

Date	Wells: Static water elevation (ft)									
	1A	8	11	12	13	14	15	16	18	19
2/10/2000	601.4	605.37	595.3	590.3	596.6	601.0	605.8	611.9	599.9	589.5
5/9/2000	602.1	607.7	595.6	590.6	596.9	601.3	606.5	612.9	600.4	589.6
8/1/2000	603.4	609.1	597.2	591.9	598.1	602.3	607.2	613.6	601.8	590.6
1/15/2001		608.6		591.5						590.23
1/16/2001	603.9				598.10					
2/15/2001				591.85						590.6
4/24/2001	604.00	608.43		591.91	598.70					590.9
5/17/2001										590.8
6/5/2001	604.12	608.50		592.08	598.80					590.8
7/12/2001	603.94	608.14		592.05	598.78					591.3
10/8/2001	605.45	607.76		592.35	598.60					591.3
1/15/2002	604.51	608.29		592.26	598.75					591.0
4/23/2002	604.95	608.58		592.75	600.35					591.31
7/24/2002	606.14	607.97		593.26	599.76					592.10
10/22/2002	604.67	606.85		592.69	598.80					591.56
1/20/2003	604.84	606.70		592.30	598.30					590.94
4/21/2003	604.14	608.03		592.44	598.47					590.78
7/29/2003	604.37	608.29		592.91	599.10					591.38
10/22/2003	603.64	607.09		592.35	598.25					590.93
1/19/2004	603.14	607.81		592.37	598.23					590.65
4/19/2004	604.50	607.96		592.38	598.60					590.68
7/19/2004	603.99	607.86		592.65	598.75					591.38
10/18/2004	603.13	609.74		592.23	598.04					591.18
1/19/2005	603.70	609.30		592.80	598.80					591.53
4/18/2005	605.14	608.39		592.90	599.50					591.53
7/18/2005	604.44	607.00		592.77	598.95					591.48
10/17/2005	603.19	607.09		592.17	598.06					591.18
1/16/2006	602.49	608.41		591.80	597.80					591.03
4/17/2006	603.44	608.20		592.29	598.41			613.60		590.92
7/17/2006	603.21	607.54		592.20	598.35			612.86		591.18
10/16/2006	602.74	608.21		592.00	598.05			613.26		591.18
1/15/2007	604.25	608.94		592.62	599.15			614.07		591.62
4/16/2007	604.87	608.94		592.87	601.78			614.18		591.94
7/16/2007	604.33	607.35		592.57	599.20			612.65		591.68
10/15/2007	605.59	608.71		593.36	600.45			614.04		592.69
1/21/2008	605.14	609.31	609.40	593.11	600.05	620.08	614.38	614.16		592.44
4/21/2008	605.62	609.30		593.05	600.15			614.46		592.36

No. Observations	34	34	4	35	34	4	4	12	33	36
Minimum	601.40	605.37	595.30	590.30	596.60	601.00	605.80	611.90	599.90	589.50
Average	604.07	608.10	599.38	592.33	598.78	606.17	608.47	613.47	600.70	591.17
Maximum	606.14	609.74	609.40	593.36	601.78	620.08	614.38	614.46	601.80	592.69
90th Percentile	605.36	609.24	605.74	592.99	600.72	614.75	612.23	614.18	601.52	592.02
95th Percentile	605.60	609.30	607.57	593.16	600.39	617.41	613.30	614.31	601.66	592.38

Wells: pH, Standard Units										
Date:	1A	8	11	12	13	14	15	16	18	19
02/10/00	6.8	6.9	7.3	7.4	6.7	6.9	6.7	7.1	6.5	7.3
05/09/00	7.0	6.9	7.2	7.9	7.1	7.0	6.8	7.3	7.3	7.8
08/01/00	8.1	7.6	7.0	8.1	7.4	7.2	7.3	7.6	7.4	7.8
10/19/00	7.7	7.5	7.3	8.3	7.2	7.2	6.7	7.1	7.4	8.1
01/15/01		7.3		7.4						7.2
01/16/01	6.7				6.7					
02/14/01										
02/15/01				7.7						7.3
03/13/01										7.4
04/24/01	7.3	6.9		7.9	7.0					7.5
05/17/01										6.50
06/05/01	7.38	7.06		7.97	7.11					7.56
07/12/01	7.49	7.02		7.94	7.13					7.20
10/08/01	6.7	6.7		7.7	7.1					7.1
01/15/02	7.1	7.0		7.4	7.2					7.6
04/23/02	7.0	6.4		7.4	6.9					7.2
07/24/02	7.15	7.11		7.95	6.89					7.57
10/22/02	6.99	6.66		8.02	7.03					7.18
01/20/03	6.63	6.99		7.99	7.16					7.56
04/21/03	6.91	6.51		7.80	6.62					7.73
07/29/03	6.63	6.78		7.78	6.91					7.49
10/20/03	6.5	6.4		7.2	6.7					7.2
01/19/04	6.5	6.6		7.4	7.1					6.9
04/19/04	7.3	6.6		7.4	7.1					7.0
07/19/04	6.8	6.9		7.9	7.0					7.5
10/18/04	6.8	6.6		7.6	7.1					7.0
01/19/05	6.3	6.6		7.9	6.6					7.65
04/18/05	6.7	6.8		7.5	6.5					7.3
07/18/05	6.7	6.9		7.5	6.7					6.8
10/17/05	6.5	6.5		7.7	7.0					7.4
01/16/06	6.3	6.5		7.8	6.7					7.0
04/17/06	6.3	7		7.5	6.7			7.2		7.0
07/17/06	6.7	7.1		7.8	7.1			7.2		7.4
10/16/06	6.7	7.1		8.0	7.0			7.2		7.5
01/15/07	6.7	6.8		7.6	7.0			7.0		7.1
04/16/07	6.7	6.8		7.7	7.0			7.0		7.2
07/16/07	6.6	7.0		7.9	7.7			7.1		7.5
10/15/07	6.9	6.5		7.7	7.0			7.1		7.4
01/21/08	6.5	6.5		7.5	7.0			6.7		6.9
04/21/08	6.4	6.4		7.4	6.6			6.7		7.1

No. Observations	35	35	4	36	35	4	4	13	4	38
Minimum	6.3	6.4	7	7.2	6.5	6.9	6.7	6.7	6.5	6.5
Average	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Maximum	8.1	7.6	7.32	8.25	7.65	7.21	7.3	7.6	7.4	8.09
90th Percentile	7.3	7.1	7.3	8.0	7.2	7.2	7.2	7.3	7.4	7.7
95th Percentile	7.5	7.4	7.3	8.0	7.3	7.2	7.2	7.4	7.4	7.8

Date	Wells Chloride, mg/l									
	1A	8	11	12	13	14	15	16	18	19
02/15/00	11.3	53.4	11.7	8.7	16.8	67.7	45.2	22.3	29.7	26.0
05/09/00	10.1	90.4	10.1	8.0	24.7	50.8	40.2	49.1	29.6	22.3
07/31/00	7.6	34.3	8.2	7.3	28.7	52.9	54.0	69.3	36.8	22.7
1/16/2001	9.0	28.0		10.0	35.0					23
2/15/2001	8	37		7	41					20
3/13/2001	10	34		10	49					18
4/24/2001	12	33		11	51					22
5/17/2001	13	35		12	52					22
6/5/2001	13	35		13	53					19
7/12/2001	13	34		11	50					20
10/8/2001	10	33		9	44					24
1/15/2002	10	65		12	58					26
4/23/2002	12	33		10	41					27
7/24/2002	12	33		13	52					29
10/22/2002	11	46		11	81					29
1/20/2003	16	64		16	45					32
4/21/2003	4	49		10	52					35
7/29/2003	16	61		12	57					30
10/20/2003	4	32		4	85					25
1/19/2004	8	49		10	66					29
4/19/2004	8	41		8	51					30
7/19/2004	11	38		7	59					28
10/18/2004	11	40		9	61					30
1/19/2005	8	63		7	64					31
4/18/2005	8	53		9	75					32
7/18/2005	12	48		13	91					39
10/17/2005	9	102		7	113					36
1/23/2006	9	77		8	76					34
4/17/2006	9	44		8	75			77		34
7/17/2006	14	46		8	77			142		40
10/16/2006	9	35		14	66			88		38
1/15/2007	12	40		10	57			76		38
4/16/2007	19	45		9	52			92		42
7/16/2007	16.0	53.4		13.4	54.5			126		44.3
10/15/2007	15.9	64.1		14.8	57.9			87.4		48.4
1/21/2008	12.7	62.6		13.3	55.3			62.2		47.2
4/21/2008	10.4	72.3		12.7	53.0			156.0		42.6

No. Observations	37	37	3	37	37	3	3	12	33	37
Minimum	4	28	8	4	17	51	40	22	30	18
Average	11	49	10	10	57	57	46	87	32	31
Maximum	19	102	12	16	113	68	54	156	37	48
90th Percentile	16	68	11	13	79	65	52	140	35	42
95th Percentile	16	80	12	14	86	66	53	148	36	45

Date:	Wells: Specific Conductivity, umho									
	1A	8	11	12	13	14	15	16	18	19
2/15/2000	289	536	971	383	372	572	290	306	406	585
5/9/2000	420	715	482	431	475	565	360	510	638	421
8/1/2000	312	396	446	433	484	566	342	587	420	609
10/19/2000	287	446	440	475	531	681	594	716	479	675
1/15/2001		462		416						622
1/16/2001	359				531					
2/15/2001				483						632
3/13/2001										624
4/24/2001	498	430		650	653					577
5/17/2001										552
6/5/2001	527	425		536	669					602
7/12/2001	504	404		440	634					543
10/8/2001	507	542		394	582					573
1/15/2002	467	625		376	600					554
4/23/2002	474	410		508	558					524
7/24/2002	399	498		545	599					547
10/22/2002	450	520		591	734					548
1/20/2003	448	665		520	601					533
4/21/2003	512	603		543	665					542
7/29/2003	385	547		490	646					572
10/20/2003	231	437		465	693					556
1/19/2004	566	573		550	695					569
4/19/2004	436	436		520	598					518
7/19/2004	452	473		468	645					544
10/18/2004	546	537		460	735					594
1/19/2005	441	653		560	727					545
4/18/2005	508	562		513	747					570
7/18/2005	422	470		506	712					568
10/17/2005	598	799		525	841					601
1/16/2006	443	818		520	736					609
4/17/2006	486	522		531	711			667		591
7/17/2006	646	451		610	624			784		534
10/16/2006	436	560		525	648			685		544
1/15/2007	512	451		505	634			644		583
4/16/2007	475	466		561	611			672		557
7/16/2007	655	484		664	633			810		556
10/15/2007	696	583		601	595			644		573
1/21/2008	580	578		645	661			651		633
4/21/2008	546	653		734	571			960		590

No. Observations	35	35	4	36	35	4	4	13	4	38
Minimum	231	396	440	376	372	565	290	306	406	421
Average	471.8	535.142857	584.75	518.805556	632.885714	596	396.5	664.307692	485.75	570.263158
Maximum	696	818	971	734	841	681	594	960	638	675
90th Percentile	590.8	660.2	824.3	627.5	734.6	648.3	523.8	804.8	590.3	622.6
95th Percentile	648.7	740.2	897.65	653.5	739.3	664.65	558.9	870	614.15	632.15

Date	Wells: Total Inorganic Nitrogen, mg/l					
	1A	8	12	13	16	19
07/31/00	0.930	0.310	0.250	0.160		0.210
01/15/01	2.03	0.570	0.430	0.270		0.360
01/16/01	2.030	0.570	0.430	0.270		0.360
02/15/01	2.170	0.120	0.810	0.700		1.510
03/13/01	2.710	0.150	0.610	0.540		0.520
04/24/01	2.64	0.020	0.330	0.200		0.260
05/17/01	2.76	0.02	0.34	0.23		0.29
06/05/01	2.89	0.21	0.35	0.25		0.32
07/12/01	4.61	0.12	0.30	0.25		0.33
10/08/01	0.52	4.01	0.27	0.20		0.36
01/15/02	1.70	<0.01	0.25	0.21		0.36
04/23/02	2.94	<0.01	0.27	0.18		0.35
07/24/02	3.19	1.16	0.26	0.23		0.35
10/22/2002	0.39	0.03	0.28	0.25		0.35
1/21/2003	1.11	0.02	0.27	0.2		0.35
4/21/2003	3.76	0.02	0.26	0.19		0.35
7/31/2003	2.38	0.16	0.30	0.33		0.41
10/20/2003	1.05	0.13	0.28	0.3		0.37
01/19/04	2.48	0.03	0.03	0.23		0.23
04/19/04	3.45	<0.01	0.24	0.21		0.34
07/19/04	4.87	0.30	0.24	0.28		0.35
10/18/2004	2.61	1.02	0.21	0.31		0.37
1/19/2005	2.15	0.09	0.32	0.37		0.44
4/18/2005	16.7	0.02	0.24	0.32		0.40
5/23/2005	3.17					
7/18/2005	1.76	1.72	0.23	0.27		0.34
10/17/2005	3.06	0.28	0.23	0.22		0.21
1/23/2006	2.39	0.11	0.87	0.41		0.5
4/17/2006					0.97	
7/17/2006	2.4	0.2	0.9	0.5	1.01	0.6
10/16/2006	1.8	0.9	0.7	0.4	0.1	0.5
1/15/2007	1.1	0.1	0.5	0.3	1.0	0.4
4/16/2007	2.29	0.1	0.4	0.3	0.4	0.5
7/16/2007	2.39	0.2	0.5	0.3	0.57	0.4
10/15/2007	4.5	0.1	0.5	0.5	1.4	0.6
1/21/2008	1.45	0.26	0.5	0.31	0.84	0.36
4/21/2008	2.61	0.16	0.37	0.41	0.59	

No. Observations	36	32	35	35	9	34
Minimum	0.390	0.020	0.030	0.160	0.140	0.210
Average	2.806	0.413	0.377	0.302	0.772	0.409
Maximum	16.700	4.010	0.900	0.700	1.430	1.510
90th Percentile	4.15	1.005	0.646	0.452	1.094	0.517
95th Percentile	4.675	1.412	0.828	0.512	1.262	0.574

Censored values treated as 1/2 the MDL

No. Observations	36	35	35	35	9	34
Minimum	0.390	0.005	0.030	0.160	0.140	0.210
Average	2.806	0.378	0.377	0.302	0.772	0.409
Maximum	16.700	4.010	0.900	0.700	1.430	1.510
90th Percentile	4.150	0.960	0.646	0.452	1.094	0.517
95th Percentile	4.675	1.328	0.828	0.512	1.262	0.574

Date	Wells: AMMONIA (mg/l)									
	1A	8	11	12	13	14	15	16	18	19
2/15/2000	<0.05	<0.05	0.16	0.23	0.15	0.21	0.12	<0.05	0.25	0.18
5/9/2000	<0.03	<0.03	0.24	0.18	0.11	0.33	0.18	<0.03	0.24	0.2
7/31/2000	<0.03	0.3	0.11	0.25	0.16	0.32	0.25	<0.03	0.24	0.21
1/15/2001	0.05	0.04		0.43	0.27					0.36
1/16/2001										
2/15/2001	0.11	0.12		0.79	0.68					1.51
3/13/2001	0.33	0.11		0.58	0.52					0.50
4/24/2001	<0.01	<0.01		0.32	0.20					0.26
5/17/2001	<0.01	<0.01		0.32	0.21					0.27
6/5/2001	<0.01	0.05		0.32	0.23					0.30
7/12/2001	<0.01	0.05		0.27	0.22					0.30
10/8/2001	<0.01	<0.01		0.25	0.18					0.34
1/15/2002	<0.01	<0.01		0.25	0.21					0.36
4/23/2002	<0.01	<0.01		0.27	0.18					0.35
7/24/2002	0.4	0.04		0.26	0.23					0.35
10/22/2002	0.06	0.03		0.28	0.25					0.35
1/20/2003	0.07	0.02		0.27	0.20					0.35
4/21/2003	0.4	0.02		0.25	0.19					0.34
7/29/2003	0.32	0.01		0.23	0.24					0.33
10/20/2003	0.52	0.07		0.24	0.25					0.32
1/19/2004	0.70	0.03		0.23	0.22					0.32
4/19/2004	0.19	<0.01		0.24	0.21					0.34
7/19/2004	<0.01	0.01		0.20	0.24					0.31
10/8/2004	0.06	<0.01		0.18	0.31					0.35
1/19/2005	<0.01	<0.01		0.23	0.27					0.36
4/18/2005	<0.01	0.02		0.24	0.32					0.40
5/23/2005	0.11									
7/18/2005	<0.01	<0.01		0.02	0.11					0.17
10/17/2005	<0.01	<0.01		0.02	0.05					0.05
1/23/2006	0.11	0.1		0.87	0.41					0.48
4/17/2006	0.3	0.2		0.8	0.4		<0.1			0.5
7/17/2006	0.1	0.2		0.9	0.5		0.2			0.6
10/16/2006	0.1	<0.1		0.6	0.3		<0.1			0.4
1/15/2007	<0.1	<0.1		0.4	0.2		0.1			0.3
4/16/2007	0.2	0.1		0.4	0.3		<0.1			0.3
7/16/2007	<0.1	0.2		0.5	0.3		<0.1			0.4
10/15/2007	<0.1	<0.1		0.4	0.3		<0.1			0.4
1/21/2008	<0.05	0.08		0.35	0.31		<0.05			0.36
4/21/2008	0.16	<0.05		0.26	0.28		0.36			0.39

No. Observations	19	21	3	37	37	3	3	3	3	37
Minimum	0.05	0.01	0.11	0.02	0.05	0.21	0.12	0.1	0.24	0.05
Average	0.23	0.09	0.17	0.35	0.26	0.29	0.18	0.22	0.24	0.37
Maximum	0.7	0.3	0.24	0.9	0.68	0.33	0.25	0.36	0.25	1.51
90th Percentile	0.424	0.2	0.224	0.676	0.404	0.328	0.236	0.328	0.248	0.488
95th Percentile	0.538	0.2	0.232	0.814	0.504	0.329	0.243	0.344	0.249	0.52

Censored values treated as 1/2 the MDL

No. Observations	38	37	3	37	37	3	12	3	37
Minimum	0.005	0.005	0.11	0.02	0.05	0.21	0.015	0.24	0.05
Average	0.12	0.06	0.17	0.35	0.26	0.29	0.18	0.08	0.37
Maximum	0.7	0.3	0.24	0.9	0.68	0.33	0.25	0.36	1.51
90th Percentile	0.351	0.152	0.224	0.676	0.404	0.328	0.236	0.19	0.488
95th Percentile	0.418	0.2	0.232	0.814	0.504	0.329	0.243	0.272	0.52

Date	Wells: NITRITE (mg/l)					
	1A	8	12	13	16	19
2/15/2000	<0.05	0.02	<0.1	<0.05		<0.05
5/9/2000	0.02	0.20	<0.1	<0.02		<0.02
7/31/2000	<0.1	0.01	<0.1	<0.02		<0.02
1/16/2001	0.10	0.53	<0.01	<0.01		<0.01
2/15/2001	0.07	<0.01	<0.01	<0.01		<0.01
3/13/2001	0.23	<0.01	<0.01	<0.01		<0.01
4/24/2001	0.12	<0.01	<0.01	<0.01		<0.01
5/17/2001	0.06	<0.01	<0.01	<0.01		<0.01
6/5/2001	0.06	0.01	<0.01	0.01		<0.01
7/12/2001	0.14	<0.01	<0.01	<0.01		<0.01
10/8/2001	<0.01	0.01	<0.01	<0.01		<0.01
1/15/2002	0.24	<0.01	<0.01	<0.01		<0.01
4/23/2002	0.05	<0.01	<0.01	<0.01		<0.01
7/24/2002	0.2	<0.01	<0.01	<0.01		<0.01
10/22/2002	0.03	<0.01	<0.01	<0.01		<0.01
1/20/2003	0.15	<0.01	<0.01	<0.01		<0.01
4/21/2003	0.02	<0.01	0.01	<0.01		0.01
7/29/2003	0.01	0.01	<0.01	<0.01		<0.01
10/20/2003	<0.01	<0.01	<0.01	<0.01		<0.01
1/19/2004	<0.01	<0.01	<0.01	<0.01		<0.01
4/19/2004	<0.01	<0.01	<0.01	<0.01		<0.01
7/19/2004	0.04	<0.01	<0.01	<0.01		<0.01
10/18/2004	0.04	<0.01	<0.01	<0.01		<0.01
1/19/2005	<0.01	<0.01	<0.01	<0.01		<0.01
4/18/2005	<0.01	<0.01	<0.01	<0.01		<0.01
5/23/2005	0.04					
7/18/2005	0.04	<0.01	<0.01	<0.01		<0.01
10/17/2005	<0.01	<0.01	<0.01	<0.01		<0.01
1/23/2006	0.06	<0.01	<0.01	<0.01		<0.01
4/17/2006	<0.05	<0.05	<0.05	<0.05	0.07	<0.05
7/17/2006	<0.05	<0.05	<0.05	<0.05	0.11	<0.05
10/16/2006	<0.05	0.07	0.07	0.08	0.14	0.11
1/15/2007	0.2	0.10	0.05	0.07	0.14	0.06
4/16/07	0.09	<0.05	<0.05	<0.05	<0.05	<0.05
7/16/2007	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10/15/2007	0.06	<0.05	0.07	0.07	0.13	<0.05
1/21/2008	<0.05	<0.05	<0.05	<0.05	0.06	<0.05
4/21/2008	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

No. Observations	23	9	4	4	6	3
Minimum	0.01	0.01	0.01	0.01	0.06	0.01
Average	0.09	0.11	0.05	0.06	0.11	0.06
Maximum	0.24	0.53	0.07	0.08	0.14	0.11
90th Percentile	0.2	0.266	0.07	0.077	0.14	0.1
95th Percentile	0.227	0.398	0.07	0.0785	0.14	0.105

Censored values treated as 1/2 the MDL

No. Observations	38	37	37	37	9	37
Minimum	0.01	0.01	0.01	0.01	0.03	0.01
Average	0.06	0.03	0.02	0.01	0.08	0.01
Maximum	0.24	0.53	0.07	0.08	0.14	0.11
90th Percentile	0.17	0.04	0.05	0.03	0.14	0.03
95th Percentile	0.20	0.12	0.05	0.07	0.14	0.03

Date	1A	8	11	12	13	14	15	16	18	19
2/15/2000	<0.05	0.35	0.08	<0.05	<0.05	<0.05	<0.05	0.27	<0.05	<0.05
5/9/2000	0.415	0.402	0.097	<0.02	<0.02	<0.02	<0.02	0.074	<0.02	<0.02
7/31/2001	0.93	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	0.147	<0.02	<0.02
1/16/2001	1.88	<0.01		<0.01	<0.01					<0.01
2/15/2001	1.99	<0.01		0.02	0.02					<0.01
3/13/2001	2.15	0.04		0.03	0.02					0.02
4/24/2001	2.52	0.02		0.01	<0.01					<0.01
5/17/2001	2.70	0.02		0.02	0.02					0.02
6/5/2001	2.83	0.15		0.03	0.01					0.02
7/12/2001	4.47	0.07		0.03	0.03					0.03
10/8/2001	0.52	4.00		0.02	0.02					0.02
1/15/2002	1.46	<0.01		<0.01	<0.01					<0.01
4/23/2002	2.89	<0.01		<0.01	<0.01					<0.01
7/24/2002	2.77	1.12		<0.01	<0.01					<0.01
10/22/2002	0.3	<0.01		<0.01	<0.01					<0.01
1/20/2003	0.89	<0.01		<0.01	<0.01					<0.01
4/21/2003	3.34	<0.01		<0.01	<0.01					<0.01
7/29/2003	2.05	0.14		0.07	0.09					0.08
10/20/2003	0.53	0.06		0.04	0.05					0.05
1/19/2004	1.78	<0.01		<0.01	<0.01					0.01
4/19/2004	3.26	<0.01		<0.01	<0.01					<0.01
7/19/2004	4.83	0.29		0.04	0.04					<0.01
10/18/2004	2.51	1.02		0.03	<0.01					0.02
1/19/2005	2.15	0.09		0.09	0.10					0.08
4/18/2005	16.7	<0.01		<0.01	<0.01					<0.01
5/23/2005	3.02									
7/18/2005	1.72	1.72		0.21	0.16					0.17
10/17/2005	3.06	0.28		0.21	0.17					0.16
1/23/2006	2.22	0.01		<0.01	<0.01					0.02
4/17/2006	2.2	<0.2		<0.2	<0.2			0.9		<0.2
7/17/2006	2.3	<0.2		<0.2	<0.2			0.7		<0.2
10/16/2006	1.7	0.8		<0.2	<0.2			<0.2		<0.2
1/15/2007	0.9	<0.2		<0.2	<0.2			0.8		<0.2
4/16/2007	2.0	<0.2		<0.2	<0.2			0.4		0.2
7/16/2007	2.39	<0.05		<0.05	<0.05			0.57		<0.05
10/15/2007	4.48	0.13		<0.05	0.11			1.30		0.16
1/21/2008	1.45	0.18		0.15	<0.10			0.78		<0.10
4/21/2008	2.45	0.16		0.11	0.13			0.23		0.11

No. Observations	37	21	3	16	14	0	0	11	0	16
Minimum	0.3	0.01	0.08	0.01	0.01	0	0	0.074	0	0.01
Average	2.59	0.53	0.09	0.07	0.07	#DIV/0!	#DIV/0!	0.56	#DIV/0!	0.07
Maximum	16.7	4	0.1	0.21	0.17	0	0	1.3	0	0.2
90th Percentile	3.79	1.12	0.10	0.18	0.15	#NUM!	#NUM!	0.90	#NUM!	0.17
95th Percentile	4.55	1.72	0.0997	0.21	0.1635	#NUM!	#NUM!	1.1	#NUM!	0.1775

Censored values treated as 1/2 the MDL.

