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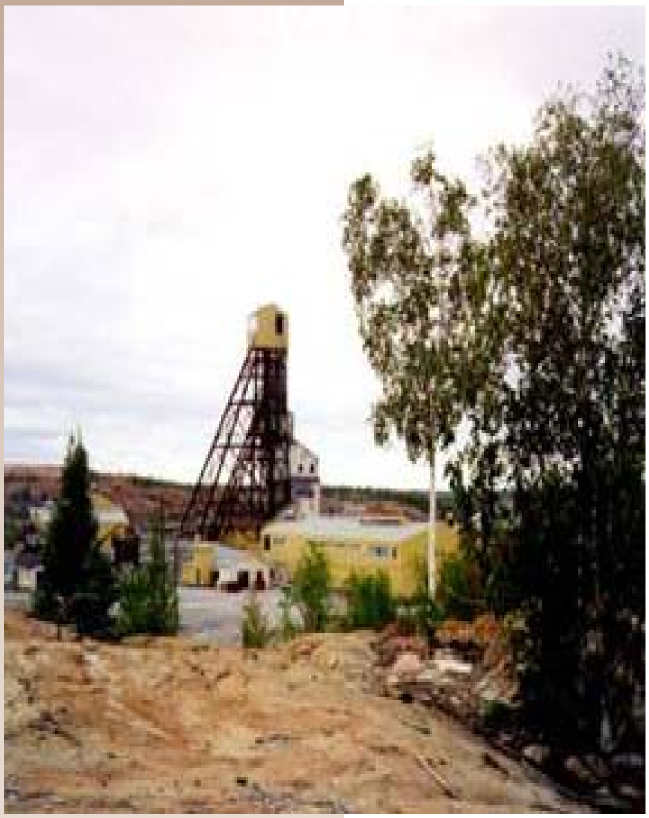
Giant Mine Arsenic Trioxide Management Plan

Groundwater & C-Shaft Monitoring: 2007 Update Report



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Giant Mine Arsenic Trioxide Management Plan

Groundwater & C-Shaft Monitoring: 2006- 2007 Update Report

Indian and Northern Affairs Canada

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1 Introduction

This report reviews the results from groundwater and mine water (C-Shaft) monitoring at the Giant Mine from May 2007 to November 2007. The monitoring systems included in this report are the:

- fourteen deep "Westbay" Multiport (MP) monitoring wells;
- shallow standpipes monitoring the tailings ponds, the Calcine Pond and the Mill Pond; and
- C-Shaft MP System.

Locations of all of these monitoring systems are illustrated on **Figure 1**.

Data from these monitoring locations are compared with previously collected data, interpretations presented regarding changes and possible causes, and comments provided regarding modifications of the existing conceptual model.

As this report was not finalised until November of 2008, it includes comments on the issues encountered at C-Shaft that have hampered pressure data and water sampling collection, as well as subsequent attempts to re-establish access to the lower monitoring levels. This is discussed in detail in Section 6.2 of this report.

2 MP Monitoring

2.1 MP Monitoring System

Fourteen multiport (MP) multi-level monitoring systems have been installed at the Giant Mine site. A complete description of the installations, including geologic/structural target features is available in the installation reports (SRK, 2002 and 2004).

Monitoring zones within these wells were identified from core logging and positioned to monitor possible lithological and/or structural features believed to impart control on groundwater flow. Completion details are included in the installation reports (SRK, 2002 and 2005).

2.1.1 Data Collection to Date

Appendix A summarizes dates and types of data collected since installation of the MP monitoring systems. Pressure profile and water chemistry data collected during previous sampling events are included on the same charts to allow for direct comparison and trend assessment.

2.1.2 2007 Monitoring

Monitoring was carried out in August of 2007. The piezometric pressures were measured in all zones in each well during the monitoring round. The fluid samples were collected from the zones listed in Table 1.

Table 1: Tasks Completed

Drillhole ID	MP Zones Sampled	Depth Water in MP Casing during sampling events (m)
S-1857	1, 3, 5, 10	139.4
S-1858b	2, 5	147.1
S-1859	2, 7	41.25
S-1860	3, 7	49.40
S-1954	2, 5	77.20
S-1955	2, 6	114.29
S-1956	4, 10	>100
S-2224	3, 9	51.76
S-DIAND-001	4, 8, 10	29.68
S-DIAND-002	4, 5, 6, 9	42.33
S-DIAND-021	10	**4.91**
S-DIAND-022	2, 4, 7, 11	38.36
S-DIAND-023	2, 4, 10	41.14
S-DIAND-024	2, 5, 10	**1.10**

Water levels in MP wells S-DIAND-021 and S-DIAND-024 are less than the recommended 25m below ground surface, and should be bailed down during the next monitoring round. This is done as a precaution against freezing the water in the casing during the winter.

All monitoring wells were confirmed to be operating properly during the 2007 testing, with the know exception of S-DIAND-021, which was still blocked at a depth of approximately 73.4 m. The blockage was first discovered during the January 2005 profiling at a depth of approximately 39 m. Remedial actions were initiated at that time to remove what was thought to be ice from S-DIAND-021. Warm water was flushed in the MP casing over a period of multiple days, and the blockage moved to a drillhole depth of 61 meters. At this depth warm water no longer achieved efficient blockage removal and no further effort was made to remove the blockage. During the September 2006 monitoring program the blockage was found to be at a depth of 73.4 m down-hole, approximately the same depth as was found during the 2007 program.

This blockage was originally thought to be ice as the well was accessible along the total depth in September 2004 but found to be blocked in January 2005. However, attempts to melt the blockage below 73.4 m indicate that the blockage is not caused by ice, but is thought to be a foreign object (rock, etc.) that has been dropped into the well. Upon completion, this well was not locked and unauthorised people were apparently accessing the site. It is now assumed that a rock, or other object(s), has been dropped into the casing. Attempts have been made to remove the blockage, or push it to the bottom, but have been unsuccessful to date (September 2006). Further work will be needed to regain access to the lower portion of this monitoring well.

2.1.3 Pressure Profiles

Pressure profiles were collected at each well and recorded on pre-formatted datasheets. Pressure profiles followed standard Westbay and SRK procedures, as documented in the equipment operation manuals.

2.1.4 Water Sampling

Water samples were collected from select zones in the monitoring systems using approved Giant Mine site methods, with additional modifications to conform to SRK's standard water sampling QA/QC procedures. Sample collection equipment was de-contaminated between monitoring zones by rinsing twice with deionised water. Field parameters were collected in standard lab-provided containers (including acid-washed when appropriate), and rinsates and field blanks included in the sample suite submitted for analysis. Copies of the field sample collection notes are included in Appendix B.

Zones sampled during the monitoring round in August 2007 are listed in **Table 2**.

Table 2: Zones Samples for Water Chemistry

Well	Zones sampled
S-1857	1, 3, 5, 10
S-1858b	2, 5, (rins)
S-1859	2, 7
S-1860	3, 7, (rins)
S-1954	2, 5, (rins)
S-1955	2, 6
S-1956	4, 10
S-2224	3, 9, (rins)
S-DIAND-001	4, 8, 10
S-DIAND-002	4, 5, 6, 9
S-DIAND-021	10
S-DIAND-022	2, 4, 7, 11, (rins)
S-DIAND-023	2, 4, 10, (rins)
S-DIAND-024	2, 5, 10, (blk), (rins)

(dup) = duplicate, (blk) = field blank, (rins) = equipment rinsate.

3 MP System Results and Interpretation

3.1 Pressure Profiles

All pressure profile data to date are displayed in **Figures 2** through **29.** Piezometric levels in each monitoring zone are plotted as the "equivalent depth to water" on the plots. This refers to the depth the water would be observed in an open standpipe if screened across the MP zone. The equivalent depth to water is calculated by adding the pressure head (height of water column calculated from the zone pressure measured) to the depth of the measurement port where the pressure was measured.

Any zone that has an equivalent depth to water greater than ground surface would have water flowing from the open standpipe and is classified as flowing artesian. The atmospheric line plotted with the data indicates a pressure head of zero (ie: a dry zone) at that depth. Any zone that plots above that line is unsaturated (under negative pressure, or suction, as in S-1955 in 2002), and along, or below, that line is saturated.

Pressure measurements have been corrected for atmospheric effects and in all of the plots the vertical depth (corrected for drillhole dip and curvature) is illustrated. The general geology/lithology features and the corresponding MP casing design (i.e., packer locations) are shown to indicate where the zones are situated.

On the depth profile graphs, the previous measurements 2002 to 2006 are shown in grey, and only the most recent pressure profile in August 2007 is emphasized. The seasonal fluctuations cause the scatter of data points and depth profiles. The groundwater level (as groundwater elevation above mine datum) was plotted as time series of all MP zones in each MP well as separate figure, showing observed trends from January 2002 to August 2007.

3.1.1 S-1857

Pressure data from August 2007 (**Figures 2 and 3**) show a normal downwards trend of increasing pressure with depth between zones 10 and 4, and there has been no significant change from previous measurements in 2006. In Zones 1 to 3 (at or below the Westbay Fault), the pressures have been consistent with previous measurements, with Zone 1 pressures almost identical to September 2006 readings.

Groundwater levels recorded were similar to those observed in September 2006 with an overall slight increase. The largest increase occurred in Zone 3 where water levels rose by approximately 6 m with the second greatest increase in Zone 4 where levels increased by approximately 2 m.

3.1.2 S-1858b

Pressure data (**Figures 4 and 5**) show no significant change in 2007 from measurements in previous years. Zones 1 through 4 did show a slight increase in water levels (maximum 3.2 m) with Zones 5 and 7 showing a slight decrease (maximum 2.4 m).

3.1.3 S-1859

Pressure data (**Figures 6 and 7**) show no significant change in 2007 from measurements in previous years. Water levels in Zones 3 through 6 show a gradual increase from their lowest levels in January of 2006, but do not exceed levels seen prior to that time.

3.1.4 S-1860

Pressure data (**Figures 8 and 9**) show no significant change in 2007 from measurements in previous years. Zones 2 and 3 (volcanic breccia and chlorite schist in zone 3 and non-brecciated volcanics in zone 2) still dominate the lower portion of the pressure profile, and the equivalent depth to water there is equal to the original open hole depth to water. At this time there is no explanation for the higher pressures in zones 2 and 3.

3.1.5 S-1954

Pressure data (**Figures 10 and 11**) show no significant change in 2007 from measurements since December 2004, except for the deepest zone 1. Prior to June 2005, zone 1 was dry, most likely due to these zones being perched above the overall mine dewatering drawdown "cone" at this location, also supported by the very low water level in the open hole. In September 2005, zone 1 was no longer dry and had approximately 40 m of increase in water level since last measurement (Figure 11). The zone 1 water level continues to slowly decrease but is still higher than the lowest level seen in January 2005.

It is uncertain if this response correlates with beginning flooding of the mine after July 2005, and needs to be monitored over time.

3.1.6 S-1955

No significant changes were observed (**Figures 12** and **13**) in 2007. Pressure variations appear to follow expected seasonal variations in infiltration during spring and summer, with water level declines over the winter. The upper part of the drillhole (Zones 6 and 7) remain the only zones that show piezometric levels significantly above the port elevations (see plotted port depth in Figure 12), and are still assumed to represent a perched water table. Zone 6 was apparently dewatered during January 2006 measurement, but recovered to its usual water level by September 2006. However; this may be due to a faulty measurement and so will be treated as suspect data until a plausible mechanism for this behaviour can be determined.

All other zones continue to show minimal saturation above the ports. This is still assumed to be due to the ports being in the current dewatered drawdown "cone" of the mine and isolated from significant surface infiltration by low hydraulic conductivity of the overlying bedrock. The three deepest zones (1, 2, 3) continue to show an increase in saturation, as do zones 4 and 5 (Figure 13).

3.1.7 S-1956

Pressure data (**Figures 14 and 15**) show no significant change in 2007 from measurements in previous years. However, the deepest zone 1 has been increasing in saturation since 2004.

3.1.8 S-2224

Pressure data (**Figures 16 and 17**) show no significant change in 2007 from measurements in previous years. The deepest zone 1 (connected to Fault Breccia at depth 148 m), and the adjacent zone 2, both continue to show the lowest groundwater levels and a continuing dewatering trend since 2004.

3.1.9 S-DIAND-001

No significant changes in seasonal water level fluctuations are observed in S-DIAND-001 (**Figures 18** and **19**) with the exception of a lag in the upwards inflection of the shallow zones (4 through 10) as a result of the summer infiltration. The deepest three zones (1, 2, 3) in the volcanic (pillow flow) rock below the Townsite Fault have artesian pressures compared to the zones in schist rock above the fault. The deeper zones also respond most rapidly to summer infiltration.

3.1.10 S-DIAND-002

No significant changes in the piezometric data (**Figures 20 and 21**); however, a number of suspect data measurements are apparent (Zones 1 and 2) in the September 2007 data. These need to be verified at the next round of monitoring, but are considered to be erroneous at this time.

3.1.11 S-DIAND-021

No significant changes in seasonal water level fluctuations were observed in zones 8 to 12 (**Figures 22** and **23**), based on a very limited data set. During the January 2005 monitoring the well was frozen below 40 m. The ice was melted in October 2005 and sampling was attempted, but another blockage was found at 73.5 m and has been blocked since. This blockage is thought to be a foreign object (rock, etc.) and not ice. The only pressure data collected in 2007 was for zones 8 to 12, above the blockage.

3.1.12 S-DIAND-022

No significant changes in the piezometric data (**Figures 24 and 25**); however, a number of suspect data measurements are apparent (Zones 3, 6 and 7) in the September 2007 data. These need to be verified at the next round of monitoring, but are considered to be erroneous at this time.

3.1.13 S-DIAND-023

Pressure data (**Figures 26 and 27**) show no significant change in 2005-2006 from measurements in previous years. The seasonal groundwater level variation is very similar in all zones in this well.

3.1.14 S-DIAND-024

Pressure data (**Figures 28 and 29**) show no significant change in 2007 from measurements in previous years. All zones continued to see an overall rise in water levels with the exception of zone 6 which showed a large decrease.

3.1.15 Overall Interpretation

In general, piezometric levels in all MP wells are seasonally stable and show an annual pattern of variation, apart from probable erroneous (suspect) data as discussed above. The exception to this is the observed changes in piezometric levels in the bottom two zones in well S-1954, which may be linked to mine re-flooding. As the response is anomalous; however, the zones needs to be monitored and assessed to ensure changes are not simply measurement errors. This will be addressed during the next monitoring round, when overall data collection QA will be carried out more rigorously.

3.2 Water Sampling

Results of water analyses with comparison to CCME guidelines for aquatic life, and comparison to Baker Creek upstream of the mine workings, are presented in Appendix C.

3.2.1 QA/QC Results

In the 2007 sampling period, 1 field blank and 7 equipment rinsate samples were collected during the groundwater monitoring program (Appendix C). Due to time constraints and limited supplies no duplicates and only 1 field blank were collected. Field blanks and equipment rinsate samples were generally free from contamination, with most values at or near detection limits.

3.2.2 Water Chemistry Results

A summary of the arsenic concentrations in the MP wells can be found in **Table 3**. The highlighted values indicate where the arsenic concentration has exceeded any previous value from earlier sampling periods. It should be noted that the MP wells are located outside the mine envelope within the assumed drawdown cone of the mine and are not influenced by any of the mine workings. These samples were collected to establish baseline conditions should any remediation efforts lead to a change in groundwater conditions, causing water to move towards the wells away from the mine.

Table 3: Summary of Arsenic Concentrations in MP Wells

Well	Zone	August 2007 Arsenic Concentration (mg/L)	Minimum Arsenic Concentration Prior to 2007 (mg/L)	Maximum Arsenic Concentration Prior to 2007 (mg/L)	Mean Aresnic Concentration Prior to 2007 (mg/L)	Number of Samples Prior to 2007
S-1857	1	0.011	0.0078	0.028	0.017	7
	3	0.109	0.0079	0.115	0.066	9
	5	0.156	0.121	0.169	0.16	7
	10	0.0746	0.0533	0.394	0.22	7
S-1858B	2	0.0381	0.0122	0.0177	0.015	3
	5	0.0112	0.0226	0.0522	0.041	3
S-1859	2	0.00485	0.0065	0.0111	0.0083	3
	7	0.0422	0.0004	0.0183	0.011	3
S-1860	3	0.0884	0.0282	0.065	0.042	6
	7	0.0387	0.0173	0.056	0.042	8
S-1954	2	0.0041	0.0139	0.0228	0.017	4
	5	0.0196	0.26	0.303	0.28	3
S-1955	2	0.00647	0.008	0.029	0.017	6
	6	0.441	0.0139	0.0228	0.32	7
S-1956	4	0.0281	0.26	0.303	0.016	3
	10	0.0438	0.008	0.029	0.025	3
S-2224	3	0.0179	0.0254	0.0472	0.037	3
	9	0.00709	0.0112	0.013	0.012	3
S-DIAND-001	4	0.0139	0.005	0.0313	0.017	9
	8	0.0204	0.004	0.0223	0.015	8
	10	0.105	0.0409	0.12	0.077	5
S-DIAND-002	4	1.12	1.26	2	1.7	8
	5	1.63	1.88	2.15	2.0	6
	6	0.533	1.04	2	1.4	5
	9	3.48	2.38	5	3.4	5
S-DIAND-021	10	0.014	0.0034	0.0034		1
S-DIAND-022	2	0.00254	0.0028	0.0095	0.0061	3
	4	0.00478	0.0064	0.0091	0.0074	3
	7	0.00266	0.0072	0.0082	0.0076	3
	11	0.00112	0.0079	0.0124	0.01	3
S-DIAND-023	2	0.00468	0.0032	0.0141	0.007	3
	4	2.97	0.0038	0.0067	0.0048	3
	10	0.00231	0.0027	0.0057	0.0045	3
S-DIAND-024	2	0.00782	0.0034	0.00754	0.005	3
	5	0.00672	0.0024	0.0054	0.0043	3
	10	0.00143	0.0043	0.0249	0.011	3

Notes

1. highlighted values indicate where the arsenic concentration has exceeded any previous value from earlier sampling periods
2. significant figures shown as reported by the lab (detection limit for arsenic varies from sample to sample)
3. n/a: insufficient data to make trend interpretation

4 Shallow Standpipe Monitoring Wells

Monitoring of wells MW00-03A, MW00-03B, MW01-1A, and MW01-2A was carried out in August of 2007 while monitoring well MW01-2B was sampled in November of 2007. Sampling of well MW01-1B was attempted during both sampling periods but was baled dry in August and was frozen in November. No sample was attained at either time. No samples were taken from either well MW00-04A or MW00-04B as the sampling team was unable to locate them. Samples were not obtained from wells MW00-01 or MW00-02. Water levels were read in all wells whenever possible.

The results of the arsenic monitoring in the shallow standpipe wells are listed in **Table 5**. Arsenic concentrations were relatively low (< 0.05 mg/L), within the typical range observed in other monitoring wells at the Giant site (see **Figure 30**).

Table 4: Arsenic in Groundwater in Shallow Standpipe Monitoring Wells

Well	Arsenic (mg/L)
MW00-01	n/a
MW00-02	n/a
MW00-03A	0.00988
MW00-03B	0.0378
MW00-04A	n/a
MW00-04B	n/a
MW01-1A	0.0231
MW01-1B	n/a
MW01-2A	0.0489
MW01-2B	0.0147

Notes: 1) Significant figures shown as reported by the lab.

5 Calcine Pond and Mill Pond Monitoring

Groundwater sampling in the area of the former calcine storage pond and the mill pond at the Giant Mine was completed during November of 2007. Water levels were read in all wells during the August 2007 sampling round but samples were not obtained at that time due to a lack of bailing tubing. Water levels were re-read in the wells as they were sampled during the November event. Only one sample was collected from the shallow wells at the mill pond, from well S-DIAND-011B. The remainder of the wells were either dry or there wasn't enough water present to obtain a sample. The arsenic and cyanide concentrations are plotted in **Figure 31**.

