



# PATHFINDER

January 25, 2008

Mr. Keith I. McConnell, Deputy Director  
Decommissioning and Uranium Recovery Licensing Directorate  
U. S. Nuclear Regulatory Commission  
11545 Rockville Pike  
Mail Stop T-8F5  
Rockville, Maryland 20852

Ref: Docket No. 40-2259, Source Material License No. SUA-672

Dear Mr. McConnell:

Enclosed please find two copies of the semi-annual ground water monitoring report (covering the third and fourth quarters of 2007) as required by condition 60B of the referenced license. Please let me know if there are any questions regarding the report.

Sincerely,

T. W. Hardgrove  
Operations Manager

Enclosure

Cc: Blair Spitzberg, USNRC Region IV  
Michael Widdop, Stoller  
Hydro-Engineering w/o encl.

**SEMI-ANNUAL  
GROUND-WATER MONITORING  
FOR LUCKY Mc MINE**



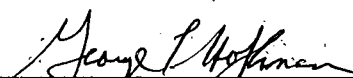
**HYDRO - ENGINEERING, LLC**

**SEMI-ANNUAL  
GROUND-WATER MONITORING  
FOR LUCKY Mc MINE**

**PREPARED FOR:  
PATHFINDER MINES CORPORATION  
LUCKY Mc MINE**

**BY:  
HYDRO-ENGINEERING, L.L.C.**

**JANUARY, 2008**

  
\_\_\_\_\_  
**GEORGE L. HOFFMAN  
HYDROLOGIST**

*1/15/08*

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## 1.0 Introduction and Summary of Results

This semi-annual report presents the results of ground-water monitoring for the second half of 2007 for the Lucky Mc tailings area. This report covers the requirement of NRC License SUA-672, License Condition 60B.

The following table lists the site standards that are in effect at Lucky Mc tailings POC well T1-12. The tabulation also lists the measured November 2007 concentrations for POC well T1-12. All of the present concentrations in POC well T1-12 are significantly below the site standards.

GROUND-WATER PROTECTION STANDARDS FOR POINT-OF COMPLIANCE WELL T1-12  
AND NOVEMBER 2007 POC CONCENTRATION

POC STANDARD & CONCENTRATION	CONSTITUENT								
	Arsenic	Beryllium	Cadmium	Chromium	Nickel	RA-226 + RA-228	Selenium	Thorium-230	Uranium
SITE STANDARD	0.05	0.07	0.02	0.05	0.85	7.5	1.10	13.2	1.70
T1-12, Nov. 2007	0.005	<0.01	<0.01	<0.05	0.29	<3.8	0.408	<0.2	0.33

NOTE: All concentrations in mg/l except for radium and thorium in pCi/l.

## 2.0 Piezometric Data

The water-level data collected during the second half of 2007 are presented in Table 1 along with the 2004 through 2006 water-level data. Figure 1 presents the piezometric surface of the Lucky Mc aquifer from the POC well through the Fraser Draw alluvium, while Figure 2 presents plots of the water-level elevations versus time for wells AL-6, T1-6, T1-12, AL-1, AL-7, AL-8 and AL-9. The corresponding water-level elevation or constituent concentration is posted adjacent to the well location on the plan view figures of the area (such as Figure 1). Water-level elevations in late 2007 have been steady in these wells except for a rise in water levels in wells AL-1, AL-7, AL-8 and T1-6. The cause of the rise in the water levels is unknown but is not a typical ground-water level change for this shallow aquifer.

## 3.0 Water-Quality Data

License Condition 60B requires monitoring of water from the POC and POE wells and other selected wells for the constituents presented in Table 1. An analysis of the selenium, uranium, combined radium-226 plus radium-228, sulfate, chloride and TDS concentrations is required.

Figure 3 presents the November 2007 chloride concentrations for the Lucky Mc aquifer. The chloride concentrations are highest in the Wind River Channel at POC well T1-12 and decrease significantly beyond POE well AL-6 to levels similar to background levels. Figure 4 presents the plots of chloride concentrations versus time for the seven monitored wells.

Chloride concentrations gradually increased in POC well T1-12 in 2007 while an overall gradual decline was observed in POE well AL-6.

Figure 5 presents the TDS concentrations for November 2007 water samples from the Lucky Mc aquifer. The TDS concentrations are greater than 5000 mg/l at POC well T1-12 and are generally less than 4000 mg/l in the western portion of the Fraser Draw alluvium. Figure 6 presents the plots of TDS concentrations versus time and illustrates that the 2007 TDS concentrations are less than the average value for the previous few years for wells AL-6, AL-8 and AL-9. The large increase in TDS in well AL-9 during December of 2006 is considered anomalous because the TDS in subsequent samples is consistent with the historical TDS concentration.

The measured sulfate concentrations for the Lucky Mc aquifer during November of 2007 are presented in Figure 7 and show that the sulfate concentrations in the western portion of the Fraser Draw alluvium are greater than 2000 mg/l while concentrations are less than 2000 mg/l in the eastern half. The sulfate concentration versus time plots in Figure 8 show that sulfate concentrations in POC well T1-12 overall gradually increased in 2007.

Uranium concentrations for the Lucky Mc aquifer during November of 2007 are presented in Figure 9 and this figure shows the highest observed uranium concentrations at POE well AL-6. Figure 10 shows that the uranium concentration in the POE well has gradually declined over the last few years. The uranium concentrations have been relatively steady in POC well T1-12, for the last few years.

Figure 11 presents the selenium concentrations for November 2007 for the Lucky Mc aquifer. Selenium concentrations are greatest at POC well T1-12. Selenium concentrations in POC well T1-12 have gradually declined for the last few years (see Figure 12).

Figure 13 presents the radium-226 plus radium-228 activity for November 2007 in the Lucky Mc aquifer in pCi/l. The activity at POC well T1-12 is well below the radium-226 plus radium-228 site standard of 7.5 pCi/l. Measured radium activities generally exhibit more variability than other constituents, and little significance is given to occasional outliers. Figure 14 shows plots of the radium-226 plus radium-228 activity versus time for the monitored wells. These plots show significant variability in measured activity, which is thought to be due to variability in the laboratory analysis. The March of 2007 values for wells AL-6 and AL-9 are slightly higher than typical values and the June of 2007 value for well T1-6 is above the normal value for this well.

Concentrations of the remainder of the constituents at the site are gradually decreasing or are not significant at POC well T1-12.

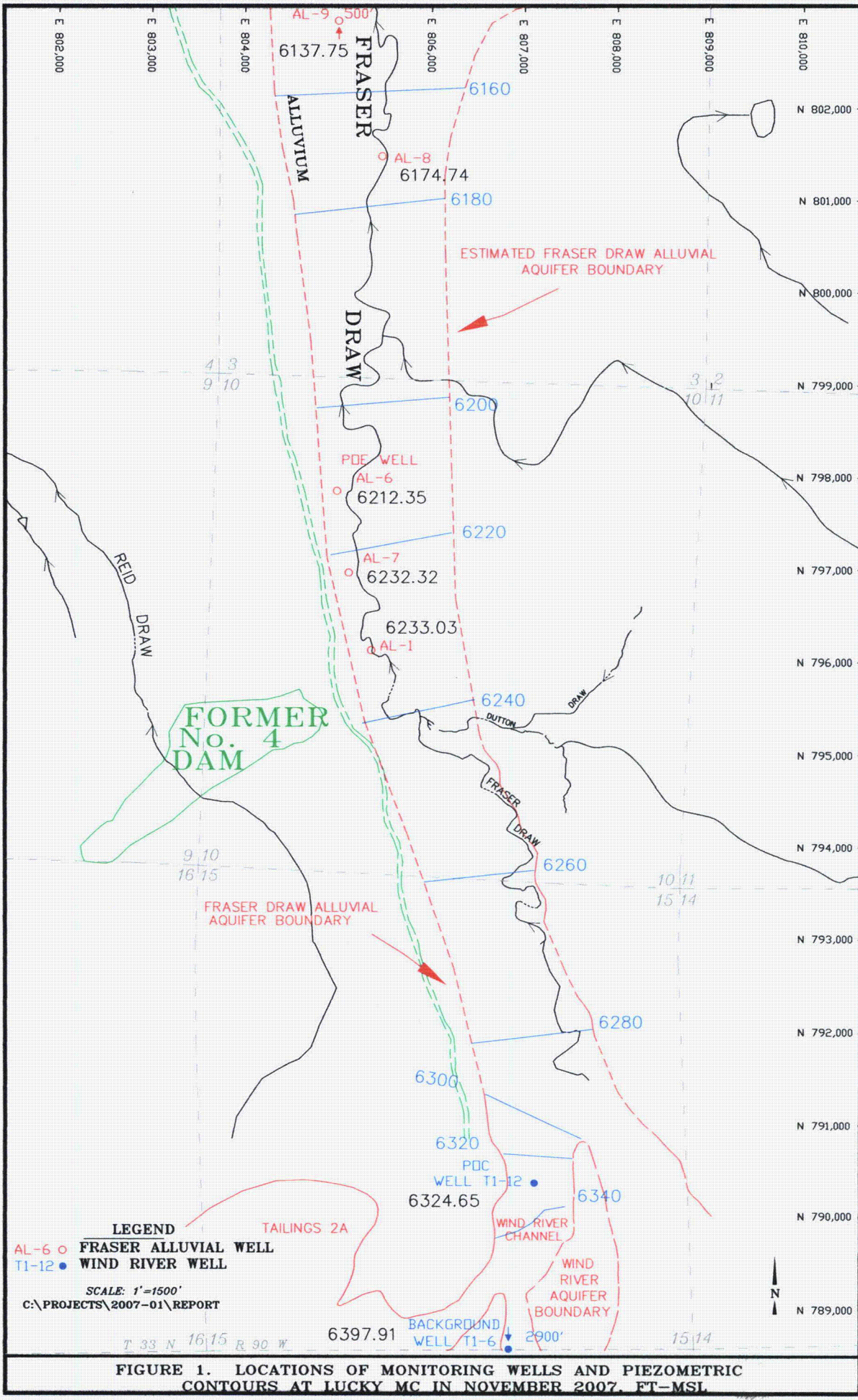
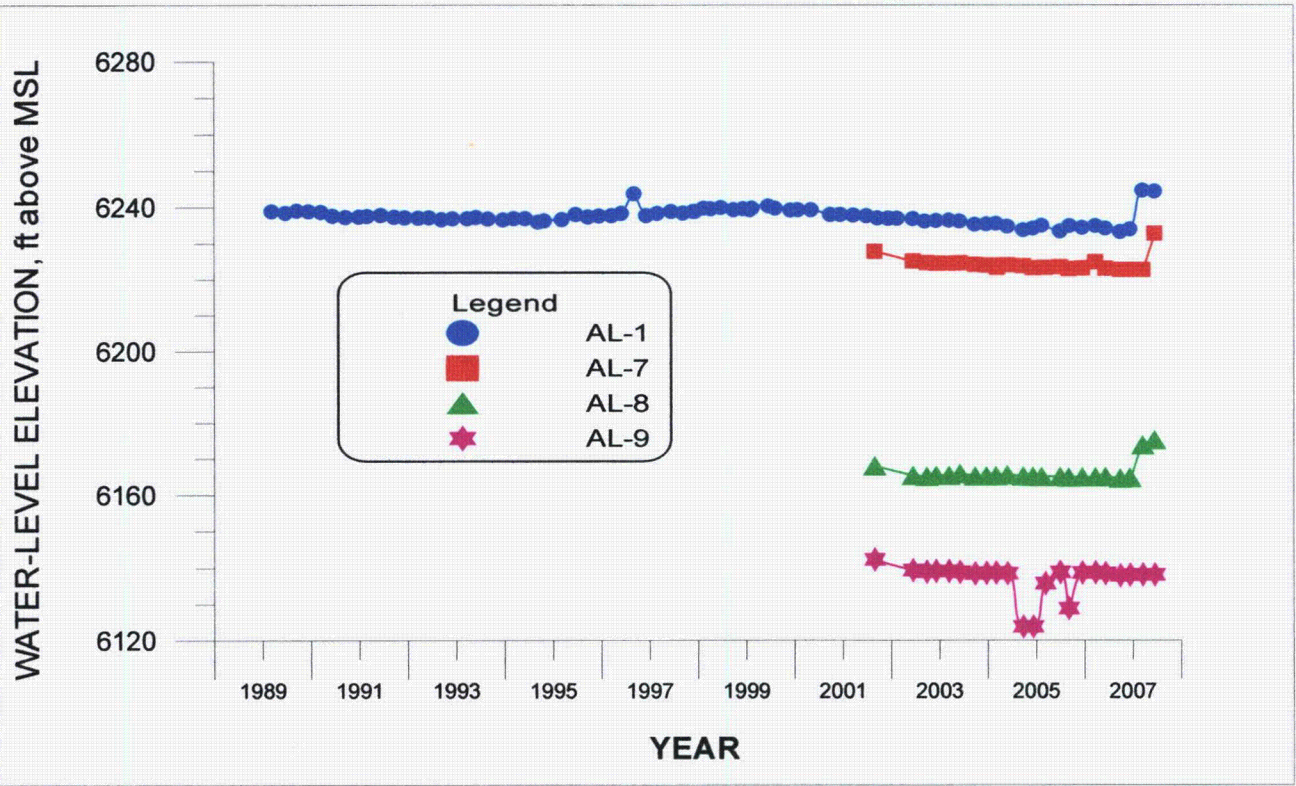
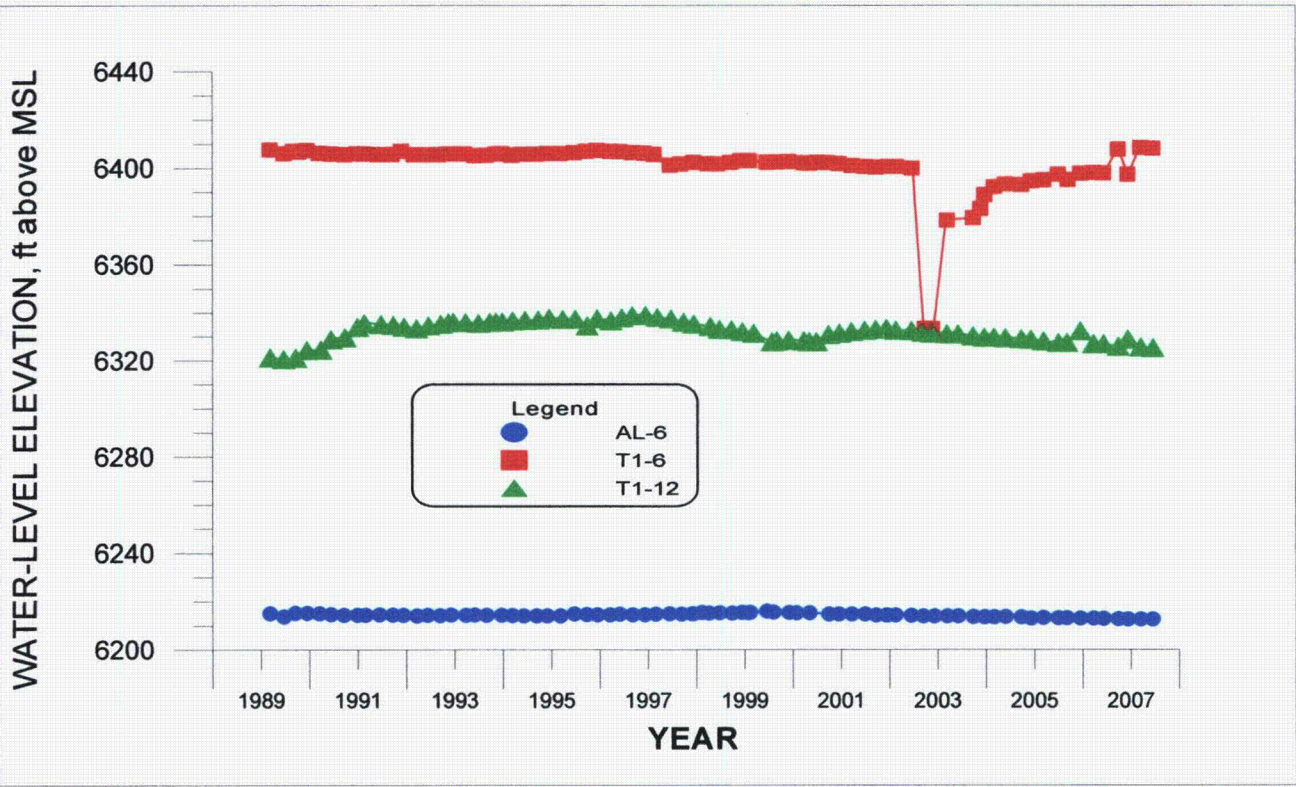
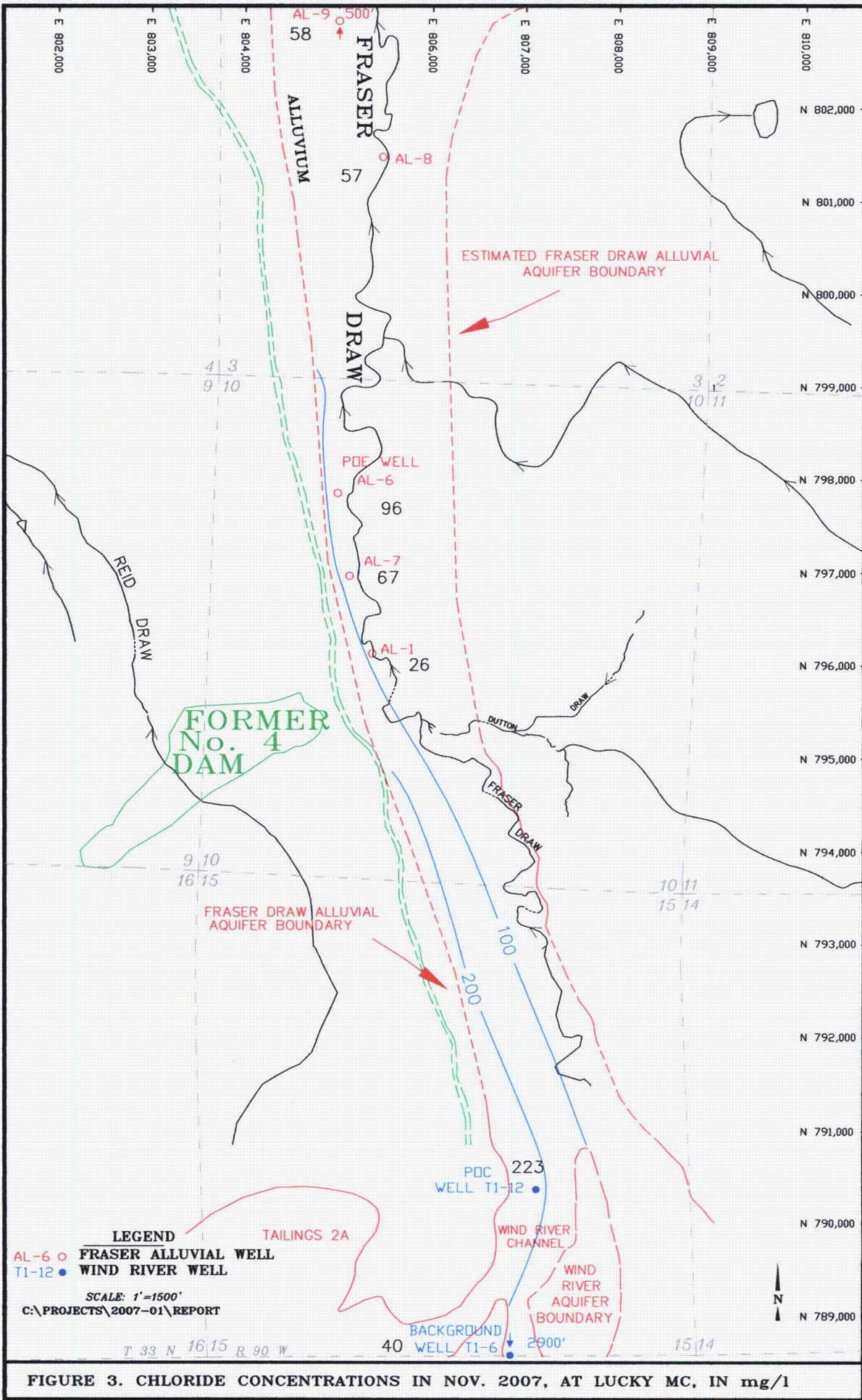


