug/L
DICHLOROPROP	1	2	5	5		42	118	42	118			36	ug/L
MCPA	100	250	500	500		26	114	26	114			47	ug/L
MCPP	100	250	500	500		32	119	32	119			44	ug/L
PENTACHLOROPHENOL	.1		.5	.5		38	130	38	130			53	

7941233

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 6010
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:15

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
ALUMINUM	10	20	500	500		80	120	75	125			20	mg/kg
ANTIMONY	.5	10	50	50		80	120	75	125			20	mg/kg
ARSENIC	.5	5	50	50		80	120	75	125			20	mg/kg
BARIUM	.1	.5	500	500		80	120	75	125			20	mg/kg
BERYLLIUM	.012	.5	50	50		80	120	75	125			20	mg/kg
BORON	10	25	50	50		80	120	75	125			20	mg/kg
CADMIUM	.05	.5	50	50		80	120	75	125			20	mg/kg
CALCIUM	5	10	500	500		80	120	75	125			20	mg/kg
CHROMIUM	.12	1	50	50		80	120	75	125			20	mg/kg
COBALT	.12	1	50	50		80	120	75	125			20	mg/kg
COPPER	.5	1	50	50		80	120	75	125			20	mg/kg
IRON	1	2	50	50		80	120	75	125			20	mg/kg
LEAD	.5	5	50	50		80	120	75	125			20	mg/kg
LITHIUM	2.5	5	500	500		80	120	75	125			20	mg/kg
MAGNESIUM	12	25	500	500		80	120	75	125			20	mg/kg
MANGANESE	.1	.5	50	50		80	120	75	125			20	mg/kg
MOLYBDENUM	1.5	5	50	50		80	120	75	125			20	mg/kg
[redacted]L	.5	2	50	50		80	120	75	125			20	mg/kg
[redacted]SIUM	25	50	2500	2500		80	120	75	125			20	mg/kg
[redacted]NIUM	.5	5	50	50		80	120	75	125			20	mg/kg
SILVER	.25	2	10	10		80	120	75	125			20	mg/kg
SODIUM	5	25	2500	2500		80	120	75	125			20	mg/kg
STRONTIUM	.25	.5	50	50		80	120	75	125			20	mg/kg
THALLIUM	1	25	50	50		80	120	75	125			20	mg/kg
TIN	5	25	50	50		80	120	75	125			20	mg/kg
TITANIUM	.5	2	50	50		80	120	75	125			20	mg/kg
VANADIUM	.25	.5	50	50		80	120	75	125			20	mg/kg
ZINC	.5	1	50	50		80	120	75	125			20	mg/kg

7941234

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 6010
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:16

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
ALUMINUM	.05	.1	10	10		80	120	75	125			20	mg/L
ANTIMONY	.01	.2	1	1		80	120	75	125			20	mg/L
ARSENIC	.01	.1	1	1		80	120	75	125			20	mg/L
BARIUM	.0025	.01	10	10		80	120	75	125			20	mg/L
BERYLLIUM	.00025	.01	1	1		80	120	75	125			20	mg/L
BORON	.033	.1	1	1		80	120	75	125			20	mg/L
CADMIUM	.0025	.01	1	1		80	120	75	125			20	mg/L
CALCIUM	.1	.2	10	10		80	120	75	125			20	mg/L
CHROMIUM	.0025	.02	1	1		80	120	75	125			20	mg/L
COBALT	.0025	.02	1	1		80	120	75	125			20	mg/L
COPPER	.005	.02	1	1		80	120	75	125			20	mg/L
IRON	.02	.04	1	1		80	120	75	125			20	mg/L
LEAD	.01	.1	1	1		80	120	75	125			20	ug/L
LITHIUM	.05	.1				80	120	75	125			20	mg/L
MAGNESIUM	.25	.5	10	10		80	120	75	125			20	mg/L
MANGANESE	.001	.01	1	1		80	120	75	125			20	mg/L
MOLYBDENUM	.005	.1	1	1		80	120	75	125			20	mg/L
NICKEL	.005	.04	1	1		80	120	75	125			20	mg/L
POTASSIUM	.25	1	50	50		80	120	75	125			20	mg/L
SELENIUM	.05	.1	1	1		80	120	75	125			20	mg/L
SILICON	.25	1				80	120	75	125			20	mg/L
SILVER	.005	.01	.2	.2		80	120	75	125			20	mg/L
SODIUM	.25	.5	50	50		80	120	75	125			20	mg/L
STRONTIUM	.005	.01				80	120	75	125			20	mg/L
THALLIUM	.05	1	1	1		80	120	75	125			20	mg/L
TIN	.05	.5	1	1		80	120	75	125			20	mg/L
TITANIUM	.005	.03	1	1		80	120	75	125			20	mg/L
VANADIUM	.005	.01	1	1		80	120	75	125			20	mg/L
ZINC	.005	.02	1	1		80	120	75	125			20	mg/L

7941235

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 7000
Matrix Class: SOLID
General Class: STD

Report Date: 07/14/2003 10:16

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
ANTIMONY	.25	1	50	50		80	120	75	125			20	mg/kg
ARSENIC	.1	.2	1.25	1.25		80	120	75	125			20	mg/kg
BERYLLIUM												20	mg/kg
CADMIUM												20	mg/kg
LEAD	.125	.25	1.25	1.25		80	120	75	125			20	mg/kg
MERCURY	.018	.25	.167	.167		80	120	75	125			20	mg/kg
SELENIUM	.1	.2	1.25	1.25		80	120	75	125			20	mg/kg
THALLIUM	.1	.25	1.25	1.25		80	120	75	125			20	mg/kg

7941236

KEMRON ENVIRONMENTAL SERVICES
QC LIMITS

Method Class: 7000
Matrix Class: WATER
General Class: STD

Report Date: 07/14/2003 10:17

Parameter	MDL	RDL	True Values LCS	True Values MS	True Values SURR	Control Limits LCS		Control Limits MS		Control Limits SURR		RPD	Units
ANTIMONY	.003	.02	.025	.025		80	120	75	125			15	mg/L
ARSENIC	.0015	.004	.025	.025		80	120	75	125			20	mg/L
BERYLLIUM	.00025	.0005	.0025	.0025		80	120	75	125			8.9	mg/L
CADMIUM													mg/L
LEAD	.002	.005	.025	.025		80	120	75	125			26	mg/L
MERCURY	.000052	.0002	.001	.001		80	120	75	125			15	mg/L
SELENIUM	.001	.004	.025	.025		80	120	75	125			15	mg/L
THALLIUM	.0015	.005	.025	.025		80	120	75	125			15	mg/L

Attachment D

Information on EDMS

DESCRIPTION OF THE DEFENSE DISTRIBUTION CENTER (MEMPHIS) ENVIRONMENTAL DATA MANAGEMENT SYSTEM

The data management task for CH2M HILL Memphis Depot projects has been accomplished through the use of the SEM Environmental Data Management System tool set (EDMS). The current tool set being utilized is EDMS97_Generic. This tool set is proprietary software, and was developed to support a variety of needs and site management projects. The EDMS tool set is Microsoft Access 97 based, with associated project data tables residing in either an Access 97 database or in a Microsoft SQL Server database. Through the use of menu driven screens , the various EDMS components can provide both field and analytical support for a project.

Field data support includes the management of field data such as location survey information, field sampling information, well construction information, lithology and stratigraphic data, water level data, in situ field measurements, down hole measurements, and vapor data. In addition, field support includes the ability to generate sample container labels, chain of custody documentation, and various reports to assist with the scheduling and login functions.

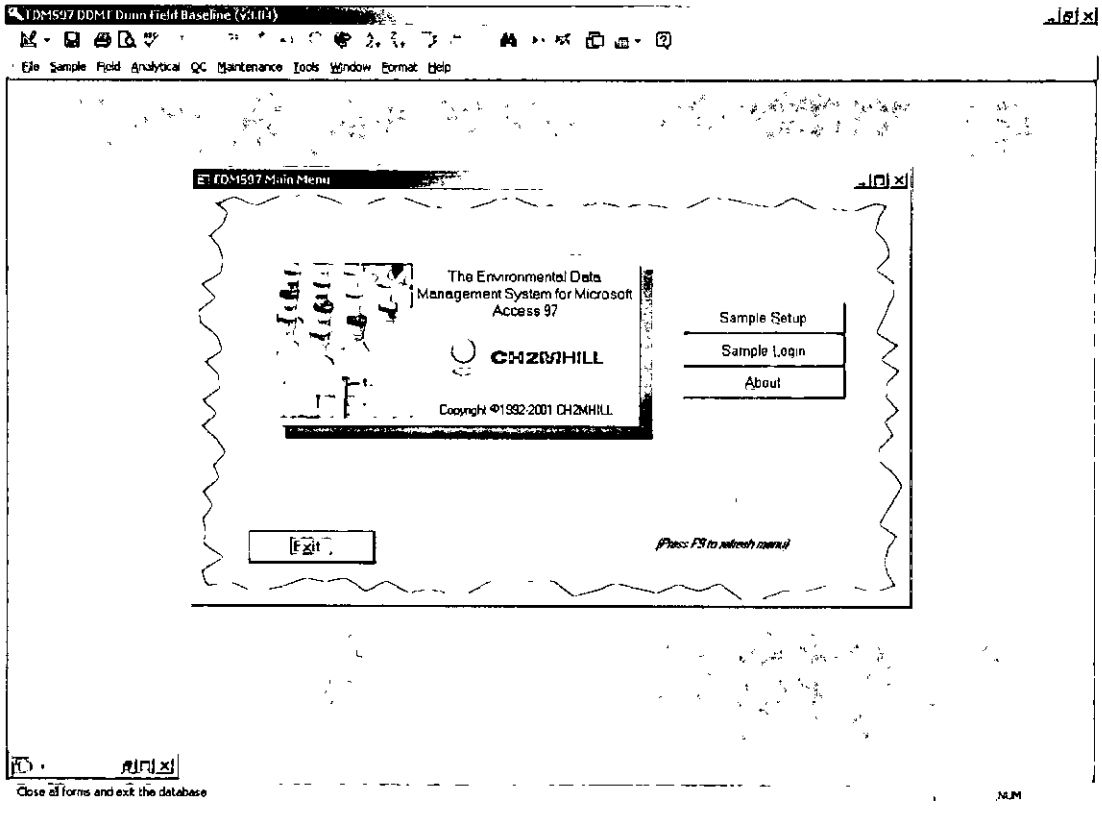
Analytical data support includes automated quality control checks of the laboratory electronic data deliverables (EDD), support for the data validation and data quality evaluation functions, and the generation of both electronic and hard copy data deliverables. Electronic data deliverables include data exports for risk assessment support, CAD support, GIS support, as well as client specified EDD. In addition, standardized and custom data tables or reports can be generated to support the project report development process.

The laboratory EDD are submitted by the laboratory in a comma separate variable (CSV) format that is directly importable by EDMS. The EDD consists of 47 fields of data per row which represents one record. Each record in the EDD is one analytical result, and all the information required to evaluated that record or link it to it's associated laboratory QC is contained in that record. The detailed electronic data deliverable specifications are attached as Attachment A.

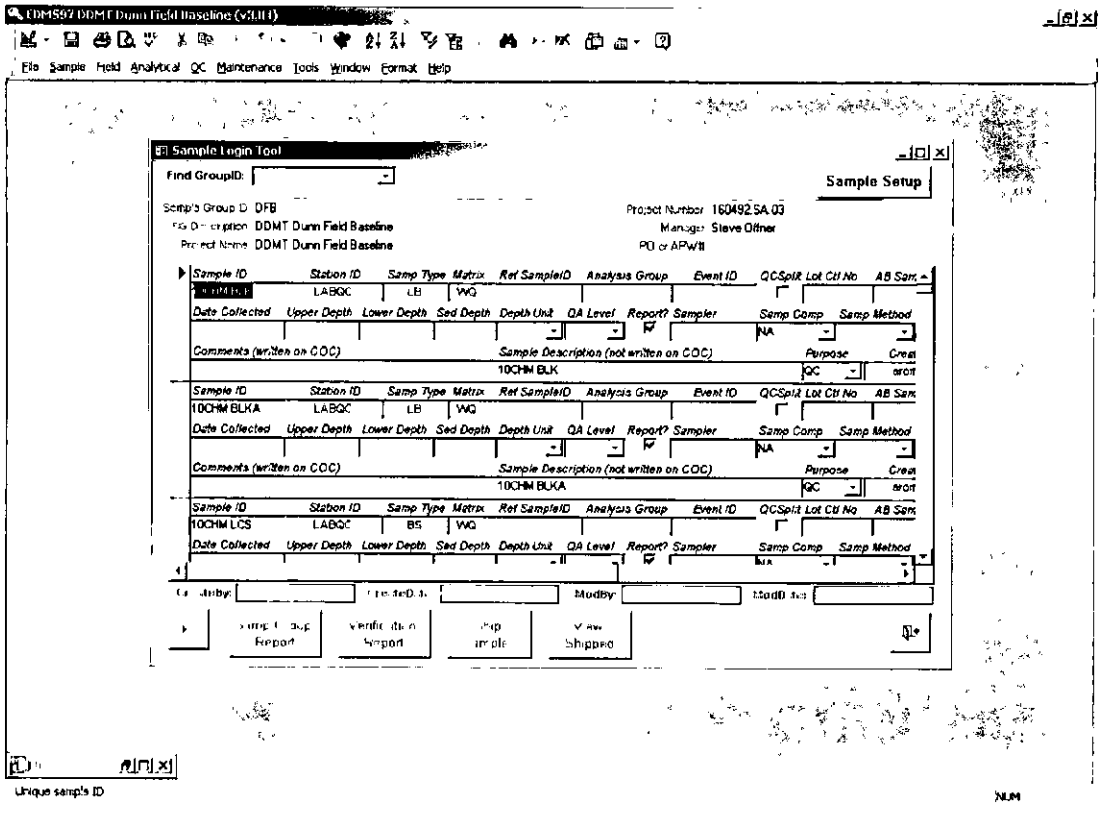
While not all features of EDMS are currently used to support Memphis Depot projects, the features are available in EDMS and can be used should the need arise.

The following screen captures are provided to illustrate the level of detailed information that can be managed through EDMS. It should be noted that while not all fields must be populated for all records, there are certain select key fields that must be populated to support a specific functionality of the tool set. An example would be that for a given sample, an analysis code is required to take advantage of the label generation capabilities of EDMS.

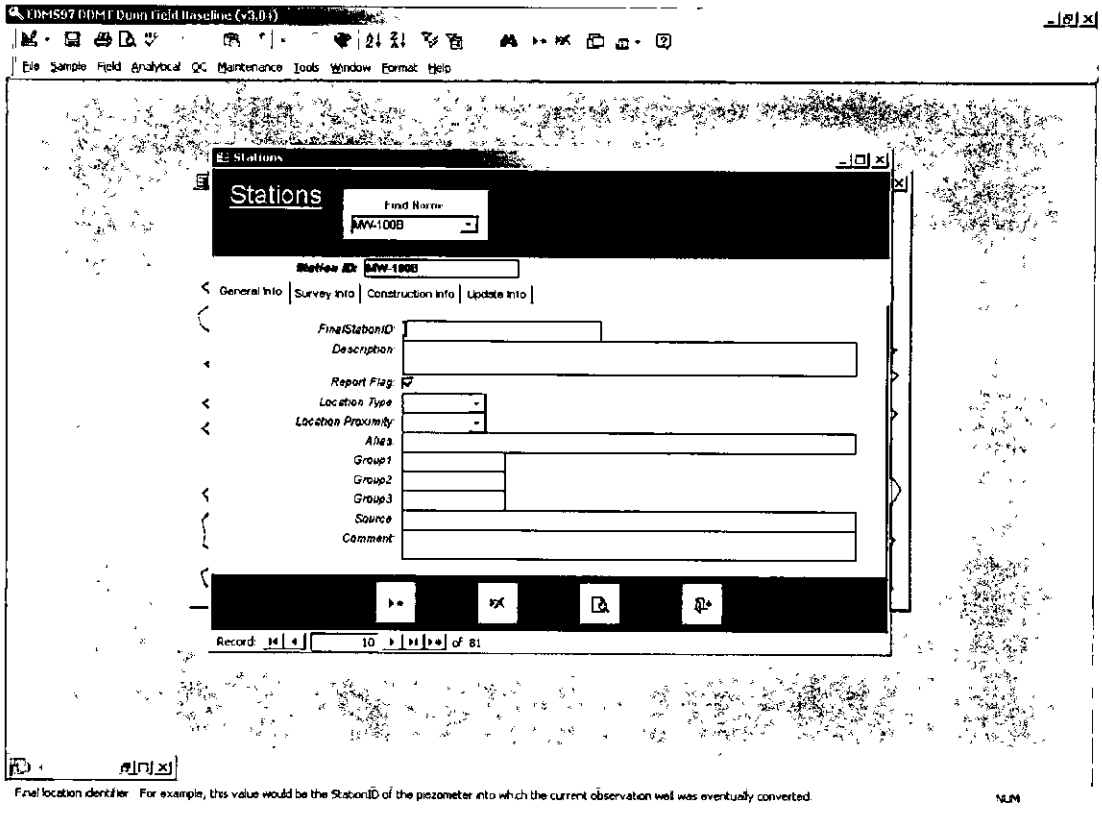
EDMS Main Menu :



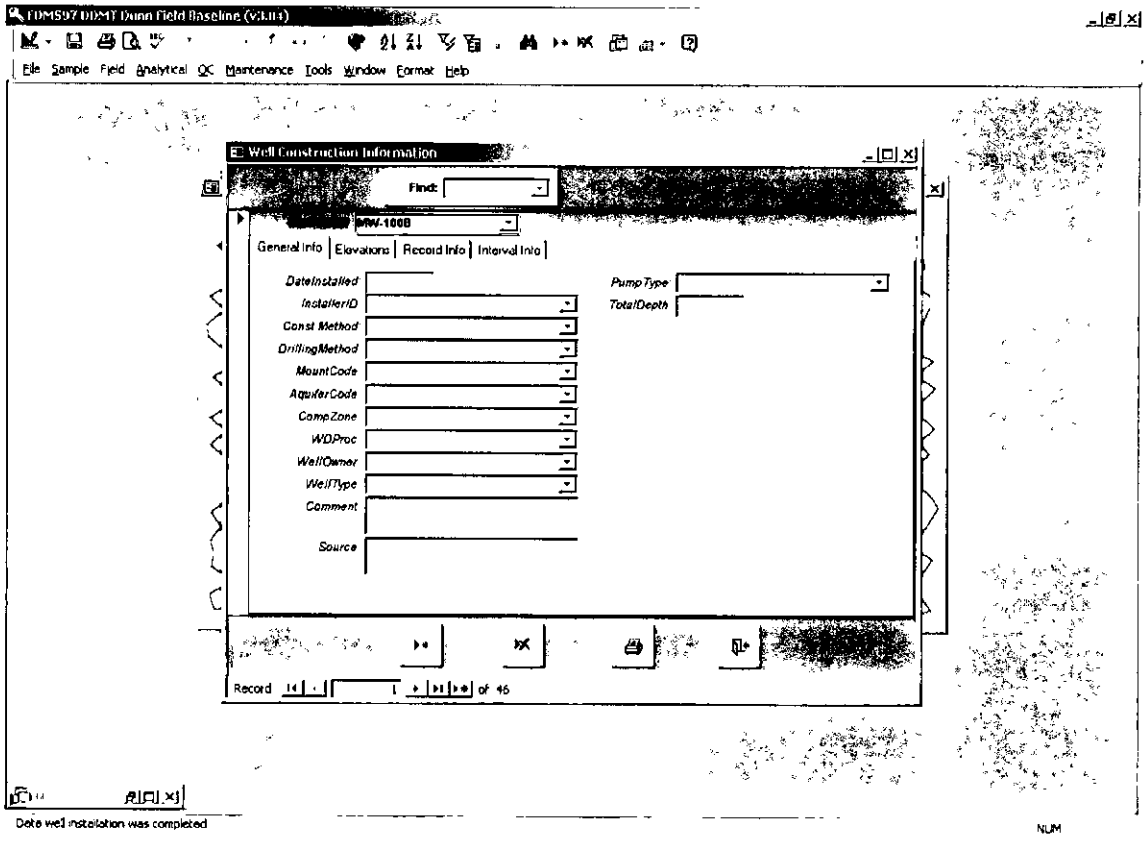
EDMS Sample Login :