Table 5: Summary of Arsenic and Cyanide Concentrations in Calcine Pond and Mill Pond Monitoring Wells

Well	Date	Arsenic (dissolved)	Cyanide-Total	Cyanide-WAD
		(mg/L)		
S-DIAND-08	9-Nov-07	Dry (Well depth: 4.43 m)		
S-DIAND-011A	9-Nov-07	Not enough water present		
S-DIAND-011B	9-Nov-07	1.05	not tested	not tested
S-DIAND-012	9-Nov-07	Not enough water present		
S-DIAND-013A	4-Aug-04	0.062		
	29-Aug-05	0.05	3.4	0.11
	17-Aug-06	0.55	0.0538	0.0145
	9-Nov-07	0.0291	not tested	not tested
S-DIAND-013B	4-Aug-04	0.453		
	29-Aug-05	0.004	0.03	0.01
	17-Aug-06	0.076	0.0738	0.0154
	9-Nov-07	Frozen/Dry @ 5.32 m		
S-DIAND-014A	4-Aug-04	13.2		
	29-Aug-05	0.02	0.005	0.006
	17-Aug-06	15.7	0.0243	0.009
	9-Nov-07	0.0224	not tested	not tested
S-DIAND-014B	21-Aug-06	0.0286	0.0112	0.005
	9-Nov-07	Couldn’t remove cap from pipe		
S-DIAND-016A	9-Nov-07	Frozen/Dry @ 11.40 m		
S-DIAND-016B	9-Nov-07	Couldn’t obtain a sample		
S-DIAND-017A	9-Nov-07	Frozen/Dry @ 15.36 m		
S-DIAND-017B	9-Nov-07	Frozen/Dry @ 12.07 m		
S-DIAND-018A	29-Aug-05	0.024	3.5	0.092
	22-Aug-06	0.705	0.0216	0.0102
	9-Nov-07	0.00368	not tested	not tested
S-DIAND-018B	29-Aug-05	5.13	4.9	0.002
	22-Aug-06	0.00361	0.023	0.005
	9-Nov-07	0.0636	not tested	not tested
S-DIAND-019A	4-Aug-04	0.007		
	29-Aug-05	12.5	5.1	0.094
	21-Aug-06	0.025	0.0321	0.005
	9-Nov-07	0.00637	not tested	not tested
S-DIAND-019B	21-Aug-06	0.00884	0.0266	0.005
	9-Nov-07	0.025	not tested	not tested

Notes: 1) Significant figures shown as reported by the lab.

6 C-Shaft Monitoring System

The C-Shaft monitoring system was installed to monitor water level rise in the mine and discrete water chemistry at all mine levels within the C-Shaft during re-flooding. Sampling and water pressure measurements are carried out through the same type of MP System ports as installed in the deep groundwater monitoring wells.

Because the C-Shaft is open along the entire vertical profile, measurement of water pressure at each level would result in the same calculated shaft water level if the water was of constant density. However, as the water is expected to vary in temperature and chemistry, the pressure readings will provide information regarding changes in fluid density within the vertical profile. This density change can be related to the discrete fluid samples and temperatures collected from each level.

In the C-Shaft system the monitoring ports were located at each of the mine levels intersecting the C-Shaft, as shown in **Table 7**. Magnetic couplings were installed 0.5m above each monitoring port to help locate the port when monitoring.

Table 6: C-Shaft MP Details

Mine Level	Measurement Port Depth (m)	Zone #	Magnetic Collar Depth Relative to Measurement Port (m)
Surface	0.0		na
100	35.2	12	- 0.5
250	89.1	11	- 0.5
425	138.3	10	- 0.5
575	184.7	9	- 0.5
750	238.7	8	- 0.5
950	298.5	7	- 0.5
1100	344.4	6	- 0.5
1250	390.4	5	- 0.5
1500	454.4	4	- 0.5
1650	500.0	3	- 0.5
1800	551.0	2	- 0.5
2000	607.2	1	- 0.5

6.1 Monitoring Results

The mine water levels have been monitored since May 2005 and are graphed in **Figure 32**. As expected, there was a rapid re-flooding of the mine during freshet and summer of 2005 (May 2005 to October 2005) when the water level rose from 2000 Level to above the 1500 Level (a rise of 150 meters in water level). There was a slower rate of increase in water level from October 2005 to May 2006 over the winter, then a relatively brief but rapid increase again during the 2006 freshet to above the 1250 Level, followed by slow increase. Currently the mine water level is just above the 1100 Level.

The average daily rate of increase is shown in Figure 32. It should be noted that as the volume stage curve of the mine is not known to any reasonable degree of accuracy, it is not possible to relate water level increase to inflow rate. Mine water samples were collected from C-Shaft sampling ports at Level 1500 to 2000 in January 2006, September 2006, and January 2007. Due to mechanical problems with the electric winch, only the 2000 Level was sampled in June 2005 (as discussed blow). Results of monitoring of dissolved arsenic and chloride are presented in **Table 9**. The mean arsenic concentration ranged from 5.7 to 8.7 mg/L. In January 2007, the highest arsenic concentration was in zone 5 near water table surface (shallowest zone in the shaft). Chloride concentration increased with depth, with mean value ranging from 529 to 908 mg/L.

Trends over time in arsenic and chloride in C-Shaft were graphed in **Figure 33**. In 2005-2007, there was a decreasing trend of arsenic concentration in monitoring levels 2000 to 1500 (no trend at 1250 Level). Similarly to arsenic, chloride also had a decreasing trend at most sampling levels in time period 2005-2007.

Table 7: Summary of C-Shaft Activities and Data Collection to Date

Date	Comments	Pumping Port Status & Continuous Monitoring	Mine Water (mbgs)
May-05	C-Shaft Monitoring System Installed		611.90
Jun-05	Pressure monitoring at 2000 Level only; water sampling at 2000 Level only		582.36
Nov-05	Pressure monitoring at 2000 Level only		444.96
Jan-06	Pressure profile, and sampling (1500 to 2000 Level – unsure of 2000 level seal quality).	Probe parked at 1500 Level for weekly monitoring until July 2006	438.97
Jul-06	Pressure monitoring at 1250 Level only	Probe moved to 1250 Level for weekly monitoring until	370.20
Sep-06	Pressure profile and sampling zones 1 to 5 (level 2000 to 1250).	Changed probe to 2000 psi range probe because of increasing water pressure at 2000 level	357.50
Jan-07	Pressure profile and sampling zones 1 to 5 (level 2000 to 1250).	Probe parked at 1100 Level for weekly monitoring.	342.93
May-07	Pressure profile and sampled zones 1 through 6 (level 2000 to 1100)	Probe parked at 1100 Level for weekly monitoring.	
Aug-07	Pressure profile and sampled zones 4, 5, and 6 (level 1500 to 1100)	Probe parked at 1100 Level for weekly monitoring.	

Note: mine water levels are referenced to ground surface at the C-Shaft.

Table 8: Arsenic and Chloride in C-Shaft (May & August 2007)

Arsenic (mg/L) dissolved			
Level	**Zone**	**May 2007**	**August 2007**
2000	1	4.17	n/a
1800	2	4.19	n/a
1650	3	4.28	n/a
1500	4	4.81	0.00413 ??
1250	5	4.99	2.99
1100	6	8.11	3.99
Chloride (mg/L)			
Level	**Zone**	**May 2007**	**August 2007**
2000	1	Not Sampled For	n/a
1800	2	Not Sampled For	n/a
1650	3	Not Sampled For	n/a
1500	4	Not Sampled For	685
1250	5	Not Sampled For	670
1100	6	Not Sampled For	540

Table 9: Arsenic and Chloride in C-Shaft (Jun 2005 – Aug 2007)

Arsenic (mg/L)						
Level	**Zone**	**Min**	**Max**	**Mean**	**Samples**	**Trend (2005-2007)**
2000	1	2.05	17	8.7	4	Decrease (no samples 2007 samples)
1800	2	2	11.8	5.8	3	decrease
1650	3	2.01	11.5	5.7	3	decrease
1500	4	2.04	14.2	6.6	3	decrease
1250	5	4.2	7.99	6.1	2	none
1100						
Chloride (mg/L)						
Level	**Zone**	**Min**	**Max**	**Mean**	**Samples**	**Trend (2005-2007)**
2000	1	760	1130	908	3	decrease
1800	2	755	1060	864	3	decrease
1650	3	756	1070	863	3	decrease
1500	4	705	997	819	3	decrease
1250	5	529	529	529	1	n/a
1100						

6.2 Operating Problems

As part of the ongoing monitoring at the Giant Mine in Yellowknife, NWT, quarter-annual water sampling from the multilevel system located in the C Shaft has been taking place. Starting in May 2007, access to the bottom monitoring ports became problematic. At that time sampling was completed using a method of pulling on and releasing the cable in order to bypass any obstructions. This method was again attempted in August 2007 with mixed results. Three of the six flooded zones were successfully sampled using the same method as in May, but upon returning to sample the remaining three zones it was found that the probe could not be raised or lowered. At the time it was not certain if the probe was blocked by a break in the PVC casing, blocked by ice (shaft was up-drafting at the time), or sediment in the casing (probe had come to surface with sediment on it and noticeable abrasions. The probe was left in place until the casing could be flushed to remove any ice or sediment build-up. After flushing it was successfully removed by INAC personnel. Since that time there has not been a successful sampling attempt as access to the monitoring ports below the flooded mine level is still blocked. The discussion below describes the last successful sampling events leading up to current situation. Figure 34 indicates where the blockages occur.

6.2.1 January 2007

This was the last successful sampling period in the C Shaft where no problems associated with lowering or raising the probe were found. At the time, there was no indication of obstructions anywhere in the PVC pipe. All six zones flooded (Zones 1 through 6) were successfully sampled and the probe was left in the pipe in order to continue monitoring the water level. Sampling was carried out by J. Scibek and K. Nokleby of SRK.

6.2.2 May 2007

It was during this sampling event that it was first noted that there were problems with raising and lowering the probe. As in January, all six flooded zones were successfully sampled, yet it was apparent that there was some sort of a blockage located in the PVC pipe at or around 298 m depth (approximately the 950 Mine Level, Zone 7). Moving the probe past this area required using a technique of pulling on and releasing the cable attached to the probe in order to jar it loose from the obstruction. A secondary, minor obstruction was also observed at approximately 185 m depth or the 575 Mine Level which also required the pull and release technique to be utilized. Although the sampling took longer than usual, eventually all six zones were sampled and the probe was left in the pipe in order to continue taking water level readings. This sampling event was carried out by K. Nokleby and D. Hewitt of SRK.

6.2.3 August 2007

The third quarterly sampling event took place in August of 2007 by K. Nokleby, J. Scibek and D. Hewitt of SRK. This time sampling proceeded in the same manner as the May 2007 event. The blockages at 298 m and 185 m remained, with an additional blockage occurring at approximately 90 m (250 Mine Level), and the pull and release technique was again employed in order to bypass them. At this time, only Zones 4, 5, and 6 were successfully sampled. All attempts to sample Zones 1, 2 and 3 (the bottom three zones) were unsuccessful. It was apparent that the probe was successfully docking at all three locations yet when the valve was opened, the pressure inside the probe failed to equilibrate with that outside, in the casing, and subsequently no sample was taken. During every failed attempt the probe was raised again to the successfully sampled Zone 4 and the valve opened. There wasn't any issue with obtaining samples there and it was concluded that there was nothing wrong with the probe and the problem is apparently due to alignment problems with the ports.

6.2.4 January 2008

Another attempt was made to sample the C-Shaft in January of 2008 by M. Royle and K. Nokleby of SRK, and G. Sommers of INAC. Prior to the sampling attempt, the probe had remained in the PVC pipe at approximately 345 m depth (1100 Mine Level) in order for daily water level readings to be taken. At this time, personnel were unable to raise or lower the probe more than a few feet and sampling had to be abandoned. The probe was later removed from the pipe by B. Nordahn of INAC.

6.2.5 April 2008

Another attempt was made by K. Nokleby and J. Scibek to sample the C Shaft in April of 2008. Obstructions in the pipe again made it impossible to lower the probe in the PVC pipe past a depth of 298 m. This time ice was observed on the top of the probe, as well as between the two attached sampling bottles, when it was removed from the pipe. As water level readings indicated that Zone 7 was now flooded and in the vicinity of the obstruction an attempt was made to sample it. After several unsuccessful attempts to land the probe at this port, sampling was once again abandoned. At this point it was believed that the blockages were the result of ice forming within the pipe and it was decided that sampling would wait until later in the year when the temperature was warmer.

6.2.6 June 2008

The latest sampling attempt took place in June of 2008 by K. Nokleby of SRK, and J. Lariviere and G. Somers of INAC. Again it was impossible to lower the probe below the 298 m depth and a new obstruction was observed at a depth of 136 m (approximately 425 Mine Level). Several attempts were made using the pull and release technique to bypass the obstructions but sampling was once again abandoned. Upon removing the probe from the pipe, a sandy-silty material was observed on the bottom of the probe.

6.2.7 Blockage at/near 950 Level

During the May monitoring event a blockage was discovered in the C-Shaft at approximately 300 m depth, at or near the 950 level. The sampler probe continuously became stuck at this depth and only through manually pulling on and releasing the cable was it able to slide past the blockage. Despite this, sampling of all flooded zones was completed as usual. At the time, it was believed that the blockage was caused by ice in the pipe. No effort was undertaken during May to remove the ice and it was thought that it would thaw before the next sampling round.

It was found during the August monitoring event that the pipe remained blocked at the 950 level. Several buckets of hot water (~ 120 L) were poured down the pipe from the surface. While this appeared to have some immediate effect on the blockage, with time it again became impassable without considerable physical effort. Sampling continued using the pull-and-release method devised in May of 2007.

6.2.8 Problems with Ports

During the August 2007 monitoring event several attempts were made to sample zones 1, 2, and 3 without any success. When the valve was opened the pressure inside the probe failed to equalise with the outside pressure, so no water was able to enter the sampling tubes. After each failed attempt the probe was raised up to the successfully sampled zone 4 and the valve was opened. There was no trouble filling the sampling tubes at zone 4 indicating that the probe was in working condition and the problem lies with the ports in zones 1, 2, and 3. Zones 4, 5, and 6 were sampled without incidence.

6.2.9 January 2008 Sampling Attempt

After the August 2007 sampling round, the Westbay probe remained in the C Shaft at approximately 345 m depth until another attempt at sampling was undertaken in January of 2008. At this time, the probe became stuck approximately 0.6 m above where it had been parked throughout the previous months. After several tries to dislodge the probe, it was eventually removed from the hole and prepared for sampling. Attempts were then made to lower the probe to the first of the sampling ports at Zone 6 (mine level 1100 at 344.4 m depth). At this time the probe again became stuck at an approximate depth of 90 m, at or near the 250 level. An effort was made to manually raise and lower the probe as per the method described above. This allowed the probe to move an additional 30 m (approximate) past the blockage at 90 m depth. At this point the probe again became stuck and any attempts to lower it further were halted. It was decided to remove the probe from the shaft at this time for its safekeeping and it was raised to the surface with some effort.

7 Conclusions and Recommendations

7.1 Conclusions

7.1.1 MP Wells

- No significant changes in piezometric levels or chemistry were observed in the MP wells.

7.1.2 Shallow Standpipes

- No significant changes in piezometric levels or chemistry were observed in the shallow standpipes; and
- No significant changes in piezometric levels or chemistry were observed in the calcine pond wells;

7.1.3 C-Shaft

- Water levels in the C-Shaft are indicating seasonal influence on mine flooding as expected;
- Mine water chemistry indicates:
  - dissolved arsenic concentrations are less than expected and appear to indicate that there is less release of stored arsenic in the flooded levels than had been anticipated;
  - the upper zone (#5: 1500 ft Level) currently has the highest arsenic concentration. This may represent the mixing of high arsenic concentration water, from the arsenic storage area, that is not captured by the "high test" water collection system into the upper water column;
  - chloride concentration levels are increasing at depth, which indicates either deeper groundwater inflow higher at depth, or stratification in the shaft due to density variation; and
  - Blockages in the pipe system appear to be related to where the standard PVC pipe and the "MP" pipe (manufactured by Schlumberger water Services) join together.

7.2 Recommended Monitoring Plan

MP Wells

- Pressure profiling should continue on a bi-annual basis, with specific attention paid to anomalous zones identified in this report;
- Sampling to be carried out annually;
- All metals samples to be field filtered and analysed for dissolved metals only;
- All well interior water levels to be maintained at least 25 m below ground surface. At this time, S-DIAND-021 and -24 should be bailed down; and
- Efforts should be made to investigate (by remote camera, etc) and remove blockage in S-DIAND-021.

Shallow Standpipes

- Water levels and sampling to be carried out annually; and
- All metals samples to be field filtered and analysed for dissolved metals only.

C-Shaft

- Monitoring water levels in C-Shaft is no longer necessary as this is being carried out at the newly commissioned Achaitcho 750 Level pumping system control system;
- C-Shaft water sampling should be resumed when possible. To resume sampling, the following tasks are being carried out by INAC and SRK staff:
  - Dummy probes have been run down the casing to see if the blockage is due to instrument size (diameter and length); and
  - Maintenance is being carried out on the accessible sections of the casing. Recent inspections have shown that the plastic strapping may be slipping.

This report, **1CI001.013 – Giant Mine Arsenic Trioxide Management Plan, Groundwater & C-Shaft Monitoring: 2006 - 2007 Update Report, Indian and Northern Affairs, Canada,** was prepared by SRK Consulting (Canada) Inc.

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Principal Hydrogeologist

8 References

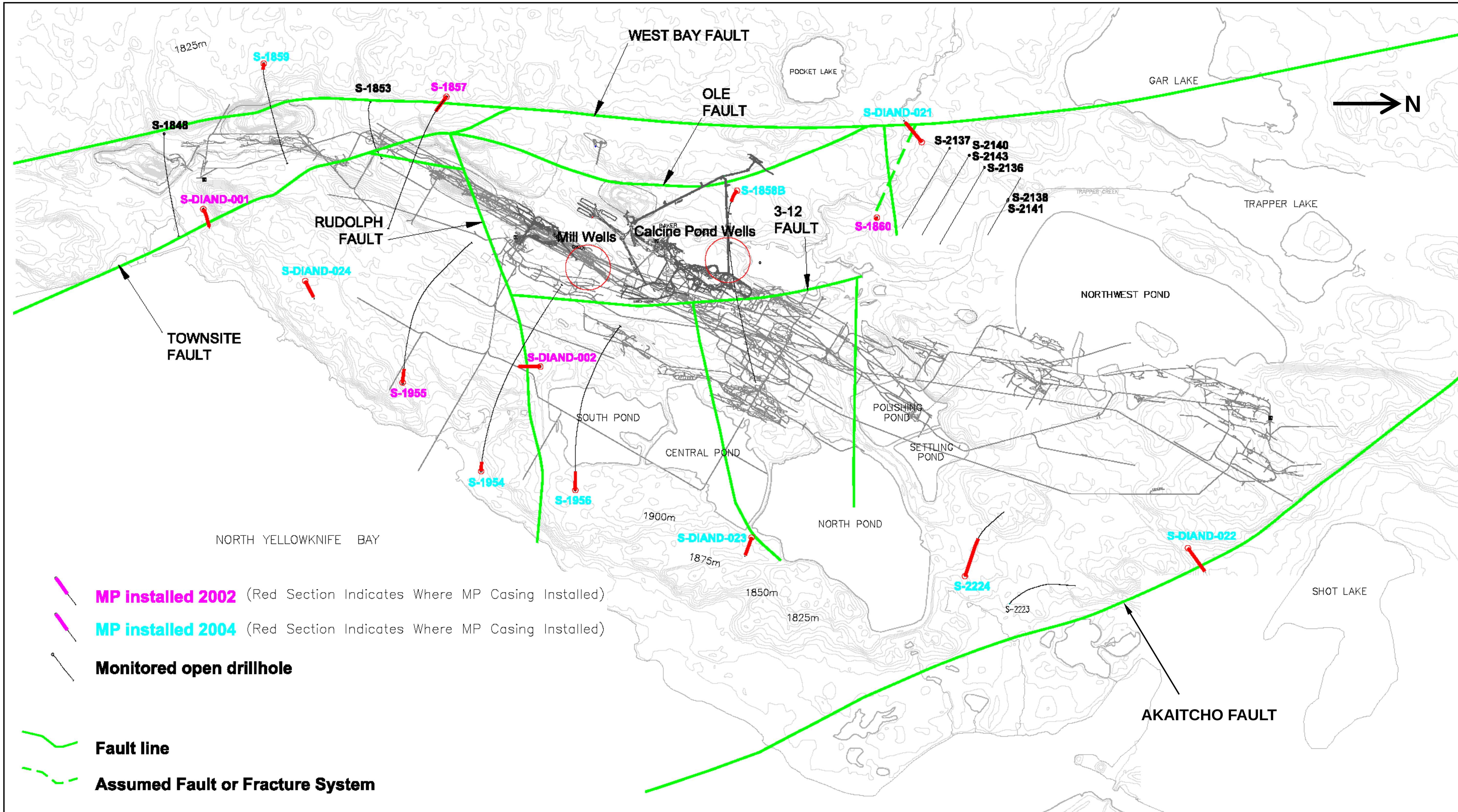
SRK, June 2002: Giant Mine Arsenic Trioxide Management Plan – Groundwater Monitoring System Installation Report (1CI005.07.318).

SRK, January 2005: Giant Mine Arsenic Trioxide Management Plan – Groundwater Monitoring System Installation Report (2004 Program).

Canadian Council of Ministers of the Environment, Canadian Environmental Quality Guidelines, Canadian Council of Ministers of the Environment, Winnipeg, 1999.