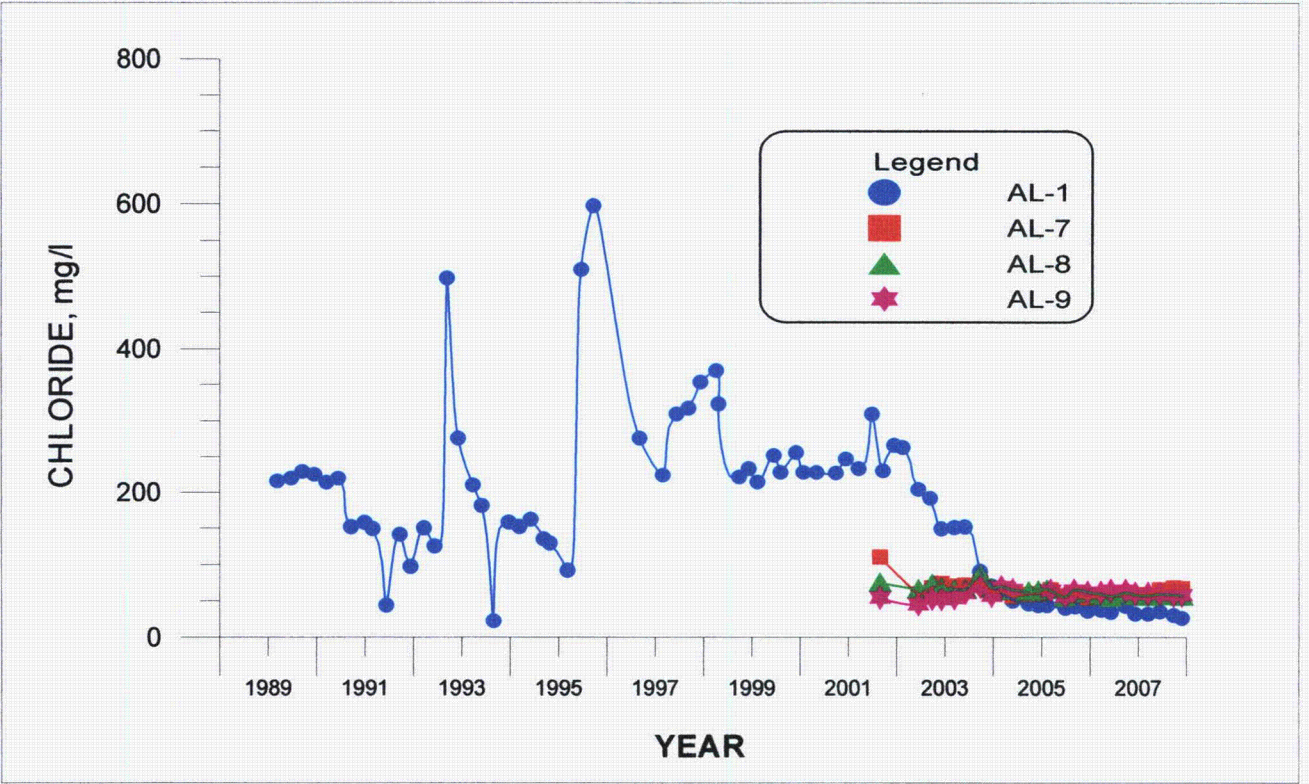
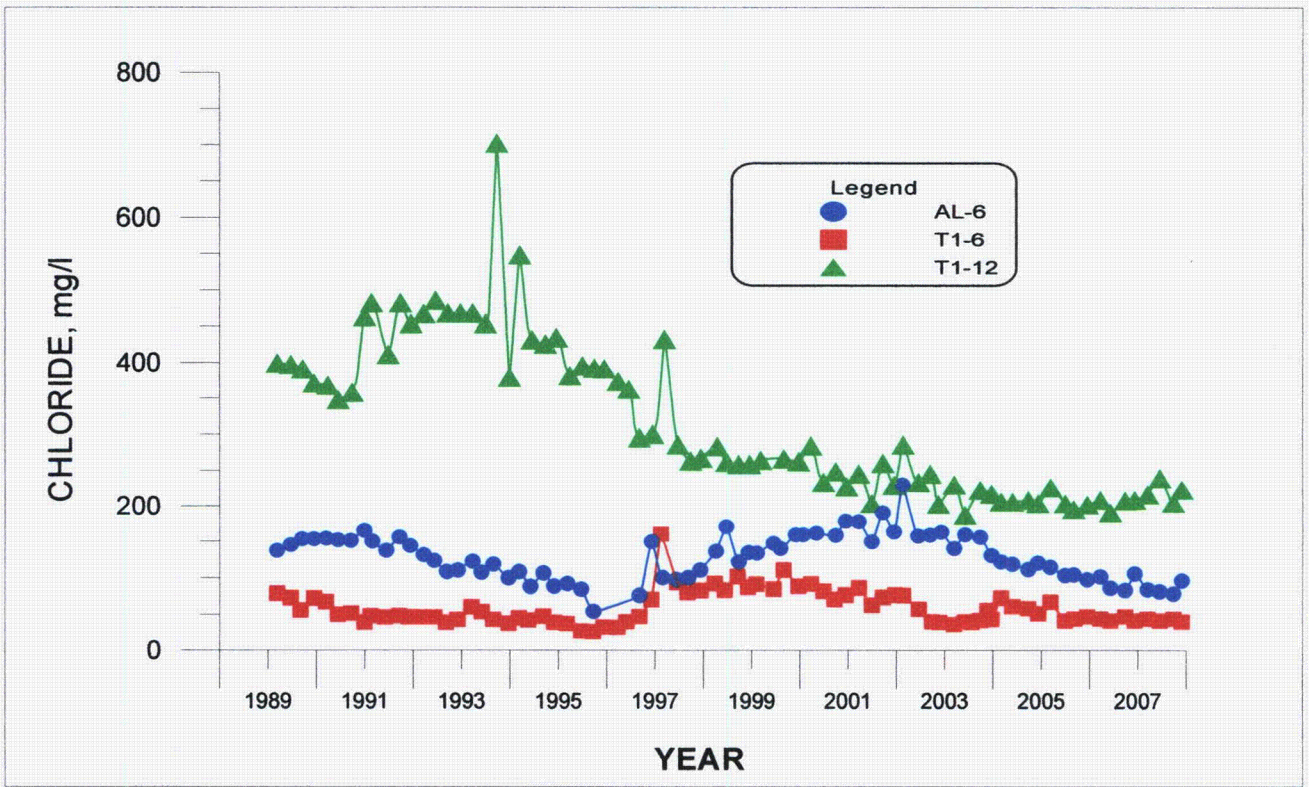
FIGURE 1. LOCATIONS OF MONITORING WELLS AND PIEZOMETRIC CONTOURS AT LUCKY MC IN NOVEMBER 2007. FT-MSL