No. Observations	38	37	3	37	37	3	3	12	3	37
Minimum	0.03	0.01	0.08	0.01	0.01	0.01	0.01	0.07	0.01	0.01
Average	2.52	0.31	0.09	0.05	0.04	0.02	0.02	0.52	0.02	0.05
Maximum	16.70	4.00	0.10	0.21	0.17	0.03	0.03	1.30	0.03	0.20
90th Percentile	3.68	0.89	0.10	0.10	0.10	0.02	0.02	0.89	0.02	0.13
95th Percentile	4.53	1.24	0.10	0.16	0.14	0.02	0.02	1.08	0.02	0.16

Wells: PHOSPHORUS (00665) - TOTAL (mg/l)										
Date:	1A	8	11	12	13	14	15	16	18	19
02/15/00	<0.05	<0.05	0.05	0.09	<0.05	<0.05	<0.05	<0.05	0.06	<0.05
05/09/00	0.03	0.03	0.04	0.07	0.04	0.03	0.05	0.04	0.04	0.07
07/31/00	<0.02	0.03	<0.02	0.05	<0.02	0.02	<0.02	<0.02	0.03	0.02
01/16/01	<0.01	0.05		0.07	<0.01					0.02
02/15/01	<0.01	<0.01		0.04	<0.01					0.02
03/13/01	<0.01	<0.01		0.03	<0.01					<0.01
04/24/01	0.01	<0.01		0.05	<0.01					0.04
05/17/01	<0.01	<0.01		0.04	<0.01					0.02
06/05/01	<0.01	<0.01		0.05	<0.01					<0.01
07/12/01	<0.01	<0.01		0.03	<0.01					<0.01
10/08/01	<0.01	<0.01		0.05	<0.01					<0.01
01/15/02	0.01	<0.01		0.08	0.01					0.02
04/23/02	<0.01	<0.01		<0.01	<0.01					<0.01
07/24/02	<0.01	<0.01		0.01	<0.01					<0.01
10/22/02	0.05	0.05		0.08	0.03					<0.01
01/20/03	<0.01	<0.01		0.03	<0.01					<0.01
04/21/03	<0.01	<0.01		<0.01	<0.01					<0.01
07/29/03	<0.01	<0.01		<0.01	<0.01					<0.01
10/20/03	0.14	0.08		0.10	0.04					0.02
01/19/04	<0.01	<0.01		0.03	<0.01					<0.01
04/19/04	<0.01	<0.01		0.03	0.02					<0.01
07/19/04	<0.01	<0.01		0.03	<0.01					<0.01
10/18/04	<0.01	<0.01		0.01	<0.01					<0.01
01/19/05	<0.01	0.03		0.03	0.03					0.04
02/24/05	<0.01	<0.01		0.03	0.04					0.04
04/18/05	0.04	0.04		0.09	0.05					0.05
07/18/05	0.06	0.18		0.07	0.09					0.37
10/17/05	1.18	0.96		0.25	<0.01					<0.01
10/17/05	<0.01	<0.01		<0.01	<0.01					<0.01
11/04/05	0.02									
01/23/06	0.02	<0.01		0.06	0.01					0.02
04/17/06	<0.1	<0.1		<0.1	<0.1			<0.1		<0.1
07/17/06	0.2	0.3		<0.1	0.4			0.1		0.1
10/16/06	<0.1	<0.1		<0.1	<0.1			<0.1		<0.1
01/15/07	0.4	<0.1		0.4	0.3			0.3		0.7
04/16/07	<0.1	<0.1		<0.1	<0.1			<0.1		0.7
07/16/07	0.6	0.7		0.6	0.6			0.6		0.6
10/15/07	<0.1	<0.1		<0.1	<0.1			<0.1		<0.1
01/21/08	<0.1	<0.1		<0.1	<0.1			<0.1		<0.1
04/21/08	<0.1	<0.1		<0.1	<0.1			<0.1		<0.1

No. Observations	13	11	2	28	13	2	4	3	17
Minimum	0.01	0.03	0.04	0.01	0.01	0.02	0.05	0.04	0.03
Average	0.21	0.22	0.05	0.09	0.13	0.03	0.05	0.26	0.04
Maximum	1.18	0.96	0.05	0.6	0.6	0.03	0.05	0.6	0.06
90th Percentile	0.56	0.7	0.049	0.145	0.38	0.029	0.05	0.51	0.056
95th Percentile	0.832	0.83	0.0495	0.3475	0.48	0.0295	0.05	0.555	0.058

Censored values treated as 1/2 the MDL

No. Observations	40	39	3	39	39	3	3	12	3	39
Minimum	0.005	0.005	0.01	0.005	0.005	0.02	0.01	0.01	0.03	0.005
Average	0.08	0.08	0.03	0.07	0.05	0.03	0.03	0.11	0.04	0.08
Maximum	1.18	0.96	0.05	0.6	0.6	0.03	0.05	0.6	0.06	0.7
90th Percentile	0.146	0.1	0.048	0.092	0.058	0.029	0.045	0.28	0.056	0.154
95th Percentile	0.41	0.34	0.049	0.265	0.31	0.0295	0.0475	0.435	0.058	0.61

Wells: SULFATE (00945) (mg/l)										
Date:	1A	8	11	12	13	14	15	16	18	19
02/15/00	43.9	28.5	374	60.3	21.2	36.1	16.4	27.9	18.3	140
05/09/00	107.0	53.0	137.0	90.0	19.7	31.8	16.3	28.9	20.1	134
07/31/00	70.9	61.2	76.6	95.3	24.1	33.0	21.7	29.5	14.5	139
01/16/01	59	27		76	22					129
02/15/01	97	27		97	25					131
03/13/01	127	29		130	24					130
04/24/01	151	29		205	35					115
05/17/01	151	36		171	42					118
06/05/01	145	36		134	52					118
07/12/01	136	37		103	60					106
10/08/01	139	45		82	32					93
01/15/02	134	44		67	35					70
04/23/02	121	27		128	26					53
07/24/02	91	28		146	337					58
10/22/02	136	31		156	44					43
01/20/03	110	57		134	55					43
04/21/03	141	34		137	51					43
07/29/03	86	30		120	128					61
10/20/03	30	38		114	47					64
01/19/04	158	29		119	43					60
04/19/04	114	28		141	45					56
07/19/04	96	33		115	59					66
10/18/04	137	33		95	199					55
01/19/05	95	36		145	54					72
04/18/05	113	27		122	43					57
07/18/05	124	27		129	36					59
10/17/05	162	28		120	33					55
01/23/06	96	41		112	25					67
04/17/06	115	29		123	25			32		63
07/17/06	199	32		180	42			33		60
10/16/06	114	39		136	33			31		56
01/15/07	124	17		112	47			26		28
04/16/07	96	22		146	53			31		49
07/16/07	200	21		198	79			31		58
10/15/07	208	16		147	32			28		57
01/21/08	140	18		150	36			32		57
04/21/08	139	21.6		206	29.8			13.7		55.7

No. Observations	37	37	3	37	37	3	3	12	3	37
Minimum	30	16	77	60	20	32	16	14	15	28
Average	122	32	196	128	54	34	18	29	18	76
Maximum	208	61	374	206	337	36	22	33	20	140
90th Percentile	160	44	327	175	68	35	21	32	20	130
95th Percentile	199	54	350	199	142	36	21	32	20	135

Date	Wells: SODIUM (00929) - (mg/l)									
	1A	8	11	12	13	14	15	16	18	19
02/15/00	24.6	17.2	120	27.2	10.1	38.8	28.1	13.3	20.3	61.7
05/09/00	61.3	68.2	84.2	31.1	14.2	37.2	28.5	9.8	22.2	72.3
07/31/00	31.5	17.4	35.3	31.4	22.5	28.6	35.8	19.2	20.6	61.2
01/16/01	20.2	18.4		32.3	22.8					56.9
02/15/01	22.9	18.7		31.9	22.4					58.0
03/13/01	37.9	20.4		33.9	24.4					59.0
04/24/01	51.0	19.5		38.5	25.6					51.4
05/17/01	59.3	21.6		45.5	24.7					54.1
06/05/01	59.6	18.7		52.2	26.7					54.9
07/12/01	51.8	19.3		49.1	30.8					55.5
10/08/01	64.9	26.5		33.9	28.2					51.6
01/15/02	47.0	34.4		31.6	29.8					40.9
04/23/02	56.2	13.5		37.0	25.4					35.0
07/24/02	37.3	18.9		55.3	31.4					37.0
10/22/02	43.9	31.2		60.9	37.7					34.7
01/20/03	30.8	38.4		58.1	34.0					31.0
04/21/03	62.2	33.1		56.7	33.2					32.3
07/29/03	33.2	33.7		53.0	42.8					33.8
10/20/03	16.5	17.3		41.8	34.7					33.5
01/19/04	47.4	26.8		46.5	39.9					27.4
04/19/04	39.6	18.1		47.8	27.8					32.2
07/19/04	40.5	19.8		51.7	38.7					32.5
10/18/04	57.4	23.6		43.2	33.8					26.6
01/19/05	26.2	28.6		35.3	31.8					15.3
04/18/05	39.5	33.3		41.6	35.3					27.5
07/18/05	58.1	23.6		46.5	41.2					30.0
10/17/05	72.0	51.3		46.0	63.2					29.6
01/16/06	38.8	51.4		43.6	49.5					36.0
04/17/06	40.6	24.7		42.8	44.2			19.0		32.1
07/17/06	88.6	22.7		54.7	47.9			60.3		30.8
10/16/06	42.8	20.9		55.0	40.2			35.0		27.4
01/15/07	63.9	20.2		49.9	46.1			30.5		30.1
04/16/07	31.8	19.6		37.6	33.5			25.4		24.3
07/16/07	64.7	22.0		71.1	48.4			65.9		31.5
10/15/07	109	34.7		66.5	34.6			49.2		32.3
01/21/08	74.8	41.2		64.3	40.4			23.2		34.5
04/21/08	52.2	45.2		79.7	29.6			69.3		32.9

No. Observations	37	37	3	37	37	3	3	12	3	37
Minimum	16.5	13.5	35.3	27.2	10.1	28.6	28.1	9.8	20.3	15.3
Average	48.65	27.41	79.83	46.63	33.72	34.87	30.80	35.01	21.03	39.13
Maximum	109	68.2	120	79.7	63.2	38.8	35.8	69.3	22.2	72.3
90th Percentile	67.74	42.8	112.84	62.26	46.82	38.48	34.34	65.34	21.88	58.4
95th Percentile	77.56	51.32	116.42	67.42	48.62	38.64	35.07	67.43	22.04	61.3

Well: TOTAL DISSOLVED SOLIDS (70300) (mg/l)										
Date:	1A	8	11	12	13	14	15	16	18	19
02/15/00	191	317	755	221	266	375	272	248	247	405
05/09/00	275	494	392	277	299	354	216	286	260	427
07/31/00	191	288	288	264	299	377	283	344	263	416
01/16/01	187	269		249	305					398
02/15/01	233	270		287	318					379
03/13/01	274	250		325	310					359
04/24/01	317	266		446	392					366
05/17/01	326	270		395	363					365
06/05/01	325	270		327	393					431
07/12/01	333	268		280	392					358
10/08/01	311	312		235	333					342
01/15/02	285	364		214	348					327
04/23/02	289	247		264	309					304
07/24/02	218	289		324	337					309
10/22/02	267	352		398	306					293
01/21/03	255	386		315	343					306
04/21/03	288	344		285	399					329
07/29/03	279	319		351	366					380
10/20/03	131	282		289	406					341
01/19/04	322	333		301	371					321
04/19/04	274	289		320	375					313
07/19/04	327	318		309	435					335
10/18/04	287	272		238	376					300
01/19/05	227	351		331	365					318
04/18/05	266	310		263	386					298
07/18/05	263	259		283	394					315
10/17/05	286	358		274	395					298
01/23/06	242	369		278	367					325
04/17/06	272	278		294	373			345		339
07/17/06	388	241		346	357			413		290
10/16/06	252	308		306	355			375		326
01/15/07	296	255		302	343			334		338
04/16/07	266	258		345	354			369		341
07/16/07	434	288		424	376			446		334
10/15/07	512	456		506	471			480		434
01/21/08	328	284		334	338			304		216
04/21/08	360	471		376	569			383		413

No. Observations	37	37	3	37	37	3	3	12	3	37
Minimum	131	241	288	214	266	354	216	248	247	216
Average	285.86	312.30	478.33	312.86	364.43	368.67	257.00	360.58	256.67	342.95
Maximum	512	494	755	506	569	377	283	480	263	434
90th Percentile	343.8	375.8	682.4	396.2	401.8	376.6	280.8	442.7	262.4	414.2
95th Percentile	397.2	459	718.7	428.4	442.2	376.8	281.9	461.3	262.7	427.8

Date	Wells: ALKALINITY - TOTAL (mg/l)									
	1A	8	11	12	13	14	15	16	18	19
2/15/2000	121	181	135	124	184	194	97.1	169	158	160
05/09/00	69	207	101	101	189	164	91	156	145	146
07/31/00	58.6	94.5	142	104	175	198	105	171	147	144
1/16/2001	78	171		126	198					154
2/15/2001	66	151		124	200					149
03/13/01	65	135		117	206					148
4/24/2001	68	139		120	204					149
5/17/2001	74	132		114	202					151
6/5/2001	88	128		112	212					153
7/12/2001	85	131		108	201					155
10/8/2001										
1/15/2002										
4/23/2002										
7/24/2002	79	175		109	188					176
7/29/2003	78	151		108	182					193
7/19/2004	78	143		105	201					172
7/18/2005	64	134		104	183					172
4/17/2006								158		
7/17/2006	79	112		111	186			173		158
7/16/2007	95	147		105	168			192		160
10/15/2007	90	134		124	180			114		169

No. Observations	17	17	3	17	17	3	3	7	3	17
Minimum	58.6	94.5	101	101	168	164	91	114	145	144
Average	78.56	145.03	126.00	112.71	191.71	185.33	97.70	161.86	150.00	159.35
Maximum	121	207	142	126	212	198	105	192	158	193
90th Percentile	92	177.4	140.6	124	204.8	197.2	103.42	180.6	155.8	173.6
95th Percentile	100.2	186.2	141.3	124.4	207.2	197.6	104.21	186.3	156.9	179.4

Date	Wells: Bicarbonate (mg/l)					
	1A	8	12	13	16	19
7/16/2007	95	147	105	168	192	160
10/15/2007	90	134	123	180	114	169

No. Observations	2	2	2	2	2	2
Minimum	90	134	105	168	114	160
Average	93	141	114	174	153	165
Maximum	95	147	123	180	192	169
90th Percentile	94.5	145.7	121.2	178.8	184.2	168.1
95th Percentile	94.75	146.35	122.1	179.4	188.1	168.55

Date	Wells: CALCIUM (ug/l)					
	1A	8	12	13	16	19
01/16/01	28600	53800	36900	58500		53200
02/15/01	35600	52200	42600	62600		49800
03/13/01	32900	45100	47400	60400		47600
04/24/01	32400	46700	66000	68100		49900
05/17/01	32800	46100	53600	70800		50500
06/05/01	30800	43700	39700	71800		49200
07/12/01	35100	45500	31000	69800		46800
07/24/02	27800	60100	39900	64400		54500
07/29/03	28200	54200	33400	63500		60500
07/19/04	32300	51000	32000	68800		55200
07/18/05	23600	50100	41500	69900		61500
04/17/06					68300	
07/17/06	33900	51300	51800	70600	84600	64400
07/16/07	47600	54000	50200	59600	66900	58400
10/15/07	26000	51500	33400	55200	54100	54200

No. Observations:	14	14	14	14	4	14
Minimum:	23600	43700	31000	55200	54100	46800
Average:	31971	50379	42814	65286	68475	53979
Maximum:	47600	60100	66000	71800	84600	64400
90th Percentile:	#NUM!	54140	53060	70740	79710	61200
95th Percentile:	39800	56265	57940	71150	82155	62515

Date:	Well: Iron (ug/l)					
	1A	8	12	13	16	19
08/01/00	<20	86.9	287	4370		
01/16/01	<10	230	260	4530		1470
02/15/01	<10	70	290	4950		1400
03/13/01	<10	60	330	5060		1350
04/11/01			490			
04/24/01	<10	110	470	6570		1470
04/14/98	<10	90	370	6720		1380
08/12/98	<10	150	290	6830		1370
10/20/98	<10	90	220	6890		1330
07/24/02	<10	110	280	5790		1530
07/29/03	<10	90	260	5480		1730
7/19/2004	<10	90	260	4900		1710
7/18/2005	<10	140	350	5580		2270
11/1/2005						
11/4/2005						
11/9/2005						
11/16/2005						
11/17/2005						
11/22/2005						
11/23/2005						
11/30/2005						
4/17/2006					<5	
7/17/2006	<5	127	442	5060	9	2250
07/16/07	<5	256	466	3960	9	1970
10/15/07	<5	1200	298	3530	6	1870

No. Observations	0	15	16	15	3	14
Minimum	0.0000	60.0000	220.0000	3530.0000	6.0000	1330.0000
Average	#DIV/0!	193.3267	335.1875	5348.0000	8.0000	1650.0000
Maximum	0.0000	1200.0000	490.0000	6890.0000	9.0000	2270.0000
90th Percentile	#NUM!	245.6	468	6786	9	2166
95th Percentile	#NUM!	539.2	475	6848	9	2257

Censored values treated as 1/2 the MDL

No. Observations	15	15	16	15	4	14
Minimum	2.5000	60.0000	220.0000	3530.0000	2.5000	1330.0000
Average	4.8333	193.3267	335.1875	5348.0000	6.6250	1650.0000
Maximum	10.0000	1200.0000	490.0000	6890.0000	9.0000	2270.0000
90th Percentile	5	245.6	468	6786	9	2166
95th Percentile	6.5	539.2	475	6848	9	2257

Date:	Wells: Magnesium mg/L									
	1A	8	11	12	13	14	15	16	18	19
2/15/2000	11.6	18.5	26.0	12.1	16.2	18.3	9.01	16.4	13.9	16.3
5/9/2000	7.1	19.8	11.1	13.2	16.2	17.9	9.5	20.0	13.6	16.8
7/31/2000	7.5	12.6	16.1	12.4	15.8	18.9	11.4	21.6	13.1	15.7
8/1/2000	7.65	12.9		13.2	17.4					
1/16/2001	9.8	15.1		12.2	16.9					14.8
2/15/2001	11.8	14.6		14.2	18.4					13.8
3/13/2001	11.0	12.8		15.7	18.0					13.2
4/24/2001	11.3	14.1		22.5	21.4					14.3
5/17/2001	11.0	13.2		17.5	21.2					13.8
6/5/2001	10.4	12.9		12.9	20.7					13.4
7/12/2001	12.5	13.9		10.0	19.8					12.7
7/24/2002	10.2	15.7		12.6	17.8					15.1
7/29/2003	9.9	15.9		10.7	18.1					16.6
7/19/2004	12.6	14.3		9.8	19.5					15.9
7/18/2005	8.9	14.6		13.4	20.9					17.8
4/17/2006								20.2		
7/17/2006	12.3	15.5		16.6	20.4			25.1		18.1
7/16/2007	15.5	14.6		15.9	15.4			18.6		15.3
10/15/2007	9.09	14.4		10.9	15.1			17.0		15.0

No. Observations	18	18	3	18	18	3	3	7	3	17
Minimum	7.1	12.6	11.1	9.8	15.1	17.9	9.01	16.4	13.1	12.7
Average	10.56	14.74	17.73	13.66	18.29	18.37	9.97	19.84	13.53	15.21
Maximum	15.5	19.8	26	22.5	21.4	18.9	11.4	25.1	13.9	18.1
90th Percentile	12.53	16.68	24.02	16.87	20.99	18.78	11.02	23	13.84	17.2
95th Percentile	13.035	18.695	25.01	18.25	21.23	18.84	11.21	24.05	13.87	17.86

Wells: Dissolved Oxygen (mg/l)										
Date:	1A	8	11	12	13	14	15	16	18	19
7/17/06	5.7	0.4		0.5	0.5			0.7		0.6
10/16/06	1.0	0.2		0.5	0.8			0.5		0.5
7/16/07	3.9	0.6		0.4	0.6			0.7		0.9

No. Observations	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0
Minimum	1.0	0.2	0.0	0.4	0.5	0.0	0.0	0.5	0.0	0.5
Average	3.5	0.4	#DIV/0!	0.5	0.7	#DIV/0!	#DIV/0!	0.6	#DIV/0!	0.7
Maximum	5.7	0.6	0.0	0.5	0.8	0.0	0.0	0.7	0.0	0.9
90th Percentile	5.3	0.6	#NUM!	0.5	0.8	#NUM!	#NUM!	0.7	#NUM!	0.8
95th Percentile	5.5	0.6	#NUM!	0.5	0.8	#NUM!	#NUM!	0.7	#NUM!	0.9

Date:	Wells Potassium (mg/l)					
	1A	8	12	13	16	19
08/01/00	0.7	2.9	1.3	1.9		
01/16/01	1.3	2.8	1.2	1.8		1.4
02/15/01	1.6	3.7	1.3	2.3		1.6
03/13/01	1.5	3.1	1.3	2.3		1.5
04/24/01	1.4	3.0	1.4	2.5		1.6
05/17/01	1.5	3.4	1.4	2.6		1.6
06/05/01	1.3	3.4	1.3	2.7		1.6
07/12/01	1.2	3.0	1.1	2.5		1.5
07/24/02	1.2	3.7	1.1	2.3		1.6
07/29/03	1.5	3.3	1.0	2.4		1.7
07/19/04	0.7	2.3	0.9	2.4		1.7
07/18/05	1.1	4.7	1.2	3.0		2.0
04/17/06					1.9	
07/17/06	2.12	3.47	2.5	3.7	3.53	2.48
07/16/07	1.57	3.88	2.04	2.13	2.25	1.77
10/15/07	1.58	4.82	1.71	1.96	1.93	1.77

No. Observations	15	15	15	15	4	14
Minimum	0.70	2.30	0.90	1.80	1.90	1.40
Average	1.35	3.43	1.38	2.43	2.40	1.70
Maximum	2.12	4.82	2.50	3.70	3.53	2.48
90th Percentile	1.59	4.37	1.91	2.88	3.15	1.93
95th Percentile	1.76	4.74	2.18	3.21	3.34	2.17

Date:	Wells: TOC mg/l					
	1A	8	12	13	16	19
08/01/00	0.824		1.22	5.25		3.05
01/16/01	11	7	2	27		3
02/15/01	15.0	27.6	21.6	42.5		30.9
03/13/01	18	38	28	54		37
04/24/01	10	26	15	43		28
05/17/01	3	28	20	46		27
06/05/01	2	8	3	5		4
07/12/01	3	7	4	5		5
07/24/02	3	7	2	10		6
07/29/03	2.0	6	2	5		4
07/19/04	1	7	2	4		4
07/18/05	3	9	3	8		6
04/17/06					1	
07/17/06	1	6	<1	4	1	3
07/16/07	1.22	7.71	1.45	4.35	1.85	3.81
10/15/07	1.01	9.06	1.35	5.38	1.95	3.39

No. Observations:	15	14	14	15	4	15
Minimum	0.82	6.00	1.22	4.00	1.00	3.00
Average	5.00	13.81	7.62	17.90	1.45	11.21
Maximum	18.00	38.00	28.00	54.00	1.95	37.00
.90th Percentile	13.40	27.88	21.12	44.80	1.92	29.74
.95th Percentile	15.90	31.50	23.84	48.40	1.94	32.73

Date	Wells: Phenol (ug/l)					
	1A	8	12	13	16	19
09/14/00	<5		<5	<5		<5
01/16/01	<1	<1	<1	<1		<1
02/15/01	<1	1	<1	<1		<1
03/13/01	<1	<1	<1	<1		1
04/24/01	<1	<1	1	<1		<1
05/17/01	<1	<1	<1	<1		<1
06/05/01	<1	<1	<1	<1		<1
07/12/01	<1	<1	<1	<1		<1
07/24/02	1.00	<1	<1	<1		<1
07/29/03	<1	<1	<1	<1		<1
07/19/04	<1	<1	<1	<1		<1
07/18/05	<1	<1	<1	<1		<1
07/17/05	<10	<10	<10	<10	<10	<10
07/16/07	<6	<6	<6	<6	<6	<6

No. Observations	1.00	1.00	1.00	0.00	0.00	1.00
Minimum	1.00	1.00	1.00	0.00	0.00	1.00
Average	1.00	1.00	1.00	#DIV/0!	#DIV/0!	1.00
Maximum	1.00	1.00	1.00	0.00	0.00	1.00
90th Percentile	1.00	1.00	1.00	#NUM!	#NUM!	1.00
95th Percentile	1.00	1.00	1.00	#NUM!	#NUM!	1.00

Censored values treated as 1/2 the MDL

No. Observations	14.00	13.00	14.00	14.00	2.00	14.00
Minimum	0.50	0.50	0.50	0.50	0.50	0.50
Average	0.86	0.73	0.86	0.82	1.75	0.86
Maximum	3.00	3.00	3.00	3.00	3.00	3.00
90th Percentile	2.05	0.90	2.05	1.90	2.75	2.05
95th Percentile	2.68	1.80	2.68	2.68	2.88	2.68

