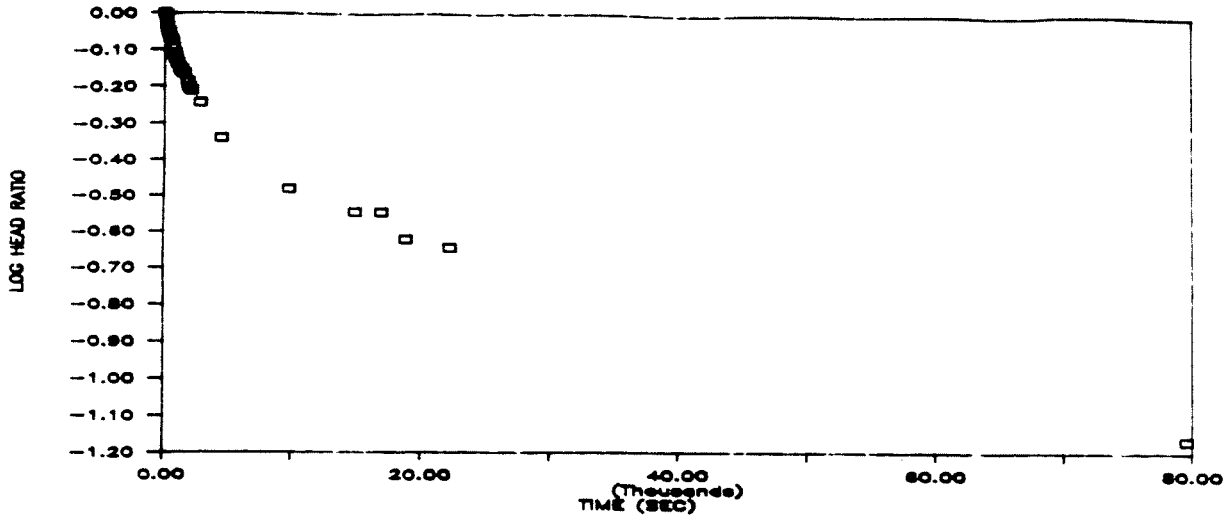


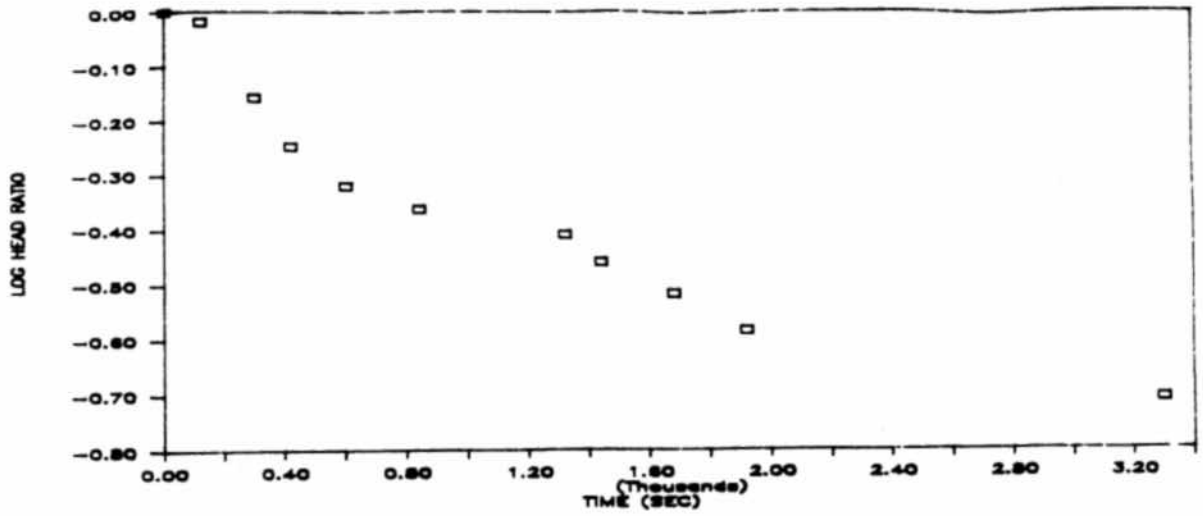
DATE= 9/3/86
DEPTH TO WATER= 7.3 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 19.5 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	10	33	0	0	16.1	8.8	1.00		0
1	10	34	0	60	16.0	8.7	0.99		-0.00436
1	10	35	0	120	15.8	8.5	0.97		-0.01506
1	10	36	0	180	15.4	8.1	0.92		-0.03549
1	10	37	0	240	15.2	7.9	0.90		-0.04685
1	10	38	0	300	15.1	7.8	0.89		-0.05238
1	10	40	0	420	14.8	7.5	0.85		-0.06942
1	10	42	0	540	14.7	7.4	0.84		-0.07525
1	10	44	0	660	14.4	7.1	0.81		-0.09322
1	10	46	0	780	14.1	6.8	0.77		-0.11197
1	10	48	0	900	13.9	6.6	0.75		-0.12493
1	10	50	0	1020	13.7	6.4	0.73		-0.13830
1	10	53	0	1200	13.5	6.2	0.70		-0.15209
1	10	55	0	1320	13.4	6.1	0.69		-0.15915
1	10	58	0	1500	13.3	6.0	0.68		-0.16633
1	11	3	0	1800	13.0	5.7	0.65		-0.18860
1	11	5	0	1920	12.8	5.5	0.62		-0.20411
1	11	8	0	2100	12.7	5.4	0.61		-0.21200
1	11	20	0	2820	12.3	5.0	0.57		-0.24551
1	11	48	0	4500	11.3	4.0	0.45	*	-0.34242
1	13	16	0	9780	10.2	2.9	0.33		-0.48200
1	14	41	0	14880	9.8	2.5	0.28		-0.54654
1	15	15	0	16920	9.8	2.5	0.28		-0.54654
1	15	47	0	18840	9.4	2.1	0.24		-0.62226
1	16	43	0	22200	9.3	2.0	0.23	*	-0.64345
2	8	39	0	79560	7.9	0.6	0.07		-1.16633

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 8.93E-07 CM/SEC

JOB NO. 853-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-7S	
DRAWN DGB	DATE 12/3/86		
CHECKED QTM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



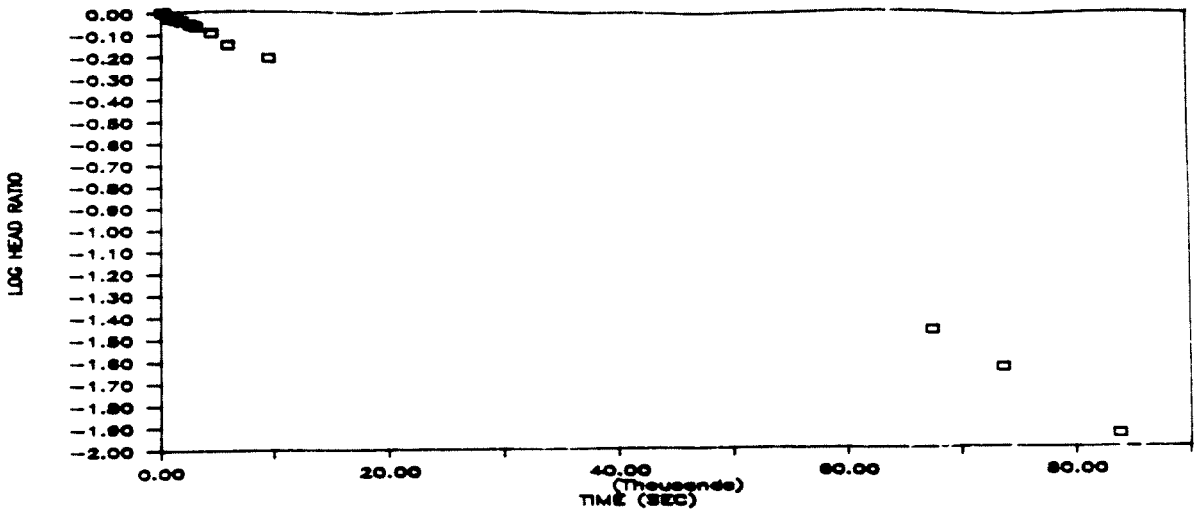
DATE= 9/28/86
DEPTH TO WATER= 7.7 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.8 INCHES
OPEN INTERVAL= 12.5 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	14	15	0	0	10.0	2.3	1.00		0
1	14	17	0	120	9.9	2.2	0.96		-0.02020
1	14	20	0	300	9.3	1.6	0.70	*	-0.15760
1	14	22	0	420	9.0	1.3	0.57		-0.24778
1	14	25	0	600	8.8	1.1	0.48		-0.32033
1	14	29	0	840	8.7	1.0	0.43		-0.36173
1	14	37	0	1320	8.6	0.9	0.39		-0.40748
1	14	39	0	1440	8.5	0.8	0.35		-0.45863
1	14	43	0	1680	8.4	0.7	0.30		-0.51862
1	14	47	0	1920	8.3	0.6	0.26	*	-0.58357
1	15	10	0	3300	8.2	0.5	0.20		-0.70851

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 1.93E-05 CM/SEC

JOB NO. 853-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-8S	
DRAWN DGB	DATE 12/3/86		
CHECKED DJM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



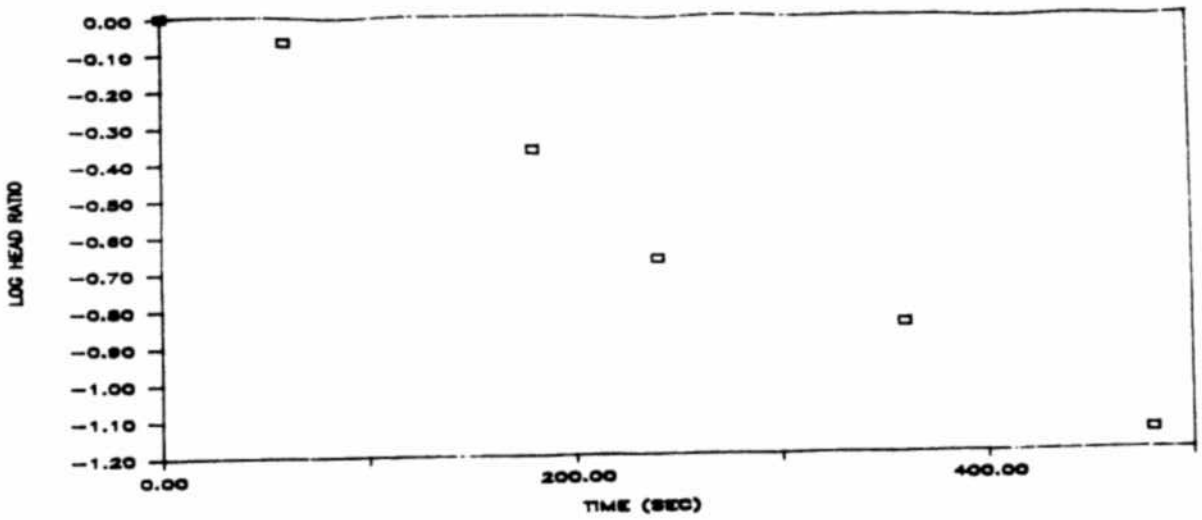
DATE= 9/2/86
DEPTH TO WATER= 8.0 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 10.5 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	13	57	0	0	25.5	17.5	1.00		0
1	14	0	0	180	25.4	17.4	0.99		-0.00248
1	14	2	0	300	25.3	17.3	0.99		-0.00499
1	14	10	0	780	24.5	16.5	0.94		-0.02555
1	14	18	0	1260	24.2	16.2	0.93		-0.03352
1	14	27	0	1800	23.8	15.8	0.90		-0.04438
1	14	41	0	2640	23.2	15.2	0.87		-0.06019
1	14	49	0	3120	22.9	14.9	0.85		-0.06986
1	15	12	0	4500	21.9	13.9	0.79		-0.10028
1	15	36	0	5940	20.2	12.2	0.70	*	-0.15667
1	16	36	0	9540	18.7	10.7	0.61		-0.21365
2	8	41	0	67440	8.6	0.6	0.03		-1.46486
2	10	24	0	73620	8.4	0.4	0.02	*	-1.64057
2	13	13	0	83760	8.2	0.2	0.01		-1.94200

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 1.82E-06 CM/SEC

JOB NO. 863-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-8D	
DRAWN DGB	DATE 12/3/86		
CHECKED AJM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



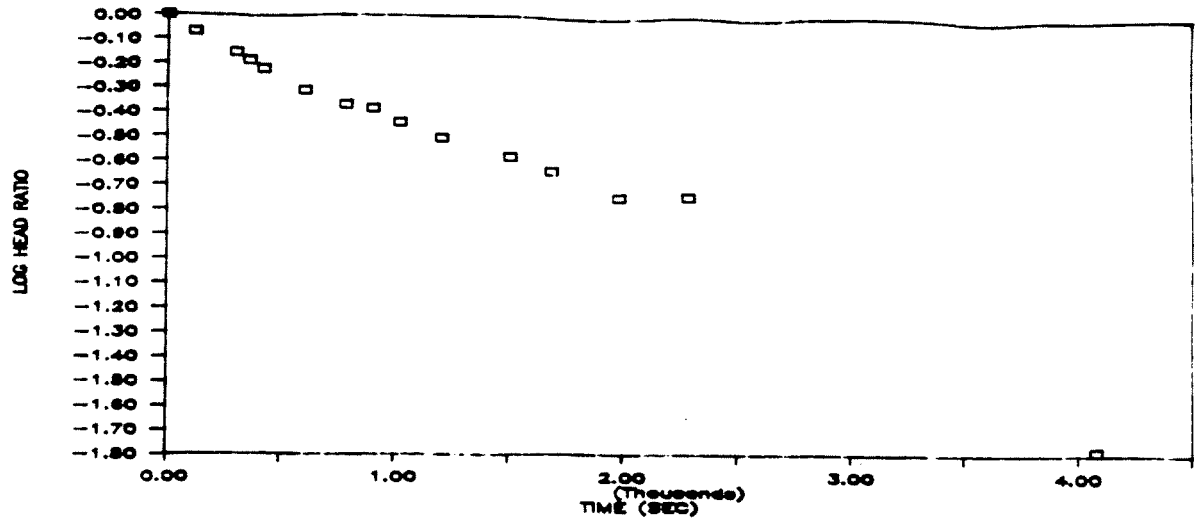
DATE= 9/2/86
DEPTH TO WATER= 12.7 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OWEN INTERVAL= 24.5 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	15	42	0	0	14.1	1.4	1.00		0
1	15	43	0	60	13.9	1.2	0.86	*	-0.065634
1	15	45	0	180	13.3	0.6	0.43		-0.36797
1	15	46	0	240	13.0	0.3	0.21		-0.66900
1	15	48	0	360	12.9	0.2	0.14		-0.84509
1	15	50	0	480	12.8	0.1	0.07	*	-1.1461

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 1.13E-04 CM/SEC

JOB NO. 863-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-9S	
DRAWN DGB	DATE 12/3/86		
CHECKED DJM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



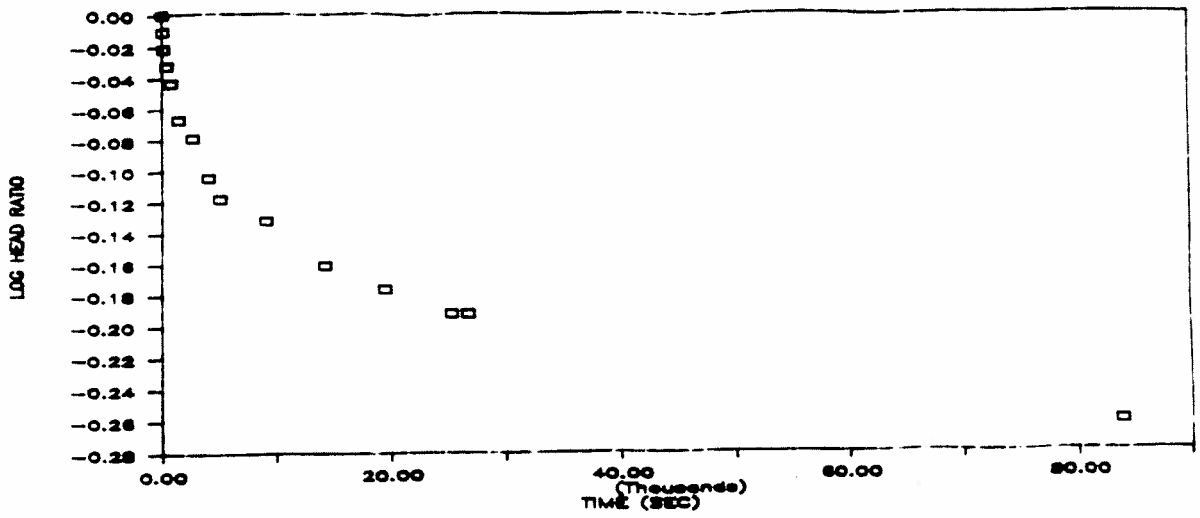
DATE= 9/2/86
DEPTH TO WATER= 9.8 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 28.0 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	14	50	0	0	15.9	6.1	1.00		0
1	14	52	0	120	15.0	5.2	0.85		-0.06932
1	14	55	0	300	14.1	4.3	0.70		-0.15186
1	14	56	0	360	13.8	4.0	0.66		-0.18326
1	14	57	0	420	13.5	3.7	0.61		-0.21718
1	15	0	0	600	12.8	3.0	0.49	*	-0.30820
1	15	3	0	780	12.4	2.6	0.43		-0.37035
1	15	5	0	900	12.3	2.5	0.41		-0.38738
1	15	7	0	1020	12.0	2.2	0.36		-0.44290
1	15	10	0	1200	11.7	1.9	0.31		-0.50657
1	15	15	0	1500	11.4	1.6	0.26		-0.58120
1	15	18	0	1680	11.2	1.4	0.23		-0.63920
1	15	23	0	1980	10.9	1.1	0.18	*	-0.74393
1	15	28	0	2280	10.9	1.1	0.18		-0.74393
1	15	58	0	4080	9.9	0.1	0.02		-1.78532

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 1.25E-05 CM/SEC

JOB NO. 863-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-10S	
DRAWN DGB	DATE 12/3/86		
CHECKED DTM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



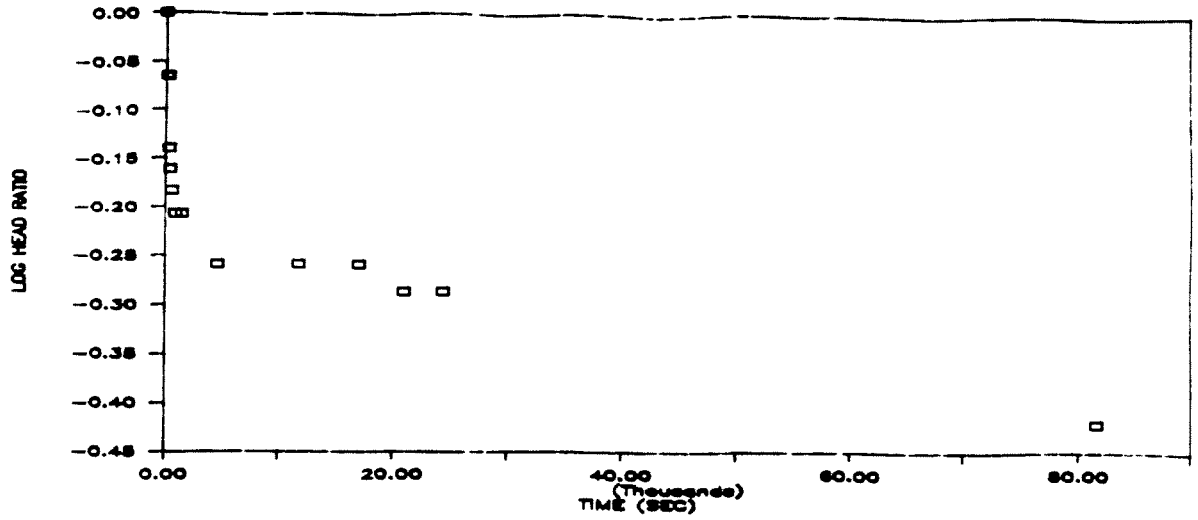
DATE= 9/3/86
DEPTH TO WATER= 13.0 FEET
CASING DIAMETER= 3.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 13.0 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	9	5	0	0	17.2	4.2	1.00		0
1	9	6	0	60	17.1	4.1	0.98		-0.0.046
1	9	7	0	120	17.0	4.0	0.95		-0.0c118
1	9	12	0	420	16.9	3.9	0.93		-0.0 3.8
1	9	18	0	780	16.8	3.8	0.90		-0.0-346
1	9	29	0	1440	16.6	3.6	0.86		-0.06694
1	9	50	0	2700	16.5	3.5	0.83		-0.07918
1	10	13	0	4080	16.3	3.3	0.79		-0.10473
1	10	30	0	5100	16.2	3.2	0.76		-0.11809
1	11	37	0	9120	16.1	3.1	0.74		-0.13188
1	13	2	0	14220	15.9	2.9	0.69		-0.16085
1	14	29	0	19440	15.8	2.8	0.67		-0.17609
1	16	5	0	25200	15.7	2.7	0.64		-0.19188
1	16	29	0	26640	15.7	2.7	0.64	*	-0.19188
2	8	23	0	83880	15.3	2.3	0.55	*	-0.26152

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 9.44E-08 CM/SEC

JOB NO. 853-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS	
DRAWN DGB	DATE 12/3/86	WELL NO. TMW-11S	
CHECKED DJM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



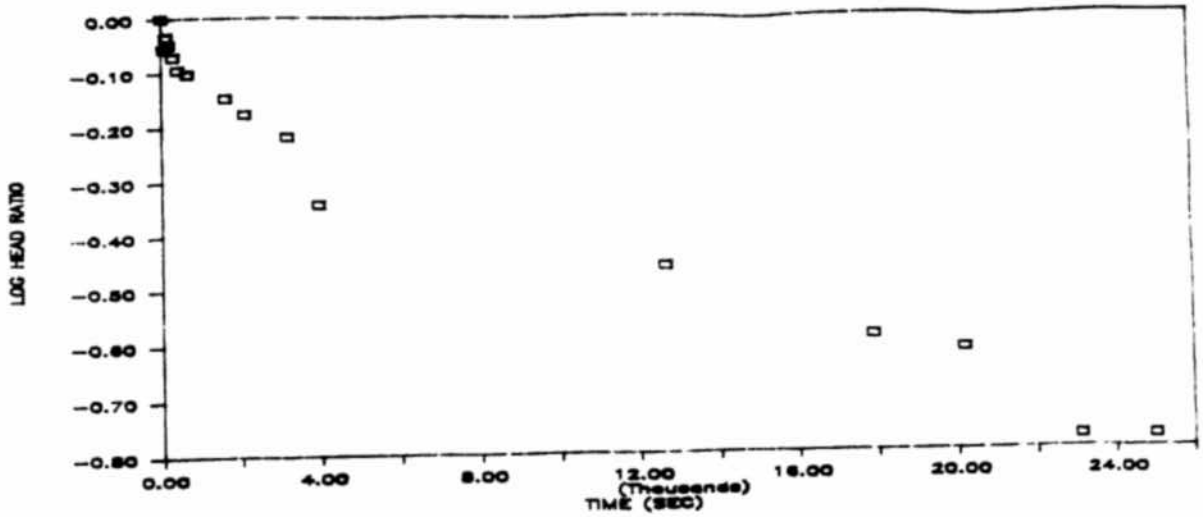
DATE= 9/3/86
DEPTH TO WATER= 8.2 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 11.3 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	9	55	0	0	11.1	2.9	1.00		0
1	9	57	0	120	10.7	2.5	0.86		-0.06445
1	9	58	0	180	10.7	2.5	0.86		-0.06445
1	10	0	0	300	10.3	2.1	0.72		-0.14017
1	10	2	0	420	10.2	2.0	0.69		-0.16136
1	10	5	0	600	10.1	1.9	0.66		-0.18364
1	10	10	0	900	10.0	1.8	0.62		-0.20712
1	10	20	0	1500	10.0	1.8	0.62		-0.20712
1	11	12	0	4620	9.8	1.6	0.55		-0.25827
1	13	10	0	11700	9.8	1.6	0.55	*	-0.25827
1	14	38	0	16980	9.8	1.6	0.55		-0.25827
1	15	44	0	20940	9.7	1.5	0.52		-0.28630
1	16	40	0	24300	9.7	1.5	0.52		-0.28630
2	8	35	0	81600	9.3	1.1	0.38	*	-0.42100

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 1.84E-07 CM/SEC

JOB NO. 863-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-12S	
DRAWN DGB	DATE 12/3/86		
CHECKED DJM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



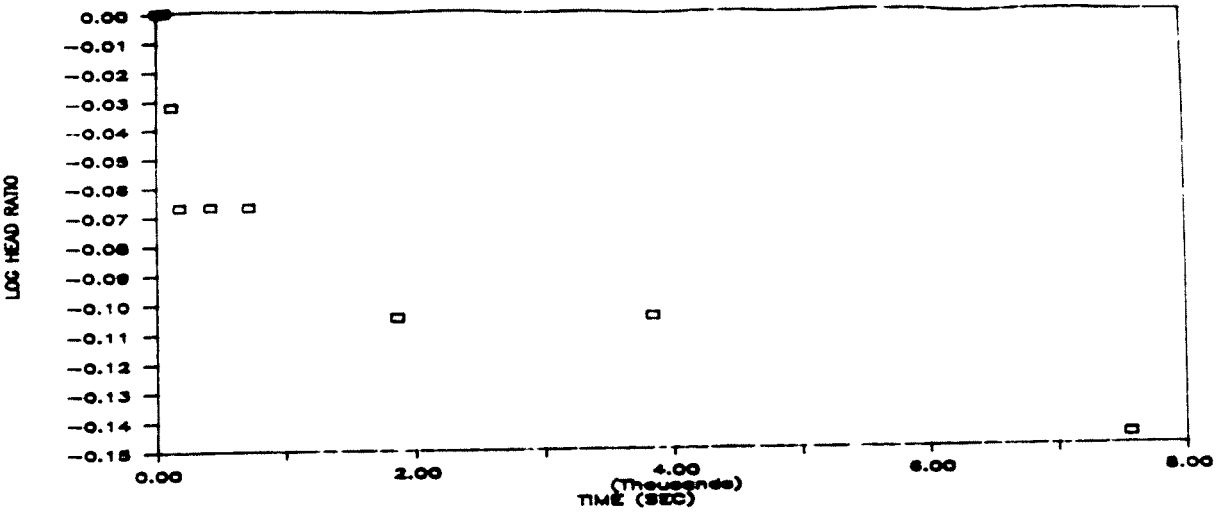
DATE= 9/3/86
DEPTH TO WATER= 5.7 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 16.0 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	9	34	0	0	12.3	6.6	1.00		0
1	9	35	0	60	11.5	5.8	0.88		-0.05611
1	9	36	0	120	11.8	6.1	0.92		-0.03421
1	9	37	0	180	11.6	5.9	0.89		-0.04869
1	9	39	0	300	11.3	5.6	0.85		-0.07135
1	9	41	0	420	11.0	5.3	0.80		-0.09566
1	9	45	0	660	10.9	5.2	0.79		-0.10354
1	10	1	0	1620	10.4	4.7	0.71		-0. 4744
1	10	9	0	2100	10.1	4.4	0.67		-0.17609
1	10	27	0	3180	9.7	4.0	0.61	*	-0.21748
1	10	48	0	3960	8.7	3.0	0.45		-0.34642
1	13	5	0	12660	8.0	2.3	0.35	*	-0.45781
1	14	32	0	17880	7.4	1.7	0.26		-0.58909
1	15	10	0	20160	7.3	1.6	0.24		-0.6.542
1	15	59	0	23100	6.8	1.1	0.17		-0.77815
1	16	31	0	25020	6.8	1.1	0.17		-0.778.5