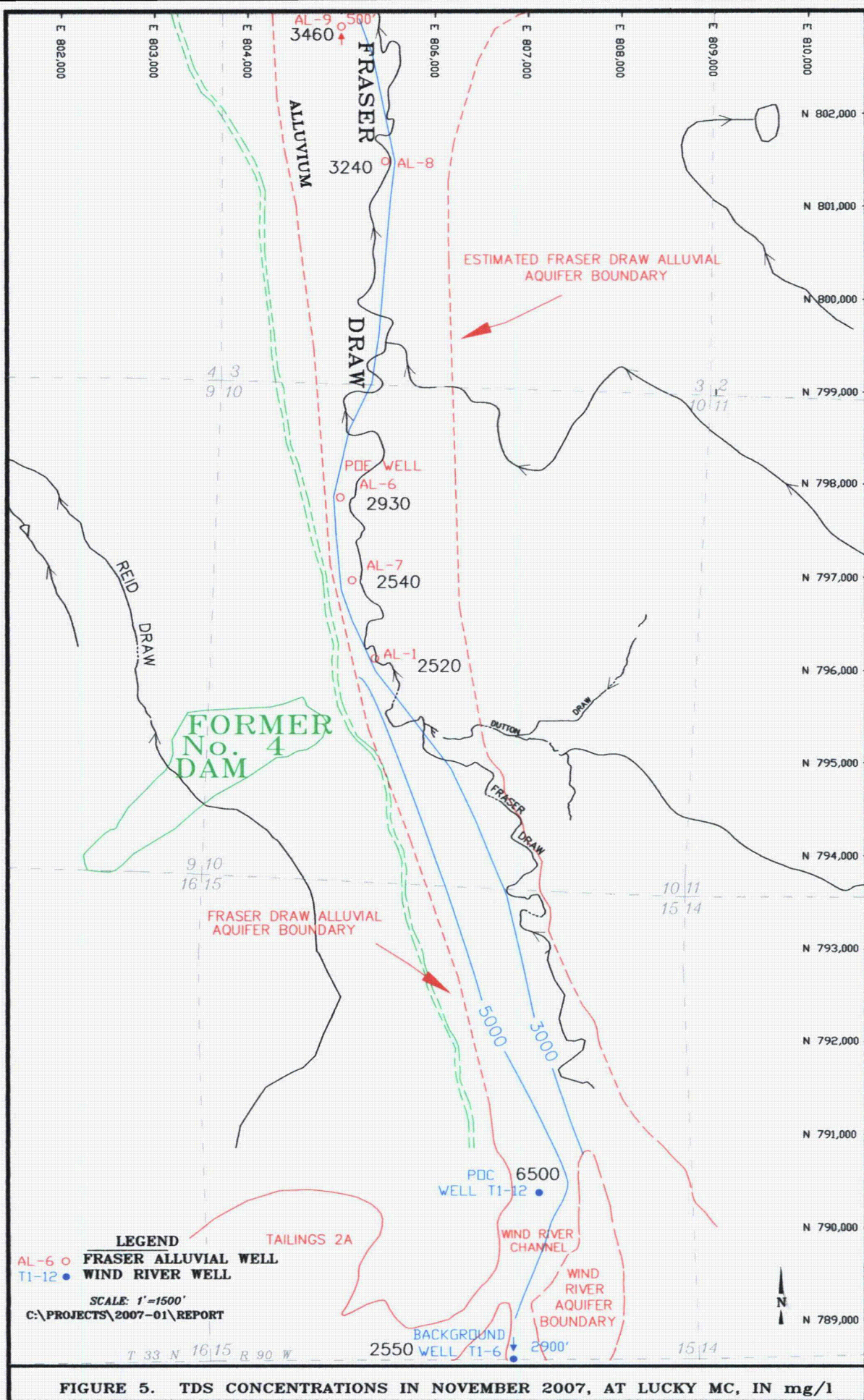


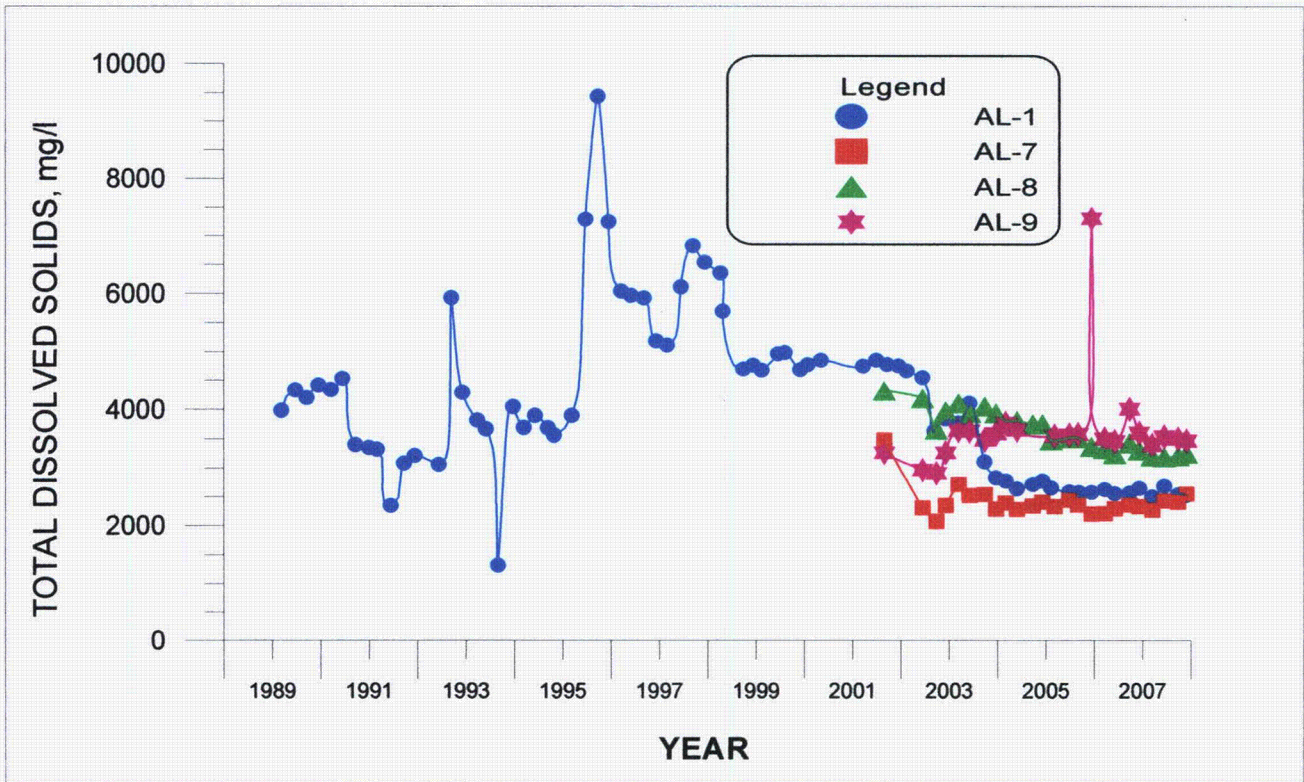
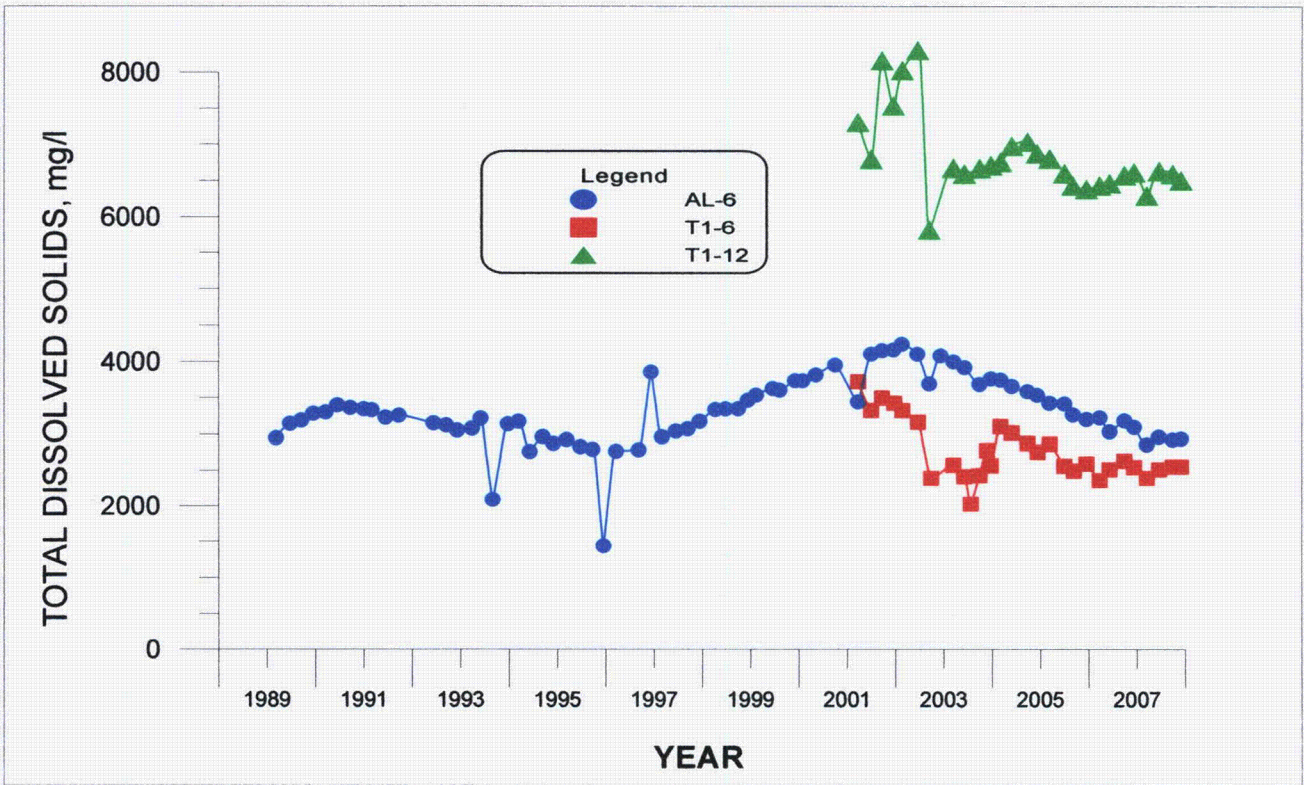
**FIGURE 2. WATER-LEVEL ELEVATION VERSUS TIME FOR WELLS T1-6, T1-12, AL-1, AL-6, AL-7, AL-8 AND AL-9.**