Date	Wells: ETA (ug/l)					
	1A	8	12	13	16	19
1/24/2001	<1000	<1000	<1000	<1000		<1000
2/15/2001	<1000	<1000	<1000	<1000		<1000
3/13/2001	<1000	<1000	<1000	<1000		<1000
4/24/2001	<1000	<1000	<1000	<1000		<1000
5/17/2001	<1000	<1000	<1000	<1000		<1000
6/5/2001	<1000	<1000	<1000	<1000		<1000
7/12/2001	<1000	<1000	<1000	<1000		<1000
10/8/2001	<700	<700	<700	<700		<700
1/15/2002	<700	<700	<700	<700		<700
4/23/2002	<700	<700	<700	<700		<700
7/24/2002	<700	<700	<700	<700		<700
10/22/2002	<700	<700	<700	<700		<700
1/20/2003	<700	<700	<700	<700		<700
4/21/2003	<700	<700	<700	1700		<700
4/30/2003				1800		
5/6/2003				1300		
5/12/2003				1500		
5/20/2003				1050		
7/29/2003	<700	<700	<700	<700		<700
10/20/2003	<700	<700	<700	<700		<700
1/19/2004	<700	<700	<700			822
1/22/2004				<700		<700
4/19/2004	<700	<700	<700	<700		<700
7/19/2004	<700	<700	<700	<700		<700
10/18/2004	<700	<700	<700	<700		<700
1/19/2005	<700	<700	<700	<700		<700
4/18/2005	<700	<700	<700	<700		<700
7/18/2005	<700	<700	<700	<700		<700
10/17/2005	<700	<700	<700	<700		<700
1/16/2006	<700	<700	<700	<700		<700
1/23/2006	<700					
4/17/2006	<700	<700	<700	<700	<700	<700
7/17/2006	<700	<700	<700	<700	<700	<700
7/16/2007	<700	<700	<700	<700	<700	<700

No. Observations:	0	0	0	5	0	1
Minimum	0.00	0.00	0.00	1050.00	0.00	822.00
Average	#DIV/0!	#DIV/0!	#DIV/0!	1470.00	#DIV/0!	822.00
Maximum	0.00	0.00	0.00	1800.00	0.00	822.00
90th Percentile	#NUM!	#NUM!	#NUM!	1760.00	#NUM!	822.00
95th Percentile	#NUM!	#NUM!	#NUM!	1780.00	#NUM!	822.00

Censored values treated as 1/2 the MDL

No. Observations:	29	28	28	32	3	29
Minimum	350.00	350.00	350.00	350.00	350.00	350.00
Average	386.21	387.50	387.50	557.81	350.00	402.48
Maximum	500.00	500.00	500.00	1800.00	350.00	822.00
90th Percentile	500.00	500.00	500.00	1275.00	350.00	500.00
95th Percentile	500.00	500.00	500.00	1590.00	350.00	500.00

Date	Wells: Dissolved Aluminum (mg/l)									
	1A	8	11	12C	13	14	15	16	18	19
2/15/2000	<0.05	<0.05	<0.05	<0.05	<0.05	0.065	0.140	<0.05	<0.05	<0.05
5/9/2000	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
7/31/2000	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.060	<0.05	<0.05	<0.05
1/16/2001	<0.05	<0.05		<0.05	<0.05					<0.05
2/15/2001	<0.05	<0.05		<0.05	<0.05					<0.05
3/13/2001	<0.05	<0.05		<0.05	<0.05					<0.05
4/24/2001	<0.05	<0.05		<0.05	<0.05					<0.05
5/17/2001	<0.05	<0.05		<0.05	<0.05					<0.05
6/5/2001	<0.05	<0.05		<0.05	<0.05					<0.05
7/12/2001	<0.05	<0.05		<0.05	<0.05					<0.05
7/24/2002	<0.05	<0.05		<0.05	<0.05					<0.05
7/29/2003	<0.05	<0.05		<0.05	<0.05					<0.05
7/19/2004	<0.05	<0.05		<0.05	<0.05					<0.05
7/18/2005	<0.05	<0.05		<0.05	<0.05					<0.05
4/17/2006								<0.05		
7/17/2006	<0.05	<0.05		<0.05	<0.05			<0.05		<0.05
7/16/2007	<0.05	<0.05		<0.05	<0.05			<0.05		<0.05
10/15/2007	<0.05	<0.05		<0.05	<0.05			<0.05		<0.05

No. Observations	0.00	0.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	0.00
Minimum	0.00	0.00	0.00	0.00	0.00	0.07	0.06	0.00	0.00	0.00
Average	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.07	0.10	#DIV/0!	#DIV/0!	#DIV/0!
Maximum	0.00	0.00	0.00	0.00	0.00	0.07	0.14	0.00	0.00	0.00
90th Percentile	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	0.07	0.13	#NUM!	#NUM!	#NUM!
95th Percentile	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	0.07	0.14	#NUM!	#NUM!	#NUM!

Censored values treated as 1/2 the MDL

No. Observations	17.00	17.00	3.00	17.00	17.00	3.00	3.00	7.00	3.00	17.00
Minimum	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Average	0.03	0.03	0.03	0.03	0.03	0.04	0.08	0.03	0.03	0.03
Maximum	0.03	0.03	0.03	0.03	0.03	0.07	0.14	0.03	0.03	0.03
90th Percentile	0.03	0.03	0.03	0.03	0.03	0.06	0.12	0.03	0.03	0.03
95th Percentile	0.03	0.03	0.03	0.03	0.03	0.06	0.13	0.03	0.03	0.03

Date:	Wells: Dissolved Barium uG/l					
	1A	8	12	13	16	19
08/01/00	8.94	19.90	18.10	35.10		
01/16/01	11.0	23	15	33		23
02/15/01	16	34	17	36		23
03/13/01	14	29	20	35		21
04/24/01	20	28	27	45		21
05/17/01	15	22	22	44		21
06/05/01	20	29	22	46		24
07/12/01	16	28	13	46		21
07/24/02	10	16	15	37		19
07/29/03	16.0	25	15	40		26
7/19/2004	17	21	15	37		23
7/18/2005	12	24	17	37		24
4/17/2006					21.2	
7/17/2006	19.1	15	27.3	35.8	28.6	25.2
7/16/2007	24.0	29.4	29.5	31.7	25.0	23.9
10/15/2006	16	28	18	24	17	18

No. Observations	15	15	15	15	4	14
Minimum	8.94	15.00	13.00	24.00	17.00	18.00
Average	15.67	24.75	19.39	37.51	22.95	22.36
Maximum	24.00	34.00	29.50	46.00	28.60	26.00
90th Percentile	20.00	29.24	27.18	45.60	27.52	24.84
95th Percentile	21.20	30.78	27.96	46.00	28.06	25.48

Wells: BORON (01022) (ug/l)										
Date:	1A	8	11	12	13	14	15	16	18	19
2/15/2000	96	68	89	149	<50	67	<50	<50	<50	141
5/9/2000	688	25	364	142	33	42	21	<20	24	126
7/31/2000	124	40	254	131	63	62	37	28	33	137
1/16/2001	110	310		200	90					200
2/15/2001	170	60		80	70					150
3/13/2001	130	70		80	80					140
4/24/2001	90	40		80	70					140
5/17/2001	90	50		100	80					150
6/5/2001	60	30		100	60					130
7/12/2001	50	40		210	70					140
7/24/2002	50	30		90	40					80
7/29/2003	40	50		70	90					110
7/19/2004	<40	50		70	70					100
7/18/2005	50	50		100	60					80
4/17/2006								18		
7/17/2006	52	68		69	123			36		88
7/16/2007	220	172		128	133			75		108
10/15/2007	54	77		71	71			39		75

No. Observations:	16	17	3	17	16	3	2	5	2	17
Minimum	40.0	25.0	89.0	69.0	33.0	42.0	21.0	18.0	24.0	75.0
Average	129.6	72.4	235.7	110.0	75.2	57.0	29.0	39.2	28.5	123.2
Maximum	688.0	310.0	364.0	210.0	133.0	67.0	37.0	75.0	33.0	200.0
90th Percentile	195.0	115.0	342.0	169.4	106.5	66.0	35.4	60.6	32.1	150.0
95th Percentile	337.0	199.6	353.0	202.0	125.5	66.5	36.2	67.8	32.6	160.0

Censored values treated as 1/2 the MDL

No. Observations:	17	17	3	17	17	3	3	7	3	17
Minimum	20.0	25.0	89.0	69.0	25.0	42.0	21.0	10.0	24.0	75.0
Average	123.2	72.4	235.7	110.0	72.2	57.0	27.7	33.0	27.3	123.2
Maximum	688.0	310.0	364.0	210.0	133.0	67.0	37.0	75.0	33.0	200.0
90th Percentile	190.0	115.0	342.0	169.4	103.2	66.0	34.6	53.4	31.4	150.0
95th Percentile	313.6	199.6	353.0	202.0	125.0	66.5	35.8	64.2	32.2	160.0

Wells: CADMIUM (01027) (ug/l)										
Date:	1A	8	11	12	13	14	15	16	18	19
07/24/02	<0.5	<0.5		<0.5	<0.5					<0.5
07/29/03	<0.5	<0.5		<0.5	<0.5					<0.5
07/19/04	<0.5	<0.5		<0.5	<0.5					<0.5
07/18/05	<0.5	<0.5		<0.5	<0.5					<0.5
04/17/06								<1		
07/17/06	<1	<1		<1	<1			<1		<1
07/16/07	<1	<1		<1	<1			<1		<1
10/15/07	<1	<1		<1	<1			<1		<1

No. Observations	0	0	0	0	0	0	0	0	0	0
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90th Percentile	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
95th Percentile	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

Censored values treated as 1/2 the MDL.

No. Observations	7	7		7	7			4		7
Minimum	0.3	0.3		0.3	0.3			0.5		0.3
Average	0.4	0.4		0.4	0.4			0.5		0.4
Maximum	0.5	0.5		0.5	0.5			0.5		0.5
90th Percentile	0.5	0.5		0.5	0.5			0.5		0.5
95th Percentile	0.5	0.5		0.5	0.5			0.5		0.5

Wells: CHROMIUM (01034) (ug/l)										
Date:	1A	8	11	12	13	14	15	16	18	19
2/15/2000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
5/9/2000	<1	<1	<1	<1	<1	1	2	<1	1	<1
	<1	<1	<1	<1	1	<1	<1	<1	<1	<1
1/16/2001	<2	<2		<2	<2					<2
2/15/2001	<2	<2		<2	<2					<2
3/13/2001	<2	<2		<2	<2					<2
4/24/2001	<2	<2		<2	<2					<2
5/17/2001	<2	<2		<2	<2					<2
6/5/2001	<2	<2		<2	<2					<2
7/12/2001	<2	<2		<2	<2					<2
7/24/2002	<2	<2		<2	<2					<2
7/29/2003	<2	<2		<2	<2					<2
7/19/2004	<2	<2		<2	<2					<2
7/18/2005	<2	<2		<2	<2					<2
4/17/2006								0.5		
7/17/2006	0.8	0.6		0.6	1.2			0.7		<0.5
7/16/2007	<1	<1		<1	<1			<1		<1
10/15/2007	<1	<1		<1	<1			<1		<1

No. Observations	1	1	0	1	2	1	1	2	1	0
Minimum	0.80	0.60	0.00	0.60	1.00	1.00	2.00	0.50	1.00	0.00
Average	0.80	0.60	#DIV/0!	0.60	1.10	1.00	2.00	0.60	1.00	#DIV/0!
Maximum	0.80	0.60	0.00	0.60	1.20	1.00	2.00	0.70	1.00	0.00
90th Percentile	0.80	0.60	#NUM!	0.60	1.18	1.00	2.00	0.68	1.00	#NUM!
95th Percentile	0.80	0.60	#NUM!	0.60	1.19	1.00	2.00	0.69	1.00	#NUM!

Censored values treated as 1/2 the MDL

No. Observations	17	17	3	17	17	3	3	7	3	17
Minimum	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.25
Average	0.96	0.95	1.17	0.95	1.01	1.33	1.67	0.81	1.33	0.93
Maximum	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
90th Percentile	1.00	1.00	2.10	1.00	1.08	2.20	2.40	1.42	2.20	1.00
95th Percentile	1.30	1.30	2.30	1.30	1.46	2.35	2.45	1.96	2.35	1.30

Wells: COPPER (01042) (ug/l)										
Date:	1A	8	11	12	13	14	15	16	18	19
2/15/2000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
5/9/2000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
7/31/2000	2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1/16/2001	<1	2		<1	<1					<1
2/15/2001	<1	2		<1	<1					<1
3/13/2001	<1	1		<1	<1					<1
4/24/2001	<1	<1		<1	<1					<1
5/17/2001	1	2		<1	<1					<1
6/5/2001	<1	<1		<1	<1					<1
7/12/2001	1	1		<1	<1					<1
7/24/2002	<1	1		<1	<1					<1
7/29/2003	<1	<1		<1	<1					<1
7/19/2004	<1	1		<1	<1					<1
7/18/2005	<1	<1		<1	<1					<1
4/17/2006								0.5		
7/17/2006	0.9	2		0.2	<0.2			0.4		<0.2
7/16/2007	1.0	0.9		0.5	0.6			0.7		0.2
10/15/2007	0.9	0.6		0.5	0.5			0.6		0.4

No. Observations	6	10	0	3	2	0	0	4	0	2
Minimum	0.90	0.60	0.00	0.20	0.50	0.00	0.00	0.40	0.00	0.20
Average	1.13	1.35	#DIV/0!	0.40	0.55	#DIV/0!	#DIV/0!	0.55	#DIV/0!	0.30
Maximum	2.00	2.00	0.00	0.50	0.60	0.00	0.00	0.70	0.00	0.40
90th Percentile	1.50	2.00	#NUM!	0.50	0.59	#NUM!	#NUM!	0.67	#NUM!	0.38
95th Percentile	1.75	2.00	#NUM!	0.50	0.60	#NUM!	#NUM!	0.69	#NUM!	0.39

Censored values treated as 1/2 the MDL

No. Observations:	17	17	3	17	17	3	3	7	3	17
Minimum:	0.50	0.50	1.00	0.20	0.10	1.00	1.00	0.40	1.00	0.10
Average	0.87	1.18	1.50	0.66	0.66	1.50	1.50	0.96	1.50	0.63
Maximum	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
90th Percentile	1.40	2.00	2.20	1.00	1.00	2.20	2.20	1.60	2.20	1.00
95th Percentile	2.10	2.10	2.35	1.30	1.30	2.35	2.35	2.05	2.35	1.30

Date	Wells: Lead (ug/l)					
	1A	8	12	13	16	19
08/01/00	1.9	<1.83	<1.83	<1.83		
01/16/01	<2	7	2	<2		3
02/15/01	1	9	<1	<1		<1
03/13/01	4	4	<1	1		1
04/24/01	2	1	1	1		2
05/17/01	<1	<1	<1	<1		2
06/05/01	2	2	1	2		2
07/12/01	<1	<1	2	<1		<1
07/24/02	3	2	2	1		<1
07/29/03	<1	2	1	<1		<1
7/19/2004	<1	<1	<1	<1		<1
7/18/2005	<1	<1	<1	<1		<1
4/17/2006					<0.1	
7/17/2006	0.1	0.1	<0.1	<0.1	<0.1	<0.1
7/16/2007	<0.05	0.09	<0.05	0.07	<0.05	<0.05
10/15/2007	<0.05	0.23	<0.05	<0.05	<0.05	<0.05

No. Observations:	7	10	6	5	0	5
Minimum:	0.1	0.1	1.0	0.1	<0.0	1.0
Average:	2.0	2.7	1.5	1.0	#DIV/0!	2.0
Maximum:	4.0	9.0	2.0	2.0	0.0	3.0
90th Percentile:	3.4	7.2	2.0	1.6	#NUM!	2.6
95th Percentile:	3.7	8.1	2.0	1.8	#NUM!	2.8

Censored values treated as 1/2 the MDL

No. Observations:	15	14	14	14	4	14
Minimum:	0.0	0.1	0.0	0.0	0.0	0.0
Average:	1.2	2.1	0.8	0.7	0.0	0.9
Maximum:	4.0	9.0	2.0	2.0	0.1	3.0
90th Percentile:	2.6	6.1	2.0	1.0	0.1	2.0
95th Percentile:	3.3	7.7	2.0	1.4	0.1	2.4

Date:	Wells: Manganese (ug/l)					
	1A	.8	.12	.13	16	19
08/01/00	<5	58.8	97	144		
01/16/01	<5	70	90	160		60
02/15/01	<5	44	103	176		59
03/13/01	<5	51	115	178		57
04/24/01	<5	59	161	227		59
05/17/01	<5	68	127	239		59
06/05/01	<5	60	99	247		59
07/12/01	<5	64	75	239		54
07/24/02	<5	60	96	153		69
07/29/03	10	51	83	136		74
7/19/2004	<10	50	80	120		70
7/18/2005	<10	50	100	120		80
4/17/2006					<0.2	
7/17/2006	0.5	55	127	128	6.6	81.9
7/16/2007	<0.2	64.3	126.0	97.0	17.0	68.5
10/16/2007	2.3	65.3	88.2	91.2	4.7	71.2

No. Observations	3	15	15	15	3	14
Minimum	0.50	44.00	75.00	91.20	4.70	54.00
Average	4.27	58.03	104.51	163.68	9.43	65.83
Maximum	10.00	70.00	161.00	247.00	17.00	81.90
90th Percentile	8.46	66.92	127.00	239.00	14.92	78.20
95th Percentile	9.23	68.60	137.20	241.40	15.96	80.67

Censored values treated as 1/2 the MDL

No. Observations	15	15	15	15	4	14
Minimum	0.10	44.00	75.00	91.20	0.10	54.00
Average	3.03	58.03	104.51	163.68	7.10	65.83
Maximum	10.00	70.00	161.00	247.00	17.00	81.90
90th Percentile	5.00	66.92	127.00	239.00	13.88	78.20
95th Percentile	6.50	68.60	137.20	241.40	15.44	80.67

Date	Wells: Mercury ug/l					
	1A	8	12	13	16	19
08/01/00	0.0712	0.0694	0.0628	0.0899		
01/16/01	<0.0005	0.0009	<0.0005	<0.0005		<0.0005
02/15/01	<0.0005			<0.0005		
02/28/01		0.0020	<0.0005			<0.0005
03/13/01	0.0005	0.0024	<0.0005	0.0005		<0.0005
04/24/01	<0.0005	0.0018	<0.0005	<0.0005		<0.0005
05/17/01	<0.0005	0.0018	<0.0005	<0.0005		<0.0005
06/05/01	<0.0005	0.0016	<0.0005	<0.0005		<0.0005
07/12/01	<0.0005	0.0017	<0.0005	<0.0005		<0.0005
07/24/02	0.0081	0.0072	0.0036	0.0021		0.0026
08/23/02	0.0015	0.0025	0.0006	0.00089		0.0007
07/29/03	<0.0005	0.0035	<0.0005	0.00067		<0.0005
7/20/2004	<0.0005	0.0013	<0.0005	0.0012		0.0011
7/19/2005	<0.0005	0.0018	<0.0005	<0.0005		<0.0005
4/14/2006					<0.005	
7/17/2006	0.0008	0.0016	<0.0005	<0.0005	0.007	<0.005
7/16/2007	<0.0005	0.0008	0.0011	0.0011	0.0019	0.0012
10/15/2007			<0.0005	<0.0005	<0.0005	

No. Observations	5	15	4	7	2	4
Minimum	0.0005	0.0008	0.0006	0.0005	0.0019	0.0007
Average	0.0164	0.0067	0.0170	0.0138	0.0045	0.0014
Maximum	0.0712	0.0694	0.0628	0.0899	0.0070	0.0026
90th Percentile	0.0460	0.0057	0.0450	0.0372	0.0065	0.0022
95th Percentile	0.0586	0.0259	0.0539	0.0636	0.0067	0.0024

Censored values treated as 1/2 the MDL

No. Observations	15	15	16	16	4	14
Minimum	0.0003	0.0008	0.0003	0.0003	0.0003	0.0003
Average	0.0056	0.0067	0.0044	0.0062	0.0029	0.0007
Maximum	0.0712	0.0694	0.0628	0.0899	0.0070	0.0026
90th Percentile	0.0055	0.0057	0.0024	0.0017	0.0057	0.0021
95th Percentile	0.0270	0.0259	0.0184	0.0241	0.0063	0.0025

Date	Wells: Nickel (ug/l)					
	1A	8	12	13	16	19
08/01/00	<3	<3	<3	<3		
01/16/01	<3	<3	<3	<3		<3
02/15/01	<2	<2	<2	<2		<2
03/13/01	<2	<2	<2	<2		<2
04/24/01	<2	2	<2	<2		<2
05/17/01	<2	<2	<2	<2		<2
06/05/01	<2	<2	<2	<2		<2
07/12/01	<2	<2	<2	<2		<2
07/24/02	<2	<2	<2	<2		<2
07/29/03	<2	<2	<2	<2		<2
07/19/04	<2	<2	<2	<2		<2
7/18/2005	<2	<2	<2	<2		<2
4/17/2006					0.9	
7/17/2006	<0.2	1.1	<0.2	<0.2	0.3	<0.2
7/16/2007	<0.2	0.9	<0.2	<0.2	0.4	<0.2
10/15/2007	0.3	1.3	0.2	0.2	0.9	0.3

No. Observations	1	4	1	1	4	1
Minimum	0.30	0.90	0.20	0.20	0.30	0.30
Average	0.30	1.33	0.20	0.20	0.63	0.30
Maximum	0.30	2.00	0.20	0.20	0.90	0.30
90th Percentile	0.30	1.79	0.20	0.20	0.90	0.30
95th Percentile	0.30	1.90	0.20	0.20	0.90	0.30

Censored values treated as 1/2 the MDL

No. Observations	15	15	15	15	4	14
Minimum	0.10	0.90	0.10	0.10	0.30	0.10
Average	0.90	1.15	0.89	0.89	0.63	0.86
Maximum	1.50	2.00	1.50	1.50	0.90	1.50
90th Percentile	1.30	1.50	1.30	1.30	0.90	1.00
95th Percentile	1.50	1.65	1.50	1.50	0.90	1.18

Date:	Wells: Selenium (ug/l)					
	1A	8	12	13	16	19
08/01/00	<2	<2	<2	<2		
01/16/01	<1	<1	<1	<1		<1
02/15/01	<1	<1	<1	<1		<1
03/13/01	<1	<1	<1	<1		<1
04/24/01	<1.0	<1.0	<1.0	<1.0		<1.0
05/17/01	<1.0	<1.0	<1.0	<1.0		<1.0
06/05/01	<1.0	<1.0	<1.0	<1.0		<1.0
07/12/01	<1.0	<1.0	<1.0	<1.0		<1.0
07/24/02	4	7	2	3		<1
08/23/02		<1.0				
07/29/03	<1	2	<1	<1		<1
07/19/04	<5	<5	<5	<5		<5
7/18/2005	<1	<1	<1	<1		<1
4/17/2006					<1	
7/17/2006	<1	<1	<1	<1	<1	<1
7/16/2007	<1	<1	<1	<1	<1	<1
10/15/2007	<0.5	0.5	<0.5	<0.5	1.4	<0.5

No. Observations:	1	3	1	1	1	0
Minimum:	4.00	0.50	2.00	3.00	1.40	0.00
Average:	4.00	3.17	2.00	3.00	1.40	#DIV/0!
Maximum:	4.00	7.00	2.00	3.00	1.40	0.00
90th Percentile:	4.00	6.00	2.00	3.00	1.40	#NUM!
95th Percentile:	4.00	6.50	2.00	3.00	1.40	#NUM!

Censored values treated as 1/2 the MDL

No. Observations:	11	11	11	11	4	10
Minimum:	0.25	0.50	0.25	0.25	0.50	0.25
Average:	1.02	1.45	0.84	0.93	0.73	0.68
Maximum:	4.00	7.00	2.50	3.00	1.40	2.50
90th Percentile:	2.50	2.50	2.00	2.50	1.13	0.70
95th Percentile:	3.25	4.75	2.25	2.75	1.27	1.60

Date:	Wells: Silver (ug/l)					
	1A	8	12	13	16	19
8/1/00	0.284	0.275	0.265	0.249		
1/16/01	<0.2	<0.2	<0.2	<0.2		<0.2
2/15/01	0.2	<0.2	<0.2	<0.2		<0.2
3/13/01	<0.2	<0.2	<0.2	<0.2		<0.2
4/24/01	<0.2	<0.2	<0.2	<0.2		<0.2
5/17/01	<0.2	<0.2	<0.2	<0.2		<0.2
6/5/01	<0.2	<0.2	<0.2	<0.2		<0.2
7/12/01	<0.2	<0.2	<0.2	<0.2		<0.2
7/24/02	<0.2	<0.2	<0.2	<0.2		<0.2
7/29/03	<0.2	<0.2	<0.2	<0.2		<0.2
7/19/04	<0.2	<0.2	<0.2	<0.2		<0.2
7/18/05	<0.2	<0.2	<0.2	<0.2		<0.2
4/17/06					<0.5	
7/17/06	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
7/16/07	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10/15/07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

No. Observations	2	1	1	1	0	0
Minimum	0.200	0.275	0.265	0.249	0.000	0.000
Average	0.242	0.275	0.265	0.249	#DIV/0!	#DIV/0!
Maximum	0.284	0.275	0.265	0.249	0.000	0.000
90th Percentile	0.276	0.275	0.265	0.249	#NUM!	#NUM!
95th Percentile	0.280	0.275	0.265	0.249	#NUM!	#NUM!

Censored values treated as 1/2 the MDL

No. Observations	15	15	15	15	3	14
Minimum	0.025	0.025	0.025	0.025	0.025	0.025
Average	0.111	0.103	0.103	0.102	0.058	0.091
Maximum	0.284	0.275	0.265	0.249	0.100	0.100
90th Percentile	0.160	0.100	0.100	0.100	0.090	0.100
95th Percentile	0.225	0.153	0.150	0.145	0.095	0.100

Date	Wells: Zinc ug/l					
	1A	8	12	13	16	19
08/01/00	<4	<4	<4	6		
01/16/01	<4	<4	<4	<4		<4
02/15/01	12.0	<4	<4	<4		<4
03/13/01	<4	<4	<4	<4		<4
04/24/01	<4	<4	<4	<4		<4
05/17/01	<4	<4	<4	<4		<4
06/05/01	<4	<4	<4	<4		<4
07/12/01	<4	<4	<4	<4		<4
07/24/02	<4	<4	<4	<4		<4
07/29/03	<4	<4	<4	<4		<4
07/19/04	<4	<4	<4	<4		<4
07/18/05	<4	<4	<4	<4		<4
4/17/2006					1	
7/17/2006	<1	<1	<1	<1	<1	<1
7/16/2007	<1	<1	<1	<1	<1	<1
10/15/2007	1	<1	<1	<1	<1	<1

No. Observations	2	0	0	1	0	0
Minimum	1.00	0.00	0.00	5.97	1.00	0.00
Average	6.50	#DIV/0!	#DIV/0!	5.97	1.00	#DIV/0!
Maximum	12.00	0.00	0.00	5.97	1.00	0.00
90th Percentile	10.90	#NUM!	#NUM!	5.97	1.00	#NUM!
95th Percentile	11.45	#NUM!	#NUM!	5.97	1.00	#NUM!