Figures

Figures



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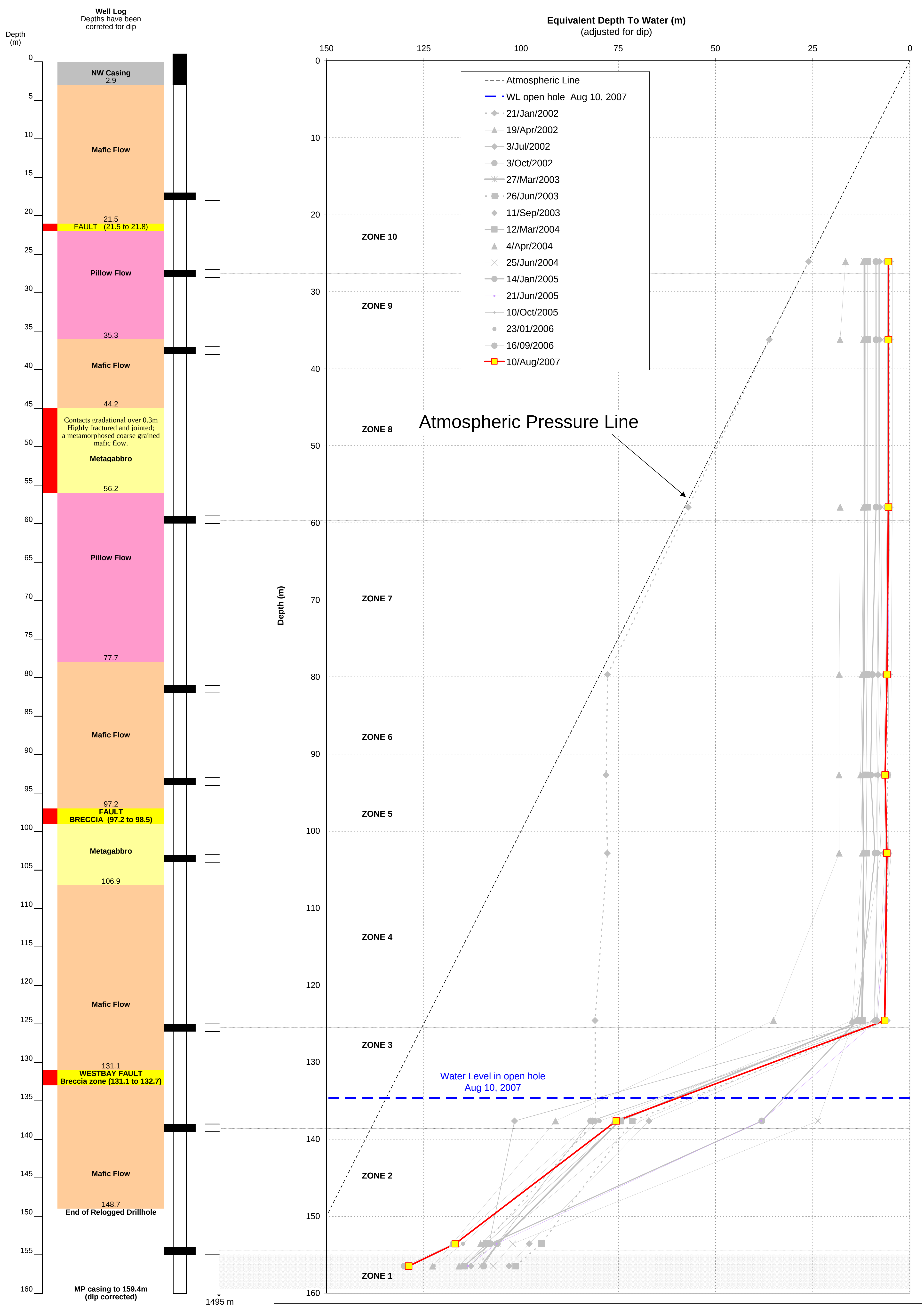
Groundwater & C-Shaft Monitoring:
2007 Update Report, Giant Mine, NWT

Groundwater Monitoring System Location Map

PROJECT:	DATE:	APPROVED:	FIGURE:
1CI001.13.C2.01	April 2008	MR	1



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Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-1857 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
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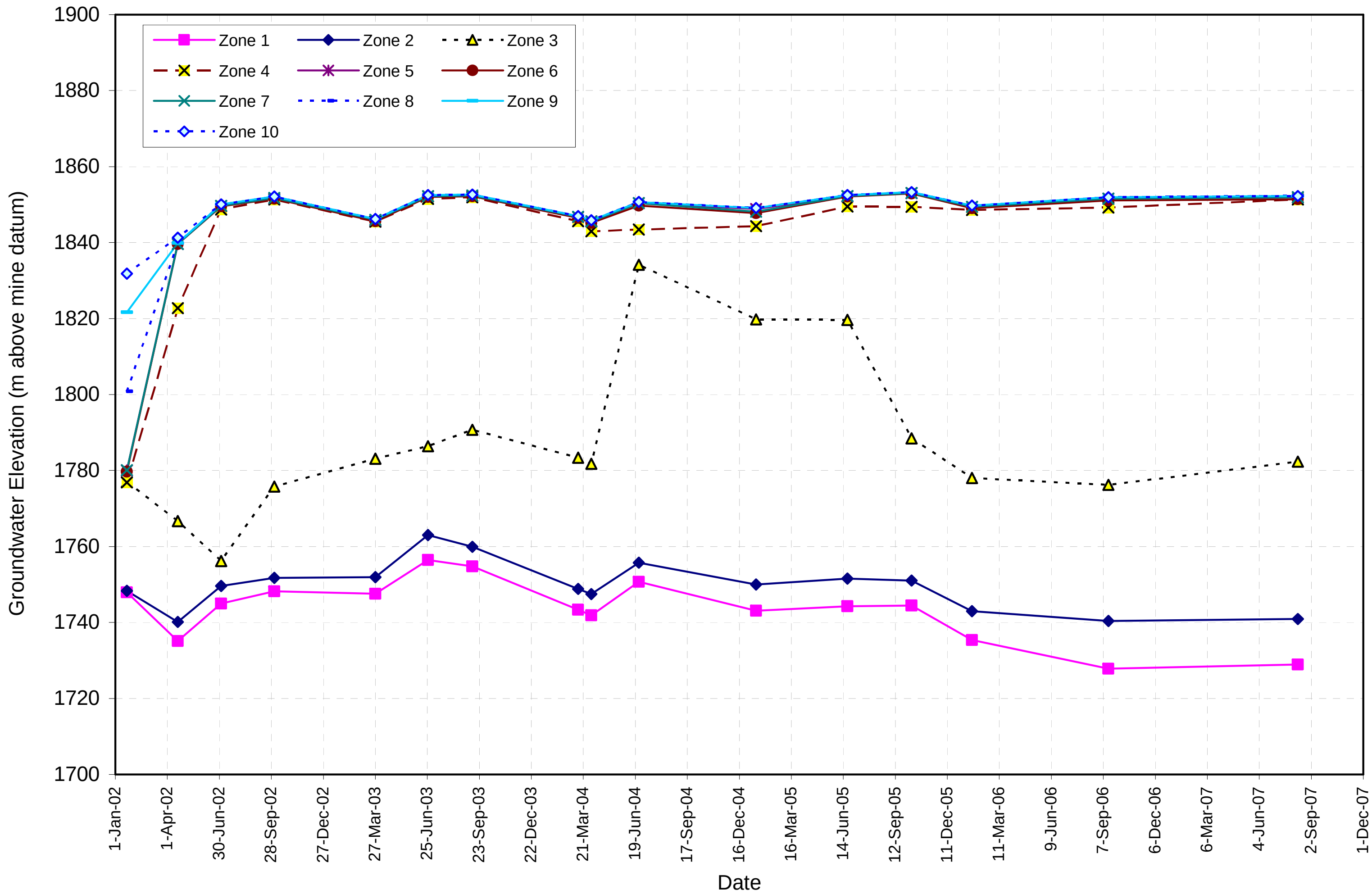

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2007 Update Report, Giant Mine, NWT

S-1857
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
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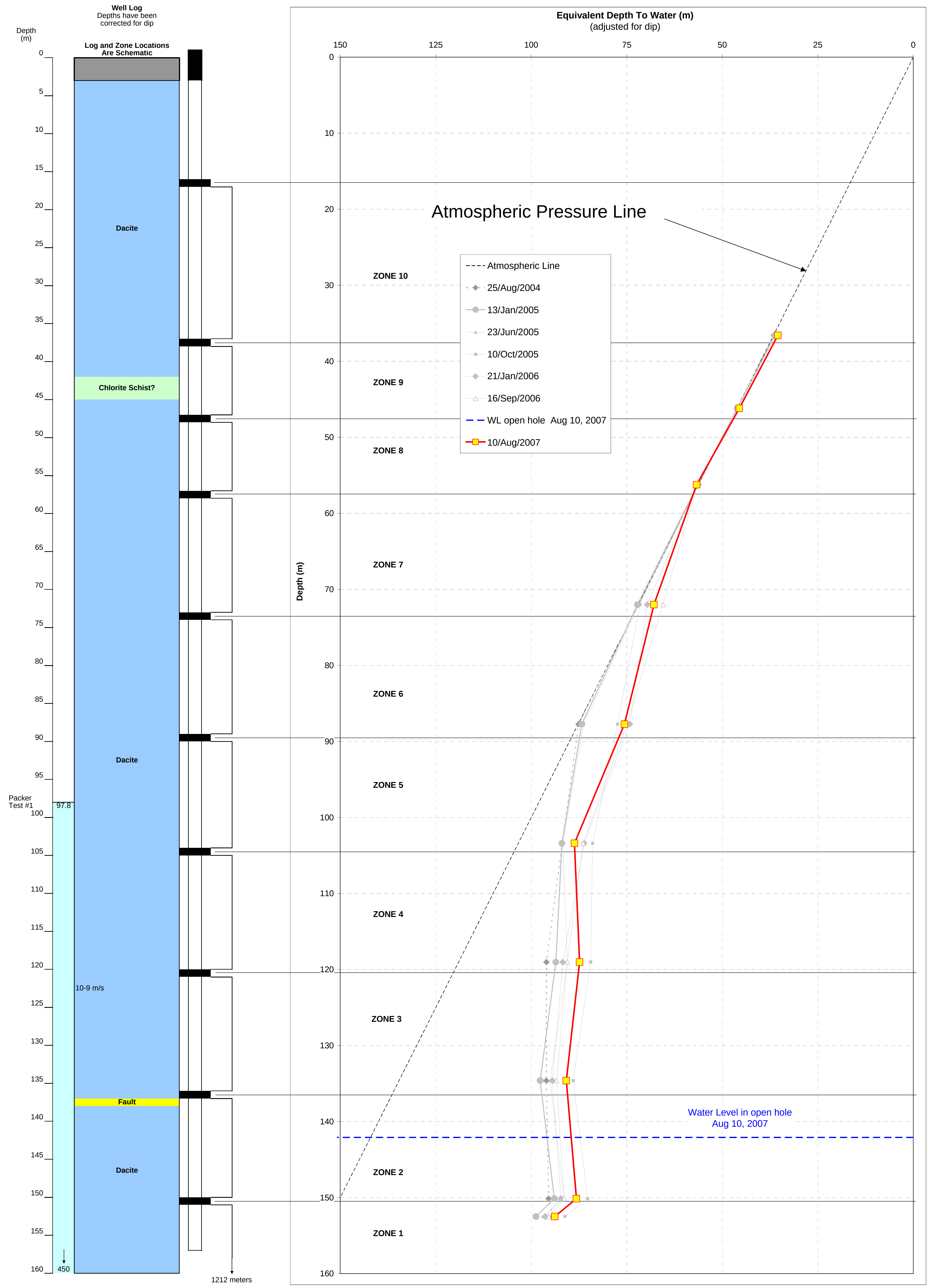

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S-1858b Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
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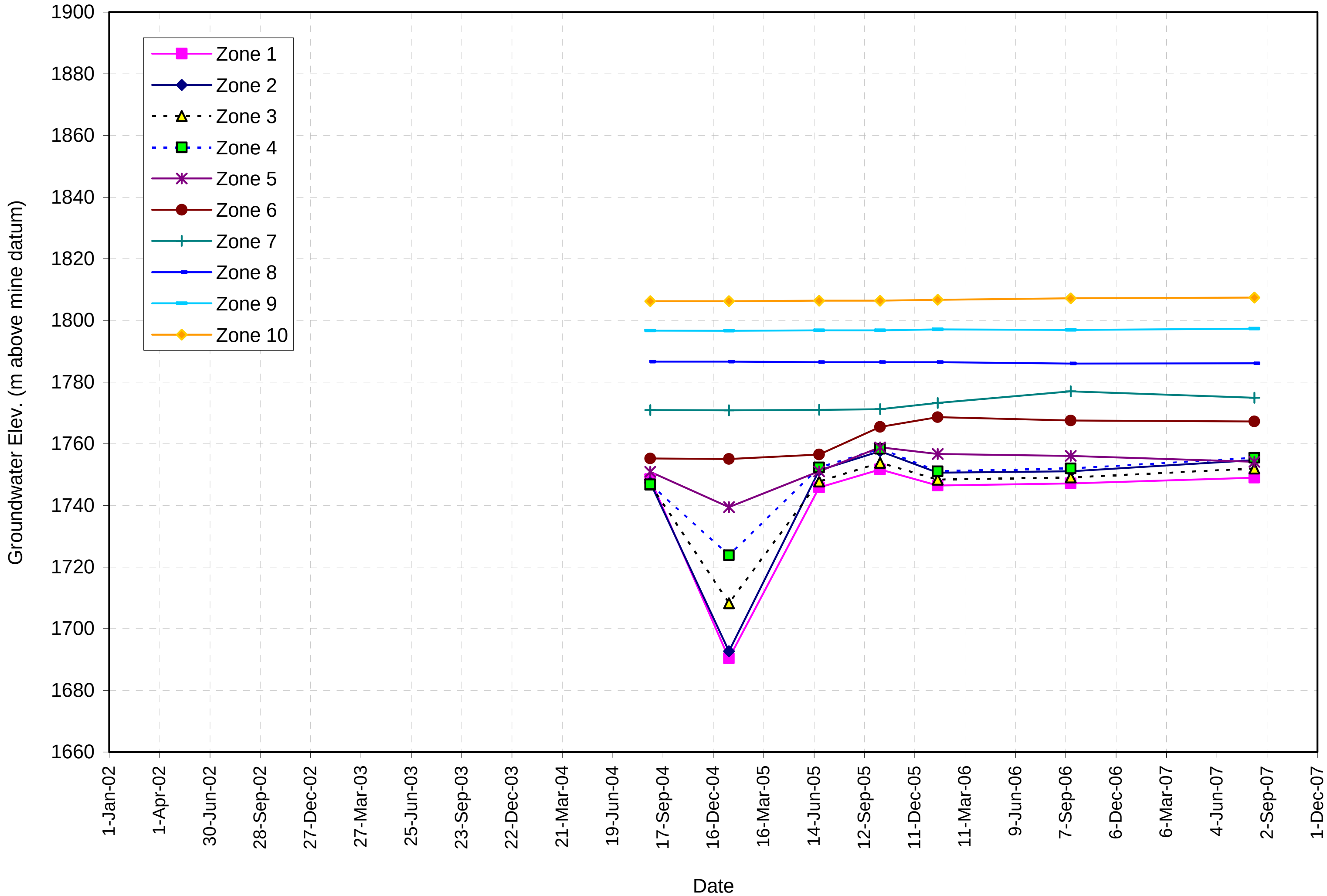

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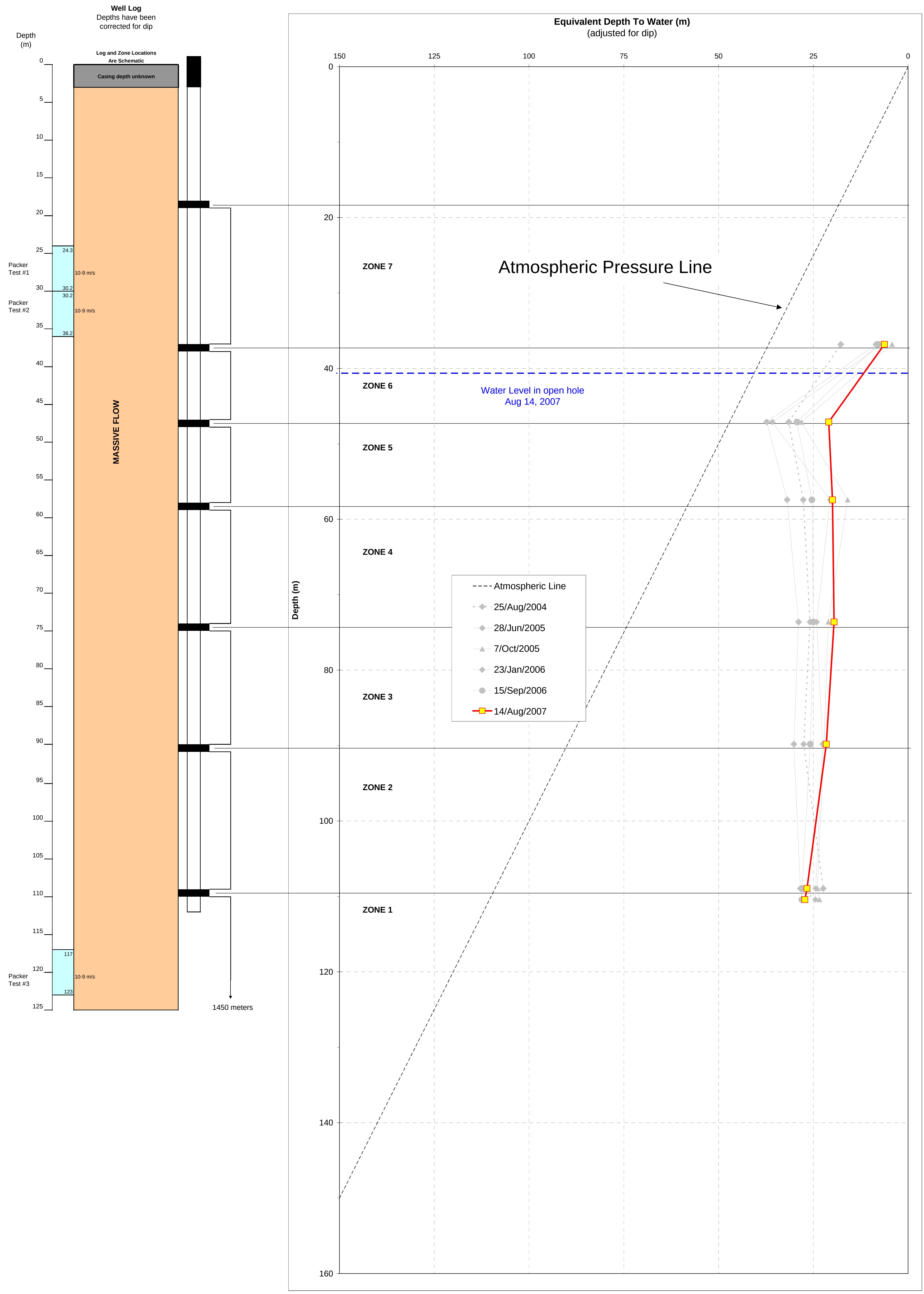
	S-1858B **Groundwater Level vs Time**			
INDIAN AND NORTHERN AFFAIRS CANADA **GIANT MINE REMEDIATION PROJECT TEAM**	PROJECT: 1CI001.13.C2.01	DATE: April 2008	APPROVED: MR	FIGURE:: 5



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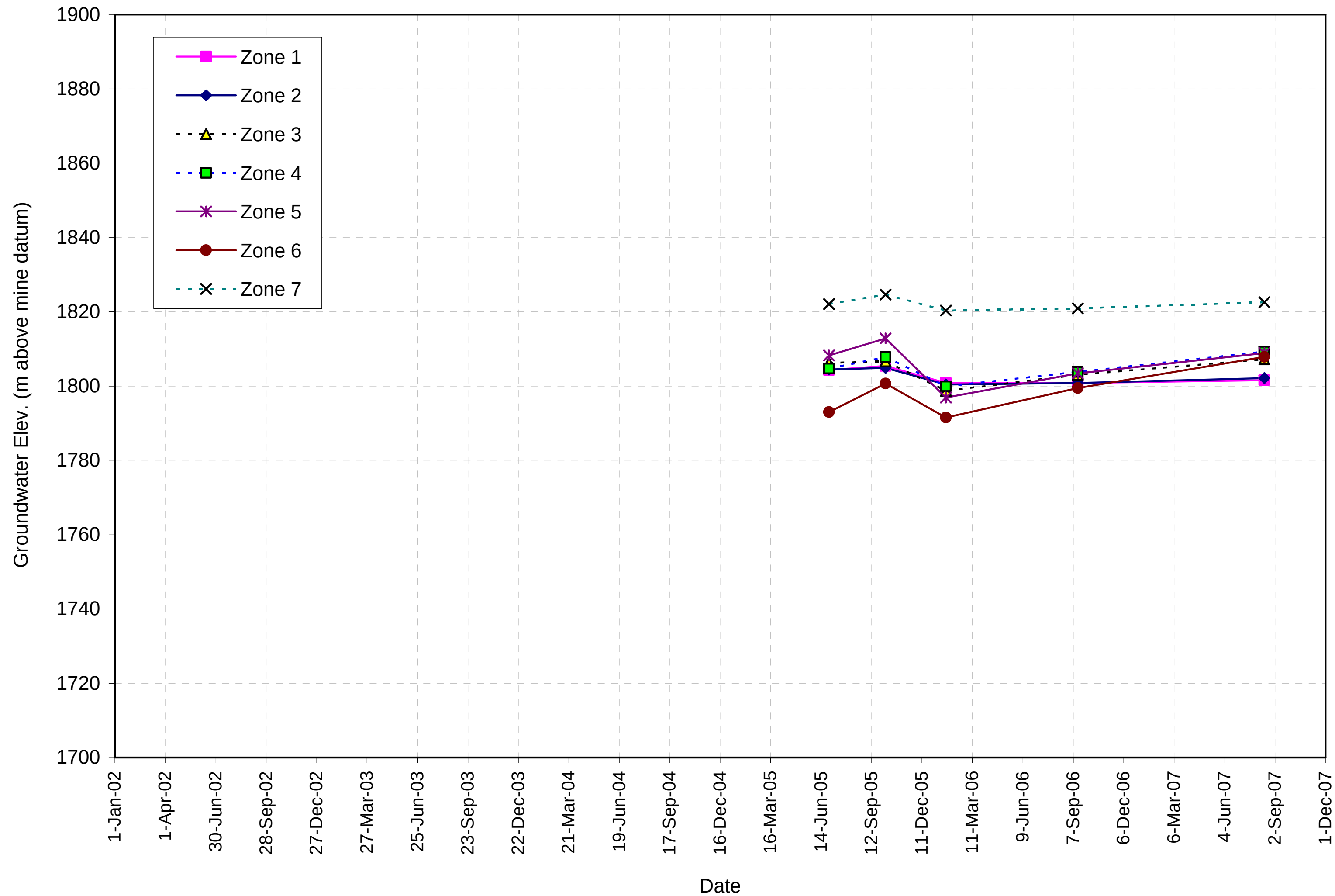
Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-1859 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.013.C2.01	April 2008	MR	6