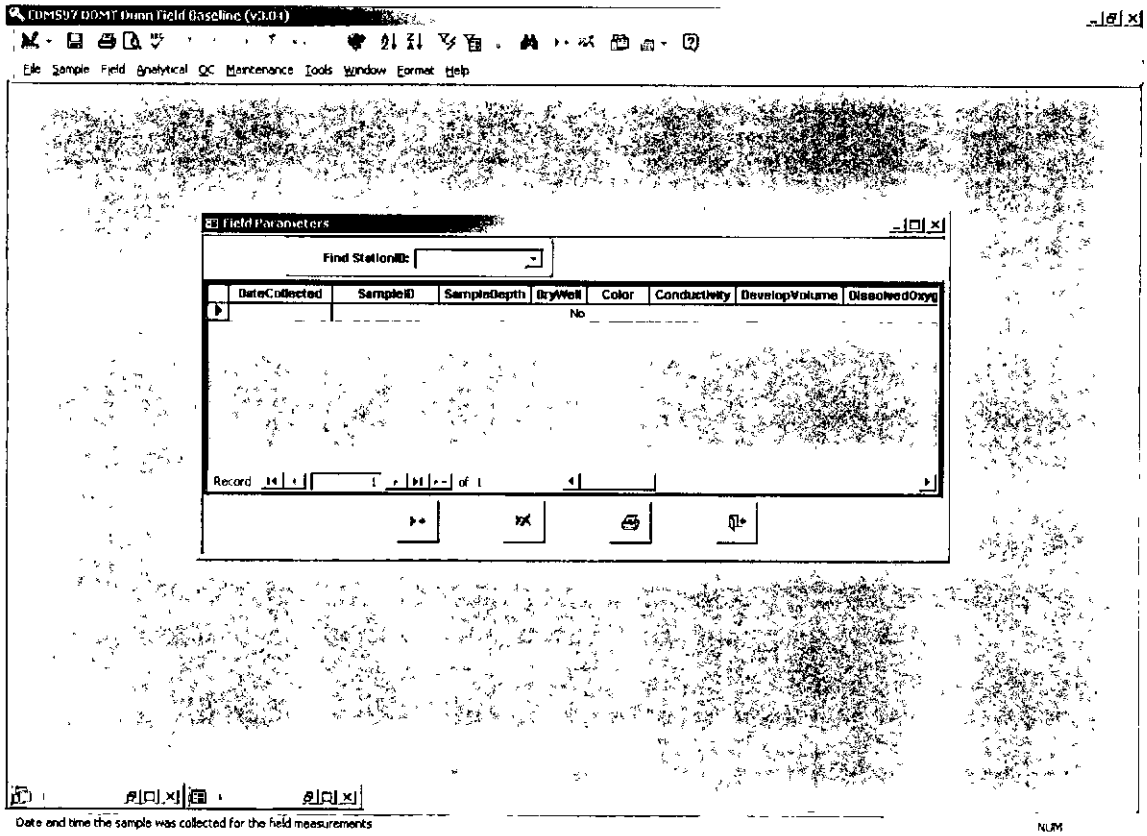
EDMS Station Information :



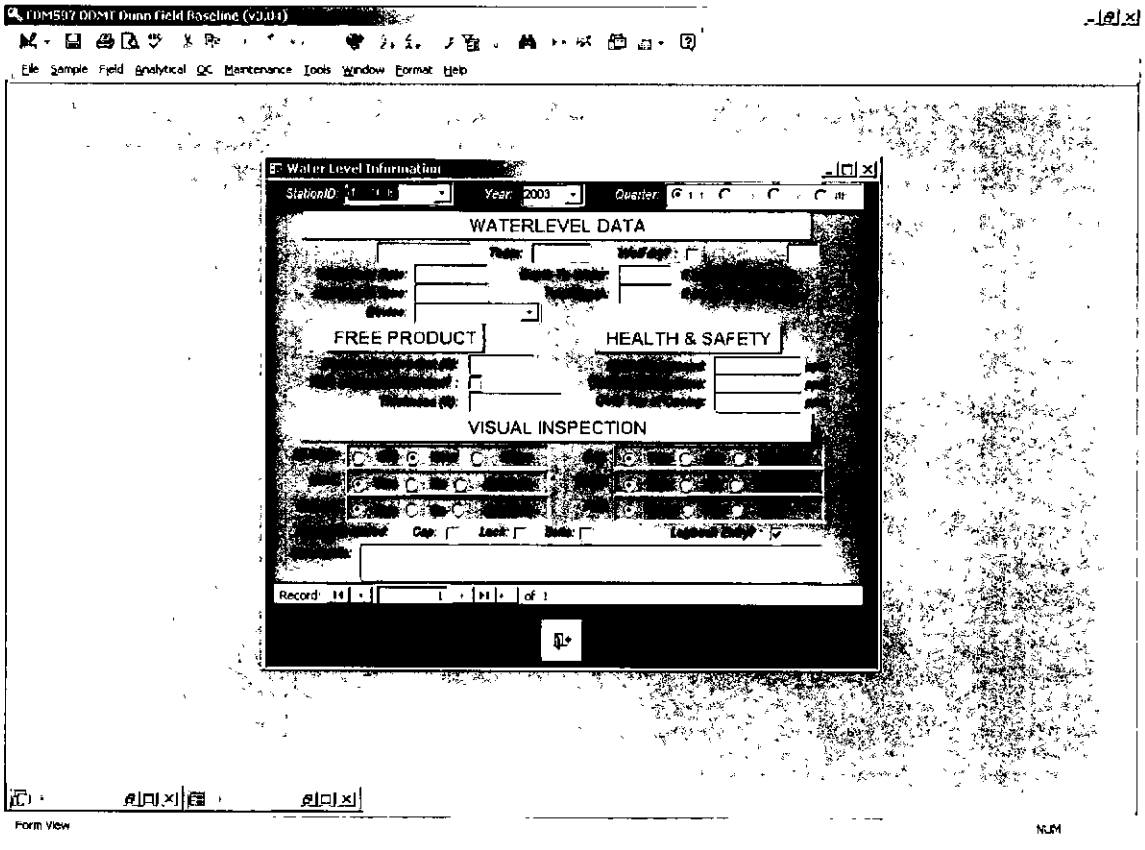
EDMS Well Construction :



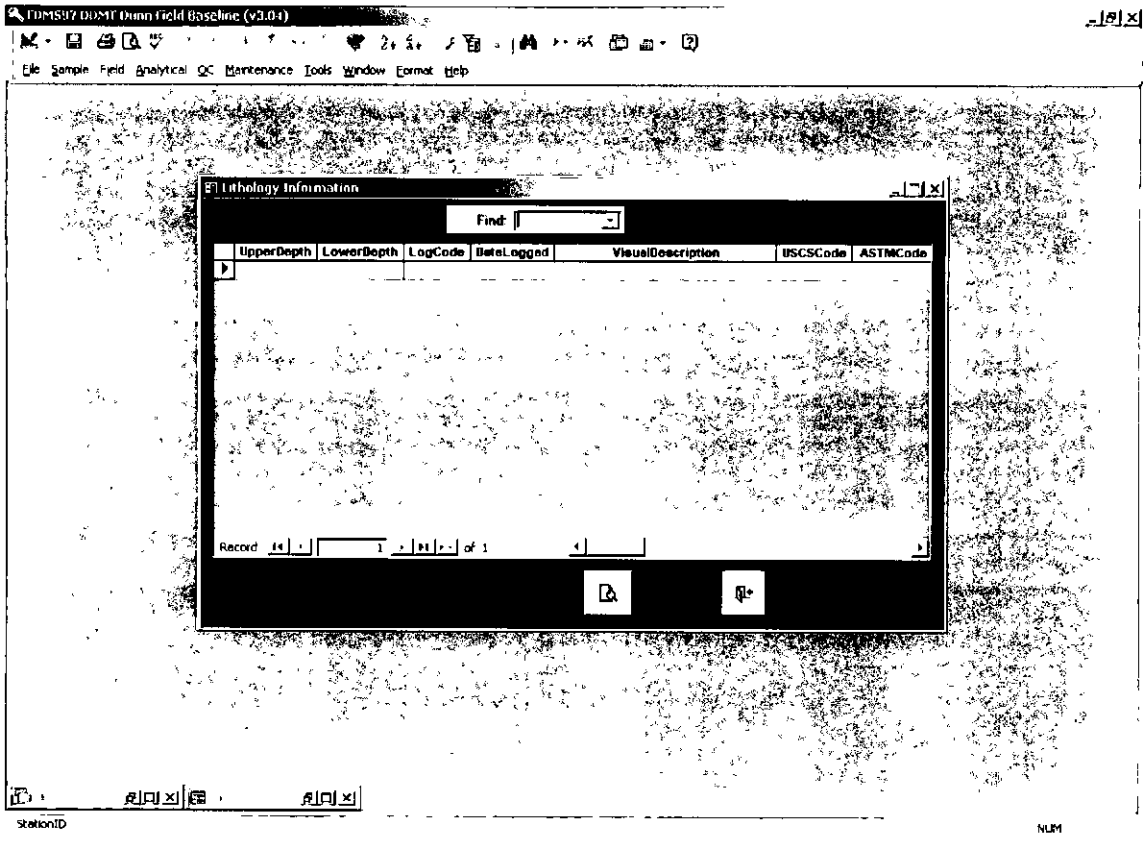
EDMS Field Measurements :



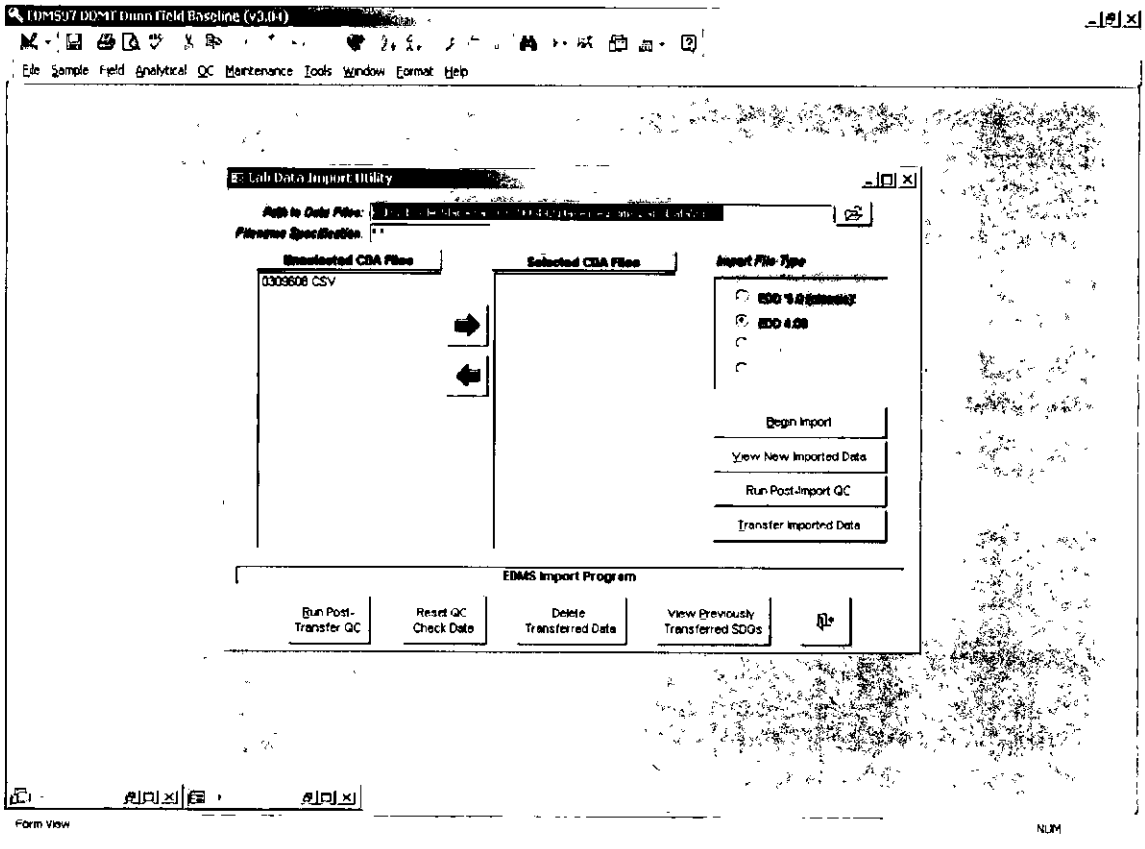
EDMS Water Level :



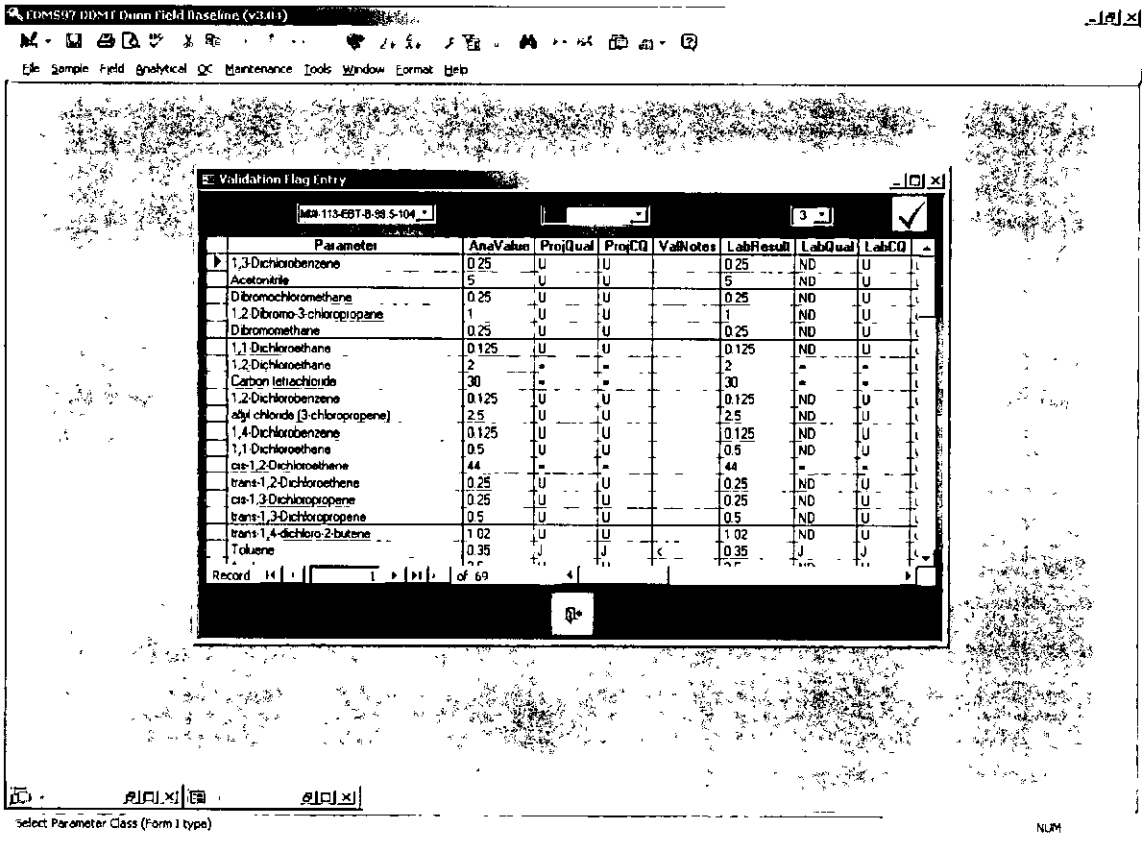
EMDS Lithology :



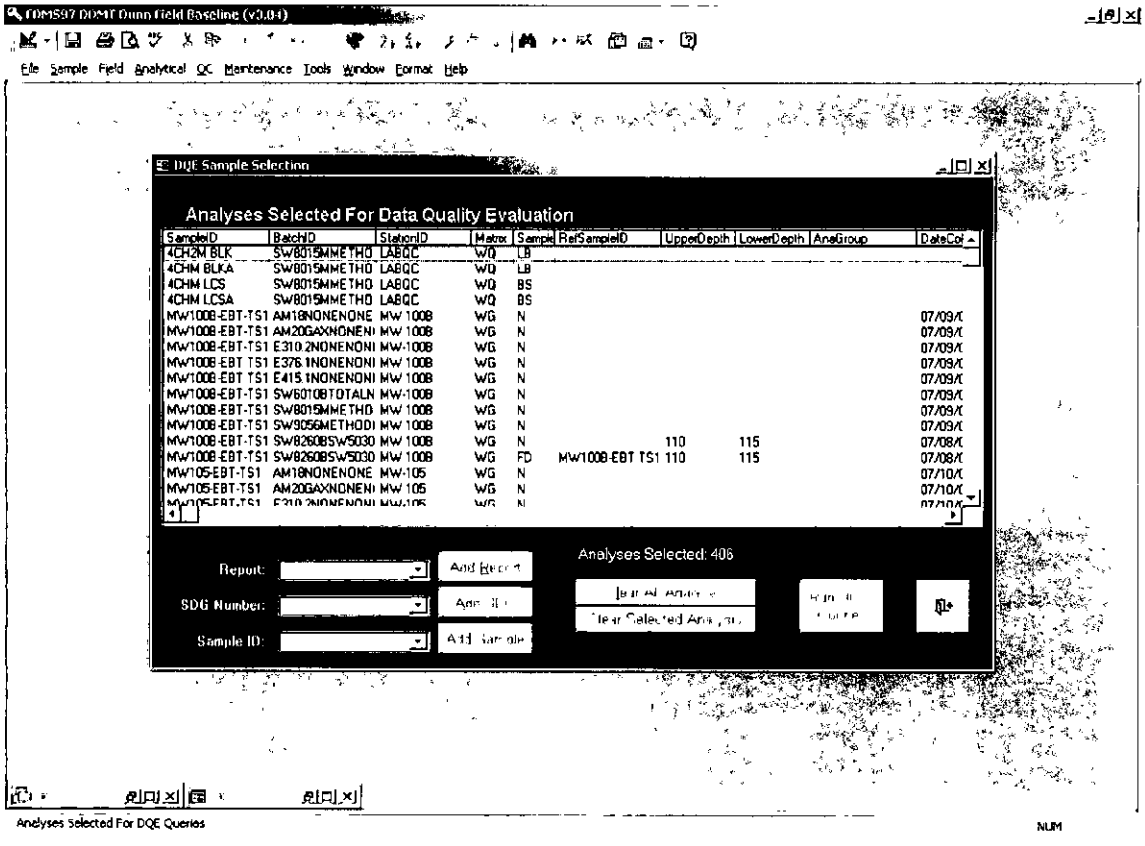
Lab EDD Import :



Validation Flag Entry :



Data Quality Evaluation :



Attachment A

Electronic Data Deliverable Format for CH2M HILL

The electronic data deliverable (EDD) file from the laboratory will be a comma-delimited ASCII (CDA) file in the format listed below. There will be one file per hard copy report and the filename of the EDD file will be in the format REPORTID.txt or REPORTID.csv, where REPORTID is the hard copy report identifier of sample delivery group.