Censored values treated as 1/2 the MDL

No. Observations	15	15	15	15	4	14
Minimum	0.50	0.50	0.50	0.50	0.50	0.50
Average	2.40	1.70	1.70	1.96	0.63	1.68
Maximum	12.00	2.00	2.00	5.97	1.00	2.00
90th Percentile	2.00	2.00	2.00	2.00	0.85	2.00
95th Percentile	5.00	2.00	2.00	3.19	0.93	2.00

Date:	Wells: Hydrazine (ug/l)									
	1A	8	11	12	13	14	15	16	18	19
2/15/2000			<10	<10	<10					
5/8/2000			<10	<10	<10					
8/1/2000			<10	<10	<10					
1/24/2001	<10	<10		<10	<10					<10
2/15/2001	<10	<10		<10	<10					<10
3/13/2001	<10	<10		<10	<10					<10
4/24/2001	<10	<10		<10	<10					<10
5/17/2001	<10	<10		<10	<10					<10
6/5/2001	<10	<10		<10	<10					<10
7/12/2001	<10	<10		<10	<10					<10
10/8/2001	<3	<3		<3	<3					<3
1/15/2002	<3	<3		<3	<3					<3
4/23/2002	<3	<3		<3	<3					<3
7/24/2002	<3	<3		<3	<3					<3
10/22/2002	<3	<3		<3	<3					<3
1/20/2003	<3	<3		<3	<3					<3
4/21/2003	<3	<3		<3	<3					<3
7/29/2003	<3	<3		<3	<3					<3
10/20/2003	<3	<3		<3	<3					<3
1/19/2004	<3	3		<3	3					<3
1/22/2004		<3			<3					
4/19/2004	<3	<3		<3	3.2					<3
7/19/2004	<3	<3		<3	<3					<3
10/18/2004	<3	<3		<3	<3					<3
1/19/2005	<3	<3		<3	<3					<3
4/18/2005	<3	<3		<3	<3					<3
7/18/2005	<3	<3		<3	<3					<3
10/17/2005	<3	<3		<3	<3					<3
1/16/2006	4.5	<3		<3	<3					<3
1/23/2006	<3									
4/17/2006	<3	<3		<3	<3			<3		<3
7/17/2006	<3	<3		<3	<3			<3		<3
7/16/2007	<3	<3		<3	<3			<3		<3

No. Observations	1	1	0	0	2	0	0	0	0	0
Minimum	4.50	3.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
Average	4.50	3.00	#DIV/0!	#DIV/0!	3.10	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Maximum	4.50	3.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00
90th Percentile	4.50	3.00	#NUM!	#NUM!	3.18	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
95th Percentile	4.50	3.00	#NUM!	#NUM!	3.19	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

Censored values treated as 1/2 the MDL

No. Observations	29	29	3	31	32			3		28
Minimum	1.50	1.50	5.00	1.50	1.50			1.50		1.50
Average	2.45	2.40	5.00	2.63	2.69			1.50		2.38
Maximum	5.00	5.00	5.00	5.00	5.00			5.00		5.00
90th Percentile	5.00	5.00	5.00	5.00	5.00			1.50		5.00
95th Percentile	5.00	5.00	5.00	5.00	5.00			1.50		5.00

Sampled 4/22/08

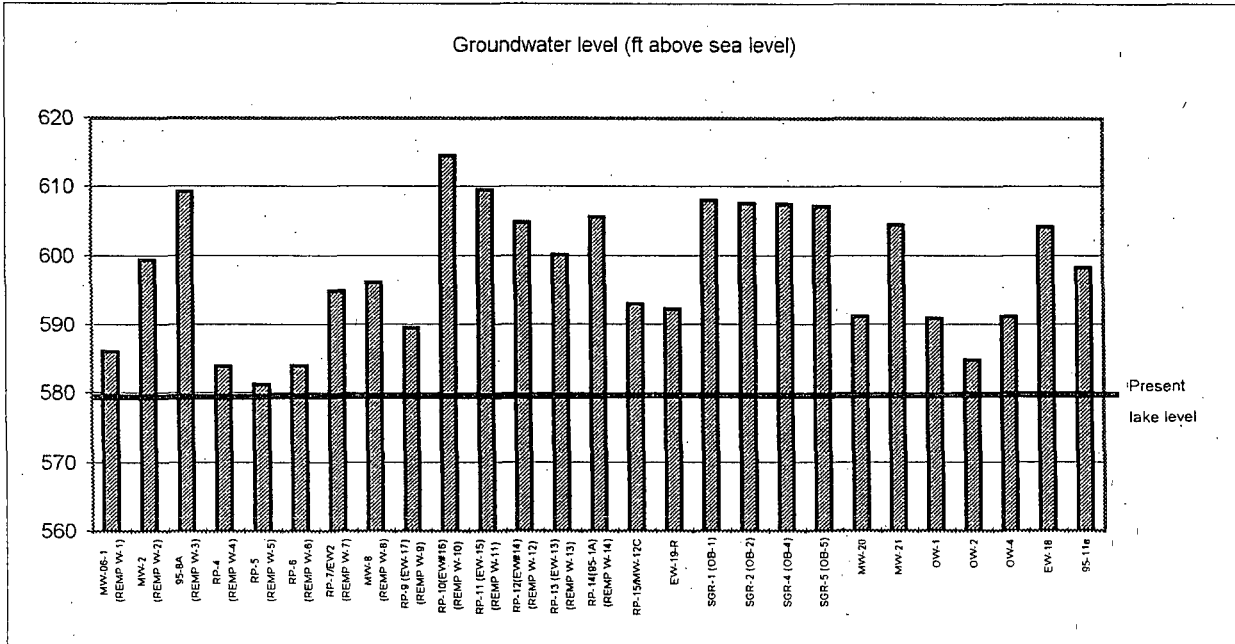
2008 well elevation

Well Number(s)	Location Description	Main use	Coordinates		Well Depth	Top of riser/pipe	Water level in ft. from top of pipe	Groundwater level (ft above sea level)	Date
MW-06-1 (REMP W-1)	Rosemary beach	REMP	N 183294.46	E 1393441.20	93	658.66	72.55	586.11	
MW-2 (REMP W-2)	Training Center	REMP Sampling	N 182,451.7	E 1,395,125.6	47.4'	630.17	30.75	599.42	
95-8A (REMP W-3)	E. Of 765 KV yard	REMP/GW permit sampling	N 180,510.5	E 1,396,322.4	22.7'	616.26	6.95	609.31	
RP-4 (REMP W-4)	West of Screen house in security Zone	REMP Sampling	N 181,639.377	E 1,392,751.454	28.00	594.28	10.41	583.87	
RP-5 (REMP W-5)	West of Screen house in security Zone	REMP Sampling	N 181,509.332	E 1,392,709.981	29.00	594.3	13.1	581.2	
RP-6 (REMP W-6)	West of Screen house in security Zone	REMP Sampling	N 181,346.614	E 1,392,657.25	20.00	594.39	10.48	583.91	
RP-7/EW2 (REMP W-7)	Livingston Road up hill, NW of chain link gate	REMP Sampling	N 179,447.797	E 1,392,848.135	96'	675.104	80.2	594.904	
MW-8 (REMP W-8)	Visitor Parking	REMP Sampling	N 182,127.4	E 1,394,124.2	31.6'	613.68	17.56	596.12	
RP-9 (EW-17) (REMP W-9)	Visitor center nature trail entrance	REMP Sampling	N 182,707.10	E 1,393,645.50	80.4'	651.26	61.75	589.51	
RP-10(EW#16) (REMP W-10)	Corner Thorton and Livingston road	REMP Sampling	N 178,689.61	E 1,396,361.82	37.4'	630.83	16.37	614.46	
RP-11 (EW-15) (REMP W-11)	E Livingston Road by gate	REMP Sampling	N 178,512.86	E 1,394,569.77	33.5'	614.38	4.8	609.58	
RP-12(EW#14) (REMP W-12)	Livingston Road	REMP Sampling	N 178,857.96	E 1,393,902.49	45.6'	620.08	15.2	604.93	
RP-13 (EW-13) (REMP W-13)	W Livingston Road by Chain link gate	REMP and GW Sampling	N 179,215.26	E 1,393,019.93	60.4'	641.75	41.6	600.15	
RP-14(95-1A) (REMP W-14)	Livingston Road up hill, NE of chain link gate	REMP and GW Sampling	N 179,676.6	E 1,393,844.6	73.3'	660.99	55.37	605.62	
RP-15/MW-12C	South of Sewage plant (SBR)	GW Permit monitoring well	N 180,678.0	E 1,392,881.9	47.4'	610.9	17.85	593.05	
EW-19-R	W of Guard House parking lot	GW Permit monitoring well	N 181,888.72	E 1,393,435.52	56.3'	612.48	20.12	592.36	
SGR-1 (OB-1)	SG Storage area	REMP Sampling	N 181,028.117	E 1,397,127.87	30'	618.18	10.1	608.08	
SGR-2 (OB-2)	SG Storage area	REMP Sampling	N 181,252.187	E 1,396,981.411	UNK	617.32	9.7	607.62	
SGR-4 (OB-4)	SG Storage area	REMP Sampling	N 181,166.568	E 1,396,798.654	UNK	616.21	8.65	607.56	
SGR-5 (OB-5)	SG Storage area	REMP Sampling	N 181,259.854	E 1,396,751.978	27.4'	624.36	17.1	607.26	
MW-20	End of Livingston Road	REMP	N 179317.38	E 1392279.76	62	631.99	40.78	591.21	
MW-21	Livington Road	REMP	N 179195.42	E 1393513.50	46	619.7	15.15	604.55	

Sampled 4/22/08

2008 well elevation

Well Number(s)	Location Description	Main use	Coordinates		Well Depth	Top of riser/pipe	Water level in ft. from top of pipe	Groundwater level (ft above sea level)	Date
OW-1	Roadway by U-2 RWST area	GW level for AB Tank testing	N 180,939.3	E 1,393,109.0	24.9	608.35	17.45	590.9	
OW-2	Roadway by chemical unloading	GW level for PHB Tank testing	N 181,705.8	E 1,393,207.4	17.95	593.75	8.97	584.78	
OW-4	Roadway by 1 RWST area	GW level for CD Tank Testing	N 181,705.8	E 1,393,207.4	33.2	608.17	16.96	591.21	
EW-18	Upper Parking Lot	2" PVC	N 180,935.058	E 1,394,772.889	57.1	631.15	26.9	604.25	
95-11a	69kv yard	Tritium	N 180,811.1	E 1,393,446.8	25	609.4	11.1	598.3	



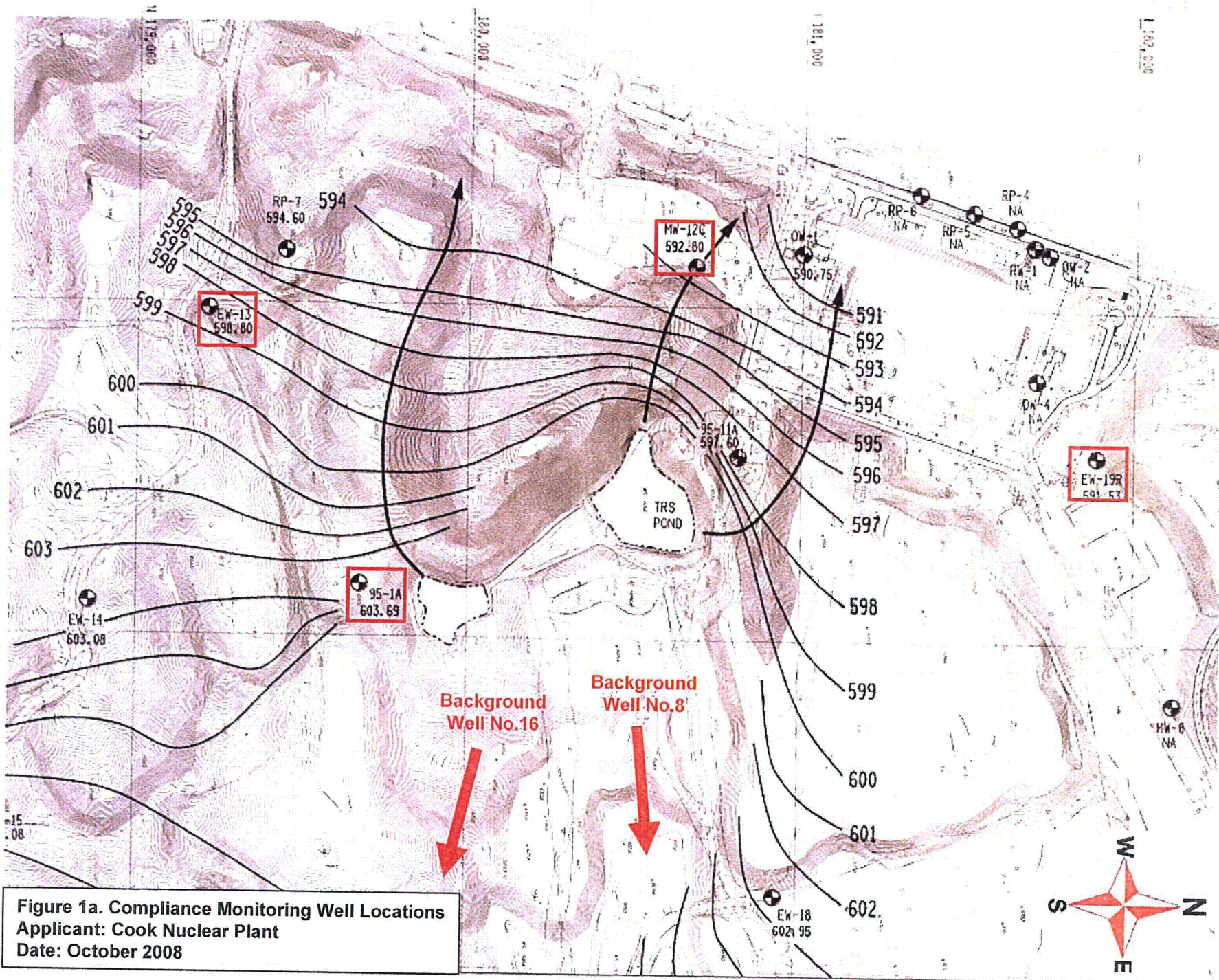


Figure 1a. Compliance Monitoring Well Locations
 Applicant: Cook Nuclear Plant
 Date: October 2008

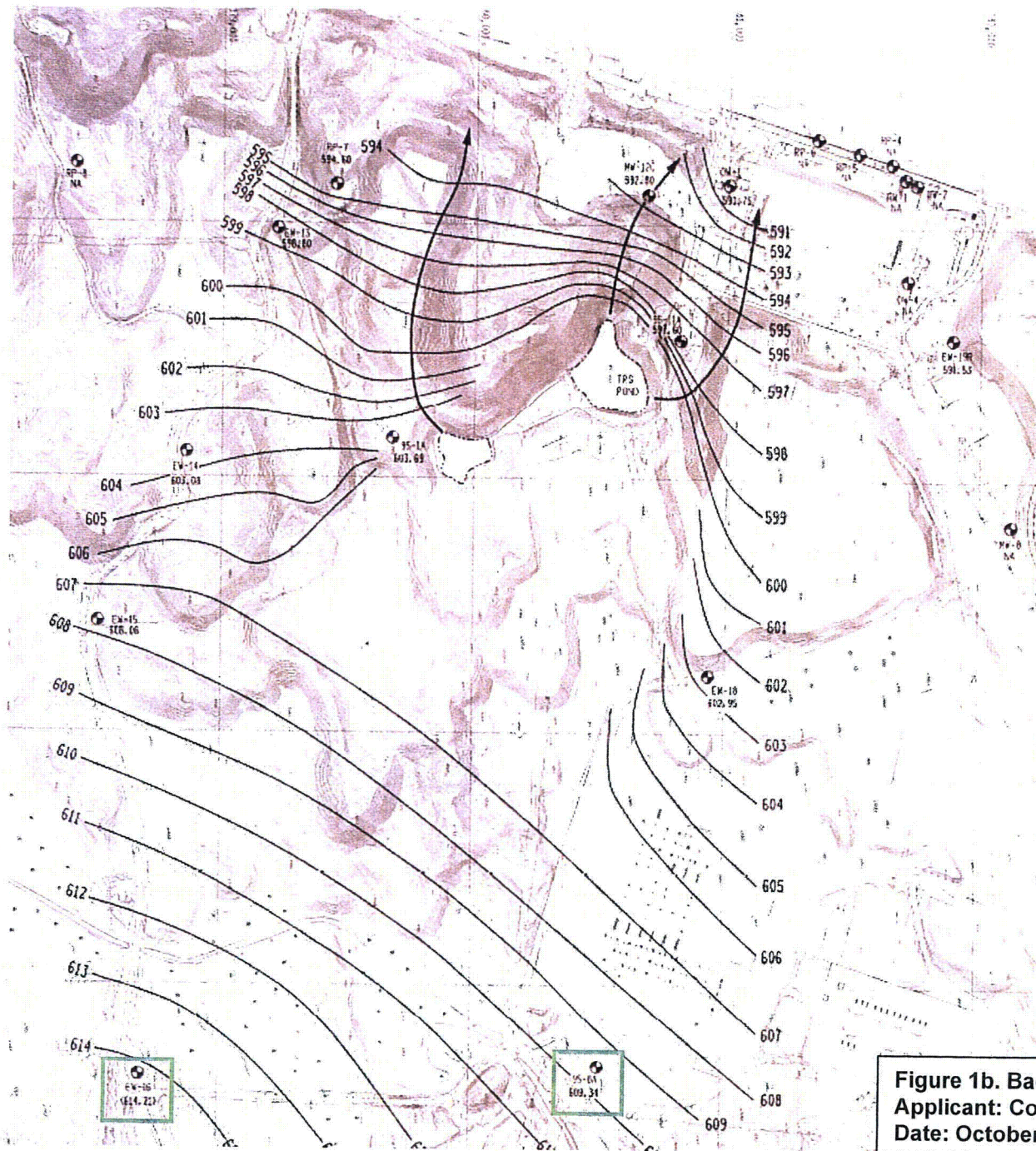


Figure 1b. Background Monitoring Well Locations
 Applicant: Cook Nuclear Plant
 Date: October 2008

**HYDROGEOLOGICAL EVALUATION
OF THE
DONALD C. COOK NUCLEAR PLANT, BRIDGMAN, MICHIGAN**

**Prepared for
Indiana Michigan Company**

**Prepared by
American Electric Power Service Corporation**

July 2007

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Introduction

A hydrogeologic study has been prepared to evaluate the potential environmental impacts, if any, resulting from the discharge of the turbine room sump effluent to the plant's Turbine Room Sump Absorption (TRS) Pond. A review of previous hydrological studies indicate that the plant is underlain by a shallow unconfined aquifer composed predominantly of beach deposits and eolian dunes (AEP 1985, 1987 & 1991, AES 1990). Comparison of the original 1966-67 Dames & Moore environmental site study with long-term well hydrographs (1975 to 2007) indicates that the prevailing direction of ground water flow remains towards Lake Michigan. The plant's ground water monitoring well network was expanded in 2006 and provides a comprehensive network to detect a potential release from the plant (Figure 1). A review of the historical tritium concentrations indicate that there has been no off-site impact to domestic wells located either north or south of the plant based on a review of the various monitoring programs and environmental site investigations.

Topography

The site is located within a local physiographic area known as the Grand Meres Embayment. This area, 16 miles long and with an average width of about 1 mile, lies adjacent and parallel to the shoreline of Lake Michigan in western Berrien County. The area adjacent to the beach is characterized by high sand dunes of Pleistocene and Recent origin. The area is bounded on the east by a glacial moraine that parallels the shoreline and is known as Covert Ridge. The area east of Covert Ridge is a glacial plain, with morainic ridges.

Topographic elevations within the dune area range from about 580 ft. NGVD, which is the elevation of Lake Michigan, to a high of slightly more than 800 ft. NGVD (Bridgman USGS 7.5 minute quadrangle map). In the southern part of the embayment, the area of high dunes extends from the lakeshore to the crest of Covert Ridge. To the north, however, the belt of high dunes is separated from Covert Ridge by Thornton Valley and the Grand Mere Lakes. The higher sand dunes extend inland about 3,000 feet from the beach. Scattered lower dunes with broader intervening flat lowlands or basins, some of which contain small shallow ponds, characterize the eastern portion of the site.

Geology

The site geology consists of a depositional sequence of glacio-lacustrine deposits composed of a surficial deposit of dune sand that overlies beach sand which in turn is underlain by glacial lake

clays, glacial till that rests unconformably over Mississippian Age shale bedrock. Figure 1 depicts the boring location plan from the original Dames & Moore (1967) site investigation.

The eolian dune sands are light brown to tan, poorly graded, typically exhibit bimodal grain sizes distribution (fine and coarse sand grains). The dune sands are easily disturbed at or near the surface and become moderately compacted at depth.

In places, the beach deposits contain a small percentage of fine gravel. The beach sand may be a bar-type deposit, probably related to an old shoreline of Lake Michigan. The maximum thickness of the beach sand is about 52 feet in the southern portion of the site. In the west-central portion of the property near the lake, the beach sands generally range from about 25 to 35 feet in thickness.

Underlying the beach sands and/or the dune sands is a thick sequence of glacial lake sediments. These glacio-lacustrine deposits, which are approximately 80 to 90 feet thick, consist generally of gray silty clay and sandy clay with occasional sand and silt partings. Varve-type bedding is not typical but does occasionally occur in places. The deposits exhibit considerable variation in detailed characteristics between borings and comprise an irregularly interbedded series of sediments.

A compact glacial till of silt and gravel with cobbles was encountered at a depth of 118 ft. This stratum is about 22 feet and is believed to be filling in any depressions in the underlying bedrock. Bedrock was encountered at a depth of 140 ft and consists of gray, thin-bedded to fissile, calcareous shale containing thin interbeds of impure, shaley limestone. The shale is horizontally bedded and is cut by two sets of cemented joints. The rock appears to correlate with the Berea-Bedford shale, a lower Mississippian formation (Dames & Moore 1967).

Hydrogeology

Covert Ridge is a groundwater barrier as well as a watershed boundary between the glacial plain to the east and the Grand Marais Embayment to the west. Static groundwater levels east of the ridge are generally at an elevation of 650 ft. NGVD (Dames & Moore 1967). In contrast, static water levels west of the ridge occur generally at elevations of 580 to 610 ft. NGVD. Depth to ground water varies from 5 ft to 80 ft depending on whether the monitoring well is sited along the crest of a dune or within a swale.

Test borings and water level measurements at the site indicate that the groundwater system is unconfined. The base of the shallow aquifer is delineated as the stratigraphic contact between the dune sand or the sandy beach deposits and the lacustrine clay deposits. The surface of the lake clays slope upward gradually from elevations of about 555 to 560 ft. NGVD along the beach to about elevation 589 ft NGVD towards the southeast corner of the site (Figures 2, 3 and 4).

Ground water is recharged by precipitation infiltrating through the permeable, sandy surficial soils. Discharge to the Turbine Room Absorption (TRS) Pond also serves as a source of recharge to the shallow aquifer. The TRS pond was equipped with a Solarbee pump in 2002 to mix the effluent discharged to the pond. Overflow from the TRS pond flows along a swale into the remaining portion of the basin. The TRS pond creates a ground-water mound that superimposes a radial flow pattern from the pond center on the regional flow towards Lake Michigan. Surface runoff is limited to minor quantities and is restricted to the northeastern and eastern portion of the site. Basins of interior drainage and closed depressions characterize most of the site.

The ground-water flow system was also indirectly modified during the original construction of the plant's cofferdam. A ring of sheet piling was driven around the plant site to allow the excavation of the plant's foundation (see Construction Photos). The sheet piling was left in place and the top was cut off below grade leaving a low permeable barrier (oral communication?? 2007). Additional sheet piling was installed in 1973-74 extending both north and south along Lake Michigan to control beach erosion. This piling was also driven into the low permeable lacustrine deposits and created a barrier to ground-water flow. Ponding occurred behind the south barrier (due to the infiltration and subsequent flow of the TRS pond effluent), eventually spilling over the piling and flowing again to Lake Michigan. A French drain was installed along the south sheet piling to intercept ground water flow and discharge it towards the southern terminal end of the piling.

Drawing No. 12-30002 depicts an approximate configuration of the water table for March 2007. The configuration of the water table is also inferred from inundated dune swales observed from stereoscopic aerial photography taken March 24, 1986. The north to south direction of flow in the vicinity of RP Wells 4 and 5 is inferred from static water levels measured on November 30, 1989 in the monitoring well and recovery well (Figure 5) (AES 1990).

Well hydrographs for observation well Nos. 1a, 8, 11, and 12 depict fluctuating water levels in response to a non-uniform discharge rate to the TRS pond, seasonal evapotranspiration, and precipitation etc (Figures 6 & 7). For example, field data recorded in 1983 depicts a decline in water levels and is probable due to a precipitation deficit of nearly 7 inches. A similar decline is observed in response to the 1988 & 1999 droughts.

Short duration pumping tests yielded formation permeability values ranging from 115 to 196 ft/day with an average value of 153.5 ft/day based on an aquifer thickness of 30ft (AEP 1991). The estimated travel time to flow from the TRS pond to Lake Michigan ranges from 4.6 to 21 months based on seepage velocities and the projected flow path (Table No 6 ref. AEP 1991). The most direct flow path is due west towards Lake Michigan. The estimated travel time of 21 months is based on a flow path emanating away from the TRS pond towards RP-4. The seepage velocities are derived from site-specific hydrogeologic parameters of formation permeability, hydraulic gradients (rate and direction of ground-water flow) and estimated value of specific yield (0.25).