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 1.55E-06 CM/SEC

JOB NO. 853-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-13S	
DRAWN DGB	DATE 12/3/86		
CHECKED DTM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



DATE= 9/3/86
DEPTH TO WATER= 9.9 FEET
CASING DIAMETER= 3.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 10.0 FEET

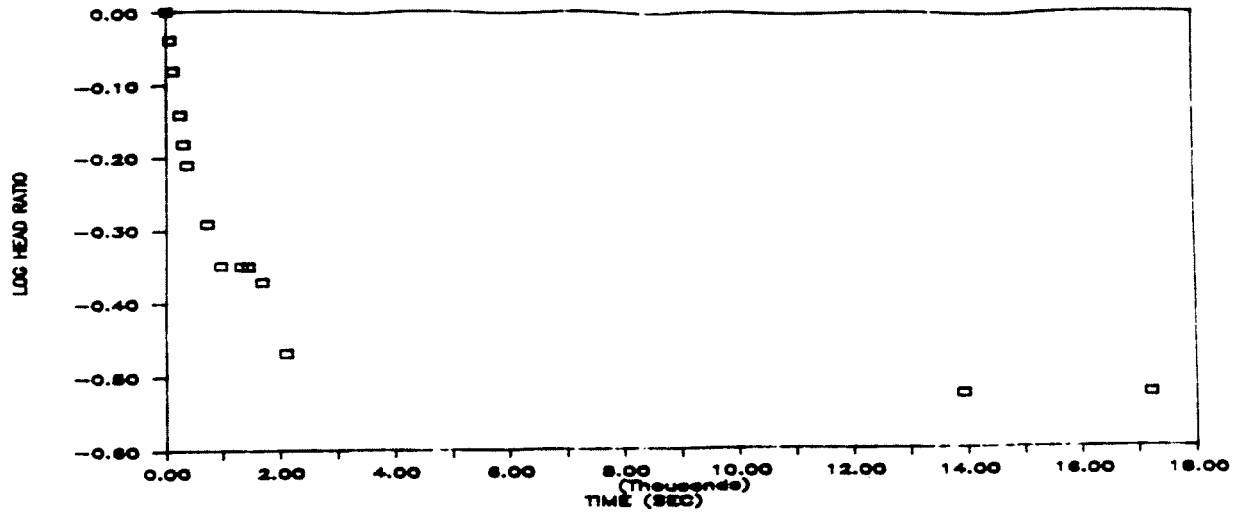
DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	9	10	0	0	11.3	1.4	1.00		0
1	9	11	0	60	11.3	1.4	1.00		0
1	9	12	0	120	11.2	1.3	0.93		-0.03318
1	9	13	0	180	11.1	1.2	0.86		-0.06694
1	9	17	0	420	11.1	1.2	0.86	*	-0.06694
1	9	22	0	720	11.1	1.2	0.86		-0.06694
1	9	41	0	1860	11.0	1.1	0.79		-0.10473
1	10	14	0	3840	11.0	1.1	0.79		-0.10473
1	11	16	0	7560	10.9	1.0	0.71	*	-0.14813

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 9.55E-07 CM/SEC

JOB NO. 853-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-14S	
DRAWN DGB	DATE 12/3/86		
CHECKED DJM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE

A # 20440A-B



DATE= 9/2/86
DEPTH TO WATER= 10.7 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 17.5 FEET

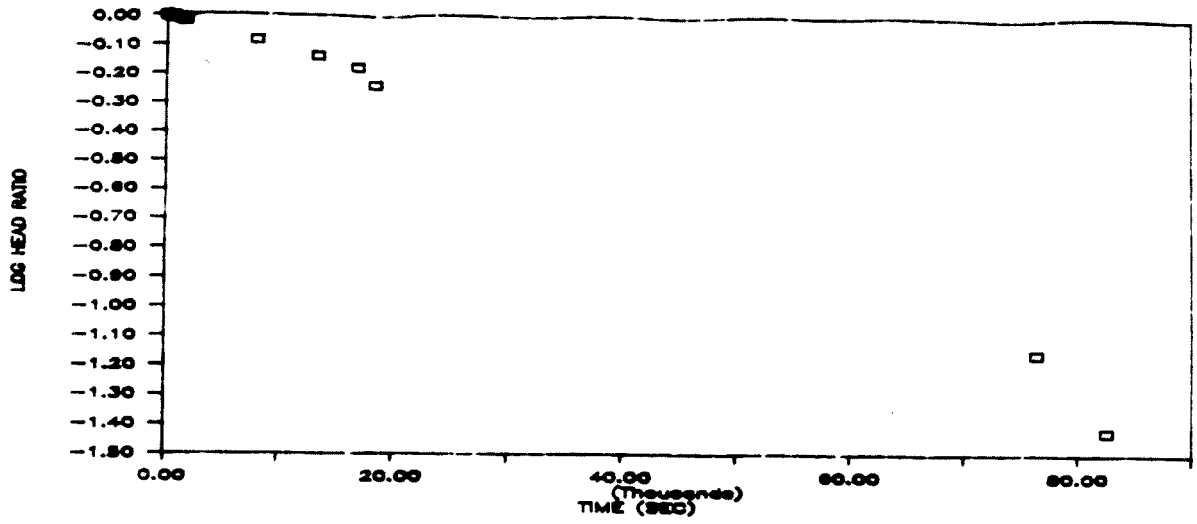
DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	11	14	0	0	15.4	4.7	1.00		0
1	11	15	0	60	15.0	4.3	0.91		-0.03866
1	11	16	0	120	14.6	3.9	0.83		-0.08143
1	11	18	0	240	14.1	3.4	0.72		-0.14061
1	11	19	0	300	13.8	3.1	0.66		-0.18073
1	11	20	0	360	13.6	2.9	0.62		-0.20969
1	11	26	0	720	13.1	2.4	0.51	*	-0.29168
1	11	30	0	960	12.8	2.1	0.45		-0.34987
1	11	36	0	1320	12.8	2.1	0.45		-0.34987
1	11	38	0	1440	12.8	2.1	0.45		-0.34987
1	11	42	0	1680	12.7	2.0	0.43	*	-0.37106
1	11	49	0	2100	12.3	1.6	0.34		-0.46797
1	11	58	0	2640	11.9	1.2	0.26		-0.59291
1	15	6	0	13920	12.1	1.4	0.30		-0.52596
1	16	1	0	17220	12.1	1.4	0.30		-0.52596

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 4.70E-06 CM/SEC

JOB NO. 853-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-15S	
DRAWN DGB	DATE 12/3/86		
CHECKED DJM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE

A = 26440A-B



DATE= 9/2/86
DEPTH TO WATER= 8.2 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 5.0 FEET

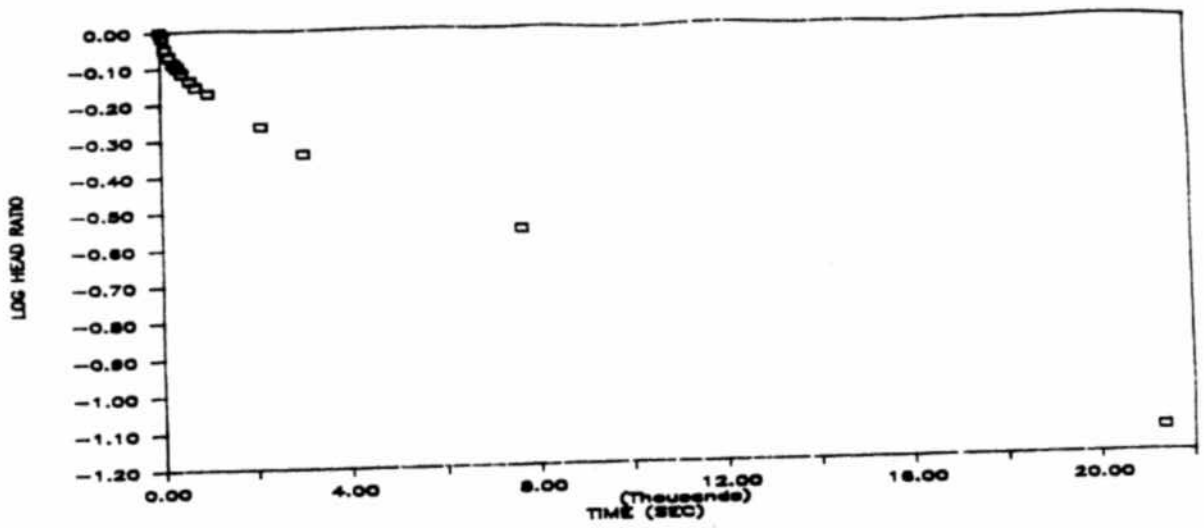
DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	11	22	0	0	24.0	15.8	1.00		0
1	11	23	0	60	23.9	15.7	0.99		-0.00275
1	11	25	0	180	23.8	15.6	0.99		-0.00553
1	11	32	0	600	23.8	15.6	0.99		-0.00553
1	11	34	0	720	23.7	15.5	0.98		-0.00832
1	11	43	0	1260	23.5	15.3	0.97		-0.01396
1	11	46	0	1560	23.3	15.1	0.96		-0.01968
1	11	50	0	1680	23.3	15.1	0.96	*	-0.01968
1	13	35	0	7980	21.1	12.9	0.82		-0.08806
1	15	4	0	13320	19.6	11.4	0.72	*	-0.14175
1	16	2	0	16800	18.7	10.5	0.66		-0.17746
1	16	28	0	18360	17.3	9.1	0.58		-0.23961
2	8	35	0	76380	9.3	1.1	0.07		-1.15726
2	10	18	0	82560	8.8	0.6	0.04		-1.42050

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 1.45E-06 CM/SEC

JOB NO. 853-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS	
DRAWN DGB	DATE 12/3/86	WELL NO. TMW-15D	
CHECKED DTM	DWG. NO. -		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE

A-20440A-B



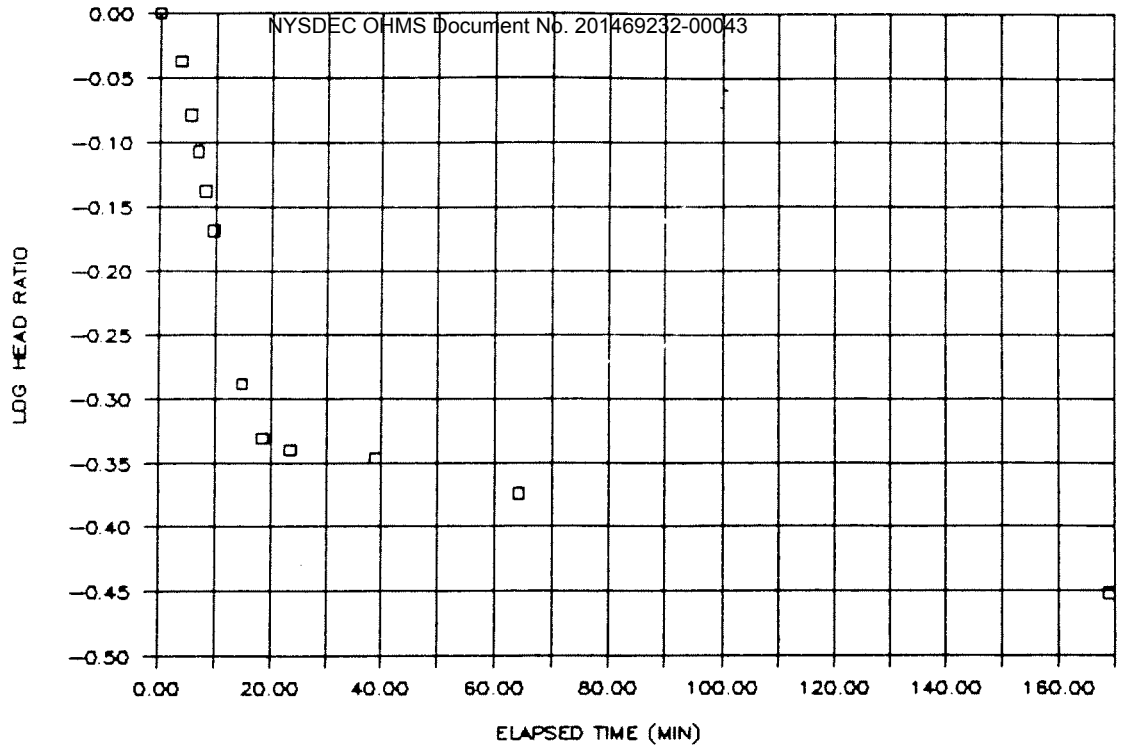
DATE= 09/25/86
DEPTH TO WATER= 5.2 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 12.0 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	9	19	15	0	12.0	6.8	1.00		0
1	9	20	0	45	11.8	6.6	0.96		-0.01626
1	9	21	0	105	11.3	6.1	0.90		-0.04717
1	9	22	30	195	11.0	5.8	0.85		-0.06908
1	9	24	0	285	10.8	5.6	0.82		-0.0881
1	9	25	30	375	10.6	5.4	0.79		-0.10011
1	9	27	0	465	10.4	5.2	0.76		-0.11650
1	9	30	0	645	10.2	5.0	0.73		-0.13790
1	9	32	0	765	10.0	4.7	0.70		-0.15581
1	9	36	30	1035	9.8	4.6	0.67		-0.17449
1	9	55	0	2145	8.9	3.7	0.54		-0.26430
1	10	10	0	3045	8.3	3.1	0.46	*	-0.34114
1	11	27	0	7665	7.1	1.9	0.28		-0.55375
1	15	15	0	21345	5.7	0.5	0.07	*	-1.13353

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 3.27E-06 CM/SEC

JOB NO. 853-3047	SCALE AS SHOWN	RECOVERY TEST RESULTS AND ANALYSIS WELL NO. TMW-18S	
DRAWN DGB	DATE 12/3/86		
CHECKED DJM	DWG. NO.		
Golder Associates		CHEMICAL WASTE MANAGEMENT, INC	FIGURE



DATE OF TEST: 9/13/89
STATIC WATER DEPTH= 7.15 FEET BELOW TOC
STANDPIPE DIAMETER= 2.00 INCHES
SANDPACK DIAMETER= 9.00 INCHES
TOP OF SATURATED SAND= 7.00 FEET BELOW TOC
BOTTOM OF SANDPACK= 20.00 FEET BELOW TOC

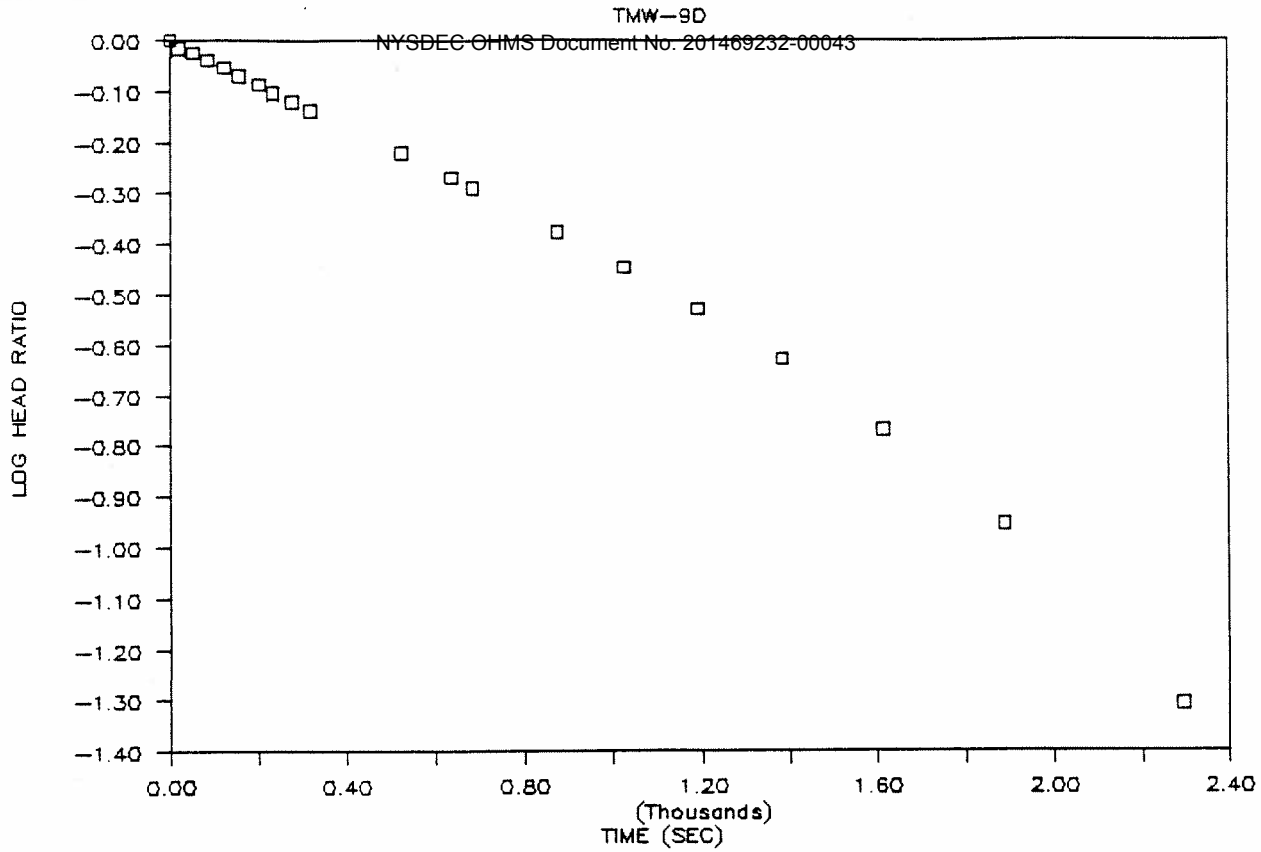
24 HOUR CLOCK HR	MIN	SEC	ELAPSED TIME (MIN)	DEPTH TO WATER (FT TOC)	HEAD (FEET)	HEAD RATIO (H/Ho)	LOG HEAD RATIO
10	46	0	0.00	17.55	-10.40	1.000	0.0000
10	49	40	3.67	16.70	-9.55	0.918	-0.0370
10	51	20	5.33	15.82	-8.67	0.834	-0.0790
10	52	45	6.75	15.27	-8.12	0.781	-0.1075
10	54	0	8.00	14.72	-7.57	0.728	-0.1379
10	55	30	9.50	14.20	-7.05	0.678	-0.1688
11	0	40	14.67	12.50	-5.35	0.514	-0.2887
11	4	15	18.25	12.00	-4.85	0.466 *	-0.3313
11	9	20	23.33	11.90	-4.75	0.457	-0.3403
11	25	0	39.00	11.83	-4.68	0.450	-0.3468
11	50	0	64.00	11.54	-4.39	0.422	-0.3746
13	35	0	169.00	10.83	-3.68	0.354 *	-0.4512

NOTES:

1) * INDICATES THE BEST FIT LINE PASSES THROUGH THESE POINTS WHICH ARE USED TO CALCULATE HYDRAULIC CONDUCTIVITY

K= 8.81E-07 CM/SEC

Golder Associates Atlanta, Georgia		TITLE: RECOVERY TEST RESULTS AND ANALYSIS WELL NO. WS-1S	
CLIENT/PROJECT: CHEMICAL WASTE MANAGEMENT, INC.			
DRAWN: EAH	CHECKED: ALG	REVIEWED: WJM	DATE: 10/12/89
SCALE: AS SHOWN	JOB NO: 853-3606.6	FILE NO: 853-3047	DWG. NO. / REV. NO: 508
FIGURE			



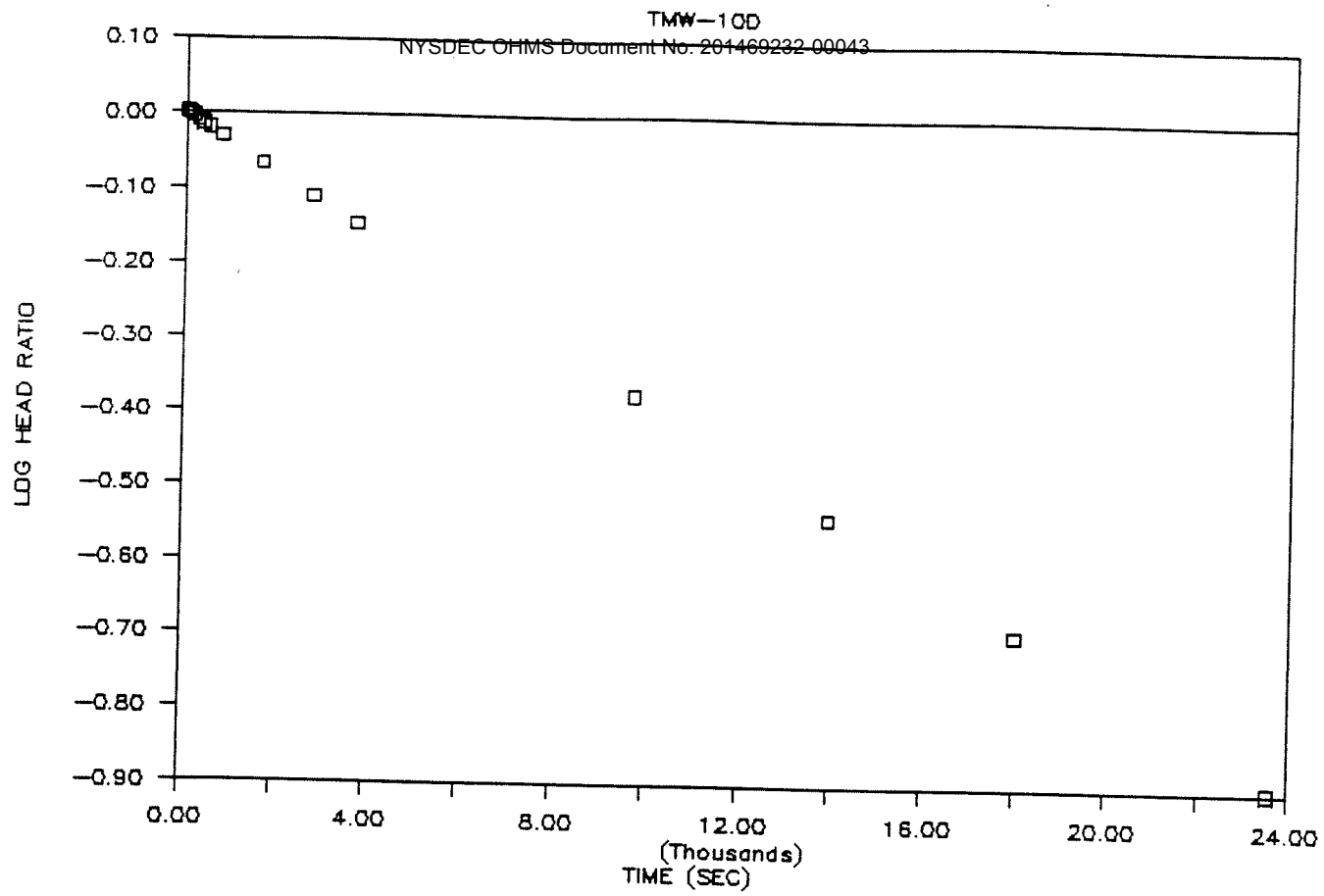
DATE= 6/6/88
DEPTH TO WATER= 13.2 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 15.9 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	11	5	35	0	29.4	16.2	1.00		0
1	11	5	54	19	28.8	15.6	0.96		-0.01639
1	11	6	26	51	28.5	15.3	0.94		-0.02482
1	11	6	59	84	28.0	14.8	0.91		-0.03925
1	11	7	36	121	27.5	14.3	0.88		-0.05417
1	11	8	11	156	27.0	13.8	0.85		-0.06963
1	11	8	56	201	26.5	13.3	0.82		-0.08566
1	11	9	27	232	26.0	12.8	0.79		-0.10230
1	11	10	9	274	25.5	12.3	0.76		-0.11960
1	11	10	52	317	25.0	11.8	0.73		-0.13763
1	11	14	19	524	22.9	9.7	0.60	*	-0.22184
1	11	16	10	635	21.9	8.7	0.54		-0.26999
1	11	16	59	684	21.5	8.3	0.51		-0.29043
1	11	20	10	875	20.0	6.8	0.42		-0.37700
1	11	22	40	1025	19.0	5.8	0.36		-0.44608
1	11	25	26	1191	18.0	4.8	0.30		-0.52827
1	11	28	40	1385	17.0	3.8	0.23		-0.62973
1	11	32	30	1615	16.0	2.8	0.17	*	-0.76703
1	11	37	1	1886	15.0	1.8	0.11		-0.95424
1	11	43	51	2296	14.0	0.8	0.05		-1.30642

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 2.90E-05 CM/SEC

Golder Associates, Atlanta, Georgia	TITLE: RECOVERY TEST RESULTS AND ANLYSIS WELL NO. TMW-9D	
CLIENT/PROJECT: CHEMICAL WASTE MANAGEMENT, INC.	DATE: 2/14/89	SCALE: AS SHOWN / JOB NO.: 853-3056
DRAWN: WDM / CHECKED: WDM / REVIEWED: ALG	FILE NO.: 853-3047	DWG. NO. / REV. NO. / FIGURE