The first row of the EDD will contain the 47 field name values as listed in the EDD Specification Table

The EDD Specification Table lists the attributes of the columns for each row of the CDA file. The fields should be reported in the order indicated.

The **Data Type** column describes the value in the field as either text (alphanumeric), number (numeric only), date (format: mm/dd/yyyy), or time (24-hour format hh:mm). If the field is conditional or optional and there is no value to be reported, report a null (i.e., no) value. For a text field, do not report a zero-length string (i.e., "").

The **Data Length** column contains the maximum length of a text value for the particular data field.

The **Rqmt** column contains a code indicating whether the value is required (R) for all rows, optional (O) for all rows, or conditional (C) and depends on the type of result reported.

Modification Notes:

Changes to February 9, 2000 Revision:

1. Change the description of the QAQCType field (Field No. 6) to clarify how diluted samples should be reported.
2. Change the description of the LRType field (Field No. 7) to allow for multiple dilutions, re-analyses, and confirmation sample analyses. Also change the example values to reflect this change.
3. Change the description of the AnalysisMethod field (Field No. 10) to correct grammatical error.
4. Minor typographical/grammatical changes in the descriptions of the ExtractDate and ExtractTime fields (Field Nos. 15 and 16).
5. Change requirement of the LabLotCtlNum field (Field No. 20) from Required to Conditional. If there is no preparation, then the value in this field should be blank.
6. Change data type of the Result field (Field No. 24) from Number to Text, length of 10. Clarify the requirement of a text value in the field description.
7. Change the description of the MDL field (Field No. 28) to clarify the contents of the field.
8. Change the description for the UpperControlLimit and LowerControlLimit fields (Field Nos. 35 and 36) to explain when a value is required in those fields.
9. Change the description of the MDLAdjusted field (Field No. 39) to clarify the contents of the field.
10. Change the requirement of the SampleDescription field (Field No. 41) from Required to Conditional. Lab QC samples (method blanks, blank spike, blank spike duplicates) do not appear on the COC.
11. Change the description of the CalRefID field (Field No. 47) to clarify the contents of the field.

EDD Specification Table					
Field Number	Field Name	Data Type	Data Length	Rqmt	Description and Comments
1	VersionCode	text	15	R	Code identifying the version of the EDD deliverable.
2	LabName	text	10	R	Identification code for the laboratory performing the work. This value is used to distinguish among different facilities.
3	SDG	text	8	R	Sample delivery group designation. Always populated for all samples, including QC.
4	FieldID	text	13	R	Client sample ID as appears on COC with optional lab-assigned suffixes and/or prefixes to make it unique. If the sample identifier on the COC and the prefix/suffix is greater than 13 characters, abbreviate the value but make it unique. For laboratory QC samples (i.e., method blanks, lab control samples), use a unique lab sample identifier.
5	NativeID	text	13	R	Client sample ID, exactly as on the COC. No prefix or suffix allowed. Used to identify the native sample from which other samples are derived (e.g., QAQCType = "LR", "MS", or "SD"). For laboratory QC samples (i.e., method blanks, lab control samples), use a unique lab sample identifier. For lab blank spike (and blank spike duplicate) samples, use the FieldID value that was assigned to the associated method blank.

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EDD Specification Table					
Field Number	Field Name	Data Type	Data Length	Rqmt	Description and Comments
6	QAQCType	text	2	R	This is the code for the sample type. Any field sample that is not used as lab QC and is not otherwise marked on the COC should have the designation of "N" (normal field sample). No suffix allowed (i.e., do not add numbers as suffixes to the QAQCType values as is called for in the ERPIMS guidelines). Note that if all analyses for a given sample are diluted, then the first dilution should be designated as the normal sample. If more dilutions are required, then the next dilution should be designated as the first true dilution with a QAQCType value of "LR" and a LRType value of "DL" (see LRType, below).
7	LRType	text	3	C	This is the code for laboratory replicate sample type. Values are: blank (if QAQCType value is not "LR"), "DL" (dilution), "RE" (re-analysis), "D" (inorganic duplicate), "CF" (confirmation). For multiple dilutions or re-analyses of the same sample, append the replicate number after the LRType value (i.e., "RE", "RE2", "RE3", etc.).
8	Matrix	text	5	R	Sample matrix code. Valid values are as follows: "AIR", "WATER", "SOIL", unless otherwise provided by the project data manager and marked on the COC. The use of "liquid", "solid", etc. for lab QC is not allowed.
9	LabSampleID	text	20	R	Laboratory sample ID. Prefix or suffix is allowed. This is where dilutions or re-extractions are noted. Ex: "D97-11111RE" is acceptable.
10	AnalysisMethod	text	20	R	Analysis method code. This is the identifier of the analytical method that was performed on the sample. Example: SW8260A. Generic names such as "EPA" should not be used.

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EDD Specification Table					
Field Number	Field Name	Data Type	Data Length	Rqmt	Description and Comments
11	ExtractionMethod	text	20	R	Preparation method code. A value in this field is required. If the preparation is described in the method, use "METHOD". If there is no separate preparation required, use "NONE". Note that Total and Dissolved metal analyses are differentiated by the value in this column. Note that Total, TCLP, and SPLP analyses are now differentiated by the value in the LeachMethod column (see below).
12	SampleDate	date		C	Date of sample collection. Value is required for all samples sent to the laboratory and samples derived from those samples. Format: mm/dd/yyyy
13	SampleTime	time		C	Time of sample collection. Value is required for all samples sent to the laboratory and samples derived from those samples. 24-hour format: hh:mm
14	ReceiveDate	date		C	Date of sample receipt in the lab. Value is required for all samples sent to the laboratory and samples derived from those samples. Format: mm/dd/yyyy
15	ExtractDate	date		C	Date of sample preparation (extraction or digestion). Value is required if the ExtractionMethod field value is other than "NONE". Format: mm/dd/yyyy
16	ExtractTime	time		C	Time of sample preparation. Value is required if the ExtractionMethod field value is other than "NONE". 24-hour format: hh:mm
17	AnalysisDate	date		R	Date of sample analysis. Value is required for all records. Format: mm/dd/yyyy
18	AnalysisTime	time		R	Time of sample analysis. Value is required for all records. 24-hour format: hh:mm
19	PercentSolids	number		R	Percent solids within the sample. Should be zero for water samples.

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EDD Specification Table					
Field Number	Field Name	Data Type	Data Length	Rqmt	Description and Comments
20	LabLotCtlNum	text	10	C	Identifier of an autonomous group of environmental samples and associated QC samples **prepared** together. For example, its value can be a digestion or extraction batch ID. If there is no separate extraction or preparation performed, leave this field blank.
21	CAS	text	20	C	CAS number of analyte, if available.
22	ParamID	text	12	R	Parameter identifier code for the parameter listed in the Analyte field.
23	Analyte	text	60	R	Name of analyte, chemical name.
24	Result	text	10	R	Result of the analysis. Surrogate analytes will be reported in units of percent. All others will be reported in sample concentration units. If undetected, report the adjusted MDL or adjusted RL, depending on the project. (Reported as a text field to preserve significant figures.)
25	ExpectedValue	number		C	"100" for surrogates; "0" (zero) for blanks; spike level plus parent result for LCS, and MS/MSD; parent value for lab duplicate; etc.
26	Units	text	10	R	Units of measure used in the analysis. Report "PERCENT" for surrogate analytes and concentration units for all others.
27	Dilution	number		R	Total dilution reported in the analysis. Default value should be 1 (one). This value should reflect changes to sample preparation amounts as defined by the method (e.g., less sample used for standard VOC analysis).
28	MDL	number		C	Minimum detection limit adjusted for preparation and dilution. Note that this value may be the method detection limit or the instrument detection limit, depending on the method and the project requirements. This value is **not** adjusted for percent moisture.
29	RL	number		C	Reporting limit adjusted for preparation and dilution. Value is **not** adjusted for percent moisture. Equivalent to PQL.
30	LabQualifier	text	6	R	Lab qualifier for the results, as reported on the hard copy. Use "=" as first (or only) qualifier value for detected results.

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EDD Specification Table					
Field Number	Field Name	Data Type	Data Length	Rqmt	Description and Comments
31	Surrogate	text	1	R	Is the chemical a surrogate? Report "Y" for yes or "N" for no.
32	Comments	text	240	O	Comment field
33	ParValUncert	text	16	C	Radiological parameter value uncertainty.
34	Recovery	number		C	Percent recovery for MS, SD, LCS, and surrogate compounds.
35	LowerControlLimit	number		C	Lower control limit value for spiked compounds, expressed in units of Percent. A value in this field is required if there is a value in the Recovery field (Field No. 34).
36	UpperControlLimit	number		C	Upper control limit value for spiked compounds, expressed in units of Percent. A value in this field is required if there is a value in the Recovery field (Field No. 34).
37	Basis	text	1	R	Weight basis for soil (or solid) sample analysis. Use "D" for dry-weight basis, "W" for wet-weight basis, or "X" if not applicable.
38	ConcQual	text	1	R	Concentration qualifier. Use "=" for detects, "J" for estimated value (value between detection limit and reporting limit), "U" for undetected result, or "E" for exceeded result.
39	MDLAdjusted	number		C	Minimum detection limit adjusted for preparation, dilution **and percent moisture**. See the description of the MDL field (Field No. 28) for an explanation of the contents of this field.
40	RLAdjusted	number		C	Reporting limit adjusted for preparation, dilution **and percent moisture**. Equivalent to PQL
41	SampleDescription	text	20	C	Full sample identifier value as it appears on the COC. In some cases, this may be the name of the sampling location instead of the sample. Required for all samples that are either collected in the field and specified on the COC, or derived from samples that are collected in the field and specified on the COC.
42	LeachMethod	text	20	R	Analytical method used for leaching the sample. This applies to TCLP, SPLP, or other leaching or pre-extraction leaching procedures. Use "NONE" if the sample was not leached.

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EDD Specification Table					
Field Number	Field Name	Data Type	Data Length	Rqmt	Description and Comments
43	LeachDate	date		C	Date that the leaching method was performed (start date for multi-date leaching procedures). Value is required if the LeachMethod field value is other then "NONE". Format: mm/dd/yyyy.
44	LeachTime	time		C	Time that the leaching procedure started. Value is required if the LeachMethod field value is other then "NONE". 24-hour format: hh:mm.
45	LeachLot	text	20	C	Identifier of an autonomous group of environmental samples and associated QC samples **leached** at the same time. If the sample was not leached, leave this field blank.
46	AnalysisLot	text	20	R	Identifier of an autonomous group of environmental samples and associated QC samples **analyzed** together. A value in this field is mandatory (i.e., it should not be blank).
47	CalRefID	text	20	C	Identifier of a group of environmental and QC samples linked by a common set of calibration records. All results with the same CalRefID value will have had the same initial calibration run.

Each row is uniquely identified by the values in the following fields:

- FieldID
- AnalysisMethod
- ExtractionMethod
- LeachMethod
- ParamID

If an analytical sample must be diluted or reanalyzed and reported in addition to the original analytical sample, the diluted or reanalyzed sample should have a FieldID value that is different that that of the original sample. This can be accomplished through the addition of a suffix to the original FieldID that establishes a new and unique FieldID for the associated records.

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Example Valid Values

The project data manager will provide the laboratory with a list of valid values that the laboratory will use in constructing the EDD. Listed below are some example valid values.

Field Name	Valid Value	Meaning
VersionCode	4.00AFCEE3	Format 4.00, AFCEE data values. LabQualifier field contains the laboratory qualifier values defined in the AFCEE QAPP, version 3.0.
VersionCode	4.00EPACLP	Format 4.00, EPA data values. LabQualifier field contains the standard EPA CLP lab qualifiers.
QAQCType	N	Normal, environmental sample
QAQCType	LB	Laboratory method blank
QAQCType	MS	Laboratory matrix spike sample
QAQCType	SD	Laboratory matrix spike duplicate
QAQCType	LR	Laboratory replicate (dilution, re-analysis, duplicate)
QAQCType	BS	Laboratory method blank spike
QAQCType	BD	Laboratory method blank spike duplicate
LRType	DL	First dilution sample
LRType	DL2	Second dilution sample
LRType	DL3	Third dilution sample
LRType	RE	First re-analysis/re-extraction sample
LRType	RE2	Second re-analysis/re-extraction sample

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Field Name	Valid Value	Meaning
LRType	RE3	Third re-analysis/re-extraction sample
LRType	D	Inorganic duplicate sample
LRType	CF	First confirmation analysis sample
LRType	CF2	Second confirmation analysis sample
LRType	CF3	Third confirmation analysis sample
AnalysisMethod	SW8260A	Volatiles by method 8260A in EPA SW846.
AnalysisMethod	SW8270	Semivolatiles by method 8270 in EPA SW846.
AnalysisMethod	SW6010	ICP metals by method 6010 in EPA SW846.
AnalysisMethod	SW7060	GFAA Arsenic by method 7060 in EPA SW846.
ExtractionMethod	FLDFLT	Field filtration for dissolved metals analysis
ExtractionMethod	C3050	CLP-modified SW3050 acid digestion for metals analysis in soil samples.
ExtractionMethod	SW1311	TCLP extraction
ExtractionMethod	DISWAT	Distilled water extraction for analytes in soil samples.
ExtractionMethod	SW3510	Separatory funnel extraction
ExtractionMethod	SW3540	Soxhlet extraction
ExtractionMethod	TOTAL	Digestion of unfiltered waters for total metals analysis
ParamID	ACE	Acetone
ParamID	AS	Arsenic

Field Name	Valid Value	Meaning
ParamID	BHCGAMMA	gamma-BHC (Lindane)
ParamID	BZ	Benzene
ParamID	CDS	Carbon disulfide
ParamID	PB	Lead
ParamID	PHENOL	Phenol
ParamID	SE	Selenium
ParamID	TCE	Trichloroethene

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APPENDIX C

Land-use Control Implementation Plan

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Memphis Depot Main Installation

Land Use Control Implementation Plan



February 2004 (Rev. 1)

CH2MHILL

U.S. Army Engineering and Support Center, Huntsville

U.S. Army Engineering and Support Center, Huntsville
Contract No. DACA87-94-D-0009
Task Order No. 13

E082002027ATL

Defense Distribution Center (Memphis) Main Installation Land Use Control Implementation Plan (LUCIP)

1. Introduction

The former Defense Distribution Center (Memphis) (hereafter referred to as the Memphis Depot) Main Installation (MI) Record of Decision (ROD) (CH2M HILL, September 2001) identified land use controls (LUCs) as part of the selected remedy. The ROD provides in part that:

> Land use controls are part of the selected remedy for the Main Installation, and shall be implemented through a land use controls implementation plan (LUCIP). The LUCIP shall be developed as part of the remedial design. The timing and nature of the monitoring and reporting for the land use controls shall be specified in the LUCIP. However, to remain protective, land use controls depend on annual monitoring, and maintenance of fences and signs. The results of the annual evaluation shall be reported to TDEC [Tennessee Department of Environment and Conservation] and EPA [U.S. Environmental Protection Agency]. The deed restrictions will add a layer of protection against future residential use that will augment current zoning restrictions.

This LUCIP describes the implementation of the MI ROD LUCs. This LUCIP is part of the Remedial Design (RD) for the MI and will be included as part of the approved design package and carried out in the Remedial Action (RA).

2. Land Use Control Objectives

The MI LUC objectives are as follows:

1. Prevent direct contact/ingestion of surface soils contaminated with dieldrin and arsenic.
2. Prevent direct contact/ingestion of surface soils contaminated with lead for protection of residential children, including those in daycare.
3. Prevent ingestion of groundwater contaminated with volatile organic compounds from potential future onsite wells.

3. Land Use Restrictions

The MI land use restrictions are as follows:

1. No residential land use or other child-occupied facilities, including daycare on the MI (except on Parcels 1 and 2 of Functional Unit (FU)6[1])(depicted in Figure 1).

[1] Parcel 1 is the main administration building and adjacent parking areas (formerly known as Building 144). Parcel 2 is the former Memphis Depot housing area. Per the MI ROD, neither parcel required any land use restrictions due to environmental conditions.

2. No production/consumptive use of groundwater or drilling groundwater wells on the MI (except on Parcels 1 and 2 of FU6) (depicted in Figure 2).

4. Land Use Controls

The LUCs for the MI consist of institutional controls, including deed and lease restrictions, a Notice of Land Use Restrictions (hereinafter Notice), zoning restrictions, and groundwater well restrictions. In addition, the fence along the boundary of the Southeast Golf Course Area (FU2) will be maintained to preclude casual access by adjacent offsite residents (see Figure 1). The following LUCs will be used to minimize the potential for violations of the land use restrictions in the future. A summary of the LUCs and monitoring requirements is provided in Table 1.

A. Lease Restrictions

The Interim Master Lease (now Lease in Furtherance of Conveyance) between the United States Army (Lessor) and the Depot Redevelopment Corporation of Memphis and Shelby County (hereinafter the DRC or Lessee) contains environmental protection provisions (EPP) that prohibit the Lessee and any sublessees from making any modifications, additions, or alterations to the Depot property in any way that might affect the cleanup activities, human health and the environment. Additionally, the lessee cannot conduct or permit its sublessees to conduct any subsurface excavation, digging, drilling, or other disturbance of the Depot surface without written approval by the Army. These EPP are enforceable against the Lessee by the Army as holder of the lease. Furthermore, any sublease by the DRC is subject to the conditions of the lease (including the EPP) and should any noncompliance stem from the activities of the sublessee, the Lessee is responsible for ensuring compliance either by corrective action itself or through the sublessee. The EPP are being updated by the Army to reflect the land use restrictions required in the MI ROD and specified above. These EPP will provide the same level of protection against unauthorized use of the Depot property prior to transfer, as the deed restrictions will provide subsequent to transfer.

B. Deed Restrictions

The Army intends to transfer ownership of all the property on the MI (by parcel) to several parties, including but not limited to, the DRC, and the City of Memphis through the U.S. Department of Interior. The Army's property disposal agent will incorporate appropriate restrictive covenant language to ensure that the above land use restrictions are incorporated into the deeds transferring the property. The deeds (or other property transfer instruments) shall include a legal description of where the land use restrictions apply and may reference the Notice that will be recorded in the Shelby County Register of Deeds office (see Section 4.C below).

Such deeds will be prepared in accordance with Tennessee real property law to ensure that the restrictions run with the land and shall be binding on all subsequent property owners. The deeds will be recorded in the Shelby County Register of Deeds office. Before executing the deed for conveyance, the Army will provide EPA with a draft copy of the deed language

(i.e., restrictive covenants consistent with the above land use restrictions) for their review and comment[2]. A copy of the final executed deed will be mailed to EPA and TDEC.

C. Notice of Land Use Restrictions

In accordance with *Tennessee Code* Section 68-212-225 *et.seq.*, the Army's property disposal agent will prepare a Notice and record it in the Shelby County Register of Deeds office. The Notice will be filed by the Army's property disposal agent within 60 days following issuance of the final RD for the MI. A copy of the *Tennessee Code* Section 68-212-225 *Notice of Land Use Restrictions* is available at http://www.michie.com/resources1.html

The Notice will: 1) include a legal description of the site; 2) identify the location and dimensions of the areas of potential environmental concern with respect to surveyed,

[2] The Army normally provides a copy of the Finding of Suitability to Transfer (FOST) document that includes the land use restriction language, for subsequent use in the deed, to EPA for review.