Ground-Water Monitoring Programs

Two separate ground-water monitoring programs are active at the plant, the radiological and the NPDES monitoring programs. Many of the monitoring wells are sampled in compliance with each program and have differing designated well numbers for the same respective well (Figure 8). Table No 1 provides a description of each well and a cross-reference table for the well numbering system. The radiological protection monitoring program is comprised of 14 monitoring wells for the plant and 4 monitoring wells for the temporary steam generator storage facility. These wells are used to monitor the shallow aquifer for radiological parameters. The NPDES ground-water monitoring program is the other monitoring program and is composed of 8 wells. Drawing No. 12-30002 depicts the location of the monitoring wells with respect to the plant's Absorption Pond, sanitary ponds and the plant's former potable supply wells. Additional well logs are also contained in Appendix No. 1 for those monitoring wells installed in 2006 under the direction of plant personnel.

Ground-Water Quality Michigan NPDES

The Michigan NPDES monitoring program is designed to evaluate significant changes in ground-water quality and potentiometric level, which occur near the Absorption Pond. The water quality of the upgradient Wells (No. 8 & 16) provide a contrast in water quality between ground-waters upgradient of the TRS pond and ground waters that are downgradient and have been influenced by the TRS pond. A key indicator parameter, chloride, exhibits a decreased concentration as a result of the TRS wastewater effluent migrating through the shallow aquifer towards Lake Michigan (AEP 1991). The downgradient NPDES observation Wells No. 95-1A and 12 detect the influence of the TRS pond as ground water flows westward into Lake Michigan.

To the north, the TRS plume is bracketed by EW-19R that exhibits a chloride concentration of 38 mg/l and is relatively unchanged from the observed upgradient concentration of 39.6 mg/l Cl at monitoring well 95-8A (Figure 9). The TRS effluent is bracketed to the south by monitoring wells EW-13 and EW-16 along Livingston Road. Chloride concentrations decrease from 76.3 mg/l Cl at upgradient well EW-16 to 57.3 mg/l Cl at monitoring well EW-13. A simple mixing calculation suggests that approximately 30% of the flow at EW-13 is derived from the TRS pond (Appendix 2).

Ground-Water Quality Radiological

A semi-annual sampling program has been initiated for the absorption pond sediments in addition to the current radiological monitoring program. Procedure (12 THP 6010 ENV. 066) has been instituted to analyze these sediments. The test results are reviewed and evaluated as a part of the quarterly analysis of the REMP data.

Tritium has been detected in the downgradient radiological protection monitoring wells Nos. 4, 5, 6, 7 and 14(95-1A) would indicate the TRS absorption pond as the source. Appendix No. 3 lists the tritium values for the monitoring program. A rise in tritium values concentrations for effluent discharge to the absorption pond is accompanied by a detectable peak concentration in the downgradient wells. Figures 10, 11, 12 and 13 illustrate tritium activities for the radiological monitoring wells for the period of record from 1981 to 1990.

Potable and Domestic Supply Wells

The Plant's Environmental Section performed a well survey in 1990 of those residents with domestic wells located in Rosemary Beach (North of the plant) and Livingston Hills (South of the plant). The communities to the east of the plant were not involved in the well census due to the fact that they are located in a different ground-water basin and are beyond the potential influences of any plant activity.

Eight of the thirty-seven residences in the Rosemary Beach community were identified in 1990 as having wells, previously used to supply water for human consumption. The eight residences are located between 2200 feet and 4100 feet from the absorption pond. All eight wells were sampled and analyzed for tritium, iodine and other gamma emitters. In all cases, there was no detectable activity identified (Liechner, 1991).

The Livingston Hills residences obtain their potable water from Lake Township Municipal water system.

As a comparison, preoperational (1974) tritium levels in ground-water range from 150-710 pCi/l (as shown in Annual Environmental Operating Reports). Tritium levels for lake water and drinking water samples collected in 1990 ranged from no detectable activity to 340 pCi/l.

Well 8, drilled in 1990, is located between the plant (south of Livingston Rd) and Livingston Hills to facilitate future groundwater sampling in this area. The well is located approximately 3100 feet from the plant center, and 2300 feet from the adsorption pond. Initial tritium, iodine and gamma emitter analysis of the well samples showed no detectable activity.

The Plant's former potable supply wells are located approximately 1,400 feet north of the Absorption Pond. These wells served as a source of drinking water for plant personnel and the Energy Information Center from 1970 to 1987. (The plant is now served by municipal water from Lake Township). Former Potable Well No. 2 is located downgradient of the Absorption Pond base upon the existing flow regime depicted on Drawings No. 12-30002. Former Potable Well No. 1 is located about 300 feet further inland and was influenced to a lesser degree by the absorption pond (AEP 1985). With the cessation of ground water withdrawals, the TRS plume has reduced its northern extent of migration based on the observed chloride concentrations from the NPDES monitoring program.

Conclusions

The Cook Nuclear Power Plant is sited within a ground-water basin bounded by Lake Michigan to the west and Covert Ridge (a terminal end moraine) to the east. The aquifer is unconfined and is composed of beach sands overlain by sand dunes and underlain by low permeable lacustrine clays. Construction of sheet piling and discharge to the Absorption Pond has modified existing ground-water flow directions. Discharge to the Absorption Pond has created a ground-water mound that superimposed a radial flow pattern on the regional flow towards Lake Michigan. Comparison of the original baseline flow directions with long term well hydrographs indicates that the prevailing direction of ground water flow remains unchanged and is towards Lake Michigan.

In the vicinity of R. P. Wells 4, 5, and 6, ground water flows from the north to the south. This direction of flow is confirmed by the previous hydrogeologic site investigation conducted by American Environmental Services, Inc. The northern areal extent of the TRS plume is bracketed by EW-19R and the southern areal extent is bracketed by well RP-13. It may be concluded that

there has been no off-site impact to domestic wells located either north or south of the plant based on a review of the various monitoring programs and environmental site investigations. The potential migration of tritiated water seeping from the absorption pond joins the regional flow and discharges into Lake Michigan.

References:

- American Electric Power, April 1985, Hydrogeological Evaluation of the Cook Nuclear Plant, Bridgman, Michigan, prepared by Civil Engineering Div., American Electric Power Service Corp., prepared for Indiana Michigan Power Company.
- American Electric Power, December 1987, Ground Water Monitoring Program Generator Storage Facility Bridgman, Michigan, prepared by Civil Engineering Div., American Electric Power Service Corp., prepared for Indiana Michigan Power Company.
- American Electric Power, April 1991, Hydro geological Evaluation of the Cook Nuclear Plant, Bridgman, Michigan, prepared by Civil Engineering Div., American Electric Power Service Corp., prepared for Indiana Michigan Power Company.
- American Electric Power, December 1991, Hydrogeographic Evaluation of the Cook Nuclear Plant, Bridgman, Michigan, prepared by Civil Engineering Div., American Electric Power Service Corp., prepared for Indiana Michigan Power Company.
- American Environmental Services Co. Inc., July 11, 1990, Subsurface Fuel Oil Contamination Assessment and Demonstration Recovery Technology at Indiana Michigan Power Company, Donald C. Cook Nuclear Plant, Bridgman, Michigan, AES Project No. AE964 AEPC741301-04/02.
- Grisak, G.E. & R.E. Jackson, 1978, "An Appraisal of the Hydrogeological Processes Involved in Shallow Subsurface Radioactive Waste Management in Canadian Terrain" Scientific Series No. 84, ISBN 0-662-10201-0
- Leichner, J.L., December 19, 1991, Concentration of Tritium Downgradient of Absorption Pond, AEP File Location. DC-RS-7950
- Oberlander, P.L., R.K. Skaggs, J.M. Shafer, August 1985, Mitigative Techniques for Groundwater Contamination Associated with Severe Nuclear Accidents, prepared by Pacific Northwest Laboratory Battelle Memorial Institute, prepared for Div. of Radiation Programs and Earth Sciences, NRC NUREG/CR-4251, PNL-5461 Vol.1
- Walton, William C., 1984, Practical Aspects of Groundwater Modeling, pub. By National Water Well Assoc., Dublin, Ohio

Appendix No 1

Well Logs

Gary S Swierz/OR4/AEPIN

01/10/2007 01:53 PM

To Blair K Zordell/BC1/AEPIN@AEPIN

cc Darren L Romshak/AEPIN@AEPIN, Brady E
Todd/MM1/AEPIN@AEPIN, Garcie M
Barnett/LA1/AEPIN@AEPIN

bcc

Subject Monitoring Wells

Data obtained during the 09Jan07 survey.

Well#	Northing	Easting	Top of Pipe	Ground
06-01	183294.46	1393441.20	658.66	655.26
20	179317.38	1392279.76	631.99	629.68
21	179195.42	1393513.50	619.70	617.05

Horizontal Datum : NAD27 Michigan South

Vertical Datum : NGVD29

Unit : Foot

If there are questions, please respond.

Thanks again for your help.

Gary S. Swierz
American Electric Power
John E. Dolan Lab
4001 Bixby Road
Groveport, OH 43125
(614) 836 - 4197

AMERICAN ELECTRIC POWER SERVICE CORPORATION
 AEP CIVIL ENGINEERING LABORATORY
 MONITORING WELL CONSTRUCTION

RP 06-01
 MW



OUTLET.

JOB NUMBER 1518867

COMPANY EDAC

PROJECT WELL INSTALLATION

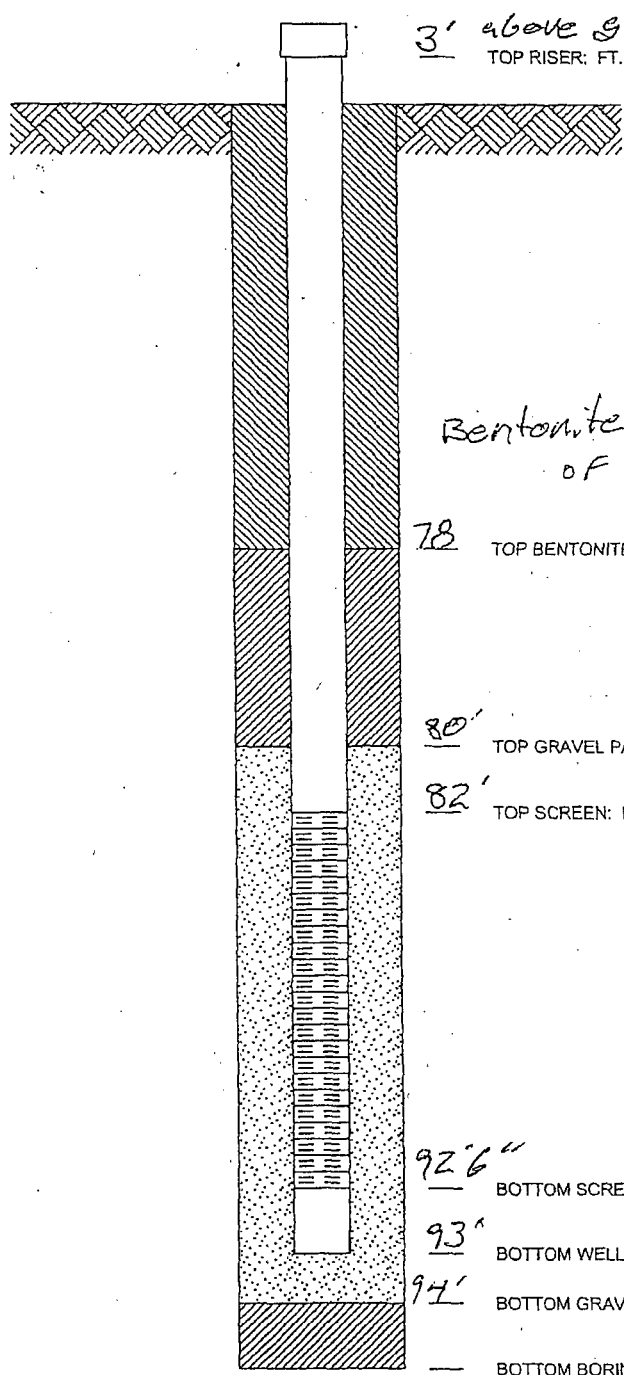
COORDINATES 183294.46 139341.20

SYSTEM _____

WELL No. RP1 BORING No. — INSTALLED EDAC

Top of pipe: 658.66'







GROUND ELEVATION FT.



3' above ground
 TOP RISER: FT.

Elevation 655.26

Bentonite seal to Top
 of Ground

-  GROUT SEAL:
-  BENTONITE SEAL:
-  SCREEN: dia.,
-  GRAVEL PACK:
-  RISER PIPE: dia.,
-  SPACERS, DEPTH:

78' TOP BENTONITE SEAL: FT.

80' TOP GRAVEL PACK: FT.

82' TOP SCREEN: FT.

92'6" BOTTOM SCREEN: FT.

93' BOTTOM WELL: FT.

94' BOTTOM GRAVEL PACK: FT.

— BOTTOM BORING: FT.

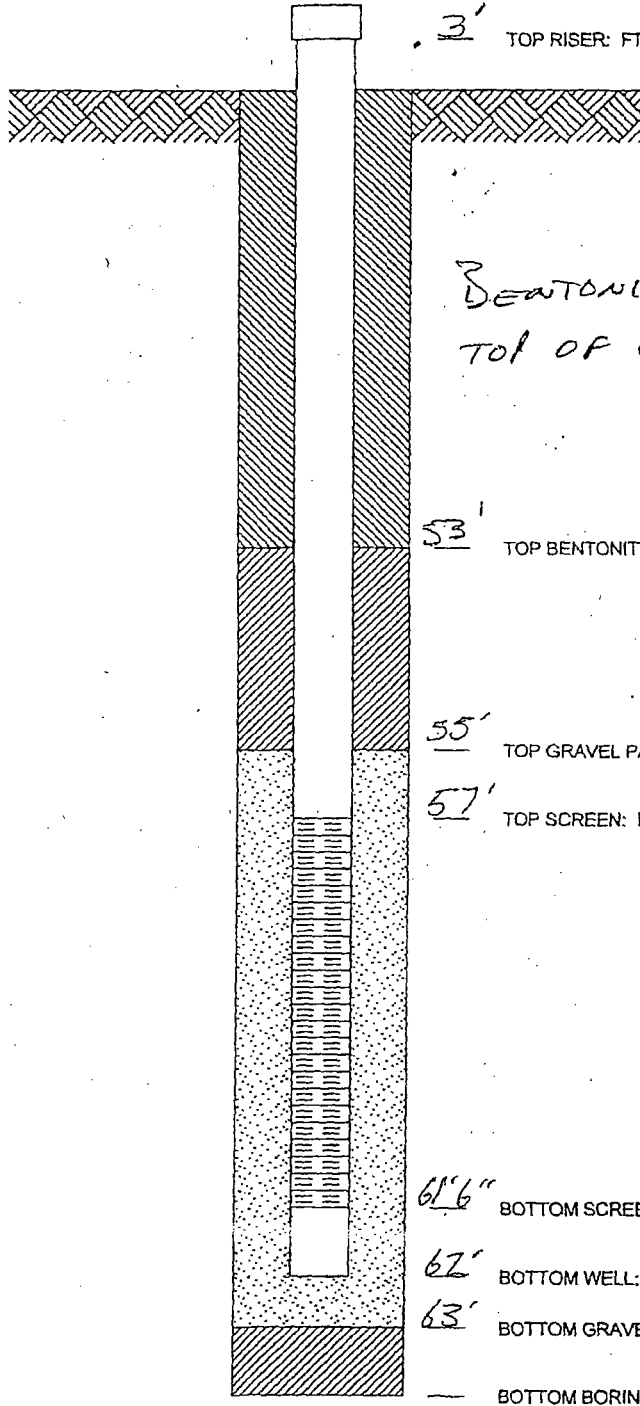
AMERICAN ELECTRIC POWER SERVICE CORPORATION
 AEP CIVIL ENGINEERING LABORATORY
 MONITORING WELL CONSTRUCTION



5271ACT
 JOB NUMBER 1518867
 COMPANY EDAC
 PROJECT WELL INSTALLATION
 JORDINATES 179317.38 139229.76
 SYSTEM _____







WELL No. MW20 BORING No. — INSTALLED 9/25/06
 1-10-07:
 Top of Pipe 631.99'

GROUND ELEVATION FT.



Ground 629.68'
 Horizontal Datum NAD27
 Vertical Datum NAD29
 Unit Foot

BENTONITE SEAL / GROUT
 TO
 TOP OF GROUND.

-  GROUT SEAL:
-  BENTONITE SEAL:
-  SCREEN: dia.,
-  GRAVEL PACK:
-  RISER PIPE: dia.,
-  SPACERS, DEPTH:

- 3' TOP RISER: FT.
- 53' TOP BENTONITE SEAL: FT.
- 55' TOP GRAVEL PACK: FT.
- 57' TOP SCREEN: FT.
- 61'6" BOTTOM SCREEN: FT.
- 62' BOTTOM WELL: FT.
- 63' BOTTOM GRAVEL PACK: FT.
- BOTTOM BORING: FT.

AMERICAN ELECTRIC POWER SERVICE CORPORATION
 AEP CIVIL ENGINEERING LABORATORY
 LOG OF BORING



CONTRACT JOB NUMBER 1518867
 COMPANY EDAL
 PROJECT WELL INSTALLATION
 ORDINATES 179317.38 1392279.76
 GROUND ELEVATION 629.68 SYSTEM _____
 WATER LEVEL 441
 TIME 2 PM
 DATE 9/27/06

BORING NO. MW 20 DATE 9/25/06 SHEET 1 OF 2
 BORING START 9/25/06 BORING FINISH 9/25/06
 PIEZOMETER TYPE SS WELL TYPE 2" PVC - OW
 HGT. RISER ABOVE GROUND 3' 629.68' DIA 2" PVC
 DEPTH TO TOP OF WELL SCREEN 57' BOTTOM 61'-6"
 WELL DEVELOPMENT LHR BACKFILL BENTONITE GRAU
 FIELD PARTY S. SMITH/R. PRINS RIG GP 1300

SAMPLE NUMBER	SAMPLE	SAMPLE DEPTH IN FEET		STANDARD PENETRATION RESISTANCE BLOWS / 6"	TOTAL LENGTH RECOVERY	RQD %	DEPTH IN FEET	GRAPHIC LOG	USCS	SOIL / ROCK IDENTIFICATION	WELL	DRILLER'S NOTES
		FROM	TO									
1		5'	7'	None	2'		5			Sand - m		
2		10'	12'		2'		10			Sand - m		
3		15'	17'		2'		15			Sand - m		
4		20'	22'		2'		20			Sand - m		
5		25'	27'		2'		25			Sand - m		

ANK BORE LOG.GPJ_AEP.GDT 02/105
 BLANK

TYPE OF CASING USED				Continued Next Page			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PIEZOMETER TYPE: PT = OPEN TUBE POROUS TIP, SS = OPEN TUBE SLOTTED SCREEN, G = GEONOR, P = PNEUMATIC			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WELL TYPE: OW = OPEN TUBE SLOTTED SCREEN, GM = GEOMON			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RECORDER _____			

AMERICAN ELECTRIC POWER SERVICE CORPORATION
 AEP CIVIL ENGINEERING LABORATORY
 LOG OF BORING



CONTRACT

JOB NUMBER 1518867
 COMPANY EDAL
 PROJECT WELL INSTALLATION

BORING NO. MW20 DATE 9/25/06 SHEET 2 OF 2
 BORING START 9/25/06 BORING FINISH 9/25/06

SAMPLE NUMBER	SAMPLE	SAMPLE DEPTH IN FEET		STANDARD PENETRATION RESISTANCE BLOWS / 6"	TOTAL LENGTH RECOVERY	RQD %	DEPTH IN FEET	GRAPHIC LOG	USCS	SOIL / ROCK IDENTIFICATION	WELL	DRILLER'S NOTES
		FROM	TO									
6		30'	32'		2'					Sand - M		
7		35'	37'		2'		35			sand - M		
8		40'	42'		2'		40			moist sand - M		
9		45'	47'		2'		45			wet sand - M		Water Table is at 44'
10		50'	52'	50 for 6"	2'		50			5' 10" or 2" Gravel seam wet sand		
11		55'	57'		2'		55			wet Gray sand		
							60					
							65					

BLANK L .JNK BORE LOG.GPJ AEP.GDT 9/21/06

Continued Next Page

AMERICAN ELECTRIC POWER SERVICE CORPORATION
 AEP CIVIL ENGINEERING LABORATORY
 MONITORING WELL CONSTRUCTION



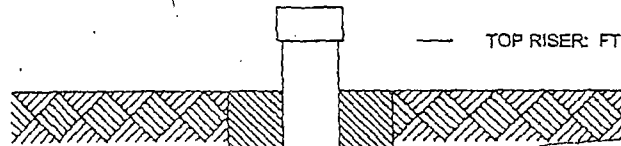
CONTRACT

JOB NUMBER 1518867
 COMPANY EDAC
 PROJECT WELL INSTALLATION
 ORDINATES 179195.42 1393513.50
 SYSTEM _____

WELL No. MW21 BORING No. - INSTALLED 9/26/06

TOP of Pipe 619.70

GROUND ELEVATION . . FT.









TOP RISER: FT.

ground 617.05

Horizontal Datum NAD 27
 Vertical Datum NGVD 29
 Unit feet

BENTONITE SEAL/GROUT TO 1' BELOW GROUND

-  GROUT SEAL:
-  BENTONITE SEAL:
-  SCREEN: dia.,
-  GRAVEL PACK:
-  RISER PIPE: , dia.,
-  SPACERS, DEPTH:

- 37' TOP BENTONITE SEAL: FT.
- 39' TOP GRAVEL PACK: FT.
- 41' TOP SCREEN: FT.
- 45'-6" BOTTOM SCREEN: FT.
- 46' BOTTOM WELL: FT.
- 47' BOTTOM GRAVEL PACK: FT.
- BOTTOM BORING: FT.

BLANK_MONT_WELL_LOG_BLANK_BORE_LOG.GPJ AEP.GDT 9/2/06

AMERICAN ELECTRIC POWER SERVICE CORPORATION
 AEP CIVIL ENGINEERING LABORATORY
 LOG OF BORING



CONTRACT

JOB NUMBER 1518867
 COMPANY EDAC
 PROJECT WELL INSTALLATION
 COORDINATES 179195.42 1393513.50
 GROUND ELEVATION 617.05 SYSTEM _____

BORING NO. MWZ1 DATE 9/26/06 SHEET 1 OF 2
 BORING START 9/26/06 BORING FINISH 9/26/06
 PIEZOMETER TYPE SS WELL TYPE OW
 HGT. RISER ABOVE GROUND (619.70) 3' DIA 2"
 DEPTH TO TOP OF WELL SCREEN 41' BOTTOM 45'-6"
 WELL DEVELOPMENT 1 HR. BACKFILL BENTONITE GROUT
 FIELD PARTY S. SMITH/R. P. KINS RIG GP1300

WATER LEVEL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TIME		<u>1 PM</u>	
DATE		<u>9/26/06</u>	

SAMPLE NUMBER	SAMPLE	SAMPLE DEPTH IN FEET		STANDARD PENETRATION RESISTANCE BLOWS / 6"	TOTAL LENGTH RECOVERY	ROD %	DEPTH IN FEET	GRAPHIC LOG	USCS	SOIL / ROCK IDENTIFICATION	WELL	DRILLER'S NOTES
		FROM	TO									
1		5	7	No Blow Counts	2'		5			med. Brown sand		
2		10	12		2'		10			med. Brown sand		
3		15	17		2'		15			med. Brown wet sand	<input checked="" type="checkbox"/>	WTP 16'
4		20	22		2'		20			med. Brown wet sand		
5		25	27				25			Dark Brown sand		

BLANK LOG BLANK BORE LOG (F.P.) AEP.GDT 9/2/06

TYPE OF CASING USED	Continued Next Page
NO-2 ROCK CORE 6" x 3.25 HSA 9" x 6.25 HSA HW CASING ADVANCER 4" NW CASING 3" SW CASING 6" AIR HAMMER 8"	PIEZOMETER TYPE: PT = OPEN TUBE POROUS TIP, SS = OPEN TUBE SLOTTED SCREEN, G = GEONOR, P = PNEUMATIC WELL TYPE: OW = OPEN TUBE SLOTTED SCREEN, GM = GEOMON
	RECORDER _____

AMERICAN ELECTRIC POWER SERVICE CORPORATION
 AEP CIVIL ENGINEERING LABORATORY
 LOG OF BORING



CONTACT

JOB NUMBER 1518867

COMPANY EDAC

BORING NO. MW21 DATE 9/26/06 SHEET 2 OF 2

PROJECT WELL INSTALLATION

BORING START 9/26/06 BORING FINISH 9/26/06

SAMPLE NUMBER	SAMPLE	SAMPLE DEPTH IN FEET		STANDARD PENETRATION RESISTANCE BLOWS / 6"	TOTAL LENGTH RECOVERY	RQD %	DEPTH IN FEET	GRAPHIC LOG	USCS	SOIL / ROCK IDENTIFICATION	WELL	DRILLER'S NOTES
		FROM	TO									
6		30	32		2'					Dark Brown sand		
7		35	37		2'		35			Dark Brown sand		
8		40	42		2'		40			Fine Brown sand		
9		45	47		2'		45			1' fine Brown sand 6" Black organic stuff 6" fine Brown sand		
							50					
							55					
							60					
							65					

BLANK LOG BLANK BORE LOG.GPJ AEP.GDT 9/21/06

Continued Next Page

Appendix No 2

Chloride Mixing Analysis

SUBJECT CHLORIDE MIXING ANALYSIS TRS ABSORPTION POND

WHAT IS THE AMOUNT OF FLOW DERIVED FROM THE TRS POND AT DOWNGRADIENT WELL RP-13 (EW-13).