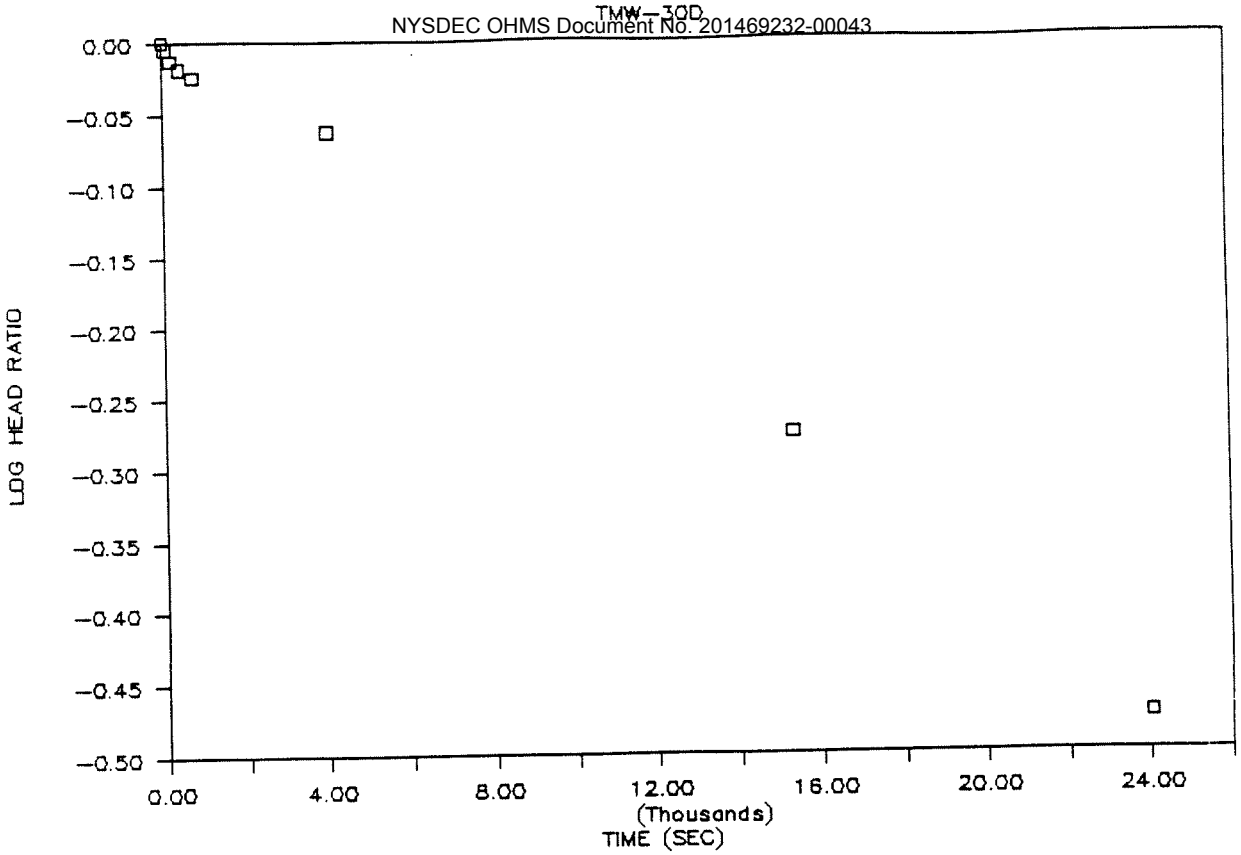
DATE= 6/6/88
DEPTH TO WATER= 16.3 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 15.5 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	10	44	53	0	36.4	20.1	1.00		0
1	10	45	10	17	36.5	20.2	1.00		0.002155
1	10	45	40	47	36.4	20.1	1.00		0
1	10	46	10	77	36.3	20.0	1.00		-0.00216
1	10	47	3	130	36.2	19.9	0.99		-0.00434
1	10	48	54	241	36.0	19.7	0.98		-0.00872
1	10	50	50	357	35.8	19.5	0.97		-0.01427
1	10	53	5	492	35.5	19.2	0.96		-0.01989
1	10	57	31	758	35.0	18.7	0.93		-0.03135
1	11	12	26	1653	33.5	17.2	0.86		-0.06766
1	11	30	35	2742	31.9	15.6	0.78		-0.11007
1	11	46	40	3707	30.7	14.4	0.71	*	-0.14634
1	13	27	16	9743	24.7	8.4	0.42		-0.37685
1	14	37	38	13965	22.1	5.8	0.29		-0.53976
1	15	45	7	18014	20.4	4.1	0.20		-0.69360
1	17	17	49	23576	18.8	2.5	0.13	*	-0.89836

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 2.36E-06 CM/SEC

Golder Associates Atlanta, Georgia	TITLE RECOVERY TEST RESULTS AND ANLYSIS WELL NO. TMW-10D	
CLIENT/PROJECT CHEMICAL WASTE MANAGEMENT, INC.	DATE 2/14/89	SCALE AS SHOWN / JOB NO. 853-3056
DRAWN WDM / CHECKED WDM / REVIEWED AG	FILE NO. 853-3047	DWG. NO. / REV. NO. / FIGURE



DATE= 10/25/88

DEPTH TO WATER= 11.5 FEET
CASING DIAMETER= 2.0 INCHES
SAND DIAMETER= 7.0 INCHES
OPEN INTERVAL= 12.8 FEET

DAY	24-HR CLOCK TIME HOURS	MINUTES	SECONDS	ELAPSED TIME (SEC)	DEPTH TO WATER (FEET)	HEAD (FEET)	HEAD RATIO		LOG HEAD RATIO
1	10	29	30	0	49.4	37.9	1.00		0
1	10	30	42	72	49.0	37.5	0.99		-0.00460
1	10	33	0	210	48.3	36.8	0.97		-0.01279
1	10	36	10	400	47.8	36.3	0.96		-0.01873
1	10	41	35	725	47.4	35.9	0.95	*	-0.02415
1	11	37	0	4050	44.4	32.9	0.87		-0.06210
1	14	45	0	15330	31.6	20.1	0.53		-0.27609
1	17	10	0	24030	24.2	12.7	0.34	*	-0.47346

NOTES:
1) * INDICATES THAT BEST FIT LINE PASSES THROUGH THESE POINTS
2) ALL DEPTHS MEASURED FROM TOP OF CASING

K= 1.39E-06 CM/SEC

Golder Associates, Atlanta, Georgia		TITLE: RECOVERY TEST RESULTS AND ANLYSIS WELL NO. TMW-30D	
CLIENT/PROJECT: CHEMICAL WASTE MANAGEMENT, INC.		DATE: 2/14/89	SCALE: AS SHOWN
JOB NO.: 853-3056			
DRAWN: WDM	CHECKED: WDM	REVIEWED: ALG	FILE NO.: 853-3047
DWG. NO. / REV. NO.	FIGURE		

APPENDIX C-1

INSTRUMENT USE AND CALIBRATION PROCEDURES

Standardizing and Measuring pH

After instrument is turned on, press **std**, select **2-Channel B** and the standardize pH menu appears:

1. Immerse the electrode in a buffer (4, 7, or 10) and stir moderately.
2. Before entering buffers, clear all 'old' buffers if necessary (see section titled Clearing Buffers). Press **1-Enter a buffer**.
3. Follow the prompts on the display.
4. The meter automatically recognizes the buffer, waits for a stable signal, and enters the buffer. The entered buffer appears in the display.
5. Repeat steps 1 through 3 to enter a second and third buffer. With more than one buffer, the meter performs a diagnostic check on the electrode. The electrode is considered good if the slope is between 90 to 105%. If calibration fails due to a bad slope, recalibrate using fresh buffers.
6. Read all three buffers after calibration and record in logbook.

Hints: To achieve better accuracy:

- Standardize at least daily for the most accurate readings.
- Rinse the electrode with DI water between samples and buffers.
- Blot the electrode dry (DO NOT rub or wipe) between samples and buffers.
- Stir all buffers and samples.
- During standardization, allow time for the electrode to stabilize before entering the buffer into the meter.
- Always use fresh buffers.
- Standards are entered in pH units.

Clearing Buffers

Press **std**, select **2-Channel B**, then press **2-Clear buffers**. If all previously entered buffers will be re-entered, it is not necessary to clear buffers. If re-entering only some buffers, all old buffers should be cleared.

Temperature Compensation

The meter automatically compensates for the temperature dependence of the electrode's response when measuring pH. The meter also compensates for buffer's change in pH value with temperature.

Acceptance Criteria for pH Electrode Calibration

The pH read values must be within ±0.1 pH unit of the actual pH of the buffers at the temperature used for calibration. This actual pH is found on a chart on each pH buffer container. If any of the pH buffer values are not within ±0.1 pH of the actual pH, then the meter must be recalibrated and the buffers may have to be changed. Note the recalibration with explanation in the Comments/Maintenance section of the logbook. If necessary, refer to the owner's manual for additional information or trouble-shooting.

Standardizing and Measuring Conductivity

Press **std**, select **1-Channel A** and the standardize conductivity menu appears:

1. Immerse the cell in a standard (447, 1413, 3900, or 8974) and stir moderately. The 1413 standard must be used as well as a second standard that brackets the range of conductivity values of samples being measured that day. The range of values are found in the Well ID Chart.

2. Before entering standards, clear all standards as described in the next section titled Clearing Standards. Press **1-Enter standard** to add or re-enter a standard. Follow the prompts.

3. The meter waits for a stable signal, and enters the standard. The entered standard appears on the display.

4. Repeat steps 1 through 3 to enter the second standard. Standards must be at least two-fold apart in value. On each standard, the meter performs a diagnostic check on the cell. The cell is considered bad if the cell constant is outside 50% and 200% of the nominal value.

5. Read both conductivity standards, 1413 chilled standard and DI water after calibration and record in logbook.

Hints:

- Always immerse, then drain, the conductivity cell several times when transferring to a new standard or sample.

- Tap the cell gently to remove air bubbles.

- Always use fresh standards.
- Standards are entered in conductivity as µS/cm.

Clearing Standards

1. Press **std**, select **1-Channel A**, then press **2-Clear standards**.

Temperature Compensation

The meter automatically compensates for conductivity temperature dependence when a temperature coefficient is used. The range of values for the temperature coefficient is from 0 to 4%/°C.

Acceptance Criteria for Conductivity Electrode Calibration

Specific conductance must be within ±5% of the expected value (i.e. 1413 µS/cm standard calibrated to within ±5% of the expected value). If the conductance is out of this range (1342-1484 µS/cm for 1413 µS/cm standard), the meter must be recalibrated. The solutions may have to be changed as well.

The specific conductance of the DI water must be less than 50 µS/cm at 25°C. Obtain new water, if necessary.

The temperature obtained from the NIST thermometer must be within 1.0°C of the temperature obtained from the Denver Instrument (AP50), (accuracy is ±0.3°C, range is -5° - 105°C). Refer to the owner's manual for additional information or trouble-shooting.

DENVER INSTRUMENT (AP50) PORTABLE METER CALIBRATION TABLE DEFINITIONS

DATE - Date meter was calibrated.

TIME - Time meter was calibrated.

METER NO. - Identifies which meter is being calibrated.

TEMP. METER - The temperature of DI using the field meter in °C.

TEMP. NIST - The temperature of DI water using a thermometer which has been certified by the National Institute of Standards in °C.

pH PROBE - Identifies which pH electrode was used during calibration and subsequent sampling.

pH STD READING - The actual pH readings obtained for pH 4.00, 7.00, and 10.00 buffer solutions after the pH electrode has been calibrated. All readings are in standard pH units.

COND. PROBE - Identifies which conductivity electrode was used during calibration and subsequent sampling.

CONDUCTIVITY READING - The actual conductivity readings obtained for the 1413 KCl standard solution, a Standard 2 which could be one of the following standards: 447, 3900, or 8974 as well as a 1413 chilled standard and DI water measured after calibration. All readings are in µS/cm.

CAL - The initial calibration of the meter at the start of the day.

MID-DAY - A reading of the pH 7.00 buffer solution and the 1413 conductivity standard solution that is taken no later than 4 hours after the meter is first calibrated if the meter will be used again later in the day; otherwise, the mid-day check is not necessary.

EOD - End-of-day reading of pH 7.00 buffer solution and the 1413 conductivity standard solution. These two readings are recorded in the calibration table. They are performed soon after meter usage has been completed for the day.

RECAL - If the initial calibration fails, a recalibration is necessary. The problem should be cross referenced in the Comments/Maintenance Section in the back of this logbook.

INITIALS - Initials of person who performed the calibration.

Denver Advanced Portable Meters

AP25 pH/Ion/FET Meter
AP50 pH/Ion/Conductivity Meter

Denver Instrument Company

300622.1
Rev. A

The following quickly steps you through meter operation. For detailed instructions on each step, refer to the page(s) indicated.

Step	Description	Page
1. Install Batteries	Install four AA alkaline batteries into the rear battery compartment.	1
2. Connect Electrode	Install electrode in the appropriate connector input on top of the meter.	5
3. Turn Meter On	Press **On/Off.**	3
4. Select Channel	Make sure that the channel selected, A (Twist-Lock input) or B (BNC input), matches the electrode connection. Press **channel** and select. Note: If no electrode is connected to channel A Twist-Lock input, only channel B is allowed.	3
5. Set Mode	For the channel A Twist-Lock input, the meter automatically recognizes the electrode connected, and selects the appropriate modes. For channel B BNC input, any allowed mode can be selected. Press **mode** and select.	3
6. Standardize	Immerse the electrode into a buffer or standard and stir. Press **std** (standard-ize) and follow the prompts. Repeat this step to enter buffers or standards.	9 (pH) 13 (ion) 15 (Conductivity)
5. Print	Press **Print** to send the measurement to the internal datalog and out to a printer/computer (if using the Docking Station).	19

Warning: Use of this product in a manner not specified by the manufacturer may impair any safety protection provided by the equipment.

LCD Display

Note: Not all of the following will display at the same time.

Ⓐ **Temperature**: The meter displays the measured temperature when an electrode with ATC or separate temperature probe is attached. Shows **M** when a manually entered temperature is being used.

Ⓑ **Result:** Current measurement.

Ⓒ **BAT:** Indicates that the meter has 10% of battery life remaining (approximately 4 hours), or **AC** indicates that the meter is connected to the Docking or Power Station.

Ⓓ **Channel:** Indicates result is from **A** (Twist-Lock input) or **B** (BNC input).

Ⓔ **Manual Temperature: M** indicates that measurement is using a manually entered temperature in place of the automatic temperature. (See page 13).

Ⓕ **Date:** The meter displays the current date, either in mm/dd/yy or dd/mm/yy format.

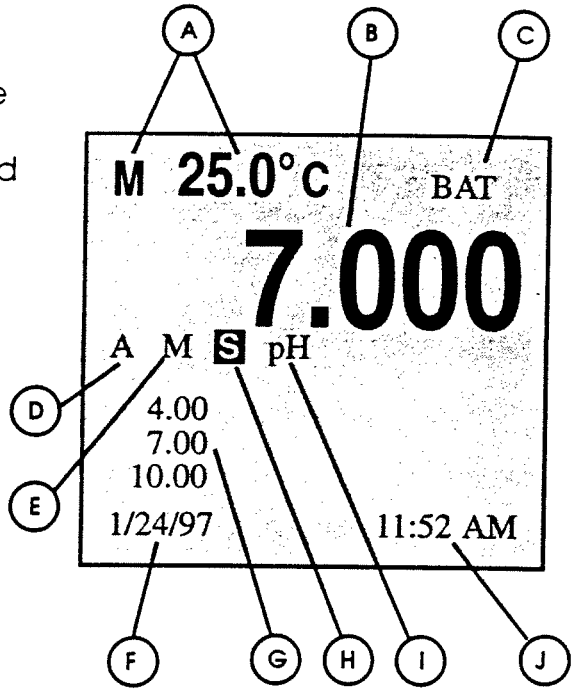
Ⓖ **Buffers/Standards**: Shows individual buffers or standards that have been entered.

Ⓗ **Stability symbols**: **S** indicates the reading is stable, **U** indicates an unstable reading.

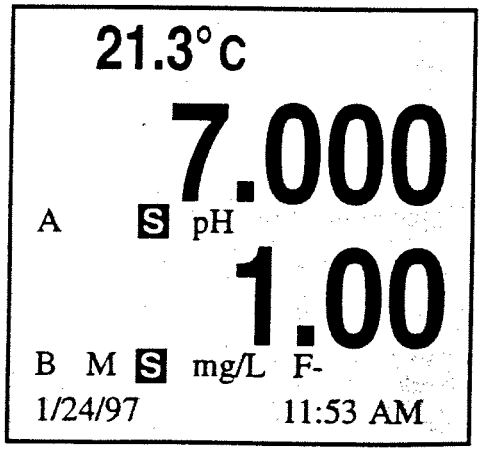
Ⓘ **Mode**: Indicates the meter is in pH, mV, ion, rel mV, conductivity, resistivity, salinity or TDS mode.

Ⓙ **Time:** Displays the current time in either 12 hour AM/PM or 24 hour format.

Single Channel Display

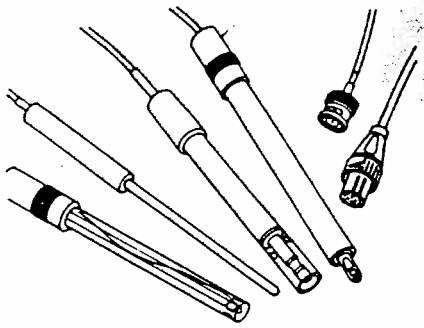


Dual Channel Display



Electrodes

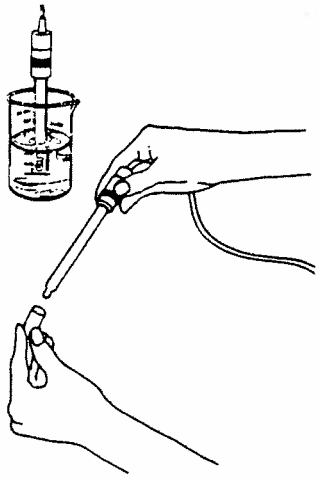
The meter allows you to use a variety of glass membrane ("glass") pH/ATC electrodes, ion selective electrodes, the Field Effect Transistor (FET) Solid-State pH/ATC electrode (AP25 only), temperature (ATC) probes, Conductivity/ATC cells (AP50 only), combination electrodes using a BNC connector, or separate electrode pairs with BNC connector and reference pin. The glass pH, FET pH and conductivity cells with Twist-Lock connector are automatically detected and identified by the meter.



To measure	Use channel (connector)		
pH	**A** (Twist-Lock)	*or*	**B** (BNC)
ORP (mV)			**B** (BNC)
FET pH	**A** (Twist-Lock)		
ISE			**B** (BNC & Reference)
Conductivity	**A** (Twist-Lock)		
pH & ISE	**A** (Twist-Lock pH)	*and*	**B** (BNC ISE)
pH & Conductivity	**A** (Twist-Lock Cond.)	*and*	**B** (BNC pH)

Preparing pH and Ion Selective Electrodes

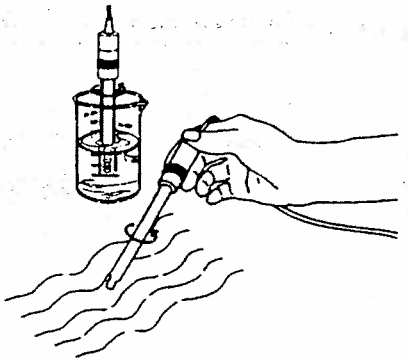
Remove the protective end cover or the soaker bottle from the electrode. Before first using your pH electrode or whenever the electrode is dry, soak it several hours in an electrode filling or storage solution (4 Molar KCl solution) or in a buffer for pH electrodes. Store and condition ISE's in the recommended solutions.



Preparing Conductivity Cells

Remove the protective end cover from the cell. Rinse the cell with deionized or demineralized water.

Using and Storing Electrodes



pH Electrodes

Provide moderate stirring for faster electrode response.

Rinse the electrode between each measurement with a portion of the next sample or buffer to be measured, or with deionized or distilled water.

Keep glass electrodes wet when not being used by moistening the cotton in their end covers with electrode filling solution and storing them with end covers on, or by placing in their storage vials.

Keeping glass electrodes "wet" will improve their performance. In the lab, store electrodes in electrode filling solution or storage solution (4M KCl). For electrodes used in field applications, occasionally leave them in solutions for several hours.

Solid-State FET Electrode

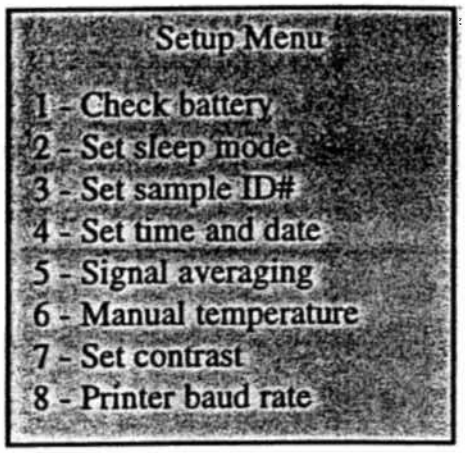
The model AP25 allows use of both standard glass pH/ATC and Solid-State FET (Field Effect Transistor) pH/ATC electrodes. The meter can store a calibration for both types of electrodes. Plug the FET electrode into the Twist-lock input. Allow the FET about 2 minutes to warm up and stabilize when first connected. The FET electrode can be stored dry or in electrode storage solution. If the FET electrode remains connected to the meter (and batteries are in the meter), further warm up is not necessary.

Setup Menu

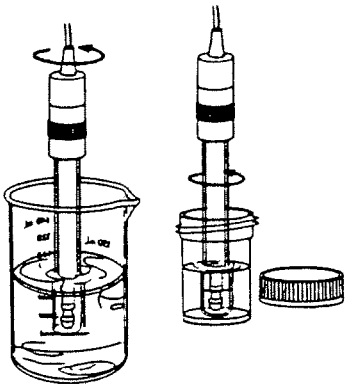
Press **setup** to access the menu options.

1. **Check battery** - Indicates the battery power remaining.
2. **Set sleep mode** - Enter the time in minutes before the meter automatically turns itself off ("sleeps") if no keystrokes have been pressed. Enter a value of 0 to keep the meter on continuously. The maximum time allowed is 999 minutes.
3. **Set sample ID#** - Select a starting value for the sample ID number. Sample measurements will then be identified by sequential sample ID numbers. Each time the **print** key is pressed the sample number will be incremented.
4. **Set time and date** - Enter time and format, and date and format.
5. **Signal averaging** - Set the meter to very slow (10 readings), slow (8), medium (6), fast (4) and very fast (2). The meter places each new reading into a moving window, from which it calculates the average (displayed) and standard deviation (for stability determination).
6. **Manual temperature** - Enter a temperature to be used in the absence of an ATC probe or with manual temperature override.
7. **Set contrast** - Adjust the display contrast.
8. **Printer baud rate** - Select the baud rate for the RS232 input/output.

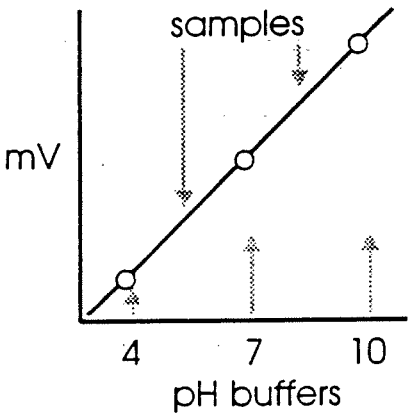
Pressing a number key causes that menu selection to be chosen or that operation to be executed.



Standardizing and Measuring pH



1. Immerse the electrode in a buffer and stir moderately. The meter displays the current pH measurement.
2. Press **std,** then press **1-Enter a buffer.**
3. Follow the prompts on the display.
4. The meter automatically recognizes the buffer, waits for a stable signal, and enters the buffer. The entered buffer appears in the display.
5. Alternatively, if the signal is not stable, you can press **enter** when the reading stabilizes according to your tolerance criteria. The meter then enters the buffer.
6. Repeat steps 1 through 3 to enter a second, third, fourth or fifth buffer. With more than one buffer the meter performs a diagnostic check on the electrode. The electrode is considered good if the slope is between 90 to 105%. If a sixth buffer is entered, the buffer farthest away is replaced by the new buffer.



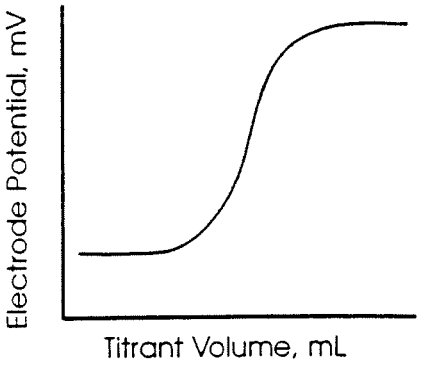
Hints: To achieve better accuracy:

- Standardize using at least two buffers, bracketing the expected pH of your samples.
- Standardize at least daily for the most accurate readings.
- Rinse the electrode with DI water between samples and buffers.
- Blot the electrode dry (DO NOT rub or wipe) between samples and buffers.
- Stir all buffers and samples.
- During standardization, allow time for

Millivolt measurements are used to measure ORP (oxidation-reduction potential) or redox potential, to check performance of pH or Ion Selective Electrodes, and for redox titrations.

The meter will measure millivolts (mV) by selecting mV mode using the **mode** key. Relative mV can be measured by entering a mV offset or using a mV value as the relative mV reference point.

Redox Titration



Relative mV Standardization Menu

In mV mode, press **std** and the standardize mV menu appears:

Standardize mV Channel A
1 - Auto-zero relative mV
2 - Enter manual mV offset
3 - Clear relative mV mode
4 - Resolution

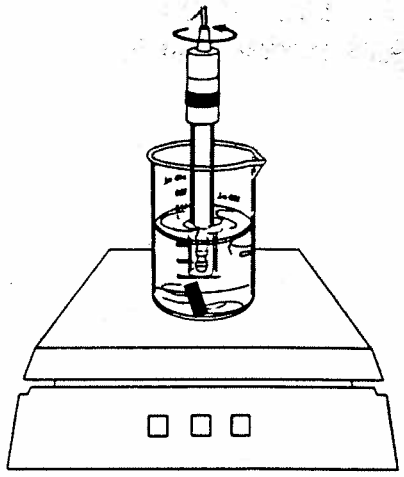
1. **Auto-zero relative mV** - Sets the relative mV offset equal to the negative of the current mV reading. The current mV becomes 0.0 relative mV.
2. **Enter manual mV offset** - Allows you to enter in any mV offset.
3. **Clear relative mV mode** - This clears any offset that has been entered, returning the meter to absolute mV mode.
4. **Resolution** - Allows mV readings to be set to 1 or 0.1 millivolt.

Clearing Relative mV Mode

Press **std**, then press **3 - Clear relative mV mode** to clear offset and return the meter to absolute mV mode.

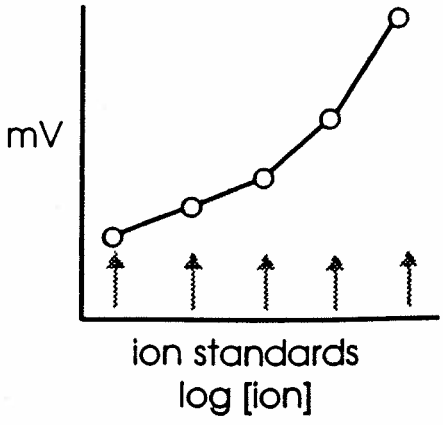
Standardizing and Measuring Ion

1. Add the appropriate Ionic Strength Adjuster (ISA) solution to the standard.
2. Immerse the electrode(s) in the solution and stir continuously.
3. Press **std** and select **1-Enter a standard** to add a standard.
4. Follow the prompts.
5. The meter waits for a stable signal and enters the standard. The entered standard appears in the display.
6. Alternatively, if the signal is not stable, you can press **enter** when the reading stabilizes according to your tolerance criteria. The meter then enters the standard.
7. Repeat steps 1 through 6 to enter a second, third, fourth or fifth standard. With more than one standard, the meter performs a diagnostic check on the electrode.



Helpful Hints:

- Provide stirring.
- Allow the electrode time to reach a stable reading before entering the standard into the meter.
- To achieve better accuracy, standardize using at least two standards, bracketing the expected range of your samples.
- Standardize from low to high concentrations.
- Always use fresh standards.

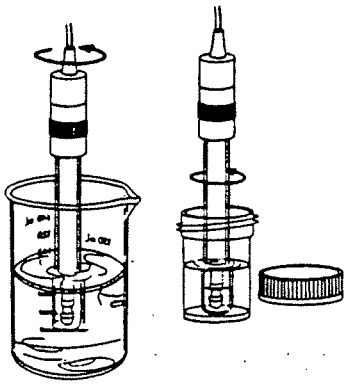


5. **Enter temperature coefficient** - Allows you to select the reference temperature and the temperature coefficient (used with conductivity). The default setting is 1.90%/°C correction to 25°C.
6. **Resolution** - Allows the readings to be set to 1, 2, 3 or 4 digits.
7. **Autoranging (Conductivity/ Resistivity modes)**- Select unit autoranging (µS to mS, Ω to kΩ to MΩ) or fixed units (µS, KΩ).

   or

7. **Solids factor (TDS mode)** - enters the solids factor used for TDS. The default is 0.5.