**FIGURE 4. CHLORIDE CONCENTRATIONS VERSUS TIME FOR WELLS T1-6, T1-12, AL-1, AL-6, AL-7, AL-8 AND AL-9.**





**FIGURE 6. TDS CONCENTRATIONS VERSUS TIME FOR WELLS T1-6, T1-12, AL-1, AL-6, AL-7, AL-8 AND AL-9.**

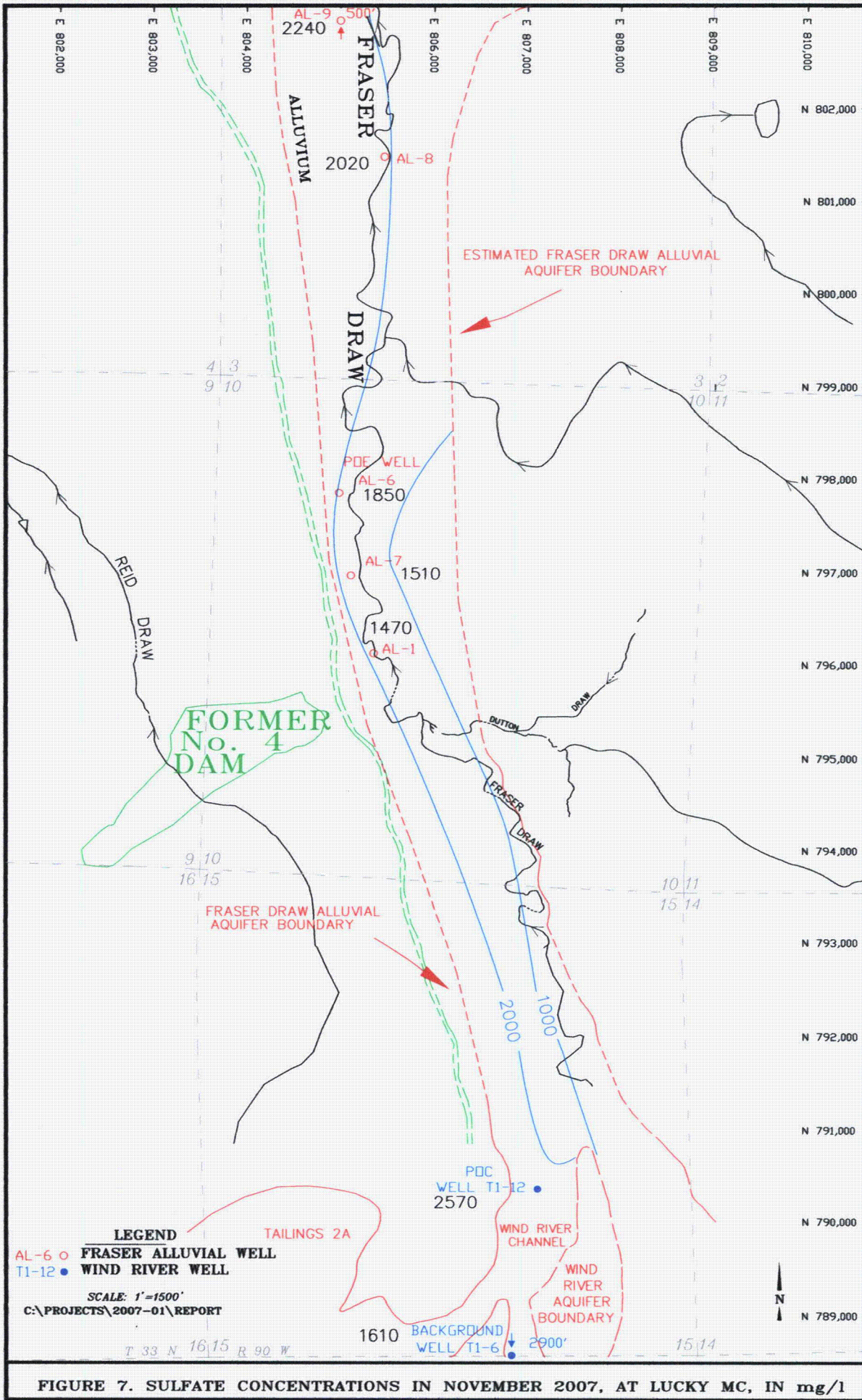
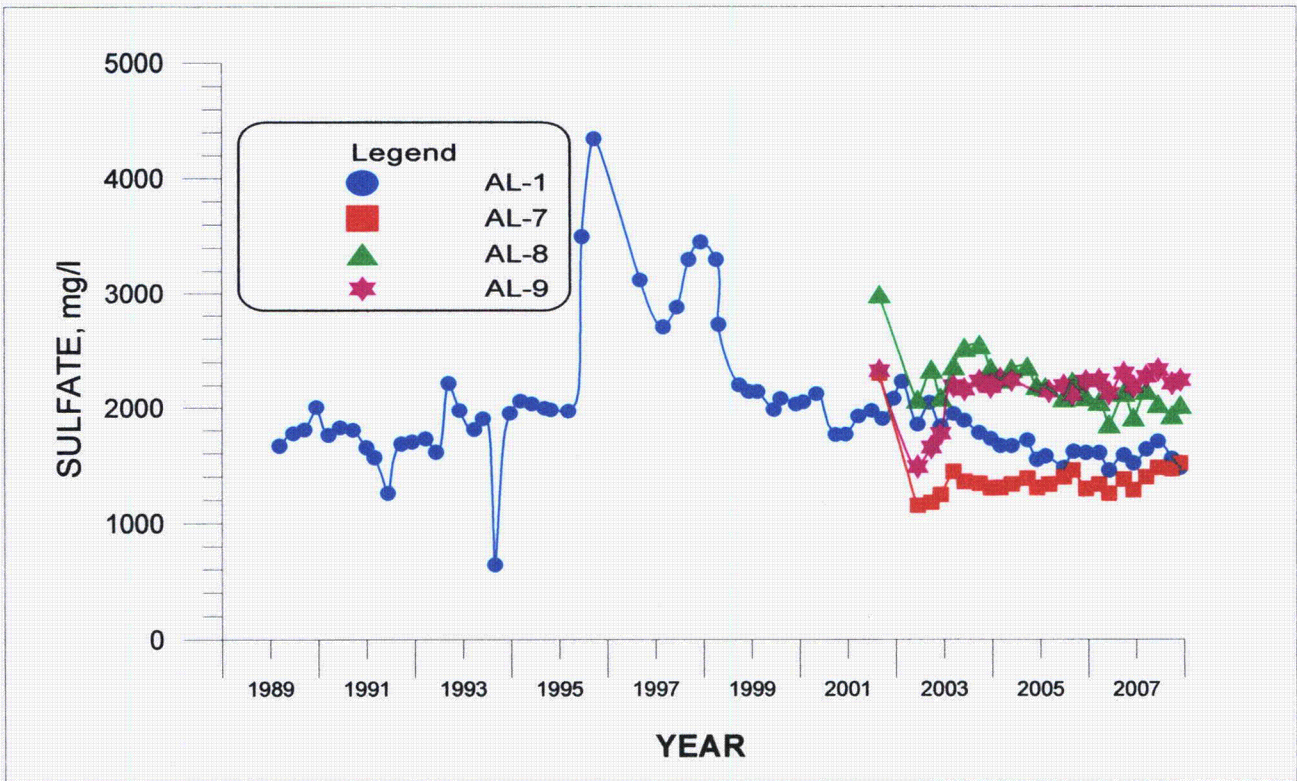
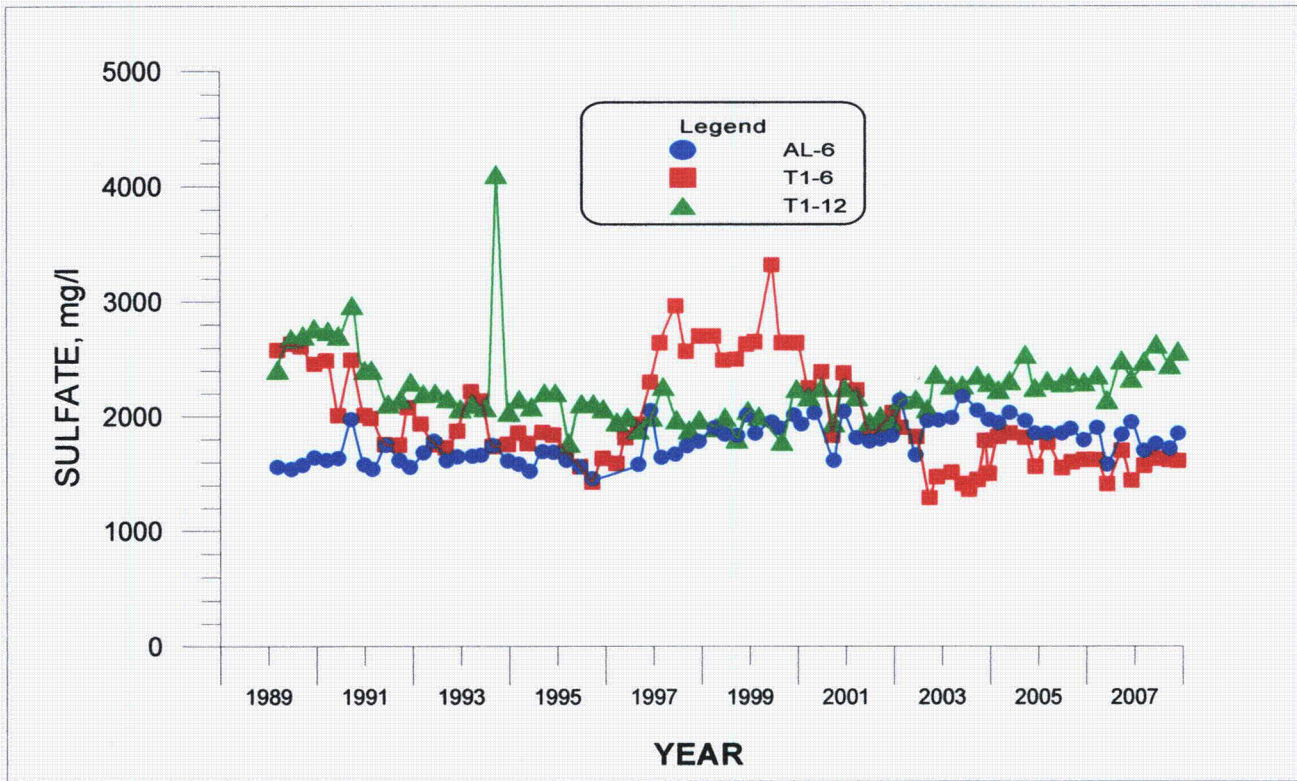
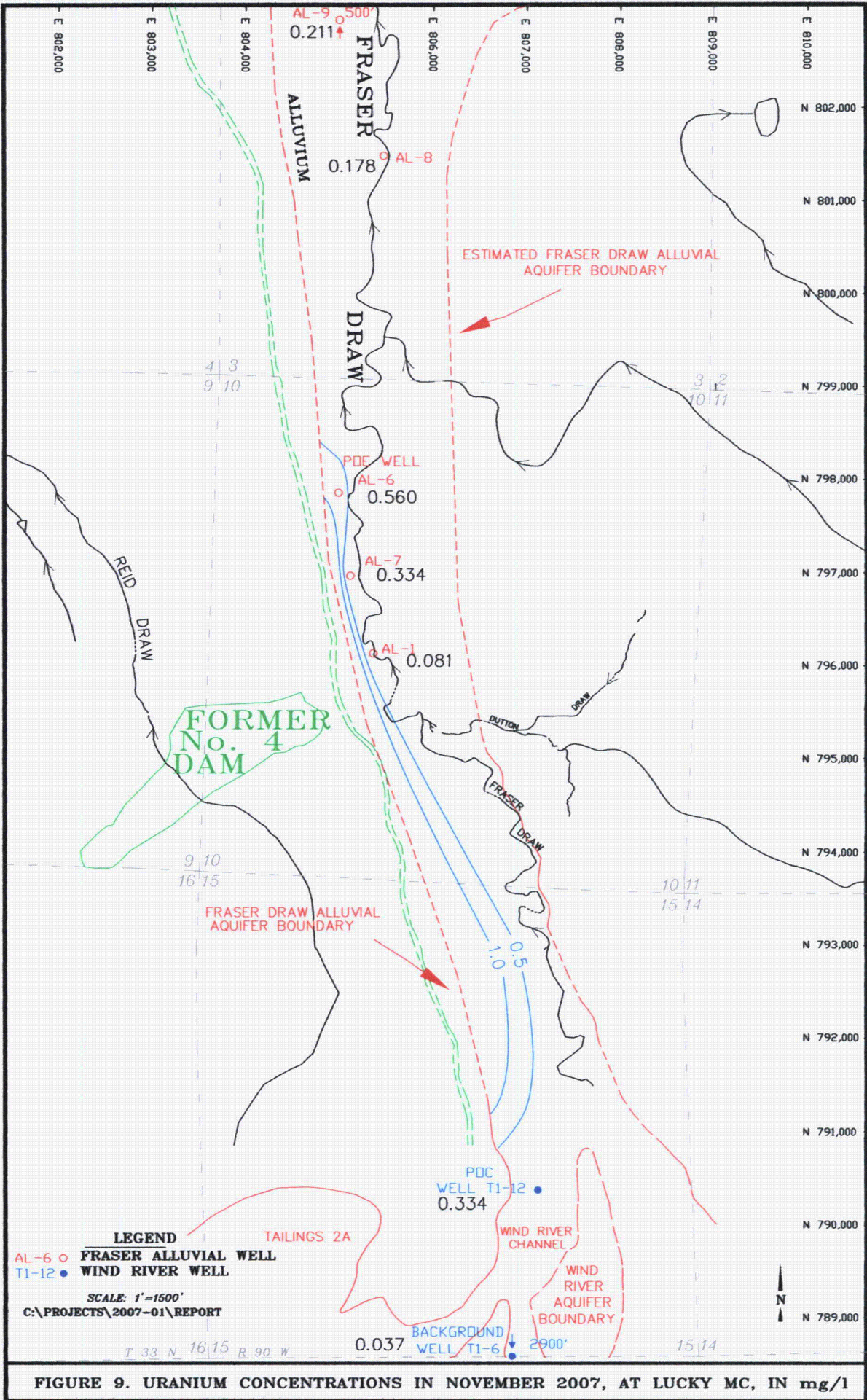


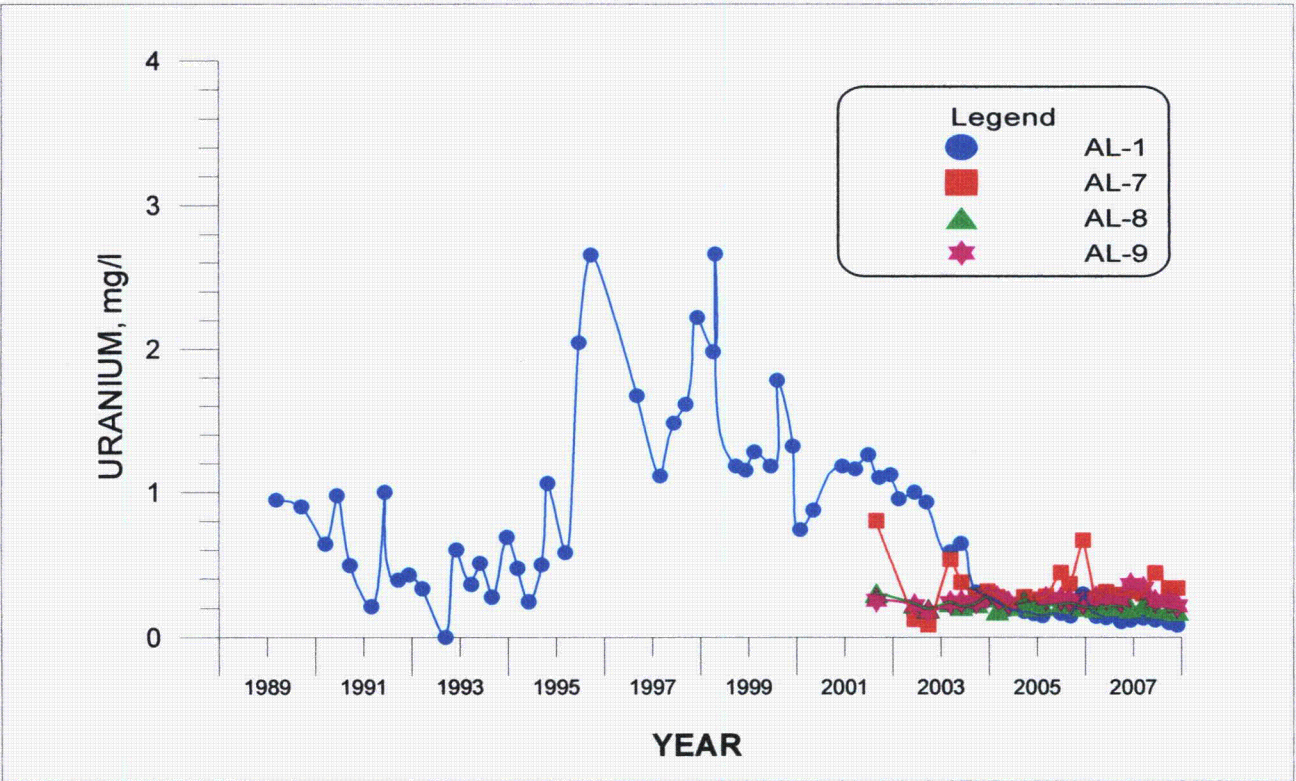
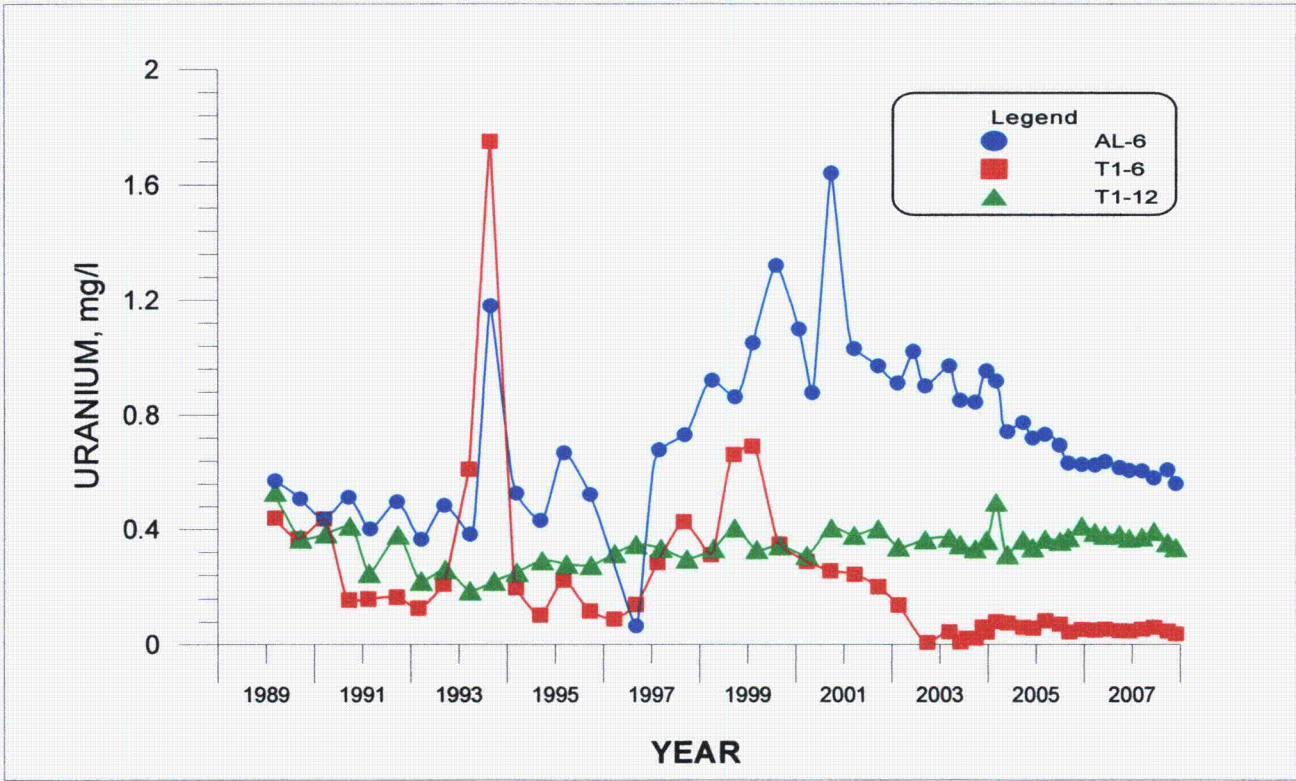
FIGURE 7. SULFATE CONCENTRATIONS IN NOVEMBER 2007, AT LUCKY MC, IN mg/l