EQ 1
$$Q_T = Q_{gw} + Q_R$$

WHERE Q_T total flow at RP-13 (EW-13)

Q_{gw} Flow from upgradient ~~well~~
(USE RP-10 (EW-16))

Q_R Flow from TRS Pond
(USE RP-14 (95-1A))

NOTE: SEE DRAWING 12-3002R POTENTIOMETRIC MAP
FLOW FLOW DIRECTIONS & WELL LOCATIONS

EQ. 2
$$Q_T C_T = Q_{gw} C_{gw} + Q_R C_R$$

WHERE

C_T Concentration at RP-13 (EW-13)

C_{gw} Concentration of upgradient well site
RP-10 (EW-16)

C_R Concentration at TRS Pond
RP-14 (95-1A)

NOTES: SEE MICHIGAN DNR REPORTS FOR J.C. COOK PLANT
FOR TRS DISCHARGE & MONITORING WELLS.

AVERAGE TRS DISCHARGE 9.4 mg/l Chloride

DOWNGRADIENT WELLS EW-12 (RP 15 (MS12C)) IS 10.1 mg/l Cl

" " EW-1A (RP 14 (95-1A)) IS 12.1 mg/l Cl

SUBJECT _____

CONTINUE NOTES

USE CHLORIDES FOR MIXING ANALYSIS SINCE IT IS
A CONSERVATIVE (I.E. NON-ATTENUATING) TRACER AND
IS A KEY INDICATOR PARAMETER FOR THE TRES
POND EFFLUENT.

REARRANGE EQ 1 TO EQ 3 & SUBSTITUTE INTO EQ 2

$$\text{EQ 3} \quad Q_T = Q_E - Q_{GW}$$

EQ 1 (WITH SUBSTITUTION)

$$Q_E C_E = Q_{GW} C_{GW} + C_T (Q_E - Q_{GW})$$

REARRANGE TERMS

$$\text{EQ 4} \quad Q_{GW} = Q_E \left\{ \frac{(C_E - C_T)}{(C_{GW} - C_T)} \right\}$$

SUBSTITUTE IN MONITORING VALUES FOR CHLORIDE CONCENTRATIONS

$$Q_{GW} = Q_E \left\{ \frac{(57.3 - 12.1)}{(76.3 - 12.1)} \right\}$$

$$Q_{GW} = 0.70 Q_E$$

AND SUBSTITUTE INTO EQ 3

$$Q_T = Q_E - (0.70 Q_E)$$

$$Q_T = 0.3 Q_E$$

⇒ APPROXIMATELY 30% OF FLOW
IS CONTRIBUTED FROM TRES POND.

ENGINEERING DEPT.
AMERICAN ELECTRIC POWER SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OHIO

SHEET _____ OF _____
DATE _____ BY _____ CK. _____
COMPANY _____ G.O. _____
PLANT _____

SUBJECT _____

REFERENCE

PAGE 100

*CLARK, IAN D. & PETER FAITZ, 1999, ENVIRONMENTAL
ISOTOPES IN HYDROGEOLOGY, LEWIS PUBLISHERS,
BOCA RATON, FLORIDA ISBN 1-56670-249-6*

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
SURFACE WATER QUALITY DIVISION & WASTE DIVISION

DISCHARGE MONITORING REPORT DAILY MONITORING

PERMITTEE NAME/ADDRESS:

Name: Indiana Michigan Power
Address: One Cook Place
Bridgman Michigan 49106

FACILITY NAME AND LOCATION (if different than permittee)
Cook Nuclear Plant

DISCHARGE NUMBER: 00D
PERMIT NUMBER: MI 0005827
MONITORING PERIOD (Yr/Mo/Da)
FROM: 07/05/01 TO: 07/05/31

Sample Location	EQ -1	EQ -1	EQ -1	EQ -1	EQ -1	EQ -1	EQ -1	EQ -1	EQ -1	EQ -1	EF-1	EF-1	EQ -1	EQ -1	EQ -1	EQ -1
PARAMETER	Nitrate Nitrogen	pH	pH	Total Inorganic Nitrogen	Ammonia	Nitrite Nitrogen	Dissolved Sodium	Chloride	Sulfate	Flow (meas)	Flow (Calc)	Hydrazine	Ethanolamine	Oil Sheen	Dike Insp	
LIMITS		6.5	9.0							2.4	876					
DAY	UNITS	mg/l	Low	High	mg/l	mg/l	mg/l	mg/l	mg/l	MGD	MGY	ug/l	mg/l	Sat/Unsat	Sat/Unsat	
01			7.0	8.5						0.380		<3.0	0.7	Sat		
02			7.0	8.5						0.489		<3.0	<0.7	Sat		
03			7.0	8.5						0.575		<3.0	0.9	Sat		
04			7.0	8.5						0.349		<3.0	<0.7	Sat		
05			7.0	8.4						0.339						
06			7.0	8.5						0.459						
07		0.4	7.0	8.5	4.2	3.8	<0.05	2820	11.4	8360	0.383		<3.0	<0.7	Sat	Sat
08			7.0	8.5						0.443			<3.0	<0.7	Sat	
09			7.0	8.5				7.1		38	0.373		4.5	<0.7	Sat	
10			7.0	8.5							0.426		5.6	<0.7	Sat	
11			7.6	8.5							0.391		<3.0	<0.7	Sat	
12			7.0	8.5							0.388					
13			7.0	8.5							0.273					
14			7.0	8.5					11.0		0.335		<3.0	<0.7	Sat	Sat
15			7.0	8.5							0.332		<3.0	<0.7	Sat	
16			7.0	8.5							0.412		<3.0	1.0	Sat	
17			7.0	8.5							0.340		<3.0	0.7	Sat	
18			7.0	8.5							0.324		<3.0	1.2	Sat	
19			7.0	8.5							0.323					
20			7.0	8.5							0.290					
21			7.2	8.5					9.5		0.291		<3.0	<0.7	Sat	Sat
22			7.0	8.5							0.289		<3.0	<0.7	Sat	
23			7.0	8.5							0.394		<3.0	<0.7	Sat	
24			7.0	8.5							0.427		<3.0	<0.7	Sat	
25			7.0	8.5							0.372		<3.0	<0.7	Sat	
26			7.0	8.5							0.471				Sat	
27			7.0	8.5							0.397					
28			7.0	8.5					12.8		0.393		<3.0	<0.7	Sat	Sat
29			7.0	8.5							0.359		<3.0	<0.7	Sat	
30			7.0	8.5							0.371		<3.0	<0.7	Sat	
31			7.0	8.5							0.353		<3.0	<0.7	Sat	
	Total										11.744					
	MAX	0.4	7.0	8.5	4.2	3.8	0.0	2820.0	12.8	8360	0.575		5.6	1.2		

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE 18 USC ,1001 AND 33 USC ,1319. (PENALTIES UNDER THESE STATUTES MAY INCLUDE FINES UP TO \$10,000 AND OR MAXIMUM IMPRISONMENT OF BETWEEN 6 MONTHS AND 5 YEARS.)

Blair Zordell ENV Specialist _____ DATE _____
PRINTED NAME AND TITLE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

Groundwater Quality

PERMITEE NAME: American Electric Power Company - Donald PERMIT NUMBER GW1810102

MAILING ADDRESS: One Cook Place Bridgman, MI 49106

Certified Operator:
Principle Executive Officer:
Report Signed On:

Blair K. Zordell
John P. Carlson
2/9/2007
1/1/2007

DISTRICT: Kalamazoo

COUNTY: Berrien

FACILITY: IN MI Power Co-Cook Plt

LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

MONITORING PERIOD: FROM:

TO: 1/31/2007

Parameter	Units	Sampling Frequency		EW-12	EW-13	EW-19	EW-1A	EW-8 (U.G.)	EW-16 (U.G.)
Static Water Elevation	USGS feet	Quarterly	Sample Measurement	592.62	599.15	591.62	604.25	608.94	614.07
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
pH (Maximum)	S.U.	Quarterly	Sample Measurement	-7.6	7.0	7.1	6.7	6.8	7.0
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
pH (minimum)	S.U.	Quarterly	Sample Measurement	7.6	7.0	7.1	6.7	6.8	7.0
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Chloride	mg/l	Quarterly	Sample Measurement	10.1	57.3	38.0	12.1	39.6	76.3
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Specific Conductance	umhos/cm3	Quarterly	Sample Measurement	505	634	583	512	451	644
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Total Inorganic Nitrogen	mg/l	Quarterly	Sample Measurement	0.5	0.3	0.4	1.1	0.1	1.0
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Ammonia Nitrogen	mg/l	Quarterly	Sample Measurement	0.4	0.2	0.3	<0.1	<0.1	0.1
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Nitrite Nitrogen	mg/l	Quarterly	Sample Measurement	0.05	0.07	0.06	0.20	0.10	0.14
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Nitrate Nitrogen	mg/l	Quarterly	Sample Measurement	<0.2	<0.2	<0.2	0.9	<0.2	0.8
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)

Groundwater Quality

PERMITEE NAME: American Electric Power Company - Donald PERMIT NUMBER GW1810102

MAILING ADDRESS: One Cook Place Bridgman, MI 49106

Certified Operator:
Principle Executive Officer:
Report Signed On:

Blair K. Zordell
John P. Carlson
2/9/2007

DISTRICT: Kalamazoo

COUNTY: Berrien

FACILITY: IN MI Power Co-Cook Plt

LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

MONITORING PERIOD: FROM:

1/1/2007

TO: 1/31/2007

Parameter	Units	Sampling Frequency		EW-12	EW-13	EW-19	EW-1A	EW-8 (U.G.)	EW-16 (U.G.)
Total Phosphorus	mg/l	Quarterly	Sample Measurement	0.4	0.3	0.7	0.4	<0.1	0.3
			Permit Requirement	maximum daily	maximum daily	maximum daily	maximum daily	maximum daily	maximum daily
Sulfate	mg/l	Quarterly	Sample Measurement	112	47	28	124	17	26
			Permit Requirement	250 maximum daily	250 maximum daily	250 maximum daily	250 maximum daily	report maximum daily	report maximum daily
Dissolved Sodium	mg/l	Quarterly	Sample Measurement	49.9	46.1	30.1	63.9	20.2	30.5
			Permit Requirement	120 maximum daily	120 maximum daily	120 maximum daily	120 maximum daily	report maximum daily	report maximum daily
Total Dissolved Solids	mg/l	Quarterly	Sample Measurement	302	343	338	296	255	334
			Permit Requirement	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily
Total Alkalinity	mg/l	Annually	Sample Measurement	*G	*G	*G	*G	*G	*G
			Permit Requirement	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily
Bicarbonate	mg/l	Annually	Sample Measurement	*G	*G	*G	*G	*G	*G
			Permit Requirement	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily
Dissolved Calcium	mg/l	Annually	Sample Measurement	*G	*G	*G	*G	*G	*G
			Permit Requirement	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily
Dissolved Iron	ug/l	Annually	Sample Measurement	*G	*G	*G	*G	*G	*G
			Permit Requirement	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily	report maximum daily
Dissolved Magnesium	mg/l	Annually	Sample Measurement	*G	*G	*G	*G	*G	*G
			Permit Requirement	200 maximum daily	200 maximum daily	200 maximum daily	200 maximum daily	report maximum daily	report maximum daily

Appendix No 3

Tritium Analysis

Appendix No 4

Table

TABLE 1
2007 well elevation

Well Elevations
Data taken 3/29/07

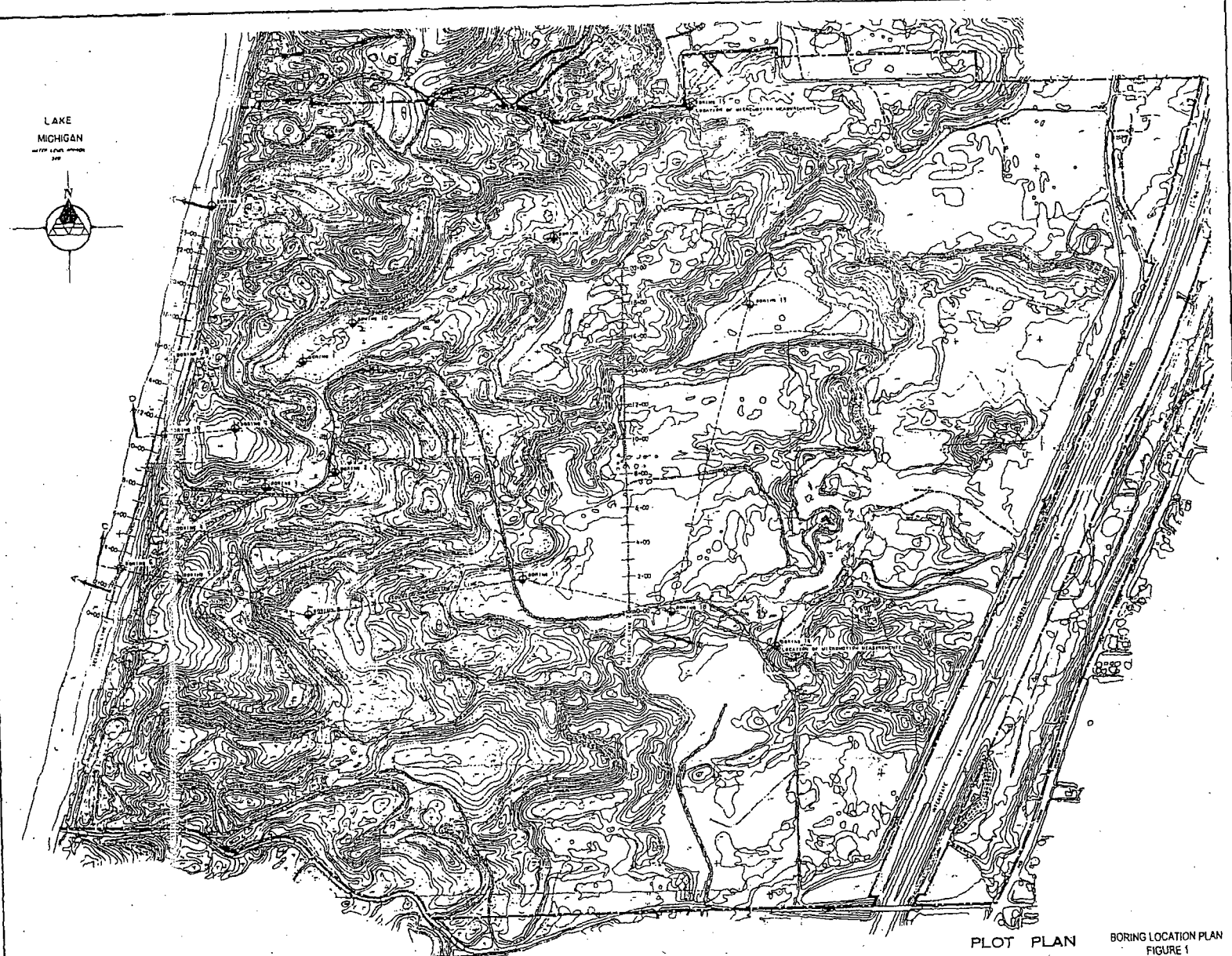
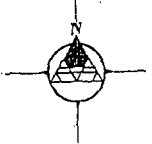
Well Number(s)	Location Description	Main use	Coordinates		Well Depth	Top of riser/pipe	Water level in ft. from top of pipe	Groundwater level (ft above sea level)
MW-06-1 (REMP W-1)	Rosemary beach	REMP	N 183294.46	E 1393441.20	93	658.66	73.35	585.31
MW-2 (REMP W-2)	Training Center	REMP Sampling	N 182,451.7	E 1,395,125.6	47.4'	630.17	31.55	598.62
95-8A (REMP W-3)	E. Of 765 KV yard	REMP/GW permit sampling	N 180,510.5	E 1,396,322.4	22.7'	616.26	7.35	608.91
RP-4 (REMP W-4)	West of Screen house in security Zone	REMP Sampling	N 181,639.377	E 1,392,751.454	25.2	594.28	10.9	583.38
RP-7/EW2 (REMP W-7)	Livingston Road up hill, NW of chain link gate	REMP Sampling	N 179,447.797	E 1,392,848.135	96'	675.104	79.8	595.304
MW-8 (REMP W-8)	Visitor Parking	REMP Sampling	N 182,127.4	E 1,394,124.2	31.6'	613.68	18.55	595.13
RP-9 (EW-17) (REMP W-9)	Visitor center nature trail entrance	REMP Sampling	N 182,707.10	E 1,393,645.50	80.4'	651.26	62.6	588.66
RP-10(EW#16) (REMP W-10)	Corner Thornton and Livingston road	REMP Sampling	N 178,689.61	E 1,396,361.82	37.4'	630.83	16.65	614.18
RP-11 (EW-15) (REMP W-11)	E Livingston Road by gate	REMP Sampling	N 178,512.86	E 1,394,569.77	33.5'	614.38	5.45	608.93
RP-12(EW#14) (REMP W-12)	Livingston Road	REMP Sampling	N 178,857.96	E 1,393,902.49	45.6'	620.08	16.0	604.08
RP-13 (EW-13) (REMP W-13)	W Livingston Road by Chain link gate	REMP and GW Sampling	N 179,215.26	E 1,393,019.93	60.4'	641.75	42.2	599.55
RP-14(95-1A) (REMP W-14)	Livingston Road up hill, NE of chain link gate	REMP and GW Sampling	N 179,676.6	E 1,393,844.6	73.3'	660.99	56.2	604.79
RP-15/MW-12C	South of Sewage plant (SBR)	GW Permit monitoring well	N 180,678.0	E 1,392,881.9	47.4'	610.9	18.2	592.7
EW-19-R	W of Guard House parking lot	GW Permit monitoring well	N 181,888.72	E 1,393,435.52	56.3'	612.48	20.7	591.78
SGR-1 (OB-1)	SG Storage area	REMP Sampling	N 181,028.117	E 1,397,127.87	30'	618.18	10.5	607.68
SGR-2 (OB-2)	SG Storage area	REMP Sampling	N 181,252.187	E 1,396,981.411	UNK	617.32	10.3	607.02
SGR-4 (OB-4)	SG Storage area	REMP Sampling	N 181,166.568	E 1,396,798.654	UNK	616.21	9.2	607.01
SGR-5 (OB-5)	SG Storage area	REMP Sampling	N 181,259.854	E 1,396,751.978	27.4'	624.36	17.8	606.56
MW-20	End of Livingston Road	REMP	N 179317.38	E 1392279.76	62	631.99	41.55	590.44
MW-21	Livingston Road	REMP	N 179195.42	E 1393513.50	46	619.7	17.65	602.05
OW-1	Roadway by U-2 RWST area	GW level for AB Tank testing	N 180,939.3	E 1,393,109.0	24.9	608.35	17.65	590.7
OW-2	Roadway by chemical unloading	GW level for PHB Tank testing	N 181,705.8	E 1,393,207.4	17.95	593.75	9.35	584.4
OW-4	Roadway by 1 RWST area	GW level for CD Tank Testing	N 181,705.8	E 1,393,207.4	33.2	608.17	17.55	590.62

Appendix No 5'

Figures

4853-001
D.J. Goss
2/1/61

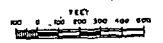
LAKE
MICHIGAN
WITH LAKE SHORES



REFERENCES:
AERIAL PHOTOGRAPHY, BRADSHAW AND COMPANY, 1000 WEST WASHINGTON, CHICAGO, ILLINOIS, 1955, ENLARGED TO 1/2" = 100' FROM ORIGINAL.
U.S. GEOLOGICAL SURVEY, TOPOGRAPHIC MAPS, SERIES 100, SHEET 1 OF 17.

PLOT PLAN

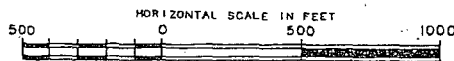
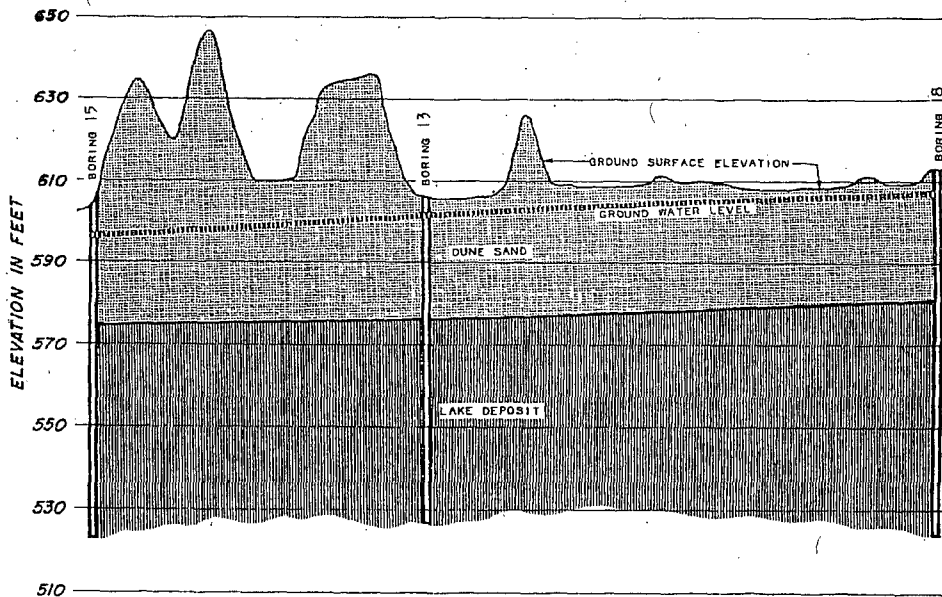
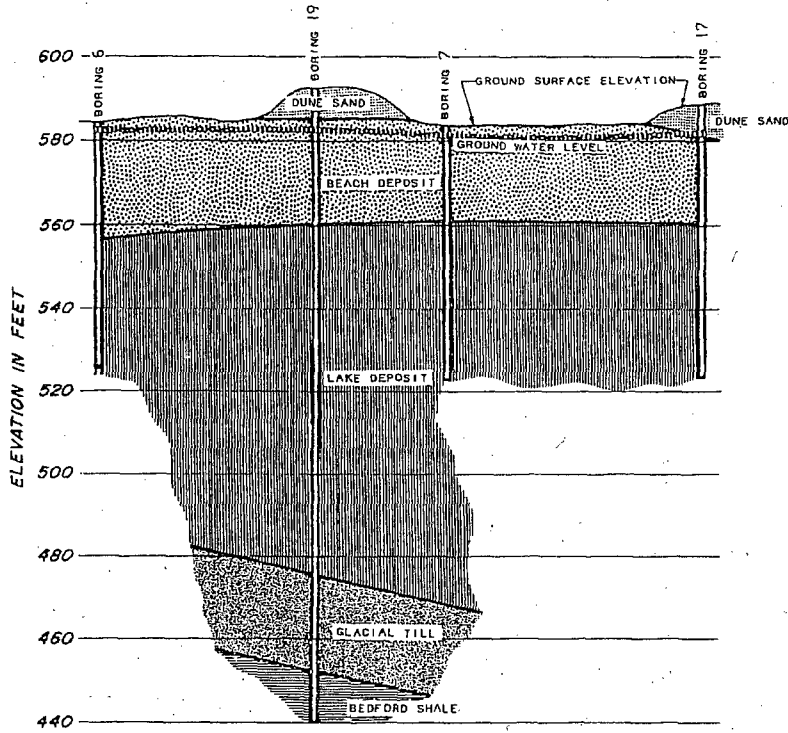
BORING LOCATION PLAN
FIGURE 1



QUANER & BACOREN
APPLIED EARTH SCIENCES

REVISIONS
 BY: _____ DATE: _____
 BY: _____ DATE: _____
 BY: _____ DATE: _____

FILE 48-53-001
 BY: D. J. GASS DATE: 2-20-63
 CHECKED BY: G. B. G. DATE: 2/14/62



GEOLOGIC CROSS-SECTIONS

NOTE:

SUBSURFACE CONDITIONS ILLUSTRATED ABOVE WERE OBTAINED BY INTERPOLATION BETWEEN BORINGS. CONSEQUENTLY, VARIATIONS WHICH ARE NOT INDICATED BY THE CROSS-SECTION CAN BE EXPECTED BETWEEN BORING LOCATIONS.