Standardizing and Measuring Conductivity, Salinity, Resistivity or TDS



1. Immerse the cell in a standard and stir moderately. The meter displays the current measurement.
2. Press **std**, then press **1 - enter standard** to add or re-enter a standard. Follow the prompts.
3. The meter waits for a stable signal, and enters the standard. The entered standard appears in the display.
4. Alternatively, if the signal is not stable, you can press **enter** when the reading stabilizes according to your tolerance criteria to enter the standard.
5. Repeat steps 1 through 3 to enter a second, third, fourth or fifth standard. Standards must be at least two-fold apart in value. On each standard, the meter performs a diagnostic check on the cell. The cell is consid-

Determining Temperature Coefficients

The temperature coefficient of a particular sample can be determined and entered to allow temperature correction. A typical temperature coefficient for a simple salt solution is 1.9%/°C.

To determine temperature coefficient:

- Set reference temperature to 25°C and temperature coefficient to 0.00%/°C.
- Record the conductivity value and temperature of the solution (temperature must be different than the reference temperature).
- Heat or cool solution to the reference temperature.
- Record the conductivity of the solutions at the reference temperature.
- Solve the following equation for the temperature coefficient TC.

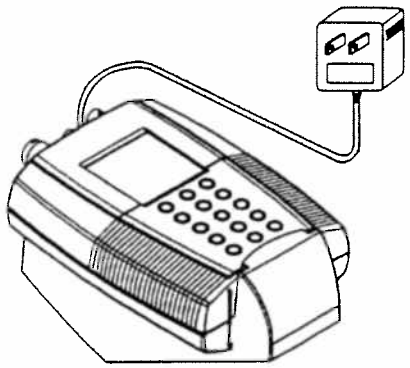
$$TC = \left[\frac{\text{Conductivity at T}}{\text{Conductivity at } T_{ref}} - 1\right]\left[\frac{100}{T - T_{ref}}\right]$$

Typical Temperature Corrections for 15°C to 25°C

NaCl	Concentration (M)	TC (%/°C)
	0.5	1.90
	0.1	1.96
	0.01	2.01
	0.001	2.02
KCl		
	1	1.75
	0.1	1.85
	0.01	1.90
	0.001	1.96

Appendix A: Power Station and Docking Station

The optional Power Station provides a laboratory bench stand and external AC power. The optional Docking Station provides external AC power and RS-232 interface to a printer or computer/terminal.



Installing Meter in the Station

1. Connect the power supply to the Power or Docking Station and to an AC outlet.
2. Place the meter in the station.
3. The meter displays **AC** to indicate external AC power is being used. The Auto-Off feature is suspended while the meter is in the station.

Using with a Printer or Computer/Terminal

1. Connect your serial cable from the Docking Station to the serial port on your printer or computer/terminal. See the next page for wiring requirements.
2. Set printer as follows:
   - baud rate must match the meter
   - 8 data bits
   - no parity
   - 1 stop bit
3. Pressing **print** causes the current reading to be printed.

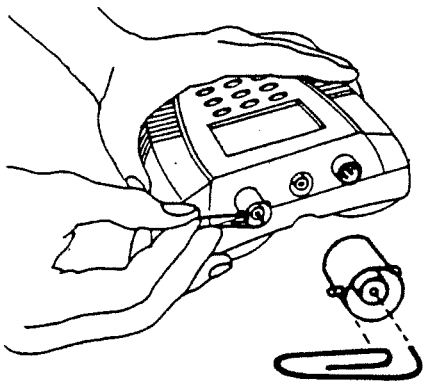
Note: During standardization, the meter automatically prints standardization data, including the value, temperature, slope and the time and date.

```
Add standard:    7.ØØ3 pH    B    25.ØC  2/17/97  11:47 AM
Add standard:    4.ØØ9 pH    B    25.ØC  2/17/97  11:47 AM
Add standard:   1Ø.ØØØ pH    B    25.ØC  2/17/97  11:47 AM
        4.ØØ9 mS/cm      2/17/97  11:47 AM   25.ØC   99.8
        7.ØØ3 mS/cm      2/17/97  11:47 AM   25.ØC   99.7
      1Ø.ØØØ mS/cm      2/17/97  11:47 AM   25.ØC
Sample:  1S  1Ø.ØØ1 pH     B    25.Ø M  2/17/97  11:48 AM


Add standard:  1.ØØ ppm   Cl-  B  25.ØC  2/17/97  11:48 AM
Add standard:  1ØØØ ppm   Cl-  B  25.ØC  2/17/97  11:49 AM
Add standard:  1ØØ ppm    Cl-  B  25.ØC  2/17/97  11:49 AM
Add standard:  1Ø.Ø ppm   Cl-  B  25.ØC  2/17/97  11:49 AM
Sample:  2 S  1Ø.Ø ppm    Cl-  B  25.ØCM  2/17/97  11:50 AM


Clear standards:  cond A
Add standard:  1ØØ uS/cm    A    25.ØC  2/17/97  11:52 AM
Sample:  3 S  1ØØ uS/cm     A    25.ØC M  2/17/97  11:52 AM


Sample:  4 S  1Ø.Ø kOhm CM  A    25.ØC M  2/17/97  11:52 AM
Sample:  5 U  1.ØØ kOhm CM  A    25.ØC M  2/17/97  11:52 AM
```

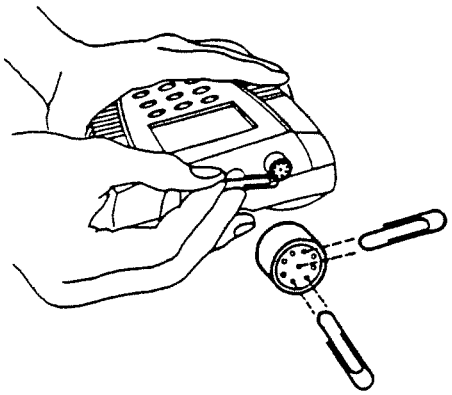
Testing the Electrode and Meter

To test the pH electrode, place it in a fresh pH 7 buffer. Select the correct channel for the electrode. Press **mode** and select **mV**. Verify that the meter is in absolute mV mode (display shows mV, not rel mV) and note the mV reading. Repeat for either a pH 4 or pH 10 buffer. If the electrode potential is within the limits shown, it is measuring correctly.

pH 7 0 ± 30 mV
pH 4 159 to 186 mV higher than pH 7 reading
pH 10 159 to 186 mV lower than pH 7 reading



To test the meter for correct operation with a **BNC electrode**, short the BNC input connector using a bent paper clip as shown. Press **mode** and select mV mode. If the meter reads 0 ± 0.1 mV*, it is measuring correctly.



To test the meter for correct operation with a **pH Twist-lock electrode**, short the Twist-lock input connector using two paper clips as shown. Each paper clip must touch two adjacent pins inside the connector. Press **mode** and select mV mode. If the meter reads 0 ± 0.1 mV*, it is measuring correctly.

* **Note**: Meter accuracy is ±0.1 mV at calibration temperature, not including long term drift and a temperature error. The zero and slope temperature coefficients of the meter over the range of 15 to 40°C specify ±4 mV at full scale (worst case). The long term drift will not exceed 0.1 mV per month.

- Insufficient or incorrect filling solution in reference electrode.
- Loose connector or cable.
- Defective meter.

The ion standard (mV signal) is too close to another standard.

- The standards are made too close together (should be 10 fold apart).
- Bad standards.
- There is no ISA adjuster in the standards.
- Defective ISE or reference electrode.
- Insufficient or incorrect filling solution in reference electrode.

Conductivity out of range.

Resistivity out of range.

Salinity or TDS out of range.

- Sample too high in conductivity for meter range with cell constant used.
- Defective probe.
- Defective meter.

Temperature out of range.

- Defective ATC probe.
- Temperature manually entered outside of -5 to 105°C.
- Defective meter.

The meter has lost calibration coefficients.

- Battery backed memory has been corrupted. (The memory does not use the AA batteries for backup. There is a separate lithium battery inside the meter. It is ***not*** user serviceable).
- Factory service is required to re-calibrate the meter for accurate mV, temperature, or conductivity measurements. pH, ion or conductivity measurements are still accurate after standardization with buffers or standards.

Appendix D: Ion Selective Electrode Theory

The measurement of ions plays an important role in water quality, industry, research and environmental monitoring. Ion-selective Electrodes (ISE's) respond, more or less exclusively, to a specific type of ion in solution. The particular ion to which an ISE responds depends on the chemical makeup of its sensing membrane. ISE's operate according to a form of the Nerst equation:

$$E = E_o + (2.303\ RT/F) \log a$$

Where:

- E = measured electrode potential
- E_o = standard potential of the system (constant)
- R = gas constant
- F = Faraday's constant
- T = absolute temperature
- a = activity of the ion interest in the solution

Isopotential Point

The Isopotential point is the potential of an electrode system which does not change with temperature. Typical pH electrodes have isopotential points near zero mV (which is the default setting for the meter). For high accuracy pH measurements, or for ion measurements where the sample temperature may widely vary, the isopotential of the pH or ion electrode may be experimentally determined and entered into the meter.

- Prepare a set of buffers or ion standards spanning the linear range of the electrode. Place the buffers or standards in a temperature bath at known temperature.
- Place the meter into mV mode.
- Measure and record mV readings of each pH or concentration, and repeat at several temperatures.
- Using graph paper, plot the log of concentration or pH value versus mV reading.
- Draw lines connecting the points at each temperature.

Where the lines intersect is the Isopotential point.

Appendix G: Meter Specifications

pH

Range:	-2.000 to 20.000
Resolution:	0.1/0.01/0.001
Accuracy:	±0.002

mV

Range:	±1,200
Resolution:	1/0.1
Accuracy:	±0.1mV over ±400mV: ±0.2mV over ±1200mV
Zero temperature coefficient:	0.01 mV/°C max.
Scale temperature coefficient:	85ppm/°C max.

Ion

Range:	1.00E-9 to 9.99E9
Resolution:	1, 2, or 3 significant figures
Accuracy:	0.17n%; where n equals electrons exchanged in the electrode reaction

Conductivity

Conductivity	0.01 – 300,000 µS/cm*
Practical Salinity:	0 to 42 ppt*
NaCl equivalents:	0 to 70 ppt*
Resistivity:	33 to 100 megohms*
TDS:	0.005 – 300,000 ppt*
Resolution:	1, 2, 3 or 4 significant figures
Accuracy:	±0.5% of reading ±0.01µS/cm
Temperature coefficient:	0.04%/°C

with cell constant 1.0 cm^{-1}

Range 5:	30,000 to 3,000 µS/cm
Range 4:	3,000 to 300 µS/cm
Range 3:	300 to 30 µS/cm
Range 2:	30 to 3 µS/cm
Range 1:	3 to 0.3 µS/cm

Temperature

Range	-5° – 105°C
Resolution	0.1°C
Accuracy	±0.3°C

* dependent on cell constant

CE

Declaration of Conformity

Denver Instrument Company
declares that the following products:

Portable Electrochemistry Meters, Models AP25 and AP50

conform to the European Union Council Directives and other standards listed below:

73/23/EEC, "Low Voltage Directive"
EN 61010-1, "Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1. General requirements".

89/336/EEC, "Electromagnetic Compatibility Directive"
EN 55011, Group 1, Class A, "Limits and methods of measurement of radio disturbance characteristics of industrial, scientific, and medical (ISM) radio-frequency equipment".

EN 50082-1, "Electromagnetic compatibility–Generic immunity standard; Part 1: Residential, commercial, and light industry".

Further information may be obtained from the manufacturer, or from the manufacturer's European representative:

Denver Instrument Company

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1-800-321-1135 • (303) 431-7255 • Fax (303) 423-4831

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Downham Market, Norfolk PE38 9SW • England
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Denver Instrument Company Asia, Ltd.
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Sheung Shui, New Territories • Hong Kong
Tel: (852) 2671 3902 • Fax: (852) 2671 5311

Appendix C-2

Recommended Sample Preservation and Holding Times

Table 4-1 Volatile Organics (reference 14A)

TABLE 4-1
RECOMMENDED SAMPLE CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES[a]
(Note: Footnotes are located on the last page of the table.)

VOLATILE ORGANICS

Sample Matrix	Container[1]	Preservative[2]	Holding Time[3]
Concentrated waste samples	Method 5035: See the method. Method 5021: See the method. Methods 5031 and 5032: See the methods. Use PTFE-lined lids for all procedures.	Cool to ≤6 °C.	14 days
Aqueous samples with no residual chlorine present	Methods 5021, 5030, 5031, and 5032: 2 x 40-mL vials with PTFE-lined septum caps	Cool to ≤6 °C and adjust pH to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
		If carbonaceous materials are present, or if MTBE and other fuel oxygenate ethers are present and a high temperature sample preparative method is to be used, do not acid preserve the samples.	*7 days*
		If compounds that readily degrade in acidified water (e.g., 2-chloroethyl vinyl ether[b]) are analytes of interest, collect a second set of samples without acid preservatives and analyze as soon as possible.	*7 days*

TABLE 4-1 (continued)
RECOMMENDED SAMPLE CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES[a]

VOLATILE ORGANICS (continued)

Sample Matrix	Container[1]	Preservative[2]	Holding Time[3]
Aqueous samples WITH residual chlorine present	Methods 5021, 5030, 5031, and 5032: 2 x 40-mL vials with PTFE-lined septum caps	Collect sample in a 125-mL container which has been pre-preserved with 4 drops of 10% sodium thiosulfate solution. Gently swirl to mix sample and transfer to a 40-mL VOA vial. Cool to ≤6 °C and adjust pH to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$.	14 days
		If carbonaceous materials are present, or if MTBE and other fuel oxygenate ethers are present and a high temperature sample preparative method is to be used, do not acid preserve the samples.	*7 days*
		If compounds that readily degrade in acidified water (e.g., 2-chloroethyl vinyl ether[b]) are analytes of interest, collect a second set of samples without acid preservatives and analyze as soon as possible.	*7 days*
Acrolein and Acrylonitrile Aqueous samples	Methods 5021, 5030, 5031, and 5032: 2 x 40-ml vials with PTFE-lined septum caps	Adjust to pH 4-5. Cool to ≤6 °C. These compounds are highly reactive and should be analyzed as soon as possible.	7 days
Solid samples (e.g. soils, sediments, sludges, ash)	Method 5035: See the method. Method 5021: See the method. Methods 5031 and 5032: See the methods.	See the individual methods.	14 days
		If compounds that may be reactive in acidified soils (e.g., vinyl chloride, styrene, 2-chloroethyl vinyl ether) are analytes of interest, collect a second set of samples without acid preservatives and analyze as soon as possible.	7 days

TABLE 4-1 (continued)
RECOMMENDED SAMPLE CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES[a]

POLYCHLORINATED BIPHENYLS, POLYCHLORINATED DIBENZO-*p*-DIOXINS, AND POLYCHLORINATED DIBENZOFURANS

Sample Matrix	Container[1]	Preservative[2]	Holding Time[3]
Concentrated waste samples	125-mL wide-mouth glass with PTFE-lined lid	None	None
Aqueous samples with no residual chlorine present	4 x 1-L amber glass container with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis.	Cool to ≤6 °C.	None
Aqueous samples WITH residual chlorine present	4 x 1-L amber glass container with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis.	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Addition of sodium thiosulfate solution to sample container may be performed in the laboratory prior to field use. Cool to ≤6 °C	None
Solid samples (e.g. soils, sediments, sludges, ash)	250-mL wide-mouth glass container with PTFE-lined lid.	Cool to ≤6 °C.	None

[a] The information presented in this table does not represent EPA requirements, but rather it is intended solely as guidance. Selection of containers, preservation techniques and applicable holding times should be based on the stated project-specific data quality objectives.
[b] See References 1-10 for the preservation and holding times studies for volatile organics and the January and February 2012 RCRA Organic Workgroup discussion for preservation and holding times for vinyl chloride, styrene and 2-chloroethyl vinyl ether in aqueous samples.
[1] PTFE lined caps are acceptable for all recommended container types. Additional replicate sample containers should also be collected to perform all necessary laboratory quality assurance / quality control audits (*e.g.*, duplicate, matrix spike / matrix spike duplicate QC samples).
[2] The exact sample, extract, and standard storage temperature should be based on project-specific requirements and/or manufacturer's recommendations for commercially available standards. Furthermore, alternative storage temperatures may be appropriate based on demonstrated analyte stability in a given matrix, provided the stated data quality objectives for a project-specific application are still attainable.
[3] A longer holding time may be appropriate if it can be demonstrated that the reported analyte concentrations are not adversely affected from preservation, storage and analyses performed outside the recommended holding times.

TABLE II.—REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES

Parameter No./name	Container [1]	Preservation [2,3]	Maximum holding time [4]
Table IA—Bacterial Tests:			
1–5. Coliform, total, fecal, and *E. coli*	PA, G	Cool, <10 °C, 0.0008% $Na_2S_2O_3$ [5]	6 hours.[22,23]
6. Fecal streptococci	PA, G	Cool, <10 °C, 0.0008% $Na_2S_2O_3$ [5]	6 hours.[22]
7. Enterococci	PA, G	Cool, <10 °C, 0.0008% $Na_2S_2O_3$ [5]	6 hours.[22]
8. Salmonella	PA, G	Cool, <10 °C, 0.0008% $Na_2S_2O_3$ [5]	6 hours.[22]
Table IA—Aquatic Toxicity Tests:			
9–11. Toxicity, acute and chronic	P, FP, G	Cool, ≤6 °C [16]	36 hours.
Table IB—Inorganic Tests:			
1. Acidity	P, FP, G	Cool, ≤6 °C [18]	14 days.
2. Alkalinity	P, FP, G	Cool, ≤6 °C [18]	14 days.
4. Ammonia	P, FP, G	Cool, ≤6 °C [18], H_2SO_4 to pH<2	28 days.
9. Biochemical oxygen demand	P, FP, G	Cool, ≤6 °C [18]	48 hours.
10. Boron	P, FP, or Quartz	HNO_3 to pH<2	6 months.
11. Bromide	P, FP, G	None required	28 days.
14. Biochemical oxygen demand, carbonaceous.	P, FP G	Cool, ≤6 °C [18]	48 hours.
15. Chemical oxygen demand	P, FP, G	Cool, ≤6 °C [19], H_2SO_4 to pH<2	28 days.
16. Chloride	P, FP, G	None required	28 days.
17. Chlorine, total residual	P, G	None required	Analyze within 15 minutes.
21. Color	P, FP, G	Cool, ≤6 °C [18]	48 hours.
23–24. Cyanide, total or available (or CATC)	P, FP, G	Cool, ≤6 °C [18], NaOH to pH>12 [6], reducing agent [5].	14 days.
25. Fluoride	P	None required	28 days.
27. Hardness	P, FP, G	HNO_3 or H_2SO_4 to pH<2	6 months.
28. Hydrogen ion (pH)	P, FP, G	None required	Analyze within 15 minutes.
31, 43. Kjeldahl and organic N	P, FP, G	Cool, ≤6 °C [18], H_2SO_4 to pH<2	28 days.
Table IB—Metals: [7]			
18. Chromium VI	P, FP, G	Cool, ≤6 °C [18], pH = 9.3–9.7 [20]	28 days.
35. Mercury (CVAA)	P, FP, G	HNO_3 to pH<2	28 days.
35. Mercury (CVAFS)	FP, G; and FP-lined cap [17].	5 mL/L 12N HCl or 5 mL/L BrCl [17]	90 days.[17]
3, 5–8, 12, 13, 19, 20, 22, 26, 29, 30, 32–34, 36, 37, 45, 47, 51, 52, 58–60, 62, 63, 70–72, 74, 75. Metals, except boron, chromium VI, and mercury.	P, FP, G	HNO_3 to pH<2, or at least 24 hours prior to analysis [19].	6 months.
38. Nitrate	P, FP, G	Cool, ≤6 °C [18]	48 hours.
39. Nitrate-nitrite	P, FP, G	Cool, ≤6 °C [18], H_2SO_4 to pH<2	28 days.
40. Nitrite	P, FP, G	Cool, ≤6 °C [18]	48 hours.
41. Oil and grease	G	Cool to ≤6 °C [18], HCl or H_2SO_4 to pH<2.	28 days.
42. Organic Carbon	P, FP, G	Cool to ≤6 °C [18], HCl, H_2SO_4, or H_3PO_4 to pH<2.	28 days.
44. Orthophosphate	P, FP, G	Cool, ≤6 °C [18]	Filter within 15 minutes; Analyze within 48 hours.
46. Oxygen, Dissolved Probe	G, Bottle and top	None required	Analyze within 15 minutes.
47. Winkler	G, Bottle and top	Fix on site and store in dark	8 hours.
48. Phenols	G	Cool, ≤6 °C [18], H_2SO_4 to pH<2	28 days.
49. Phosphorous (elemental)	G	Cool, ≤6 °C [18]	48 hours.
50. Phosphorous, total	P, FP, G	Cool, ≤6 °C [18], H_2SO_4 to pH<2	28 days.
53. Residue, total	P, FP, G	Cool, ≤6 °C [18]	7 days.
54. Residue, Filterable	P, FP, G	Cool, ≤6 °C [18]	7 days.
55. Residue, Nonfilterable (TSS)	P, FP, G	Cool, ≤6 °C [18]	7 days.
56. Residue, Settleable	P, FP, G	Cool, ≤6 °C [18]	48 hours.
57. Residue, Volatile	P, FP, G	Cool, ≤6 °C [18]	7 days.
61. Silica	P or Quartz	Cool, ≤6 °C [18]	28 days.
64. Specific conductance	P, FP, G	Cool, ≤6 °C [18]	28 days.
65. Sulfate	P, FP, G	Cool, ≤6 °C [18]	28 days.
66. Sulfide	P, FP, G	Cool, ≤6 °C [18], add zinc acetate plus sodium hydroxide to pH>9.	7 days.
67. Sulfite	P, FP, G	None required	Analyze within 15 minutes.
68. Surfactants	P, FP, G	Cool, ≤6 °C [18]	48 hours.
69. Temperature	P, FP, G	None required	Analyze.
73. Turbidity	P, FP, G	Cool, ≤6 °C [18]	48 hours.
Table IC—Organic Tests [8]			

TABLE II.—REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES—Continued

Parameter No./name	Container [1]	Preservation [2,3]	Maximum holding time [4]
13, 18–20, 22, 24–28, 34–37, 39–43, 45–47, 56, 76, 104, 105, 108–111, 113. Purgeable Halocarbons.	G, FP-lined septum	Cool, ≤6 °C [18], 0.008% $Na_2S_2O_3$ [5]	14 days.
6, 57, 106. Purgeable aromatic hydrocarbons	G, FP-lined septum	Cool, ≤6 °C [18], 0.008% $Na_2S_2O_3$ [5], HCl to pH 2 [9].	14 days.[9]
3, 4. Acrolein and acrylonitrile	G, FP-lined septum	Cool, ≤6 °C [18], 0.008% $Na_2S_2O_3$ [5], pH to 4–5 [10].	14 days.[10]
23, 30, 44, 49, 53, 77, 80, 81, 98, 100, 112. Phenols [11].	G, FP-lined cap	Cool, ≤6 °C [18], 0.008% $Na_2S_2O_3$ [5]	7 days until extraction, 40 days after extraction.
7, 38. Benzidines [11, 12]	G, FP-lined cap	Cool, ≤6 C [18], 0.008% $Na_2S_2O_3$ [5]	7 days until extraction.[13]
14, 17, 48, 50–52. Phthalate esters [11]	G, FP-lined cap	Cool, ≤6 °C [18]	7 days until extraction, 40 days after extraction.
82–84. Nitrosamines [11, 14]	G, FP-lined cap	Cool, ≤6 °C [18], store in dark, 0.008% $Na_2S_2O_3$ [5].	7 days until extraction, 40 days after extraction.
88–94. PCBs [11]	G, FP-lined cap	Cool, ≤6 °C [18]	1 year until extraction, 1 year after extraction.
54, 55, 75, 79. Nitroaromatics and isophorone [11].	G, FP-lined cap	Cool, ≤6 °C [18], store in dark, 0.008% $Na_2S_2O_3$ [5].	7 days until extraction, 40 days after extraction.
1, 2, 5, 8–12, 32, 33, 58, 59, 74, 78, 99, 101. Polynuclear aromatic hydrocarbons [11].	G, FP-lined cap	Cool, ≤6 °C [18], store in dark, 0.008% $Na_2S_2O_3$ [5].	7 days until extraction, 40 days after extraction.
15, 16, 21, 31, 87. Haloethers [11]	G, FP-lined cap	Cool, ≤6 °C [18], 0.008% $Na_2S_2O_3$ [5]	7 days until extraction, 40 days after extraction.
29, 35–37, 63–65, 107. Chlorinated hydrocarbons [11].	G, FP-lined cap	Cool, ≤6 °C [18]	7 days until extraction, 40 days after extraction.
60–62, 66–72, 85, 86, 95–97, 102, 103. CDDs/CDFs [11].			
Aqueous Samples: Field and Lab Preservation	G	Cool, ≤6 °C [18], 0.008% $Na_2S_2O_3$ [5], pH<9.	1 year.
Solids and Mixed-Phase Samples: Field Preservation.	G	Cool, ≤6 °C [18]	7 days.
Tissue Samples: Field Preservation	G	Cool, ≤6 °C [18]	24 hours.
Solids, Mixed-Phase, and Tissue Samples: Lab Preservation.	G	Freeze, ≤ −10 °C	1 year.
Table ID—Pesticides Tests:			
1–70. Pesticides [11]	G, FP-lined cap	Cool, ≤6 °C [18], pH 5–9 [15]	7 days until extraction, 40 days after extraction.
Table IE—Radiological Tests:			
1–5. Alpha, beta, and radium	P, FP, G	HNO_3 to pH<2	6 months.
Table IH—Bacterial Tests:			
1. *E. coli*	PA, G	Cool, <10 °C, 0.0008% $Na_2S_2O_3$ [5]	6 hours.[22]
2. Enterococci	PA, G	Cool, <10 °C, 0.0008% $Na_2S_2O_3$ [5]	6 hours.[22]
Table IH—Protozoan Tests:			
8. Cryptosporidium	LDPE; field filtration	0–8 °C	96 hours.[21]
9. Giardia	LDPE; field filtration	0–8 °C	96 hours.[21]

[1] "P" is polyethylene; "FP" is fluoropolymer (polytetrafluoroethylene (PTFE; Teflon®), or other fluoropolymer, unless stated otherwise in this Table II; "G" is glass; "PA" is any plastic that is made of a sterlizable material (polypropylene or other autoclavable plastic); "LDPE" is low density polyethylene.

[2] Except where noted in this Table II and the method for the parameter, preserve each grab sample within 15 minutes of collection. For a composite sample collected with an automated sampler (e.g., using a 24-hour composite sampler; see 40 CFR 122.21(g)(7)(i) or 40 CFR Part 403, Appendix E), refrigerate the sample at ≤6 °C during collection unless specified otherwise in this Table II or in the method(s). For a composite sample to be split into separate aliquots for preservation and/or analysis, maintain the sample at ≤6 °C, unless specified otherwise in this Table II or in the method(s), until collection, splitting, and preservation is completed. Add the preservative to the sample contalner prior to sample collection when the preservative will not compromise the integrity of a grab sample, a composite sample, or an aliquot split from a composite sample; otherwise, preserve the grab sample, composite sample, or aliquot split from a composite sample within 15 minutes of collection. If a composite measurement is required but a composite sample would compromise sample integrity, individual grab samples must be collected at prescribed time intervals (e.g., 4 samples over the course of a day, at 6-hour intervals). Grab samples must be analyzed separately and the concentrations averaged. Alternatively, grab samples may be collected in the field and composited in the laboratory if the compositing procedure produces results equivalent to results produced by arithmetic averaging of the results of analysis of individual grab samples. For examples of laboratory compositing procedures, see EPA Method 1664A (oil and grease) and the procedures at 40 CFR 141.34(f)(14)(iv) and (v) (volatile organics).