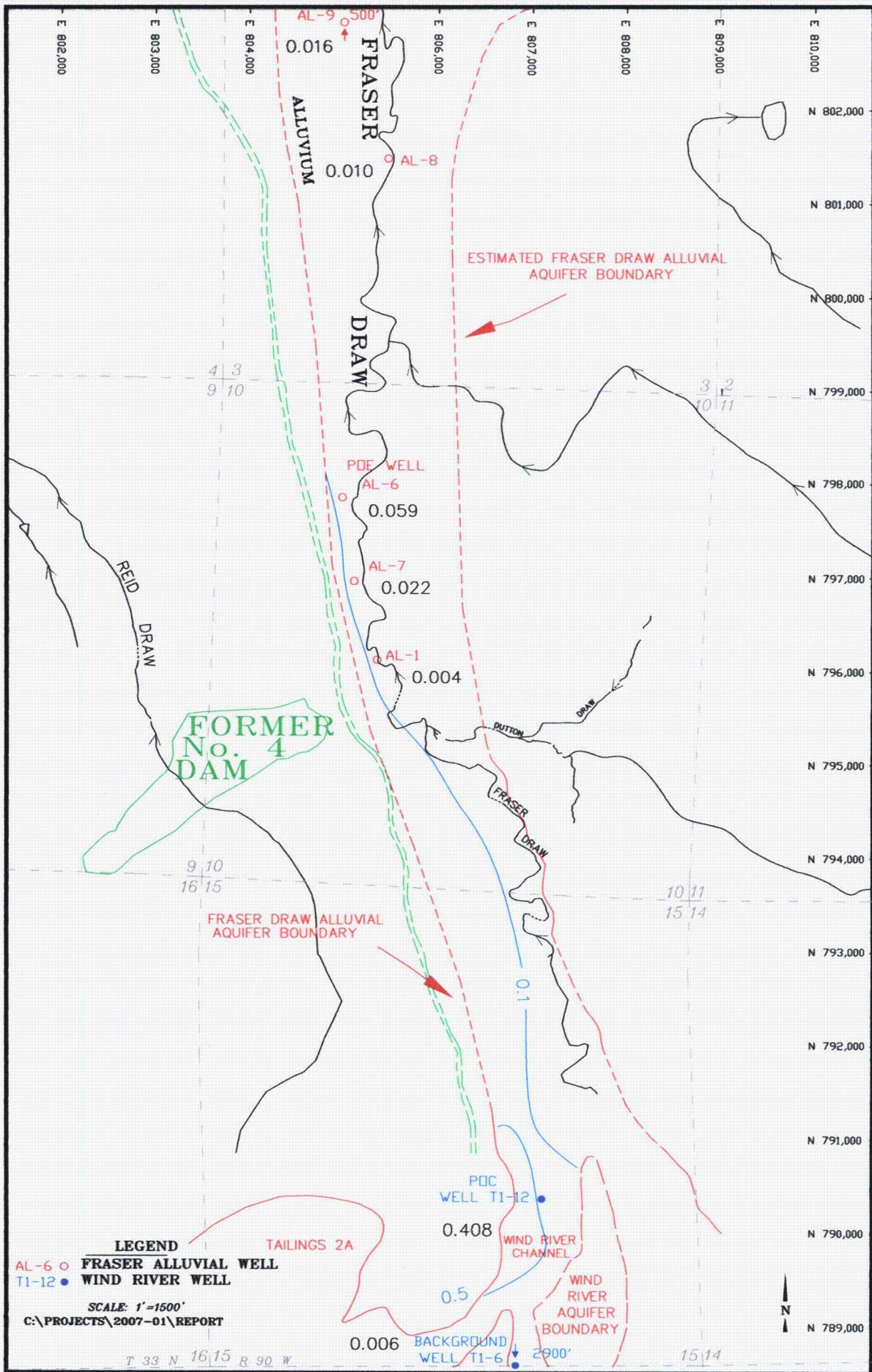
**FIGURE 8. SULFATE CONCENTRATIONS VERSUS TIME FOR WELLS T1-6, T1-12, AL-1, AL-6, AL-7, AL-8 AND AL-9.**

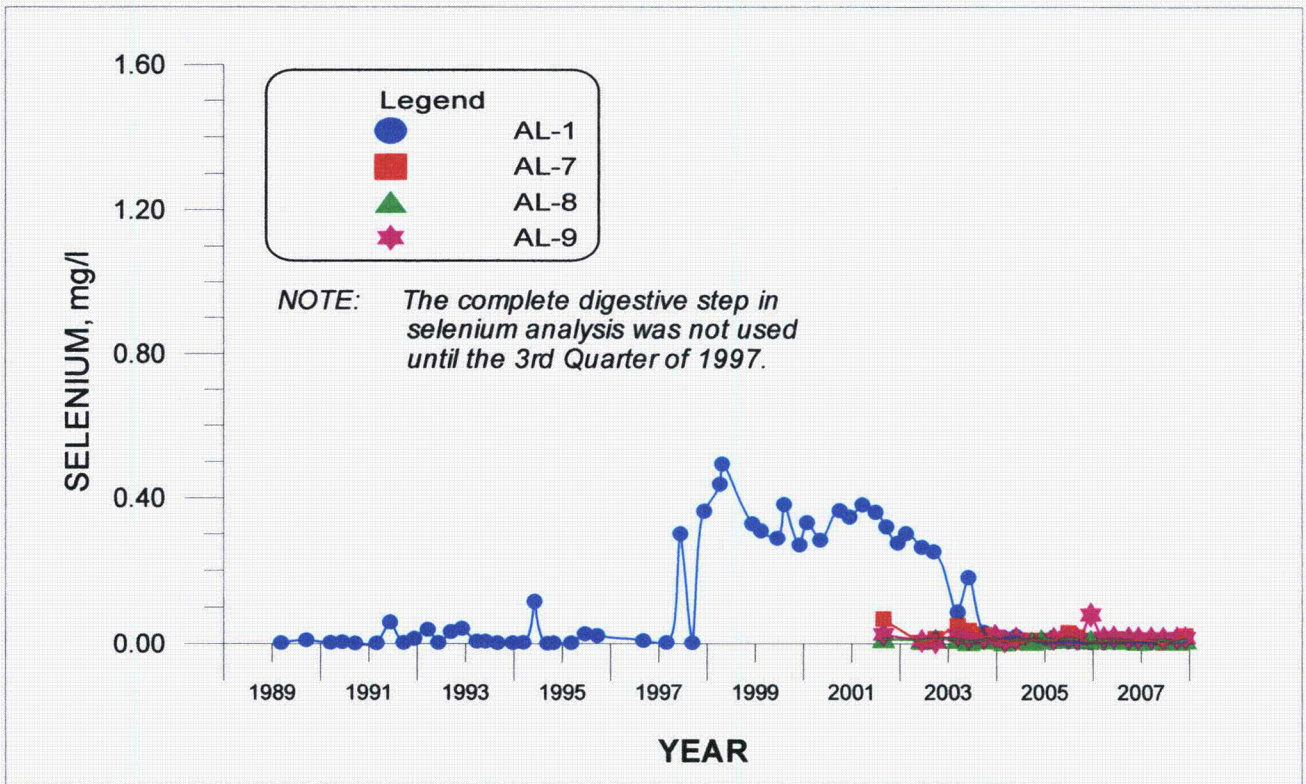
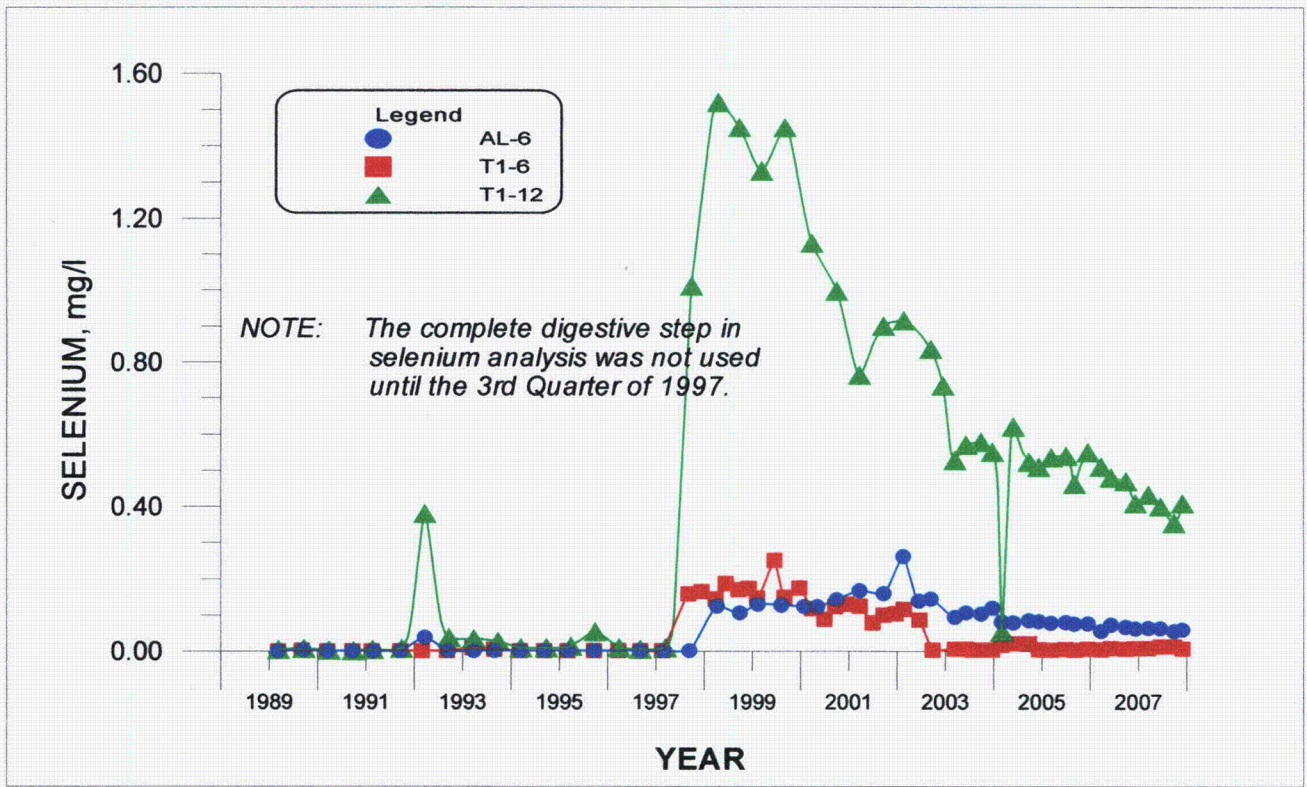