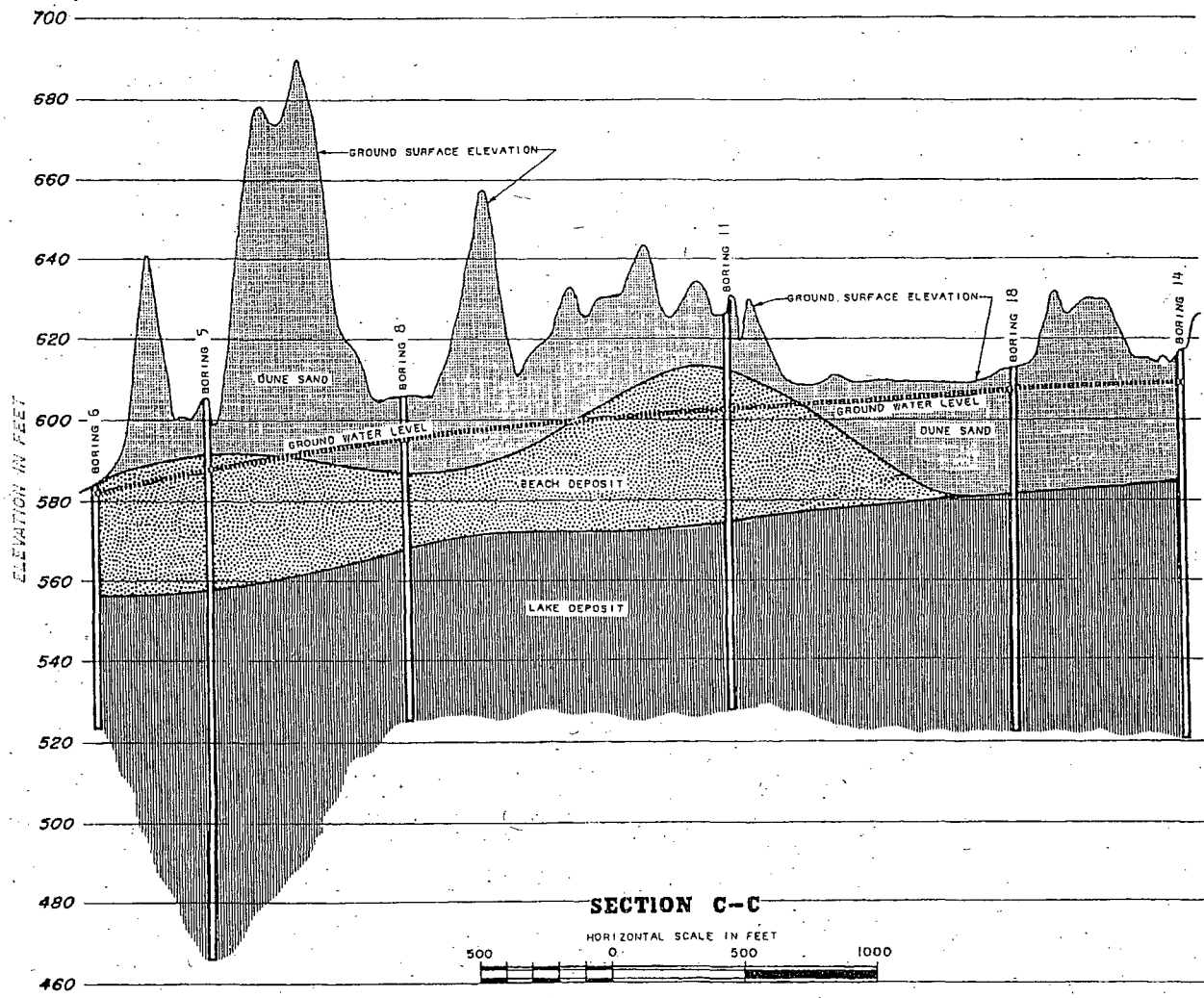
FIGURE 2

DAMES & MOORE

FILE 4853 001
 BY D.J. O'NEILL DATE 2-20-67
 CHECKED BY [signature] DATE 2-2-67

REVISIONS
 BY _____ DATE _____
 BY _____ DATE _____
 PLATE _____ OF _____

NOTE:
 SUBSURFACE CONDITIONS ILLUSTRATED ABOVE WERE OBTAINED BY INTERPOLATION BETWEEN BORINGS. CONSEQUENTLY, VARIATIONS WHICH ARE NOT INDICATED BY THE CROSS-SECTION CAN BE EXPECTED BETWEEN BORING LOCATIONS.



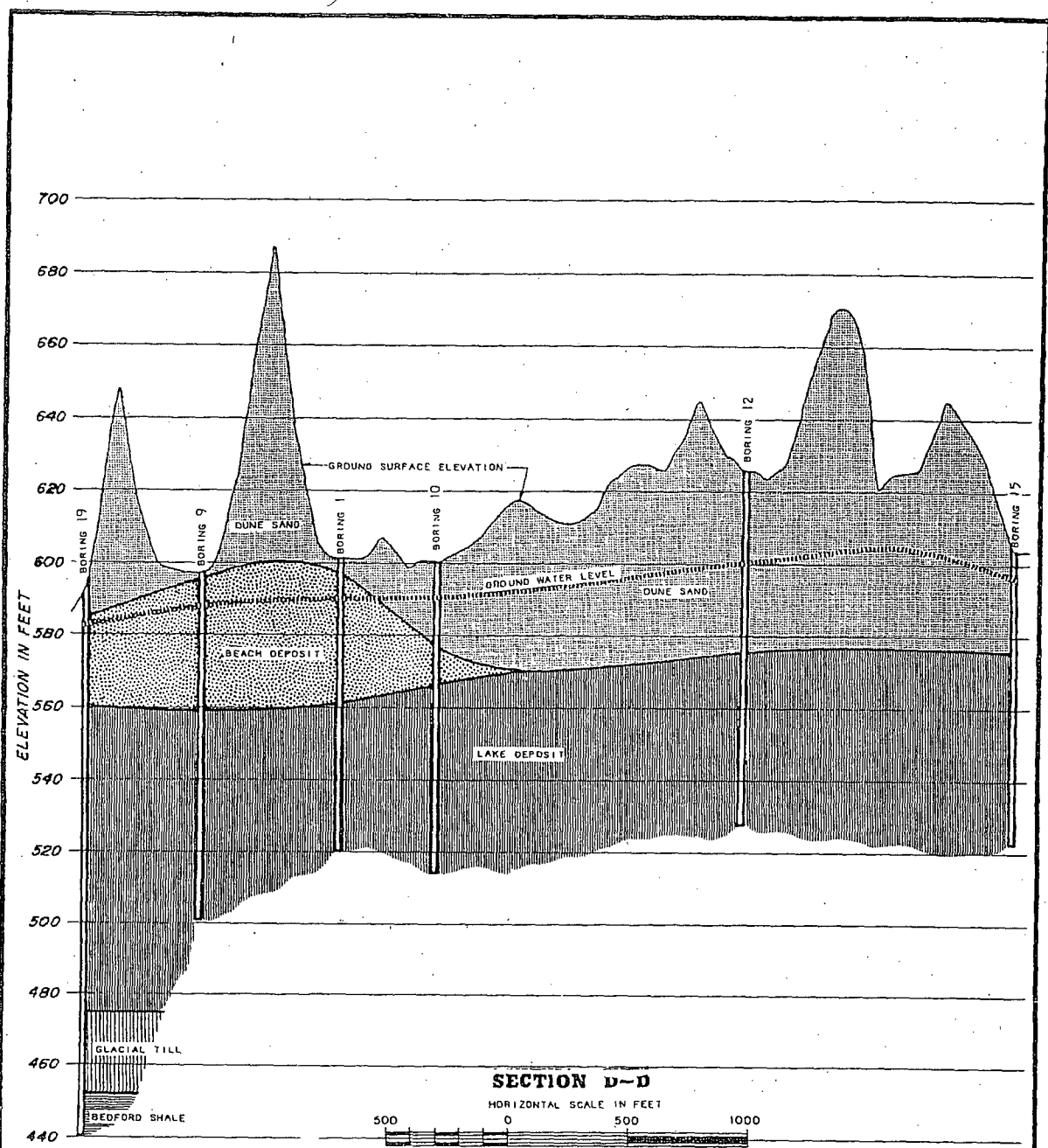
GEOLOGIC CROSS-SECTION

THE TRS POND IS LOCATED AT BORING 8 AND MAINTAINS A WATER ELEVATION OF 615.0

FIGURE 3
 DAMES & MOORE
 PLATE IA-10b

REVISIONS
 BY: _____ DATE: _____
 BY: _____ DATE: _____
 BY: _____ DATE: _____
 BY: _____ DATE: _____

FILE NO. 1001
 BY: D. J. GALEY
 CHECKED BY: J. J. GALEY
 DATE: 12/1/52



NOTE:
 SUBSURFACE CONDITIONS ILLUSTRATED ABOVE WERE OBTAINED BY INTERPOLATION BETWEEN BORINGS. CONSEQUENTLY, VARIATIONS WHICH ARE NOT INDICATED BY THE CROSS-SECTION CAN BE EXPECTED BETWEEN BORING LOCATION.

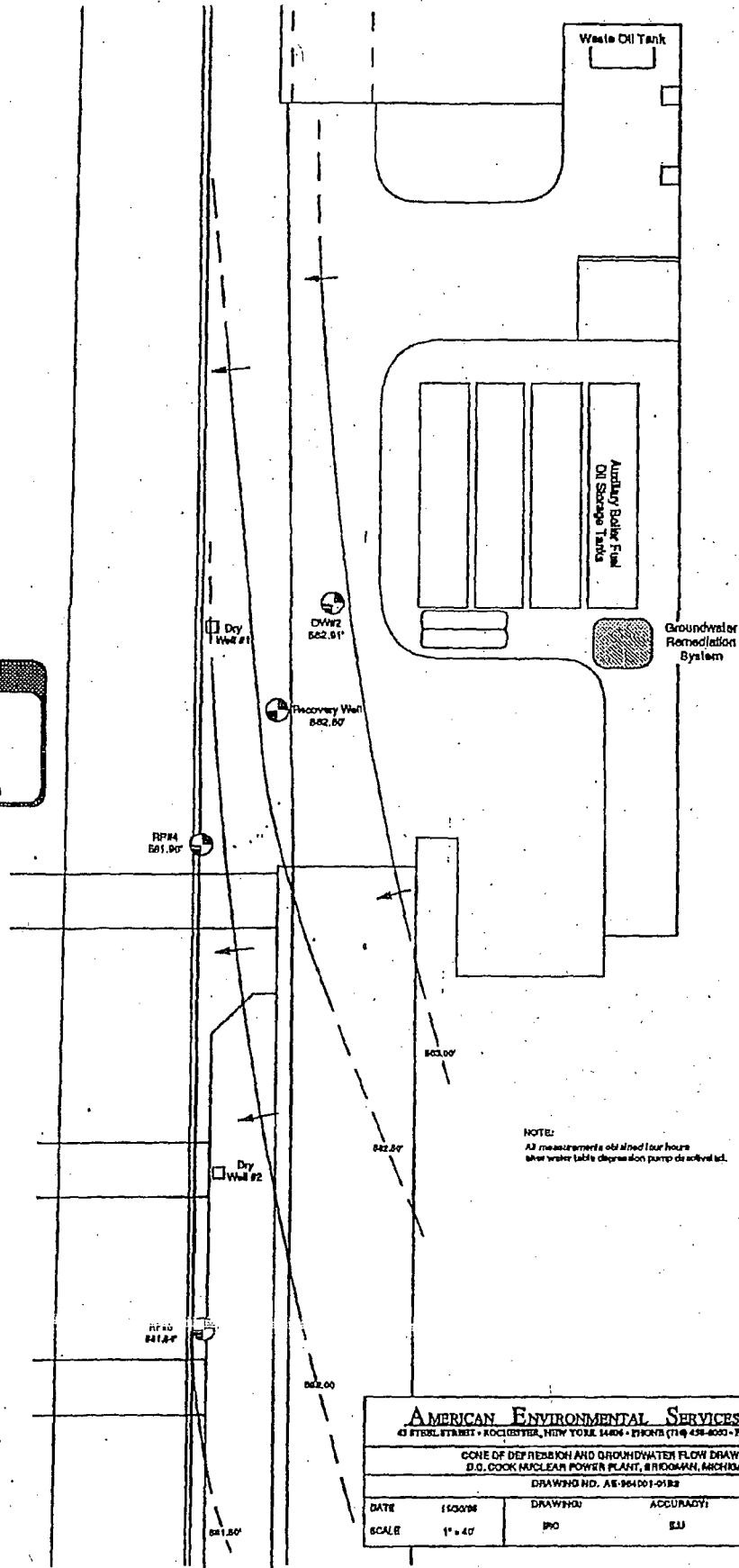
GEOLOGIC CROSS-SECTION

FIGURE 4
 DAMES & MOORE

Figure No. 5
Water Table Map

LEGEND

- Well Location (groundwater elevations)
- Equipotential Contour (dashed where interrupted)
- Groundwater Flow Direction



NOTE:
All measurements obtained four hours after water table depression pump deactivatd.

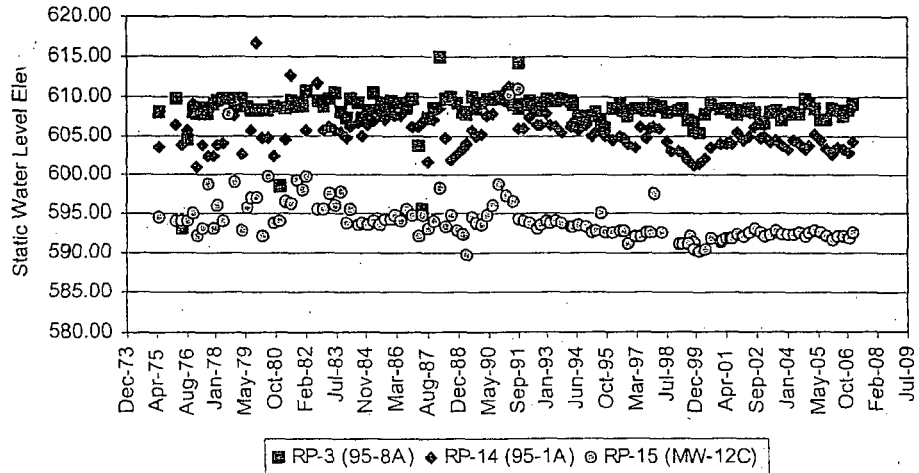
AMERICAN ENVIRONMENTAL SERVICES CO., INC.
 43 STEEL STREET • ROCHESTER, NEW YORK 14604 • PH: 478-7175 (7) • FAX: (716) 478-3341

CONE OF DEPRESSION AND GROUNDWATER FLOW DRAWING
 D.O. COOK NUCLEAR POWER PLANT, BIRMINGHAM, MICHIGAN

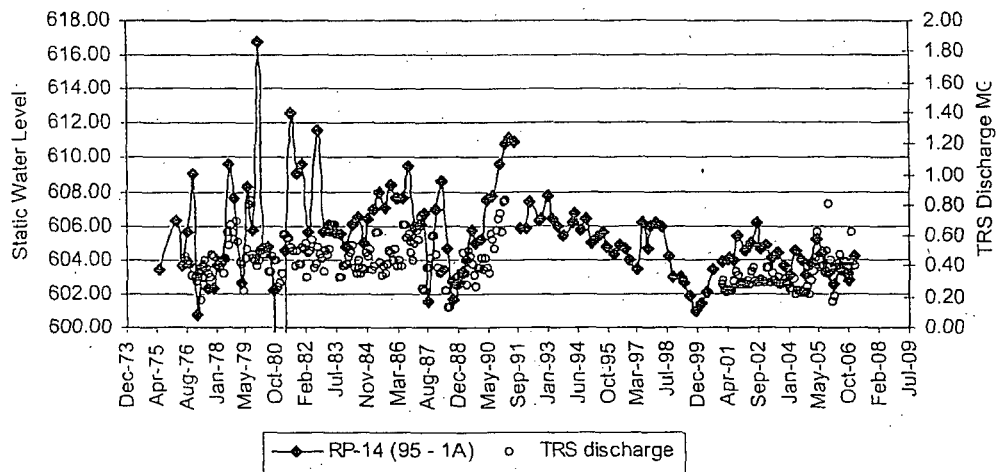
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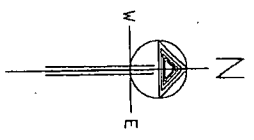
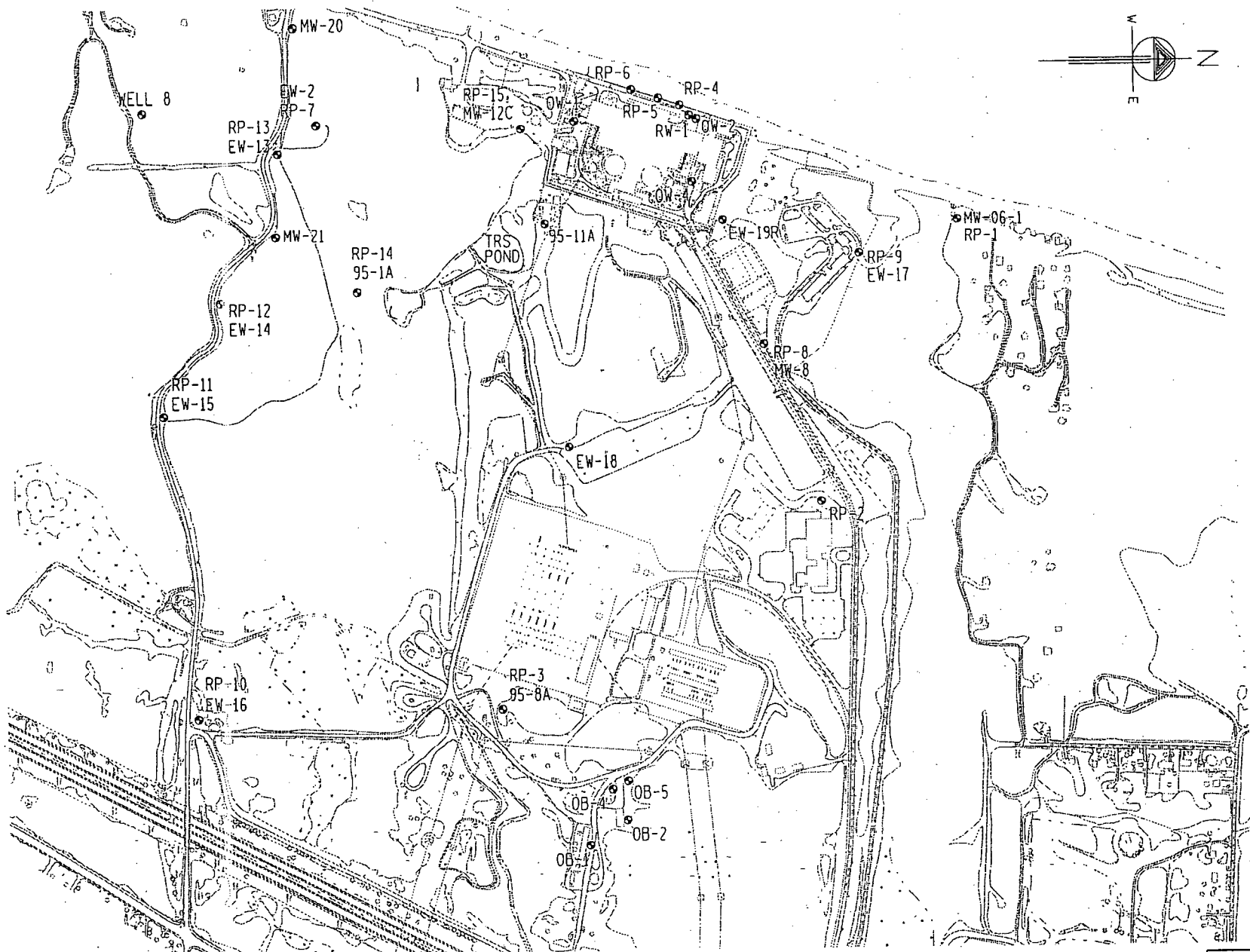
DATE	DRAWN BY	ACCURACY	APPROVAL
1/20/98	BPO	EU	DNA
SCALE	1" = 40'		