[3] When any sample is to be shipped by common carrier or sent via the U.S. Postal Service, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements of Table II, the Office of Hazardous Materials, Materials Transportation Bureau, Department of Transportation has determined that the Hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO_3) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H_2SO_4) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); and Sodium hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less).

[4] Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before the start of analysis and still be considered valid (e.g., samples analyzed for fecal coliforms may be held up to 6 hours prior to commencing analysis). Samples may be held for longer periods only if the permittee or monitoring laboratory has data on file to show that, for the specific types of samples under study, the analytes are stable for the longer time, and has received a variance from the Regional Administrator under § 136.3(e). For a grab sample, the holding time begins at the time of collection. For a composite sample collected with an automated sampler (e.g., using a 24-hour composite sampler; see 40 CFR 122.21(g)(7)(i) or 40 CFR Part 403, Appendix E), the holding time begins at the time of the end of collection of the composite sample. For a set of grab samples composited in the field or laboratory, the holding time begins at the time of collection of the last grab sample in the set. Some samples may not be stable for the maximum time period given in the table. A permittee or monitoring laboratory is obligated to hold the sample for a shorter time if it knows that a shorter time is necessary to maintain sample stability. See § 136.3(e) for details. The date and time of collection of an individual grab sample is the date and time at which the sample is collected. For a set of grab samples to be composited, and that are all collected on the same calendar date, the date of collection is the date on which the samples are collected. For a set of grab samples to be composited, and that are collected across two calendar dates, the date of collection is the dates of the two days; e.g., November 14–15. For a composite sample collected automatically on a given date, the date of collection is the date on which the sample is collected. For a composite sample collected automatically, and that is collected across two calendar dates, the date of collection is the dates of the two days; e.g., November 14–15.

[5] Add a reducing agent only if an oxidant (e.g., chlorine) is present. Reducing agents shown to be effective are sodium thiosulfate ($Na_2S_2O_3$), ascorbic acid, sodium arsenite ($NaAsO_2$), or sodium borohydride ($NaBH_4$). However, some of these agents have been shown to produce a positive or negative cyanide bias, depending on other substances in the sample and the analytical method used. Therefore, do not add an excess of reducing agent. Methods recommending ascorbic acid (e.g., EPA Method 335.4) specify adding ascorbic acid crystals, 0.1–0.6 g, until a drop of sample produces no color on potassium iodide (KI) starch paper, then adding 0.06 g (60 mg) for each liter of sample volume. If $NaBH_4$ or $NaAsO_2$ is used, 25 mg/L $NaBH_4$ or 100 mg/L $NaAsO_2$ will reduce more than 50 mg/L of chlorine (see method "Kelada-01" and/or Standard Method 4500–CN^- for more information). After adding reducing agent, test the sample using KI paper, a test strip (e.g. for chlorine, SenSafe™ Total Chlorine Water Check 480010) moistened with acetate buffer solution (see Standard Method 4500–Cl.C.3e), or a chlorine/oxidant test method (e.g., EPA Method 330.4 or 330.5), to make sure all oxidant is removed. If oxidant remains, add more reducing agent. Whatever agent is used, it should be tested to assure that cyanide results are not affected adversely.

[6] Sample collection and preservation: Collect a volume of sample appropriate to the analytical method in a bottle of the material specified. If the sample can be analyzed within 48 hours and sulfide is not present, adjust the pH to > 12 with sodium hydroxide solution (e.g., 5% w/v), refrigerate as specified, and analyze within 48 hours. Otherwise, to extend the holding time to 14 days and mitigate interferences, treat the sample immediately using any or all of the following techniques, as necessary, followed by adjustment of the sample pH to > 12 and refrigeration as specified. There may be interferences that are not mitigated by approved procedures. Any procedure for removal or suppression of an interference may be employed, provided the laboratory demonstrates that it more accurately measures cyanide. Particulate cyanide (e.g., ferric ferrocyanide) or a strong cyanide complex (e.g., cobalt cyanide) are more accurately measured if the laboratory holds the sample at room temperature and pH > 12 for a minimum of 4 hours prior to analysis, and performs UV digestion or dissolution under alkaline (pH=12) conditions, if necessary.

(1) Sulfur: To remove elemental sulfur (S_8), filter the sample immediately. If the filtration time will exceed 15 minutes, use a larger filter or a method that requires a smaller sample volume (e.g., EPA Method 335.4 or Lachat Method 01). Adjust the pH of the filtrate to > 12 with NaOH, refrigerate the filter and filtrate, and ship or transport to the laboratory. In the laboratory, extract the filter with 100 mL of 5% NaOH solution for a minimum of 2 hours. Filter the extract and discard the solids. Combine the 5% NaOH-extracted filtrate with the initial filtrate, lower the pH to approximately 12 with concentrated hydrochloric or sulfuric acid, and analyze the combined filtrate. Because the detection limit for cyanide will be increased by dilution by the filtrate from the solids, test the sample with and without the solids procedure if a low detection limit for cyanide is necessary. Do not use the solids procedure if a higher cyanide concentration is obtained without it. Alternatively, analyze the filtrates from the sample and the solids separately, add the amounts determined (in µg or mg), and divide by the original sample volume to obtain the cyanide concentration.

(2) Sulfide: If the sample contains sulfide as determined by lead acetate paper, or if sulfide is known or suspected to be present, immediately conduct one of the volatilization treatments or the precipitation treatment as follows: Volatilization—Headspace expelling. In a fume hood or well-ventilated area, transfer 0.75 liter of sample to a 4.4 L collapsible container (e.g., Cubitainer™). Acidify with concentrated hydrochloric acid to pH < 2. Cap the container and shake vigorously for 30 seconds. Remove the cap and expel the headspace into the fume hood or open area by collapsing the container without expelling the sample. Refill the headspace by expanding the container. Repeat expelling a total of five headspace volumes. Adjust the pH to > 12, refrigerate, and ship or transport to the laboratory. Scaling to a smaller or larger sample volume must maintain the air to sample volume ratio. A larger volume of air will result in too great a loss of cyanide (> 10%). Dynamic stripping: In a fume hood or well-ventilated area, transfer 0.75 liter of sample to a container of the material specified and acidify with concentrated hydrochloric acid to pH < 2. Using a calibrated air sampling pump or flowmeter, purge the acidified sample into the fume hood or open area through a fritted glass aerator at a flow rate of 2.25 L/min for 4 minutes. Adjust the pH to > 12, refrigerate, and ship or transport to the laboratory. Scaling to a smaller or larger sample volume must maintain the air to sample volume ratio. A larger volume of air will result in too great a loss of cyanide (> 10%). Precipitation: If the sample contains particulate matter that would be removed by filtration, filter the sample prior to treatment to assure that cyanide associated with the particulate matter is included in the measurement. Ship or transport the filter to the laboratory. In the laboratory, extract the filter with 100 mL of 5% NaOH solution for a minimum of 2 hours. Filter the extract and discard the solids. Combine the 5% NaOH-extracted filtrate with the initial filtrate, lower the pH to approximately 12 with concentrated hydrochloric or sulfuric acid, and analyze the combined filtrate. Because the detection limit for cyanide will be increased by dilution by the filtrate from the solids, test the sample with and without the solids procedure if a low detection limit for cyanide is necessary. Do not use the solids procedure if a higher cyanide concentration is obtained without it. Alternatively, analyze the filtrates from the sample and the solids separately, add the amounts determined (in µg or mg), and divide by the original sample volume to obtain the cyanide concentration. For removal of sulfide by precipitation, raise the pH of the sample to > 12 with NaOH solution, then add approximately 1 mg of powdered cadmium chloride for each mL of sample. For example, add approximately 500 mg to a 500-mL sample. Cap and shake the container to mix. Allow the precipitate to settle and test the sample with lead acetate paper. If necessary, add cadmium chloride but avoid adding an excess. Finally, filter through 0.45 micron filter. Cool the sample as specified and ship or transport the filtrate and filter to the laboratory. In the laboratory, extract the filter with 100 mL of 5% NaOH solution for a minimum of 2 hours. Filter the extract and discard the solids. Combine the 5% NaOH-extracted filtrate with the initial filtrate, lower the pH to approximately 12 with concentrated hydrochloric or sulfuric acid, and analyze the combined filtrate. Because the detection limit for cyanide will be increased by dilution by the filtrate from the solids, test the sample with and without the solids procedure if a low detection limit for cyanide is necessary. Do not use the solids procedure if a higher cyanide concentration is obtained without it. Alternatively, analyze the filtrates from the sample and the solids separately, add the amounts determined (in µg or mg), and divide by the original sample volume to obtain the cyanide concentration. If a ligand-exchange method is used (e.g., ASTM D6888), it may be necessary to increase the ligand-exchange reagent to offset any excess of cadmium chloride.

(3) Sulfite, thiosulfate, or thiocyanate: If sulfite, thiosulfate, or thiocyanate is known or suspected to be present, use UV digestion with a glass coil (Method Kelada-01) or ligand exchange (Method OIA–1677) to preclude cyanide loss or positive interference.

(4) Aldehyde: If formaldehyde, acetaldehyde, or another water-soluble aldehyde is known or suspected to be present, treat the sample with 20 mL of 3.5% ethylenediamine solution per liter of sample.

(5) Carbonate: Carbonate interference is evidenced by noticeable effervescence upon acidification in the distillation flask, a reduction in the pH of the absorber solution, and incomplete cyanide spike recovery. When significant carbonate is present, adjust the pH to ≥12 using calcium hydroxide instead of sodium hydroxide. Allow the precipitate to settle and decant or filter the sample prior to analysis (also see Standard Method 4500–CN.B.3.d).

(6) Chlorine, hypochlorite, or other oxidant: Treat a sample known or suspected to contain chlorine, hypochlorite, or other oxidant as directed in footnote 5.

[7] For dissolved metals, filter grab samples within 15 minutes of collection and before adding preservatives. For a composite sample collected with an automated sampler (e.g., using a 24-hour composite sampler; see 40 CFR 122.21(g)(7)(i) or 40 CFR Part 403, Appendix E), filter the sample within 15 minutes after completion of collection and before adding preservatives. If it is known or suspected that dissolved sample integrity will be compromised during collection of a composite sample collected automatically over time (e.g., by interchange of a metal between dissolved and suspended forms), collect and filter grab samples to be composited (footnote 2) in place of a composite sample collected automatically.

[8] Guidance applies to samples to be analyzed by GC, LC, or GC/MS for specific compounds.

[9] If the sample is not adjusted to pH 2, then the sample must be analyzed within seven days of sampling.

[10] The pH adjustment is not required if acrolein will not be measured. Samples for acrolein receiving no pH adjustment must be analyzed within 3 days of sampling.

[11] When the extractable analytes of concern fall within a single chemical category, the specified preservative and maximum holding times should be observed for optimum safeguard of sample integrity (i.e., use all necessary preservatives and hold for the shortest time listed). When the analytes of concern fall within two or more chemical categories, the sample may be preserved by cooling to ≤6 °C, reducing residual chlorine with 0.008% sodium thiosulfate, storing in the dark, and adjusting the pH to 6–9; samples preserved in this manner may be held for seven days before extraction and for forty days after extraction. Exceptions to this optional preservation and holding time procedure are noted in footnote 5 (regarding the requirement for thiosulfate reduction), and footnotes 12, 13 (regarding the analysis of benzidine).

[12] If 1,2-diphenylhydrazine is likely to be present, adjust the pH of the sample to 4.0 ± 0.2 to prevent rearrangement to benzidine.

[13] Extracts may be stored up to 30 days at < 0 °C.

[14] For the analysis of diphenylnitrosamine, add 0.008% $Na_2S_2O_3$ and adjust pH to 7–10 with NaOH within 24 hours of sampling.

[15] The pH adjustment may be performed upon receipt at the laboratory and may be omitted if the samples are extracted within 72 hours of collection. For the analysis of aldrin, add 0.008% $Na_2S_2O_3$.

[16] Sufficient ice should be placed with the samples in the shipping container to ensure that ice is still present when the samples arrive at the laboratory. However, even if ice is present when the samples arrive, it is necessary to immediately measure the temperature of the samples and confirm that the preservation temperature maximum has not been exceeded. In the isolated cases where it can be documented that this holding temperature cannot be met, the permittee can be given the option of on-site testing or can request a variance. The request for a variance should include supportive data which show that the toxicity of the effluent samples is not reduced because of the increased holding temperature.

[17] Samples collected for the determination of trace level mercury (<100 ng/L) using EPA Method 1631 must be collected in tightly-capped fluoropolymer or glass bottles and preserved with BrCl or HCl solution within 48 hours of sample collection. The time to preservation may be extended to 28 days if a sample is oxidized in the sample bottle. A sample collected for dissolved trace level mercury should be filtered in the laboratory within 24 hours of the time of collection. However, if circumstances preclude overnight shipment, the sample should be filtered in a designated clean area in the field in accordance with procedures given in Method 1669. If sample integrity will not be maintained by shipment to and filtration in the laboratory, the sample must be filtered in a designated clean area in the field within the time period necessary to maintain sample integrity. A sample that has been collected for determination of total or dissolved trace level mercury must be analyzed within 90 days of sample collection.

[18] Aqueous samples must be preserved at ≤6 °C, and should not be frozen unless data demonstrating that sample freezing does not adversely impact sample integrity is maintained on file and accepted as valid by the regulatory authority. Also, for purposes of NPDES monitoring, the specification of "≤°C" is used in place of the "4 °C" and "< 4 °C" sample temperature requirements listed in some methods. It is not necessary to measure the sample temperature to three significant figures (1/100th of 1 degree); rather, three significant figures are specified so that rounding down to 6 °C may not be used to meet the ≤6 °C requirement. The preservation temperature does not apply to samples that are analyzed immediately (less than 15 minutes).

[19] An aqueous sample may be collected and shipped without acid preservation. However, acid must be added at least 24 hours before analysis to dissolve any metals that adsorb to the container walls. If the sample must be analyzed within 24 hours of collection, add the acid immediately (see footnote 2). Soil and sediment samples do not need to be preserved with acid. The allowances in this footnote supersede the preservation and holding time requirements in the approved metals methods.

[20] To achieve the 28-day holding time, use the ammonium sulfate buffer solution specified in EPA Method 218.6. The allowance in this footnote supersedes preservation and holding time requirements in the approved hexavalent chromium methods, unless this supersession would compromise the measurement, in which case requirements in the method must be followed.

[21] Holding time is calculated from time of sample collection to elution for samples shipped to the laboratory in bulk and calculated from the time of sample filtration to elution for samples filtered in the field.

[22] Samples analysis should begin immediately, preferably within 2 hours of collection. The maximum transport time to the laboratory is 6 hours, and samples should be processed within 2 hours of receipt at the laboratory.

[23] For fecal coliform samples for sewage sludge (biosolids) only, the holding time is extended to 24 hours for the following sample types using either EPA Method 1680 (LTB–EC) or 1681 (A–1): Class A composted, Class B aerobically digested, and Class B anaerobically digested.

PART 503—STANDARDS FOR THE USE OR DISPOSAL OF SEWAGE SLUDGE

■ 3. The authority citation for Part 503 continues to read as follows:

Authority: Secs. 405(d) and (e) of the Clean Water Act, as amended by Pub. L. 95–217, sec. 54(d), 91 Stat. 1591 (33 U.S.C. 1345(d) and (e)); and Pub. L. 100–4, title IV, sec. 406(a), (b), 101 Stat., 71, 72 (33 U.S.C. 1251 et seq.).

■ 4. Section 503.8 is amended by revising paragraph (b) introductory text to read as follows:

§ 503.8 Sampling and analysis.

* * * * *

(b) *Methods.* The materials listed below are incorporated by reference in this part. These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. The materials are incorporated as they exist on the date of approval, and notice of any change in these materials will be published in the **Federal Register**. They are available for inspection at the HQ Water Docket Center, EPA/DC, EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC, and at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

Copies may be obtained from the standard producer or publisher listed in the regulation. The methods in the materials listed below (or in 40 CFR Part 136) shall be used to analyze samples of sewage sludge.

* * * * *

[FR Doc. 07–1455 Filed 3–23–07; 8:45 am]

BILLING CODE 6560–50–P

Treating Samples for Residual Chlorine

Samples subject to chlorine interference must be checked for the presence of chlorine and treated with 10% sodium thiosulfate prior to chemical preservation. Samples that may be affected include coliforms, Inorganic Phenols, Ammonia Nitrogen, Total Kjeldahl Nitrogen, and samples for organic analyses.

The waste stream or sample source may be checked with potassium iodide starch paper test strips to document the presence or absence of chlorine.

If residual chlorine is present, treat sample with 0.1 ml of a 10% solution of sodium thiosulfate for every 125 ml of sample collected. This treatment represents a 0.008% $Na_2S_2O_3$ total volume solution and should neutralize approximately 15 mg/L residual chlorine.

(For nutrients samples, add approx. 0.4 ml to a 500 ml sample. For phenols, add approx. 0.8 ml to a 1L sample. For semivolatile organics/pesticides, add approx. 3.2 ml to a 4L (or 1 Gal.) sample. For coliforms approx. 0.2 ml has been added to each 250 ml bottle prior to sterilization.

References: 40 CFR Part 136.3, Table II

Laboratory Section :: Sample Preservation Guidance

Instructions for Chemically Preserving Aqueous Samples

ANALYTICAL PARAMETER	CHEMICAL PRESERVATIVE	LABORATORY OR FIELD PRESERVATION	GENERAL INSTRUCTIONS (2)	pH	ADDITIONAL INFORMATION
Metals: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr (Total), Cu, Fe, K, Li, Mg, Mn, Na, Ni, Pb, Sb, Se, V, Zn, Hg and Total Hardness (1)	Nitric Acid (HNO3), 1+1 - ampoules	Field preservation	1 ampoule per 500 ml bottle	<2	Refer to "Nitric Acid Ampule Handling and Use", August 6, 2001, Susan Gale .
EPA Method 1631E Trace Level Hg	None required	Sampling kits are prepared at the laboratory. Samples are preserved with BrCl **by the laboratory** within 28 days of collection.	Refer to EPA Method 1669 for "Clean hands/Dirty hands" sample collection technique.	N/A	Refer to "Sampling Kits for Low Level Mercury Analysis by EPA Method 1631".
Oil and Grease	6N Sulfuric Acid	Field preservation	Add approx. 2 to 4 ml per 1 L bottle	<2	
COD	25% Sulfuric Acid (H2SO4)	Field preservation	Add approx. 2 ml per 500 ml bottle	<2	
TOC	Concentrated Phosphoric Acid (H3PO4)	Field preservation	Add approx. 1 ml per 500 ml bottle	<2	
NH3, NO3 +NO2, TKN, TP	25% Sulfuric Acid (H2SO4) *10% Sodium Thiosulfate (Na2S2O3)	Field preservation	Add approx. 2 ml per 500 ml bottle	<2	*NH3 and TKN samples must be checked for residual chlorine and treated with 10% Na2S2O3 prior to acid preservation only when residual chlorine is present.
Cyanide	Sodium Hydroxide (NaOH), 6N *Ascorbic acid	Field preservation	See "Preserving Cyanide Samples" instruction sheet.	>12	*Add ascorbic acid only if residual chlorine is present. See "Preserving Cyanide Samples" instruction sheet.
Sulfide	Zinc Acetate solution, 2N and Sodium Hydroxide (NaOH), 6N	Field preservation	See "Preserving Sulfide Samples" instruction sheet.	>9	
Coliform (Total, Fecal, E.coli and Entercocci)	10% Sodium Thiosulfate (Na2S2O3) 15% EDTA	Bottles are sterilized at the lab and shipped with sodium thiosulfate and EDTA in them.	Do not rinse bottles prior to sampling. Use aseptic sampling techniques.	N/A	
Total Phenolics	1:1 Sulfuric Acid (H2SO4) Ferrous Ammonium Sulfate(FAS)	Field preservation	Add approximately 2 ml to a 1 liter bottle. 1ml FAS	<2	Samples containing oxidizers (e.g. chlorine) must be treated with 1 ml Ferrous Ammonium Sulfate (FAS) Solution.
Acid-preserved VOA (3) **GROUND WATER SAMPLES ONLY**	Sodium Bisulfate *0.6 g ascorbic acid	Field preservation	Add 0.25 g per 40-ml vial or add 1 ml of a 25% solution per 40-ml vial.	<2	Do not use vials containing HCl. *Samples containing residual chlorine must be treated with 0.6 g ascorbic acid prior to acid preservation.

Acid-preserved VOA (3) **SURFACE WATER SAMPLES ONLY**	1+1 HCl *10% Sodium Thiosulfate (Na2S2O3)	Field preservation	Add 0.2 ml per 40-ml vial.	<2	Do not use vials containing sodium bisulfate *Samples containing residual chlorine must be treated with 10% Na2S2O3 prior to acid preservation.
SVOA	*10% Sodium Thiosulfate (Na2S2O3)	Field preservation		N/A	*Samples containing residual chlorine must be treated with 10% Na2S2O3 .
Pesticides/PCBs	*10% Sodium Thiosulfate (Na2S2O3) **__For pH adjustment only__, add Sulfuric Acid (H2SO4), 1:1 or Sodium Hydroxide (NaOH), 6N	Field preservation	** Add acid or base dropwise until pH is in the desired range (5-9).	**	*Samples containing residual chlorine must be treated with 10% Na2S2O3 . **If samples cannot be extracted within 72 hours of collection, the sample pH must be in the range of pH 5 to 9.
Acid Herbicides	*10% Sodium Thiosulfate (Na2S2O3) **__For pH adjustment only__, add Sulfuric Acid (H2SO4), 1:1 or Sodium Hydroxide (NaOH), 6N	Field preservation	** Add acid or base dropwise until pH is in the desired range (5-9).	**	*Samples containing residual chlorine must be treated with 10% Na2S2O3 prior to acid preservation. **If samples cannot be extracted within 72 hours of collection, the sample pH must be in the range of pH 5 to 9.

(1)Total Hardness by calculation: Hardness, mg CaCO3/L = 2.497[Ca, mg/L] + 4.118[Mg, mg/L]

(2)Samplers must test the effectiveness of chemical preservation in the field. Pour an aliquot of the acidified sample into a disposable container or onto a piece of narrow range pH paper to determine if the pH is in the desired range. Do NOT put the pH paper directly into the sample container. If additional preservative is required, add dropwise until the sample reaches the desired range.

(3)If CIEVE is an analyte of interest, submit an additional unpreserved sample for analysis and label it clearly.

January 2007 /dbs

top of page

1623 Mail Service Center, Raleigh, NC 27699-1623 (t) 919.733.3908 (f) 919.733.6241
DWQ - DENR - NCGOV

APPENDIX C-3

CHAIN OF CUSTODY
AND
FIELD INFORMATION FORMS

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

WASTE MANAGEMENT CHAIN OF CUSTODY

Internal Use Only

Sampler Name (Print)	Signature
A. Cadwalader	Angie Cadwalader
Site Name:	**Spec Request:**
CWM Chemical Services	AC
Site Location:	**Event Name:**
Model City, NY	Task 4

TA Sample No.	Client Sample ID	Sampling Date	Sampling Time	MATRIX	COMP / GRAB	8260/VOA	T-METALS	D-METALS	CHLORIDE/SULFATE/NITRATE PH, TSS, TDS	ALK / CARB / BICARB	HARDNESS	NH_3 / COD	TOC	Additional Analysis/Remarks
				INDICATE PRESERVATIVE BY USING KEY BELOW (OPTIONAL)										
				INDICATE CONTAINER BY USING KEY BELOW										
	TW12S	7-10-09	0828	W	G	2/1								
	TW13S		0836			2/1								
	TW14S		0841			2/1								
	TW15S		0818			2/1								
	TW15D		0820			2/1								
	TB		—		—	2/1								

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
Angie Cadwalader	CWM	7-10-09	0859				
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
					RVK	7-11-09	0900
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME

Matrix Key
WW = Wastewater
W = Water/Groundwater
S = Solid
Sl = Sludge
MS = Miscellaneous Solids
Oil = Oil
A = Air
O = _____

Container Key
1. Plastic
2. VOA Vial
3. Sterile Plastic
4. Amber Glass
5. Widemouth Glass
6. Other

Preservation Key
1. HCl, Cool to 4°
2. H_2SO_4, Cool to 4°
3. HNO_3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn Acetate, Cool to 4°
6. Cool to 4°
7. None

COMMENTS: 2.0

Courier:

Bill of Lading:

TAL-8219 (1106)

FIELD INFORMATION FORM

WASTE MANAGEMENT

Site Name: Model City, NY
Site No.:
Sample Point: TW12S
Sample ID

This Waste Management Field Information Form is Mandatory
This form is to be completed on all locations at any Site Visit. This Field Form is submitted along with the Chain of Custody Form that accompanies the sample container(s) sent with the cooler that is returned to the laboratory.

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (24 Hr Clock)	ELAPSED HRS (Hrs and)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	# WELL VOLs PURGED
07/09/09	1316	0004	22.3	30.0 gallons	1.3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Inbound low Cell and Inbound low Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment: Dedicated: (Y) or N

Purging Device: D
Sampling Device: D
A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
X-Other:

Filter Device: Y or (N) [ ] µm or [ ] µm (circle or fill in)
Filter Type: [ ]
A In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type: [ ]
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): 3|4|5|6 (ft msl)
Depth to Water (DTW) (from TOC): 14.42 (ft)
Groundwater Elevation (site datum, from TOC): 316.14 (ft/msl)
Total Well Depth (from TOC): 18.56 (ft)
Stick Up (from ground elevation): [ ] (in)
Casing ID: [ ] (in)
Casing Material: [ ]

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by SiteOrPermit. Well Elevation, DTW, and Groundwater Elevation must be captured.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (SU)	Conductance (SC/EC) (µmhos/cm @ 25°C)	Temp (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1st								
2nd								
3rd								
4th								
Suggested range for Numeric readings per Permit/Site requirement		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields/events are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
07/10/09							

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

Sample Appearance: Ag
Odor: None
Color: Colorless
Other:
Weather Conditions (record daily, or as conditions change):
Direction/Speed: S@4mph
Outlook: Sunny
Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required): Well conditions & access are good

18.56-4.42 = 14.14 X 0.163 = 2.3 gal x 3 = 6.9 gal in 3 casings

FIELD COMMENTS

* From 10/08 Well ID Charts. RAD Samples taken here.

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/10/09	A. Caduvalader	Angie Caduvalader	CWM

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8029WM (0106)

APPENDIX C-4

REPORTING FORMAT

rec'd 1.29.09

07/09

NSA

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analytical Report

Work Order: RSG0410

Project Description
MODEL CITY-NORTH SALTS AREA(7)

For:

Greg Zayatz
CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Candace L. Fox

Candace Fox
Project Manager
candace.fox@testamericainc.com

Friday, July 24, 2009

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

TestAmerica Buffalo
Current Certifications

As of 1/27/2009

STATE	Program	Cert # / Lab ID
Arkansas	CWA, RCRA, SOIL	88-0686
California*	NELAP CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida*	NELAP CWA, RCRA	E87672
Georgia*	SDWA,NELAP CWA, RCRA	956
Illinois*	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas*	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana*	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY0044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	SDWA,CWA, RCRA	036-999-337
New Hampshire*	NELAP SDWA, CWA	233701
New Jersey*	NELAP,SDWA, CWA, RCRA,	NY455
New York*	NELAP, AIR, SDWA, CWA, RCRA,CLP	10026
Oklahoma	CWA, RCRA	9421
Pennsylvania*	NELAP CWA,RCRA	68-00281
Tennessee	SDWA	02970
Texas*	NELAP CWA, RCRA	T104704412-08-TX
USDA	FOREIGN SOIL PERMIT	S-41579
USDOE	Department of Energy	DOECAP-STB
Virginia	SDWA	278
Washington*	NELAP CWA,RCRA	C1677
Wisconsin	CWA, RCRA	998310390
West Virginia	CWA,RCRA	252

*As required under the indicated accreditation, the test results in this report meet all NELAP requirements for parameters for which accre ditation is required or available. Any exceptions to NELAP requirements are noted in this report.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

Case Narrative

According to 40CFR Part 136.3, pH, Chlorine Residual, Dissolved Oxygen, Sulfite, and Temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. field-pH), they were not analyzed immediately, but as soon as possible after laboratory receipt.