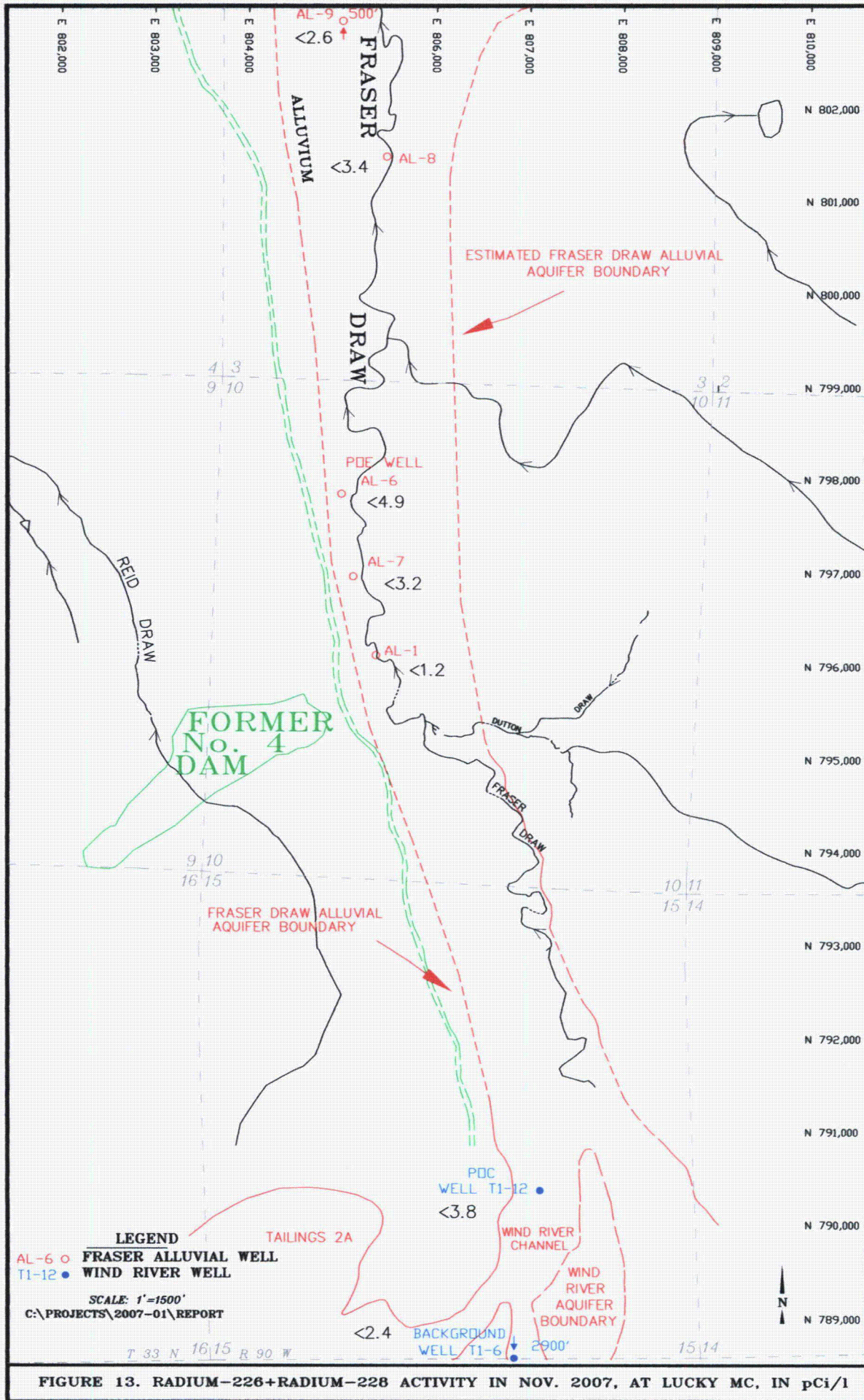


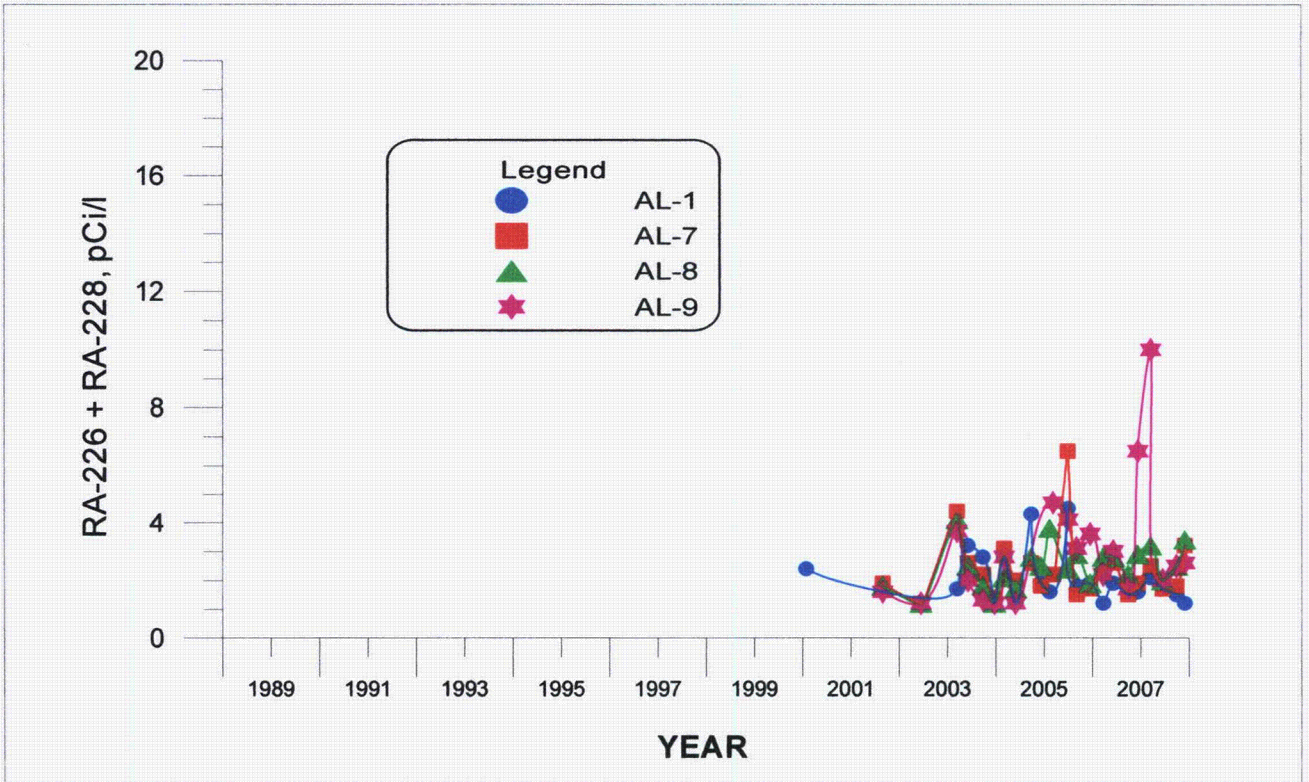
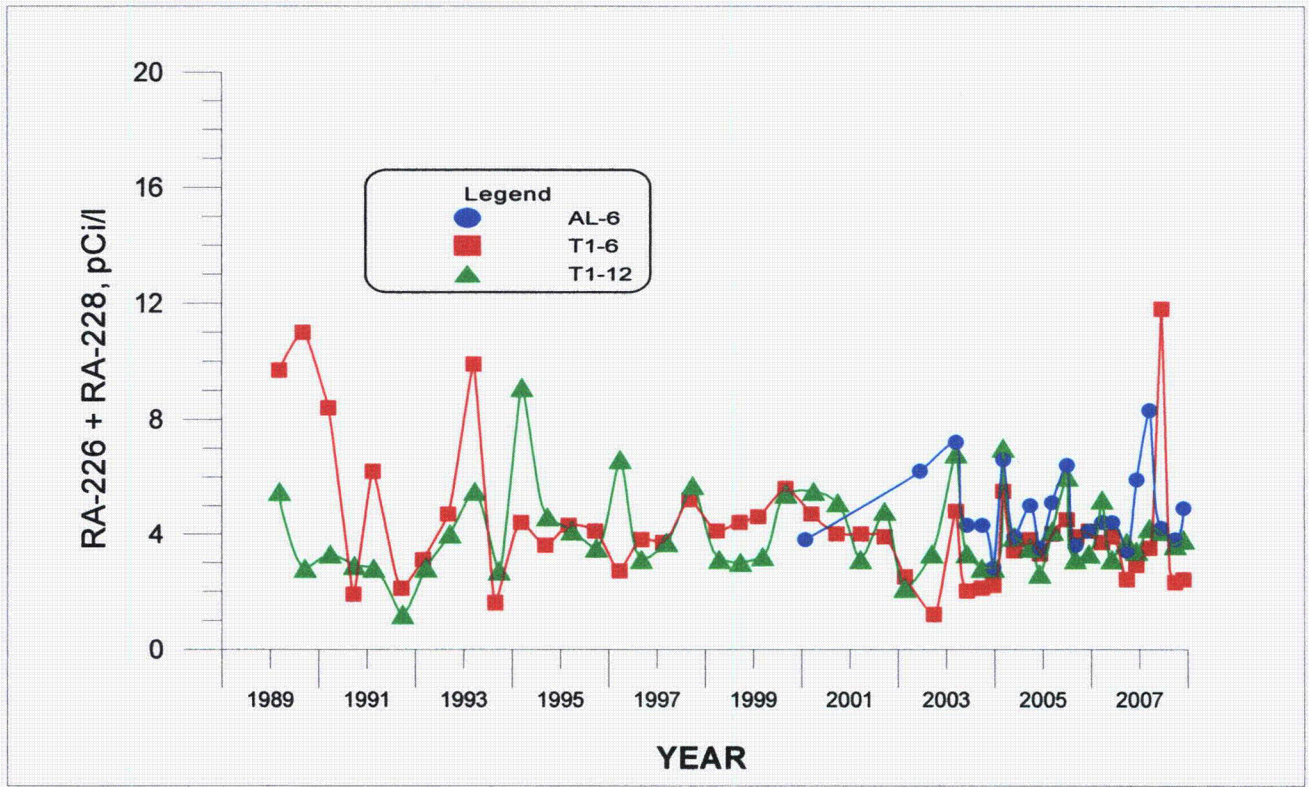
**FIGURE 10. URANIUM CONCENTRATIONS VERSUS TIME FOR WELLS T1-6, T1-12, AL-1, AL-6, AL-7, AL-8 AND AL-9.**





**FIGURE 12. SELENIUM CONCENTRATIONS VERSUS TIME FOR WELLS T1-6, T1-12, AL-1, AL-6, AL-7, AL-8 AND AL-9.**





**FIGURE 14. RADIUM-226 + RADIUM-228 ACTIVITY VERSUS TIME FOR WELLS T1-6, T1-12, AL-1, AL-6, AL-7, AL-8 AND AL-9.**

**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA.**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	WL (feet)	WL_ELEV (ft-msl)	pH(f) (std. units)	Cond(f) (µmhos)	TDS (mg/l)	SO4 (mg/l)	Cl (mg/l)	NO3+NO2 (mg/l)	Unat (mg/l)
AL-1	3/2/2004	29.15	6235.45	—	3380	2770	1660	61.2	2.9	0.245
	5/26/2004	29.93	6234.67	7.2	3080	2630	1660	50.1	1.6	0.190
	9/22/2004	30.96	6233.64	7.5	2830	2710	1710	46.0	0.3	0.175
	12/6/2004	30.54	6234.06	7.0	2910	2770	1540	44.0	0.1	0.159
	2/9/2005	29.73	6234.87	7.2	1885	2650	1570	44.0	< 0.1	0.147
	6/27/2005	31.31	6233.29	6.9	3140	2580	1470	40.0	< 0.1	0.162
	9/8/2005	29.76	6234.84	6.8	3100	2570	1610	42.0	< 0.1	0.144
	12/12/2005	30.31	6234.29	6.2	3110	2570	1600	36.0	0.1	0.289
	3/22/2006	29.75	6234.85	7.4	3240	2620	1600	37.0	< 0.1	0.142
	6/5/2006	30.45	6234.15	7.4	3280	2550	1450	34.0	< 0.1	0.133
	9/26/2006	31.44	6233.16	6.8	2830	2560	1580	43.0	< 0.1	0.107
	12/8/2006	30.71	6233.89	7.5	2500	2640	1510	32.0	< 0.1	0.118
	3/14/2007	19.98	6244.62	6.9	2840	2490	1630	32.0	0.4	0.129
	6/12/2007	20.27	6244.33	7.5	3840	2680	1700	35.0	< 0.1	0.118
	9/26/2007	20.56	6244.04	7.8	3170	2530	1550	30.0	< 0.1	0.100
11/27/2007	31.57	6233.03	6.9	2910	2520	1470	26.0	< 0.1	0.081	
AL-6	3/2/2004	23.18	6213.62	7.0	3970	3740	1940	121.0	41.5	0.916
	5/26/2004	23.14	6213.66	7.0	3820	3650	2030	118.0	40.3	0.740
	9/22/2004	23.31	6213.49	7.3	3500	3580	1960	111.0	69.1	0.772
	12/6/2004	23.77	6213.03	6.9	3490	3530	1850	120.0	41.7	0.718
	3/8/2005	23.45	6213.35	6.9	3730	3420	1850	114.0	37.2	0.731
	6/27/2005	23.65	6213.15	7.2	3740	3410	1850	103.0	29.5	0.693
	8/31/2005	23.66	6213.14	6.6	3720	3260	1890	104.0	36.7	0.631
	12/12/2005	23.72	6213.08	6.6	3630	3200	1790	97.0	41.1	0.626
	3/22/2006	23.77	6213.03	12.9	4160	3220	1900	101.0	24.0	0.624
	6/5/2006	23.87	6212.93	7.5	3670	3030	1580	86.0	34.0	0.636
	9/26/2006	24.07	6212.73	6.7	3310	3180	1840	83.0	30.6	0.615
	12/7/2006	24.14	6212.66	6.9	3370	3090	1950	105.0	32.1	0.605
	3/14/2007	24.14	6212.66	7.1	3050	2850	1700	84.0	30.0	0.604
	6/12/2007	24.17	6212.63	7.6	4080	2960	1760	81.0	34.7	0.579
	9/26/2007	24.40	6212.40	8.0	3660	2920	1720	78.0	27.5	0.607
11/27/2007	24.45	6212.35	6.8	3450	2930	1850	96.0	26.6	0.560	
AL-7	3/2/2004	28.12	6223.88	6.9	2710	2380	1300	62.5	3.6	0.274
	3/8/2004	28.71	6223.29	7.1	2550	—	—	—	—	—
	5/26/2004	28.04	6223.96	7.2	2580	2270	1330	56.3	0.4	0.210
	9/22/2004	28.33	6223.67	7.4	2360	2330	1380	59.0	1.9	0.272
	12/6/2004	28.79	6223.21	7.4	2400	2400	1300	60.0	2.3	0.255
	3/8/2005	28.71	6223.29	7.1	2550	2320	1330	65.0	0.6	0.276
	6/28/2005	28.61	6223.39	6.9	2750	2430	1390	57.0	8.9	0.439
	8/31/2005	29.05	6222.95	6.7	2730	2350	1450	60.0	5.6	0.361
	12/12/2005	28.91	6223.09	6.2	2670	2190	1290	54.0	0.3	0.663
	3/22/2006	27.20	6224.80	7.5	2840	2200	1330	58.0	0.3	0.261
	6/5/2006	29.01	6222.99	7.4	2900	2280	1250	56.0	0.8	0.306
9/26/2006	29.34	6222.66	6.7	2640	2350	1370	60.0	1.6	0.285	