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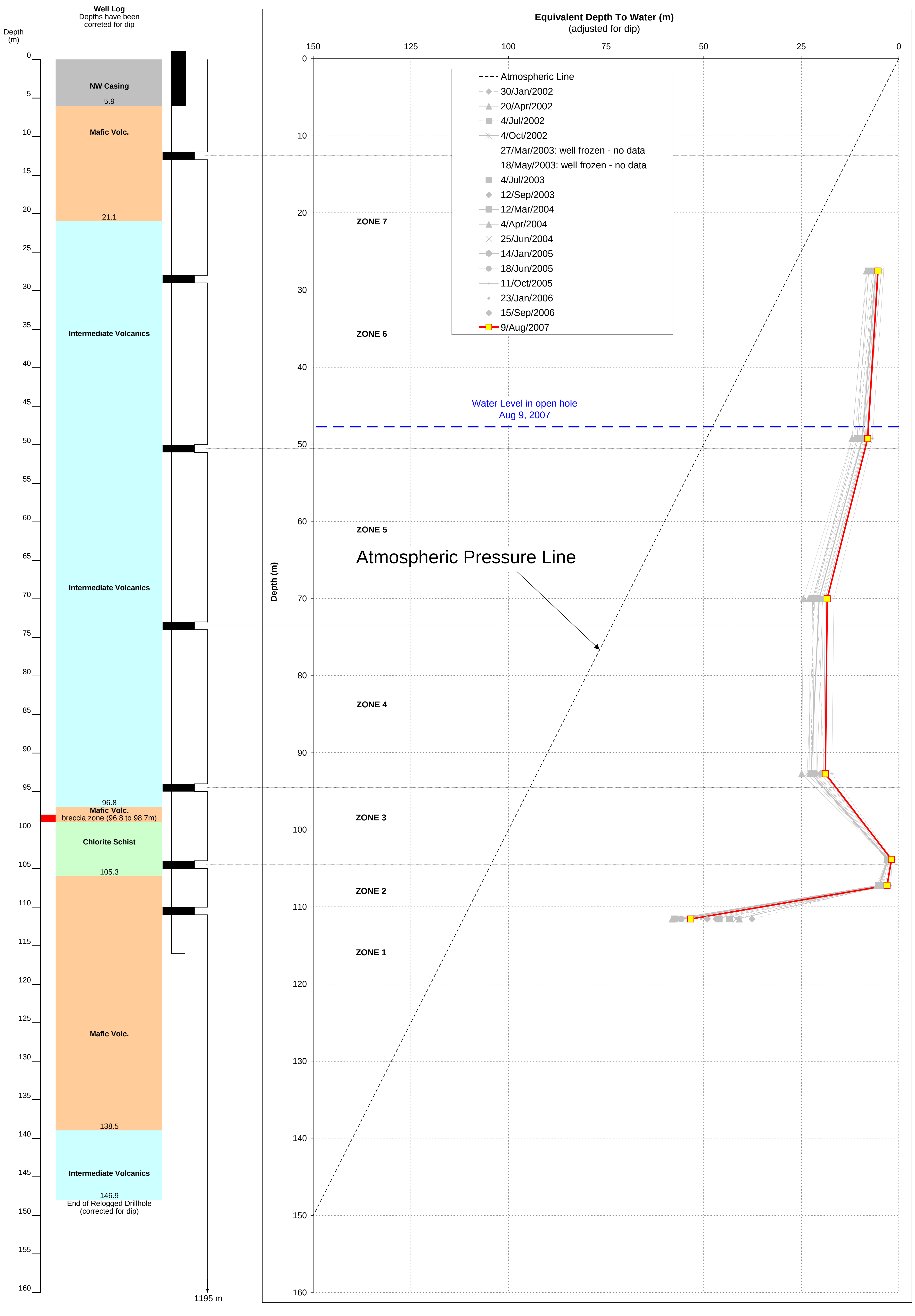
INDIAN AND NORTHERN AFFAIRS CANADA **GIANT MINE REMEDIATION PROJECT TEAM**	**S-1859** **Groundwater Level vs Time**			
	PROJECT: 1CI001.13.C2.01	DATE: April 2008	APPROVED: MR	FIGURE:: 7



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S-1860 Pressure

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PROJECT:	DATE:	APPROVED:	FIGURE::
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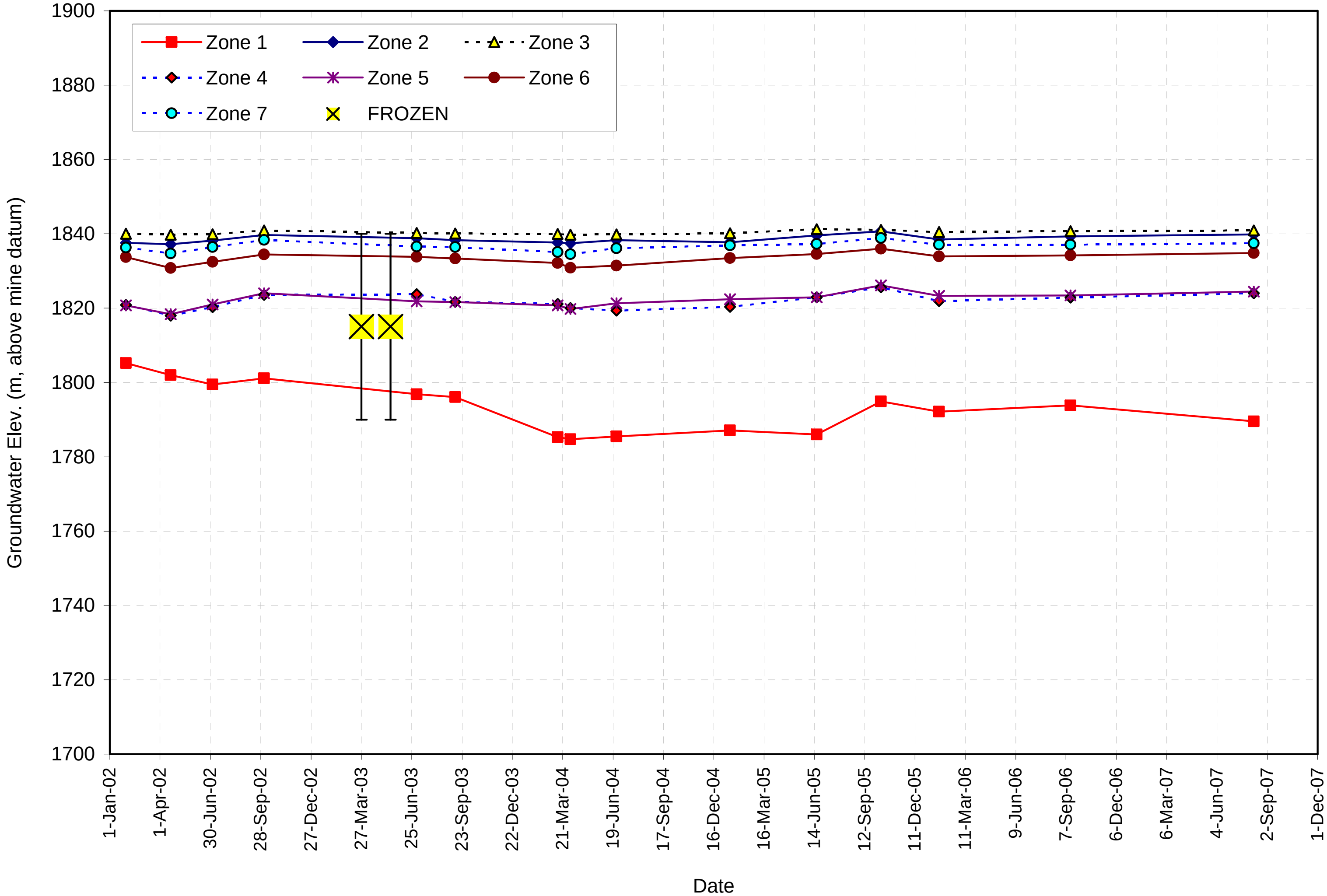

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2007 Update Report, Giant Mine, NWT

S-1860
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
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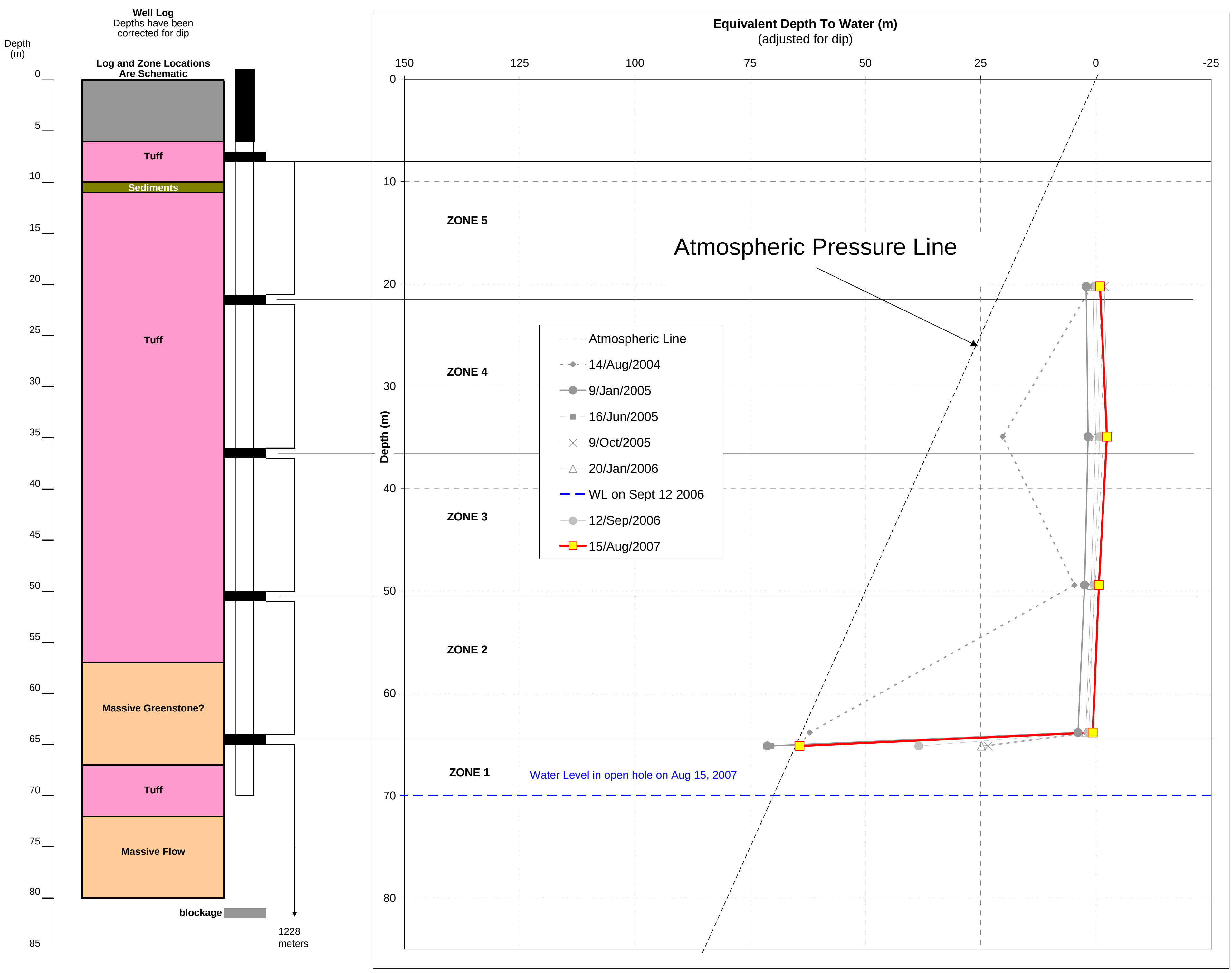

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Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-1954 Pressure

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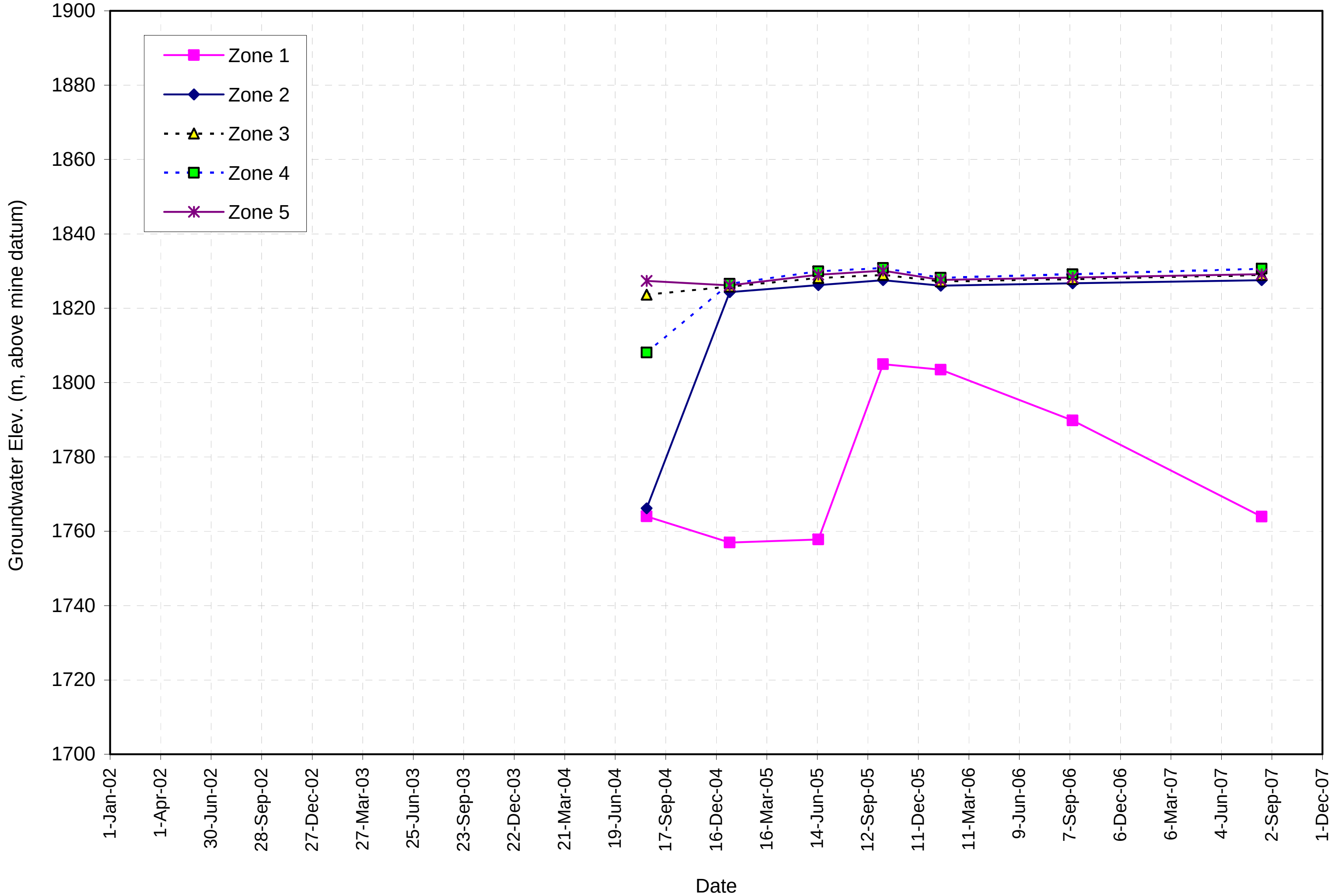

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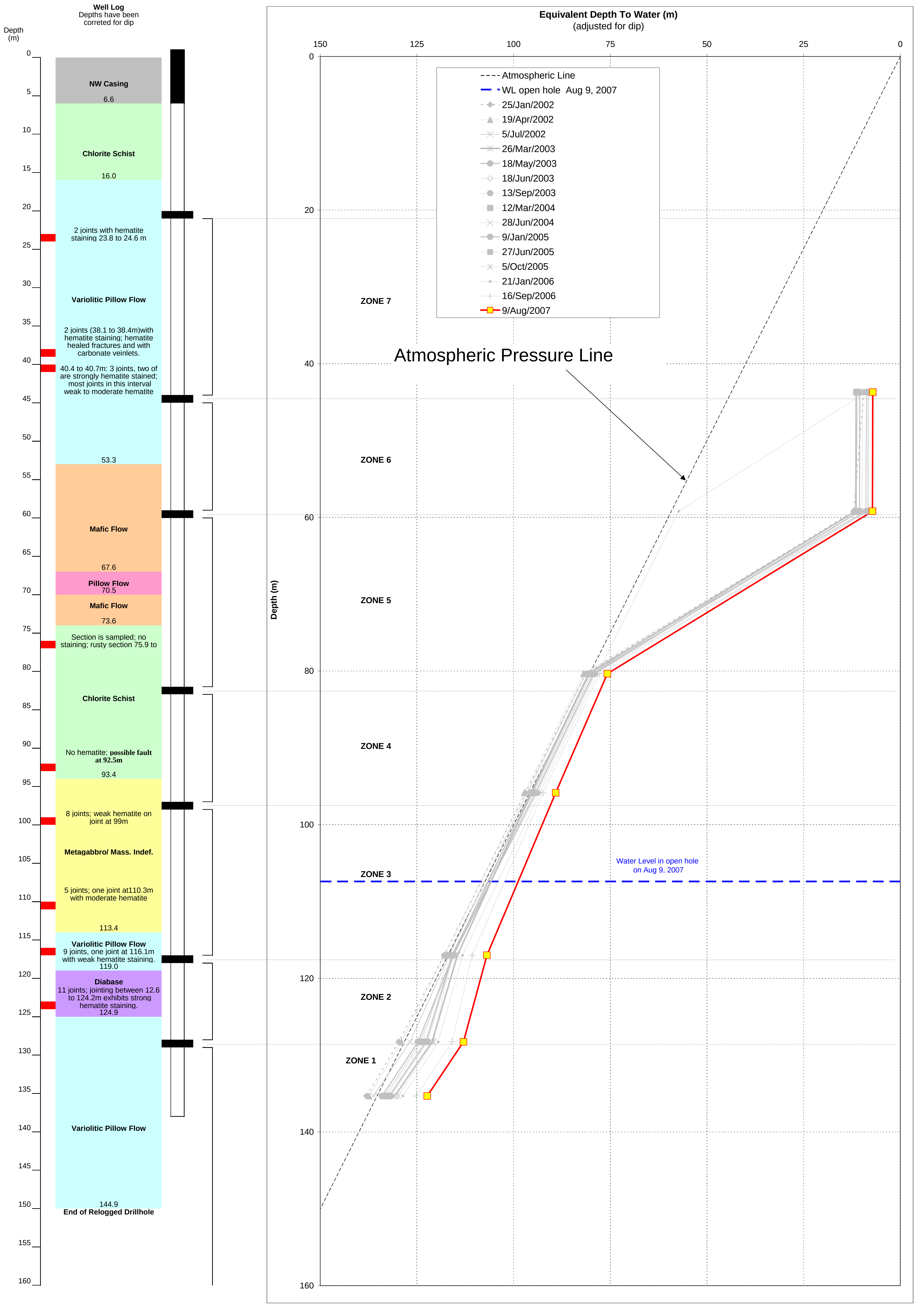
2007 Update Report, Giant Mine, NWT