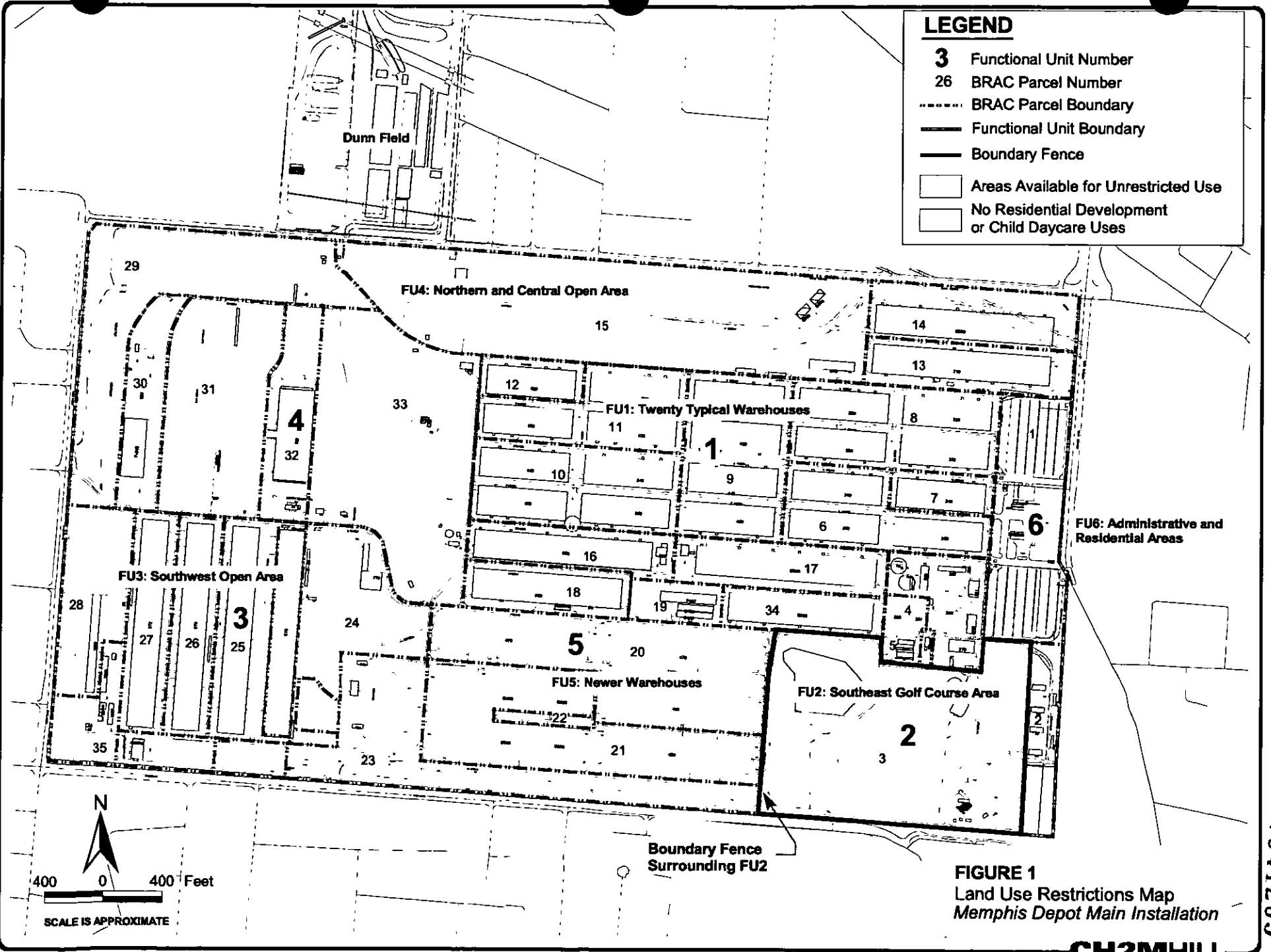


FIGURE 1
Land Use Restrictions Map
Memphis Depot Main Installation

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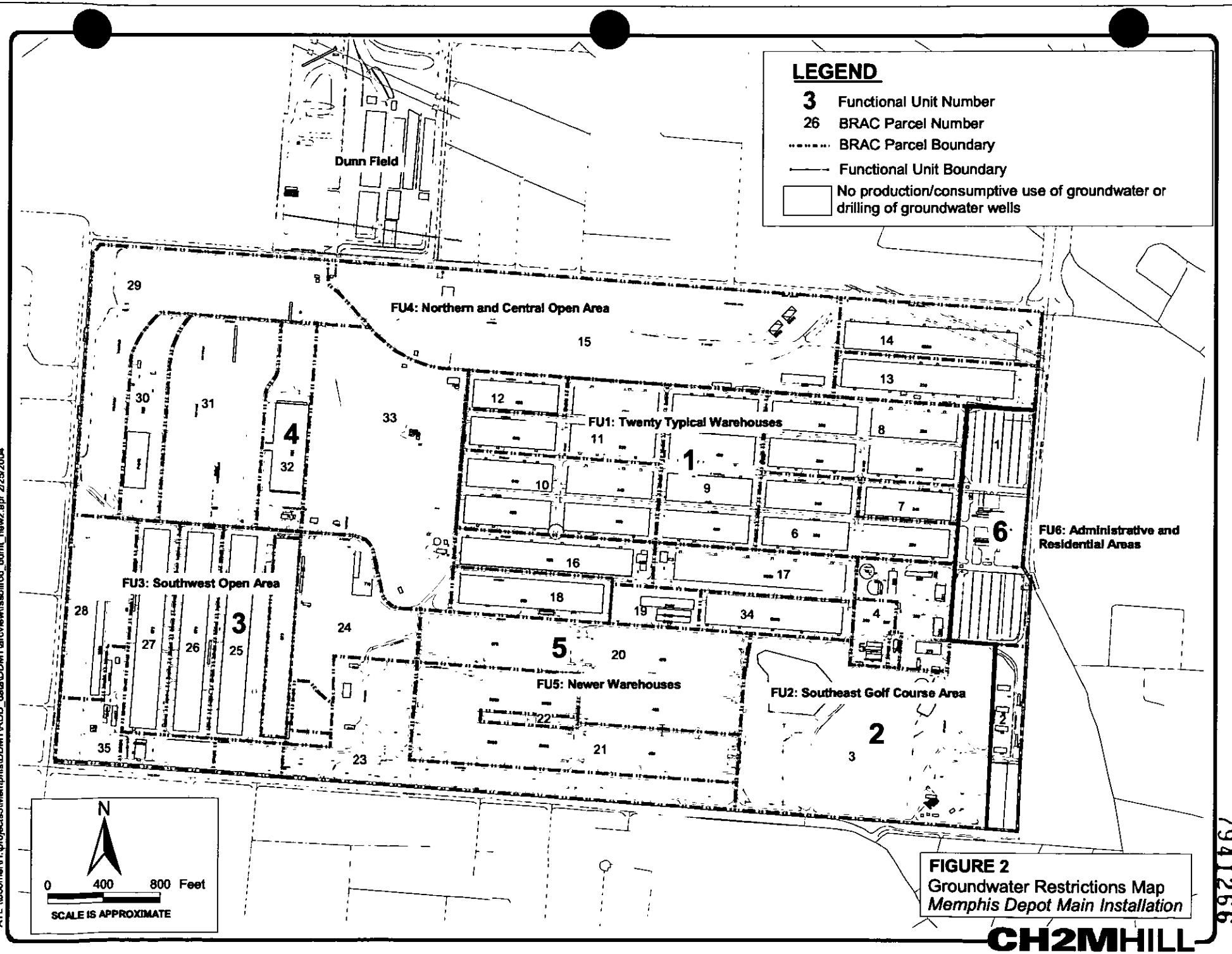


FIGURE 2
Groundwater Restrictions Map
Memphis Depot Main Installation

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Table 1. Summary of Land Use Controls and Monitoring Requirements
Main Installation - Memphis Depot, Tennessee

Type of control	Purposes of control	Duration	Implementation	Monitoring Frequency/Responsibility	Affected area
1. Lease Restrictions A. Land Use B. Groundwater	A. Prevent residential use or daycare activities on property. B. Prevent production/ consumptive use of groundwater or drilling of groundwater wells.	The term of the Master Lease ending on August 31, 2052, or the term specified in any sublease	Master Lease entered into by the Army and the DRC includes EPP. DRC subleases are required to include Master Lease EPP that restrict land use and groundwater use.	Site Inspection – Annual. The Army will verify adherence to the LUC. LUC verification -- Every 5 years as part of the required remedy review under CERCLA. The Army will verify with the DRC that all subleases contain required EPP.	All of the MI property, except Parcels 1 and 2 in FU6.
2. Deed Restrictions A. Land use B. Groundwater	A. Prevent residential use or daycare activities on property. B. Prevent production/ consumptive use of groundwater or drilling of groundwater wells.	Until the concentration of hazardous substances in the soil and the groundwater have been reduced to levels that allow for unlimited exposure and unrestricted use.	Drafted by Army property disposal agent in accordance with Tennessee law and recorded at the Shelby County Register of Deeds office.	Site Inspection – Annual. The Army will verify adherence to the LUC. LUC verification -- Every 5 years as part of the required remedy review under CERCLA. The Army will verify information properly recorded at Shelby County Register of Deeds office(s).	All of the MI property except Parcels 1 and 2 in FU6
3. Notice of Land Use Restriction A. Land Use B. Groundwater	A. Prevent residential use or daycare activities on property. B. Prevent production/ consumptive uses of groundwater or drilling of groundwater wells.	Until the concentration of hazardous substances in the soil and the groundwater have been reduced to levels that allow for unlimited exposure and unrestricted use.	Drafted by Army property disposal agent in accordance with Tennessee law and recorded at the Shelby County Register of Deeds office.	Site Inspection – Annual. The Army will verify adherence to the LUC. LUC verification -- Every 5 years as part of the required remedy review under CERCLA . The Army will verify information properly recorded at Shelby County Register of Deeds office(s).	All of the MI property except Parcels 1 and 2 in FU6.
4. Zoning Restrictions	Allow only certain uses of the property per designation as a Light Industrial zoning district.	Until zoning district designation changes.	Zoning districts designated by City of Memphis and Shelby County LUC Board.	Site Inspection – Annual. The Army will verify adherence to the LUC. LUC verification -- Every 5 years as part of the required remedy review under CERCLA. The Army will verify with the City of Memphis and Shelby County the current zoning designation.	All of the MI property.

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5. Groundwater Well Restrictions	Prohibit installation of drinking water well within half-mile of the site and the off-site contaminated groundwater.	Until the site is no longer a Federal Superfund site, or MSCHD determines that the drilling of a well does not pose a threat to a local aquifer.	Groundwater Well Construction Code administered by MSCHD, Water Quality Branch.	Site Inspection – Annual. The Army will verify adherence to the LUC. LUC verification -- Every 5 years as part of the required remedy review under CERCLA. The Army will verify with the MSCHD on the implementation of its regulation.	All of the MI property except Parcels 1 and 2 in FU6.
6. Fence	Restrict public access to prevent unauthorized uses.	Until the concentration of hazardous substances in the soil and the groundwater have been reduced to levels that allow for unlimited exposure and unrestricted use.	Erected by the Army and maintained by the City of Memphis.	Site Inspection – Annual. The Army will verify adherence to the LUC. LUC verification -- Every 5 years as part of the required remedy review under CERCLA.	The golf course area located in FU2.

Notes

[1] Prior to transfer of any Depot property, the Army or its representatives will perform the monitoring. After transfer, the Army may arrange to have TDEC, the City of Memphis, or some independent third party representative conduct any required monitoring. [See Section 5 below].

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
DRC = Depot Redevelopment Corporation of Memphis and Shelby County
EPP = Environmental Protection Provision
FU = Functional Unit
LUC = Land Use Control
MI = Main Installation [of the Memphis Depot]
MSCHD = Memphis Shelby County Division of Health Services
TDEC = Tennessee Department of Environment and Conservation

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permanent benchmarks; 3) identify generally the type, location, and quantity of regulated hazardous substances known to exist at the site; and 4) identify specific restrictions on the current or future use of the site. The Register of Deeds will record the Notice and index it in the grantor index under the names of the owners of the land. Once filed, any of the aforementioned land use restrictions may be enforced by any owner of the land, TDEC, or any unit of local government having jurisdiction over the property through issuance of an order by means of a civil action.

A copy of this Notice will be mailed to the appropriate state and local governments having jurisdiction over any part of the property within 30 days of being filed. These include, but are not limited to, the Memphis and Shelby County Division of Planning and Development, the DRC, and the Memphis and Shelby County Division of Health Services (MSCHD) Water Quality Branch (hereinafter Water Quality Branch). Copies will also be provided to the EPA Region 4 and TDEC Memphis Field Office. The Army expects that the DRC will formally notify any subsequent property transferees on the existence of the Notice. If the DRC is no longer managing the Memphis Depot, the Army will send a copy of the Notice to the successor organization.

D. Zoning Restrictions

The Memphis and Shelby County Land Use Control Board has established zoning districts through zoning regulations and has zoned the area where the MI is located as Light Industrial (I-L) (see Attachment A). The principal uses permitted in the I-L district are manufacturing, wholesaling, and warehousing. The boundaries of the zoning districts are shown on "City of Memphis and Shelby County Zoning District Maps." A copy of the Shelby County Zoning Ordinance is available at:

http://livepublish.municode.com/17/lpext.dll?f=templates&fn=main-j.htm&vid=12392

Unless the zoning classification changes, residential development is not allowed on this site by the zoning ordinance[3]. The Memphis and Shelby County Land Use Control Board (and not the Army) is responsible for administering and enforcing the zoning regulations. The zoning regulations are an existing governmental control that provides an additional layer of protection to the deed restrictions in preventing residential use. The above zoning restrictions are referenced as a LUC for informational purposes only.

E. Groundwater Well Restrictions

The Ground Water Quality Control Board for Shelby County has established *Rules and Regulations of Wells in Shelby County* in accordance with the authority granted by the Code of Shelby County (Codified through Ord. No. 269, enacted Oct.21, 2002, Chapter 29, Section 29-58). The rules are known as the Shelby County Well Construction Code, which can be found at:

[3] Parcels 1 and 2 of FU6 have been transferred by the Army. Parcel 2 is currently being used for transition housing for veterans. This land use is considered non-conforming with respect to the current zoning designation (I-L); however, the City of Memphis allows the use based on the age of the housing units. Additional residential construction or expansion of the housing units are prohibited.

http://www.co.shelby.tn.us/county_gov/divisions/health_serv/environ_health/air_pollution/water_wells/wells_regs.pdf

The Water Quality Branch is responsible for administering and enforcing these rules. Section 5.02(E) of the Well Construction Code prohibits installation of drinking water wells within a half-mile of the designated boundaries of a listed federal Superfund (i.e., Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA]) site unless the well owner can demonstrate that the well will not enhance the movement of contaminated groundwater or materials into the shallow or deep aquifer. The Water Quality Branch is aware that the Memphis Depot is a federal CERCLA site with contaminated groundwater both on and off site. According to the Water Quality Branch Manager, in the case of offsite groundwater contamination from a CERCLA site, the half-mile boundary limit means no wells would be permitted on or within a half-mile of the "facility" (as defined in CERCLA Section 101-9) including all areas with groundwater contamination [4].

The Water Quality Branch keeps information related to groundwater contamination in order to carry out its responsibilities in administering the Well Construction Code. Accordingly, the Army will provide a copy of the Notice (which includes a survey plat depicting groundwater contamination areas) to the Water Quality Branch when the Notice is recorded. The groundwater well regulations are an existing governmental control that are being referenced as a LUC and provide an additional layer of protection to the deed restrictions and the Notice in preventing production/consumptive use of groundwater or drilling groundwater wells on the MI.

5. Monitoring

As stated in Section 2.1.2 of the MI ROD, the timing and nature of the monitoring and reporting of the LUCs is herein specified in the LUCIP. Prior to transfer of any Depot property, the Army or its representatives will perform the monitoring. After transfer, the Army may arrange to have TDEC, the City of Memphis, or some independent third-party representative conduct any required monitoring. Any reassignment of the monitoring duties will accordingly be incorporated in any pertinent documentation, such as an addendum to this LUCIP. Although the Army may transfer responsibility for monitoring to another party, the Army shall retain ultimate responsibility for the remedy integrity.

A summary of the monitoring frequency and the party responsible for performing the activity is provided in Table 1.

A. Annual Site Inspection

An annual site inspection is required by the ROD to ensure that LUC objectives are met and the land use restrictions are being followed (e.g., no residential use) such that the remedy remains protective. Until determined otherwise, the Army will conduct an annual site inspection to determine whether the required LUCs remain effective and the land use

[4] Per phone conversation with Mr. Greg Parker on September 10, 2003.

restrictions are being achieved. The Army must sign and certify that the inspection has been performed. Attachment B presents the annual inspection checklist and certification form.

In the unlikely event that there is a land use restriction deficiency/violation, the Army (or its representative) will inform EPA and TDEC within 72 hours by phone, fax, or email, and include a description of such in the site inspection form. In addition, the Army (or its representative) will describe any proposed measures to correct the deficiency/violation and/or any completed corrective actions.

The Army (or its representative) will provide (via mail) a copy of the completed and signed annual inspection form to EPA and TDEC within 30 days of the inspection.

B. 5-Year LUC Verification

As part of the required CERCLA Section 121(c) 5-Year remedy review process, the Army will verify that the LUCs for the MI (i.e., deed and lease restrictions, the Notice, zoning and groundwater well restrictions) continue to be properly recorded and/or maintained by the responsible agency or entity (see Section 8 below).

6. Modification of LUCs

The aforementioned LUCs are expected to remain in place until the concentration of hazardous substances in the soil and the groundwater have been reduced to levels that allow for unlimited exposure and unrestricted use. If conditions at the site improve, land use objectives change and remedial goals are met, then the parties agree to evaluate whether to modify or discontinue a particular LUC(s). For example, the groundwater remedial actions are expected to achieve ROD remediation levels by year 2014 so that groundwater use restrictions may no longer be necessary. Also, due to possible contaminant migration associated with surface soil re-contouring activities, land use restrictions may no longer be necessary for certain areas on the MI if the residual risk is eliminated.

The determination to modify or discontinue a LUC(s) will be made by the Army, with approval from EPA and TDEC. Per Section XV of the FFA for the Depot, both EPA and TDEC have review and approval authority over primary documents. The decision to modify or discontinue a LUC(s) will be documented in a formal memorandum that will be placed in the Administrative Record file for the Memphis Depot. If the changes to the LUC(s) are deemed significant and affect the scope of the remedy, then the Army may pursue an Explanation of Significant Difference (ESD) or Amendment to the MI ROD. An ESD or Amendment would require review and concurrence by EPA and TDEC.

As stated above, the Army plans to transfer ownership of all of the property on the MI of the Memphis Depot. Transferees must submit (to the Army, TDEC and EPA concurrently) a request in writing to modify any LUC(s) described herein. The parties will review the request and make any determination in accordance with the process described above.