**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA. (cont.)**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	WL (feet)	WL_ELEV (ft-msl)	pH(f) (std. units)	Cond(f) (µmhos)	TDS (mg/l)	SO4 (mg/l)	Cl (mg/l)	NO3+NO2 (mg/l)	Unat (mg/l)
AL-7	12/8/2006	29.41	6222.59	7.5	2150	2320	1280	59.0	3.0	0.309
	3/14/2007	29.40	6222.60	7.2	2560	2260	1390	59.0	2.2	0.295
	6/12/2007	19.33	6232.67	7.6	3520	2420	1470	65.0	23.3	0.438
	9/26/2007	19.73	6232.27	8.0	3040	2400	1460	68.0	5.4	0.334
	11/27/2007	19.68	6232.32	6.9	3440	2540	1510	67.0	13.2	0.334
AL-8	3/2/2004	29.85	6165.15	7.2	4910	3800	2250	69.5	< 0.1	0.180
	5/26/2004	29.53	6165.47	7.1	4310	3800	2340	65.1	< 0.1	0.210
	9/22/2004	29.89	6165.11	7.5	3950	3740	2360	64.0	0.2	0.242
	12/6/2004	29.91	6165.09	7.1	3960	3740	2190	65.0	< 0.1	0.206
	2/9/2005	30.02	6164.98	7.3	3160	3470	2180	66.0	0.3	0.210
	6/27/2005	30.06	6164.94	7.3	4240	3510	2080	55.0	< 0.1	0.223
	8/31/2005	30.19	6164.81	6.9	4340	3510	2230	65.0	0.2	0.230
	12/12/2005	30.14	6164.86	6.4	4070	3360	2090	62.0	0.2	0.206
	3/22/2006	30.14	6164.86	7.5	4160	3320	2050	59.0	0.4	0.198
	6/5/2006	30.11	6164.89	7.7	4230	3230	1850	56.0	0.1	0.207
	9/26/2006	30.45	6164.55	6.8	3970	3420	2130	61.0	0.2	0.210
	12/7/2006	30.35	6164.65	7.2	4350	3300	1910	58.0	0.1	0.195
	3/14/2007	21.29	6173.71	7.1	3570	3190	2150	57.0	0.2	0.216
	6/12/2007	19.80	6175.20	7.6	4780	3180	2030	59.0	< 0.1	0.183
	9/26/2007	20.35	6174.65	8.0	3940	3200	1930	58.0	0.1	0.182
11/27/2007	20.26	6174.74	7.0	4250	3240	2020	57.0	< 0.1	0.178	
AL-9	3/2/2004	35.38	6138.62	7.3	4290	3760	2250	68.8	0.6	0.266
	5/26/2004	35.53	6138.47	6.9	4020	3640	2240	64.5	< 0.1	0.230
	9/22/2004	50.30	6123.70	—	—	—	—	—	—	—
	12/6/2004	> 50.30	6123.70	—	—	—	—	—	—	—
	3/8/2005	38.34	6135.66	6.7	3850	3540	2140	64.0	< 0.1	0.261
	6/27/2005	35.25	6138.75	7.3	4000	3560	2190	56.0	< 0.1	0.256
	8/31/2005	45.21	6128.79	6.8	4320	3570	2110	64.0	0.6	0.253
	12/12/2005	35.31	6138.69	6.6	4240	7300	2230	61.0	< 0.1	0.234
	3/22/2006	35.30	6138.70	7.6	4790	3490	2240	61.0	< 0.1	0.264
	6/5/2006	35.53	6138.47	7.4	4390	3450	2120	64.0	0.2	0.266
	9/26/2006	36.11	6137.89	6.8	3950	4000	2300	64.0	0.4	0.244
	12/7/2006	35.95	6138.05	7.4	3670	3590	2180	60.0	0.1	0.356
	3/14/2007	35.86	6138.14	6.7	3810	3380	2270	60.0	0.2	0.329
	6/12/2007	35.92	6138.08	7.1	5120	3530	2330	60.0	< 0.1	0.242
	9/26/2007	36.47	6137.53	6.7	4210	3490	2210	58.0	0.1	0.246
11/27/2007	36.25	6137.75	6.7	3920	3460	2240	58.0	< 0.1	0.211	
T1-6	3/2/2004	36.18	6392.04	7.6	4090	3100	1820	72.3	0.5	0.080
	5/26/2004	35.00	6393.22	6.8	3400	3010	1850	60.7	0.2	0.075
	9/22/2004	35.25	6392.97	7.8	3230	2870	1810	58.0	0.3	0.059
	12/7/2004	33.72	6394.50	7.5	2900	2750	1560	51.0	0.3	0.056
	3/8/2005	33.28	6394.94	7.5	3270	2860	1770	67.0	< 0.1	0.083
	6/28/2005	30.90	6397.32	7.8	3470	2560	1550	41.0	< 0.1	0.071
	9/8/2005	33.15	6395.07	7.2	3310	2490	1600	44.0	< 0.1	0.043

**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA. (cont.)**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	WL (feet)	WL_ELEV (ft-msl)	pH(f) (std. units)	Cond(f) ( $\mu$ mhos)	TDS (mg/l)	SO4 (mg/l)	Cl (mg/l)	NO3+NO2 (mg/l)	Unat (mg/l)
T1-6	12/12/2005	30.43	6397.79	6.4	2960	2590	1620	47.0	< 0.1	0.052
	3/22/2006	30.25	6397.97	7.6	3350	2360	1620	44.0	< 0.1	0.050
	6/5/2006	30.40	6397.82	7.8	3250	2510	1410	41.0	0.1	0.053
	9/27/2006	20.51	6407.71	6.9	2600	2630	1700	47.0	1.8	0.048
	12/8/2006	30.95	6397.27	8.0	2330	2540	1440	41.0	0.2	0.046
	3/14/2007	19.88	6408.34	7.5	3070	2390	1570	44.0	0.8	0.053
	6/14/2007	20.14	6408.08	7.4	3510	2510	1630	41.0	0.6	0.060
	9/27/2007	20.29	6407.93	7.8	3500	2550	1620	44.0	1.4	0.046
	11/27/2007	30.31	6397.91	7.0	2970	2550	1610	40.0	0.3	0.037
T1-12	3/2/2004	11.26	6329.54	6.7	7060	6750	2230	205.0	310.0	0.493
	5/26/2004	11.40	6329.40	6.3	7240	6970	2310	205.0	340.0	0.310
	9/22/2004	11.95	6328.85	6.6	6550	7030	2540	208.0	550.0	0.361
	12/6/2004	12.17	6328.63	6.7	6450	6870	2250	203.0	321.0	0.333
	3/8/2005	12.87	6327.93	6.7	6840	6800	2310	226.0	298.0	0.364
	6/29/2005	13.42	6327.38	6.5	7110	6600	2290	203.0	259.0	0.356
	8/31/2005	13.49	6327.31	6.0	6770	6430	2350	195.0	271.0	0.370
	12/12/2005	8.52	6332.28	5.3	6960	6380	2300	201.0	289.0	0.409
	3/22/2006	13.97	6326.83	6.9	7230	6430	2360	208.0	343.0	0.387
	6/5/2006	13.97	6326.83	6.8	7310	6460	2140	190.0	327.0	0.377
	9/27/2006	15.08	6325.72	6.0	5580	6570	2490	207.0	446.0	0.380
	12/8/2006	12.04	6328.76	6.6	4950	6610	2330	208.0	306.0	0.367
	3/14/2007	15.32	6325.48	6.4	6530	6290	2480	216.0	243.0	0.372
	6/14/2007	15.68	6325.12	5.7	7910	6630	2630	239.0	278.0	0.391
	9/27/2007	16.22	6324.58	6.5	7540	6590	2450	204.0	280.0	0.352
11/27/2007	16.15	6324.65	6.4	6450	6500	2570	223.0	246.0	0.334	



**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA. (cont.)**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	Th230 (pCi/l)	Th230(e) (pCi/l)	Ra226 (pCi/l)	Ra226(e) (pCi/l)	Ra228 (pCi/l)	Ra228(e) (pCi/l)	Ra226+Ra228 (pCi/l)
AL-1	3/2/2004	< 0.2	—	1.8	± 0.4	< 1.0	—	< 2.8
	5/26/2004	< 0.2	—	< 0.2	—	< 1.0	—	< 1.2
	9/22/2004	< 0.2	—	1.3	—	3.0	—	4.3
	12/6/2004	< 0.2	—	0.9	—	< 1.0	—	< 1.9
	2/9/2005	< 0.2	—	0.6	± 0.4	< 1.0	—	< 1.6
	6/27/2005	2.0	± 0.6	3.5	± 1.0	< 1.0	—	< 4.5
	9/8/2005	< 0.2	—	0.8	± 0.4	< 1.0	—	< 1.8
	12/12/2005	< 0.2	—	0.9	± 0.4	< 1.0	—	< 1.9
	3/22/2006	< 0.2	—	< 0.2	± 0.2	< 1.0	—	< 1.2
	6/5/2006	< 0.2	—	0.9	± 0.3	< 1.0	—	< 1.9
	9/26/2006	0.6	± 0.4	0.5	± 0.3	< 1.0	—	< 1.5
	12/8/2006	< 0.2	—	0.6	± 0.3	< 1.0	—	< 1.6
	3/14/2007	< 0.2	—	1.1	± 0.5	< 1.0	—	< 2.1
	6/12/2007	< 0.2	—	0.7	± 0.3	< 1.0	—	< 1.7
	9/26/2007	< 0.2	—	0.5	0.2	< 1.0	—	< 1.5
	11/27/2007	0.5	0.3	< 0.2	0.2	< 1.0	—	< 1.2
AL-6	3/2/2004	< 0.2	—	3.4	± 0.5	3.2	± 1.2	6.6
	5/26/2004	< 0.2	—	2.9	± 0.7	< 1.0	—	< 3.9
	9/22/2004	< 0.2	—	4.0	—	< 1.0	—	< 5.0
	12/6/2004	< 0.2	—	2.5	—	< 1.0	—	< 3.5
	3/8/2005	< 0.2	—	4.1	± 0.7	< 1.0	—	< 5.1
	6/27/2005	< 0.2	—	5.4	± 1.5	< 1.0	—	< 6.4
	8/31/2005	< 0.2	—	2.6	± 0.6	< 1.0	—	< 3.6
	12/12/2005	< 0.2	—	3.1	± 0.7	< 1.0	—	< 4.1
	3/22/2006	< 0.2	—	3.4	± 0.7	< 1.0	—	< 4.4
	6/5/2006	< 0.2	—	3.4	± 0.6	< 1.0	—	< 4.4
	9/26/2006	< 0.2	—	2.4	± 0.6	< 1.0	—	< 3.4
	12/7/2006	< 0.2	—	3.5	± 0.6	2.4	± 0.9	5.9
	3/14/2007	< 0.2	—	7.3	± 1.2	< 1.0	—	< 8.3
	6/12/2007	< 0.2	—	3.2	± 0.6	< 1.0	—	< 4.2
	9/26/2007	0.4	0.3	2.8	0.5	< 1.0	—	< 3.8
	11/27/2007	< 0.2	—	3.9	0.7	< 1.0	—	< 4.9
AL-7	3/2/2004	< 0.2	—	2.1	± 0.5	< 1.0	—	< 3.1
	5/26/2004	< 0.2	—	1.0	± 0.5	< 1.0	—	< 2.0
	9/22/2004	< 0.2	—	1.6	—	< 1.0	—	< 2.6
	12/6/2004	< 0.2	—	0.8	—	< 1.0	—	< 1.8
	3/8/2005	< 0.2	—	1.2	± 0.5	< 1.0	—	< 2.2
	6/28/2005	< 0.2	—	5.5	± 1.4	< 1.0	—	< 6.5
	8/31/2005	< 0.2	—	0.5	± 0.3	< 1.0	—	< 1.5
	12/12/2005	< 0.2	—	0.7	± 0.4	< 1.0	—	< 1.7
	3/22/2006	< 0.2	—	1.4	± 0.5	< 1.0	—	< 2.4
	6/5/2006	< 0.2	—	1.6	± 0.4	< 1.0	—	< 2.6
9/26/2006	< 0.2	—	0.5	± 0.3	< 1.0	—	< 1.5	
12/8/2006	< 0.2	—	0.9	± 0.3	< 1.0	—	< 1.9	