S-1954
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.13.C2.01	April 2008	MR	**11**



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Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-1955 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
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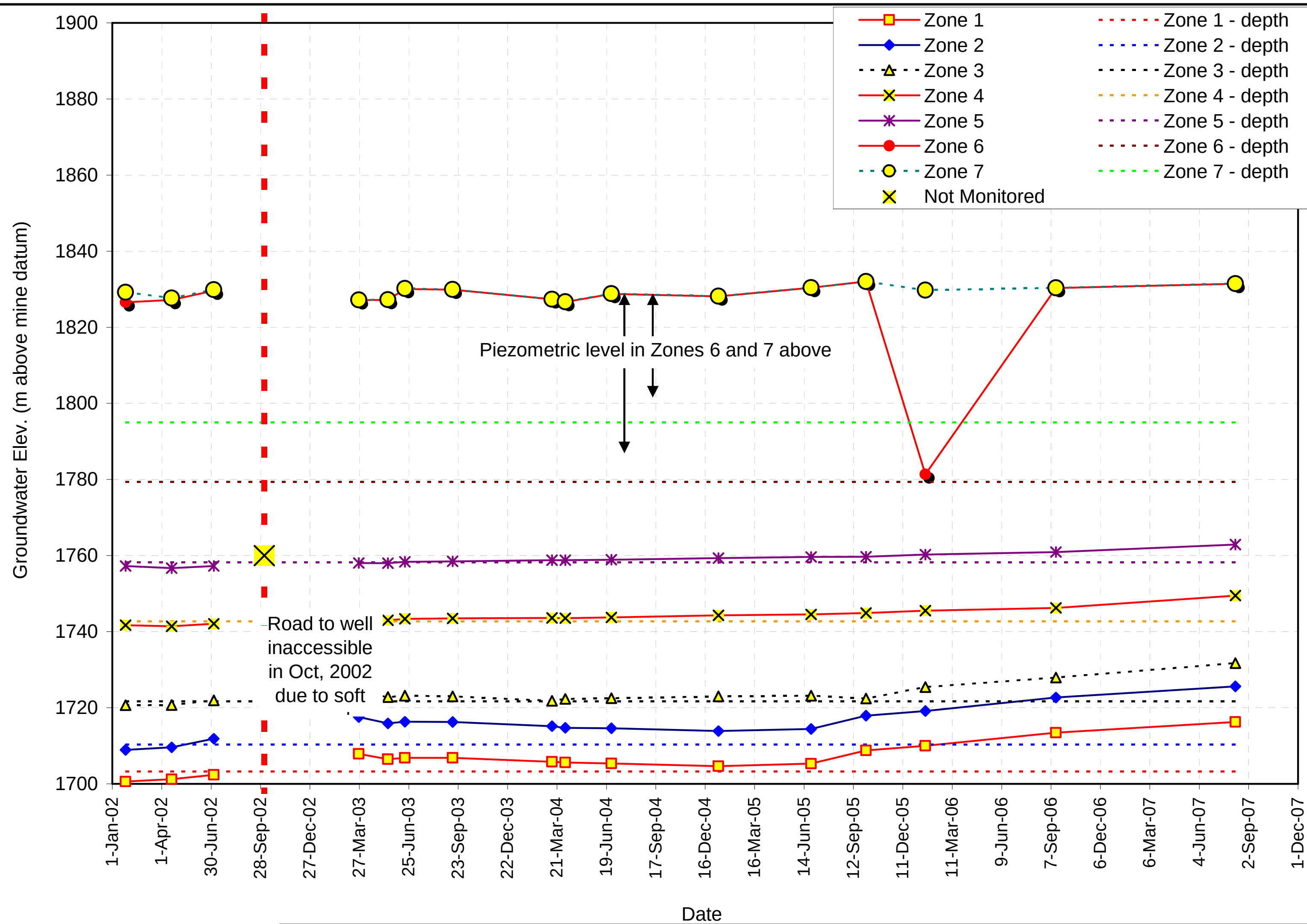

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2007 Update Report, Giant Mine, NWT

S-1955
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
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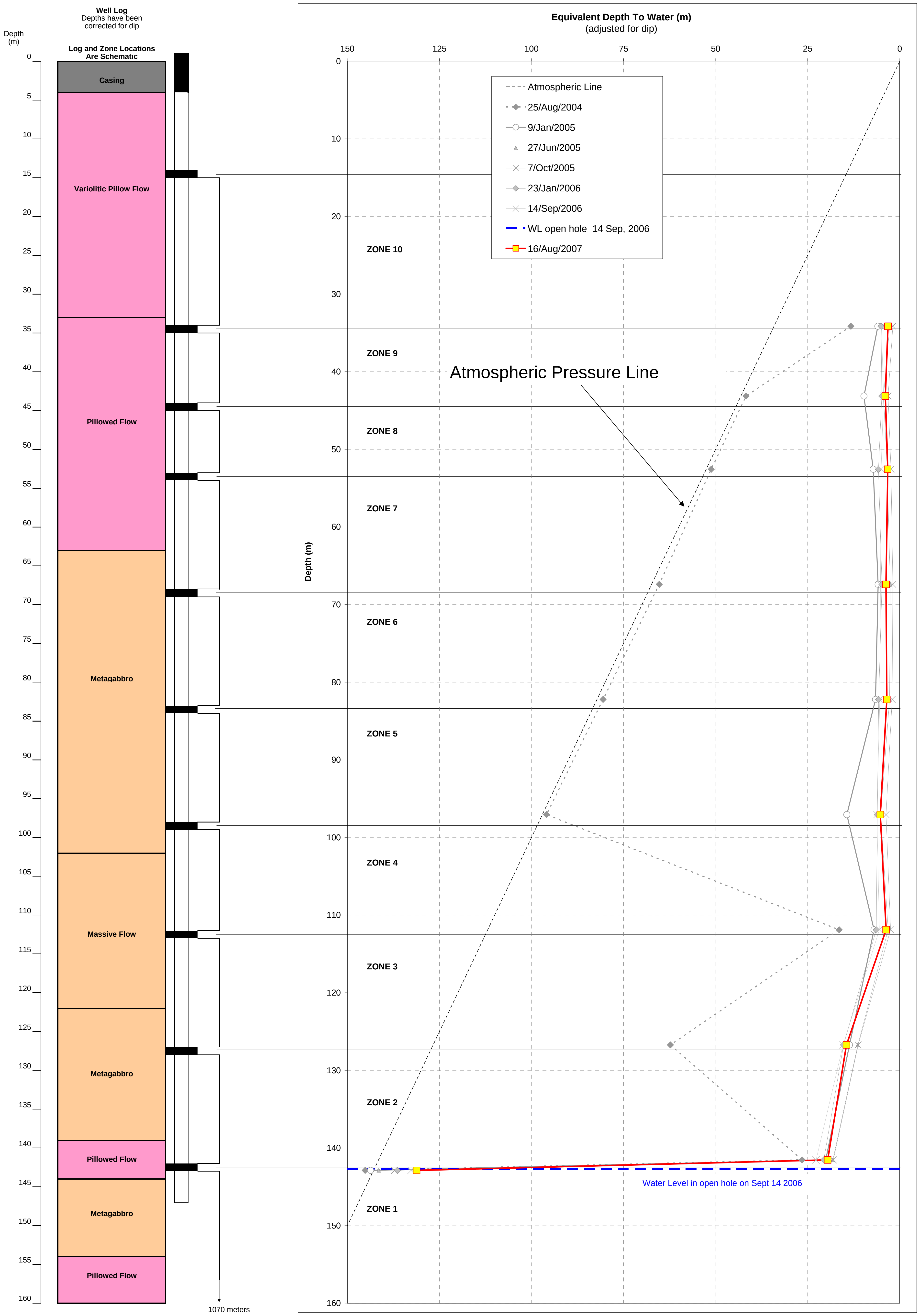

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Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-1956 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
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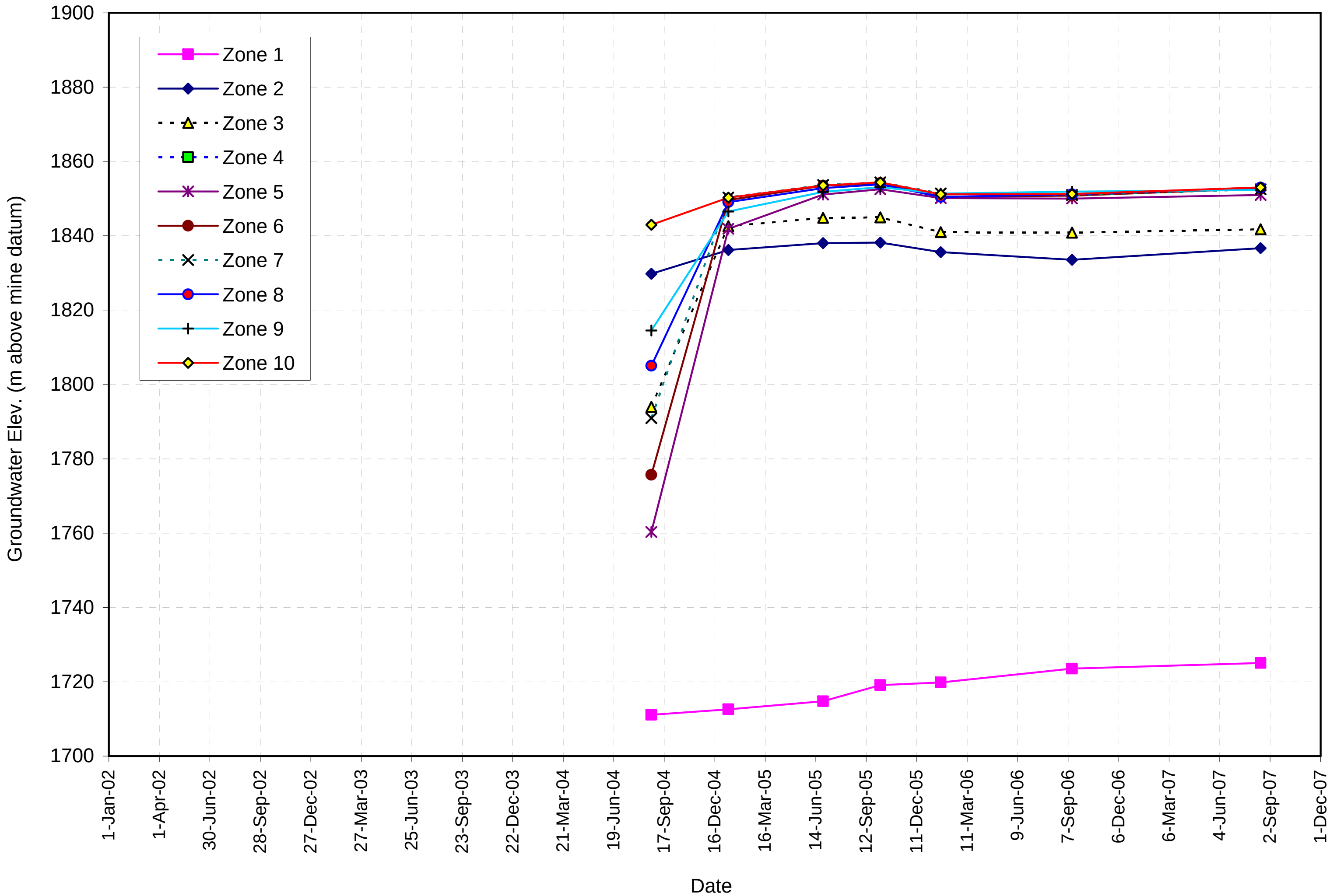

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2007 Update Report, Giant Mine, NWT

S-1956
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
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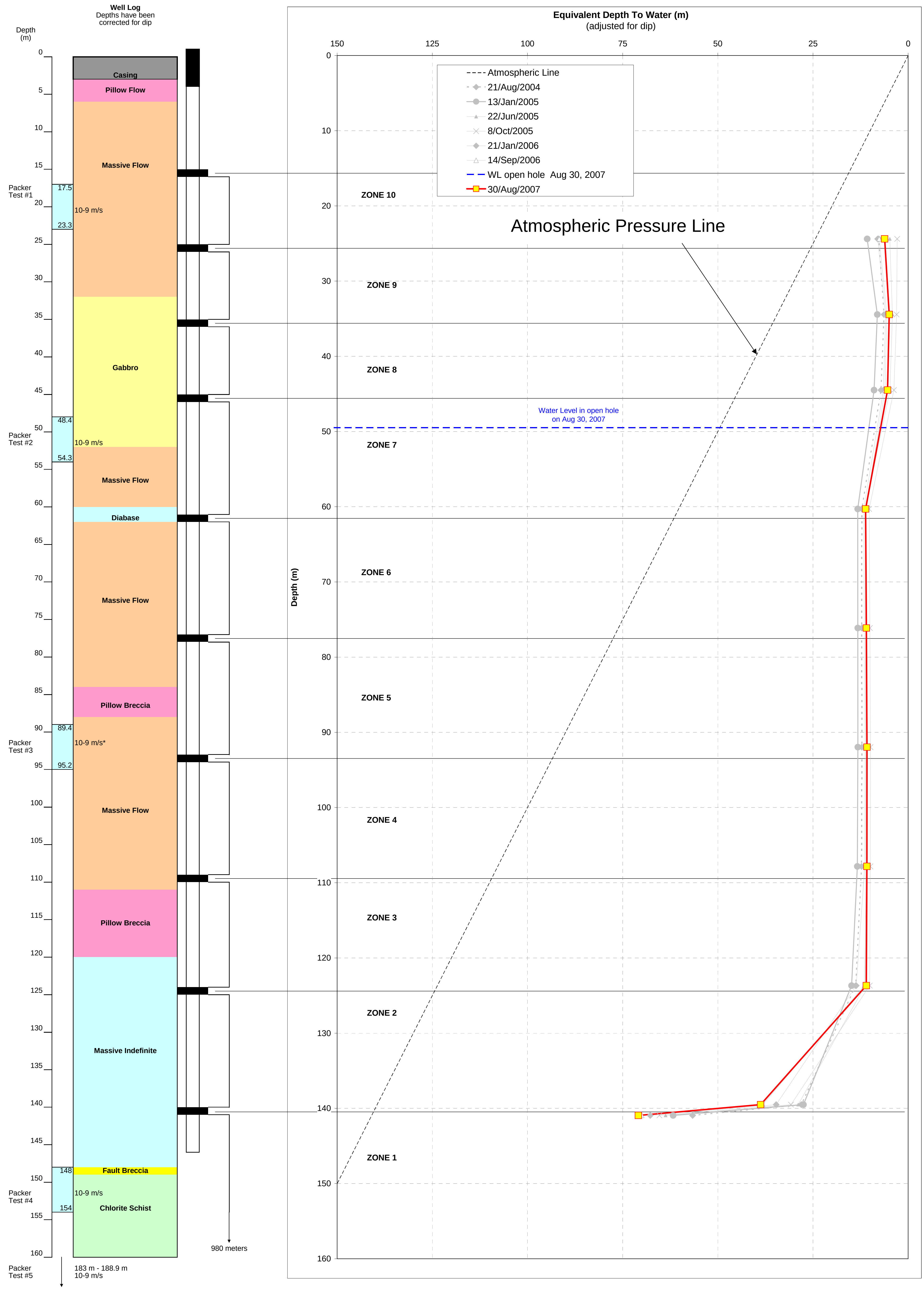

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Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-2224 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
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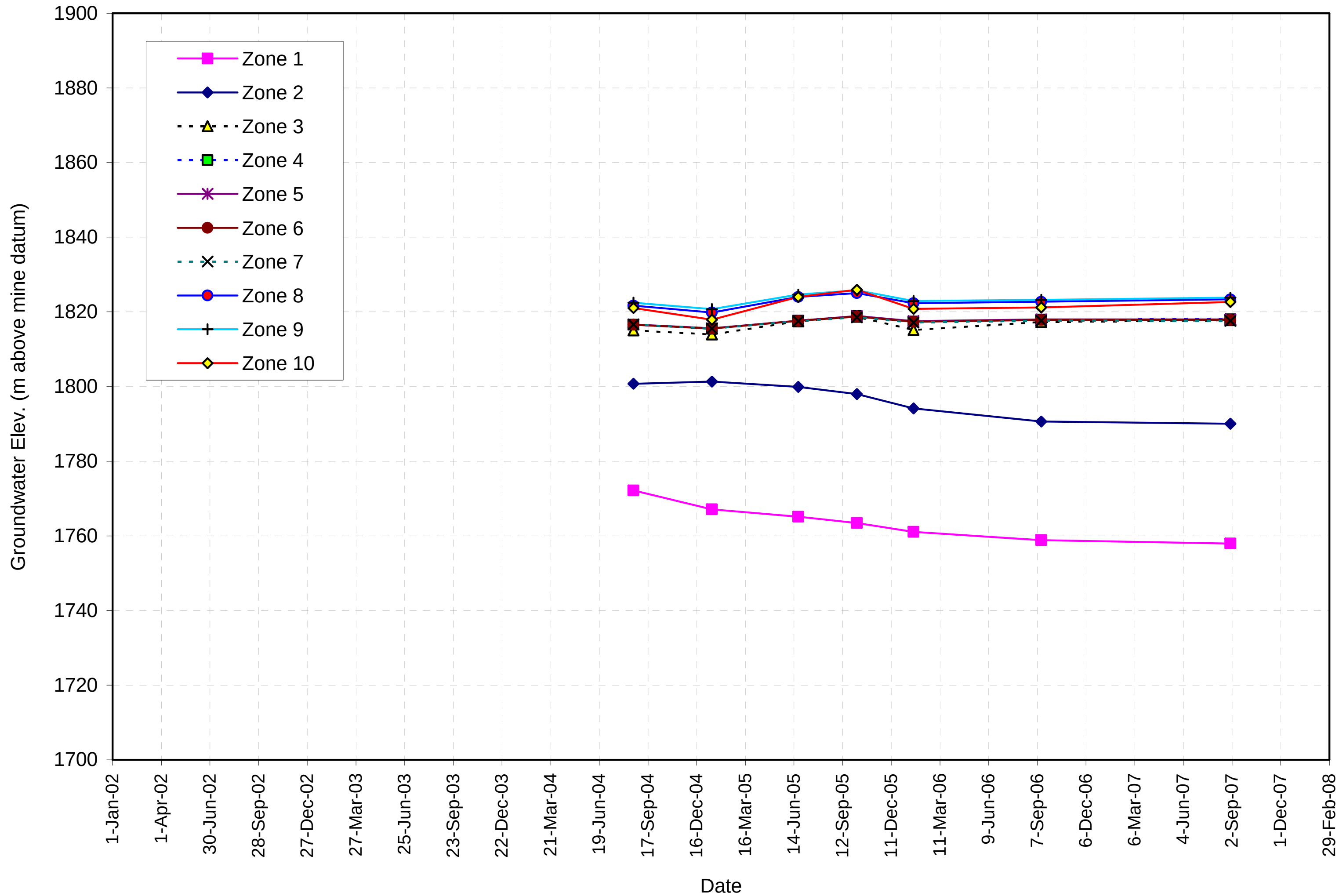

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INDIAN AND NORTHERN AFFAIRS CANADA **GIANT MINE REMEDIATION PROJECT TEAM**	**S-2224** **Groundwater Level vs Time**