Under *Tennessee Code* Section 68-212-225(e), the Notice may be made less stringent or canceled by the TDEC Commissioner if the risk has been eliminated or reduced so that less restrictive LUCs are required to protect human health and the environment. Notwithstanding the above requirement, any future action to terminate or make less stringent the LUCs included in this Notice must receive prior written approval by the Army

and EPA. The proposed changes must be publicly noticed and mailed to all local governments having jurisdiction over the property. If the TDEC Commissioner concurs with the proposed changes, the Army (or subsequent owners) must request in writing that the TDEC Commissioner send a statement that the hazards have changed or have been eliminated to the Shelby County Register of Deeds office. The TDEC Commissioner's statement shall contain the names of the owners of the land as shown in the Notice on the plat book and page. The Register of Deeds shall record the TDEC Commissioner's statement in the deed books and index it on the grantor index in the names of the owners and in the grantee index in the name "Commissioner of the Department of Environment and Conservation".

7. Enforcement of LUCs

Under *Tennessee Code* Section 68-212-225(f) any person who owns or leases a property subject to a land use restriction(s) that was recorded as part of the Notice shall abide by the restrictions. If at any time, the Army, EPA, or TDEC determines that the property owner or occupant is not complying with the land use restrictions, it will notify the others by telephone, fax and/or by email within 72 hours of the discovery. After consultation with EPA and TDEC, the Army will exercise any available legal authority and take appropriate action (e.g., enforce deed covenant or lease restrictions) to enforce the LUC and, where necessary, correct the violation.

If the matter cannot be resolved, the Army will request that TDEC (or other appropriate local government agency) take appropriate legal action (e.g., civil order) to enforce the land use restrictions in accordance with *Tennessee Code* Section 68-212-225(f) or any other applicable authority. EPA and TDEC will work with the Army to ensure that the property owner or occupant corrects the violation.

The Army will provide written notification to the EPA and TDEC within 30 days of discovering the deficiency/violation and any proposed or completed corrective actions.

8. CERCLA Five Year Review

As part of the CERCLA Section 121(c) 5-Year remedy review process, the Army shall prepare a report certifying the continued effectiveness of the remedy, including all LUCs implemented at the site. The report will include the information contained in the annual inspection forms and an evaluation on the need to modify the land use restrictions or scope of the above LUCs.

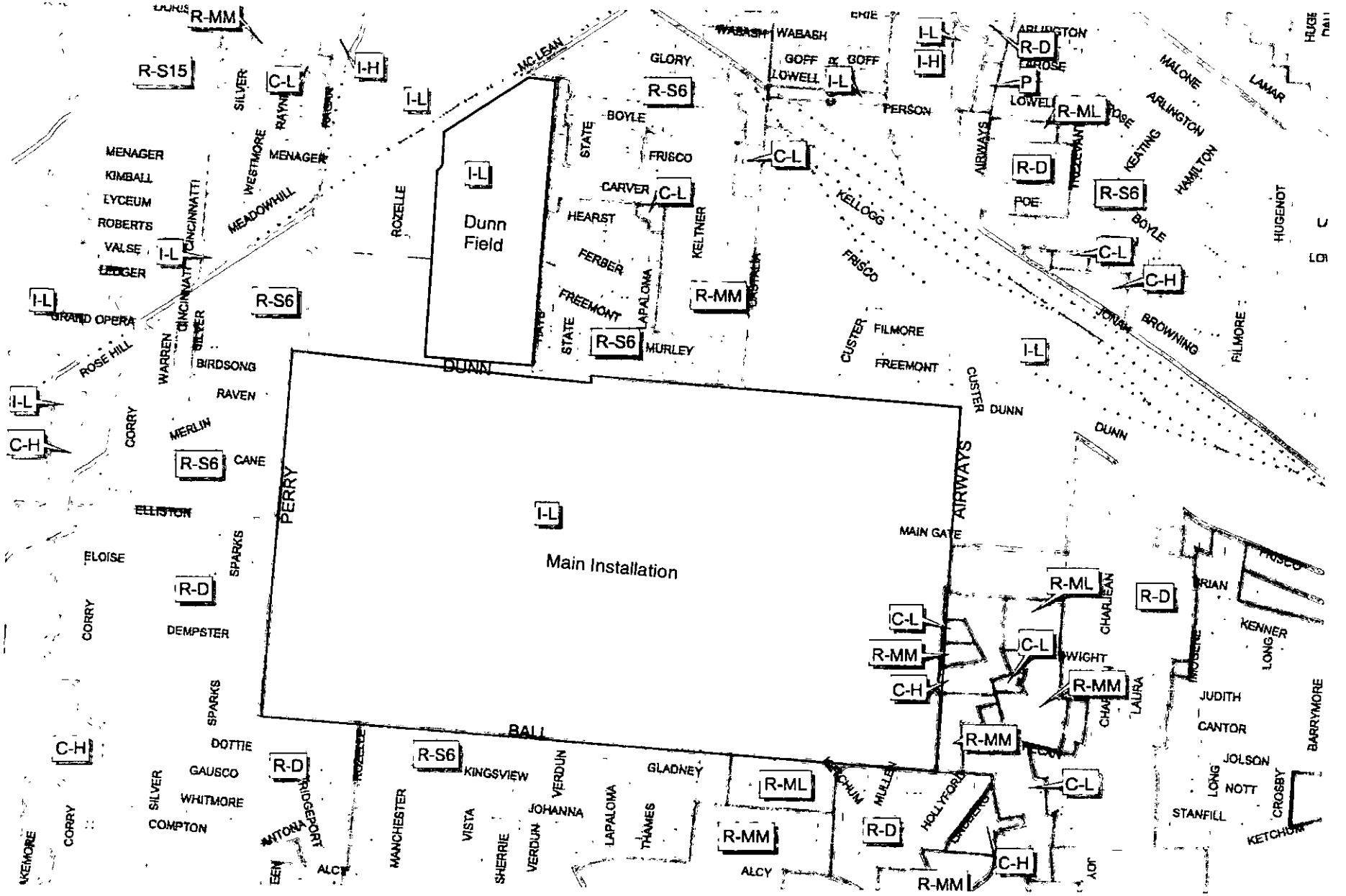
At the first 5-Year review, the parties intend to evaluate whether site conditions in several areas on the MI have changed due to possible contaminant migration associated with surface soil re-contouring activities. Such evaluation would likely require soil sample collection and analysis to provide new data sufficient to perform a residual risk assessment. If conditions have changed at these areas of the site (e.g., due to contaminant migration or attenuation) and certain land use restrictions are no longer needed, the parties may determine that inspections could occur less frequently, such as every 5 years.

9. Termination

This LUCIP is part of the post-ROD remedy design documents and is part of the Administrative Record file for the Memphis Depot. In the event conditions at the site improve, land use objectives change and all remedial goals are met such that all of the aforementioned LUCs become unnecessary, then the parties agree to evaluate the continued implementation of the LUCIP. Discontinuing implementation of all the LUCs would be a significant change in the scope of the remedy. A determination by the Army to terminate this LUCIP (part of an FFA primary document) would require concurrence by EPA and TDEC. The decision will be documented in a site closeout document, an ESD, or an Amendment to the MI ROD that is added to the Administrative Record file.

ATTACHMENT A

Zoning Map for Memphis Depot and Surrounding Area



ZONING in and around Memphis Depot Business Park

current as of September 15, 2003

Prepared by Memphis and Shelby County Office of Planning and Development. 15 September 2003.

\\boomer\H\projects3\Memphis\DDMT\RDD_data\Memphis_Business_Park.mxd JHenderson 9/16/2003

N W E S

0.3 0 0.3 Miles

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ATTACHMENT B

Annual Site Inspection Form

Memphis Depot Main Installation

Annual Site Inspection Form

Pursuant to the Land Use Controls Implementation Plan dated _____ for the former Defense Distribution Center (Memphis) - Main Installation (Memphis Depot) an inspection of property at the Memphis Depot was conducted by _____ [*indicate Army or its approved representative*] on _____*date*_____.

A summary of the land use restrictions is as follows:

- No residential land use or other child-occupied facilities including daycare on the MI (except Parcels 1 and 2 of FU6).
- No production/consumptive use of groundwater or drilling groundwater wells on the MI.

Verification that land use restrictions are being accomplished and LUCs remain effective

- Verify that boundary fence surrounding golf course area in FU2 remains intact.
- Verify that no residential housing/development or child daycare activities are occurring at the site (except Parcels 1 and 2 of FU6).
- Verify that no groundwater wells have been installed at the site (except for monitoring and injection wells that were done as part of the remedy) and that no production/consumptive use of groundwater is occurring.

Description of any deficiency or violation of the land use restrictions

[*Provide detailed summary of what was observed. If known, indicate which owner/occupant is responsible for the deficiency/violation. Include the location of where the deficiency/violation was observed.*]

Description of any proposed measures or corrective actions taken to remedy the deficiency or violation

[*Provide detailed summary of any proposed measures that will be undertaken to mitigate or remedy the deficiency/violation. Indicate the responsible party and a time frame for completing the necessary actions.*]

Certification Statement

I, the undersigned, do document that the inspection was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Organization: _____

Signature: _____

Completed annual inspection forms shall be sent within thirty (30) days of the inspection to:

Department of Army
Hampton Field Office - Base Realignment and Closure Office
Attn: Tom Lederle
3A Bernard Road
Fort Monroe, VA 26351-5000

U. S. Environmental Protection Agency, Region 4
Federal Facilities Branch
Attn: Jon Johnston
61 Forsyth Street, SW
Atlanta, GA 30303

Tennessee Department of Environment and Conservation
Division of Superfund
Attn: Jordan English
2510 Mt. Moriah Road, Suite E645
Memphis, TN 38115-1520

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APPENDIX D

Overview of Sodium Lactate Delivery Alternatives

TECHNICAL MEMORANDUM CH2MHILL

An Overview of Sodium Lactate Delivery Alternatives – Memphis Depot, Main Installation

PREPARED FOR: Memphis Depot BCT

PREPARED BY: David Nelson/CH2M HILL
Casey Hudson/CH2M HILL

DATE: December 2, 2003

Introduction

The Main Installation (MI) Record of Decision (ROD), issued on September 7, 2001, presented the enhanced bioremediation alternative as the selected remedy for groundwater. The MI Intermediate Remedial Design (RD) was submitted for review by the Memphis Depot Base Realignment and Closure Act (BRAC) Cleanup Team (BCT) on October 30, 2003.

Delivery of the electron donor for enhanced in situ biodegradation can be accomplished using a number of methods. Selection of the delivery method is an integral part of the implementation of the remedial alternative. Each delivery method, viable in its own right, should be considered based on factors such as site conditions, protection of human health and the environment, potential to attain media cleanup standards (MCSs), feasibility, ease of implementation, anticipated project duration, effectiveness, and cost.

Purpose of This Memorandum

Preliminary comments from the BCT on the Intermediate RD indicate that the potential capital and operation and maintenance (O&M) costs of the proposed enhanced bioremediation system exceed estimates provided in the ROD, and the remedial systems may be larger than necessary. Therefore, this memorandum evaluates less expensive approaches to implementing an enhanced bioremediation system that will achieve the objectives of the ROD.

This memorandum presents an evaluation of three electron donor delivery methods for enhanced in situ biodegradation in the two target treatment areas (TTAs) at the MI. The

three delivery methods are (1) frequent or continuous injection; (2) recirculation; and (3) manual injection.

Since each method is considered to be protective of human health and the environment and capable of achieving MCSs without a change in project duration, this evaluation focuses on the implementability, effectiveness, and cost of each method.

Included as part of this memorandum is the recommendation for additional site characterization activities to further delineate the areas of elevated chlorinated volatile organic compounds (CVOCs) in groundwater. Findings from the additional investigation will be used to modify a design that will focus on areas of elevated CVOC concentration.

Summary of Information in This Memorandum

This memorandum presents the following information:

- Recommendation for a focused RD-related investigation of the CVOC source areas in TTAs 1 and 2.
- Description and comparison of electron donor delivery methods.
- Cost estimate and comparison of electron donor delivery methods.

Design-related Investigation of Chlorinated Volatile Organic Compound Source Areas

The current intermediate design layouts in TTA 1 Phase I and TTA 2 cover areas of 196,000 square feet (ft^2) and 150,000 ft^2, respectively. These design layouts, depicted in Figures 5-1 and 5-4 of the *Intermediate Remedial Design, Memphis Depot, Main Installation, Revision 0* (CH2M HILL, October 2003), cover most or all of the VOC-impacted groundwater and are large in comparison to the original source areas (areas where VOCs originally entered the aquifer). The goal of an RD-related investigation would be to identify areas of elevated parent CVOC concentrations, primarily tetrachloroethene (PCE) and trichloroethene (TCE) in groundwater. Delineation of these areas would be used to modify the existing design layout to target more focused areas of elevated concentration for treatment. One approach would be to focus electron donor delivery in interpreted areas of PCE and TCE concentration greater than 50 micrograms per liter (µg/L). Such focused RD-related

investigations are often conducted to support critical design steps in the remediation process, and for this site, have the potential to yield millions of dollars in cost savings during subsequent remedial construction and operation of the selected alternative. Reduction of each TTA footprint would significantly reduce costs associated with O&M and capital costs, including the number of injection wells, the amount of trenching, piping, and sodium lactate (electron donor material), as well as other equipment and material related to lactate delivery.

The proposed focused investigation would consist of installing up to 20 new monitoring wells screened in the fluvial aquifer. The proposed locations of these wells are depicted in the attached Figure 1. Depending upon results from the samples collected during installation, not all of these wells may need to be installed. The newly installed monitoring wells would be used in the subsequent design modification as potential monitoring and injection wells.

The approach of focusing treatment on the area of greatest groundwater contamination is commonly used in groundwater remediation and has been found to be significantly more cost effective than attempting to treat the entire plume. This approach is consistent with the intent of the ROD and will help achieve the target MCSs in groundwater.

Electron Donor Delivery Methods

The three electron donor delivery methods evaluated in this technical memorandum include:

1. Frequent or continuous injection.
2. Recirculation.
3. Manual injection.

Electron donor delivery methods using frequent or continuous injection and recirculation are described in Sections 3.2 of the *Intermediate Remedial Design, Memphis Depot, Main Installation, Revision 0* (CH2M HILL, October 2003). Bioaugmentation and anaerobic-aerobic sequential bioremediation alternatives that may be implemented as part of the selected remedy are also presented in Section 3.2 of the referenced document.

Frequent or continuous injection of sodium lactate would sustain reducing conditions favorable for reductive dechlorination. The recirculation system consists of groundwater recovery downgradient from a series of injection wells, aboveground electron donor addition, and re-injection within the areas of elevated concentration. Manual injection involves periodic injection of the electron donor material using portable equipment. For example, sodium lactate could be added to a storage tank secured on a trailer, mixed with water to obtain the appropriate injectate concentration, and subsequently injected into one or a series of injection wells. The system could then be mobilized to perform injections in other wells at the site.

Evaluation Criteria

Each of the three delivery methods evaluated as part of this memorandum presents not only the advantages and disadvantages of each method, but also information pertaining to the method's implementability, effectiveness, and cost. These three criteria are described in more detail below. Results of the evaluation are presented in the attached Table 1.

Effectiveness

Delivery methods were evaluated on their ability to sustain anaerobic conditions in the aquifer and supply the electron donor material in a quantity and concentration to impact and react with the dissolved CVOCs.

Implementability

Delivery methods were evaluated for any difficulties associated with conducting the methods (such as the construction disturbances they may create) and the availability of equipment and resources to implement the delivery of the electron donor.

Cost

A net present value of each delivery method was developed. These cost estimates were used for the relative evaluation of the delivery methods. The estimates were based on information available at the time of the intermediate remedial design and on a conceptual design of the alternative with the proposed delivery method.

Recommended Electron Donor Delivery Method

Based on the evaluation of available viable delivery methods of the electron donor material at the proposed TTAs, an enhanced in situ biodegradation remedial design employing a

manual injection is considered by CH2M HILL to be the preferred delivery method. Although labor intensive, this delivery method is the least expensive and the easiest to implement and construct, and it will provide the maximum flexibility of focused short-term injections in localized area(s) within each TTA.

Several factors are necessary for successful implementation of the manual injection scenario, which include the following:

- Additional investigation activities at both TTAs to further delineate the CVOC source areas in the fluvial aquifer, especially within the TTAs.
- The BCT's acceptance of the goal to initially treat CVOC concentrations greater than 50 µg/L (or consensus on some other mutually-agreeable definition of the source area).
- Analysis of the data collected during additional characterization activities to further modify and enhance the injection program.

TABLE 1
Evaluation of Enhanced In Situ Biodegradation Delivery Methods
Remedial Design, Memphis Depot, Main Installation

Evaluation Criteria	Frequent or Continuos Injection	Recirculation	Manual Injection
Effectiveness	High potential for maintaining anaerobic aquifer conditions. Continuous feed allows the engineered controlled delivery of the electron donor. Distribution of electron donor is limited to groundwater gradient and, possibly, preferential flow pathways in the aquifer.	Potential for introduction of oxygen during management of recovered groundwater. Re-injection feed allows the engineer-controlled delivery of the electron donor. Groundwater recovery allows controlled movement of electron donor material through TTA and potentially provides greater exposure of more surface area in aquifer to electron donor.	Required to maintain a schedule for electron donor delivery to sustain an anaerobic aquifer. Manual injection allows for continuous modification to both the design and method of the portable delivery system. This allows flexibility in the mass of electron donor material delivered to localized areas of elevated concentration. Distribution of electron donor is limited to groundwater gradient and, possibly, preferential flow pathways in the aquifer.
Implementability	Involves months of construction and approximately 4,700 linear feet of trenching and piping. Trenches cross streets and require tapping into potable water supply. Minimal O&M anticipated.	Involves months of construction and approximately 4,700 linear feet of trenching and piping, plus possibly aboveground treatment equipment to sustain re-injection capacity. Trenches cross streets. O&M will require control of potential biological fouling in recovery wells and downhole extraction pumps.	With the exception of injection well installation, delivery method involves no construction. Minimal O&M required. Periodic manual injections can be performed by a small field team.

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TABLE 1
Evaluation of Enhanced In Situ Biodegradation Delivery Methods
Remedial Design, Memphis Depot, Main Installation

Evaluation Criteria	Frequent or Continuos Injection	Recirculation	Manual Injection
Advantages	Injection is engineered and controlled. Effective in maintaining anaerobic aquifer. Anticipated number of O&M hours required will be less than recirculation.	Potable water source not required. Injection is controlled by volumetric recovery rate Electron donor material distribution hydraulically controlled through TTA compared to other delivery methods. Potentially greater exposure of more surface area in aquifer to electron donor during groundwater recovery. Fewer injection wells are required compared to other delivery methods.	Quick construction time. Cheapest delivery method. Easy to implement. O&M involving periodic injections and preventive maintenance associated with injection wells. Flexibility involving injection delivery location(s), electron donor concentrations, and schedule.
Disadvantages	Expensive and long construction time. Electron donor injection is limited to preferred pathways and groundwater gradients.	Expensive and long construction time. O&M intensive compared to other methods. Potential oxygen introduction during groundwater management.	Labor intensive. Maintain injection schedule to sustain anaerobic conditions throughout TTA. Electron donor injection is limited to preferred pathways and groundwater gradients.
Estimated Costs[a]			
Capital Cost	$2,504,500 - Full Plume	$2,347,600 – Full Plume	$1,897,800 – Full Plume
O&M Cost	$2,107,800 – Full Plume	$2,107,800 – Full Plume	$2,106,800 – Full Plume
Present Value 30-Year O&M Cost	$1,790,500 – Full Plume	$1,791,400 – Full Plume	$1,790,200 – Full Plume
Total Cost	$4,295,000 - Full Plume	$4,139,000 – Full Plume	$3,688,000- Full Plume

[a] Assumes 3.2 percent discount rate
Source area treatment will account for a 25 to 40 percent reduction in TTA footprint, electron donor material, injection wells, and associated trenching and piping.