There are pertinent documents appended to this report, 6 pages, are included and are an integral part of this report.

TestAmerica Laboratories, Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our Laboratory.

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

DATA QUALIFIERS AND DEFINITIONS

NR Any inclusion of NR indicates that the project specific requirements do not require reporting estimated values below the laboratory reporting limit.

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

Sample Summary

Sample Identification	Lab Number	Client Matrix	Date/Time Sampled	Date/Time Received	Sample Qualifiers
TW12S	RSG0410-01	Water	07/10/09 08:28	07/11/09 09:00	
TW13S	RSG0410-02	Water	07/10/09 08:36	07/11/09 09:00	
TW14S	RSG0410-03	Water	07/10/09 08:41	07/11/09 09:00	
TW15S	RSG0410-04	Water	07/10/09 08:18	07/11/09 09:00	
TW15D	RSG0410-05	Water	07/10/09 08:20	07/11/09 09:00	
TB	RSG0410-06	Water	07/10/09	07/11/09 09:00	

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RSG0410-01 (TW12S - Water)							**Sampled: 07/10/09 08:28**		**Recvd: 07/11/09 09:00**	
Field Data										
Groundwater Elev.	310.14		NA	NR	FT/MSL	1.00	07/10/09 08:28	FLD	9G23034	Field Test
Volatile Organic Compounds										
1,1,1-Trichloroethane	ND		5.0	0.73	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
1,1,2,2-Tetrachloroethane	ND		5.0	1.2	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
1,1-Dichloroethane	ND		5.0	0.59	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
1,1-Dichloroethene	ND		5.0	0.85	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
1,2-Dichloroethane	ND		5.0	0.60	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
1,2-Dichloropropane	ND		5.0	0.61	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
2-Chloroethyl vinyl ether	ND		25	3.7	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Benzene	ND		5.0	0.60	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Bromodichloromethane	ND		5.0	0.54	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Bromoform	ND		5.0	0.47	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Bromomethane	ND		5.0	1.2	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Carbon Tetrachloride	ND		5.0	0.51	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Chlorobenzene	ND		5.0	0.48	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Dibromochloromethane	ND		5.0	0.41	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Chloroethane	ND		5.0	0.87	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Chloroform	ND		5.0	0.54	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Chloromethane	ND		5.0	0.64	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
cis-1,3-Dichloropropene	ND		5.0	0.57	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Ethylbenzene	ND		5.0	0.46	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Methylene Chloride	ND		5.0	0.81	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Tetrachloroethene	ND		5.0	0.34	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Toluene	ND		5.0	0.45	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Trichloroethene	ND		5.0	0.60	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
Vinyl chloride	ND		5.0	0.75	ug/L	1.00	07/15/09 02:53	TWS	9G14047	624
1,2-Dichloroethane-d4	*112 %*		*Surr Limits: (88-132%)*				*07/15/09 02:53*	*TWS*	*9G14047*	*624*
4-Bromofluorobenzene	*93 %*		*Surr Limits: (78-122%)*				*07/15/09 02:53*	*TWS*	*9G14047*	*624*
Toluene-d8	*97 %*		*Surr Limits: (87-110%)*				*07/15/09 02:53*	*TWS*	*9G14047*	*624*

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RSG0410-02 (TW13S - Water)							**Sampled: 07/10/09 08:36**		**Recvd: 07/11/09 09:00**	
Field Data										
Groundwater Elev.	**314.58**		NA	NR	FT/MSL	1.00	07/10/09 08:36	FLD	9G23034	Field Test
Volatile Organic Compounds										
1,1,1-Trichloroethane	ND		5.0	0.73	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
1,1,2,2-Tetrachloroethane	ND		5.0	1.2	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
1,1-Dichloroethane	ND		5.0	0.59	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
1,1-Dichloroethene	ND		5.0	0.85	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
1,2-Dichloroethane	ND		5.0	0.60	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
1,2-Dichloropropane	ND		5.0	0.61	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
2-Chloroethyl vinyl ether	ND		25	3.7	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Benzene	ND		5.0	0.60	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Bromodichloromethane	ND		5.0	0.54	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Bromoform	ND		5.0	0.47	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Bromomethane	ND		5.0	1.2	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Carbon Tetrachloride	ND		5.0	0.51	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Chlorobenzene	ND		5.0	0.48	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Dibromochloromethane	ND		5.0	0.41	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Chloroethane	ND		5.0	0.87	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Chloroform	ND		5.0	0.54	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Chloromethane	ND		5.0	0.64	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
cis-1,3-Dichloropropene	ND		5.0	0.57	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Ethylbenzene	ND		5.0	0.46	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Methylene Chloride	ND		5.0	0.81	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Tetrachloroethene	ND		5.0	0.34	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Toluene	ND		5.0	0.45	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Trichloroethene	ND		5.0	0.60	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
Vinyl chloride	ND		5.0	0.75	ug/L	1.00	07/15/09 03:19	TWS	9G14047	624
1,2-Dichloroethane-d4	*112 %*		*Surr Limits: (88-132%)*				*07/15/09 03:19*	*TWS*	*9G14047*	*624*
4-Bromofluorobenzene	*94 %*		*Surr Limits: (78-122%)*				*07/15/09 03:19*	*TWS*	*9G14047*	*624*
Toluene-d8	*99 %*		*Surr Limits: (87-110%)*				*07/15/09 03:19*	*TWS*	*9G14047*	*624*

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

Analytical Report

Sample ID: RSG0410-03 (TW14S - Water) — Sampled: 07/10/09 08:41 — Recvd: 07/11/09 09:00

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Field Data										
Groundwater Elev.	313.49		NA	NR	FT/MSL	1.00	07/10/09 08:41	FLD	9G23034	Field Test
Volatile Organic Compounds										
1,1,1-Trichloroethane	ND		5.0	0.73	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
1,1,2,2-Tetrachloroethane	ND		5.0	1.2	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
1,1-Dichloroethane	ND		5.0	0.59	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
1,1-Dichloroethene	ND		5.0	0.85	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
1,2-Dichloroethane	ND		5.0	0.60	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
1,2-Dichloropropane	ND		5.0	0.61	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
2-Chloroethyl vinyl ether	ND		25	3.7	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Benzene	ND		5.0	0.60	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Bromodichloromethane	ND		5.0	0.54	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Bromoform	ND		5.0	0.47	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Bromomethane	ND		5.0	1.2	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Carbon Tetrachloride	ND		5.0	0.51	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Chlorobenzene	ND		5.0	0.48	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Dibromochloromethane	ND		5.0	0.41	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Chloroethane	ND		5.0	0.87	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Chloroform	ND		5.0	0.54	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Chloromethane	ND		5.0	0.64	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
cis-1,3-Dichloropropene	ND		5.0	0.57	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Ethylbenzene	ND		5.0	0.46	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Methylene Chloride	ND		5.0	0.81	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Tetrachloroethene	ND		5.0	0.34	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Toluene	ND		5.0	0.45	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Trichloroethene	ND		5.0	0.60	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
Vinyl chloride	ND		5.0	0.75	ug/L	1.00	07/15/09 03:44	TWS	9G14047	624
1,2-Dichloroethane-d4	*113 %*		*Surr Limits: (88-132%)*				*07/15/09 03:44*	*TWS*	*9G14047*	*624*
4-Bromofluorobenzene	*94 %*		*Surr Limits: (78-122%)*				*07/15/09 03:44*	*TWS*	*9G14047*	*624*
Toluene-d8	*100 %*		*Surr Limits: (87-110%)*				*07/15/09 03:44*	*TWS*	*9G14047*	*624*

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RSG0410-04 (TW15S - Water)							**Sampled: 07/10/09 08:18**		**Recvd: 07/11/09 09:00**	
Field Data										
Groundwater Elev.	310.96		NA	NR	FT/MSL	1.00	07/10/09 08:18	FLD	9G23034	Field Test
Volatile Organic Compounds										
1,1,1-Trichloroethane	ND		5.0	0.73	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
1,1,2,2-Tetrachloroethane	ND		5.0	1.2	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
1,1-Dichloroethane	ND		5.0	0.59	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
1,1-Dichloroethene	ND		5.0	0.85	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
1,2-Dichloroethane	ND		5.0	0.60	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
1,2-Dichloropropane	ND		5.0	0.61	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
2-Chloroethyl vinyl ether	ND		25	3.7	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Benzene	ND		5.0	0.60	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Bromodichloromethane	ND		5.0	0.54	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Bromoform	ND		5.0	0.47	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Bromomethane	ND		5.0	1.2	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Carbon Tetrachloride	ND		5.0	0.51	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Chlorobenzene	ND		5.0	0.48	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Dibromochloromethane	ND		5.0	0.41	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Chloroethane	ND		5.0	0.87	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Chloroform	ND		5.0	0.54	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Chloromethane	ND		5.0	0.64	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
cis-1,3-Dichloropropene	ND		5.0	0.57	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Ethylbenzene	ND		5.0	0.46	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Methylene Chloride	ND		5.0	0.81	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Tetrachloroethene	ND		5.0	0.34	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Toluene	ND		5.0	0.45	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Trichloroethene	ND		5.0	0.60	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
Vinyl chloride	ND		5.0	0.75	ug/L	1.00	07/15/09 04:10	TWS	9G14047	624
1,2-Dichloroethane-d4	*114 %*		*Surr Limits: (88-132%)*				*07/15/09 04:10*	*TWS*	*9G14047*	*624*
4-Bromofluorobenzene	*94 %*		*Surr Limits: (78-122%)*				*07/15/09 04:10*	*TWS*	*9G14047*	*624*
Toluene-d8	*97 %*		*Surr Limits: (87-110%)*				*07/15/09 04:10*	*TWS*	*9G14047*	*624*

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RSG0410-05 (TW15D - Water)						**Sampled: 07/10/09 08:20**		**Recvd: 07/11/09 09:00**		
Field Data										
Groundwater Elev.	312.14		NA	NR	FT/MSL	1.00	07/10/09 08:20	FLD	9G23034	Field Test
Volatile Organic Compounds										
1,1,1-Trichloroethane	ND		5.0	0.73	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
1,1,2,2-Tetrachloroethane	ND		5.0	1.2	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
1,1-Dichloroethane	ND		5.0	0.59	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
1,1-Dichloroethene	ND		5.0	0.85	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
1,2-Dichloroethane	ND		5.0	0.60	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
1,2-Dichloropropane	ND		5.0	0.61	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
2-Chloroethyl vinyl ether	ND		25	3.7	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Benzene	ND		5.0	0.60	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Bromodichloromethane	ND		5.0	0.54	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Bromoform	ND		5.0	0.47	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Bromomethane	ND		5.0	1.2	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Carbon Tetrachloride	ND		5.0	0.51	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Chlorobenzene	ND		5.0	0.48	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Dibromochloromethane	ND		5.0	0.41	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Chloroethane	ND		5.0	0.87	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Chloroform	ND		5.0	0.54	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Chloromethane	ND		5.0	0.64	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
cis-1,3-Dichloropropene	ND		5.0	0.57	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Ethylbenzene	ND		5.0	0.46	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Methylene Chloride	ND		5.0	0.81	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Tetrachloroethene	ND		5.0	0.34	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Toluene	ND		5.0	0.45	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Trichloroethene	ND		5.0	0.60	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
Vinyl chloride	ND		5.0	0.75	ug/L	1.00	07/15/09 04:35	TWS	9G14047	624
1,2-Dichloroethane-d4	*112 %*		*Surr Limits: (88-132%)*				*07/15/09 04:35*	*TWS*	*9G14047*	*624*
4-Bromofluorobenzene	*92 %*		*Surr Limits: (78-122%)*				*07/15/09 04:35*	*TWS*	*9G14047*	*624*
Toluene-d8	*97 %*		*Surr Limits: (87-110%)*				*07/15/09 04:35*	*TWS*	*9G14047*	*624*

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RSG0410-06 (TB - Water)						**Sampled: 07/10/09**			**Recvd: 07/11/09 09:00**	
Volatile Organic Compounds										
1,1,1-Trichloroethane	ND		5.0	0.73	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
1,1,2,2-Tetrachloroethane	ND		5.0	1.2	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
1,1-Dichloroethane	ND		5.0	0.59	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
1,1-Dichloroethene	ND		5.0	0.85	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
1,2-Dichloroethane	ND		5.0	0.60	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
1,2-Dichloropropane	ND		5.0	0.61	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
2-Chloroethyl vinyl ether	ND		25	3.7	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Benzene	ND		5.0	0.60	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Bromodichloromethane	ND		5.0	0.54	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Bromoform	ND		5.0	0.47	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Bromomethane	ND		5.0	1.2	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Carbon Tetrachloride	ND		5.0	0.51	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Chlorobenzene	ND		5.0	0.48	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Dibromochloromethane	ND		5.0	0.41	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Chloroethane	ND		5.0	0.87	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Chloroform	ND		5.0	0.54	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Chloromethane	ND		5.0	0.64	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
cis-1,3-Dichloropropene	ND		5.0	0.57	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Ethylbenzene	ND		5.0	0.46	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Methylene Chloride	ND		5.0	0.81	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Tetrachloroethene	ND		5.0	0.34	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Toluene	ND		5.0	0.45	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Trichloroethene	ND		5.0	0.60	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
Vinyl chloride	ND		5.0	0.75	ug/L	1.00	07/15/09 05:01	TWS	9G14047	624
1,2-Dichloroethane-d4	*114 %*		*Surr Limits: (88-132%)*				*07/15/09 05:01*	*TWS*	*9G14047*	*624*
4-Bromofluorobenzene	*94 %*		*Surr Limits: (78-122%)*				*07/15/09 05:01*	*TWS*	*9G14047*	*624*
Toluene-d8	*99 %*		*Surr Limits: (87-110%)*				*07/15/09 05:01*	*TWS*	*9G14047*	*624*

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

SAMPLE EXTRACTION DATA

Parameter	Batch	Lab Number	Wt/Vol Extracte	Units	Extract Volume	Units	Date Prepared	Lab Tech	Extraction Method
Field Data									
Field Test	9G23034	RSG0410-04	1.00	mL	1.00	mL	07/10/09 08:18	LCW	Field
Field Test	9G23034	RSG0410-05	1.00	mL	1.00	mL	07/10/09 08:20	LCW	Field
Field Test	9G23034	RSG0410-01	1.00	mL	1.00	mL	07/10/09 08:28	LCW	Field
Field Test	9G23034	RSG0410-02	1.00	mL	1.00	mL	07/10/09 08:36	LCW	Field
Field Test	9G23034	RSG0410-03	1.00	mL	1.00	mL	07/10/09 08:41	LCW	Field
Volatile Organic Compounds									
624	9G14047	RSG0410-01	5.00	mL	5.00	mL	07/14/09 10:48	TWS	5030B MS
624	9G14047	RSG0410-02	5.00	mL	5.00	mL	07/14/09 10:48	TWS	5030B MS
624	9G14047	RSG0410-03	5.00	mL	5.00	mL	07/14/09 10:48	TWS	5030B MS
624	9G14047	RSG0410-04	5.00	mL	5.00	mL	07/14/09 10:48	TWS	5030B MS
624	9G14047	RSG0410-05	5.00	mL	5.00	mL	07/14/09 10:48	TWS	5030B MS
624	9G14047	RSG0410-06	5.00	mL	5.00	mL	07/14/09 10:48	TWS	5030B MS

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Volatile Organic Compounds											
Blank Analyzed: 07/14/09 (Lab Number:9G14047-BLK1, Batch: 9G14047)											
1,1,1-Trichloroethane			5.0	0.73	ug/L	ND					
1,1,2,2-Tetrachloroethane			5.0	1.2	ug/L	ND					
1,1,2-Trichloroethane			5.0	0.48	ug/L	ND					
1,1-Dichloroethane			5.0	0.59	ug/L	ND					
1,1-Dichloroethene			5.0	0.85	ug/L	ND					
1,2-Dichloroethane			5.0	0.60	ug/L	ND					
1,2-Dichloropropane			5.0	0.61	ug/L	ND					
2-Chloroethyl vinyl ether			25	3.7	ug/L	ND					
Benzene			5.0	0.60	ug/L	ND					
Bromodichloromethane			5.0	0.54	ug/L	ND					
Bromoform			5.0	0.47	ug/L	ND					
Bromomethane			5.0	1.2	ug/L	ND					
Carbon Tetrachloride			5.0	0.51	ug/L	ND					
Chlorobenzene			5.0	0.48	ug/L	ND					
Chlorodibromomethane			5.0	0.41	ug/L	ND					
Chloroethane			5.0	0.87	ug/L	ND					
Chloroform			5.0	0.54	ug/L	ND					
Chloromethane			5.0	0.64	ug/L	ND					
cis-1,3-Dichloropropene			5.0	0.57	ug/L	ND					
Ethylbenzene			5.0	0.46	ug/L	ND					
Methylene Chloride			5.0	0.81	ug/L	ND					
Tetrachloroethene			5.0	0.34	ug/L	ND					
Toluene			5.0	0.45	ug/L	ND					
trans-1,2-Dichloroethene			5.0	0.59	ug/L	ND					
trans-1,3-Dichloropropene			5.0	0.44	ug/L	ND					
Trichloroethene			5.0	0.60	ug/L	ND					
Vinyl chloride			5.0	0.75	ug/L	ND					
Surrogate: 1,2-Dichloroethane-d4					*ug/L*		*104*	*88-132*			
Surrogate: 4-Bromofluorobenzene					*ug/L*		*95*	*78-122*			
Surrogate: Toluene-d8					*ug/L*		*99*	*87-110*			
LCS Analyzed: 07/14/09 (Lab Number:9G14047-BS1, Batch: 9G14047)											
1,1,1-Trichloroethane		20	5.0	0.73	ug/L	19.4	97	75-125			
1,1,2,2-Tetrachloroethane		20	5.0	1.2	ug/L	19.4	97	61-140			
1,1,2-Trichloroethane		20	5.0	0.48	ug/L	20.7	103	71-129			
1,1-Dichloroethane		20	5.0	0.59	ug/L	20.1	101	73-128			

CWM Chemical Services - Model City, NY
1550 Balmer Road
Model City, NY 14107

Work Order: RSG0410
Model City Landfill
Project: MODEL CITY-NORTH SALTS AREA(7)
Project Number: WMI01414

Received: 07/11/09
Reported: 07/24/09 13:53

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Volatile Organic Compounds											
LCS Analyzed: 07/14/09 (Lab Number:9G14047-BS1, Batch: 9G14047)											
1,1-Dichloroethene		20	5.0	0.85	ug/L	19.1	96	51-150			
1,2-Dichloroethane		20	5.0	0.60	ug/L	21.3	106	68-132			
1,2-Dichloropropane		20	5.0	0.61	ug/L	20.4	102	34-166			
2-Chloroethyl vinyl ether		100	25	3.7	ug/L	107	107	1-224			
Benzene		20	5.0	0.60	ug/L	20.7	104	64-136			
Bromodichloromethane		20	5.0	0.54	ug/L	19.5	98	66-135			
Bromoform		20	5.0	0.47	ug/L	16.9	84	73-129			
Bromomethane		20	5.0	1.2	ug/L	20.9	105	14-186			
Carbon Tetrachloride		20	5.0	0.51	ug/L	17.6	88	73-127			
Chlorobenzene		20	5.0	0.48	ug/L	20.6	103	66-134			
Chlorodibromomethane		20	5.0	0.41	ug/L	18.0	90	68-133			
Chloroethane		20	5.0	0.87	ug/L	20.6	103	38-162			
Chloroform		20	5.0	0.54	ug/L	20.2	101	68-133			
Chloromethane		20	5.0	0.64	ug/L	23.4	117	1-204			
cis-1,3-Dichloropropene		20	5.0	0.57	ug/L	19.1	96	24-176			
Ethylbenzene		20	5.0	0.46	ug/L	21.5	108	59-141			
Methylene Chloride		20	5.0	0.81	ug/L	19.8	99	61-140			
Tetrachloroethene		20	5.0	0.34	ug/L	20.6	103	74-127			
Toluene		20	5.0	0.45	ug/L	20.2	101	75-126			
trans-1,2-Dichloroethene		20	5.0	0.59	ug/L	20.4	102	70-131			
trans-1,3-Dichloropropene		20	5.0	0.44	ug/L	18.6	93	50-150			
Trichloroethene		20	5.0	0.60	ug/L	19.3	97	67-134			
Vinyl chloride		20	5.0	0.75	ug/L	21.5	107	4-196			
Surrogate: 1,2-Dichloroethane-d4					*ug/L*		*103*	*88-132*			
Surrogate: 4-Bromofluorobenzene					*ug/L*		*99*	*78-122*			
Surrogate: Toluene-d8					*ug/L*		*101*	*87-110*			

APPENDIX C-5

WELL WIZARD SYSTEM DIAGNOSIS GUIDE

Incorporate procedure into next GWSAP

New York State Department of Environmental Conservation
Division of Solid & Hazardous Materials
Bureau of Hazardous Waste Facilities
50 Wolf Road, Albany, New York 12233-7252
518-457-9253 FAX 518-457-9240

Michael D. Zagata
Commissioner

September 19, 1996

Mr. Greg Zayatz
Environmental Monitoring Supervisor
CWM Chemical Services, Inc.
P.O. Box 200
1550 Balmer Road
Model City, New York 14107

Re: Quintennial Inspection Modification

Dear Mr. Zayatz:

The New York State Department of Environmental Conservation (DEC) has reviewed the proposed modification to the "Quintennial Inspection Program" which were submitted on July 17, 1996. The modification requests an alternative procedure for evaluating the condition of Well Wizard bladder pumps used for groundwater monitoring at the Model City Facility.

Upon review, the modification to the inspection program is acceptable and hereby approved.

If you have any further questions on this matter, please contact me at (518) 457-9253.

Sincerely,

Kent Johnson
Engineering Geologist II

cc: F. Shattuck, Region 9
A. Everett, USEPA Region II
J. Devald, NCHD

CWM Chemical Services, Inc.

Model City Facility
P.O. Box 200
1550 Balmer Road
Model City, New York 14107
716/754-8231

July 17, 1996

William E. Wertz, Ph.D.
Senior Engineering Geologist
Bureau of Hazardous Compliance & Land Management
Division of Solid & Hazardous Materials

New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7251

RE: Quintennial Inspection Modification Request

Dear Dr. Wertz:

As a result of a conversation with Kent Johnson of NYSDEC, CWM Chemical Services Inc. (CWM) is requesting to modify the method currently used to evaluate the condition of groundwater monitoring equipment for the Quintennial Inspection. This request is applicable for Well Wizard-type sampling devices only. Bailers will continue to be visually inspected and replaced as needed.

The procedure currently used and demonstrated for Mr. Johnson, involves in-the-field removal of the bladder and pump from their protective stainless steel housing. Although the procedure is time-consuming, exposes the unit to dirt and dust, and may unseat seals and "O" rings, it does allow for a visual inspection of the pump interior. However, pinholes and abrasions on a Teflon bladder are very difficult to see.

The proposed procedure (attached) involves pressure testing the Well Wizard system for several minutes to demonstrate that it will hold pressure; a function integral to the unit's operation. This procedure does not expose the Well Wizard interior when performing the "Depth-to-Bottom" measurement nor does it result in undue wear on fragile "O" rings. A visual inspection of the Well Wizard exterior will then be made to determine the condition of the outer stainless steel shell. The shell will be replaced if exceedingly pitted or otherwise damaged.

CWM believes that the proposed procedure will allow the condition of dedicated sampling equipment to be thoroughly evaluated without resulting in unnecessary exposure or wear. If approved, this procedure will be incorporated into the next revision of the Groundwater Sampling & Analysis Plan.

WELL WIZARD''' SYSTEM DIAGNOSIS GUIDE

IF YOU ENCOUNTER A PROBLEM, THESE 4 CHECKS SHOULD BE MADE TO EITHER LOCATE THE PROBLEM AREA OR FACILITATE OUR DIAGNOSIS AND REPAIR. PLEASE WRITE DOWN YOUR FINDINGS FROM THESE CHECKS AS YOU PERFORM THEM. BEFORE USING THIS DIAGNOSIS GUIDE, PLEASE FAMILIARIZE YOURSELF WITH THE SYSTEM OPERATION AND TERMS USED IN THE OPERATING AND MAINTENANCE MANUAL.

IF YOU ARE HAVING A PROBLEM, PLEASE CONFIRM THAT:

1) THE CONTROLLER IS CYCLING AND ATTAINING A PRESSURE OF AT LEAST 80 PSI IN 60 SECONDS. (YOU MAY HAVE TO ADJUST THE FLOW THROTTLE FULLY CLOCKWISE AND THE DISCHARGE PUMP CONTROL TO THE 5 O'CLOCK POSITION TO ACHIEVE THIS PRESSURE)

2) THE CYCLE TIME LENGTH CAN BE CHANGED BY ADJUSTING THE REFILL AND DISCHARGE CONTROL KNOB POSITIONS, SO THAT CYCLE OPTIMIZATION CAN BE PERFORMED (STEP 4C)

3) THE SYSTEM WILL HOLD PRESSURE, BY PERFORMING THE LEAK TEST BELOW:

   a) Operate the system, adjust refill knob to 12 o'clock position and discharge knob to the 5 o'clock position.

   b) After reaching 100 PSI (OR HIGHEST READING below 100 PSI) during discharge cycle, shut off compressed gas source (compressor switch or tank valve).

   c) Observe pressure gauge on Controller, it should hold steady. A very slow decrease in pressure is permissible.

4) DISCHARGE VOLUME IS GREATER THAN 300 ML FOR THE 1100 SERIES PUMPS AND GREATER THAN 400 ML FOR THE 1200 SERIES PUMPS, BY USING THE FOLLOWING METHOD:

   a) Set refill and discharge knobs to 5 o'clock position.

   b) Measure volume of one discharge cycle.

   c) If volume is within specifications, optimize cycle pumping efficiency per instructions in the Operating and Maintenance Manual.

   d) If volume is low, check for:

      1) Insufficient pump submergence

      2) Well water recovery rate too slow.

      3) Leaking discharge fitting or tubing.

IF THESE 4 CHECKS DID NOT EXPOSE A MINOR PROBLEM (eg, - LOOSE FITTING) THAT WAS CAUSING YOUR PROBLEM, PLEASE CONTACT OUR CUSTOMER SERVICE DEPARTMENT AT 1-800-624-202: FOR ASSISTANCE.