Donald C. Cook Nuclear Plant
Figure 6



Donald C. Cook Nuclear Plant
Figure 7



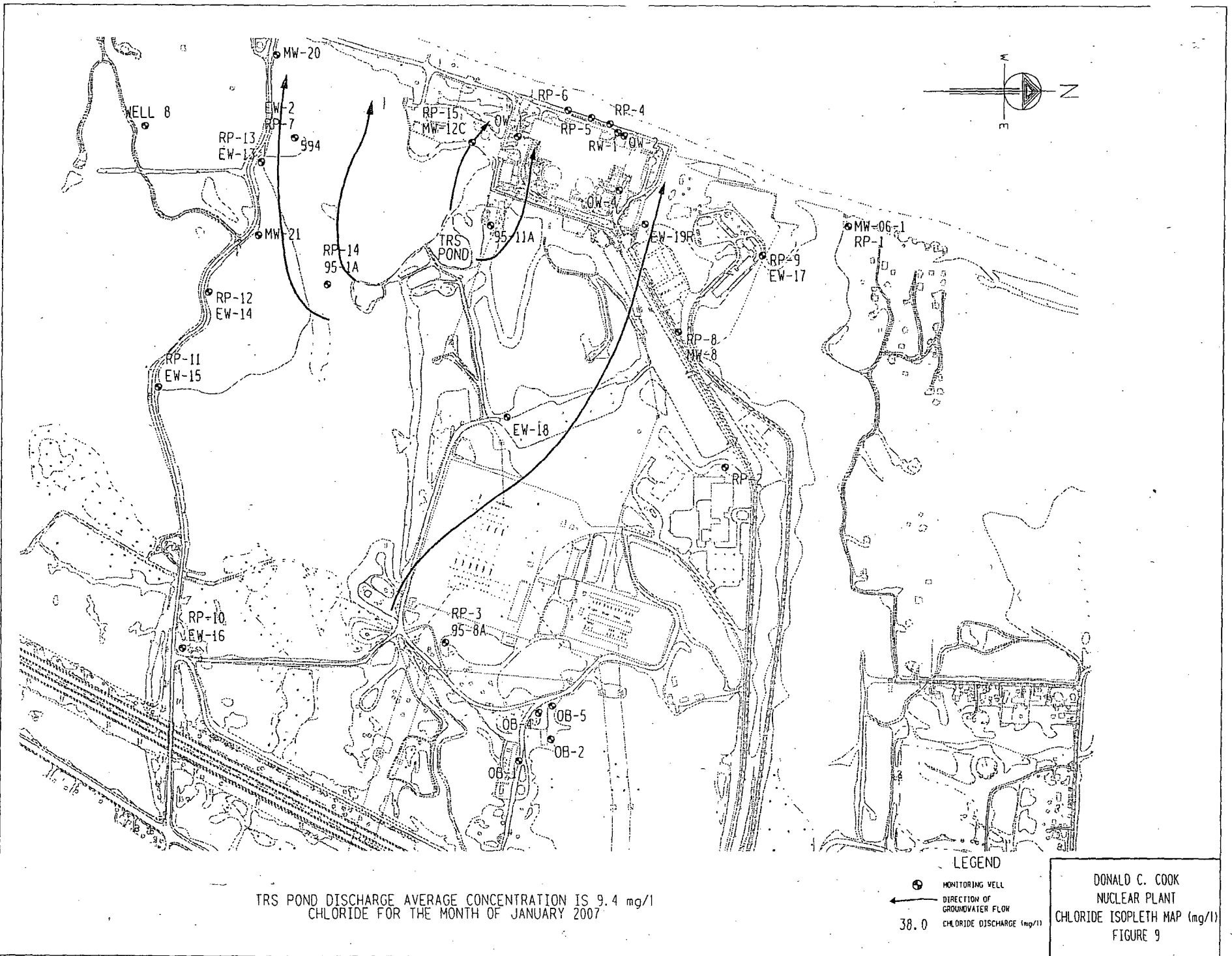


LEGEND

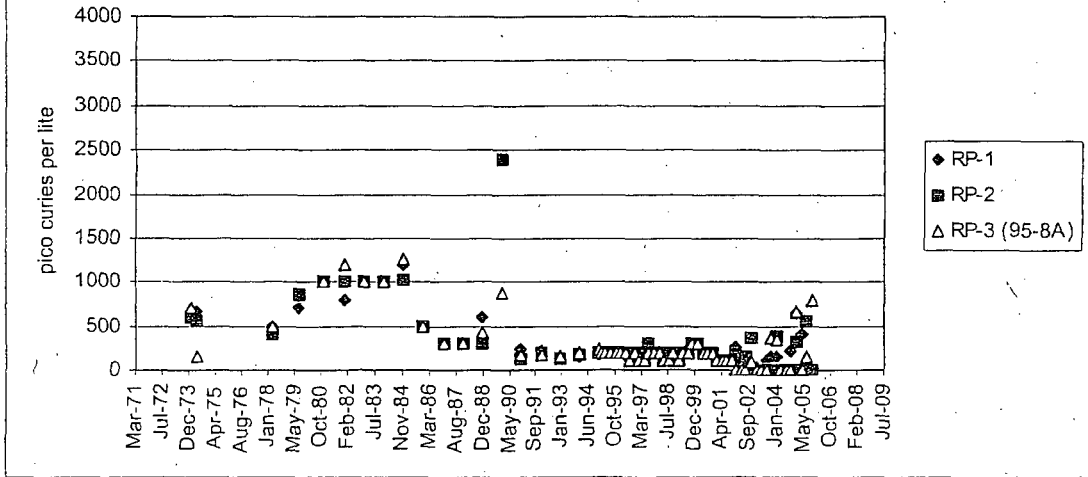


MONITORING WELL

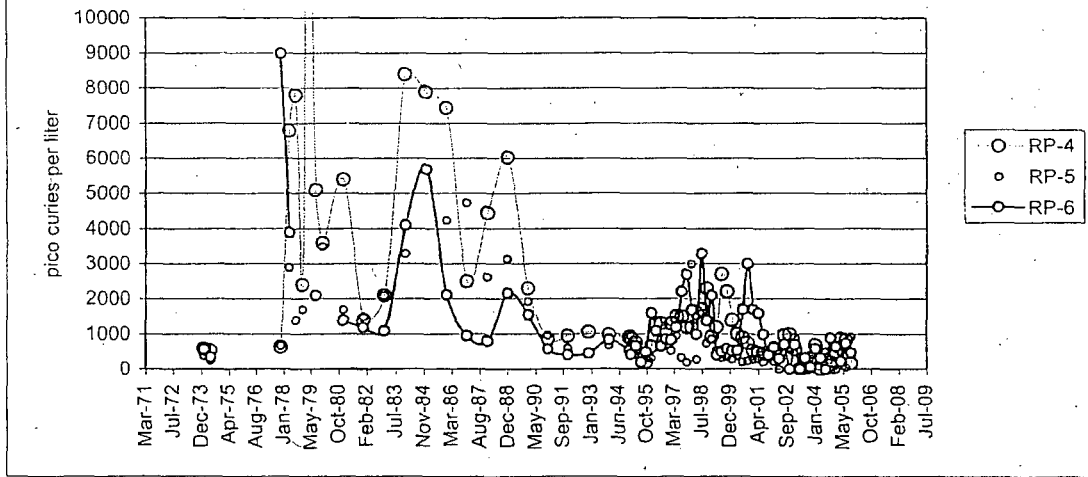
DONALD C. COOK
 NUCLEAR PLANT
 WELL LOCATION MAP
 FIGURE 8



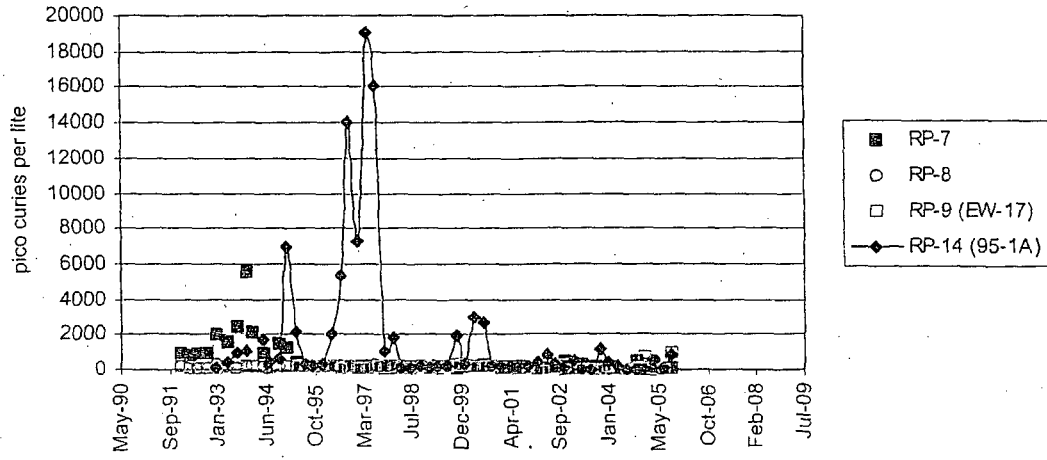
Donald C Cook Plant
Figure 10



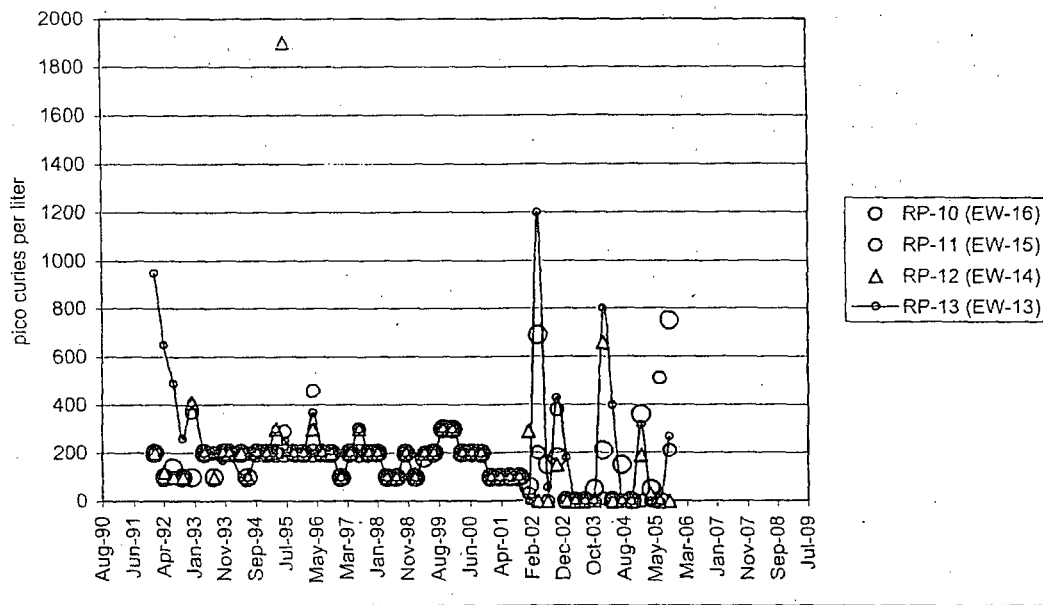
Donald C Cook Plant
Figure 11



Donald C Cook Plant
Figure 12



Donald C Cook Plant
Figure 13





Michigan Department of Environmental Quality, Water Division
Groundwater Section, Permits & Technical Support Unit

COMPLIANCE MONITORING REPORT FORM

Required by Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA)

Facility Name 1 Indiana Michigan Power Co-Cook Plt	Facility Name 2 American Electric Power
Facility ID Number 20073.7	Authorization Number GW1810102
Jurisdiction: Water Division	
District: Kalamazoo	
Month: Sep	Year: 2008

CERTIFICATION STATEMENT:

I certify, under penalty of law, that I have personally examined and am familiar with the information submitted in this document and all attachments. The information being submitted was collected and analyzed according to the approved methods specified in the groundwater discharge permit for this facility. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment

CERTIFIED OPERATOR (PRINT): Blair K. Zordell	CERTIFICATION NUMBER: 4537
CERTIFIED OPERATOR (SIGNATURE): 	DATE: 10/14/2008
PRINCIPAL EXECUTIVE OFFICER (PRINT): Jon H. Harner	
PRINCIPAL EXECUTIVE OFFICER (SIGNATURE): 	DATE: 10-14-08

EFFLUENT QUALITY

PERMITEE NAME: American Electric Power Company - Donald
 MAILING ADDRESS: One Cook Place Bridgman, MI 49106

PERMIT NUMBER GW1810102
 Certified Operator: Blair K. Zordell
 Principle Executive Officer: Jon H. Harner
 Report Signed On: 10/14/2008

DISTRICT: Kalamazoo
 COUNTY: Berrien

FACILITY: IN MI Power Co-Cook Plt

LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

MONITORING PERIOD: FROM: 9/1/2008

TO: 9/30/2008

Sample Location	Sampling Frequency	Parameter	Units		Statistical Base Code 1	Statistical Base Code 2	Number of Limit Exceedances
EQ-1	Daily	Flow (Measured)	gallons	Sample Measurement	****	599600	0
				Permit Requirement	****	2400000 maximum daily	
EQ-1	Annually	Flow (Calculated)	gallons	Sample Measurement	****	*G	0
				Permit Requirement	****	875000000 maximum annual	
EQ-1	Weekly	Chloride	mg/l	Sample Measurement	****	13.5	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Weekdays	Ethanolamine	mg/l	Sample Measurement	****	15.2	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Weekdays	Hydrazine	ug/l	Sample Measurement	****	877	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Weekdays	pH (minimum)	S.U.	Sample Measurement	****	6.9	0
				Permit Requirement	****	6.5 minimum daily	
EQ-1	Weekdays	pH (maximum)	S.U.	Sample Measurement	****	9.0	0
				Permit Requirement	****	9.0 maximum daily	
EQ-1	Monthly	Total Inorganic Nitrogen	mg/l	Sample Measurement	****	5.3	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Monthly	Ammonia Nitrogen	mg/l	Sample Measurement	****	4.8	0
				Permit Requirement	****	(report) maximum daily	

EFFLUENT QUALITY

PERMITEE NAME: American Electric Power Company - Donald
MAILING ADDRESS: One Cook Place Bridgman, MI 49106
FACILITY: IN MI Power Co-Cook Plt
LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

PERMIT NUMBER: GW1810102
Certified Operator: Blair K. Zordell
Principle Executive Officer: Jon H. Harner
Report Signed On: 10/14/2008
MONITORING PERIOD: FROM: 9/1/2008

DISTRICT: Kalamazoo
COUNTY: Berrien
TO: 9/30/2008

Sample Location	Sampling Frequency	Parameter	Units	Statistical Base Code 1	Statistical Base Code 2	Number of Limit Exceedences	
EQ-1	Monthly	Nitrite Nitrogen	mg/l	Sample Measurement	****	0.10	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Monthly	Nitrate Nitrogen	mg/l	Sample Measurement	****	0.38	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	2x monthly	Sodium	mg/l	Sample Measurement	****	1697	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	2x monthly	Sulfate	mg/l	Sample Measurement	****	1756	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Daily	Flow (Measured)	gallons	Sample Measurement	****	26750	0
				Permit Requirement	****	60000 maximum daily	
EQ-2	Annually	Flow (Calculated)	Gallons	Sample Measurement	****	*G	0
				Permit Requirement	****	21900000 annual maximum	
EQ-2	Weekly	Biochemical Oxygen Demand (BOD5)	mg/l	Sample Measurement	****	4.26	0
				Permit Requirement	****	35 maximum daily	
EQ-2	Weekly	Chloride	mg/l	Sample Measurement	****	142.0	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Dissolved Oxygen	mg/l	Sample Measurement	****	4.9	0
				Permit Requirement	****	(report) maximum daily	

EFFLUENT QUALITY

PERMITEE NAME: American Electric Power Company - Donald
MAILING ADDRESS: One Cook Place Bridgman, MI 49106

PERMIT NUMBER GW1810102
 Certified Operator: Blair K. Zordell
 Principle Executive Officer: Jon H. Harner
 Report Signed On: 10/14/2008
 MONITORING PERIOD: FROM: 9/1/2008

DISTRICT: Kalamazoo
COUNTY: Berrien

FACILITY: IN MI Power Co-Cook Plt
LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

TO: 9/30/2008

Sample Location	Sampling Frequency	Parameter	Units	Statistical Base Code 1	Statistical Base Code 2	Number of Limit Exceedences	
EQ-2	Weekly	Total Phosphorus	mg/l	Sample Measurement	****	2.50	0
				Permit Requirement	****	15 maximum daily	
EQ-2	Weekly	pH (minimum)	S.U.	Sample Measurement	****	7.1	0
				Permit Requirement	****	6.0 minimum daily	
EQ-2	Weekly	pH (maximum)	S.U.	Sample Measurement	****	7.5	0
				Permit Requirement	****	9.0 maximum daily	
EQ-2	Weekly	Sodium	mg/l	Sample Measurement	****	39.4	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Total Inorganic Nitrogen	mg/l	Sample Measurement	****	20.1	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Ammonia Nitrogen	mg/l	Sample Measurement	****	10.4	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Nitrite Nitrogen	mg/l	Sample Measurement	****	0.04	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Nitrate Nitrogen	mg/l	Sample Measurement	****	17.6	0
				Permit Requirement	****	(report) maximum daily	
				Sample Measurement	****		
				Permit Requirement			

Land Application

PERMITEE NAME: American Electric Power Company - Donald
 MAILING ADDRESS: One Cook Place Bridgman, MI 49106

PERMIT NUMBER GW1810102
 Certified Operator: Blair K. Zordell
 Principle Executive Officer: Jon H. Harner
 Report Signed On: 10/14/2008
 MONITORING PERIOD: FROM: 9/1/2008

DISTRICT: Kalamazoo
 COUNTY: Berrien

FACILITY: IN MI Power Co-Cook Plt

LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

TO: 9/30/2008

Sample Location	Sampling Frequency	Parameter	Units		Statistical Base Code 1	Statistical Base Code 2	No. Ex.
LA-1 Outfall OOD	Daily	Application Rate	gallons/day/sqft	Sample Measurement	****	6	0
				Permit Requirement	****	25 maximum daily	
LA-2 Outfall OOE Basin A	Daily	Application Rate	gallons/day/sqft	Sample Measurement	****	3	0
				Permit Requirement	****	7.5 maximum daily	
LA-3 Outfall OOE Basin B	Daily	Application Rate	gallons/day/sqft	Sample Measurement	****	8	0
				Permit Requirement	****	17.6 maximum daily	
				Sample Measurement			
				Permit Requirement			
				Permit Requirement			
				Sample Measurement			
				Permit Requirement			
				Sample Measurement			
				Permit Requirement			
				Sample Measurement			
				Permit Requirement			



Michigan Department of Environmental Quality, Water Division
Groundwater Section, Permits & Technical Support Unit

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EFFLUENT QUALITY

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 MAILING ADDRESS: One Cook Place Bridgman, MI 49106

PERMIT NUMBER GW1810102
 Certified Operator: Blair K. Zordell
 Principle Executive Officer: Jon H. Harner
 Report Signed On: 8/14/2008

DISTRICT: Kalamazoo
 COUNTY: Berrien

FACILITY: IN MI Power Co-Cook Plt

LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI
 49106

MONITORING PERIOD: FROM: 7/1/2008

TO: 7/31/2008

Sample Location	Sampling Frequency	Parameter	Units		Statistical Base Code 1	Statistical Base Code 2	Number of Limit Exceedances
EQ-1	Daily	Flow (Measured)	gallons	Sample Measurement	****	726916	0
				Permit Requirement	****	2400000 maximum daily	
EQ-1	Annually	Flow (Calculated)	gallons	Sample Measurement	****	*G	0
				Permit Requirement	****	876000000 maximum annual	
EQ-1	Weekly	Chloride	mg/l	Sample Measurement	****	12.0	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Weekdays	Ethanolamine	mg/l	Sample Measurement	****	1.7	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Weekdays	Hydrazine	ug/l	Sample Measurement	****	5.9	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Weekdays	pH (minimum)	S.U.	Sample Measurement	****	7.0	0
				Permit Requirement	****	6.5 minimum daily	
EQ-1	Weekdays	pH (maximum)	S.U.	Sample Measurement	****	8.9	0
				Permit Requirement	****	9.0 maximum daily	
EQ-1	Monthly	Total Inorganic Nitrogen	mg/l	Sample Measurement	****	6.1	0
				Permit Requirement	****	(report) maximum daily	
EQ-1	Monthly	Ammonia Nitrogen	mg/l	Sample Measurement	****	6.1	0
				Permit Requirement	****	(report) maximum daily	

EFFLUENT QUALITY

PERMITEE NAME: American Electric Power Company - Donald
 MAILING ADDRESS: One Cook Place Bridgman, MI 49106

PERMIT NUMBER GW1810102
 Certified Operator: Blair K. Zordell
 Principle Executive Officer: Jon H. Harner
 Report Signed On: 8/14/2008

DISTRICT: Kalamazoo
 COUNTY: Berrien

FACILITY: IN MI Power Co-Cook Plt
 LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

MONITORING PERIOD: FROM: 7/1/2008

TO: 7/31/2008

Sample Location	Sampling Frequency	Parameter	Units	Statistical Base Code 1	Statistical Base Code 2	Number of Limit Exceedences
EQ-1	Monthly	Nitrite Nitrogen	mg/l	Sample Measurement	***** < 0.05	0
				Permit Requirement	***** (report) maximum daily	
EQ-1	Monthly	Nitrate Nitrogen	mg/l	Sample Measurement	***** < 0.10	0
				Permit Requirement	***** (report) maximum daily	
EQ-1	2x monthly	Sodium	mg/l	Sample Measurement	***** 1460	0
				Permit Requirement	***** (report) maximum daily	
EQ-1	2x monthly	Sulfate	mg/l	Sample Measurement	***** 2500	0
				Permit Requirement	***** (report) maximum daily	
EQ-2	Daily	Flow (Measured)	gallons	Sample Measurement	***** 27260	0
				Permit Requirement	***** 60000 (report) maximum daily	
EQ-2	Annually	Flow (Calculated)	Gallons	Sample Measurement	***** *G	0
				Permit Requirement	***** 21900000 (report) annual maximum	
EQ-2	Weekly	Biochemical Oxygen Demand (BOD5)	mg/l	Sample Measurement	***** 3.60	0
				Permit Requirement	***** 35 (report) maximum daily	
EQ-2	Weekly	Chloride	mg/l	Sample Measurement	***** 126.0	0
				Permit Requirement	***** (report) maximum daily	
EQ-2	Weekly	Dissolved Oxygen	mg/l	Sample Measurement	***** 5.8	0
				Permit Requirement	***** (report) maximum daily	

EFFLUENT QUALITY

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TO: 7/31/2008

Sample Location	Sampling Frequency	Parameter	Units		Statistical Base Code 1	Statistical Base Code 2	Number of Limit Exceedences
EQ-2	Weekly	Total Phosphorus	mg/l	Sample Measurement	****	1.75	0
				Permit Requirement	****	1.5 maximum daily	
EQ-2	Weekly	pH (minimum)	S.U.	Sample Measurement	****	7.2	0
				Permit Requirement	****	6.0 minimum daily	
EQ-2	Weekly	pH (maximum)	S.U.	Sample Measurement	****	7.5	0
				Permit Requirement	****	9.0 maximum daily	
EQ-2	Weekly	Sodium	mg/l	Sample Measurement	****	34.2	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Total Inorganic Nitrogen	mg/l	Sample Measurement	****	20.0	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Ammonia Nitrogen	mg/l	Sample Measurement	****	0.30	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Nitrite Nitrogen	mg/l	Sample Measurement	****	0.04	0
				Permit Requirement	****	(report) maximum daily	
EQ-2	Weekly	Nitrate Nitrogen	mg/l	Sample Measurement	****	20.0	0
				Permit Requirement	****	(report) maximum daily	
				Sample Measurement	****		
				Permit Requirement			

Land Application

PERMITEE NAME:American Electric Power Company -Donald
MAILING ADDRESS:One Cook Place Bridgman, MI 49106

PERMIT NUMBER GW1810102
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 Report Signed On: 8/14/2008
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DISTRICT: Kalamazoo
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FACILITY: IN MI Power Co-Cook Plt
LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

TO: 7/31/2008

Sample Location	Sampling Frequency	Parameter	Units		Statistical Base Code 1	Statistical Base Code 2	No. Ex.
LA-1 Outfall OOD	Daily	Application Rate	gallons/day/sqft	Sample Measurement	****	8	0
				Permit Requirement	****	25 maximum daily	
LA-2 Outfall OOE Basin A	Daily	Application Rate	gallons/day/sqft	Sample Measurement	****	*G	0
				Permit Requirement	****	7.15 maximum daily	
LA-3 Outfall OOE Basin B	Daily	Application Rate	gallons/day/sqft	Sample Measurement	****	8	0
				Permit Requirement	****	17.8 maximum daily	
				Sample Measurement			
				Permit Requirement			
				Sample Measurement			
				Permit Requirement			
				Sample Measurement			
				Permit Requirement			
				Sample Measurement			
				Permit Requirement			
				Sample Measurement			
				Permit Requirement			

Groundwater Quality

PERMITEE NAME: American Electric Power Company - Donald PERMIT NUMBER GW1810102

MAILING ADDRESS: One Cook Place Bridgman, MI 49106

Certified Operator:

Blair K. Zordell

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Report Signed On:

8/14/2008

LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

MONITORING PERIOD: FROM:

7/1/2008

TO: 7/31/2008

Parameter	Units	Sampling Frequency		EW-12	EW-13	EW-19	EW-1A	EW-8 (U.G.)	EW-16 (U.G.)
Static Water Elevation	USGS feet	Quarterly	Sample Measurement	593.38	600.03	592.54	605.45	608.41	613.38
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
pH (Maximum)	S.U.	Quarterly	Sample Measurement	8.0	7.2	7.5	7.4	6.8	7.1
			Permit Requirement	9.0 maximum daily	9.0 maximum daily	9.0 maximum daily	9.0 maximum daily	(report) maximum daily	(report) maximum daily
pH (minimum)	S.U.	Quarterly	Sample Measurement	8.0	7.2	7.5	7.4	6.8	7.1
			Permit Requirement	6.0 minimum daily	6.0 minimum daily	6.0 minimum daily	6.0 minimum daily	(report) maximum daily	(report) maximum daily
Chloride	mg/l	Quarterly	Sample Measurement	12.5	56.8	49.1	12.5	119	86.8
			Permit Requirement	250 maximum daily	250 maximum daily	250 maximum daily	250 maximum daily	(report) maximum daily	(report) maximum daily
Specific Conductance	umhos/cm3	Quarterly	Sample Measurement	730	565	552	515	672	613
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Total Inorganic Nitrogen	mg/l	Quarterly	Sample Measurement	0.30	0.33	0.52	2.86	0.12	0.17
			Permit Requirement	5 maximum daily	5 maximum daily	5 maximum daily	15 maximum daily	(report) maximum daily	(report) maximum daily
Ammonia Nitrogen	mg/l	Quarterly	Sample Measurement	0.30	0.33	0.38	<0.05	<0.05	<0.05
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Nitrite Nitrogen	mg/l	Quarterly	Sample Measurement	<0.05	<0.05	0.14	<0.05	<0.05	<0.05
			Permit Requirement	0.5 maximum daily	0.5 maximum daily	0.5 maximum daily	0.5 maximum daily	(report) maximum daily	(report) maximum daily
Nitrate Nitrogen	mg/l	Quarterly	Sample Measurement	<0.10	<0.10	<0.10	2.86	0.12	0.17
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily

Groundwater Quality

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MAILING ADDRESS: One Cook Place Bridgman, MI 49106

Certified Operator:

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Principle Executive Officer:

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LOCATION: 1 Cook Place, Mail Zone 5A Bridgman, MI 49106

MONITORING PERIOD: FROM:

7/1/2008

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Parameter	Units	Sampling Frequency		EW-12	EW-13	EW-19	EW-1A	EW-8 (U.G.)	EW-16 (U.G.)
Total Phosphorus	mg/l	Quarterly	Sample Measurement	0.6	0.6	0.5	0.7	0.6	0.6
			Permit Requirement	1	1	1	1	(report)	(report)
Sulfate	mg/l	Quarterly	Sample Measurement	222	31.9	52.4	132	34.1	22.5
			Permit Requirement	250	250	250	250	(report)	(report)
Dissolved Sodium	mg/l	Quarterly	Sample Measurement	97.5	32.2	32.0	65.9	83.7	53.5
			Permit Requirement	120	120	120	120	(report)	(report)
Total Dissolved Solids	mg/l	Quarterly	Sample Measurement	486	346	347	318	485	370
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Total Alkalinity	mg/l	Annually	Sample Measurement	138	177	172	87	195	184
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Bicarbonate	mg/l	Annually	Sample Measurement	137	177	172	84	195	184
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Dissolved Calcium	mg/l	Annually	Sample Measurement	42.5	56.8	57.2	25.1	66.0	50.0
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Dissolved Iron	mg/l	Annually	Sample Measurement	0.42	4.12	1.94	<0.02	0.20	<0.02
			Permit Requirement	(report)	(report)	(report)	(report)	(report)	(report)
Dissolved Magnesium	mg/l	Annually	Sample Measurement	15.0	17.1	17.9	9.95	20.5	17.5
			Permit Requirement	200	200	200	200	(report)	(report)

Groundwater Quality

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Parameter	Units	Sampling Frequency		EW-12	EW-13	EW-19	EW-1A	EW-8 (U.G.)	EW-16 (U.G.)
Dissolved Oxygen	mg/l	Annually	Sample Measurement	1.5	0.9	1.5	3.6	1.0	0.9
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Potassium	mg/l	Annually	Sample Measurement	1.7	2.2	1.7	1.1	3.8	2.0
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Total Organic Carbon	mg/l	Annually	Sample Measurement	1.44	5.65	3.38	1.00	6.62	3.23
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Phenol	mg/l	Annually	Sample Measurement	0.424	<0.006	0.351	<0.006	<0.006	<0.006
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Ethanolamine	mg/l	Annually	Sample Measurement	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Aluminum	ug/l	Annually	Sample Measurement	<20	<20	<20	<20	<20	<20
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Barium	ug/l	Annually	Sample Measurement	28.1	28.2	23.7	16.0	23.9	21.9
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Boron	ug/l	Annually	Sample Measurement	80	70	60	30	50	30
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Cadmium	ug/l	Annually	Sample Measurement	<1	<1	<1	<1	<1	<1
			Permit Requirement	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily	(report) maximum daily

Groundwater Quality

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Parameter	Units	Sampling Frequency		EW-12	EW-13	EW-19	EW-1A	EW-8 (U.G.)	EW-16 (U.G.)
Dissolved Chromium	ug/l	Annually	Sample Measurement	<2	<2	<2	<2	<2	<2
			Permit Requirement	11 maximum daily	11 maximum daily	11 maximum daily	11 maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Copper	ug/l	Annually	Sample Measurement	<0.05	<0.05	<0.05	0.5	0.4	0.6
			Permit Requirement	9 maximum daily	9 maximum daily	9 maximum daily	9 maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Lead	ug/l	Annually	Sample Measurement	<0.05	<0.05	<0.05	<0.05	0.24	<0.05
			Permit Requirement	10 maximum daily	10 maximum daily	10 maximum daily	10 maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Manganese	ug/l	Annually	Sample Measurement	120	105	78	<1	66	4
			Permit Requirement	530 maximum daily	530 maximum daily	530 maximum daily	530 maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Inorganic Mercury	ug/l	Annually	Sample Measurement	<0.0005	<0.0005	<0.0005	<0.0005	0.0028	0.0011
			Permit Requirement	0.0013 maximum daily	0.0013 maximum daily	0.0013 maximum daily	0.0013 maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Nickel	ug/l	Annually	Sample Measurement	0.3	0.4	0.4	0.4	2.2	1.2
			Permit Requirement	52 maximum daily	52 maximum daily	52 maximum daily	52 maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Selenium	ug/l	Annually	Sample Measurement	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			Permit Requirement	5 maximum daily	5 maximum daily	5 maximum daily	5 maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Silver	ug/l	Annually	Sample Measurement	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
			Permit Requirement	0.2 maximum daily	0.2 maximum daily	0.2 maximum daily	0.2 maximum daily	(report) maximum daily	(report) maximum daily
Dissolved Zinc	ug/l	Annually	Sample Measurement	<2	<2	<2	<2	<2	<2
			Permit Requirement	120 maximum daily	120 maximum daily	120 maximum daily	120 maximum daily	(report) maximum daily	(report) maximum daily

Groundwater Quality

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Parameter	Units	Sampling Frequency		EW-12	EW-13	EW-19	EW-1A	EW-8 (U.G.)	EW-16 (U.G.)
Hydrazine	ug/l	Annually	Sample Measurement	<3	6.1	<3	<3	5.1	<3
			Permit Requirement	10 maximum daily	10 maximum daily	10 maximum daily	10 maximum daily	(report) maximum daily	(report) maximum daily
			Sample Measurement						
			Permit Requirement						
			Sample Measurement						
			Permit Requirement						
			Sample Measurement						
			Permit Requirement						
			Sample Measurement						
			Permit Requirement						
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			Permit Requirement						