PROJECT:	DATE:	APPROVED:	FIGURE::
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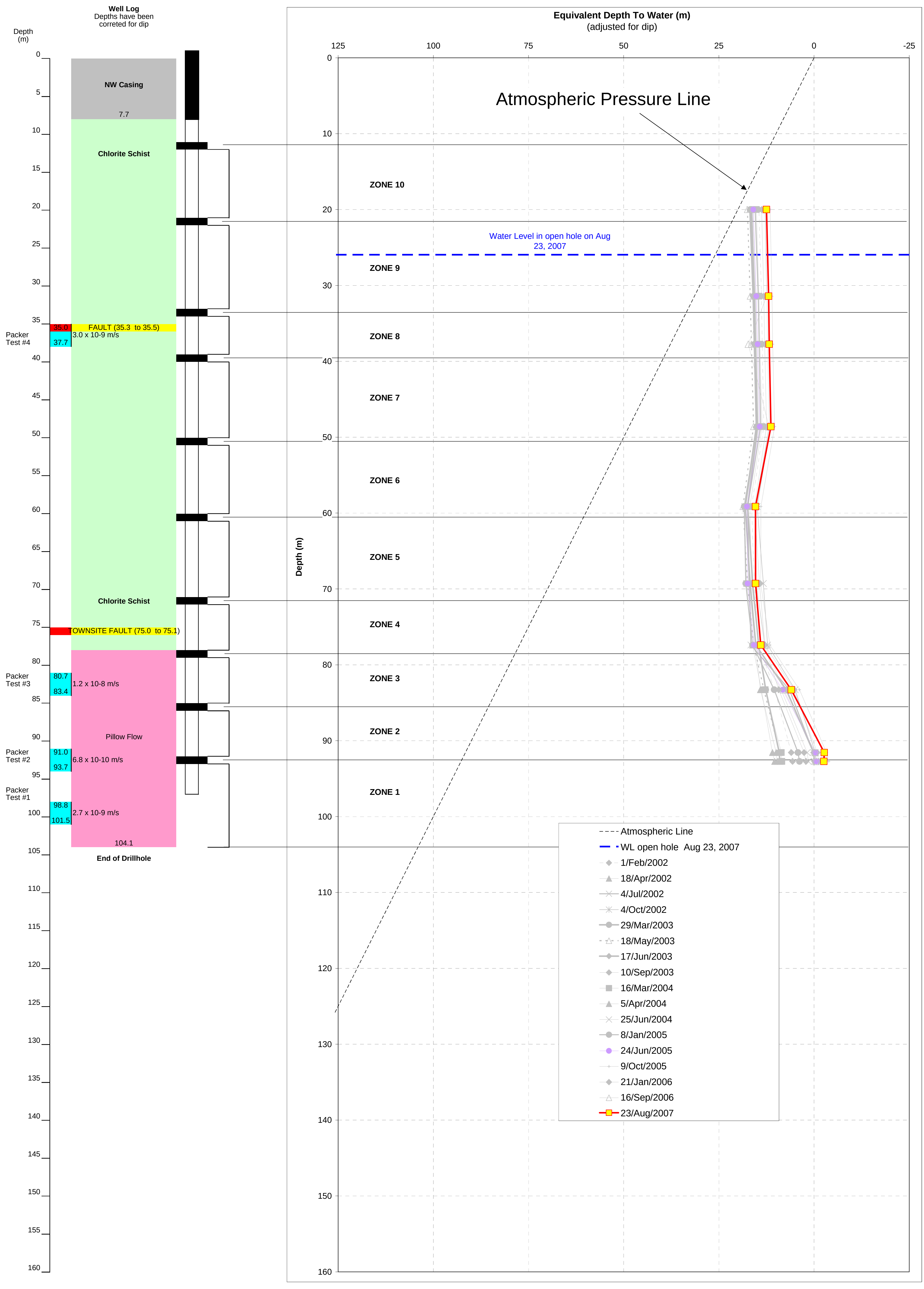

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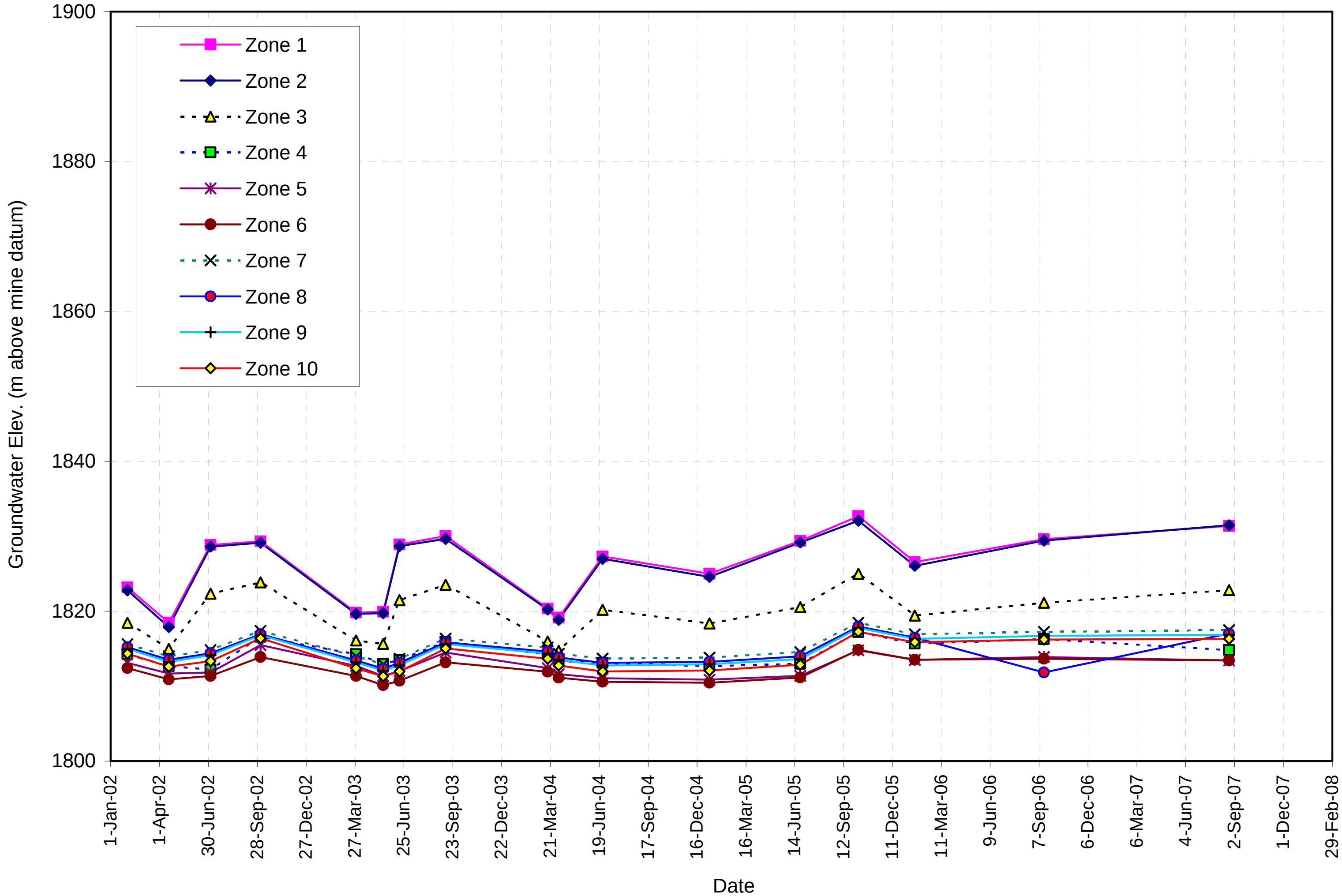
Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-DIAND-001 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.013.C2.01	April 2008	MR	18



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INDIAN AND NORTHERN AFFAIRS CANADA **GIANT MINE REMEDIATION PROJECT TEAM**	**S-DIAND-001** **Groundwater Level vs Time**

PROJECT:	DATE:	APPROVED:	FIGURE::
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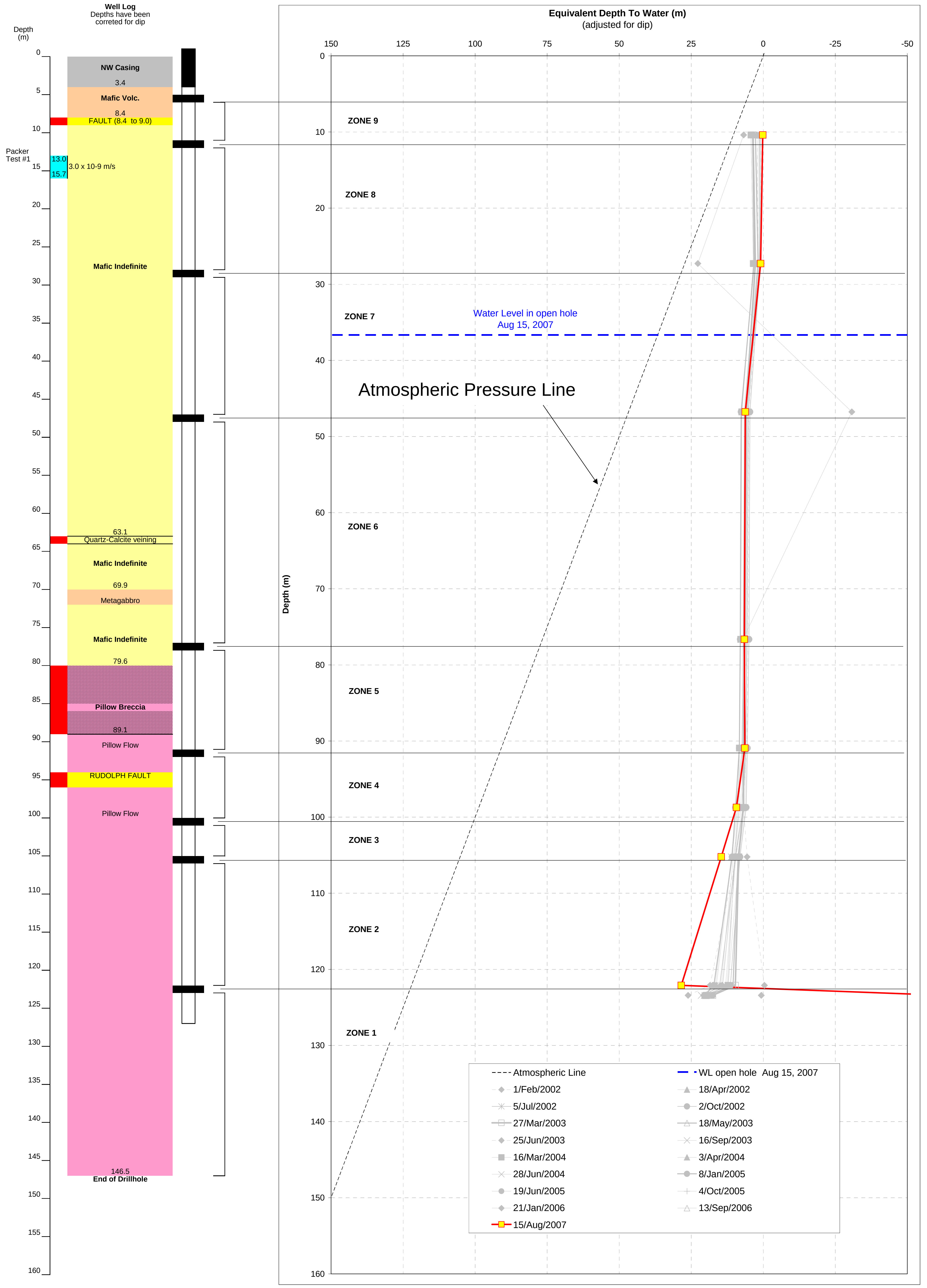

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Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-DIAND-002 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
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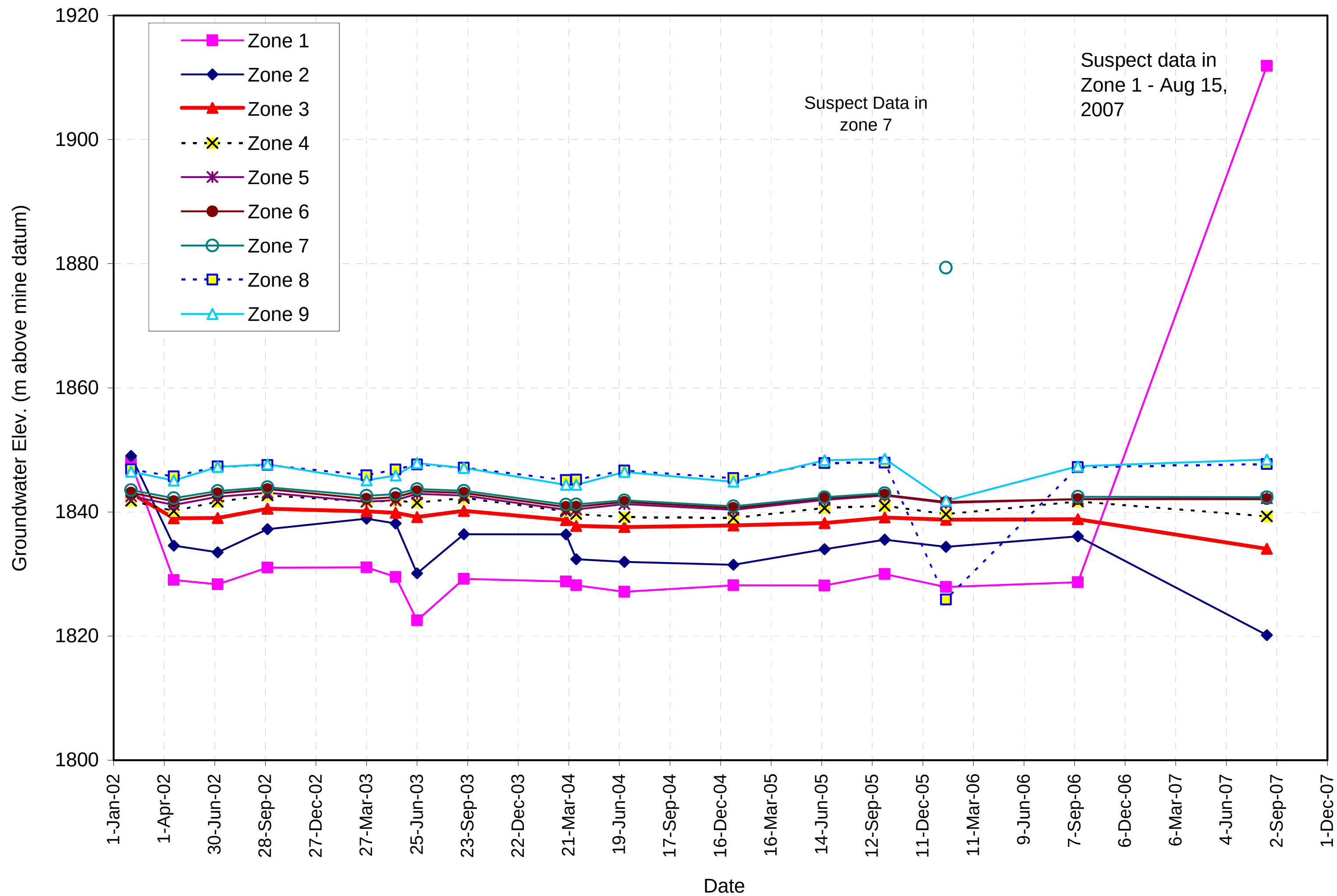

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S-DIAND-002
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
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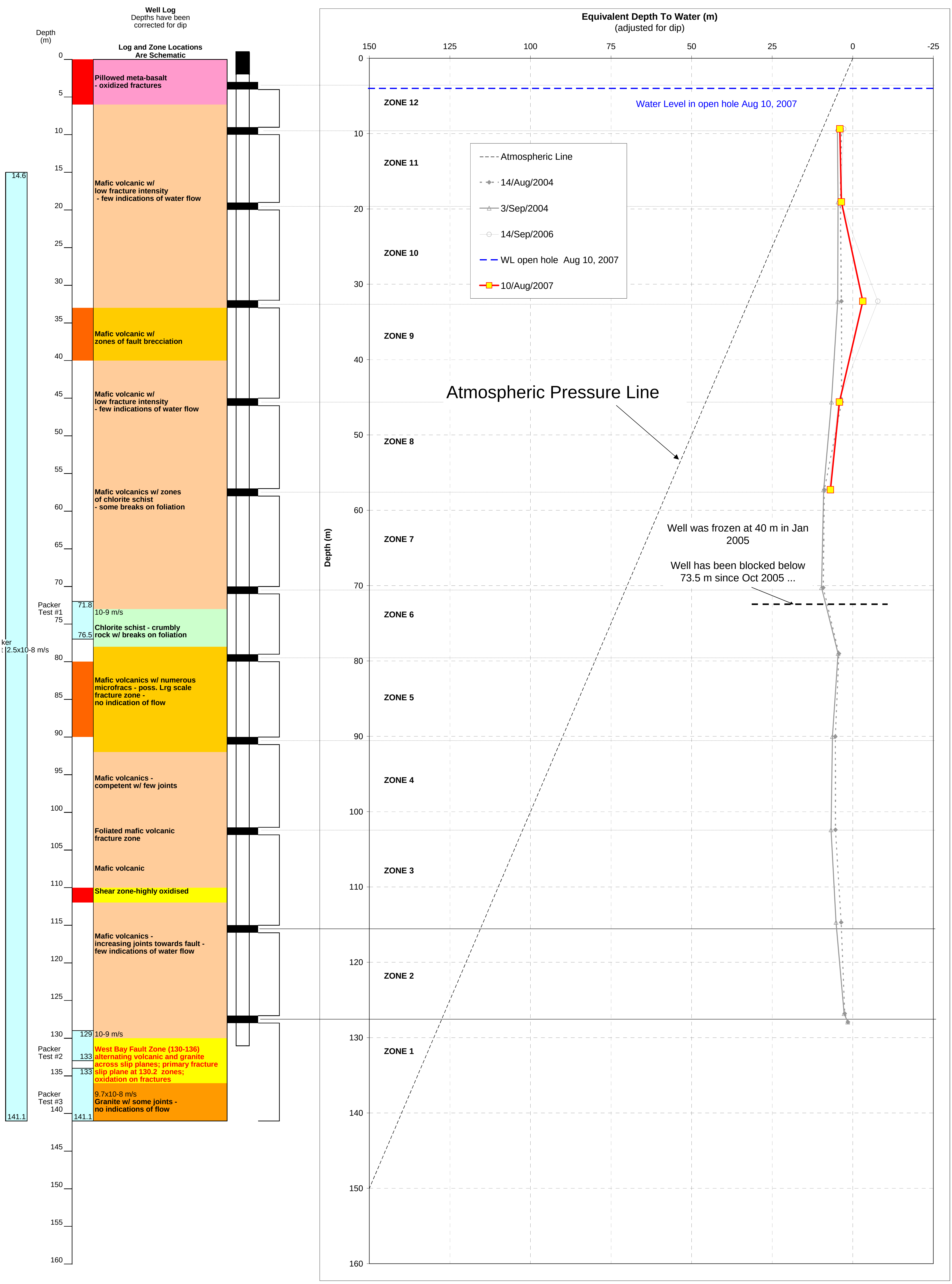

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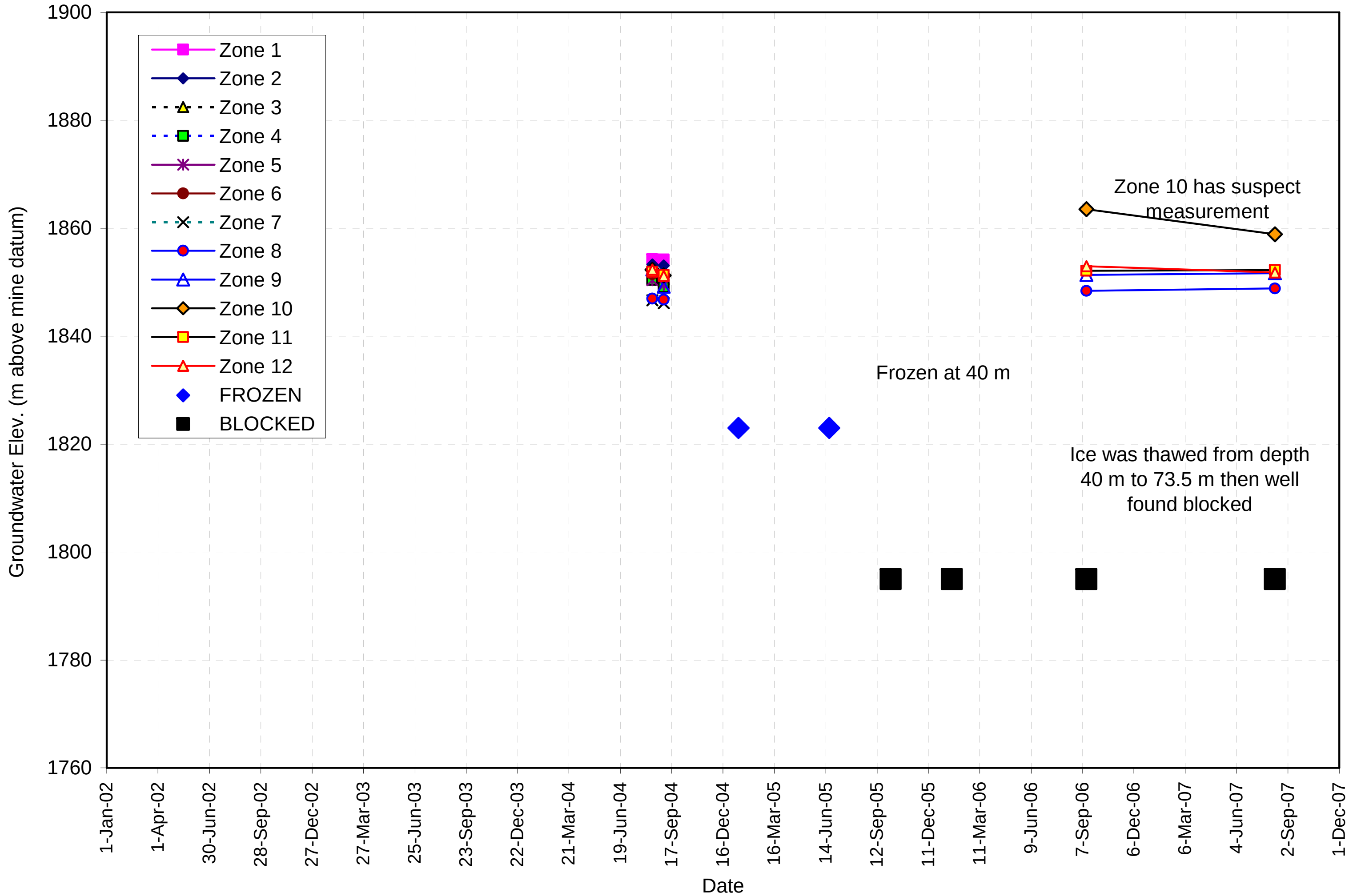
GIANT MINE REMEDIATION PROJECT TEAM

Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-DIAND-021 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.013.C2.01	April 2008	MR	22



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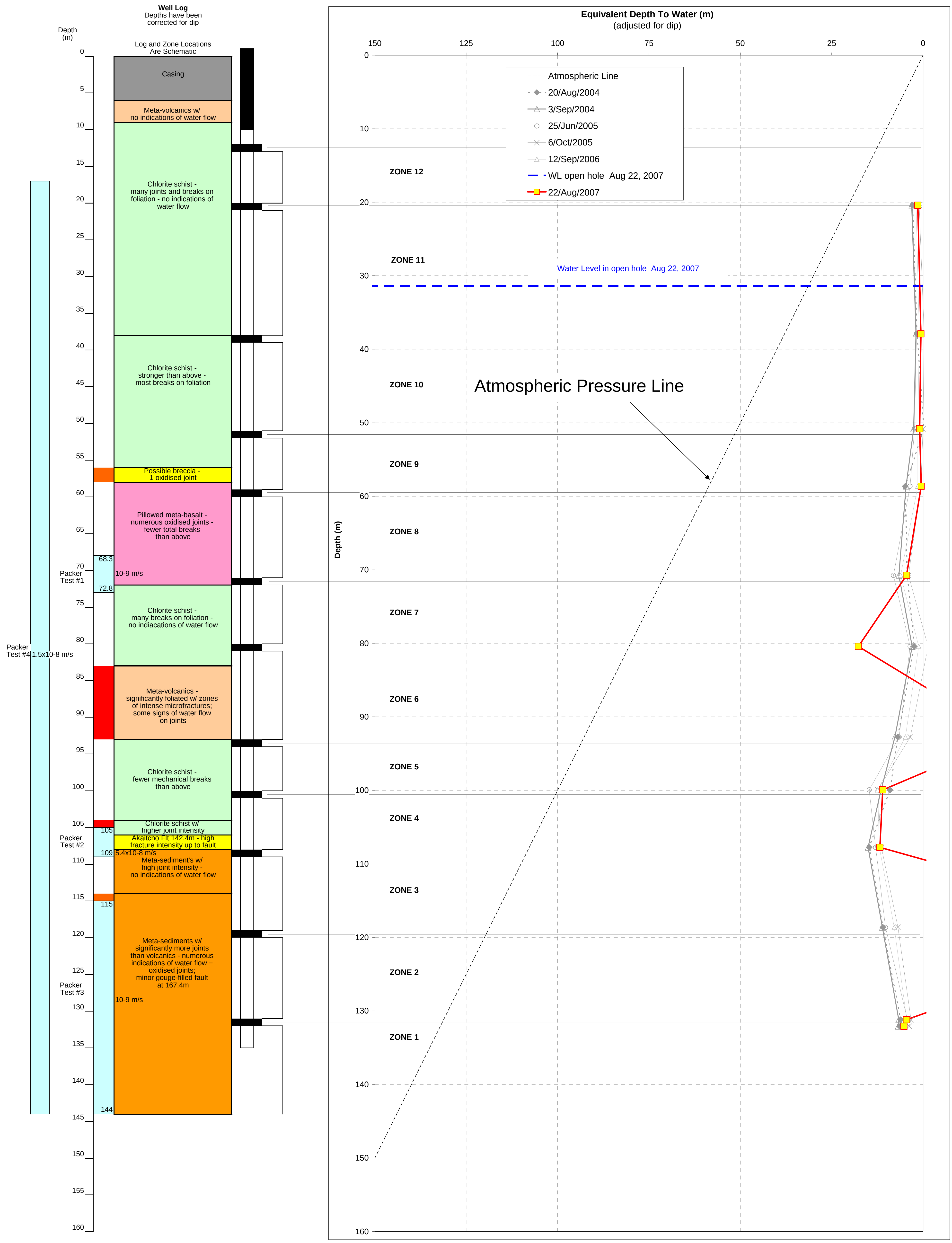
2007 Update Report, Giant Mine, NWT

S-DIAND-021
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.13.C2.01	April 2008	MR	**23**



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Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-DIAND-022 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE:
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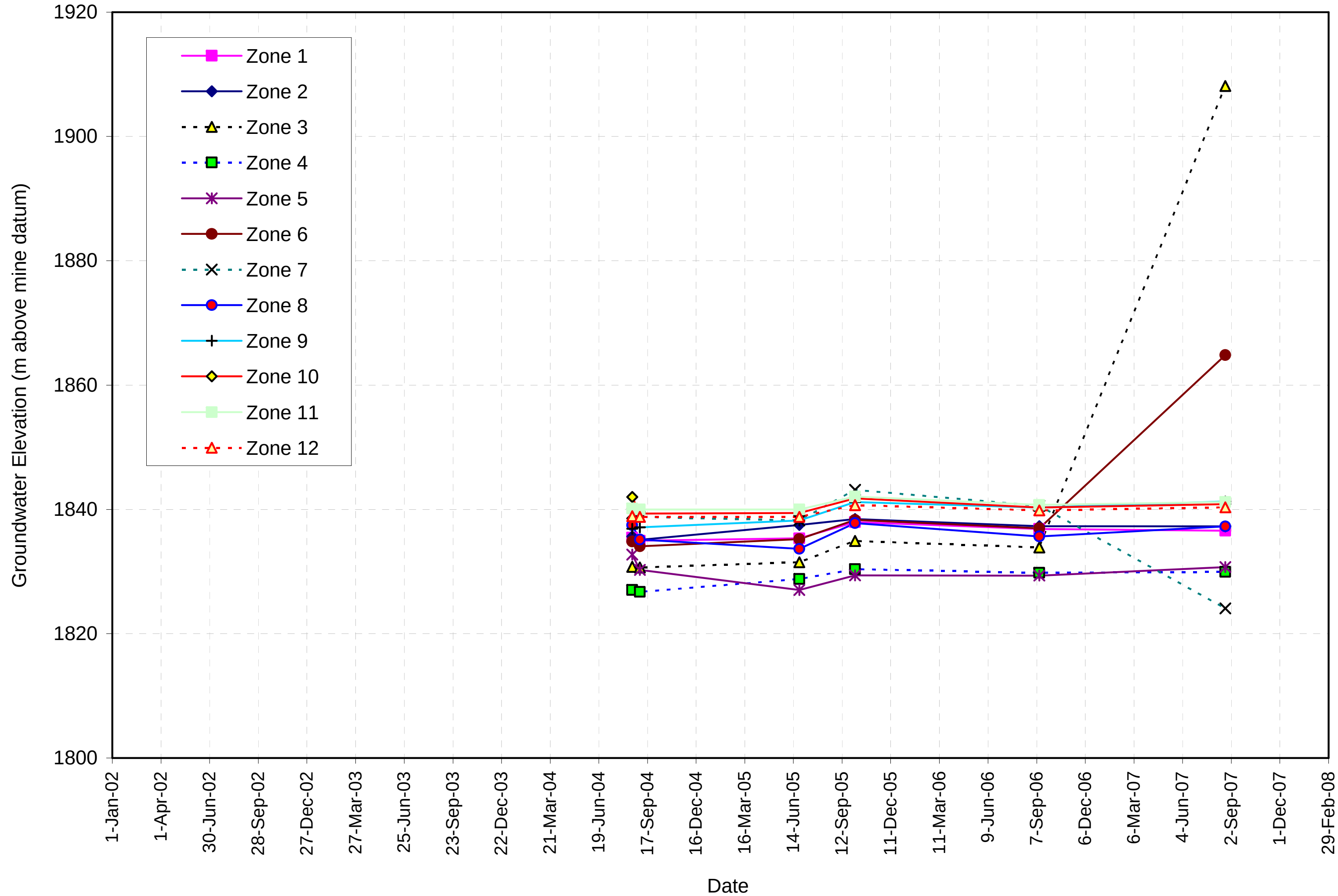

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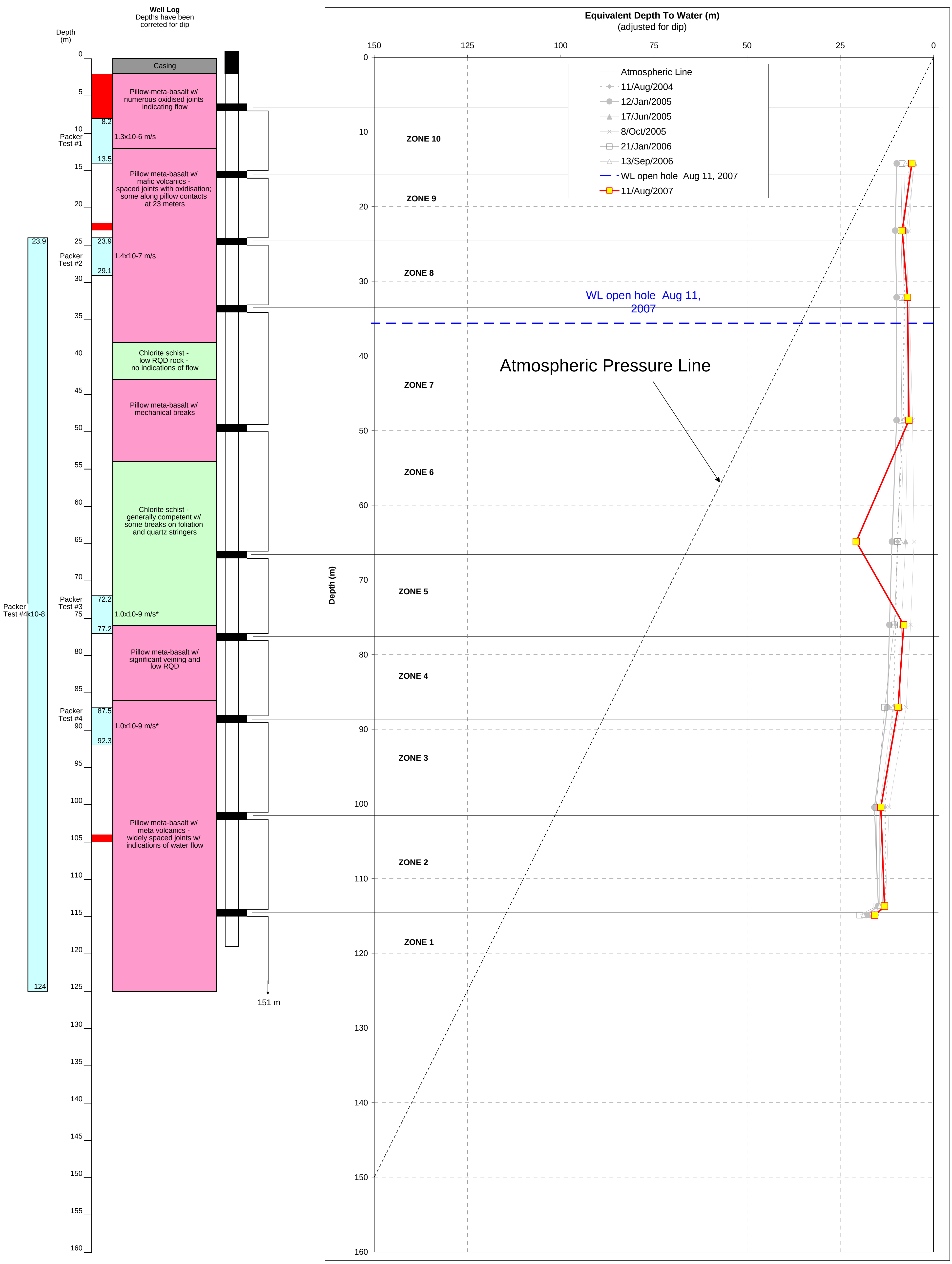
INDIAN AND NORTHERN AFFAIRS CANADA **GIANT MINE REMEDIATION PROJECT TEAM**	**S-DIAND-022 Groundwater Level vs Time**

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.13.C2.01	April 2008	MR	**25**



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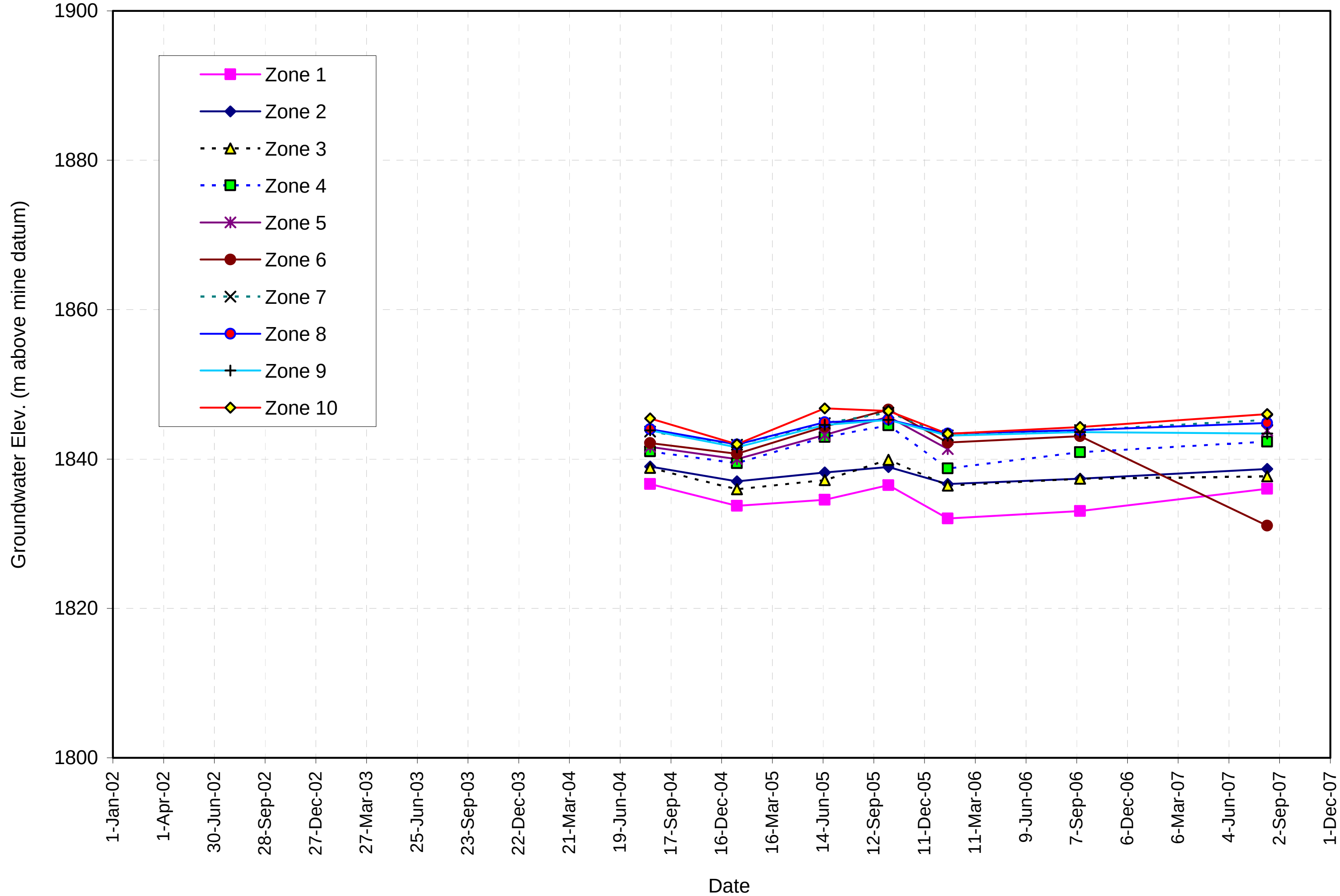
GIANT MINE REMEDIATION PROJECT TEAM

Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-DIAND-023 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.013.C2.01	April 2008	MR	26



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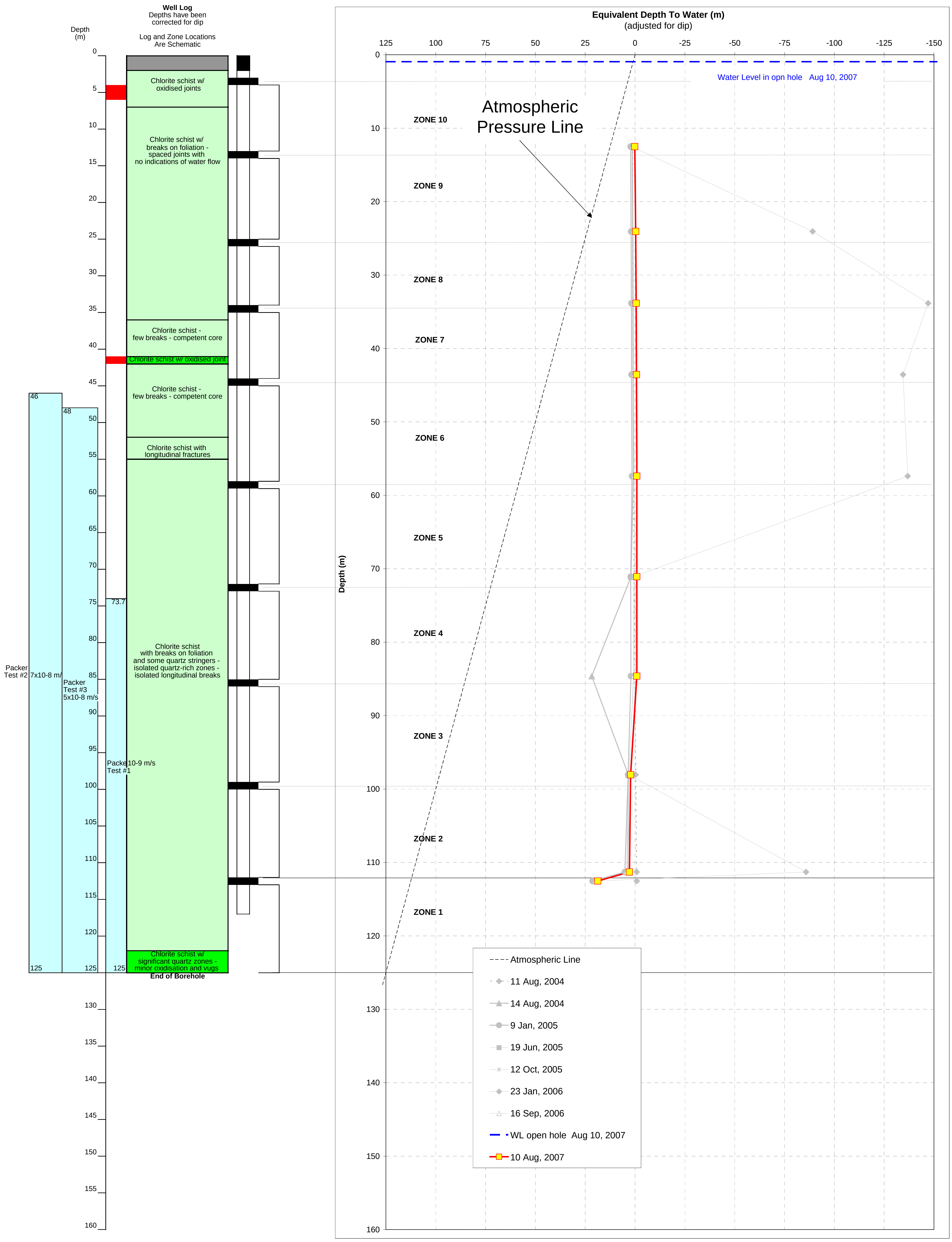
S-DIAND-023
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.13.C2.01	April 2008	MR	27