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DUNN FIELD

MAIN INSTALLATION

MW84* 0.37J
MW34 ND
MW55 ND
MW38 ND
MW53 0.4J
MW19 ND
PZ06 ND
MW103 ND
MW104 ND
MW16 ND
MW107 0.8J
MW62 ND
MW89 5
MW90 5.9 & 5860 10
MW63 9.7
MW20 ND
MW108 2.6
MW99 ND
MW39 5.2
MW64 10
PZ07 ND
MW88 10.7
MW85 40
MW86 198
MW56 ND
MW98 4.6
MW100B 50
MW21 90
MW101 490
PZ03 7.1
MW28 8.7
MW96 3.4
MW92 150
MW50 ND
PZ04 2.7
MW97 ND
MW94 ND
MW22 0.27J
MW23 ND
MW72 ND
MW102B ND
MW24 ND
MW93 ND
MW52 6.4
MW47 ND
PZ01 ND
PZ05 ND
PZ08 ND

0 250 500
APPROXIMATE SCALE

LEGEND

- 10 ISOCONCENTRATION LINE (IN ug/L)
- 10 INFERRED ISOCONCENTRATION LINE FROM LIMITED DATA (IN ug/L)
- DEPOT BOUNDARY
- BASE FEATURES
- MW86 MONITORING WELL
- PZ06 PIEZOMETER
- ND NOT DETECTED ABOVE LABORATORY REPORTING LIMIT
- 7.6 CONCENTRATIONS IN ug/L
- ug/L MICROGRAMS PER LITER
- J ESTIMATED CONCENTRATION
- CLAY ELEVATION EXCEEDS GROUNDWATER ELEVATION
- PROPOSED ADDITIONAL MONITORING WELL LOCATIONS

NOTE:

(1) ALL UNITS ARE IN ug/L

(2) MONITORING WELLS 85,86,88,92,93,94,96,97, 98,99,100B,101,102B,103,104,107 AND 108 WERE SAMPLED IN NOVEMBER AND DECEMBER 2001. CONCENTRATIONS DETECTED IN THESE WELLS ARE AVERAGED PER WELL, EXCEPT MW-108.

(3) ALL OTHER AVAILABLE MONITORING WELLS WERE SAMPLED DURING THE MARCH 2002 SAMPLING EVENT.

(4) 5 ug/L MAXIMUM CONTAMINANT LEVEL (MCL) PRIMARY DRINKING WATER STANDARD.

(5) MONITORING WELLS MW-89 AND MW-90 WERE SAMPLED AT TWO DIFFERENT INTERVALS WITHIN EACH WELL. CONCENTRATIONS ARE INDICATED FOR BOTH INTERVALS.

(6) THE "LIMITED TO NO FLOW BOUNDARY" BOUNDS AN AREA WHERE THE WATER LEVEL IN THE FLUVIAL AQUIFER INTERSECTS THE CLAY DIRECTLY UNDERLYING THE FLUVIAL DEPOSITS, LEAVING FLUVIAL DEPOSITS UNSATURATED.

FIGURE 1
TETRACHLOROETHENE
(PCE) CONCENTRATION
IN GROUNDWATER-MARCH 2002
EBT TREATABILITY STUDY (REV. 0)
MAIN INSTALLATION, MEMPHIS DEPOT

CH2MHILL

ATLANTA/CAD1/PROJECTS/148071 DDMT/DUNNFIELD_RD 2003 06-OCT-2003 figure1.dgn

APPENDIX E

Injection Well Specification

INJECTION WELL SPECIFICATION
REMEDIAL DESIGN, MAIN INSTALLATION, MEMPHIS DEPOT
MEMPHIS, TENNESSEE

INTRODUCTION

As part of the enhanced in situ biodegradation alternative, injection wells for substrate delivery will be installed at the Memphis Depot Main Installation located in Memphis, Tennessee. Groundwater and soil at the facility have been impacted by past operations. Contaminants that may be encountered during drilling operations are chlorinated solvents in soil and groundwater.

This document provides the specifications for performing drilling services to install injection wells.

GEOLOGY AND HYDROGEOLOGY

The stratigraphy underlying the proposed drilling locations consists of loess (silts and clays) from land surface to approximately 30 feet below ground surface (bgs) and fluvial deposits consisting of predominately sands mixed with gravel to boring termination.

The target interval to set the well screens is between 90 and 110 feet below ground surface. Conditions encountered during drilling will be used by the engineer/geologist to determine the actual interval for the well screen. Groundwater at the proposed drill locations is approximately 90 feet below ground surface.

SUMMARY OF WORK

- Install 4-inch diameter injection wells or well pairs as necessary to total depths ranging from 90 to 110 bgs. No well screen will be greater than 15 feet in length.
- Collect continuous samples for lithologic description from the well borings.
- Contain and stage investigation derived waste (IDW) at a predetermined area at the Site. Manage the off-site disposal of IDW in accordance with all applicable federal, state, county and local laws and regulations.
- Decontamination of all drilling equipment will be performed in accordance with Section—**Decontamination.**

Details of each of the above activities will be described in Section—**Scope of Services.** The Remedial Contractor may request that the selected subcontractor use multiple drill rigs to complete the project in a shorter time.

GENERAL CONDITIONS

Quality Assurance

The Subcontractor will be licensed and insured to install wells in the State of Tennessee and will comply with all applicable federal, state, county and local laws and regulations. These include but are not limited to the Tennessee Department of Environment and Conservation (TDEC) *Underground Injection Control Rules* (Chapter 1200-4-6), the TDEC *Water Well Licensing Regulations and Well Construction Standards* (Chapter 1200-4-9), and the Shelby

County *Rules and Regulations of Wells*. The Subcontractor will obtain all drilling permits required to conduct this work. Subcontractor will not mobilize to the facility without written authorization from Remedial Contractor's representative. The authorization can be in the format of an email transmission, facsimile transmission, or letter.

Site Access

The Subcontractor will coordinate with the Remedial Contractor prior to initiating site operations. The Remedial Contractor will coordinate the start of field activities. Subcontractor will not mobilize to the facility without written authorization from Remedial Contractor's representative. The authorization can be in the format of an email transmission, facsimile transmission, or letter.

Site Conditions

Each drill location is accessible to truck mounted drill equipment. Potable water will be attained from an onsite hydrant. Subcontractor will supply necessary equipment to convey and transport water (i.e., hoses, hydrant tap, tanks, etc.) from the hydrant. Electricity is not available at the facility. Therefore, the Subcontractor will be required to supply electricity necessary for the drilling activities.

Groundcover near the proposed well locations is primarily asphalt or concrete. Some locations will require concrete cutting; however, the concrete is typically less than six inches.

House Keeping

The Subcontractor will keep the site neat and orderly, and will provide all proper containers to keep the site free from all trash.

Schedule

Workdays will be approximately 10 hours during daylight hours. The schedule will be 5 days on and 2 days off. Depending on the occurrence of adverse weather and potential impacts to the schedule, time lost during a scheduled workweek may be made up on an accelerated schedule (including weekends) at the discretion of the Remedial Contractor's representative. The Subcontractor must state with his Bid the estimated schedule and duration for performing each numbered task listed on the Bid Form, and the estimated schedule for completing the total project.

Subcontractor Submittals

During pre-mobilization, the Subcontractor will submit certificates of H&S training and medical monitoring for its crew to the Remedial Contractor.

During the bid phase, the prospective subcontractors must provide an Injection Well Development Plan with the bid that describes in detail the procedures to develop the injection wells. This plan will be reviewed by the Remedial Contractor for acceptability in achieving maximum performance of the wells.

The Subcontractor will submit the following information for the materials intended to be used for the well construction. The information will be submitted to the Remedial Contractor prior to or at the beginning of mobilization for review and acceptance. Materials determined to be unacceptable will not be permitted for use on this project and will be replaced with materials that are determined to be acceptable.

a. Well casing and well screen – Lot number and manufacturers specification sheets.
b. Filter pack material – Sieve analyses that the grain-size distribution curve meets the 4-20 gradation specification.
c. Filter pack material – Certification that the material is contaminant-free.
d. Two-foot diameter well vault and cover for a traffic bearing rating of Department of Transportation (DOT) HS20.

The Subcontractor will maintain a daily log of drilling activities, including number of feet drilled, number of hours on job, periods of shutdown because of mechanical breakdown, and other pertinent data. The daily logs will include the following information as appropriate to the work performed that day:

a. Drilling dates and names of driller and crew
b. Boring or well identification
c. Drilling method
d. Time that drilling began and ended
e. The reference point for all measurements
f. The depth at which groundwater is first encountered
h. The total depth of the completed boring
i. The type of drilling fluid and depths at which they were used, if applicable
j. The depth or locations of any loss of drill water, circulation, loss of tools, or equipment
k. Sample interval depths
l. Zones of caving and heaving
m. The depth of grouting or sealing
n. The nominal hole diameters
o. Amount (volume) of cement used for grouting or sealing
p. Any sealing-off of water-bearing strata
q. Type of well material used (i.e., casing and screen) and method of installation
r. Types of materials (bentonite, cement) used to seal the annulus
s. Results of daily equipment and materials inspections including corrective actions involved and maintenance and repairs resulting from these inspections
t. Any unusual occurrence including injuries, breakdowns, weather, or any other out-of-the-ordinary event.
u. Levels of protection and other information regarding crew Health and Safety

A copy of this the daily log will be provided to the Remedial Contractor's representative by 12 noon of the following day.

MOBILIZATION AND CLEANUP

This section covers the work necessary to mobilize and demobilize personnel and equipment, set up and remove drill rig and temporary facilities (if necessary), and clean up the site. Subcontractor must provide all materials and equipment required to accomplish the work as described in Section—**Scope of Services.**

The Subcontractor will assume that each drill site is accessible by truck mounted drill equipment. Underground utility clearances will be conducted and well locations will be clearly flagged or marked as appropriate. Before drilling at a location the Subcontractor will post-hole dig or hand auger to approximately 4 feet bgs to ensure no utilities are present.

Before mobilization, all drilling equipment will be cleaned and decontaminated in accordance with Section - **Decontamination**. All drilling equipment will be stored within an area designated by the Remedial Contractor's representative. The Subcontractor will contact the Remedial Contractor's representative before mobilization for the location of the designated staging and storage area. Decontamination activities will be conducted on an existing concrete decontamination pad at the Site. Subcontractor will construct a minimum 3 feet high splashguard around three sides of the decontamination pad using plywood and plastic sheeting. Decontamination fluids will be pumped by the Subcontractor into drums or other approved containers. Potable water will not be available at the decontamination pad location.

Contamination of the project area will be avoided by not dumping waste oil, rubbish, or other similar materials on the ground. The Subcontractor will clean the storage and staging area on a daily basis to maintain a neat and orderly appearance.

Upon completion and acceptance of the drilling activities (as designated by the Remedial Contractor's representative), the Subcontractor will remove the drill rig and equipment, all debris, unused materials, other equipment, decontamination pads, and other miscellaneous items resulting from or used in the operations. The Subcontractor will restore the site to the satisfaction of the Remedial Contractor's representative. When the Subcontractor has completed demobilization, payment for the work will be made in accordance with the cost provided in the attached Bid Schedule. If the Subcontractor cannot complete the work in the time permitted, or leaves the site on his own accord; he will not be compensated for additional mobilization.

A mobilization is defined as moving required equipment and materials from the Subcontractor's office to a facility. Demobilization is defined as removing required equipment and materials from a facility to the Subcontractor's office after completion of work, or as instructed by the Remedial Contractor's representative.

SAFETY

Work to be performed under this Contract is considered hazardous waste work. Therefore, Subcontractor will comply with 29 CFR 1910.120 in accordance with OSHA regulations for the protection of hazardous waste workers. Work is expected to be conducted in modified Level D (i.e., tyvek).

Subcontractor's personnel will abide by the applicable OSHA guidelines 29 CFR 1910 for general personal safety around operating heavy equipment. Required safety equipment will be used at all times during work onsite. Subcontractor will provide all required personal safety equipment for Subcontractor's employees including, but not limited to, gloves, tyvek coveralls, hearing protection, safety glasses, hard hats, and steel-toed/steel-shank boots.

SITE SAFETY AND SECURITY

The Subcontractor will be solely and completely responsible for conditions at the job site, including safety of his personnel and damage to property during performance of the work. The Subcontractor will be responsible for maintaining appropriate security during drilling operations (i.e. orange safety fencing, caution tape and appropriate signage). The Subcontractor's personnel will abide by the applicable OSHA guidelines in 29 CFR 1910 for

general and personal safety around operating heavy equipment. Required safety equipment will be used onsite at all times.

While working at the Site, the Subcontractor's employees must comply with the site safety and security rules, and the Remedial Contractor's Health and Safety Plan. Prior to commencing site activities, Remedial Contractor will provide its Site Health and Safety Plan and security protocols for workers' review.

Prior to the start of work each day and with Remedial Contractor's representative in attendance, the Subcontractor will conduct daily planning/H&S meetings to discuss the work for that day and special equipment or precautions that may be needed. These daily meetings typically do not exceed 15 minutes duration. Documentation of ~~each H&S meeting~~ will be provided to the Remedial Contractor's representative with the daily drilling logs.

DRILLING WORKMANSHIP

Subcontractor will provide a drill rig(s) capable of installing groundwater injection wells to the determined depths as described in Section - **Scope of Services** and, if necessary, abandon the boreholes in accordance with state and local regulations.

Injection well installation and development will be performed in accordance with COE EM 1110-1-4000 and USEPA Region IV SOPQAM.

The injection wells will be drilled using mud rotary drilling techniques to advance a ~~10-inch~~ diameter borehole. Soil from drill cutting return will be continuously collected and rinsed of drilling mud from each borehole, segmented into 10-foot increments ~~or a lithologic~~ breaks, and presented to the Remedial Contractor's representative for lithologic logging purposes.

Before well installation at each location, all drilling equipment will be cleaned and decontaminated in accordance with Section - **Decontamination**.

All necessary tools, support equipment, and ancillary materials needed to complete the work as described will be provided by the Subcontractor, including, but not limited to, drill pipe, support vehicles, coring tools, core catchers, samples core boxes or plastic sheaths, sampling equipment bits, pumps, pans, decontamination supplies, steam cleaner, and caution tape. All drilling and sampling equipment will be in good operating conditions at all times and operated and maintained in strict accordance with manufacturer's recommendations. The Subcontractor will also provide one experienced driller and additional helpers to assist the driller and the Remedial Contractor when needed. Contamination of the aquifer will be avoided. All necessary precautions will be taken to prevent contaminated water, gasoline, hydraulic fluids or oils, or other deleterious substances from spilling to the ground or entering the boreholes.

SCOPE OF SERVICES

Continuous Sampling

Continuous soil sampling will be conducted at each of the well locations. The sampling interval will not be greater than 10 feet. The sampling technique must provide samples representative of the interval sampled. A portion of the soil samples will be containerized in 16-ounce glass mason jars supplied by the Subcontractor. The jars will be labeled with the well ID and the depth interval of the sample, then presented to the Remedial Contractor's representative at the end of each day.

Drilling Methods
The well borings will be drilled using the mud rotary drilling techniques to advance a minimum 10-inch boring.

Borehole Requirements
A minimum borehole diameter of 10-inches is required for the injection wells. The borehole will be straight and plumb to allow passage of pumps or sampling equipment.

Drilling Fluids
For mud rotary, the Subcontractor will use Johnson Screen™ Revert® (or equivalent) to drill the borehole. Subcontractor will follow the manufacturer's recommendations for mixing and using the drilling fluid additives, and the manufacturer's recommendations for preparing the borehole for installation of well materials and well development.

Well Installation
The wells casing and screen will be constructed within the borehole. The annular space will be filled with well material consisting of the filter pack, bentonite seal, and grout. The depth of placement of the screen and well material will be as directed by the Remedial Contractor's representative.

Casing and Screen
Well casings will be new, unused, decontaminated 4-inch I.D. Schedule 80 polyvinyl chloride (PVC) pipe with internal flush joined threaded joints ~~that conform with to the~~ ASTM Standard F-480-88A or the National Sanitation Foundation Standard 14 (Plastic Pipe System). Under no circumstances are glue or solvent-welded ~~joints acceptable. The~~ Subcontractor will furnish all casing fittings, caps, and plugs. Casing and well screen assemblies that fail, collapse, or separate during construction will be removed from the hole and repaired or replaced at the Subcontractor's sole expense.

Well screens will be made from new, unused, and ~~decontaminated 4-inch~~ I.D. Schedule 80 polyvinyl chloride (PVC) pipe with internal flush joined threaded joints. Well PVC screen will have the same requirements that apply to well casing, ~~except strength requirements.~~ The well screens will be available in 5 and 10 feet lengths. Screens will be Schedule 80 threaded PVC pipe factory-slotted with 0.040 inch openings. A threaded PVC cap or point will be placed at the bottom of the screen. Each well will be constructed with a threaded well cap.

Filter Pack
The filter pack material will be a sand with a grain-size distribution curve that meets the 4-20 gradation specification.

The filter pack shall consist of inert, hard, well rounded sand (less than 2 percent flat particles), and free from roots, trash, and other deleterious material. The sand will be certified free of metals and VOCs (see Subcontractor Submittals) ~~by vendor. The filter pack~~ will extend from the bottom of the hole to at least 2 ft above the top of the well screen.

The filter pack will be installed with a bottom-discharge tremie pipe. The tremie pipe will be lifted from the bottom of the hole at the same rate the filter pack is set. The contractor will record the volume of the filter pack emplaced in the well. Potable water may be used, with the approval of the Remedial Contractor's representative, to emplace the filter pack so long as no contaminants are introduced.

Bentonite Seal

Following filter pack placement, a minimum 2-foot-thick bentonite seal will be placed above the sandpack. The 100 % sodium bentonite seal will consist of 1/4-inch or 3/8-inch diameter dry bentonite pellets or chips. The bentonite seal will be installed by gravity methods but the subcontractor should be prepared to employ the tremie method, if necessary. If the seal is placed above the water table, then sufficient water will be added to the bentonite to allow complete hydration of the bentonite. The bentonite seal will be allowed to hydrated for a minimum of 4 hours prior to the installation of the cement grout.

Cement Grouting

Cement grout will be placed in the annular space above the bentonite seal to ground surface. The grout will be pumped through a side-discharge tremie pipe and the length will be no more than 5 feet from the top of the level of grout at all times. The pumping will continue until grout has returned to the surface. No method will be permitted that does not force grout from the bottom of the borehole to the surface. The grout seal will be made using ASTM C150 Type II Portland cement with no more than 4 percent bentonite. Use manufacturers recommendations for portioning and mixing the grout materials. A pressurized mud balance will be used to measure the density of the mixture conforms to the manufacturer's standards. Neat cement grout shall have a density of 15.6 pounds per gallon (lbs/gal), ±5%. Grout with 4 percent bentonite shall have a density of 14.1 lbs/gal, ±5%. The grout will be allowed to cure for a minimum of 8 hours after placement before further grouting or other work is done in the well. Prior to installation of the surface completions, the boreholes will be topped off with grout to approximately 1 to 2 feet bgs.