**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA. (cont.)**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	Th230 (pCi/l)	Th230(e) (pCi/l)	Ra226 (pCi/l)	Ra226(e) (pCi/l)	Ra228 (pCi/l)	Ra228(e) (pCi/l)	Ra226+Ra228 (pCi/l)
AL-7	3/14/2007	< 0.2	—	1.5	± 0.6	< 1.0	—	< 2.5
	6/12/2007	< 0.2	—	0.7	± 0.3	< 1.0	—	< 1.7
	9/26/2007	< 0.2	—	0.8	0.3	< 1.0	—	< 1.8
	11/27/2007	< 0.2	—	2.2	0.6	< 1.0	—	< 3.2
AL-8	3/2/2004	< 0.2	—	1.1	± 0.4	< 1.0	—	< 2.1
	5/26/2004	< 0.2	—	0.7	± 0.5	< 1.0	—	< 1.7
	9/22/2004	< 0.2	—	1.8	—	< 1.0	—	< 2.8
	12/6/2004	< 0.2	—	1.5	—	< 1.0	—	< 2.5
	2/9/2005	< 0.2	—	2.8	± 0.5	< 1.0	—	< 3.8
	6/27/2005	< 0.2	—	1.4	± 0.5	< 1.0	—	< 2.4
	8/31/2005	< 0.2	—	1.9	± 0.5	< 1.0	—	< 2.9
	12/12/2005	< 0.2	—	0.9	± 0.4	< 1.0	—	< 1.9
	3/22/2006	< 0.2	—	1.1	± 0.4	< 1.0	—	< 2.8
	6/5/2006	< 0.2	—	1.8	± 0.5	< 1.0	—	< 2.8
	9/26/2006	< 0.2	—	< 0.2	± 0.2	2.0	± 1.1	< 2.2
	12/7/2006	< 0.2	—	1.9	± 0.5	< 1.0	—	< 2.9
	3/14/2007	< 0.2	—	2.2	± 0.8	< 1.0	—	< 3.2
	6/12/2007	< 0.2	—	1.0	± 0.4	< 1.0	—	< 2.0
9/26/2007	< 0.2	—	1.5	0.4	< 1.0	—	< 2.5	
11/27/2007	< 0.2	—	2.4	0.6	< 1.0	—	< 3.4	
AL-9	3/2/2004	0.7	± 0.4	1.8	± 0.4	< 1.0	—	< 2.8
	5/26/2004	< 0.2	—	< 0.2	—	< 1.0	—	< 1.2
	3/8/2005	< 0.2	—	3.7	± 0.7	< 1.0	—	< 4.7
	6/27/2005	< 0.2	—	3.1	± 0.8	< 1.0	—	< 4.1
	8/31/2005	< 0.2	—	2.1	± 0.5	< 1.0	—	< 3.1
	12/12/2005	< 0.2	—	2.6	± 0.5	< 1.0	—	< 3.6
	3/22/2006	< 0.2	—	1.2	± 0.5	< 1.0	—	< 2.2
	6/5/2006	< 0.2	—	2.0	± 0.5	< 1.0	—	< 3.0
	9/26/2006	< 0.2	—	0.7	± 0.3	< 1.0	—	< 1.7
	12/7/2006	< 0.2	—	5.5	± 0.7	< 1.0	—	< 6.5
	3/14/2007	< 0.2	—	9.0	± 1.3	< 1.0	—	< 10.0
	6/12/2007	< 0.2	—	1.0	± 0.4	< 1.0	—	< 2.0
	9/26/2007	< 0.2	—	1.5	0.4	< 1.0	—	< 2.5
	11/27/2007	< 0.2	—	1.6	0.5	< 1.0	—	< 2.6
T1-6	3/2/2004	< 0.2	—	4.5	± 0.6	< 1.0	—	< 5.5
	5/26/2004	< 0.2	—	2.4	± 0.7	< 1.0	—	< 3.4
	9/22/2004	< 0.2	—	2.8	± 0.5	< 1.0	—	< 3.8
	12/7/2004	< 0.2	—	2.3	± 0.5	< 1.0	—	< 3.3
	3/8/2005	< 0.2	—	3.0	± 0.6	< 1.0	—	< 4.0
	6/28/2005	4.5	± 1.0	3.5	± 0.8	< 1.0	—	< 4.5
	9/8/2005	< 0.2	—	2.9	± 0.6	< 1.0	—	< 3.9
	12/12/2005	< 0.2	—	3.1	± 0.6	< 1.0	—	< 4.1
	3/22/2006	< 0.2	—	2.7	± 0.6	< 1.0	—	< 3.7
	6/5/2006	< 0.2	—	2.9	± 0.6	< 1.0	—	< 3.9

**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA. (cont.)**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	Th230 (pCi/l)	Th230(e) (pCi/l)	Ra226 (pCi/l)	Ra226(e) (pCi/l)	Ra228 (pCi/l)	Ra228(e) (pCi/l)	Ra226+Ra228 (pCi/l)
T1-6	9/27/2006	< 0.2	—	1.4	± 0.4	< 1.0	—	< 2.4
	12/8/2006	< 0.2	—	1.9	± 0.5	< 1.0	—	< 2.9
	3/14/2007	0.5	± 0.3	2.5	± 0.7	< 1.0	—	< 3.5
	6/14/2007	< 0.2	—	10.8	± 1.1	< 1.0	—	< 11.8
	9/27/2007	< 0.2	—	1.3	0.4	< 1.0	—	< 2.3
	11/27/2007	< 0.2	—	1.4	0.5	< 1.0	—	< 2.4
T1-12	3/2/2004	< 0.2	—	6.0	± 0.7	< 1.0	—	< 7.0
	5/26/2004	< 0.2	—	2.9	± 0.7	< 1.0	—	< 3.9
	9/22/2004	< 0.2	—	2.5	—	< 1.0	—	< 3.5
	12/6/2004	< 0.2	—	1.6	—	< 1.0	—	< 2.6
	3/8/2005	< 0.2	—	3.1	± 0.6	< 1.0	—	< 4.1
	6/29/2005	< 0.2	—	4.9	± 1.1	1.1	± 2.1	6.0
	8/31/2005	< 0.2	—	2.1	± 0.5	< 1.0	—	< 3.1
	12/12/2005	< 0.2	—	2.3	± 0.5	< 1.0	—	< 3.3
	3/22/2006	< 0.2	—	3.0	± 0.7	2.2	± 0.9	5.2
	6/5/2006	< 0.2	—	2.1	± 0.5	< 1.0	—	< 3.1
	9/27/2006	< 0.2	—	1.9	± 0.5	1.8	± 1.1	3.7
	12/8/2006	< 0.2	—	2.4	± 0.7	< 1.0	—	< 3.4
	3/14/2007	0.8	± 0.4	3.2	± 0.8	< 1.0	—	< 4.2
	6/14/2007	< 0.2	—	3.1	± 0.6	< 1.0	—	< 4.1
	9/27/2007	< 0.2	—	2.6	0.5	< 1.0	—	< 3.6
	11/27/2007	< 0.2	—	2.8	0.6	< 1.0	—	< 3.8

**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA. (cont.)**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	As (mg/l)	Be (mg/l)	Cd (mg/l)	Cr (mg/l)	Ni (mg/l)	Se (mg/l)
AL-1	3/2/2004	0.003	< 0.010	< 0.005	< 0.050	0.039	0.015
	5/26/2004	< 0.004	< 0.010	< 0.010	< 0.050	< 0.050	0.020
	9/22/2004	< 0.001	—	< 0.010	< 0.050	< 0.050	0.007
	12/6/2004	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.003
	2/9/2005	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.002
	6/27/2005	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.004
	9/8/2005	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.002
	12/12/2005	0.001	< 0.010	< 0.010	< 0.050	< 0.050	< 0.001
	3/22/2006	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.001
	6/5/2006	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.002
	9/26/2006	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.003
	12/8/2006	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.002
	3/14/2007	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.001
	6/12/2007	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.004
	9/26/2007	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.003
11/27/2007	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.004	
AL-6	3/2/2004	0.007	< 0.001	< 0.005	< 0.050	0.012	0.081
	5/26/2004	0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.079
	9/22/2004	0.006	—	< 0.010	< 0.050	< 0.050	0.085
	12/6/2004	0.007	< 0.010	< 0.010	< 0.050	< 0.050	0.082
	3/8/2005	< 0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.078
	6/27/2005	0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.080
	8/31/2005	0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.075
	12/12/2005	0.007	< 0.010	< 0.010	< 0.050	< 0.050	0.076
	3/22/2006	0.005	< 0.010	< 0.010	< 0.050	< 0.050	0.055
	6/5/2006	0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.073
	9/26/2006	0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.066
	12/7/2006	0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.062
	3/14/2007	0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.064
	6/12/2007	0.007	< 0.010	< 0.010	< 0.050	< 0.050	0.063
	9/26/2007	0.006	< 0.010	< 0.010	< 0.050	< 0.050	0.055
11/27/2007	0.007	< 0.010	< 0.010	< 0.050	< 0.050	0.059	
AL-7	3/2/2004	0.001	< 0.001	< 0.005	< 0.050	0.011	0.006
	5/26/2004	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.003
	9/22/2004	0.001	—	< 0.010	< 0.050	< 0.050	0.009
	12/6/2004	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.007
	3/8/2005	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.007
	6/28/2005	0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.031
	8/31/2005	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.018

**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA. (cont.)**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	As (mg/l)	Be (mg/l)	Cd (mg/l)	Cr (mg/l)	Ni (mg/l)	Se (mg/l)
AL-7	12/12/2005	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.003
	3/22/2006	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.005
	6/5/2006	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.007
	9/26/2006	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.007
	12/8/2006	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.009
	3/14/2007	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.008
	6/12/2007	0.008	< 0.010	< 0.010	< 0.050	< 0.050	< 0.001
	9/26/2007	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.012
	11/27/2007	0.004	< 0.010	< 0.010	< 0.050	< 0.050	0.022
	AL-8	3/2/2004	0.002	< 0.001	< 0.005	< 0.050	0.007
5/26/2004		0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.012
9/22/2004		0.004	—	< 0.010	< 0.050	< 0.050	0.006
12/6/2004		0.005	< 0.010	< 0.010	< 0.050	< 0.050	0.013
2/9/2005		0.005	< 0.010	< 0.010	< 0.050	< 0.050	0.011
6/27/2005		0.004	< 0.010	< 0.010	< 0.050	< 0.050	0.013
8/31/2005		0.004	< 0.010	< 0.010	< 0.050	< 0.050	0.012
12/12/2005		0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.011
3/22/2006		0.004	< 0.010	< 0.010	< 0.050	< 0.050	0.010
6/5/2006		0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.011
9/26/2006		0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.009
12/7/2006		0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.007
3/14/2007		0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.009
6/12/2007		0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.010
9/26/2007		0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.007
11/27/2007	0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.010	
AL-9	3/2/2004	0.002	< 0.001	< 0.005	< 0.050	0.010	0.006
	5/26/2004	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.014
	3/8/2005	0.004	< 0.010	< 0.010	< 0.050	< 0.050	0.013
	6/27/2005	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.018
	8/31/2005	0.005	< 0.010	< 0.010	< 0.050	< 0.050	0.013
	12/12/2005	< 0.030	< 0.010	< 0.030	< 0.050	< 0.050	< 0.080
	3/22/2006	0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.016
	6/5/2006	0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.017
	9/26/2006	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.015
	12/7/2006	0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.015
	3/14/2007	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.015
	6/12/2007	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.014
	9/26/2007	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.015
11/27/2007	0.002	< 0.010	< 0.010	< 0.050	< 0.050	0.016	

**TABLE 1. WATER-LEVEL AND WATER-QUALITY DATA. (cont.)**

Lucky MC Mine - Pathfinder Mines Corp.

Sample Point Name	Date	As (mg/l)	Be (mg/l)	Cd (mg/l)	Cr (mg/l)	Ni (mg/l)	Se (mg/l)
T1-6	3/2/2004	0.003	< 0.001	< 0.005	< 0.050	0.056	0.016
	5/26/2004	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.020
	9/22/2004	< 0.001	—	< 0.010	< 0.050	< 0.050	0.021
	12/7/2004	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.003
	3/8/2005	0.001	< 0.010	< 0.010	< 0.050	< 0.050	< 0.002
	6/28/2005	0.001	< 0.010	< 0.010	< 0.050	0.060	0.004
	9/8/2005	0.003	< 0.010	< 0.010	< 0.050	< 0.050	0.002
	12/12/2005	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.005
	3/22/2006	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.003
	6/5/2006	< 0.001	< 0.010	< 0.005	< 0.050	< 0.050	0.007
	9/27/2006	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.005
	12/8/2006	0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.007
	3/14/2007	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.007
	6/14/2007	0.002	< 0.010	< 0.005	< 0.050	< 0.050	0.012
	9/27/2007	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.012
T1-12	11/27/2007	< 0.001	< 0.010	< 0.010	< 0.050	< 0.050	0.006
	3/2/2004	< 0.001	< 0.001	< 0.005	< 0.050	0.032	0.054
	5/26/2004	< 0.004	< 0.001	< 0.001	< 0.050	0.280	0.620
	9/22/2004	< 0.002	—	< 0.010	< 0.050	0.290	0.523
	12/6/2004	< 0.002	< 0.010	< 0.010	< 0.050	0.280	0.509
	3/8/2005	0.003	< 0.010	< 0.010	< 0.050	0.300	0.536
	6/29/2005	0.010	< 0.010	< 0.010	< 0.050	0.310	0.540
	8/31/2005	< 0.002	< 0.010	< 0.010	< 0.050	0.290	0.462
	12/12/2005	0.006	< 0.010	< 0.010	< 0.050	0.330	0.550
	3/22/2006	< 0.004	< 0.010	< 0.010	< 0.050	0.300	0.510
	6/5/2006	< 0.004	< 0.010	< 0.010	< 0.050	0.310	0.480
	9/27/2006	< 0.004	< 0.010	< 0.010	< 0.050	0.300	0.470
	12/8/2006	0.002	< 0.010	< 0.010	< 0.050	0.280	0.408
	3/14/2007	0.002	< 0.010	< 0.010	< 0.050	0.290	0.432
	6/14/2007	< 0.002	< 0.010	0.010	< 0.050	0.280	0.399
9/27/2007	< 0.002	< 0.010	< 0.010	< 0.050	0.250	0.353	
11/27/2007	0.005	< 0.010	< 0.010	< 0.050	0.290	0.408	