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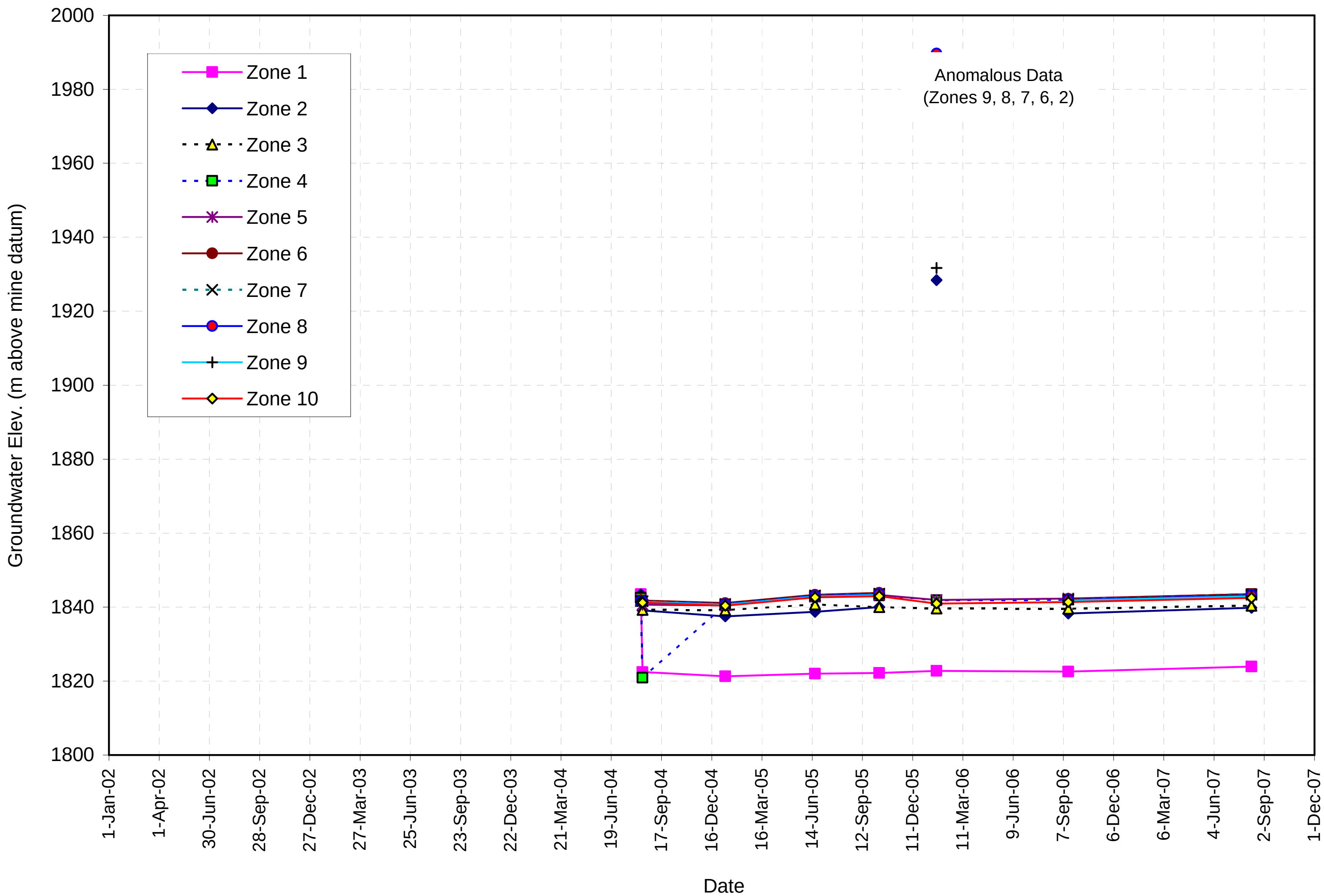
GIANT MINE REMEDIATION PROJECT TEAM

Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

S-DIAND-024 Pressure

PROJECT:	DATE:	APPROVED:	FIGURE:
1CI001.013.C2.01	April 2008	MR	28



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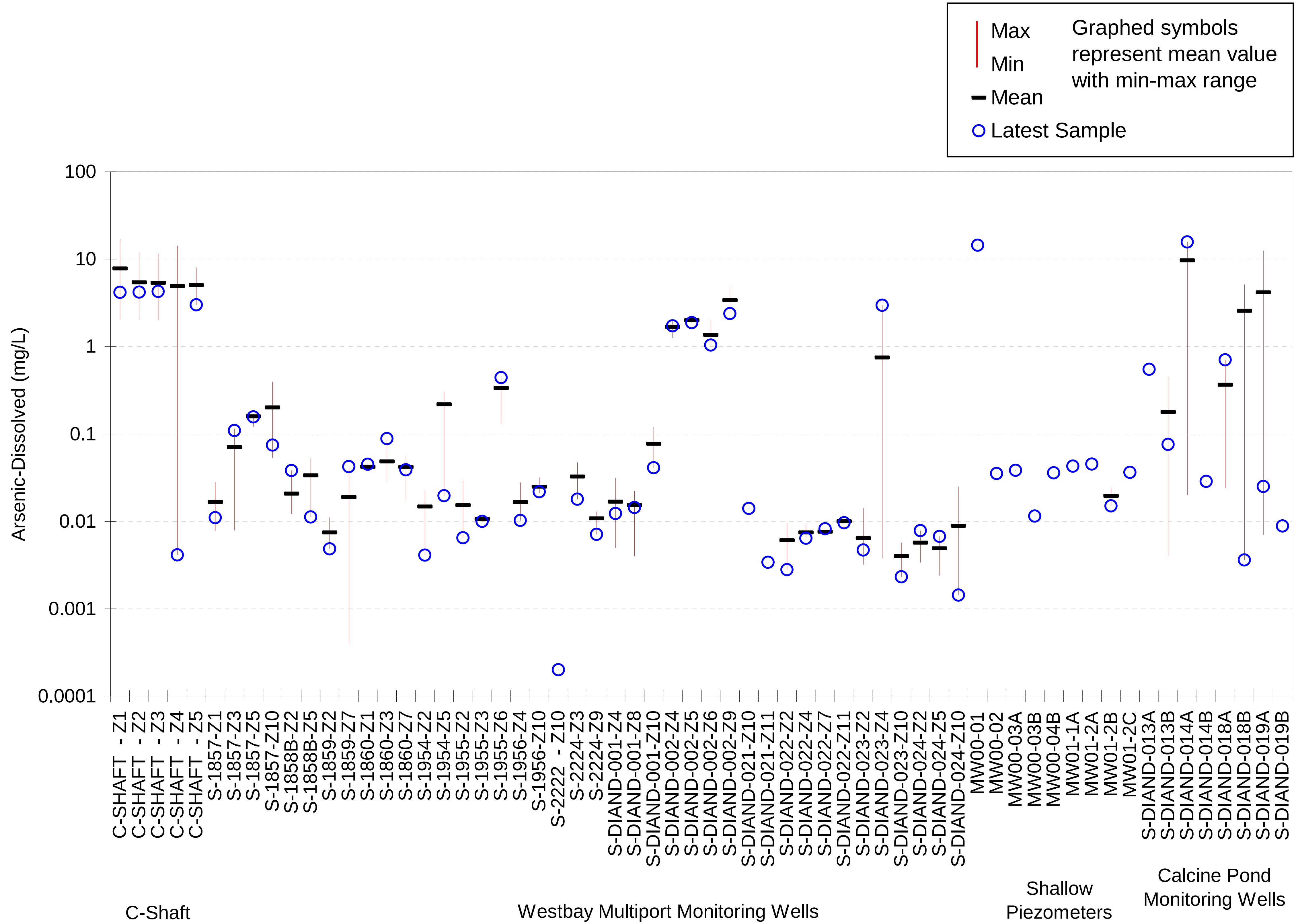
S-DIAND-024
Groundwater Level vs Time

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.13.C2.01	April 2008	MR	**29**



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Groundwater & C-Shaft Monitoring:
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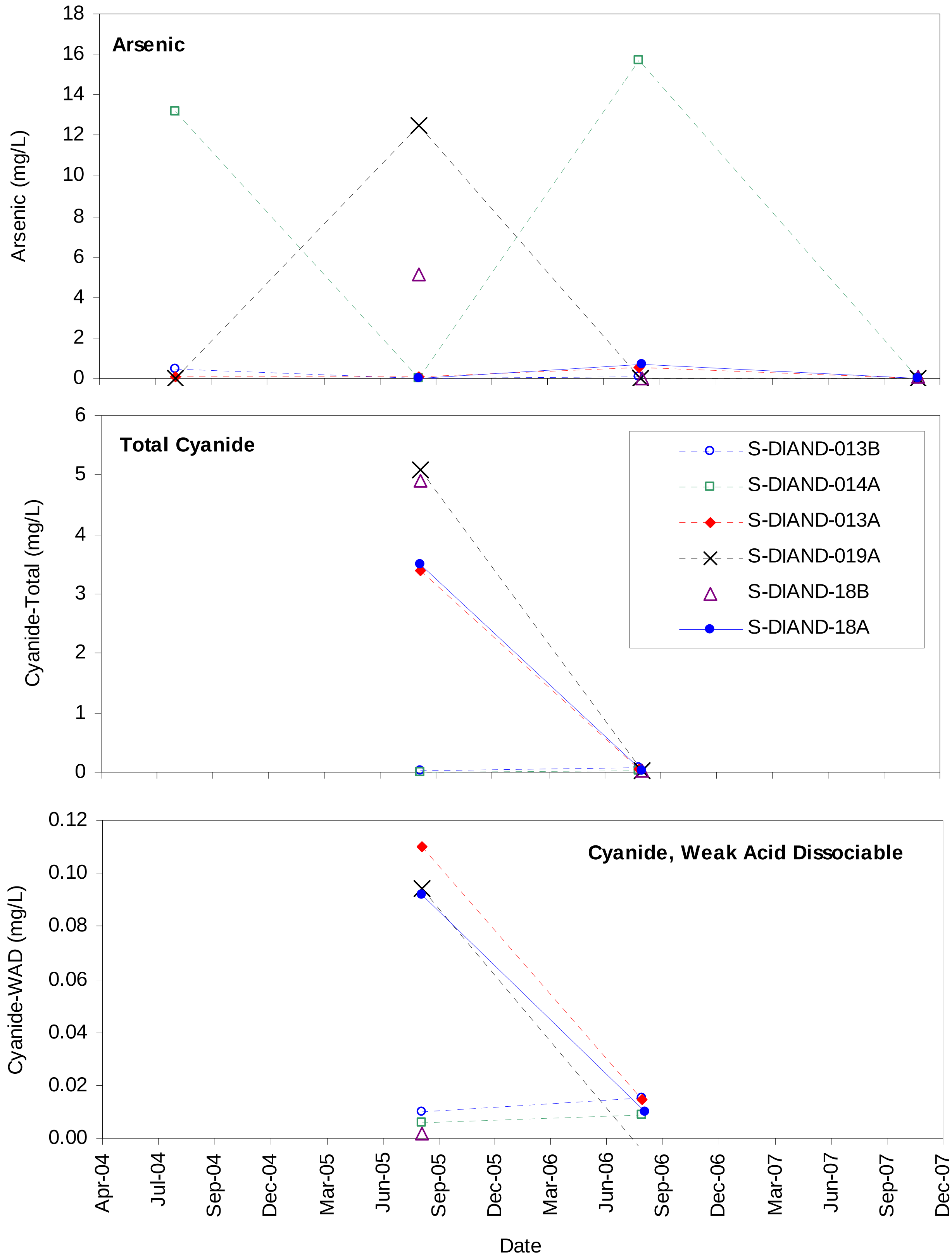
Arsenic in Groundwater in Monitoring Wells

PROJECT:	DATE:	APPROVED:	FIGURE:
1CI001.13.C2.01	April 2008	MR	30



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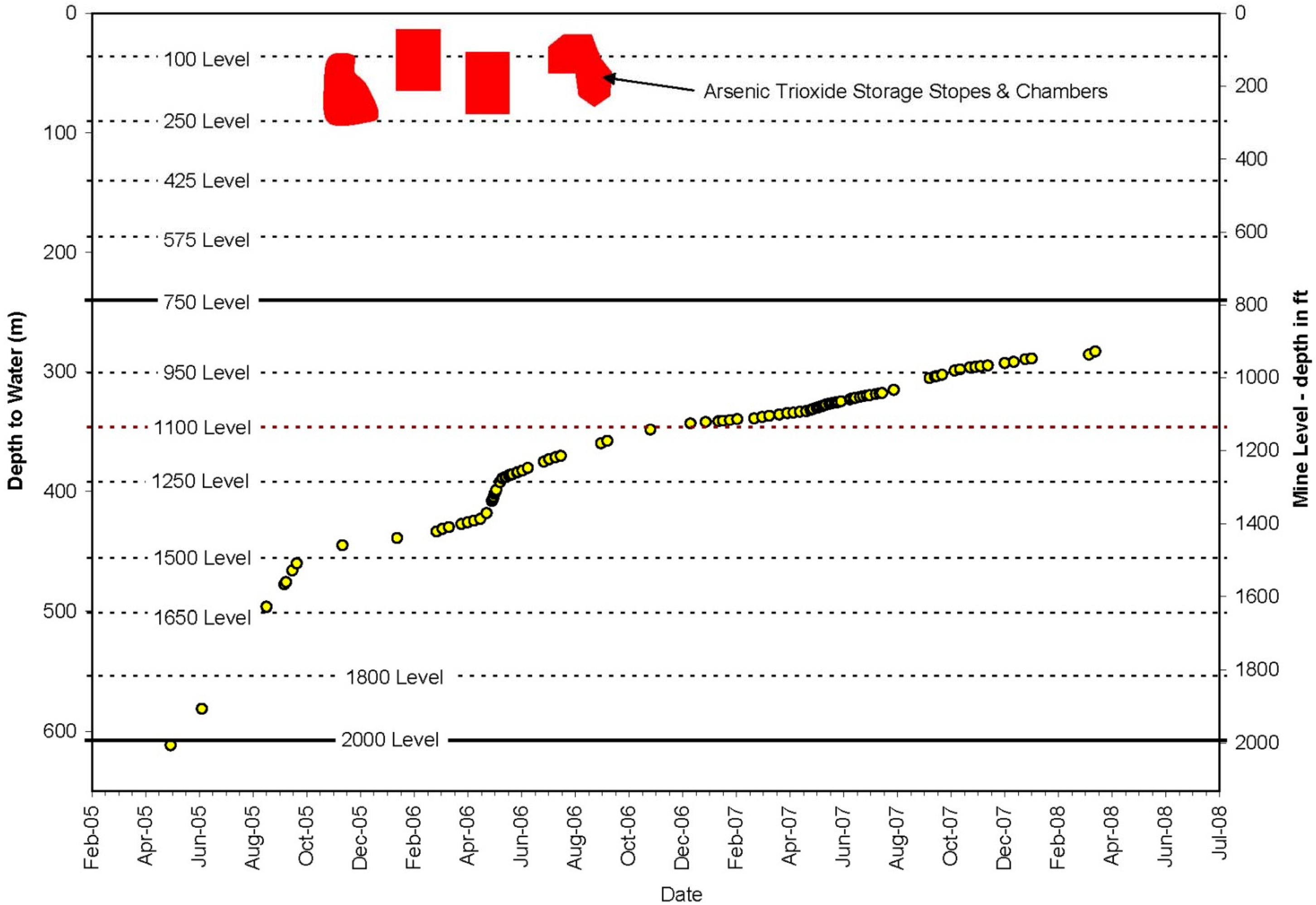
INDIAN AND NORTHERN AFFAIRS CANADA GIANT MINE REMEDIATION PROJECT TEAM	**Calcine Pond Monitoring Wells Arsenic and Cyanide vs Time**
	PROJECT: 1CI001.013.C2.01 | DATE: April 2008 | APPROVED: MR | FIGURE: **31**



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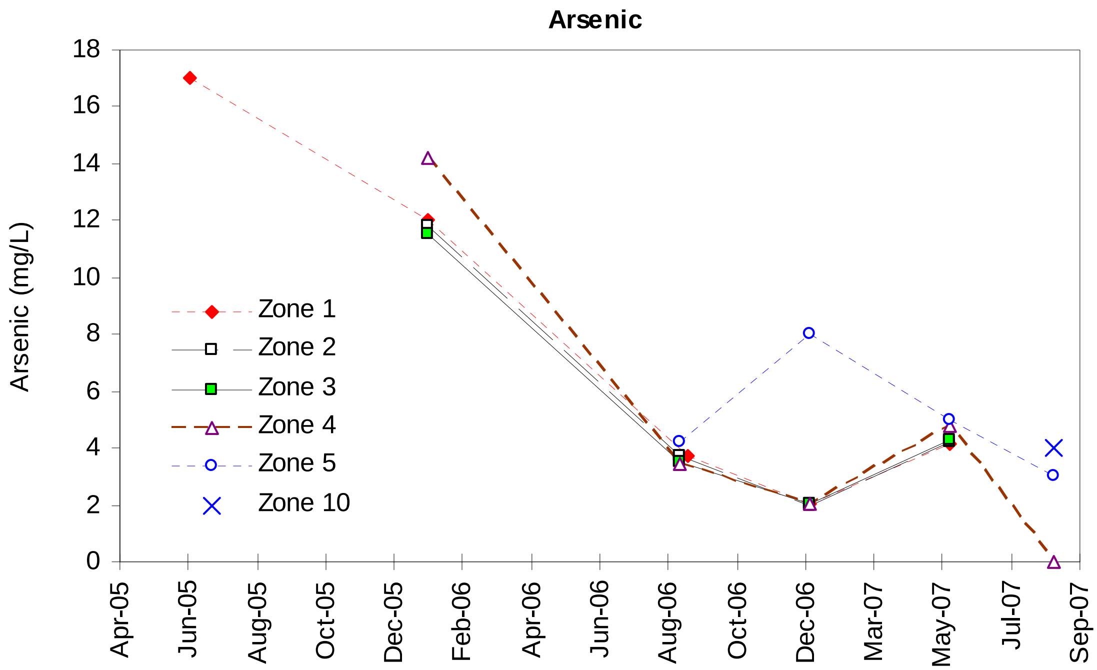
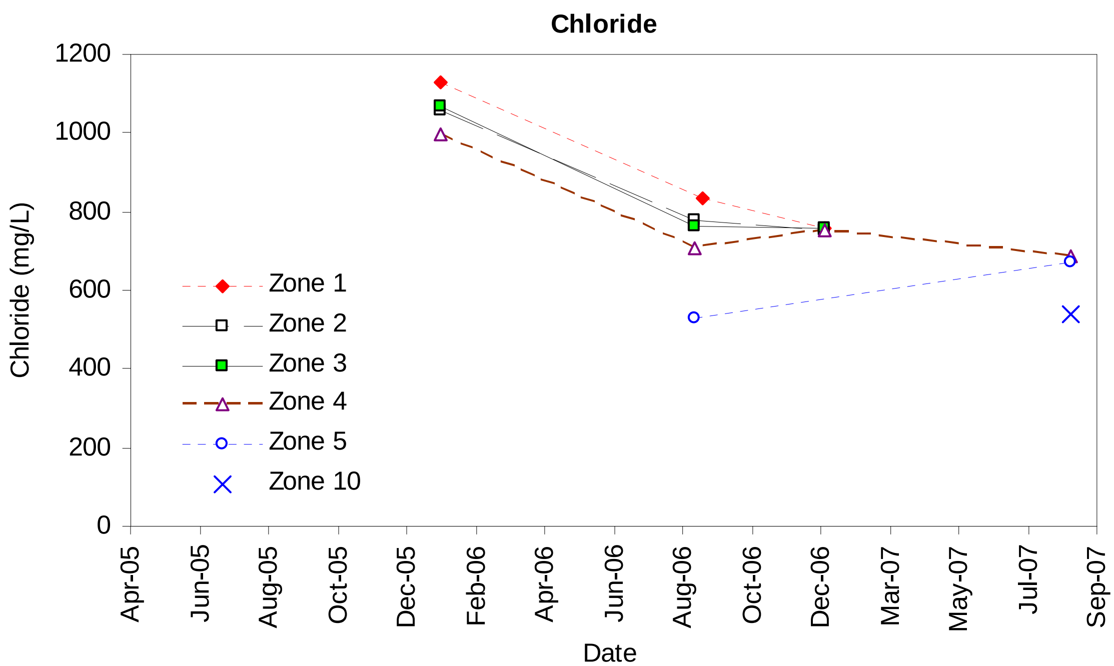
INDIAN AND NORTHERN AFFAIRS CANADA **GIANT MINE REMEDIATION PROJECT TEAM**	**C-Shaft** **Water Level vs Time**

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.13.C2.01	April 2008	MR	**32**





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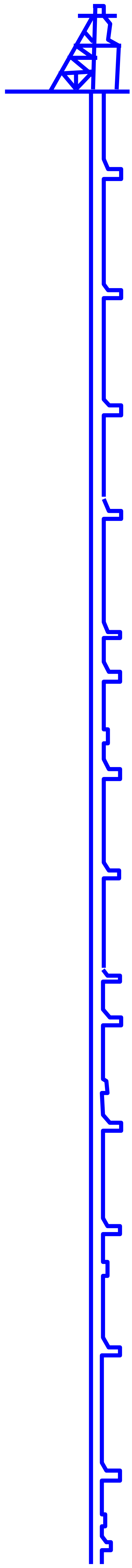
GIANT MINE REMEDIATION PROJECT TEAM

C-Shaft
Arsenic and Chloride vs Time

PROJECT:	DATE:	APPROVED:	FIGURE:
1CI001.013.C2.01	April 2008	MR	33



Elevation (m above mine datum)	Mine Level	Port Depth (m)	Zone #
1838	surface		
1802	100	35	12
1748	250	~ 89	11
1698	425	~ 138	10
1652	575	185	9
1598	750	~ 239	8
1538	950	~ 299	7
1492	1100	344	6
1446	1250	390	5
1383	1500	454	4
1337	1650	500	3
1285	1800	551	2
1230	2000	607	1
1191	shaft bottom		

All blockages appear to be within 2m of sampling ports

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GIANT MINE REMEDIATION PROJECT TEAM

Groundwater & C-Shaft Monitoring: 2007 Update Report, Giant Mine, NWT

C-Shaft: Observed Blockages or Restrictions

PROJECT:	DATE:	APPROVED:	FIGURE::
1CI001.013.C2.01	Nov 2008	MR	34