Surface Completion

Wells will be set as flush-mounted to ground completions. The casing will be cut approximately 12 inches bgs and installation of a PVC coupling and a watertight well cap will be placed on the well. At the completion of Well Development, a 4-inch diameter Schedule PVC male-threaded coupling will be installed to the top of the casing using PVC cement. Care must be taken to not use excessive amounts of cement for the cement to appear in the inside of the casing. A small notch will be cut in the top of the tee to be used as a measuring point for water levels. A 4-inch by 4-inch by 2-inch diameter Schedule 80 PVC female-threaded tee will be installed at the top of the coupling. The open ends of the tee will be temporarily capped with threaded PVC caps under normal hand pressure.

A freely draining 2-foot inner diameter vault with cover with a locking lid will be placed over the casing. The manhole will be approximately two feet deep. Two-foot diameter well vault and cover will be specified for a traffic bearing rating of DOT HS20. The top of the tee will be at least 12 inches above the bottom of the box. The vault will be centered in a 3-foot diameter, 4-inch thick concrete pad that slopes away from the vault at ¼-inch per foot. The identity of the well will be permanently marked on the concrete pad.

Wells will be secured as soon as possible after drilling with corrosion resistant locks (supplied by the Subcontractor). The locks must either have identical keys or be keyed for opening with one master key.

Well Development

As part of the bid submittal, the bidder will submit a Injection Well Development Plan. The plan must provide the overall concept for injection well development; techniques, equipment, and materials used to develop the injection wells; management of IDW; and

recognizing the intended depths of injection well screen placements and depth to groundwater.

No air, detergents, soaps, acids, bleaches, or additives will be used during well development, unless preapproved by the Remedial Contractor. The use of polyphosphates and other chemicals may be required in order to completely develop the injection wells, and their intended use should be identified in the development plan. Well development will be initiated no sooner than 24 hours following grout installation.

Development of the injection wells will continue until clear, sand-free formation water is produced from the wells and the required injection capacity is achieved. The minimum required injection capacity is 10 gallons per minute (gpm) sustained for one hour at a maximum injection pressure of 40 pounds per square inch (psi) measured at the wellhead. The Remedial Contractor will determine when injection well development is complete.

Water from development will be contained and disposed in accordance with Section - **Management of Investigation Derived Wastes.**

DECONTAMINATION

All downhole drilling equipment as well as other equipment will be decontaminated according to procedures presented in Appendix B of the *Environmental Investigations Standard Operating Procedures Quality Assurance Manual* (EISOPQAM), EPA, May 1996 (revised in 1997). Decontamination of the drill rig, drilling equipment, pipes, bits, tools, and all downhole equipment will be conducted between each well installation. Decontamination of development equipment will be performed between each well developed. Decontamination will consist of the following:

- High pressure, low volume steam-cleaning
- Wash and scrub with non-phosphate detergent (Liquinox) and potable water
- Rinse with potable water
- Rinse with deionized (or analyte free) water
- Rinse with laboratory grade isopropyl alcohol (PVC or plastic material will not be rinsed with solvent)
- Rinse with potable water
- Air dry to the extent practical
- Wrap in plastic sheeting or aluminum foil

Decontamination activities will be conducted on a concrete decontamination pad at the Site. Subcontractor will construct a minimum 3 feet high splashguard around three sides of the decontamination pad using plywood and plastic sheeting.

A high-pressure, low volume steam cleaning device will be provided by the Subcontractor. The Subcontractor will also provide all detergents, solvents, buckets and brushes necessary for decontamination of sampling equipment and for the mobile drilling equipment decontamination pad. A power source will be provided by the Subcontractor and will be attained from a hydrant and transported to the decontamination area by the Subcontractor. All tools and drilling equipment to be placed in the drill hole, and the rear of the drill rig will be steam-cleaned before drilling begins, between each boring, and after work is completed.

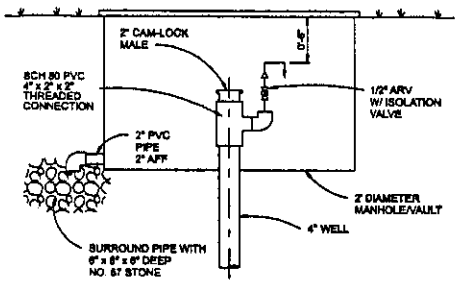
The Subcontractor will be prepared to collect and containerize all wash and decontamination water in accordance with Section - **Management of Investigation Derived Wastes**. All personnel protection clothing and articles will be contained in 55-gallon drums and disposed of separately.

MANAGEMENT OF INVESTIGATION-DERIVED WASTES (IDW)

All soil cuttings will placed in 55-gallon drums(supplied by the Subcontractor) located in a central staging area at the Site. Soil cuttings may only be temporarily staged at one drill location at any one time during drilling activities. Prior to leaving the site or prior to setting up at a new location, all soil cuttings will be placed in 55-gallon drums.

Development water and wastewater from equipment decontamination produced during the drilling operation will be containerized in Frac tank(s) (supplied by the Subcontractor). The Subcontractor will permanently mark all containers with a weatherproof label, signifying the date, site number, and well number. The Subcontractor will be responsible for hauling all liquid waste containers used in well development and during collection of soil cuttings to a staging area located on-site (up to 1/4 mile from some locations). As a result, the Subcontractor will provide, at a minimum, a sufficient quantity of 55-gallon drumsthat will be required to move the soil cuttings from one well to this staging area. Proper and safe hoisting equipment is required for drum staging operations.

Representative samples of the IDW will be collected for chemical characterization by the Remedial Contractor for off-site disposal. Once analytical results of the IDW are available, the Subcontractor will be responsible for management of the disposal of all IDW in accordance with federal, state, and local regulations. The IDW must be removed from the site within 60 days following of the receipt of analytical results.



NOTES:

1. VAULT AND COVER MUST BE CONSTRUCTED FOR TRAFFIC BEARING RATING OF DOT H320.
2. AIR RELEASE VALVE SHALL BE RATED FOR 150 psi WORKING PRESSURE, CAST IRON, DUCTILE IRON, OR SEMI-STEEL BODY WITH SST FLOAT AND TRIM. VALVE SHALL BE EQUIPPED WITH BRONZE BALL ISOLATION VALVE. VALVE SHALL BE VAL-MATIC SERIES 100 OR EQUAL.

WELLHEAD DETAIL

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DSGN Y. PICARD
DR 0492mm141d_160492.dgn BM PARTNER
CHK J. LUMENS
APVD C. HUDSON

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE:
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

CH2MHILL
4624 PARKWAY PLAZA BOULEVARD, SUITE 200
CHARLOTTE, NC 28217-1963

MEMPHIS DEPOT
SODIUM LACTATE ADDITION FACILITIES

MECHANICAL
WELLHEAD DETAIL

DWG M-2
DATE FEBRUARY 2004
PROJ 160492

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PRELIMINARY

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APPENDIX F

Specification for Portable Chemical Injection System

SECTION 13450
PORTABLE CHEMICAL INJECTION SYSTEM

PART 1 GENERAL

1.1 GENERAL

A. The Portable Chemical Injection System is a self-contained system that can be transported from one injection site to another, over open highways and grassy fields. The system includes one trailer on which is mounted one chemical storage tank, one tank-mounted mixer, one injection ~~pump~~, ~~one flow totalizer~~, associated piping, and one gasoline powered generator. System shall be suitable for the transportation, mixing and injection of a sodium lactate solution ranging in concentration from less than one to 40 percent. System shall be capable of operation in all weather conditions typical of Memphis, Tennessee. A suitable ladder shall be provided on the trailer to allow access to all equipment located on the trailer. Sufficient clearance shall be provided around all trailer-mounted equipment to allow starting, operating, and maintaining all equipment.

B. SUPPLIER shall be responsible for providing ~~and installing~~ all ~~equipment~~ required for proper operation of a portable chemical injection system. SUPPLIER shall furnish and install all ~~associated~~ piping, ~~flexible hosing~~, or instrumentation tubing needed for connecting trailer-mounted injection pump to injection wells.

1.2 QUALIFICATIONS

A. The portable chemical injection system SUPPLIER shall have no less than five years experience providing self-contained agricultural and/or chemical trailers.

1.3 SUBMITTALS

A. Provide manufacturer's data on materials, construction, connections, dimensions, ratings, capacities, storage, handling and operational data concerning all equipment specified herein.

PART 2 PRODUCTS

2.1 DESIGN CRITERIA

A. Chemical Solution: Solution of sodium lactate ranging in concentration from less than one to 40 percent.

B. Number of Storage Tanks: One.

C. Minimum Storage: 500 gallons.

D. Injection Pump Rate: Normal rated capacity is 20 gpm at 50 psi..

E. Mixing Power: As required to mix a 60 percent sodium lactate solution with dilution water to prepare a well-mixed sodium lactate solution ranging in concentration from less than one to 40 percent in the storage tank within 5 minutes.

2.2 EQUIPMENT

A. General

1. Entire injection system shall be mounted ~~on~~ a ~~highway-rated trailer that~~ can be hitched to a standard Class 4 hitch with a two-inch receiver.
2. All equipment shall be trailer-mounted, manually operated, and electric-driven, except for the generator which shall be gasoline driven.
3. All hardware shall be stainless steel.

B. Storage Tank

1. Trailer-mounted polyethylene storage tank shall be chemical resistant, capable of storing a minimum of 500 gallons of a sodium lactate solution ranging in concentration from less than one to 40 percent.
2. Ultraviolet inhibitor shall be added to the resin to increase resistance to ultraviolet light. No titanium or carbon based pigments shall be used.
3. Tank shall be equipped with a minimum of the following nozzles:
   a. One sodium lactate injection port, top-mounted, 2-inch, blind flange required.
   b. One water injection port, top-mounted, 2-inch, blind flange required.
   c. One mixer flange, top-mounted, size as required.
   d. One air vent, top-mounted, 2-inch.
   e. One discharge port, side mounted at tank bottom, 1-inch, with isolation ball valve.
4. Tank shall be labeled in a manner consistent with local codes.

C. Tank Mixer

1. Tank mixer shall be capable of operating for five minutes continuously.
2. Mixer shall be permanently mounted ~~on the top of the storage tank.~~
3. Mixer shall be electric powered from the trailer-mounted generator, manually operated, with switch mounted adjacent to mixer and accessible from the ground.

D. Chemical Injection Pump

1. Normal rated capacity is 20 gpm at 50 psi.
2. Transfer pump shall be electric powered from the trailer-mounted generator, manually operated.

E. Piping, Meters, and Valves

1. Flexible hose shall be two-inch diameter Teflon hose with stainless steel braided cover. Connections to tank shall be made with stainless steel hose clamps. Connections at pump shall match pump discharge connection and be capable of withstanding 150 psi. Connections to well head shall include a cam-lock fitting that can be connected to the well head as shown in the Drawing Detail "Well Head Detail". Provide a quick-connect cap for the hose end. Provide a minimum of 50 feet of discharge hose.
2. All connections to equipment shall include isolation ball valves. Ball valves shall be rated 150 psi at 120°F with PVC full port body, PTFE Teflon seat, Viton or Teflon O-ring stem, face and carrier seals. Valves shall be ASAHI-American, Chemtrol or equal.
3. Flow Meter:
   a. Function: Measure flow of sodium lactate solution in a full pipe.
   b. Type: Turbine.
   c. Parts: Meter, integral rate indicator and totalizer.
   d. Bearing Type: Self-lubricating, ceramic hybrid ball bearing, unless otherwise noted.
   e. Other Materials: 316 stainless steel, unless otherwise noted.
   f. Rate Display: 5 digits, 0.5-inches high, two second update, decimal selectable.
   g. Totalizer Display: 8 digits, 0.26-inches high, decimal selectable, configurable units, e.g. gallons.
   h. Operating Temperature: minus 4 to 158 degrees F.
   i. Accuracy: Plus or minus 0.01 percent reading, plus or minus 1 count
   j. Enclosure: NEMA 4X, unless otherwise noted.
   k. Mounting: Integral to meter, unless otherwise noted.
   l. Manufacturer/Model:
      1) Hoffer HO Series Turbine Flowmeter for Liquid Service with HIT-2A Rate Indicator and Totalizer.
4. SUPPLIER is responsible for providing the piping, piping connections/accessories/reducers, and valves between the tank and the pump and between the pump and the well connection. SUPPLIER shall provide appropriate support on the trailer for the fifty feet of discharge hose.

2.3 GAS-POWERED GENERATOR

A. Trailer-mounted gasoline generator shall be capable of operating either the mixer or the injection pump for a minimum of eight hours. SUPPLIER shall be responsible for determining maximum rated output required for all electrical equipment located on the trailer.

B. Generator shall be self-contained, trailer-mounted and permanently wired to provide power to the mixer and to the transfer ~~pump mounted on the trailer~~. Generator shall be equipped with automatic idle control.

PART 3 EXECUTION

3.1 INSTALLATION AND MAINTENANCE

A. Portable Chemical Injection System SUPPLIER shall be responsible for the engineering, fabrication, and installation of the equipment described above. All work shall be done in a manner compliant with local codes and regulations. All drives shall be tested and made operational.

3.2 TESTING AND STARTING

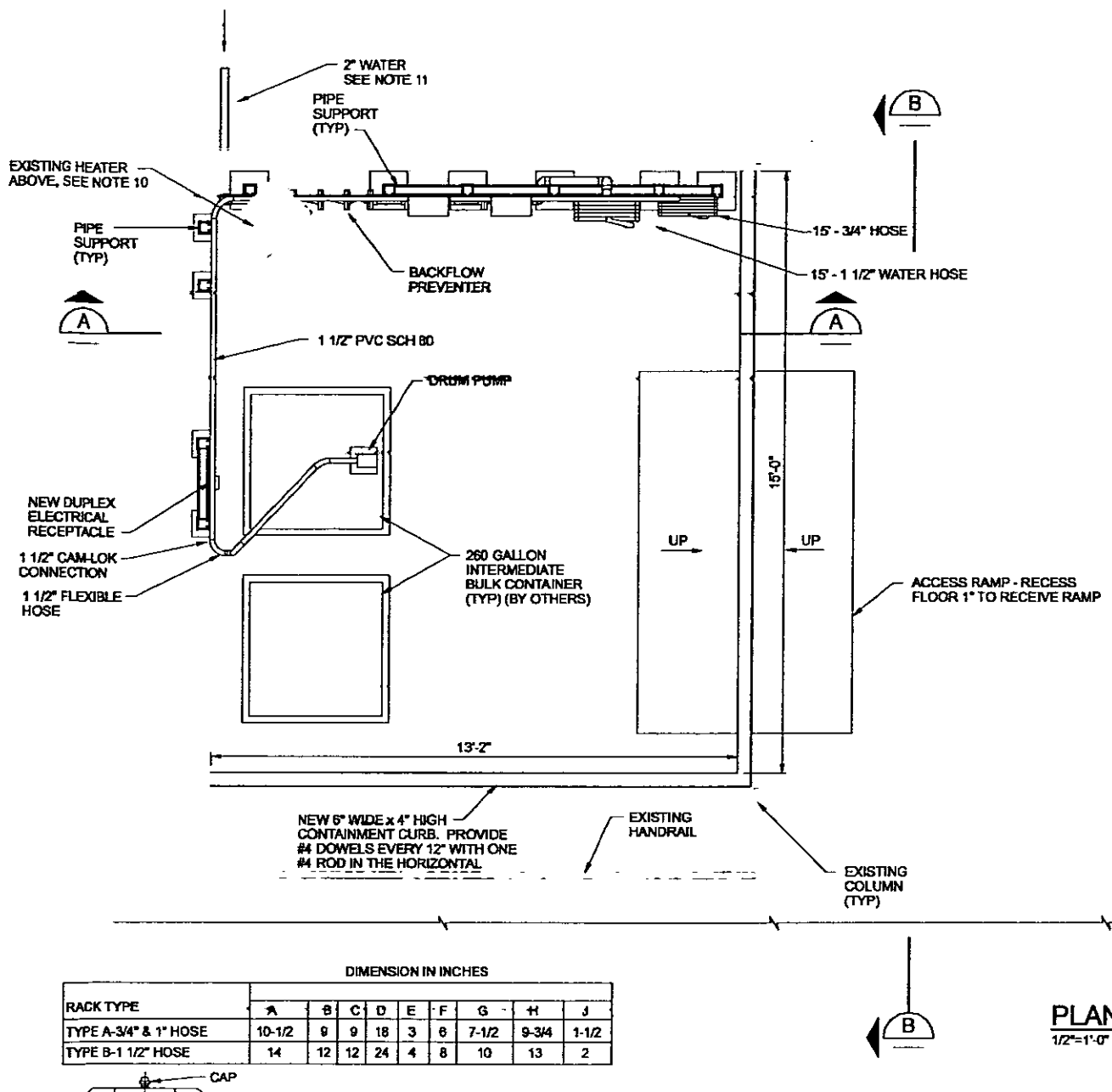
A. Provide testing and start up assistance as required to implement satisfactory operation of the portable chemical injection system. Provide on-site personnel as and when required during start up period of 2 days.