DO NOT DISASSEMBLE ANY COMPONENT OF YOUR WELL WIZARD™ SYSTEM

DOING SO MAY VOID YOUR WARRANTY COVERAGE

GWSAP
Appendix D
Well ID Charts
December 17, 2013

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			BACKGROUND WELLS		
B34A	321.89	42.90	CLEAN	CONTROL	None
BW01D	321.08	40.32	CLEAN	Detection Well	Well Wiz
BW01S	321.53	15.93	CLEAN	Detection Well	Bailer
BW02D	322.57	42.87	CLEAN	Detection Well	Well Wiz
BW03D	320.84	49.89	CLEAN	Detection Well	Well Wiz
BW03S	322.75	13.57	CLEAN	Detection Well	Bailer
BW04D	323.53	40.65	CLEAN	Detection Well	Well Wiz
BW04S	323.84	17.93	CLEAN	Detection Well	Bailer
BW05S	321.13	17.88	CLEAN	Detection Well	Bailer
BW05D	321.65	42.49	CLEAN	Detection Well	Well Wiz
			FAC POND 1 & 2 WELLS		
F101S	322.62	25.36	CLEAN	Detection Well	Bailer
F102D	320.06	32.42	CLEAN	Detection Well	Well Wiz
F102S	320.55	20.95	CLEAN	Detection Well	Bailer
F103S	319.05	20.51	CLEAN	Detection Well	Bailer
			FAC POND 3 WELLS		
F301S	321.51	20.55	CLEAN	Detection Well	Bailer
F302D	321.26	50.26	CLEAN	Detection Well	Well Wiz
F302S	320.41	22.94	CLEAN	Detection Well	Bailer
			FAC POND 5 WELLS		
F501D	317.31	48.89	CLEAN	Detection Well	Well Wiz
F501S	317.11	16.99	CLEAN	Detection Well	Bailer
F502S	315.41	18.04	CLEAN	Detection Well	Bailer
			FAC POND 8 WELLS		
F801S	321.83	20.56	CLEAN	Detection Well	Bailer
F802LD	323.63	55.73	CLEAN	Detection Well	Well Wiz
F802S	323.44	20.56	CLEAN	Detection Well	Bailer
F802UD	323.97	45.69	CLEAN	Detection Well	Well Wiz

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			TANK 58 WELLS		
F5801D	319.84	40.25	CLEAN	Detection Well	Well Wiz
F5801S	319.84	19.54	CLEAN	Detection Well	Bailer
F5802S	319.35	20.58	CLEAN	Detection Well	1" Bailer
			FIRE POND WELLS		
FP01D	320.94	52.35	CLEAN	Detection Well	Well Wiz
FP01S	320.83	17.92	CLEAN	Detection Well	Bailer
			EAST/WEST SALTS AREA WELLS		
TP04S	321.75	22.92	CLEAN	Detection Well	Bailer
TW01S	320.20	17.92	**DIRTY**	Detection Well	Well Wiz
TW02S	329.46	28.27	CLEAN	Detection Well	Well Wiz
TW03D	322.08	41.56	CLEAN	Detection Well	Well Wiz
TW03S	321.82	25.93	CLEAN	Detection Well	Well Wiz
WS01S	320.02	20.51	CLEAN	Detection Well	Bailer
			NORTH SALTS AREA WELLS		
TW12S	314.49	18.56	CLEAN	Detection Well	Bailer
TW13S	319.92	22.94	CLEAN	Detection Well	Bailer
TW14S	314.69	17.92	CLEAN	Detection Well	Bailer
TW15D	315.38	38.52	CLEAN	Detection Well	Well Wiz
TW15S	316.06	25.92	CLEAN	Detection Well	Well Wiz
			INVESTIGATION WELLS		
TW21S	323.54	20.73	CLEAN	Detection Well	Bailer
TW24S	323.49	18.20	**DIRTY**	Detection Well	Well Wiz
TW26S	318.25	38.96	**DIRTY**	Detection Well	Well Wiz
TW29S	321.55	18.23	CLEAN	Detection Well	Bailer
RR01S	322.11	15.12	CLEAN	Detection Well	Bailer
W1209S	316.06	15.23	CLEAN	Detection Well	Bailer
GDA01S	320.32	20.14	CLEAN	Detection Well	Bailer

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			LAGOONS WELLS		
LMS01D	324.00	45.87	CLEAN	Detection Well	Well Wiz
LMS01S	323.45	20.48	CLEAN	Detection Well	Bailer
LMS02D	319.31	43.02	CLEAN	Detection Well	Well Wiz
LMS02S	319.77	28.12	CLEAN	Detection Well	Well Wiz
LMS03D	316.96	40.98	CLEAN	Detection Well	Well Wiz
LMS03S	317.20	21.71	CLEAN	Detection Well	Bailer
LMS04S	321.83	21.48	CLEAN	Detection Well	Bailer
TW11S	319.24	20.58	**DIRTY**	Detection Well	Well Wiz
TW30D	322.05	51.25	CLEAN	Detection Well	Well Wiz
			WEST DRUM AREA WELLS		
WDA01D	318.55	42.56	CLEAN	Detection Well	Well Wiz
WDA01S	318.97	27.86	CLEAN	Detection Well	Bailer
TW16S	319.82	25.56	**DIRTY**	Detection Well	Well Wiz
TW17S	317.65	20.57	**DIRTY**	Detection Well	Well Wiz
TW18S	318.73	20.56	**DIRTY**	Detection Well	Well Wiz
TW19S	318.89	26.20	**DIRTY**	Detection Well	Well Wiz
TW20S	318.26	20.73	CLEAN	Detection Well	Bailer
			GROUNDWATER EXTRACTION SYSTEM WELLS		
AQ01	319.97	22.61	**DIRTY**	Aqueous Sump	
AQ02	319.54	21.46	**DIRTY**	Aqueous Sump	Well Wiz
AQ03	318.38	20.96	**DIRTY**	Aqueous Sump	None
AQ04	318.43	20.81	**DIRTY**	Aqueous Sump	None
AQ05	318.62	19.06	**DIRTY**	Aqueous Sump	Well Wiz
AQ06	319.76	21.84	**DIRTY**	Aqueous Sump	None
AQ07	319.26	21.16	**DIRTY**	Aqueous Sump	Well Wiz
AQ08	323.61	23.86	**DIRTY**	Aqueous Sump	None
AQ09	322.96	29.00	**DIRTY**	Aqueous Sump	Well Wiz
AQ10	321.28	29.61	**DIRTY**	Aqueous Sump	None
AQ11	323.53	18.36	**DIRTY**	Aqueous Sump	None

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
GROUNDWATER EXTRACTION SYSTEM WELLS (continued)					
AQ12	323.35	18.31	**DIRTY**	Aqueous Sump	Well Wiz
AQ13W	321.24	24.62	**DIRTY**	Aqueous Sump	Well Wiz
AQ14E	321.33	25.49	**DIRTY**	Aqueous Sump	Well Wiz
AQ15	323.95	15.25	**DIRTY**	Aqueous Sump	Well Wiz
BW02S	322.12	15.90	**DIRTY**	Extraction Well	Well Wiz
TW27S	323.00	20.75	**DIRTY**	Extraction Well	Bailer
BWP01S	322.82	17.40	**DIRTY**	Performance Piezometer	None
BWP02S	323.07	17.59	**DIRTY**	Performance Piezometer	None
BWP03S	322.96	16.90	**DIRTY**	Performance Piezometer	None
BWP04S	323.30	17.03	**DIRTY**	Performance Piezometer	None
DS01	318.62	26.21	**DIRTY**	DNAPL Sump	None
DS02	318.74	25.71	**DIRTY**	DNAPL Sump	None
DS03	318.62	24.55	**DIRTY**	DNAPL Sump	None
DS04	319.17	25.42	**DIRTY**	DNAPL Sump	None
DS05	318.43	24.52	**DIRTY**	DNAPL Sump	None
DS06	319.18	24.50	**DIRTY**	DNAPL Sump	None
DS07	318.68	28.49	**DIRTY**	DNAPL Sump	None
DS08	320.67	26.31	**DIRTY**	DNAPL Sump	None
DS09	318.15	24.50	**DIRTY**	DNAPL Sump	None
DS10	317.44	22.60	**DIRTY**	DNAPL Sump	None
DS11	317.84	25.01	**DIRTY**	DNAPL Sump	None
DS12	317.03	22.01	**DIRTY**	DNAPL Sump	None
DS13	317.58	23.56	**DIRTY**	DNAPL Sump	None
DS14	317.20	23.86	**DIRTY**	DNAPL Sump	None
DS15	318.13	23.23	**DIRTY**	DNAPL Sump	None
DS16	318.18	23.61	**DIRTY**	DNAPL Sump	None
DS17	318.79	24.38	**DIRTY**	DNAPL Sump	None
DS18	318.87	24.54	**DIRTY**	DNAPL Sump	None
DS19	318.35	22.65	**DIRTY**	DNAPL Sump	None
DS20	323.20	27.11	**DIRTY**	DNAPL Sump	None
DS21	321.98	25.96	**DIRTY**	DNAPL Sump	None
DS22	321.53	30.16	**DIRTY**	DNAPL Sump	None

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
GROUNDWATER EXTRACTION SYSTEM WELLS (continued)					
DS23	321.07	31.71	DIRTY	DNAPL Sump	None
DS26	323.47	20.79	DIRTY	DNAPL Sump	None
DS27	320.90	18.22	DIRTY	DNAPL Sump	None
DS28	322.32	23.56	DIRTY	DNAPL Sump	None
DS29	322.15	27.76	DIRTY	DNAPL Sump	None
EW06	321.66	18.53	DIRTY	Extraction Well	Well Wiz
EW07	321.77	19.48	DIRTY	Extraction Well	Well Wiz
EW08	323.71	19.01	DIRTY	Extraction Well	None
EW09	323.04	19.91	DIRTY	Extraction Well	None
EW10	322.82	21.97	DIRTY	Extraction Well	None
EW11	322.50	15.06	DIRTY	Extraction Well	None
EW12	322.14	17.91	DIRTY	Extraction Well	Well Wiz
EW13	321.97	21.56	DIRTY	Extraction Well	None
EW14	321.74	19.81	DIRTY	Extraction Well	None
EW15	321.46	21.97	DIRTY	Extraction Well	None
EW16	321.46	21.75	DIRTY	Extraction Well	None
EW17	321.94	17.90	DIRTY	Extraction Well	None
EW18	322.04	17.79	DIRTY	Extraction Well	None
LD91	324.50	0.00	DIRTY	Performance Piezometer	Bailer
LD92	321.61	0.00	DIRTY	Performance Piezometer	Bailer
P1201S	313.50	13.58	CLEAN	Piezometer	Bailer
P1202S	317.54	20.54	DIRTY	Extraction Well	Well Wiz
P1203S	318.62	18.08	DIRTY	Performance Piezometer	None
P1204S	318.52	17.00	DIRTY	Performance Piezometer	None
P1205S	318.46	17.16	DIRTY	Performance Piezometer	None
P1206S	318.85	17.20	DIRTY	Performance Piezometer	None
TW25S	316.32	33.73	DIRTY	Extraction Well	Well Wiz
PA	318.50	21.72	DIRTY	Performance Piezometer	None
PAN01	318.52	21.80	DIRTY	Performance Piezometer	None
PAN02	318.58	21.91	DIRTY	Performance Piezometer	None
PAN03	318.74	22.36	DIRTY	Performance Piezometer	None
PAN04	319.08	21.15	DIRTY	Performance Piezometer	None
PAS01	318.51	22.14	DIRTY	Performance Piezometer	None

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
GROUNDWATER EXTRACTION SYSTEM WELLS (continued)					
PAS02	318.54	22.15	DIRTY	Performance Piezometer	None
PAS03	318.64	22.42	DIRTY	Performance Piezometer	None
PAS04	319.06	22.82	DIRTY	Performance Piezometer	None
PB	318.32	21.29	DIRTY	Performance Piezometer	None
PBN01	318.33	21.86	DIRTY	Performance Piezometer	None
PBN02	318.41	21.96	DIRTY	Performance Piezometer	None
PBN03	318.38	21.97	DIRTY	Performance Piezometer	None
PBN04	318.67	22.26	DIRTY	Performance Piezometer	None
PBS01	318.28	21.81	DIRTY	Performance Piezometer	None
PBS02	318.32	21.51	DIRTY	Performance Piezometer	None
PBS03	318.35	21.76	DIRTY	Performance Piezometer	None
PBS04	317.83	21.40	DIRTY	Performance Piezometer	None
PC	322.33	25.26	DIRTY	Performance Piezometer	None
PCN01	322.10	25.27	DIRTY	Performance Piezometer	None
PCN02	324.66	27.31	DIRTY	Performance Piezometer	None
PCN03	325.16	27.31	DIRTY	Performance Piezometer	None
PCS01	322.56	25.36	DIRTY	Performance Piezometer	None
PCS02	322.58	25.36	DIRTY	Performance Piezometer	None
PCS03	322.26	25.30	DIRTY	Performance Piezometer	None
PDN01	323.77	19.57	DIRTY	Performance Piezometer	None
PDN02	328.09	23.66	DIRTY	Performance Piezometer	None
PDN03	330.75	26.79	DIRTY	Performance Piezometer	None
PE01S	321.80	17.00	DIRTY	Performance Piezometer	None
PE02S	321.55	17.46	DIRTY	Performance Piezometer	None
PE03S	321.80	16.96	DIRTY	Performance Piezometer	None
PEW701	321.51	18.86	DIRTY	Performance Piezometer	None
PEW702	321.34	18.76	DIRTY	Performance Piezometer	None
PEW703	321.01	17.34	DIRTY	Performance Piezometer	None
PEW704	321.46	18.57	DIRTY	Performance Piezometer	None
PF	322.32	11.25	DIRTY	Performance Piezometer	None
PFN01	321.52	11.37	DIRTY	Performance Piezometer	None

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
GROUNDWATER EXTRACTION SYSTEM WELLS (continued)					
PFN02	321.39	11.20	**DIRTY**	Performance Piezometer	None
PFS01	322.91	12.07	**DIRTY**	Performance Piezometer	None
PFS02	322.95	12.07	**DIRTY**	Performance Piezometer	None
PLM101	324.23	21.73	**DIRTY**	Performance Piezometer	None
PLM201	320.58	17.35	**DIRTY**	Performance Piezometer	None
PLM202	320.45	16.79	**DIRTY**	Performance Piezometer	None
PLM301	317.81	18.38	**DIRTY**	Performance Piezometer	None
SLF 1-6 WELLS					
W101D	322.60	50.37	CLEAN	Detection Well	Well Wiz
W101S	321.26	15.89	CLEAN	Detection Well	Bailer
W102S	321.61	23.67	CLEAN	Detection Well	Bailer
W201D	322.99	48.42	CLEAN	Detection Well	Well Wiz
W201S	322.84	20.56	CLEAN	Detection Well	Bailer
W202S	335.49	28.27	**DIRTY**	Detection Well	Well Wiz
W202UD	335.24	50.93	CLEAN	Detection Well	Well Wiz
W202LD	335.39	63.20	CLEAN	Detection Well	Well Wiz
W301D	336.69	65.74	CLEAN	Detection Well	Well Wiz
W301S	335.87	31.30	**DIRTY**	Detection Well	Well Wiz
W302S	320.87	17.92	**DIRTY**	Detection Well	Well Wiz
W303S	320.77	20.49	CLEAN	Detection Well	Bailer
W401D	334.91	65.51	CLEAN	Detection Well	Well Wiz
W401S	336.29	32.96	**DIRTY**	Detection Well	Well Wiz
W402S	320.87	18.58	CLEAN	Detection Well	Bailer
W501D	326.82	55.79	CLEAN	Detection Well	Well Wiz
W501S	327.68	25.21	CLEAN	Detection Well	Well Wiz
W502S	322.82	17.91	CLEAN	Detection Well	Bailer
W601D	325.76	45.33	CLEAN	Detection Well	Well Wiz
W601S	324.27	22.59	CLEAN	Detection Well	Bailer
W602S	324.16	25.94	CLEAN	Detection Well	Bailer
W603S	325.30	25.58	CLEAN	Detection Well	Bailer

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			SLF 7 WELLS		
W701S	316.24	17.92	CLEAN	Detection Well	Bailer
W701D	316.40	39.56	CLEAN	Detection Well	Well Wiz
W702S	316.39	22.94	CLEAN	Detection Well	Bailer
W702D	317.23	41.35	CLEAN	Detection Well	Well Wiz
W703S	317.31	20.44	**DIRTY**	Detection Well	1"Well Wiz
W703D	316.63	43.56	CLEAN	Detection Well	Well Wiz
W704S	317.82	20.58	CLEAN	Detection Well	Bailer
W704D	318.13	45.46	CLEAN	Detection Well	Well Wiz
W705S	318.18	25.94	CLEAN	Detection Well	Bailer
W705D	318.24	40.17	CLEAN	Detection Well	Well Wiz
P701S	320.27	27.59	**DIRTY**	Det/Inv	1"Well Wiz
P702S	317.41	20.50	CLEAN	Piezometer	Bailer
P703S	320.79	25.96	**DIRTY**	Det/Inv	Bailer
			SLF 10 WELLS		
W1001S	321.70	26.25	CLEAN	Detection Well	Bailer
W1001D	321.19	38.58	CLEAN	Detection Well	Well Wiz
W1002S	322.83	23.27	**DIRTY**	Detection Well	Well Wiz
W1003S	336.45	27.94	CLEAN	Detection Well	Well Wiz
W1003D	336.22	53.24	CLEAN	Detection Well	Well Wiz
W1004S	336.30	30.39	CLEAN	Detection Well	Well Wiz
W1004D	336.49	55.68	CLEAN	Detection Well	Well Wiz
P1001S	322.46	18.48	CLEAN	Piezometer	Bailer
P1002S	323.64	20.54	CLEAN	Piezometer	Bailer
			GZR WELLS		
GZR01S	318.58	22.12	CLEAN	Detection Well	Bailer
GZR02S	318.82	20.54	CLEAN	Detection Well	Bailer
GZR03S	318.55	25.84	CLEAN	Detection Well	Bailer
GZR04S	319.63	20.44	CLEAN	Detection Well	Bailer

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			SLF 11 WELLS		
W1101S	319.08	26.19	CLEAN	Detection Well	Bailer
W1101D	318.94	42.94	CLEAN	Detection Well	Well Wiz
W1102S	319.24	23.75	CLEAN	Detection Well	Bailer
W1102D	318.62	41.73	CLEAN	Detection Well	Well Wiz
W1103S	318.92	29.19	**DIRTY**	Detection Well	Well Wiz
W1103D	319.77	43.25	CLEAN	Detection Well	Well Wiz
W1104S	320.36	25.75	**DIRTY**	Detection Well	Well Wiz
W1104D	318.70	46.07	CLEAN	Detection Well	Well Wiz
W1105S	319.45	18.21	**DIRTY**	Detection Well	Well Wiz
W1105D	319.95	48.64	CLEAN	Detection Well	Well Wiz
W1106S	320.06	26.25	**DIRTY**	Detection Well	Well Wiz
W1106D	318.36	41.52	CLEAN	Detection Well	Well Wiz
W1107S	319.73	20.92	CLEAN	Detection Well	Bailer
W1107D	318.62	44.92	CLEAN	Detection Well	Well Wiz
W1108S	319.12	24.19	CLEAN	Detection Well	Bailer
W1108D	318.87	44.96	CLEAN	Detection Well	Well Wiz
W1109S	319.34	20.56	**DIRTY**	Detection Well	Bailer
W1109D	318.90	45.58	CLEAN	Detection Well	Well Wiz
P1102S	321.26	16.23	CLEAN	Piezometer	Bailer
P1103S	320.47	23.78	CLEAN	Piezometer	None
P1104S	320.90	25.70	CLEAN	Piezometer	None
P1105S	320.33	18.58	CLEAN	Piezometer	Bailer
			SLF 12 WELLS		
W1201S	315.80	15.98	CLEAN	Detection Well	Bailer
W121UD	316.29	45.27	CLEAN	Detection Well	Well Wiz
W121LD	316.06	57.85	CLEAN	Detection Well	Well Wiz
W1202S	315.78	15.98	CLEAN	Detection Well	Bailer
W122UD	315.42	50.50	CLEAN	Detection Well	Well Wiz
W122LD	315.85	63.71	CLEAN	Detection Well	Well Wiz
W1203S	315.04	23.93	CLEAN	Detection Well	Bailer
W123UD	316.85	53.21	CLEAN	Detection Well	Well Wiz

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			SLF 12 WELLS (continued)		
W123LD	316.63	66.06	CLEAN	Detection Well	Well Wiz
W1204S	316.40	25.97	CLEAN	Detection Well	Bailer
W1204D	317.46	55.60	CLEAN	Detection Well	Well Wiz
W1205S	315.90	16.89	CLEAN	Detection Well	Bailer
W1205D	315.88	57.54	CLEAN	Detection Well	Well Wiz
W1206S	315.54	20.68	CLEAN	Detection Well	Bailer
W1206D	316.11	55.30	CLEAN	Detection Well	Well Wiz
W1207S	315.10	20.63	**DIRTY**	Detection Well	Bailer
W1207D	315.39	53.52	CLEAN	Detection Well	Well Wiz
W1208S	314.63	20.98	CLEAN	Detection Well	Bailer
W128UD	317.43	45.92	CLEAN	Detection Well	Well Wiz
W128LD	315.28	50.54	CLEAN	Detection Well	Well Wiz
			RMU-1 WELLS		
R101D	322.06	44.31	CLEAN	Detection Well	Well Wiz
R101DR	0.00	0.00	0	Detection Well	0
R101S	321.71	17.25	CLEAN	Detection Well	Bailer
R101SR	0.00	0.00	0	Detection Well	0
R102D	319.73	42.37	CLEAN	Detection Well	Well Wiz
R103D	319.57	45.27	CLEAN	Detection Well	Well Wiz
R102S	320.67	16.23	CLEAN	Detection Well	Bailer
R102SR	333.72	36.50	CLEAN	Detection Well	Well Wiz
R103S	321.26	16.25	CLEAN	Detection Well	Bailer
R104D	320.61	48.21	CLEAN	Detection Well	Well Wiz
R104S	320.45	15.24	CLEAN	Detection Well	Bailer
R105D	320.32	43.35	CLEAN	Detection Well	Well Wiz
R105S	320.87	16.25	**DIRTY**	Detection Well	Bailer
R106D	321.81	44.29	CLEAN	Detection Well	Well Wiz
R106S	320.84	20.23	**DIRTY**	Detection Well	Bailer
R107D	320.63	41.29	CLEAN	Detection Well	Well Wiz
R107S	320.71	26.26	**DIRTY**	Detection Well	Bailer

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			RMU-1 WELLS (continued)		
R108D	321.64	42.31	CLEAN	Detection Well	Well Wiz
R108S	321.79	21.25	**DIRTY**	Detection Well	1" Bailer
R1N08S	336.94	37.70	CLEAN	Detection Well	Well Wiz
R109D	320.89	45.29	CLEAN	Detection Well	Well Wiz
R109S	320.19	19.25	CLEAN	Detection Well	Bailer
R110D	321.38	43.28	CLEAN	Detection Well	Well Wiz
R110S	322.22	25.24	**DIRTY**	Detection Well	Bailer
R1N10S	331.24	30.15	CLEAN	Detection Well	Well Wiz
R111D	322.00	47.27	CLEAN	Detection Well	Well Wiz
R111S	321.18	23.26	CLEAN	Detection Well	Bailer
R112S	337.62	32.33	CLEAN	Detection Well	Well Wiz
R113S	337.23	32.24	CLEAN	Detection Well	Well Wiz
R114D	336.02	56.52	CLEAN	Detection Well	Well Wiz
R114S	335.55	32.96	CLEAN	Detection Well	Well Wiz
R115S	335.75	28.26	CLEAN	Detection Well	Bailer
R116D	335.58	58.72	CLEAN	Detection Well	Well Wiz
R116S	334.29	30.32	CLEAN	Detection Well	Well Wiz
R117LD	323.12	57.29	CLEAN	Piezometer	Well Wiz
R117UD	322.93	45.27	CLEAN	Piezometer	Well Wiz
R118D	321.31	45.30	CLEAN	Detection Well	Well Wiz
R118S	321.78	23.23	CLEAN	Detection Well	Bailer
R119D	323.04	50.31	CLEAN	Piezometer	Well Wiz
R120D	323.69	47.46	CLEAN	Piezometer	Well Wiz
R121D	325.41	51.80	CLEAN	Piezometer	None
R122D	326.21	48.69	CLEAN	Piezometer	None
R125D	325.95	48.09	CLEAN	Detection Well	Well Wiz
R126D	325.03	50.05	CLEAN	Detection Well	Well Wiz
R127D	326.15	51.17	CLEAN	Detection Well	Well Wiz
R128D	326.81	47.40	CLEAN	Detection Well	Well Wiz
R129D	327.38	50.24	CLEAN	Detection Well	Well Wiz
R130D	325.54	45.69	CLEAN	Detection Well	Well Wiz

GROUNDWATER WELL ID CHARTS

(Last updated 12/17/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			RMU-1 WELLS (continued)		
R131D	325.09	44.93	CLEAN	Detection Well	Well Wiz
R132D	325.11	46.54	CLEAN	Detection Well	Well Wiz
R133D	325.34	45.93	CLEAN	Detection Well	Well Wiz
R134D	324.44	45.46	CLEAN	Detection Well	Well Wiz
R135D	325.33	46.09	CLEAN	Detection Well	Well Wiz
R1P01S	323.90	20.19	CLEAN	Piezometer	None
R1P02S	327.25	21.52	CLEAN	Piezometer	None
R1P03S	322.24	18.21	CLEAN	Piezometer	None
R1P04S	324.43	23.70	CLEAN	Piezometer	None
R1P05S	324.29	18.80	CLEAN	Piezometer	None
R1P07S	322.77	19.19	CLEAN	Piezometer	None
R1P08S	335.23	31.52	CLEAN	Piezometer	None
R1P09S	322.92	18.19	CLEAN	Piezometer	None
R1P10S	321.36	21.21	CLEAN	Piezometer	None

GWSAP

Appendix D

GROUNDWATER WELL ID CHARTS

(Last updated 12/18/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
BACKGROUND WELLS					
B34A	321.89	42.90	CLEAN	CONTROL	None
BW01D	321.08	40.32	CLEAN	Detection Well	Well Wiz
BW01S	321.53	15.93	CLEAN	Detection Well	Bailer
BW02D	322.57	42.87	CLEAN	Detection Well	Well Wiz
BW03D	320.84	49.89	CLEAN	Detection Well	Well Wiz
BW03S	322.75	13.57	CLEAN	Detection Well	Bailer
BW04D	323.53	40.65	CLEAN	Detection Well	Well Wiz
BW04S	323.84	17.93	CLEAN	Detection Well	Bailer
BW05S	321.13	17.88	CLEAN	Detection Well	Bailer
BW05D	321.65	42.49	CLEAN	Detection Well	Well Wiz
FAC POND 1 & 2 WELLS					
F101S	322.62	25.36	CLEAN	Detection Well	Bailer
F102D	320.06	32.42	CLEAN	Detection Well	Well Wiz
F102S	320.55	20.95	CLEAN	Detection Well	Bailer
F103S	319.05	20.51	CLEAN	Detection Well	Bailer
FAC POND 3 WELLS					
F301S	321.51	20.55	CLEAN	Detection Well	Bailer
F302D	321.26	50.26	CLEAN	Detection Well	Well Wiz
F302S	320.41	22.94	CLEAN	Detection Well	Bailer
FAC POND 5 WELLS					
F501D	317.31	48.89	CLEAN	Detection Well	Well Wiz
F501S	317.11	16.99	CLEAN	Detection Well	Bailer
F502S	315.41	18.04	CLEAN	Detection Well	Bailer
FAC POND 8 WELLS					
F801S	321.83	20.56	CLEAN	Detection Well	Bailer
F802LD	323.63	55.73	CLEAN	Detection Well	Well Wiz
F802S	323.44	20.56	CLEAN	Detection Well	Bailer
F802UD	323.97	45.69	CLEAN	Detection Well	Well Wiz

GROUNDWATER WELL ID CHARTS

(Last updated 12/18/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			TANK 58 WELLS		
F5801D	319.84	40.25	CLEAN	Detection Well	Well Wiz
F5801S	319.84	19.54	CLEAN	Detection Well	Bailer
F5802S	319.35	20.58	CLEAN	Detection Well	1" Bailer
			FIRE POND WELLS		
FP01D	320.94	52.35	CLEAN	Detection Well	Well Wiz
FP01S	320.83	17.92	CLEAN	Detection Well	Bailer
			EAST/WEST SALTS AREA WELLS		
TP04S	321.75	22.92	CLEAN	Detection Well	Bailer
TW01S	320.20	17.92	**DIRTY**	Detection Well	Well Wiz
TW02S	329.46	28.27	CLEAN	Detection Well	Well Wiz
TW03D	322.08	41.56	CLEAN	Detection Well	Well Wiz
TW03S	321.82	25.93	CLEAN	Detection Well	Well Wiz
WS01S	320.02	20.51	CLEAN	Detection Well	Bailer
			NORTH SALTS AREA WELLS		
TW12S	314.49	18.56	CLEAN	Detection Well	Bailer
TW13S	319.92	22.94	CLEAN	Detection Well	Bailer
TW14S	314.69	17.92	CLEAN	Detection Well	Bailer
TW15D	315.38	38.52	CLEAN	Detection Well	Well Wiz
TW15S	316.06	25.92	CLEAN	Detection Well	Well Wiz
			INVESTIGATION WELLS		
TW21S	323.54	20.73	CLEAN	Detection Well	Bailer
TW24S	323.49	18.20	**DIRTY**	Detection Well	Well Wiz
TW26S	318.25	38.96	**DIRTY**	Detection Well	Well Wiz
TW29S	321.55	18.23	CLEAN	Detection Well	Bailer
RR01S	322.11	15.12	CLEAN	Detection Well	Bailer
W1209S	316.06	15.23	CLEAN	Detection Well	Bailer
GDA01S	320.32	20.14	CLEAN	Detection Well	Bailer

GROUNDWATER WELL ID CHARTS

(Last updated 12/18/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			LAGOONS WELLS		
LMS01D	324.00	45.87	CLEAN	Detection Well	Well Wiz
LMS01S	323.45	20.48	CLEAN	Detection Well	Bailer
LMS02D	319.31	43.02	CLEAN	Detection Well	Well Wiz
LMS02S	319.77	28.12	CLEAN	Detection Well	Well Wiz
LMS03D	316.96	40.98	CLEAN	Detection Well	Well Wiz
LMS03S	317.20	21.71	CLEAN	Detection Well	Bailer
LMS04S	321.83	21.48	CLEAN	Detection Well	Bailer
TW11S	319.24	20.58	**DIRTY**	Detection Well	Well Wiz
TW30D	322.05	51.25	CLEAN	Detection Well	Well Wiz
			WEST DRUM AREA WELLS		
WDA01D	318.55	42.56	CLEAN	Detection Well	Well Wiz
WDA01S	318.97	27.86	CLEAN	Detection Well	Bailer
TW16S	319.82	25.56	**DIRTY**	Detection Well	Well Wiz
TW17S	317.65	20.57	**DIRTY**	Detection Well	Well Wiz
TW18S	318.73	20.56	**DIRTY**	Detection Well	Well Wiz
TW19S	318.89	26.20	**DIRTY**	Detection Well	Well Wiz
TW20S	318.26	20.73	CLEAN	Detection Well	Bailer
			GROUNDWATER EXTRACTION SYSTEM WELLS		
AQ01	319.97	22.61	**DIRTY**	Aqueous Sump	
AQ02	319.54	21.46	**DIRTY**	Aqueous Sump	Well Wiz
AQ03	318.38	20.96	**DIRTY**	Aqueous Sump	None
AQ04	318.43	20.81	**DIRTY**	Aqueous Sump	None
AQ05	318.62	19.06	**DIRTY**	Aqueous Sump	Well Wiz
AQ06	319.76	21.84	**DIRTY**	Aqueous Sump	None
AQ07	319.26	21.16	**DIRTY**	Aqueous Sump	Well Wiz
AQ08	323.61	23.86	**DIRTY**	Aqueous Sump	None
AQ09	322.96	29.00	**DIRTY**	Aqueous Sump	Well Wiz
AQ10	321.28	29.61	**DIRTY**	Aqueous Sump	None
AQ11	323.53	18.36	**DIRTY**	Aqueous Sump	None

GROUNDWATER WELL ID CHARTS

(Last updated 12/18/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
GROUNDWATER EXTRACTION SYSTEM WELLS (continued)					
AQ12	323.35	18.31	**DIRTY**	Aqueous Sump	Well Wiz
AQ13W	321.24	24.62	**DIRTY**	Aqueous Sump	Well Wiz
AQ14E	321.33	25.49	**DIRTY**	Aqueous Sump	Well Wiz
AQ15	323.95	15.25	**DIRTY**	Aqueous Sump	Well Wiz
BW02S	322.12	15.90	**DIRTY**	Extraction Well	Well Wiz
TW27S	323.00	20.75	**DIRTY**	Extraction Well	Bailer
BWP01S	322.82	17.40	**DIRTY**	Performance Piezometer	None
BWP02S	323.07	17.59	**DIRTY**	Performance Piezometer	None
BWP03S	322.96	16.90	**DIRTY**	Performance Piezometer	None
BWP04S	323.30	17.03	**DIRTY**	Performance Piezometer	None
DS01	318.62	26.21	**DIRTY**	DNAPL Sump	None
DS02	318.74	25.71	**DIRTY**	DNAPL Sump	None
DS03	318.62	24.55	**DIRTY**	DNAPL Sump	None
DS04	319.17	25.42	**DIRTY**	DNAPL Sump	None
DS05	318.43	24.52	**DIRTY**	DNAPL Sump	None
DS06	319.18	24.50	**DIRTY**	DNAPL Sump	None
DS07	318.68	28.49	**DIRTY**	DNAPL Sump	None
DS08	320.67	26.31	**DIRTY**	DNAPL Sump	None
DS09	318.15	24.50	**DIRTY**	DNAPL Sump	None
DS10	317.44	22.60	**DIRTY**	DNAPL Sump	None
DS11	317.84	25.01	**DIRTY**	DNAPL Sump	None
DS12	317.03	22.01	**DIRTY**	DNAPL Sump	None
DS13	317.58	23.56	**DIRTY**	DNAPL Sump	None
DS14	317.20	23.86	**DIRTY**	DNAPL Sump	None
DS15	318.13	23.23	**DIRTY**	DNAPL Sump	None
DS16	318.18	23.61	**DIRTY**	DNAPL Sump	None
DS17	318.79	24.38	**DIRTY**	DNAPL Sump	None
DS18	318.87	24.54	**DIRTY**	DNAPL Sump	None
DS19	318.35	22.65	**DIRTY**	DNAPL Sump	None
DS20	323.20	27.11	**DIRTY**	DNAPL Sump	None
DS21	321.98	25.96	**DIRTY**	DNAPL Sump	None
DS22	321.53	30.16	**DIRTY**	DNAPL Sump	None

GROUNDWATER WELL ID CHARTS

(Last updated 12/18/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
GROUNDWATER EXTRACTION SYSTEM WELLS (continued)					
DS23	321.07	31.71	**DIRTY**	DNAPL Sump	None
DS26	323.47	20.79	**DIRTY**	DNAPL Sump	None
DS27	320.90	18.22	**DIRTY**	DNAPL Sump	None
DS28	322.32	23.56	**DIRTY**	DNAPL Sump	None
DS29	322.15	27.76	**DIRTY**	DNAPL Sump	None
EW06	321.66	18.53	**DIRTY**	Extraction Well	Well Wiz
EW07	321.77	19.48	**DIRTY**	Extraction Well	Well Wiz
EW08	323.71	19.01	**DIRTY**	Extraction Well	None
EW09	323.04	19.91	**DIRTY**	Extraction Well	None
EW10	322.82	21.97	**DIRTY**	Extraction Well	None
EW11	322.50	15.06	**DIRTY**	Extraction Well	None
EW12	322.14	17.91	**DIRTY**	Extraction Well	Well Wiz
EW13	321.97	21.56	**DIRTY**	Extraction Well	None
EW14	321.74	19.81	**DIRTY**	Extraction Well	None
EW15	321.46	21.97	**DIRTY**	Extraction Well	None
EW16	321.46	21.75	**DIRTY**	Extraction Well	None
EW17	321.94	17.90	**DIRTY**	Extraction Well	None
EW18	322.04	17.79	**DIRTY**	Extraction Well	None
LD91	324.50	0.00	**DIRTY**	Performance Piezometer	Bailer
LD92	321.61	0.00	**DIRTY**	Performance Piezometer	Bailer
P1201S	313.50	13.58	CLEAN	Piezometer	Bailer
P1202S	317.54	20.54	**DIRTY**	Extraction Well	Well Wiz
P1203S	318.62	18.08	**DIRTY**	Performance Piezometer	None
P1204S	318.52	17.00	**DIRTY**	Performance Piezometer	None
P1205S	318.46	17.16	**DIRTY**	Performance Piezometer	None
P1206S	318.85	17.20	**DIRTY**	Performance Piezometer	None
TW25S	316.32	33.73	**DIRTY**	Extraction Well	Well Wiz
PA	318.50	21.72	**DIRTY**	Performance Piezometer	None
PAN01	318.52	21.80	**DIRTY**	Performance Piezometer	None
PAN02	318.58	21.91	**DIRTY**	Performance Piezometer	None
PAN03	318.74	22.36	**DIRTY**	Performance Piezometer	None
PAN04	319.08	21.15	**DIRTY**	Performance Piezometer	None
PAS01	318.51	22.14	**DIRTY**	Performance Piezometer	None

GROUNDWATER WELL ID CHARTS

(Last updated 12/18/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
GROUNDWATER EXTRACTION SYSTEM WELLS (continued)					
PAS02	318.54	22.15	**DIRTY**	Performance Piezometer	None
PAS03	318.64	22.42	**DIRTY**	Performance Piezometer	None
PAS04	319.06	22.82	**DIRTY**	Performance Piezometer	None
PB	318.32	21.29	**DIRTY**	Performance Piezometer	None
PBN01	318.33	21.86	**DIRTY**	Performance Piezometer	None
PBN02	318.41	21.96	**DIRTY**	Performance Piezometer	None
PBN03	318.38	21.97	**DIRTY**	Performance Piezometer	None
PBN04	318.67	22.26	**DIRTY**	Performance Piezometer	None
PBS01	318.28	21.81	**DIRTY**	Performance Piezometer	None
PBS02	318.32	21.51	**DIRTY**	Performance Piezometer	None
PBS03	318.35	21.76	**DIRTY**	Performance Piezometer	None
PBS04	317.83	21.40	**DIRTY**	Performance Piezometer	None
PC	322.33	25.26	**DIRTY**	Performance Piezometer	None
PCN01	322.10	25.27	**DIRTY**	Performance Piezometer	None
PCN02	324.66	27.31	**DIRTY**	Performance Piezometer	None
PCN03	325.16	27.31	**DIRTY**	Performance Piezometer	None
PCS01	322.56	25.36	**DIRTY**	Performance Piezometer	None
PCS02	322.58	25.36	**DIRTY**	Performance Piezometer	None
PCS03	322.26	25.30	**DIRTY**	Performance Piezometer	None
PDN01	323.77	19.57	**DIRTY**	Performance Piezometer	None
PDN02	328.09	23.66	**DIRTY**	Performance Piezometer	None
PDN03	330.75	26.79	**DIRTY**	Performance Piezometer	None
PE01S	321.80	17.00	**DIRTY**	Performance Piezometer	None
PE02S	321.55	17.46	**DIRTY**	Performance Piezometer	None
PE03S	321.80	16.96	**DIRTY**	Performance Piezometer	None
PEW701	321.51	18.86	**DIRTY**	Performance Piezometer	None
PEW702	321.34	18.76	**DIRTY**	Performance Piezometer	None
PEW703	321.01	17.34	**DIRTY**	Performance Piezometer	None
PEW704	321.46	18.57	**DIRTY**	Performance Piezometer	None
PF	322.32	11.25	**DIRTY**	Performance Piezometer	None
PFN01	321.52	11.37	**DIRTY**	Performance Piezometer	None

GROUNDWATER WELL ID CHARTS

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Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
GROUNDWATER EXTRACTION SYSTEM WELLS (continued)					
PFN02	321.39	11.20	**DIRTY**	Performance Piezometer	None
PFS01	322.91	12.07	**DIRTY**	Performance Piezometer	None
PFS02	322.95	12.07	**DIRTY**	Performance Piezometer	None
PLM101	324.23	21.73	**DIRTY**	Performance Piezometer	None
PLM201	320.58	17.35	**DIRTY**	Performance Piezometer	None
PLM202	320.45	16.79	**DIRTY**	Performance Piezometer	None
PLM301	317.81	18.38	**DIRTY**	Performance Piezometer	None
SLF 1-6 WELLS					
W101D	322.60	50.37	CLEAN	Detection Well	Well Wiz
W101S	321.26	15.89	CLEAN	Detection Well	Bailer
W102S	321.61	23.67	CLEAN	Detection Well	Bailer
W201D	322.99	48.42	CLEAN	Detection Well	Well Wiz
W201S	322.84	20.56	CLEAN	Detection Well	Bailer
W202S	335.49	28.27	**DIRTY**	Detection Well	Well Wiz
W202UD	335.24	50.93	CLEAN	Detection Well	Well Wiz
W202LD	335.39	63.20	CLEAN	Detection Well	Well Wiz
W301D	336.69	65.74	CLEAN	Detection Well	Well Wiz
W301S	335.87	31.30	**DIRTY**	Detection Well	Well Wiz
W302S	320.87	17.92	**DIRTY**	Detection Well	Well Wiz
W303S	320.77	20.49	CLEAN	Detection Well	Bailer
W401D	334.91	65.51	CLEAN	Detection Well	Well Wiz
W401S	336.29	32.96	**DIRTY**	Detection Well	Well Wiz
W402S	320.87	18.58	CLEAN	Detection Well	Bailer
W501D	326.82	55.79	CLEAN	Detection Well	Well Wiz
W501S	327.68	25.21	CLEAN	Detection Well	Well Wiz
W502S	322.82	17.91	CLEAN	Detection Well	Bailer
W601D	325.76	45.33	CLEAN	Detection Well	Well Wiz
W601S	324.27	22.59	CLEAN	Detection Well	Bailer
W602S	324.16	25.94	CLEAN	Detection Well	Bailer
W603S	325.30	25.58	CLEAN	Detection Well	Bailer

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Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			SLF 7 WELLS		
W701S	316.24	17.92	CLEAN	Detection Well	Bailer
W701D	316.40	39.56	CLEAN	Detection Well	Well Wiz
W702S	316.39	22.94	CLEAN	Detection Well	Bailer
W702D	317.23	41.35	CLEAN	Detection Well	Well Wiz
W703S	317.31	20.44	**DIRTY**	Detection Well	1"Well Wiz
W703D	316.63	43.56	CLEAN	Detection Well	Well Wiz
W704S	317.82	20.58	CLEAN	Detection Well	Bailer
W704D	318.13	45.46	CLEAN	Detection Well	Well Wiz
W705S	318.18	25.94	CLEAN	Detection Well	Bailer
W705D	318.24	40.17	CLEAN	Detection Well	Well Wiz
P701S	320.27	27.59	**DIRTY**	Det/Inv	1"Well Wiz
P702S	317.41	20.50	CLEAN	Piezometer	Bailer
P703S	320.79	25.96	**DIRTY**	Det/Inv	Bailer
			SLF 10 WELLS		
W1001S	321.70	26.25	CLEAN	Detection Well	Bailer
W1001D	321.19	38.58	CLEAN	Detection Well	Well Wiz
W1002S	322.83	23.27	**DIRTY**	Detection Well	Well Wiz
W1003S	336.45	27.94	CLEAN	Detection Well	Well Wiz
W1003D	336.22	53.24	CLEAN	Detection Well	Well Wiz
W1004S	336.30	30.39	CLEAN	Detection Well	Well Wiz
W1004D	336.49	55.68	CLEAN	Detection Well	Well Wiz
P1001S	322.46	18.48	CLEAN	Piezometer	Bailer
P1002S	323.64	20.54	CLEAN	Piezometer	Bailer
			GZR WELLS		
GZR01S	318.58	22.12	CLEAN	Detection Well	Bailer
GZR02S	318.82	20.54	CLEAN	Detection Well	Bailer
GZR03S	318.55	25.84	CLEAN	Detection Well	Bailer
GZR04S	319.63	20.44	CLEAN	Detection Well	Bailer

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Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			SLF 11 WELLS		
W1101S	319.08	26.19	CLEAN	Detection Well	Bailer
W1101D	318.94	42.94	CLEAN	Detection Well	Well Wiz
W1102S	319.24	23.75	CLEAN	Detection Well	Bailer
W1102D	318.62	41.73	CLEAN	Detection Well	Well Wiz
W1103S	318.92	29.19	**DIRTY**	Detection Well	Well Wiz
W1103D	319.77	43.25	CLEAN	Detection Well	Well Wiz
W1104S	320.36	25.75	**DIRTY**	Detection Well	Well Wiz
W1104D	318.70	46.07	CLEAN	Detection Well	Well Wiz
W1105S	319.45	18.21	**DIRTY**	Detection Well	Well Wiz
W1105D	319.95	48.64	CLEAN	Detection Well	Well Wiz
W1106S	320.06	26.25	**DIRTY**	Detection Well	Well Wiz
W1106D	318.36	41.52	CLEAN	Detection Well	Well Wiz
W1107S	319.73	20.92	CLEAN	Detection Well	Bailer
W1107D	318.62	44.92	CLEAN	Detection Well	Well Wiz
W1108S	319.12	24.19	CLEAN	Detection Well	Bailer
W1108D	318.87	44.96	CLEAN	Detection Well	Well Wiz
W1109S	319.34	20.56	**DIRTY**	Detection Well	Bailer
W1109D	318.90	45.58	CLEAN	Detection Well	Well Wiz
P1102S	321.26	16.23	CLEAN	Piezometer	Bailer
P1103S	320.47	23.78	CLEAN	Piezometer	None
P1104S	320.90	25.70	CLEAN	Piezometer	None
P1105S	320.33	18.58	CLEAN	Piezometer	Bailer
			SLF 12 WELLS		
W1201S	315.80	15.98	CLEAN	Detection Well	Bailer
W121UD	316.29	45.27	CLEAN	Detection Well	Well Wiz
W121LD	316.06	57.85	CLEAN	Detection Well	Well Wiz
W1202S	315.78	15.98	CLEAN	Detection Well	Bailer
W122UD	315.42	50.50	CLEAN	Detection Well	Well Wiz
W122LD	315.85	63.71	CLEAN	Detection Well	Well Wiz
W1203S	315.04	23.93	CLEAN	Detection Well	Bailer
W123UD	316.85	53.21	CLEAN	Detection Well	Well Wiz

GROUNDWATER WELL ID CHARTS

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Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			SLF 12 WELLS (continued)		
W123LD	316.63	66.06	CLEAN	Detection Well	Well Wiz
W1204S	316.40	25.97	CLEAN	Detection Well	Bailer
W1204D	317.46	55.60	CLEAN	Detection Well	Well Wiz
W1205S	315.90	16.89	CLEAN	Detection Well	Bailer
W1205D	315.88	57.54	CLEAN	Detection Well	Well Wiz
W1206S	315.54	20.68	CLEAN	Detection Well	Bailer
W1206D	316.11	55.30	CLEAN	Detection Well	Well Wiz
W1207S	315.10	20.63	**DIRTY**	Detection Well	Bailer
W1207D	315.39	53.52	CLEAN	Detection Well	Well Wiz
W1208S	314.63	20.98	CLEAN	Detection Well	Bailer
W128UD	317.43	45.92	CLEAN	Detection Well	Well Wiz
W128LD	315.28	50.54	CLEAN	Detection Well	Well Wiz
			RMU-1 WELLS		
R101D	322.06	44.31	CLEAN	Detection Well	Well Wiz
R101DR	0.00	0.00	0	Detection Well	0
R101S	321.71	17.25	CLEAN	Detection Well	Bailer
R101SR	0.00	0.00	0	Detection Well	0
R102D	319.73	42.37	CLEAN	Detection Well	Well Wiz
R103D	319.57	45.27	CLEAN	Detection Well	Well Wiz
R102S	320.67	16.23	CLEAN	Detection Well	Bailer
R102SR	333.72	36.50	CLEAN	Detection Well	Well Wiz
R103S	321.26	16.25	CLEAN	Detection Well	Bailer
R104D	320.61	48.21	CLEAN	Detection Well	Well Wiz
R104S	320.45	15.24	CLEAN	Detection Well	Bailer
R105D	320.32	43.35	CLEAN	Detection Well	Well Wiz
R105S	320.87	16.25	**DIRTY**	Detection Well	Bailer
R106D	321.81	44.29	CLEAN	Detection Well	Well Wiz
R106S	320.84	20.23	**DIRTY**	Detection Well	Bailer
R107D	320.63	41.29	CLEAN	Detection Well	Well Wiz
R107S	320.71	26.26	**DIRTY**	Detection Well	Bailer

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(Last updated 12/18/13)

Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			RMU-1 WELLS (continued)		
R108D	321.64	42.31	CLEAN	Detection Well	Well Wiz
R108S	321.79	21.25	**DIRTY**	Detection Well	1" Bailer
R1N08S	336.94	37.70	CLEAN	Detection Well	Well Wiz
R109D	320.89	45.29	CLEAN	Detection Well	Well Wiz
R109S	320.19	19.25	CLEAN	Detection Well	Bailer
R110D	321.38	43.28	CLEAN	Detection Well	Well Wiz
R110S	322.22	25.24	**DIRTY**	Detection Well	Bailer
R1N10S	331.24	30.15	CLEAN	Detection Well	Well Wiz
R111D	322.00	47.27	CLEAN	Detection Well	Well Wiz
R111S	321.18	23.26	CLEAN	Detection Well	Bailer
R112S	337.62	32.33	CLEAN	Detection Well	Well Wiz
R113S	337.23	32.24	CLEAN	Detection Well	Well Wiz
R114D	336.02	56.52	CLEAN	Detection Well	Well Wiz
R114S	335.55	32.96	CLEAN	Detection Well	Well Wiz
R115S	335.75	28.26	CLEAN	Detection Well	Bailer
R116D	335.58	58.72	CLEAN	Detection Well	Well Wiz
R116S	334.29	30.32	CLEAN	Detection Well	Well Wiz
R117LD	323.12	57.29	CLEAN	Piezometer	Well Wiz
R117UD	322.93	45.27	CLEAN	Piezometer	Well Wiz
R118D	321.31	45.30	CLEAN	Detection Well	Well Wiz
R118S	321.78	23.23	CLEAN	Detection Well	Bailer
R119D	323.04	50.31	CLEAN	Piezometer	Well Wiz
R120D	323.69	47.46	CLEAN	Piezometer	Well Wiz
R121D	325.41	51.80	CLEAN	Piezometer	None
R122D	326.21	48.69	CLEAN	Piezometer	None
R125D	325.95	48.09	CLEAN	Detection Well	Well Wiz
R126D	325.03	50.05	CLEAN	Detection Well	Well Wiz
R127D	326.15	51.17	CLEAN	Detection Well	Well Wiz
R128D	326.81	47.40	CLEAN	Detection Well	Well Wiz
R129D	327.38	50.24	CLEAN	Detection Well	Well Wiz
R130D	325.54	45.69	CLEAN	Detection Well	Well Wiz

GROUNDWATER WELL ID CHARTS

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Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			RMU-1 WELLS (continued)		
R131D	325.09	44.93	CLEAN	Detection Well	Well Wiz
R132D	325.11	46.54	CLEAN	Detection Well	Well Wiz
R133D	325.34	45.93	CLEAN	Detection Well	Well Wiz
R134D	324.44	45.46	CLEAN	Detection Well	Well Wiz
R135D	325.33	46.09	CLEAN	Detection Well	Well Wiz
R1P01S	323.90	20.19	CLEAN	Piezometer	None
R1P02S	327.25	21.52	CLEAN	Piezometer	None
R1P03S	322.24	18.21	CLEAN	Piezometer	None
R1P04S	324.43	23.70	CLEAN	Piezometer	None
R1P05S	324.29	18.80	CLEAN	Piezometer	None
R1P07S	322.77	19.19	CLEAN	Piezometer	None
R1P08S	335.23	31.52	CLEAN	Piezometer	None
R1P09S	322.92	18.19	CLEAN	Piezometer	None
R1P10S	321.36	21.21	CLEAN	Piezometer	None
			RMU-2 WELLS		
R201S	322.05	17.54	**DIRTY**	Detection Well	Bailer
R201D	322.54	41.29	CLEAN	Detection Well	Well Wiz
R201SR	323.08	16.76	CLEAN	Detection Well	Bailer
R201DR	323.03	51.26	CLEAN	Detection Well	Well Wiz
R202S	320.61	13.34	**DIRTY**	Detection Well	Bailer
R202D	321.27	39.99	CLEAN	Detection Well	Well Wiz
R203S	320.17	13.44	CLEAN	Detection Well	Bailer
R203D	320.21	40.34	CLEAN	Detection Well	Well Wiz
R204S	319.15	14.01	**DIRTY**	Detection Well	Bailer
R204D	318.65	37.97	CLEAN	Detection Well	Well Wiz
R205S	317.79	18.20	CLEAN	Detection Well	Bailer
R205D	317.45	38.34	CLEAN	Detection Well	Well Wiz
R206S	316.45	13.07	CLEAN	Detection Well	Bailer
R206D	316.34	36.94	CLEAN	Detection Well	Well Wiz
R207S	319.05	12.34	CLEAN	Detection Well	Bailer
R207D	319.02	41.74	CLEAN	Detection Well	Well Wiz

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Well ID	Well Elevation	Well Depth	Status	Purpose	Sampler Type
			RMU-2 WELLS (continued)		
R208S	318.89	12.36	**DIRTY**	Detection Well	Bailer
R208D	319.00	40.49	CLEAN	Detection Well	Well Wiz
R209S	321.66	17.47	CLEAN	Detection Well	Bailer
R209D	321.65	43.45	CLEAN	Detection Well	Well Wiz
R210S	322.68	21.12	CLEAN	Detection Well	Bailer
R210D	322.19	46.28	CLEAN	Detection Well	Well Wiz
R211S	321.90	16.89	CLEAN	Detection Well	1" Well Wiz
R211D	321.73	44.76	CLEAN	Detection Well	Well Wiz
R212S	336.39	36.03	CLEAN	Detection Well	Well Wiz
R212UD	336.36	55.57	CLEAN	Detection Well	Well Wiz
R212LD	336.46	71.12	CLEAN	Detection Well	Well Wiz
R213S	333.68	28.49	CLEAN	Detection Well	Well Wiz
R213D	333.88	64.79	CLEAN	Detection Well	Well Wiz
R214S	333.31	28.19	CLEAN	Detection Well	Well Wiz
R214D	333.16	49.43	CLEAN	Detection Well	Well Wiz
R213S	333.68	28.49	CLEAN	Detection Well	Well Wiz
R215S	332.56	27.89	CLEAN	Detection Well	Well Wiz
R215D	332.54	61.86	CLEAN	Detection Well	Well Wiz
R216S	323.58	20.18	CLEAN	Detection Well	Bailer
R216D	323.71	54.94	CLEAN	Detection Well	Well Wiz
R2P01S	324.47	18.29	CLEAN	Piezometer	None