END OF SECTION

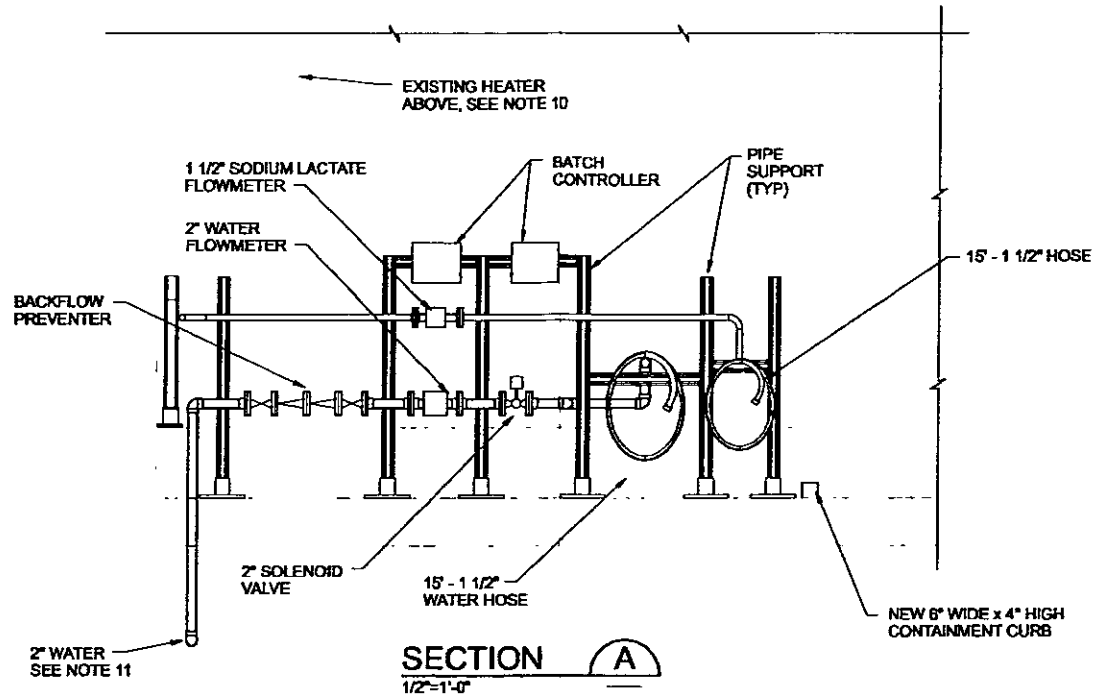
APPENDIX G

Final Bulk Facility Drawings

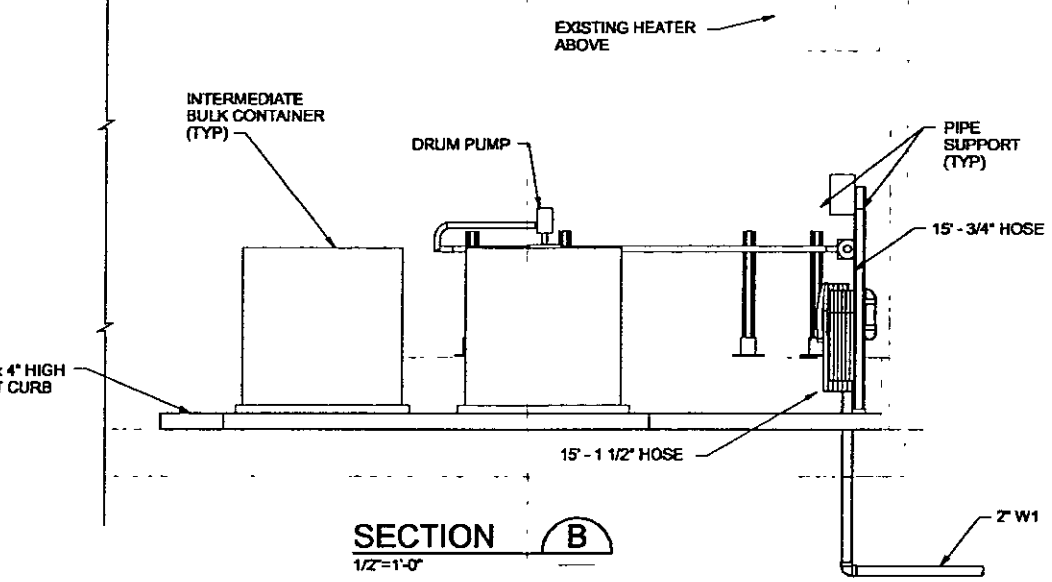
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PLAN
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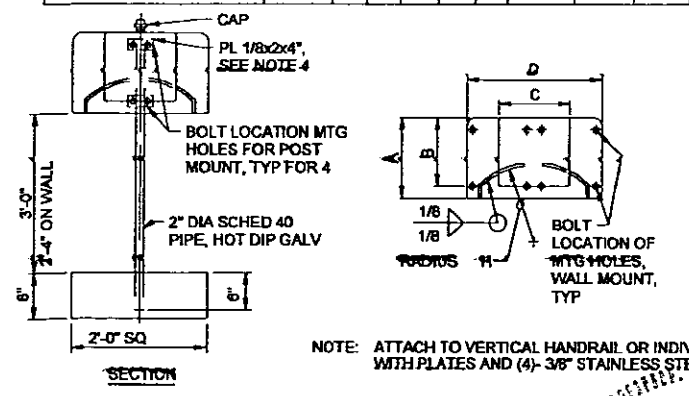
SECTION A
1/2"=1'-0"



SECTION B
1/2"=1'-0"

DIMENSION IN INCHES

RACK TYPE	A	B	C	D	E	F	G	H	J
TYPE A-3/4" & 1" HOSE	10-1/2	9	9	18	3	6	7-1/2	9-3/4	1-1/2
TYPE B-1 1/2" HOSE	14	12	12	24	4	8	10	13	2



NOTE: ATTACH TO VERTICAL HANDRAIL OR INDIVIDUAL POST WITH PLATES AND (4)- 3/8" STAINLESS STEEL BOLTS.

HOSE RACK DETAIL
NTS

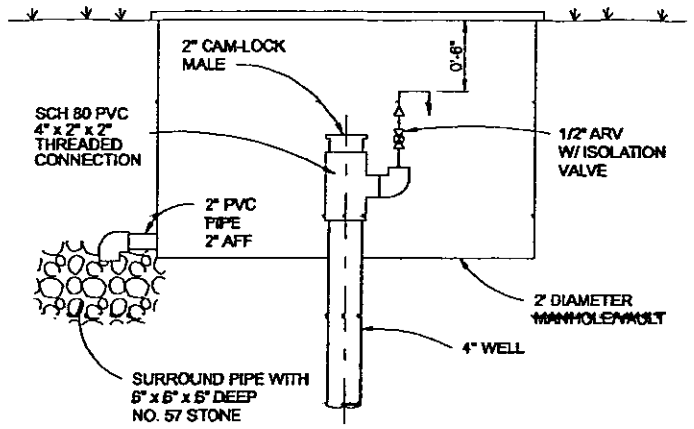
NOTES:

1. SODIUM LACTATE METER SHALL BE NUTATING DISK TYPE BY NIAGARA. METER SHALL BE PORT NUMBER N125TRNBRTE WITH 1581A0 DRY CONTACT OUTPUT DIGITAL PULSE TRANSMITTER. WATER METER SHALL BE NIAGARA MTX MODEL 420 WITH 604B0D236 DIGITAL PULSE TRANSMITTER.
2. SOLENOID VALVE SHALL BE TWO-WAY INTERNAL PILOT OPERATED DIAPHRAGM TYPE, STAINLESS STEEL RESILIENT SEAT, SOLENOID COIL MOLDED EPOXY, NEMA CLASS A, 120 VOLT AC, 60 Hz, 1-PHASE, SHALL ENERGIZE TO OPEN. MANUFACTURER SHALL BE ASCO RED HAT OR EQUAL.
3. BATCH CONTROLLERS SHALL BE NIAGARA MODEL 3030F. ONE BATCH CONTROLLER SHALL ENERGIZE NEW 2" WATER SOLINOID VALVE, AND ONE BATCH CONTROLLER SHALL ENERGIZE NEW DUPLEX RECEPTACLE. CONTROLLERS EACH TO BE CONFIGURED TO DELIVER A VOLUME OF LIQUID, LOCALLY REQUESTED BY OPERATOR ON MANUAL INITIATION.
4. DRUM PUMP SHALL BE AN ELECTRIC POWERED DRUM PUMP CAPABLE OF PUMPING 35 GPM AT VISCOSITIES OF 850 CENTIPOISE OR GREATER. PUMP SHALL BE POLYPROPYLENE SELF-PRIMING, SEALLESS WITH A STRAINER AND WALL BRACKET. MOTOR SHALL OPERATE ON 115 VAC, 50/60 Hz, 1-PHASE WITH A 15 FOOT CORD AND PLUG. PUMP SHALL BE EQUIPPED WITH 10 FEET OF 1-INCH DIAMETER VINYL DISCHARGE HOSE. PUMP SHALL BE MCMASTER-CARR MODEL 4316 K25 OR EQUAL.
5. FLEXIBLE HOSE SHALL BE TEFLON HOSE WITH STAINLESS STEEL BRAIDED COVERS. CONTRACTOR SHALL VERIFY PROPER CONNECTIONS/DRAINS TO HARD PIPING USING CAM-LOK CONNECTIONS. PROVIDE REDUCERS AS REQUIRED.
6. BACKFLOW PREVENTER SHALL BE DOUBLE-CHECK VALVES WITH RELIEF VALVE AND FULL-PORT BALL VALVES AT AT EACH END. VALVE SHALL MEET AWWA C511 STANDARDS. VALVE SHALL BE 2" BRONZE BODY. MANUFACTURER SHALL BE MCMASTER-CARR MODEL 45265K69 OR EQUAL.
7. PIPE SUPPORTS SHALL BE UNISTRUT CHANNEL 3" x 3" x 1/4", SPACED NO MORE THAN 5 FEET APART. CHANNEL SHALL BE BOLTED TO THE FLOOR WITH CONCRETE ANCHOR BOLTS. PROVIDE UNISTRUT PIPE/TUBING CLAMPS WITH NEOPRENE PIPE WRAP.
8. BALL VALVES SHALL BE RATED 150 psi AT 120 DEGREES F WITH PVC FULL PORT BODY, PTFE TEFLON SEAT, VITON OR TEFLON O-RING STEM, FACE AND CARRIER SEALS, END ENTRY DESIGN WITH DUAL UNION, SOLVENT WELD SOCKET ENDS. VALVES SHALL BE ASAHI-AMERICA TYPE 21 OR EQUAL.
9. CONTAINMENT CURB AND ACCESS RAMP SHALL BE CONSTRUCTED OF 3,000 psi CONCRETE.
10. RECONNECT GAS LINE AND THERMOSTAT AND PROVIDE STANDARD MAINTENANCE REQUIRED TO MAKE EXISTING HEATER OPERABLE.
11. CONTRACTOR TO FIELD VERIFY LOCATION, DIAMETER, AND ELEVATION OF EXISTING WATER MAIN AT ROAD PRIOR TO ORDERING WET TAP WITH 2" SADDLE AND GATE VALVE. ROADWAY AND WATER MAIN ARE APPROXIMATELY 200 FEET SOUTHEAST OF BUILDING ENTRANCE. COORDINATE TAP WITH OWNER AND UTILITY.
12. CONTRACTOR SHALL SUBMIT LAYOUT, MANUFACTURER'S DATA, AND DIMENSIONAL INFORMATION ON ALL EQUIPMENT AND SUPPLIES AS REQUIRED FOR THIS FACILITY.

DSGN	Y. PICARD					VERIFY SCALE	CH2MHILL 4824 PARKWAY PLAZA BOULEVARD, SUITE 200 CHARLOTTE, NC 28217-1968	MEMPHIS DEPOT SODIUM LACTATE ADDITION FACILITIES	MECHANICAL WAREHOUSE MODIFICATIONS PLAN, SECTIONS AND DETAIL	DWG M-1
DR	0492nm140d_160492.dgn SM PASTEUR					BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.				DATE FEBRUARY 2004
CHK	J. LUMENS									PROJ 160492
APVD	C. HUDSON	NO.	DATE	/REVISION	BY	APVD				

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REUSE OF DOCUMENTS.
PRELIMINARY



NOTES:

1. VAULT AND COVER MUST BE CONSTRUCTED FOR TRAFFIC BEARING RATING OF DOT HS20.
2. AIR RELEASE VALVE SHALL BE RATED FOR 150 psi WORKING PRESSURE, CAST IRON, DUCTILE IRON, OR SEMI-STEEL BODY WITH SST FLOAT AND TRIM. VALVE SHALL BE EQUIPPED WITH BRONZE BALL ISOLATION VALVE. VALVE SHALL BE VAL-MATIC SERIES 100 OR EQUAL.

WELLHEAD DETAIL

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PRELIMINARY

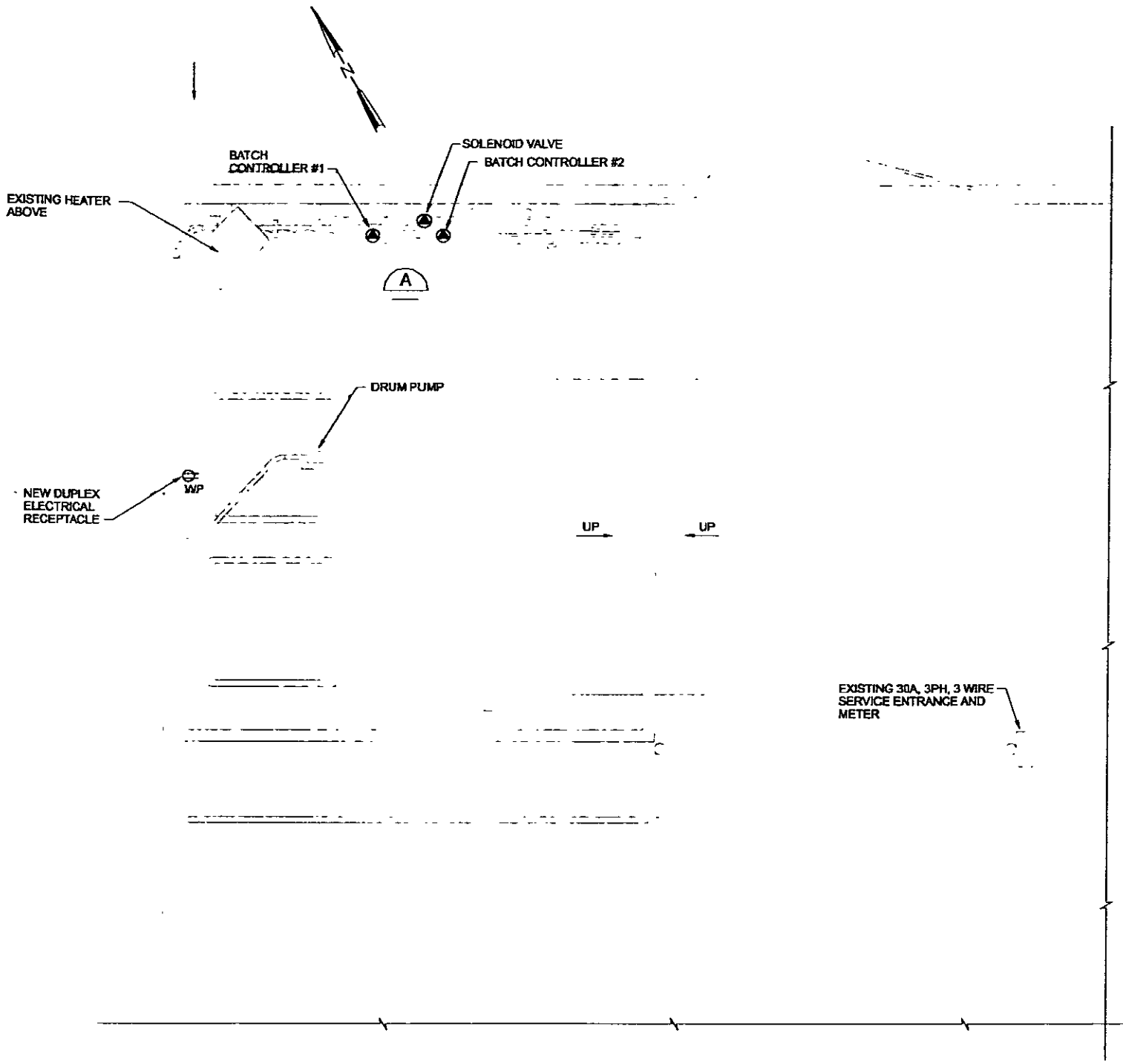
MICHAEL WILLIAM PERLMUTTER
REGISTERED ENGINEER
STATE OF ILLINOIS

DSGN Y. PICARD					VERIFY SCALE	CH2MHILL	MECHANICAL
DR 0492nm141d_160492.dgn SM PASTEUR					BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	4824 PARKWAY PLAZA BOULEVARD, SUITE 200 CHARLOTTE, NC 28217-1968	MEMPHIS DEPOT SODIUM LACTATE ADDITION FACILITIES
CHK J. LUMENS							WELLHEAD DETAIL
APVD C. HUDSON	NO.	DATE	REVISION	BY	APVD		

DWG M-2
DATE FEBRUARY 2004
PROJ 160492

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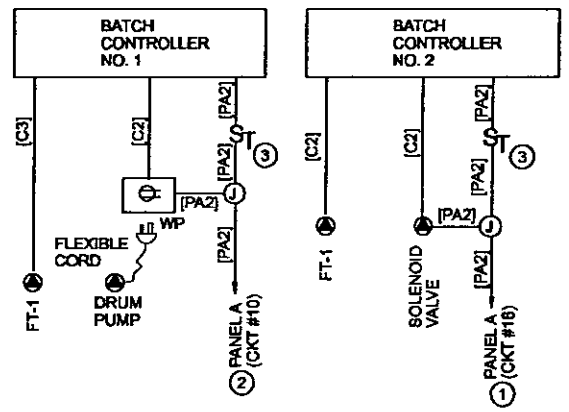
PARTIAL PLAN
1/2"=1'-0"

CIRCUIT CALLOUT

[C2] = [3/4"C, 2#14, 1#14G]

[C3] = [3/4"C, 3#14, 1#14G]

[PA2] = [3/4"C, 2#12, 1#12G]



WIRING DIAGRAMS A
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LEGEND

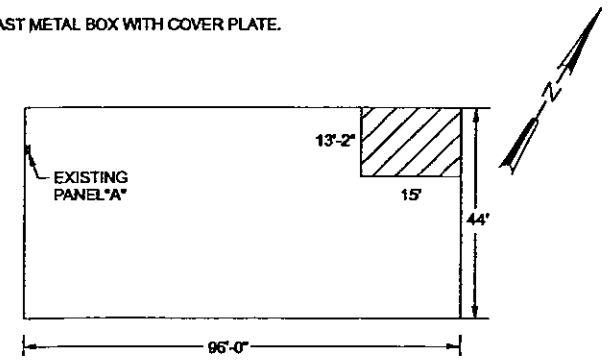
- CONNECTION POINT TO EQUIPMENT SPECIFIED. FURNISHED AND INSTALLED UNDER OTHER DECCIPLINES. RACEWAY, CONDUCTOR AND CONNECTION SHOWN. COORDINATE FINAL CONNECTION WITH EQUIPMENT SUPPLIER.
- CONVENIENCE RECEPTACLE - DUPLEX UNLESS SPECIFIED OTHERWISE
  - WP- WEATHERPROOF
  - TL- TWIST LOCK
  - C- CLOCK HANGER
  - CRE- CORROSION RESISTANT
- (J) CONDUIT FITTING OR JUNCTION BOX
- [ ] CIRCUIT CALLOUT, [1"C,3#8,1#10G] CONDUIT, CONDUCTOR, AND NUMBER INDICATED.
- LA-2 HOME RUN - DESTINATION SHOWN
- PLUG WITH FLEXIBLE CORD
- ST MOTOR RATED TOGLE SWITCH WITHOUT OVERLOAD

GENERAL NOTES:

1. COORDINATE LOCATION WITH MECHNICAL DRAWINGS
2. FIELD COORDINATE WIRING WITH MANUFACTURER'S SHOP DRAWING FOR OPERATION OF DRUM PUMP AND SOLENOID VALVE WITH BATCH CONTROLLER(S).
3. FACILITY HAS EXISTING 30A, 240V,3-PHASE, 3 WIRE AC MAIN SAFETY SWITCH (SERVICE ENTRANCE), AND A 208/120V, 3-PH, 4W, PANEL-A.
4. THE WORK SHALL BE CARIED OUT NATIONAL ELECTRICAL CODE (NEC), AND APPLICABLE LOCAL CODES.
5. ALL WIRES SHALL BE THNN/THWN, 600V, UL LISTED.
6. PROVIDED RGS CONDUITS. ALL EQUIPMENT AND ACCESSORIES USED SHALL BE UL LISTED.

KEYED NOTES:

1. FIELD VERIFY AND CONNECT TO THE AVAILABLE 'SPARE' CIRCUIT BREAKER
2. FIELD VERIFY AND PRIVIDE NEW 20A, 1-PHASE CIRCUIT BREAKER IN THE EXISTING SPACE. MATCH EXISTING CIRCUIT BREAKERS.
3. PROVIDE IN NEMA-12 CAST METAL BOX WITH COVER PLATE. FIELD LOCATE SWITCH.



KEY PLAN
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WILLIAM PERMENTER — REGISTERED ENGINEER — AGRICULTURE — STATE OF TENNESSEE — No. 001071

DSGN	V. TREHAN					VERIFY SCALE	CH2MHILL
DR	0492ne141d_160492.dgn P. OAKES					BAR IS ONE INCH ON ORGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	4824 PARKWAY PLAZA BOULEVARD, SUITE 200 CHARLOTTE, NC 28217-1968
CHK	Checked_By						
APVD	Approved_By	NO.	DATE	REVISION	BY	APVD	

MEMPHIS DEPOT
SODIUM LACTATE ADDITION FACILITIES

ELECTRICAL
WAREHOUSE - PARTIAL PLAN
LEGEND AND WIRING DIAGRAM

DWG	E-1
DATE	FEBRUARY 2004
PROJ	160492

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FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE