Colorado Oil and Gas Conservation Commission

Monitor Wells Summary Report
March 2010

4M Project Monitoring Program
La Plata County and
Archuleta County, Colorado

Prepared By
Colorado Oil and Gas Conservation Commission
NORWEST Corporation
Denver, Colorado

March 9, 2010

TABLE OF CONTENTS

PAGE

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

This report summarizes Colorado Oil and Gas Conservation Commission (COGCC) 4M Project monitoring well program activities and well pressure monitoring data through January 1, 2010 for Archuleta and La Plata Counties. Monitoring work was performed by COGCC staff and Norwest Corporation on behalf of the COGCC. Activities completed during this reporting period included installation of three new monitoring wells in La Plata County, automated well pressure monitoring and data transmission to In-Situ® Data Center, online data retrieval, data analysis, and summary report preparation. Well pressure measurements recorded by pressure transducer data loggers in each monitoring well are available to all interested parties upon request.

The COGCC 4M Project monitoring well program includes 16 wells at 10 monitoring well sites. Figure 1-1 (following page) shows the location and name of all ten monitoring well sites and individual site monitoring well names in accordance with the following well nomenclature.

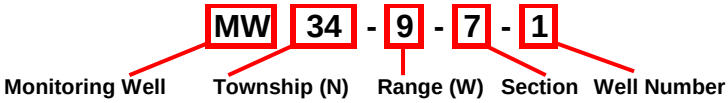


Table 1-1 lists the 4M project monitoring sites and wells by county, project phase and initiation date.

Table 1-1
4M Project Monitoring Well Program Phases

County	Site Name	Well Name	Project/Phase	Phase Initiation Date
Archuleta	Wagon Gulch	MW 34-5-4-1 MW 34-5-4-2	4M/Archuleta	October 2008
	Fosset Gulch	MW 34-5-14-1 MW 34-5-14-2		
	Highway 151	MW 34-4-30-1 MW 34-4-30-2		
La Plata	Basin Creek	MW 34-9-7-1 MW 34-9-7-2	3M/La Plata	January 2001
	S. Fork Texas Creek	MW 35-7-8-1 MW 35-7-8-2		
	Beaver Creek Ranch	MW 35-6-17-1 MW 35-6-17-2		
	Shamrock Mines	MW 35-6-13-1		
	Palmer Ranch	MW 35-8-19-1	4M/La Plata	October 2009
	Fiddler	MW 35-8-10-1		
	BP Highlands	MW 35-7-15-1		

Table 1-2 lists monitoring well site locations and individual well completion details. Table 1-3 lists the depth and type of pressure transducers used in each monitoring well. Appendix A includes a chronology of monitoring well installation, operation and maintenance activities for the January 2001 through January 2010 period of record.

Figure 1-1: COGCC 4M Project - Monitoring Well Locations

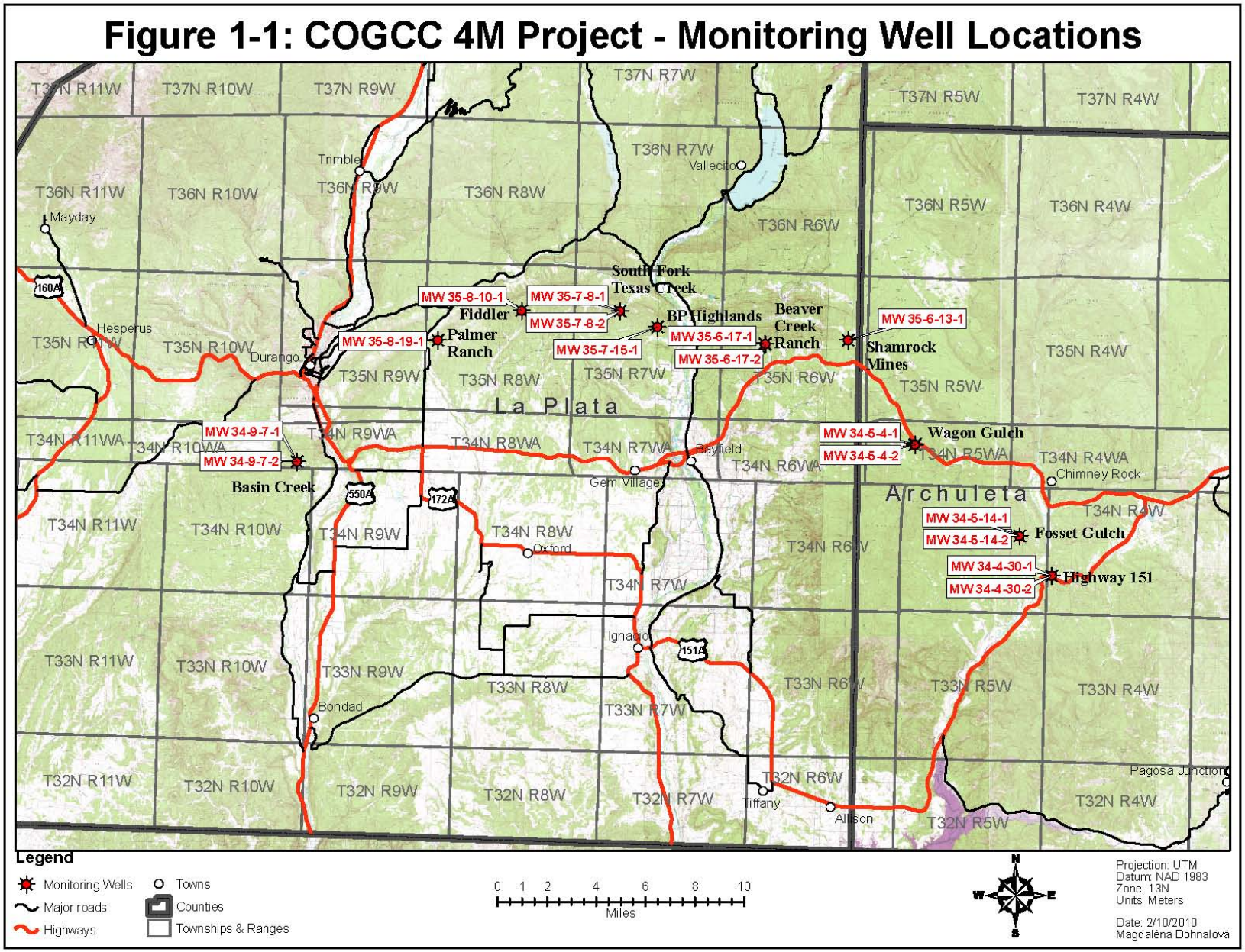


Table 1-2
Monitor Well Completion Summary

Site Name	Well ID	Location (NAD 83)	Construction Completion Date	Drilled Depth (fbgs)	Cored Intervals (fbgs)	Casing Depth (fbgs)	Casing Stickup (fags)	Well Casing Material	Perforated Interval in Coal seam(s) (fbgs)	Log Type	Logged Depth (fbgs)	Log Date
Basin Creek	MW 34-9-7-1	37.218482 N 107.887502 W	01/28/01	820		802	1	2 ", Schedule 40 galvanized steel pipe	578 - 609	gamma ray, bulk density, caliper, resistance	819	01/27/01
										64" normal resistivity, 16" normal resistivity, sp	822	01/27/01
										temperature, differential temperature	822	01/27/01
										gamma ray, casing collar locator	763	09/27/01
	MW 34-9-7-2	37.218542 N 107.887442 W	04/25/02	570	359 - 374 * 498 - 513 578 - 593	561	1.5	2.875" & 2.375", Oilfield steel tubing	496 - 526	gamma ray, casing collar locator	550	05/02/02
Palmer Ranch	MW-35-8-19-1	37.292284 N 107.786741 W (Estimated-survey pending)	11/10/2009	747	NA	738	2.5	4.5" 10#/foot	623-628;634-637;640-657;662-671	Open hole: gamma ray, bulk density, neutron, temperature, E-log, bore hole deviation and acoustical televiewer; Cased hole: casing collar locator and gamma ray	725	11/6/2009;11/17/09
Fiddler	MW-35-8-10-1	37.311135 N 107.725623 W (Estimated-survey pending)	11/17/2009	457	NA	457	3	4.5" 10#/foot	174-190;220-226;276-291;354-363;378-380	Open hole: gamma ray, bulk density, neutron, temperature, E-log, bore hore deviation and acoustical televiewer; Cased hole: casing collar locator and gamma ray	457	10/16/09;11/3/09
South Fork Texas Creek	MW 35-7-8-1	37.312493 N 107.653315 W	09/20/01	486		463	1.6	2 ", Schedule 40 galvanized steel pipe	403 - 416	gamma ray, bulk density, caliper, resistance	485	09/19/01
										64" normal resistivity, 16" normal resistivity, sp	485	09/19/01
										temperature, differential temperature	485	09/19/01
										gamma ray, casing collar locator	462	09/27/01
	MW 35-7-8-2	37.312443 N 107.653315 W	09/21/01	420	410 - 425	425	1.6	2", Schedule 40 galvanized steel pipe	235 - 241 254 - 258 264 - 274	gamma ray, casing collar locator	420	09/27/01
BP Highlands	MW-34-7-15-1	37.303663 N 107.625489 W (Estimated-survey pending)	10/10/2009	276	NA	241	2.5	4.5" 10#/foot	182-194	Open hole: gamma ray, bulk density, neutron, temperature, E-log, bore hole deviation and acoustical televiewer; Cased hole: casing collar locator and gamma ray	276	10/3/09; 10/9/09

* Cored interval from initial well drilled, plugged and abandoned in February 2001.

Table 1-2 Continued
Monitor Well Completion Summary

Site Name	Well ID	Location (NAD 83)	Construction Completion Date	Drilled Depth (fbgs)	Cored Intervals (fbgs)	Casing Depth (fbgs)	Casing Stickup (fags)	Well Casing Material	Perforated Interval in Coal seam(s) (fbgs)	Log Type	Logged Depth (fbgs)	Log Date
Beaver Creek Ranch	MW 35-6-17-1	37.295393 N 107.546011 W	04/04/02	1,645	1,457 - 1,467 1,564 - 1,572	1,631	1.5	2.875", Oilfield steel tubing	1,572 - 1,576 1,582 - 1,584	64" normal resistivity, 16" normal resistivity, sp	1,645	04/03/02
										temperature, differential temperature	1,640	04/03/02
										gamma ray, bulk density, caliper, resistance	1,643	04/03/02
										gamma ray, casing collar locator	1,618	05/02/02
	MW 35-6-17-2	37.295503 N 107.545901 W	10/04/01	1,550		1,500	2	2", Schedule 40 galvanized steel pipe	1,437 - 1,449 1,458 - 1,472	gamma ray, neutron	1,499	10/10/01
										temperature, 4Pi density	1,493	11/14/01
										signal amplitude, travel time \ D T, VDL	1,484	11/14/01
										gamma ray, casing collar locator	1,483	11/27/01
Shamrock Mines	MW 35-6-13-1	37.299063 N 107.484969 W	05/07/02	627		606	1.5	2.375", Oilfield steel tubing	507 - 511 517 - 533 539 - 562	gamma ray, bulk density, caliper, resistance	626	05/06/02
										64" normal resistivity, 16" normal resistivity, sp	626	05/06/02
										gamma ray, casing collar locator	626	05/10/02
Wagon Gulch	MW-34-4-30-1	37.238958 N 107.433631 W	10/2/2008	938	NA	927	2.5	4.5" 10.5#/foot	821-833	Open hole: gamma ray, bulk density, neutron, temperature, E-log, bore hole deviation and acoustical televiewer; Cased hole: casing collar locator and gamma ray	938	10/2/2008;10/16/08
	MW-34-4-30-2	37.238389 N 107.355340 W	10/13/2008	883	749-779 810-818	833	2.5	4.5" 10.5#/foot	752-767	Open Hole: gamma ray, bulk density, neutron, temperature, E-log, bore hole deviation and acoustical televiewer; Cased hole: casing collar locator and gamma ray	883	10/12/2008;10/16/08
Fossett Gulch	MW-35-5-14-1	37.186510 N 107.355270 W	10/31/2008	624	480-506 524-532	618	2.5	4.5" 10.5#/foot	482-502	Cased hole: casing collar locator and gamma ray	624	11/14/08
	MW-35-5-14-2	37.186550 N 107.355340 W	10/22/2008	660	NA	660	2.5	4.5" 10.5#/foot	525-534 548-551	Open hole: gamma ray, bulk density, neutron, temperature, E-log, bore hole deviation and acoustical televiewer; Cased hole: casing collar locator and gamma ray	648	10/22/08;11/14/2008
Highway 151	MW-34-4-30-1	37.163685 N 107.331061 W	11/11/2008	340	226-247 266-287	330	2.5	4.5" 10.5#/foot	218-22 231-241	Open hole: gamma ray, bulk density, neutron, temperature, E-log, bore hole deviation and acoustical televiewer; Cased hole: casing collar locator and gamma ray	326	11/16/09
	MW-34-4-30-2	37.163631 N 107.331008 W	11/7/2008	330	NA	330	2.5	4.5" 10.5#/foot	268-277 292-301	Open Hole: gamma ray, bulk density, neutron, temperature, E-log, bore hole deviation and acoustical televiewer; Cased hole: casing collar locator and gamma ray	326	11/6/09;11/16/09

Table 1-3
Monitor Well Pressure Transducers

Location	Well ID	Upper Transducer		Lower Transducer	
		Depth (fbgs)	Type and Rating	Depth (fbgs)	Type and Rating
Basin Creek	MW 34-9-7-1	5	LT 500 - 30 psia	570	LT 500 - 300 psia
	MW 34-9-7-2	5	LT 500 - 30 psia	485	LT 500 - 300 psia
Palmer Ranch	MW-35-8-19-1	3	LT 500 - 500 psia	690	LT 700 - 1000 psia
Fiddler	MW-35-8-10-1	3	LT 700 - 1000 psia	390	LT 700 - 1000 psia
South Fork Texas Creek	MW 35-7-8-1	5	LT 500 - 30 psia	390	LT 500 - 300 psia
	MW 35-7-8-2	5	LT 500 - 300 psia	232	LT 500 - 300 psia
BP Highlands	MW-34-7-15-1	2	LT 500 - 30 psia	204	LT 500 - 500 psia
Beaver Creek Ranch	MW 35-6-17-1	6	LT 500 - 300 psia	1,551	LT 700 - 1000 psia
	MW 35-6-17-2	5	LT 700 - 1000 psia	1,408	LT 700 - 1000 psia
Shamrock Mines	MW 35-6-13-1	5	LT 500 - 30 psia	512	LT 500 - 300 psia
Wagon Gulch	MW-34-4-30-1	well head	LT 700 - 1000 psia	840	LT 700 - 1000 psia
	MW-34-4-30-2	well head	LT 700 - 1000 psia	780	LT 700 - 1000 psia
Fossett Gulch	MW-35-5-14-1	well head	LT 700 - 1000 psia	510	LT 700 - 1000 psia
	MW-35-5-14-2	well head	LT 700 - 1000 psia	560	LT 700 - 1000 psia
Highway 151	MW-34-4-30-1	well head	LT 700 - 1000 psia	250	LT 700 - 1000 psia
	MW-34-4-30-2	well head	LT 700 - 1000 psia	310	LT 700 - 1000 psia

*** LT = Level Troll**

*** A depth recorded as "well head" is assumed to be zero.**

2.0 LA PLATA COUNTY MONITORING WELL DATA SUMMARY

Well pressure was measured and recorded twice daily (12-hour interval) for the 7 monitoring well sites located in La Plata County, Colorado. Applicable well pressure and calculated water level data for the entire period of record for each monitoring well are plotted in annotated charts. The water level in a well is calculated using the depth of the lower transducer and the difference in pressure between upper and lower transducers. This calculation is applicable at sites where the water level in a well is above the lower pressure transducer and below the upper pressure transducer.

2.1 BASIN CREEK

Monitor well MW 34-9-7-1 has been monitored since November 29, 2001 and monitor well MW 34-9-7-2 has been monitored since May 24, 2002. Initial and ending monitoring well pressures and calculated water levels in the wells for each period of record are summarized in Table 2-1.

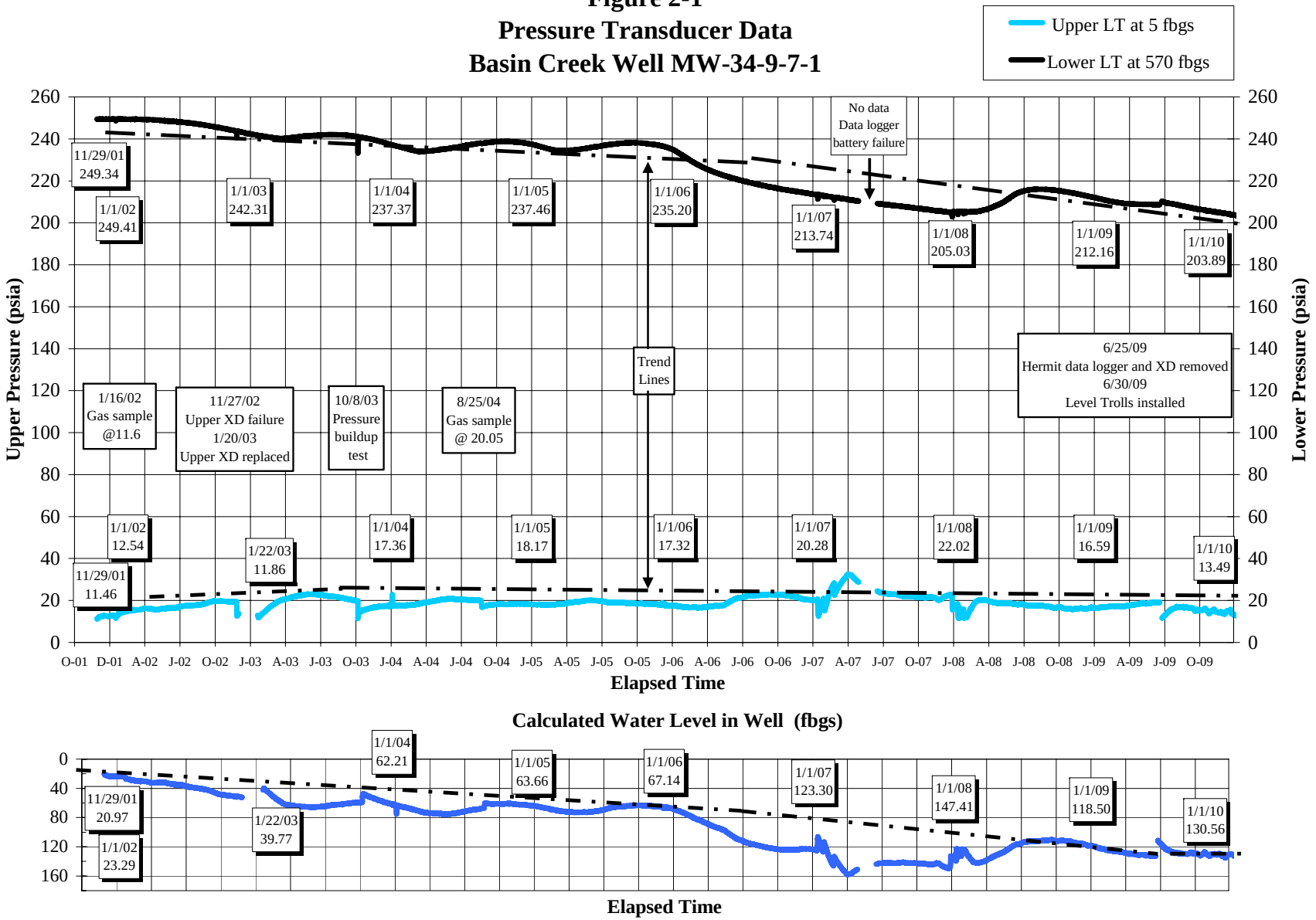
Table 2-1
Well Pressure Data Summary for Basin Creek Monitoring Wells

Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 34-9-7-1 Upper	11/29/01 to 1/1/10	11.46	13.49	2.03	20.97	130.56	-109.59
Lower		249.34	203.89	-45.45			
MW 34-9-7-2 Upper	5/24/02 to 1/1/10	33.26	12.66	-20.60	Upper transducer is under water at 5 ft below ground level		
Lower		241.42	220.37	-21.05			

2.1.1 MW 34-9-7-1

Figure 2-1 charts the upper and lower pressure transducer data and the calculated water level in the well. Table 2-1 and Figure 2-1 show a net increase of 2.03 psi in wellhead pressure for the entire 8-year period of record from November 29, 2001 (11.46 psia) to January 1, 2010 (13.49 psia). Since October 1, 2002, Figure 2-1 generally shows a pattern of minor seasonal fluctuations within an overall flat trend in wellhead pressure. In contrast to the wellhead pressure patterns, Table 2-1 and Figure 2-1 show a net decline of about 109.59 feet in the calculated well water level and a corresponding net decline in down-hole pressure of about 21.05 psi for the period of record. Figure 2-1 also shows a pattern of slight seasonal fluctuations within the overall declining trend in the water level and corresponding down-hole pressure for the period of record.

Figure 2-1
Pressure Transducer Data
Basin Creek Well MW-34-9-7-1



2.1.2 MW 34-9-7-2

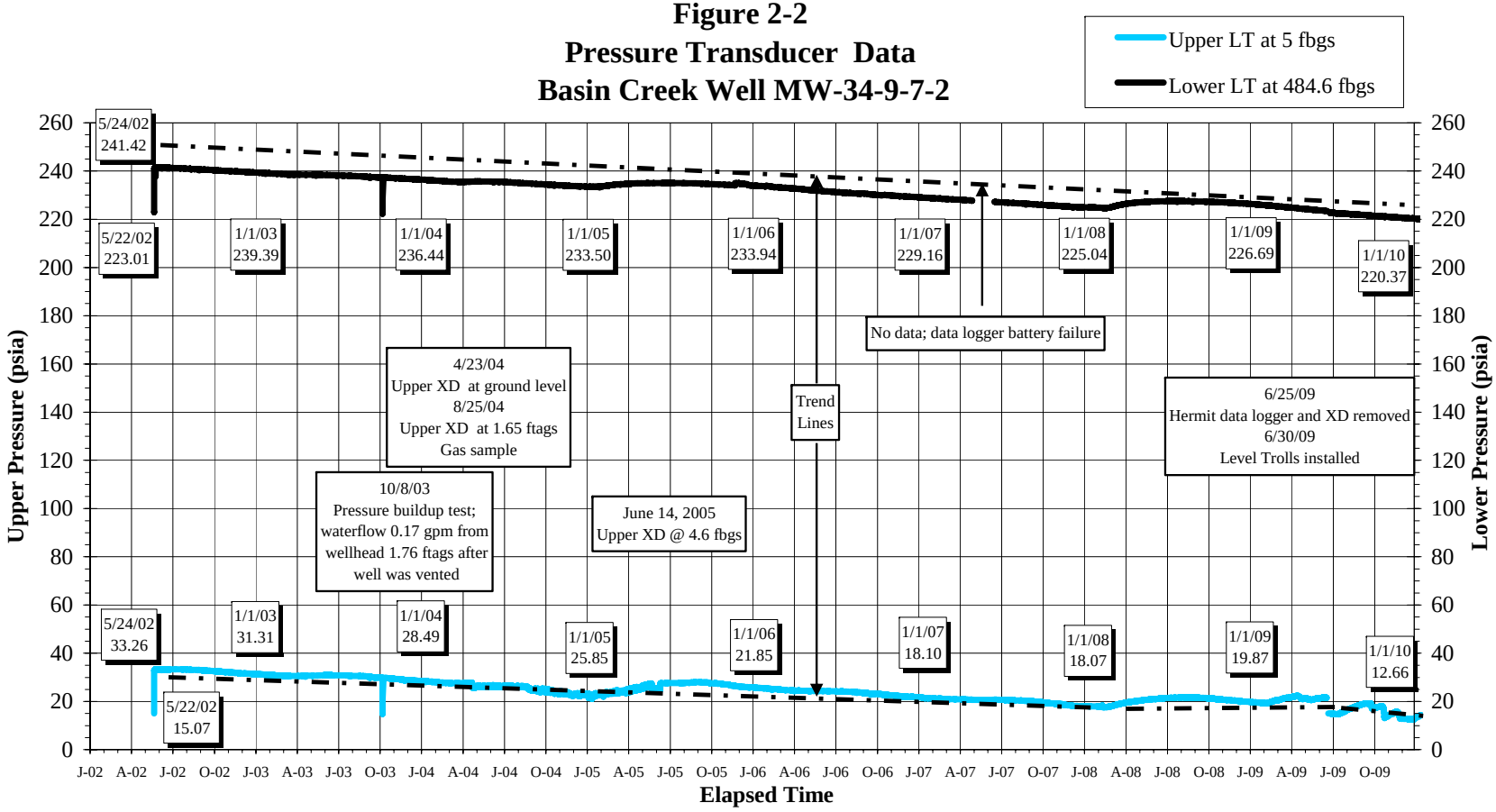
Recorded pressure data and calculated down-hole and wellhead differential pressures for well MW-34-9-7-2 are charted on Figure 2-2. Initial and ending monitoring well pressures and apparent water level in the well are summarized in Table 2-1.

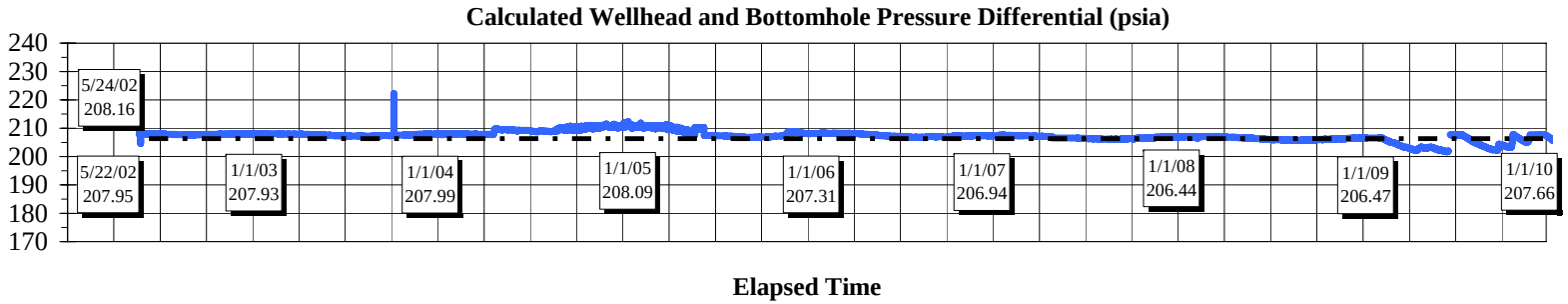
Figures 2-2 continues to show a trend of gradually declining wellhead pressure and slight seasonal fluctuations in down-hole pressures within the overall declining trend for the period of record. A record low down-hole pressure of 220.37 psia and record low wellhead pressure of 12.66 psia was recorded on January 1, 2010. As indicated in Table 2-1, there has been a net decline in well pressure of about 20.60 psi (wellhead) and 21.05 psi (down-hole) for the 7.5-year period of record. Between February 18, 2008 and January 1, 2010, Figure 2-2 shows an apparent seasonal fluctuation within the overall declining well pressure trend.

As described in previous COGCC Monitor Wells Summary Reports, the chart on the bottom of Figure 2-2 shows the wellhead and down-hole pressure differential instead of the calculated water level in the well because the water level in the well has been above the upper transducer for the entire period of record. Each time the wellhead was opened for maintenance in the past, only a small amount of gas under very low pressure was released and artesian flow (~0.2 gpm) occurred after the well was open for a period of no longer than10 to 15 minutes.

Figure 2-2 shows the calculated differential well pressure consistently ranges between 206.5 psia and 208 psia for the period of record, while the down-hole and wellhead pressures both declined by about 20 psi to 21 psi. The release of minimal gas when the wellhead is opened suggests the observed 20 to 21 psi decline in well pressure reflects a decline in water pressure resulting from an apparent decline in the water level. Assuming minimal wellhead gas pressure, the wellhead pressure recorded on January 10, 2010 can be used to estimate a corresponding water level in the well. On this date, it is assumed that a shut in wellhead pressure of 12.66 psia is equal to atmospheric pressure plus water pressure. An average atmospheric pressure of 11.17 psi is calculated from 7 years (May 3, 2002 - June 25, 2009) of Hermit data logger 12-hour interval measurements of atmospheric pressure at this site. Wellhead pressure (12.66 psia) minus atmospheric pressure (11.17 psia) equals an assumed water pressure of about 1.5 psia, which is equivalent to 3.46 feet of water above the upper transducer pressure sensor (1.5 psi x 2.308 ft of water/psi). The upper transducer is set at 5 ftbgs, therefore, the estimated water level in the well on January 1, 2010 was about 1.54 fbgs (5 ft -3.46 ft). If this is the case, the water level in the well is expected to drop below the upper transducer level in the near future if the current trend of water level decline continues for an extended period of time.

Figure 2-2
Pressure Transducer Data
Basin Creek Well MW-34-9-7-2





2.2 PALMER RANCH

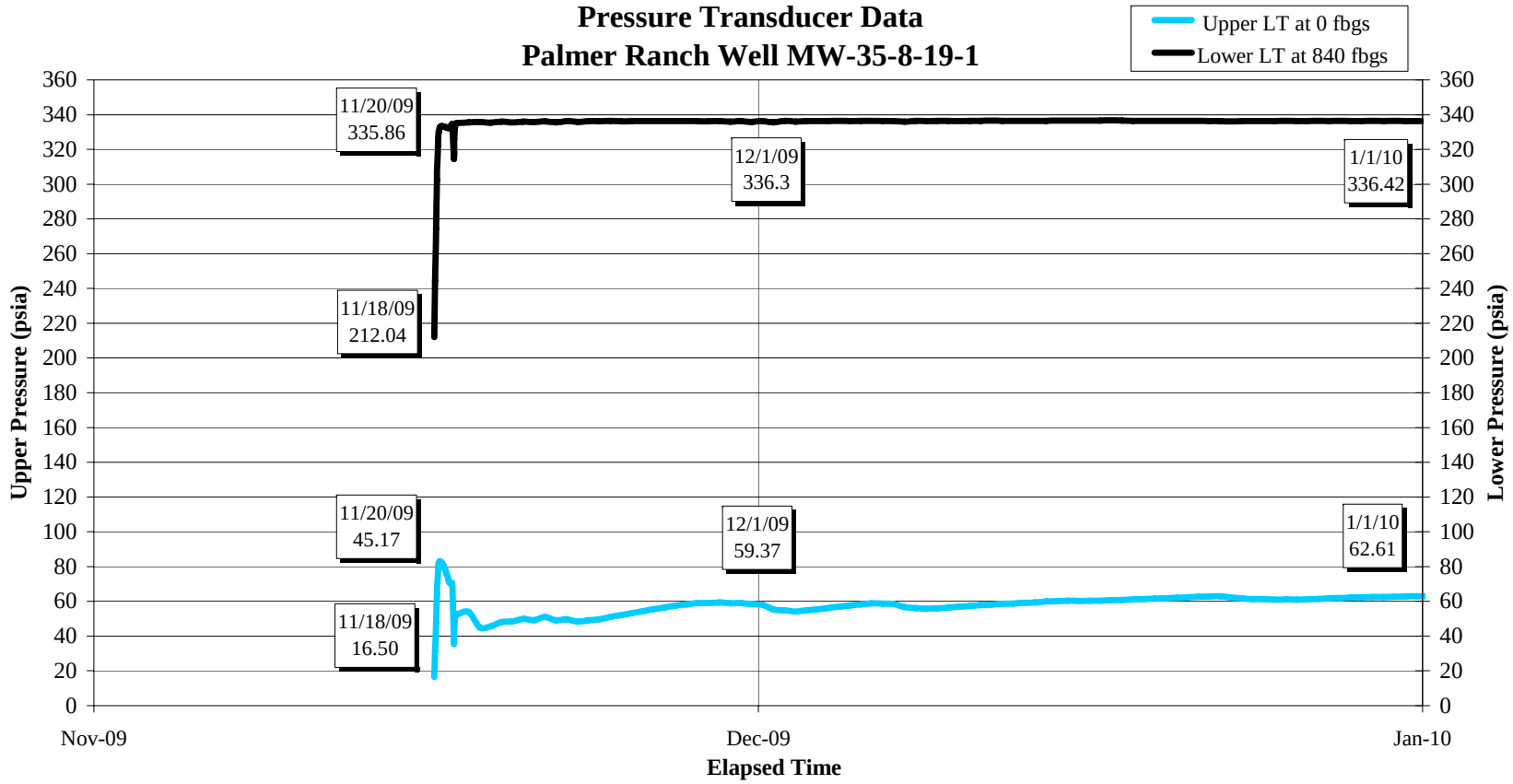
Monitor well MW 35-8-19-1 has been monitored since November 20, 2009. Initial and ending well pressures and calculated water level in the monitor well are summarized in Table 2-2 for the indicated period of record.

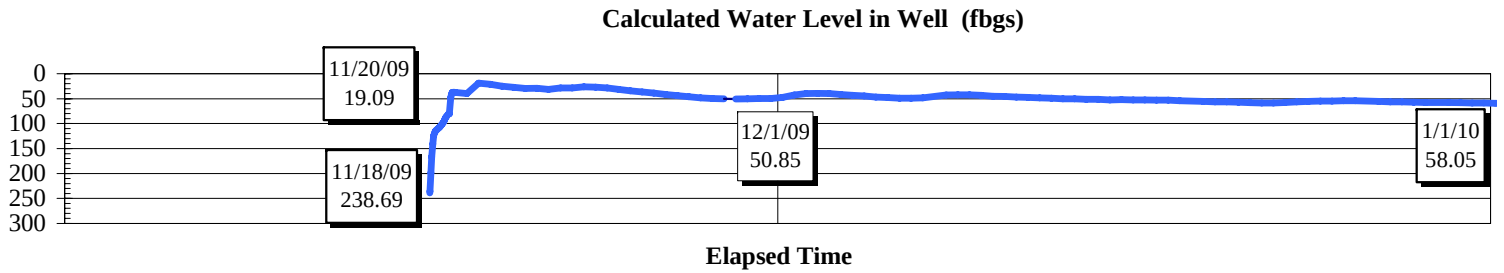
Table 2-2
Well Pressure Data Summary for Palmer Ranch Monitoring Well

Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 35-8-19-1 Upper	11/20/09 to 1/1/10	45.17	62.61	17.44	19.09	58.05	-38.96
Lower		335.86	336.42	0.56			

Monitoring data for MW 35-8-19-1 are charted in Figure 2-3. Since November 20, 2009, there has been a gradual increase in wellhead pressure and an overall flat trend in down-hole pressure. As summarized in Table 2-2 for the 1.5-month period of record, the net change in wellhead and down-hole pressures are 17.44 psi and 0.56 psi respectively. The net change in the calculated water level in the well is -38.96 feet, which corresponds to an equivalent well pressure change of -16.88 psi. Figure 2-3 also shows an initial well pressure build-up period of about 2 days following well shut in on November 18, 2009.

Figure 2-3
Pressure Transducer Data
Palmer Ranch Well MW-35-8-19-1





2.3 FIDDLER

Monitor well MW 35-8-10-1 has been monitored since November 17, 2009. Initial and ending well pressures and calculated water level in the monitor well are summarized in Table 2-3 for the indicated period of record.

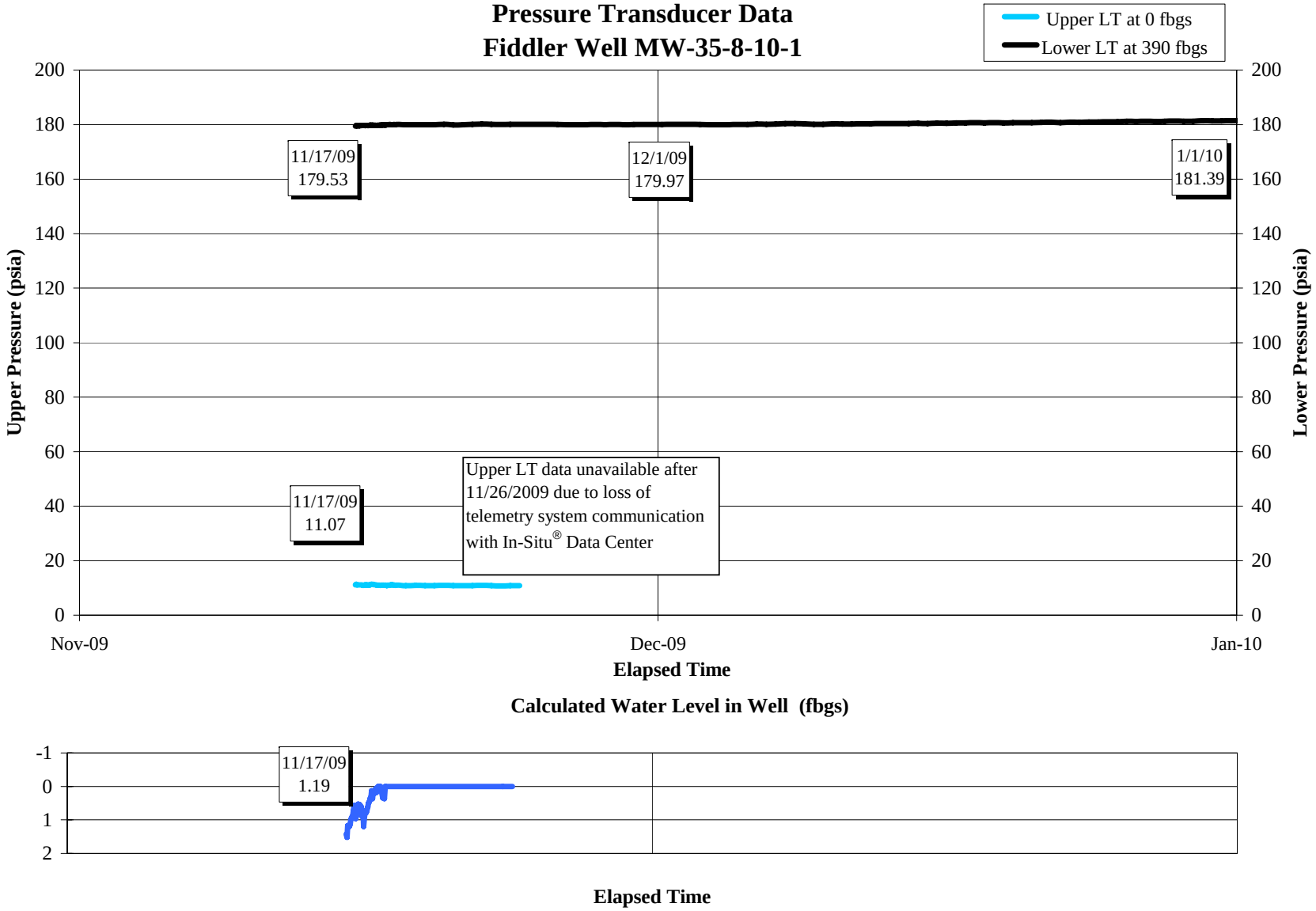
Table 2-3
Well Pressure Data Summary for Fiddler Monitoring Well

Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 35-8-10-1 Upper	11/17/09 to 1/1/10	11.07	N/A	N/A	1.19	N/A	N/A
Lower		179.53	181.39	1.86			

Monitoring data for MW 35-8-10-1 are charted in Figure 2-4. As noted on Figure 2-4, no data are available for the upper transducer after 11/26/2009 due to loss of telemetry system communication with the In-Situ® Data Center. Therefore, the net change in wellhead pressure and water level in the well are not included in Table 2-3. The net change in down-hole pressure is 1.86 psi for the 1.5-month period of record.

COGCC staff will schedule an inspection and repair/replacement of upper Level Troll and/or Troll® Link telemetry system communication equipment after the 2010 spring snowmelt period when all monitoring well sites are safely accessible.

Figure 2-4
Pressure Transducer Data
Fiddler Well MW-35-8-10-1



2.4 SOUTH FORK TEXAS CREEK

Monitor wells MW 35-7-8-1 and MW 35-7-8-2 have been monitored since November 29, 2001. Initial and ending well pressures and calculated water levels in the monitor wells are summarized in Table 2-4 for the indicated period of record.

Table 2-4
Well Pressure Data Summary for South Fork Texas Creek Monitoring Wells

Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 35-7-8-1 Upper	12/01/01 to 1/1/10	13.79	31.80	18.01	88.39	152.08	-63.69
Lower		144.47	134.93	-9.54			
MW 35-7-8-2 Upper	1/15/02 to 1/1/10	91.32[1]	35.49	-55.83	Water level in well is >225 fbgs with complete shut-in;		
Lower		91.91[1]	65.46	-26.45			

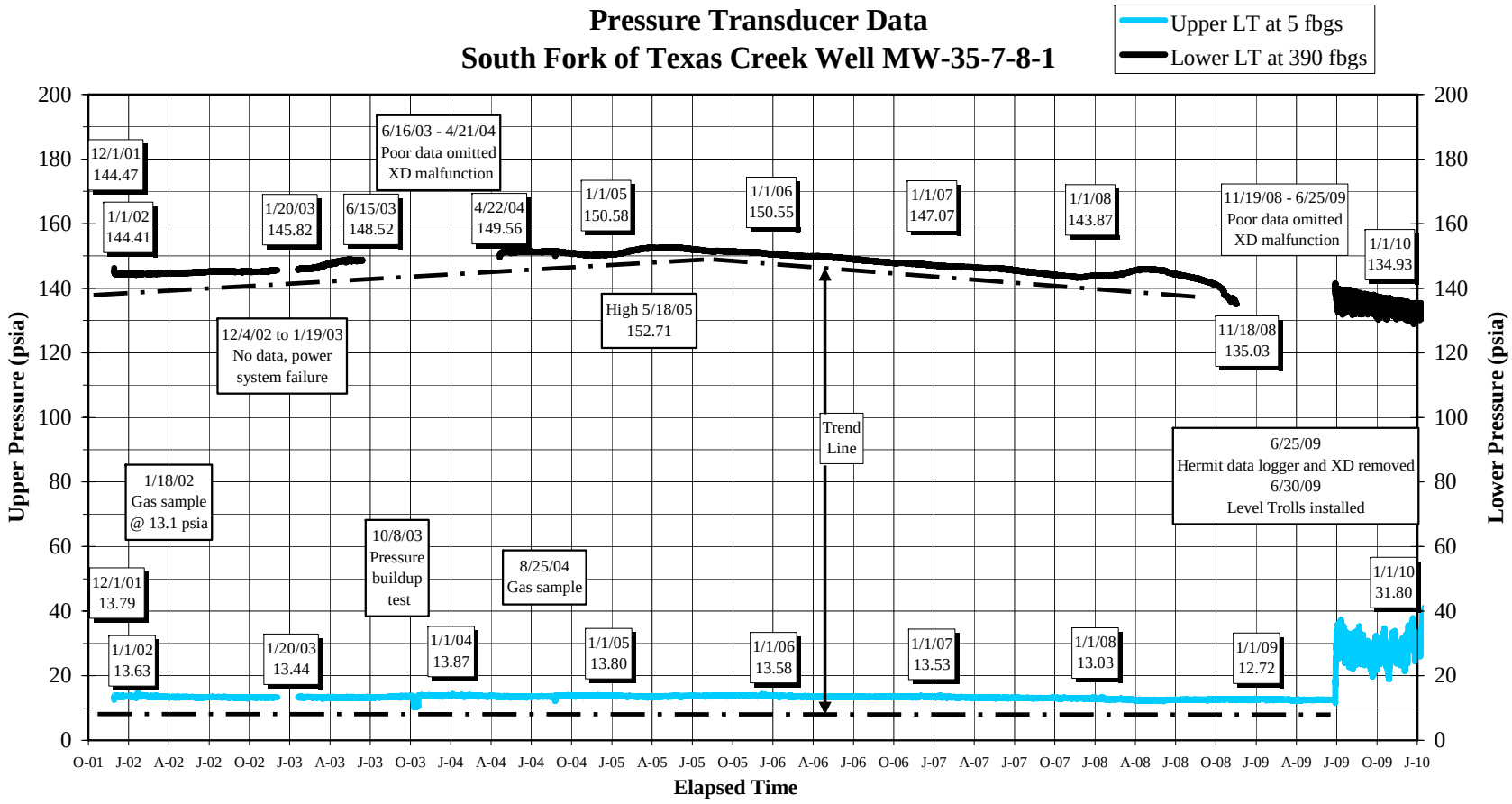
1 Both down-hole and wellhead pressure are typically the same in MW 35-7-8-2 with complete shut in.

2.4.1 MW 35-7-8-1

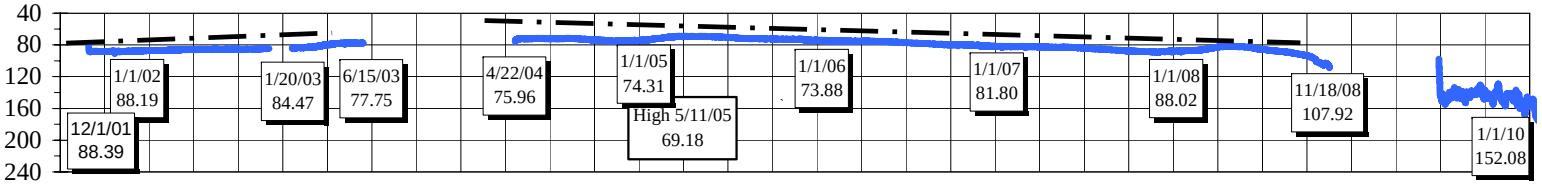
Monitoring data for MW 35-7-8-1 are charted in Figure 2-5. As summarized in Table 2-4, the net change in wellhead and down-hole pressures is 18.01 psi and -9.54 psi respectively for the 8-year period of record. The net change in the calculated water level in the well is -63.69 feet, which corresponds to an equivalent well pressure change of -27.60 psi.

Figure 2-5 shows a relatively stable wellhead pressure (12 to 13.5 psia) prior to installation of the Level Troll instrument on June 30, 2009. After the transducer change-out, there was a build up in wellhead pressure from 11.52 psia on June 30, 2009 to 33.76 psia on July 3, 2009 followed by frequent fluctuations in wellhead pressure ranging between 19 psia and 38 psia through January 1, 2010. The relatively stable wellhead pressure curve prior to June 30, 2009 is inconsistent with the fluctuating and notably higher pressure measurements recorded after June 30, 2009. Likewise, the down-hole Level Troll has recorded frequent down-hole pressure fluctuations (between 129 and 142 psia) not previously observed in well pressure data prior to June 30, 2009. The reason for these inconsistencies has not been identified at the time of writing this report. COGCC staff will schedule an inspection and testing of wellhead components and instruments after the 2010 spring snowmelt period when all monitoring well sites are safely accessible.

Figure 2-5
Pressure Transducer Data
South Fork of Texas Creek Well MW-35-7-8-1



Calculated Water Level in Well (fbgs)

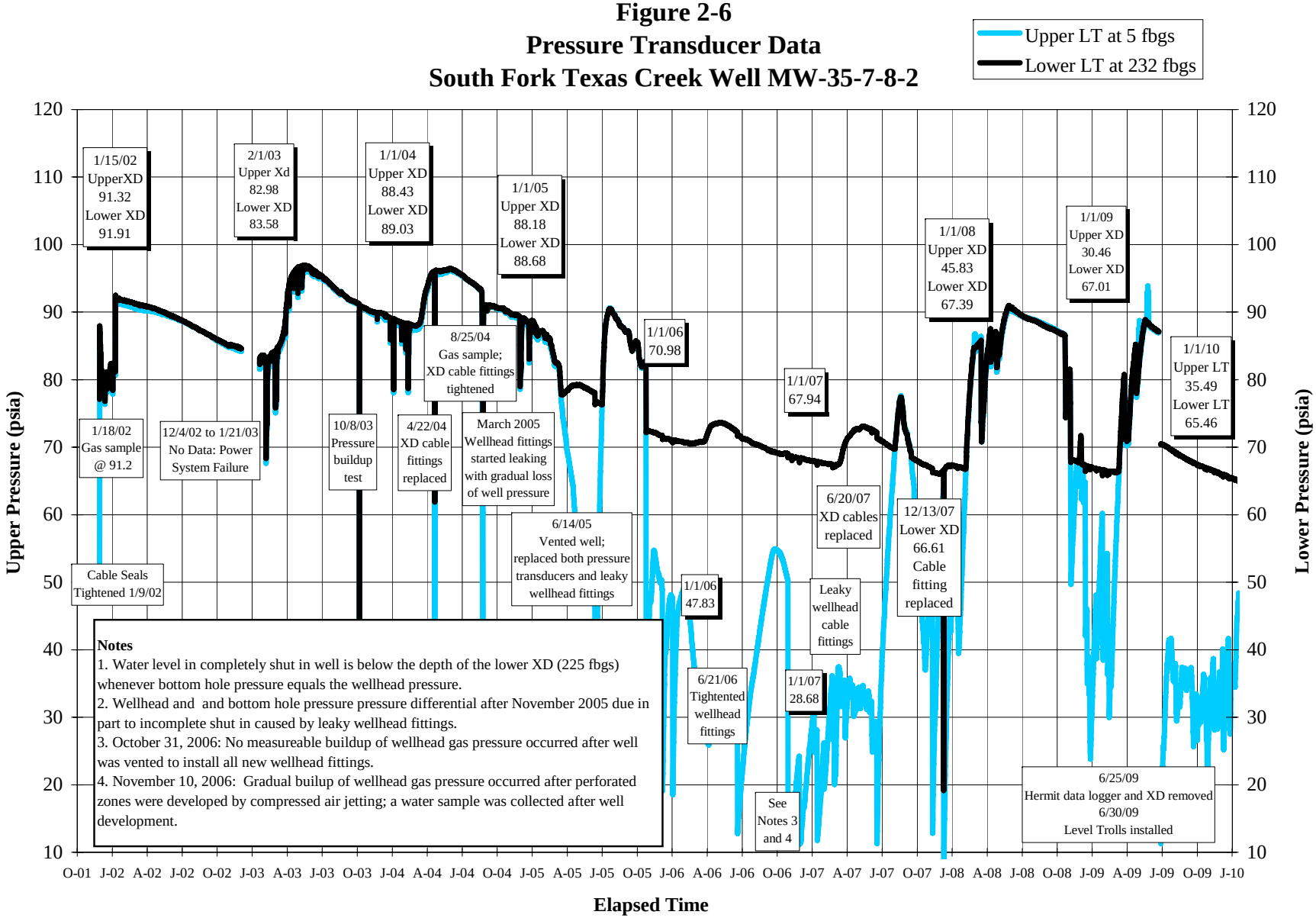


2.4.2 MW 35-7-8-2

Figure 2-6 charts the pressure data for well MW 35-7-8-2, which exhibits an entirely different pressure regime than the deeper monitoring well MW 35-7-8-1. Figure 2-6 shows nearly equal wellhead and down-hole pressures for the period of record when the well is completely shut in. For example, wellhead and down-hole pressures recorded on June 25, 2009 were 86.97 psia and 87.14 psia respectively under shut-in conditions. On 6/30/2009 the Hermit data logger and PXD pressure transducers were replaced with Level Troll instruments. Equal wellhead and down-hole pressures have not been seen since the installation of Level Troll equipment, potentially indicating an incomplete wellhead shut-in.

Figure 2-6 shows the wellhead pressure is erratic for the period of record between October 2005 and December 2007, between November 2008 and March 2009, and since the Level Troll was installed on June 25, 2009. The cause of this erratic pattern may be related to leaky wellhead fittings rather than an erratic change in wellhead pressure since the down-hole pressure curve does not show erratic pressure fluctuations for the same period of record. True pressures and trends cannot be measured until a complete shut in is accomplished. COGCC staff will schedule an inspection and testing of wellhead components and instruments after the 2010 spring snowmelt period when all monitoring well sites are safely accessible.

Figure 2-6
Pressure Transducer Data
South Fork Texas Creek Well MW-35-7-8-2



2.5 BP HIGHLANDS

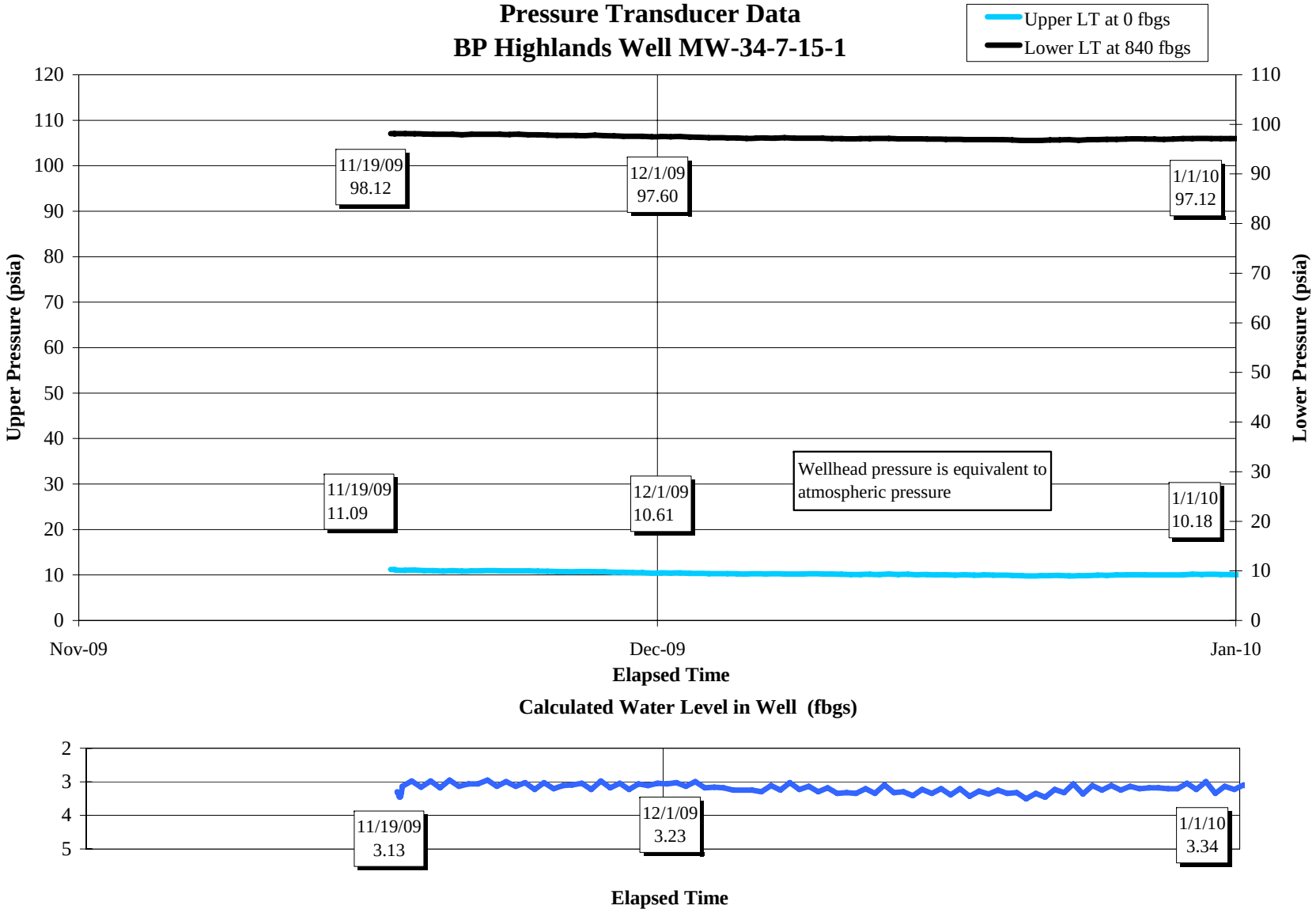
Monitor well MW 34-7-15-1 has been monitored since November 19, 2009. Initial and ending well pressures and calculated water levels in the monitor well are summarized in Table 2-5 for the indicated period of record.

Table 2-5
Well Pressure Data Summary for BP Highlands Monitoring Well

Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 34-7-15-1 Upper	11/19/09 to 1/1/10	11.09	10.18	Atmospheric Pressure	3.13	3.34	-0.21
Lower		98.12	97.12	-1.00			

Monitoring data for MW 34-7-15-1 are charted in Figure 2-7. As summarized in Table 2-5 for the 1.5-month period of record, the net change in down-hole pressures is about 1.00 psi. The wellhead pressure curve is equivalent to atmospheric pressure and shows normal fluctuations in atmospheric pressure. The net change in the calculated water level in the well is -0.21 feet, which corresponds to an equivalent well pressure change of -0.09 psi.

Figure 2-7
Pressure Transducer Data
BP Highlands Well MW-34-7-15-1



2.6 BEAVER CREEK RANCH

Well MW 35-6-17-1 has been monitored since May 21, 2002 and well MW 35-6-17-2 has been monitored since November 30, 2001. On July 17, 2009 the Hermit data logger and PXD transducers were replaced with Level Troll instruments. Initial and ending well pressures and calculated water levels in the monitor wells are summarized in Table 2-6 for the indicated period of record.

Table 2-6
Well Pressure Data Summary for Beaver Creek Ranch Monitoring Wells

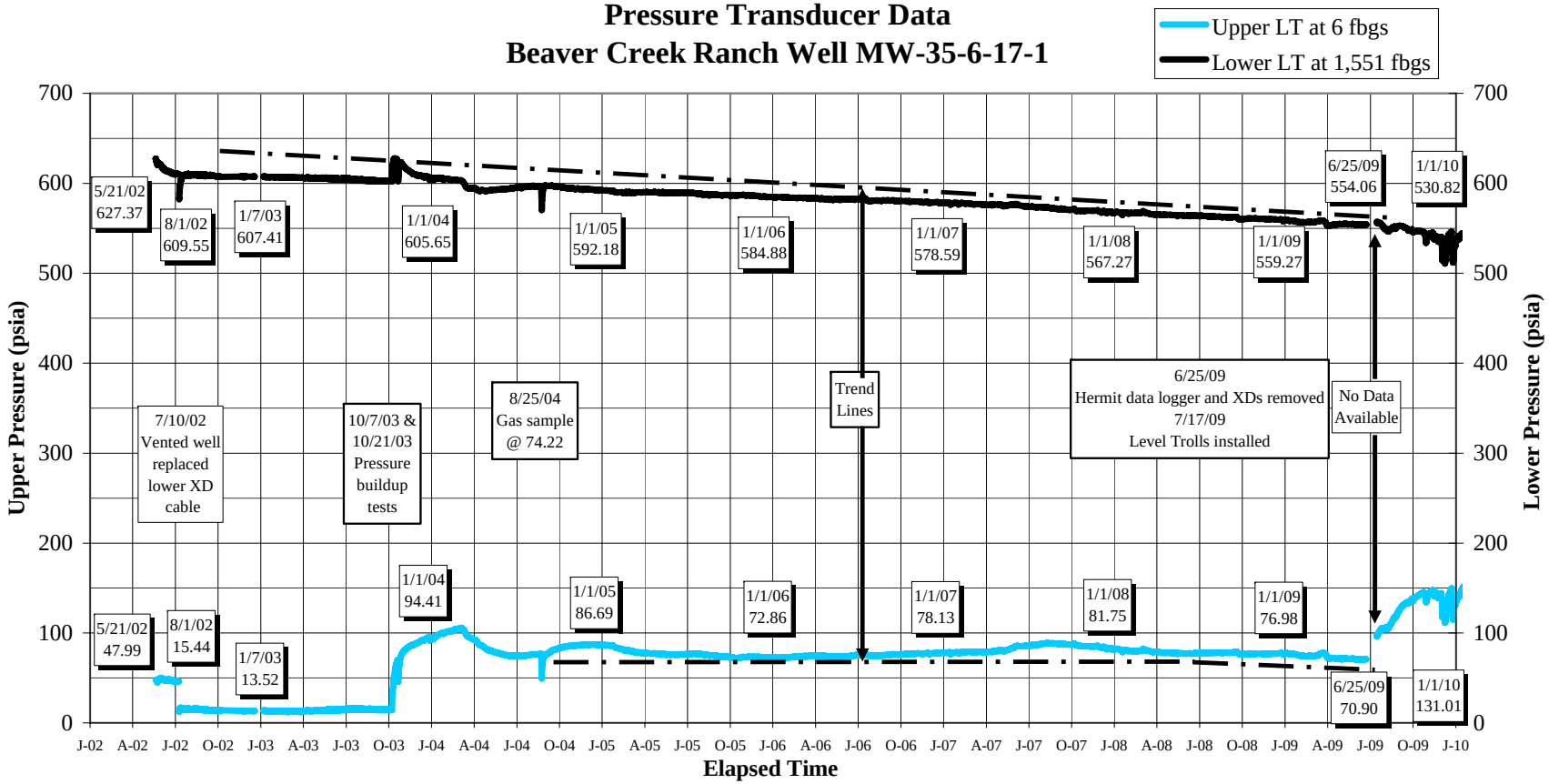
Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 35-6-17-1 Upper	08/01/02 to 1/1/10	15.44	131.01	115.57	194.37	628.64	-434.27
Lower		609.55	530.82	-78.73			
MW 35-6-17-2 Upper	06/15/02 to 1/1/10	614.27	464.15	-150.12	1,377.64	1,374.88	2.76
Lower		632.63	478.42	-154.21			

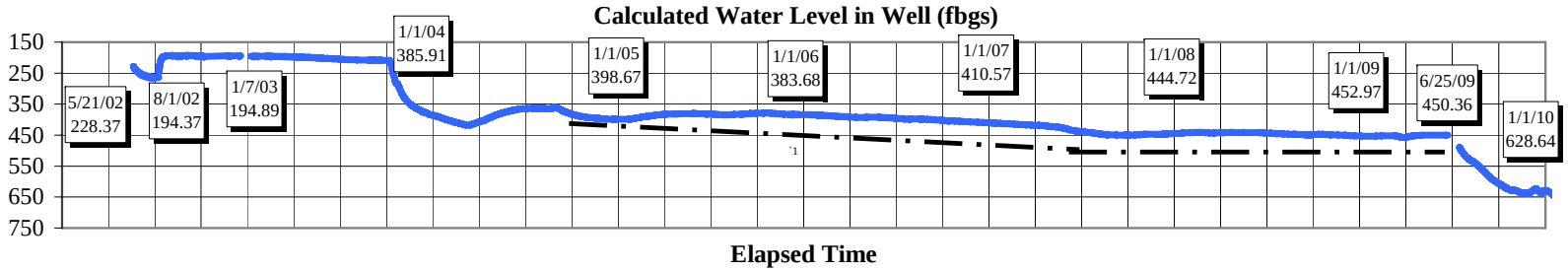
2.6.1 MW 35-6-17-1

Monitoring data for well MW 35-6-27-1 are charted in Figure 2-8. As described below, the pressure regime for this well is different than the regime exhibited by well MW 35-6-17-2.

Figure 2-8 shows the well pressure and calculated water level in a gradual declining trend for the period record between January 1, 2005 and June 25, 2009. There is a notable shift in all data curves following the installation of Level Troll instruments on 7/17/2009. For example, the wellhead pressure measured by the PXD transducer was 70.9 psia on June 25, 2009 as compared with 131 psia measured by the Level Troll on January 1, 2010. This shift in well pressure and corresponding shift in the calculated water level suggests a difference in readings related to transducer performance rather than a marked change in the well pressure regime. Continued monitoring will confirm any potential changes in the well pressure regime.

Figure 2-8
Pressure Transducer Data
Beaver Creek Ranch Well MW-35-6-17-1





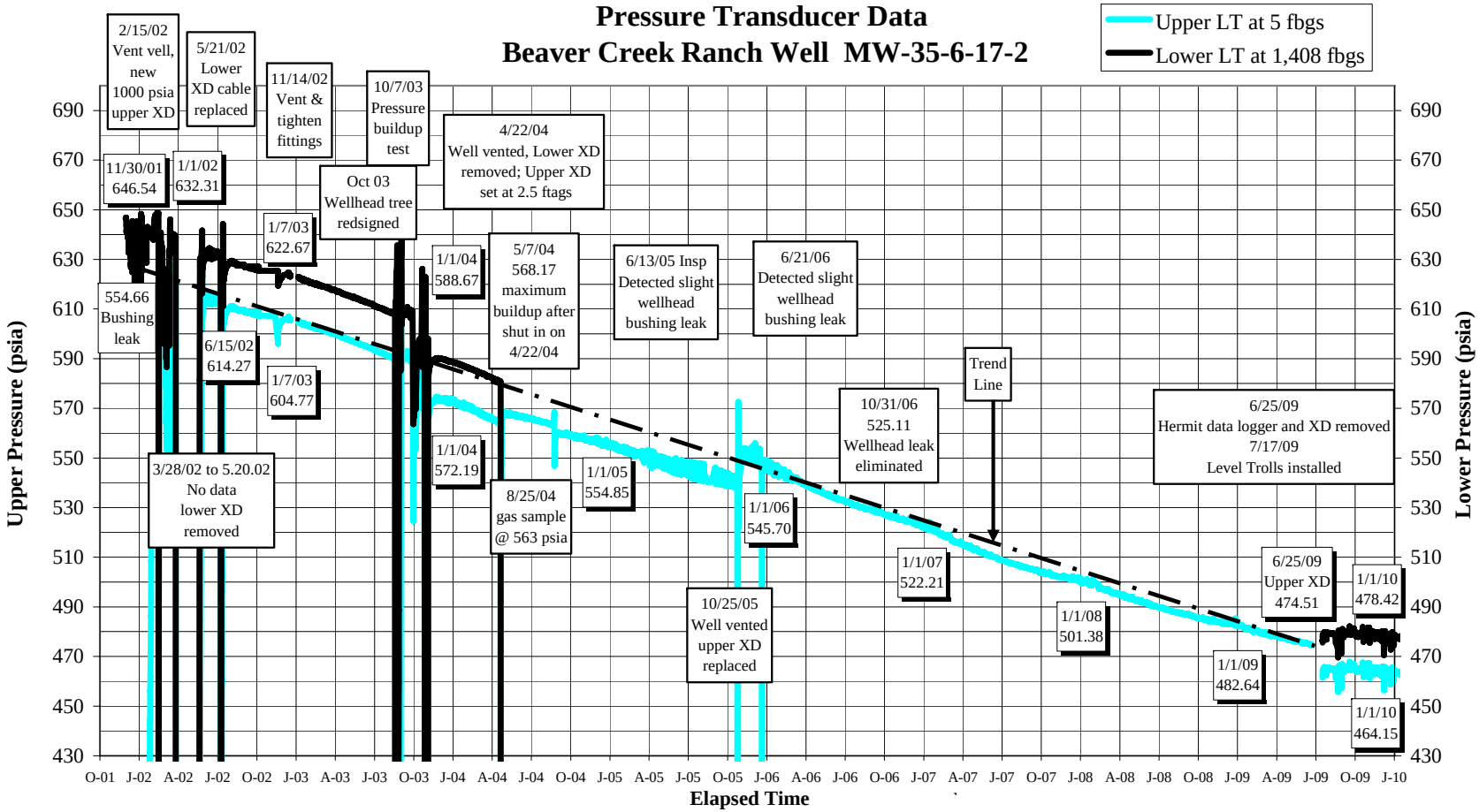
2.6.2 MW 35-6-17-2

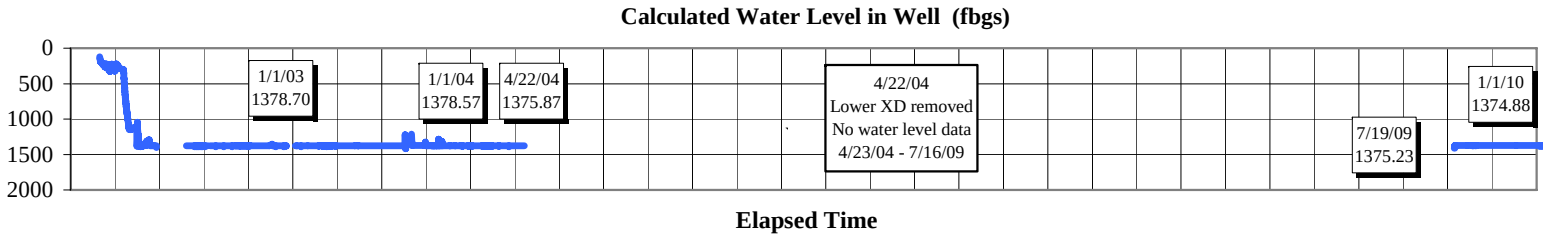
Wellhead pressure, down-hole pressure, and calculated well water level data for well MW 35-6-17-2 are charted in Figure 2-9 and summarized in Table 2-6 for the period of record. Monitoring of down-hole pressure was terminated after the lower transducer was removed from the well for the period of record between April 22, 2004 and June 25, 2009. The Hermit data logger and wellhead PXD pressure transducer were removed on June 25, 2009. New wellhead and down hole Level Trolls were installed in well MW 35-6-17-2 on July 17, 2009 to enable future monitoring of both wellhead and down-hole pressure regimes and the water level in the well.

Figure 2-9 shows the well pressure in a declining trend for the entire period record. There is a notable shift in the well pressure curve following the installation of Level Troll instruments on 7/17/2009. For example, the wellhead pressure measured by the PXD transducer was 474.51 psia on June 25, 2009 as compared with 464.15 psia measured by the Level Troll on January 1, 2010. This shift in well pressure suggests a difference in readings related to transducer performance rather than a marked change in the well pressure regime. Continued monitoring will confirm any potential changes in the well pressure regime.

As shown on Figure 2-9, no water level data is available for the 6-year period of record when there was only one well pressure transducer. However, data is available after installation of an upper and lower Level Troll on July 19, 2009 and shows essentially no change in the water level. The calculated water level was 1,375.9 ftbgs on April 22, 2004 as compared with 1,374.9 ftbgs on January 10, 2010.

Figure 2-9
Pressure Transducer Data
Beaver Creek Ranch Well MW-35-6-17-2





2.7 SHAMROCK MINES

Well MW 35-6-13-1 monitoring data are charted in Figures 2-10 and summarized in Table 2-7 for the entire 7.5-year period of record. Since there are no producing wells in close proximity to this area, this well is used to collect background data and has been monitored continuously since May 22, 2002. On June 29, 2009 the Hermit data logger and PXD transducers were replaced with Level Troll instruments.

Table 2-7
Well Pressure Data Summary for Shamrock Mines Monitoring Well

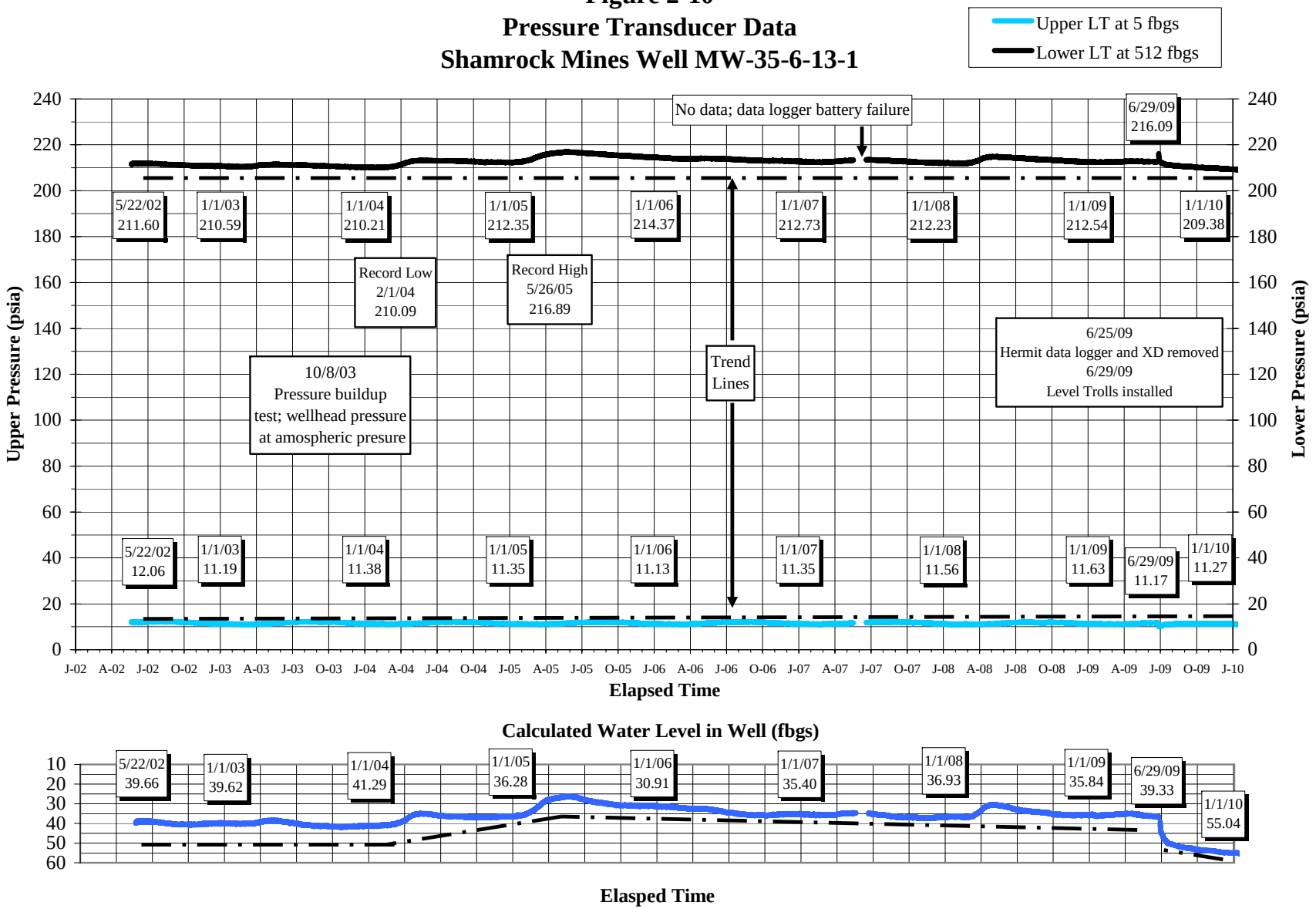
Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia[1]	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs[1]	Net Water Level Change in Well ft
MW 35-6-13-1 Upper	5/22/02 to 1/1/10	12.06	11.27	Atmospheric Pressure	39.66	55.04	-15.38
Lower		211.60	209.38	-2.22			

1 On May 26, 2005, the measured down-hole pressure (216.89 psia) and calculated depth to water (26.53 ft) in well MW 35-6-13-1 were at their highest levels for the period of record.

Figures 2-10 shows the wellhead pressure regime continues to be at atmospheric pressure and fluctuates within a range of 2 psi (between 10 psia and 12 psia). With wellhead pressure equal to atmospheric pressure, down-hole pressure is equal to atmospheric pressure plus water pressure, which is a function of the water level in the well. Table 2-7 shows a measured down-hole pressure of 209.38 psia when the water level in the well is 55.04 feet below ground surface. Figure 2-10 also shows the down-hole pressure and calculated water level in the well continued to exhibit a similar trend of seasonal fluctuation until the Level Trolls were installed. With wellhead pressure equal to atmospheric pressure, fluctuation of down-hole pressure is attributable to the fluctuation of the water level in the well.

Figure 2-10 shows a notable downward shift in the down-hole pressure and calculated water level data curves following the installation of the Level Trolls on June 29, 2009. For example, the down-hole pressure measured by the PXD transducer was 216.09 psia on June 25, 2009 as compared with 209.38 psia measured by the Level Troll on January 1, 2010. Like the Beaver Creek site monitoring wells, this shift in well pressure and corresponding shift in the calculated water level suggests a difference in readings related to transducer performance rather than a marked change in the well pressure regime. Continued monitoring will confirm any potential changes in the well pressure regime.

Figure 2-10
Pressure Transducer Data
Shamrock Mines Well MW-35-6-13-1



3.0 ARCHULETA COUNTY MONITORING WELL DATA SUMMARY

Monitoring well pressure was measured and recorded twice daily (12-hour interval) at the 3 monitoring well sites located in Archuleta County, Colorado. Applicable well pressure and calculated water level data for the entire period of record for each monitoring well are plotted in annotated charts. The water level in a well is calculated using the depth of the lower transducer and the difference in pressure between upper and lower transducers. This calculation is applicable at sites where the water level in a well is above the lower pressure transducer and below the upper pressure transducer.

3.1 WAGON GULCH

Monitor wells MW 34-5-4-1 and MW 34-5-4-2 have been monitored since December 2, 2008. Initial and ending monitoring well pressures and calculated water levels in the wells for the period of record are summarized in Table 3-1.

Table 3-1
Well Pressure Data Summary for Wagon Gulch Monitoring Wells

Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 34-5-4-1 Upper	12/2/08 to 1/1/10	12.16	24.12	11.96	692.66	281.88	410.78
Lower		75.35	265.94	190.59			
MW 34-5-4-2 Upper	12/2/08 to 1/1/10	13.31	N/A	N/A	372.85	N/A	N/A
Lower		189.72	388.86	199.14			

3.1.1 MW 34-5-4-1

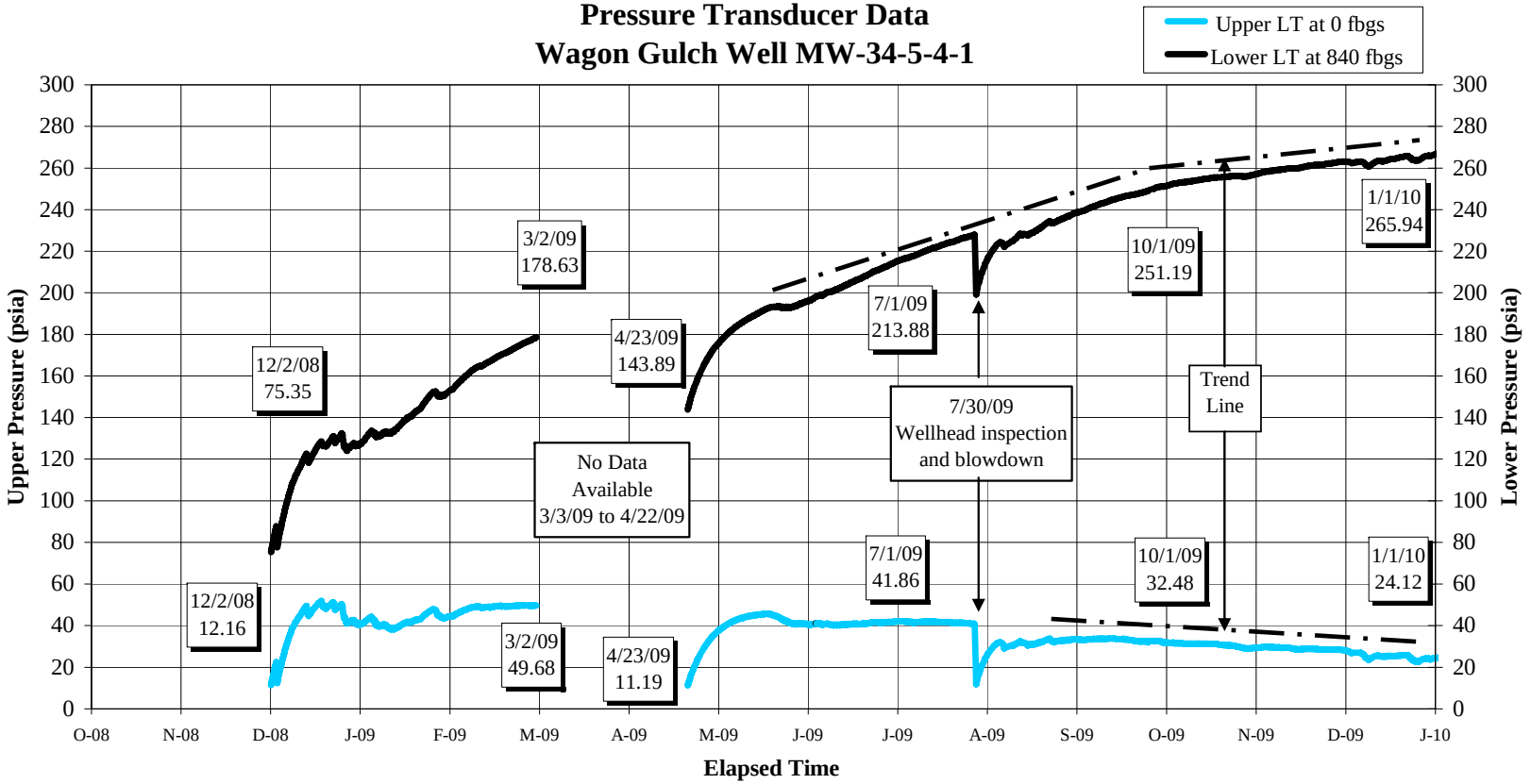
Figure 3-1 charts the upper and lower pressure transducer data and the calculated water level in the well. Table 3-1 and Figure 3-1 show an overall 11.96 psi net increase in wellhead pressure for the entire 1-year period of record from December 2, 2008 (12.16 psia) to January 1, 2010 (11.96 psia). During the first 3-month period of monitoring, Figure 3-1 shows an overall increase of 37.52 psi in wellhead pressure, from 12.16 psia on December 2, 2008 to 49.68 psia on March 2, 2009. No data are available from March 3, 2009 to April 22, 2009 due to Level Troll malfunctions. After the Level Troll replacement on April 23, 2009, the wellhead pressure stabilized at 40 to 41 psia. An inspection on July30, 2009 included a well blow down. Since July 30, 2009, wellhead pressure shows a build-up to about 35 psia in mid-September followed by a gradual decline trend to 24.12 psia on January 1, 2010.

This decline may indicate incomplete shut in. COGCC staff will schedule an inspection and testing of wellhead components and instruments after the 2010 spring snowmelt period when all monitoring well sites are safely accessible.

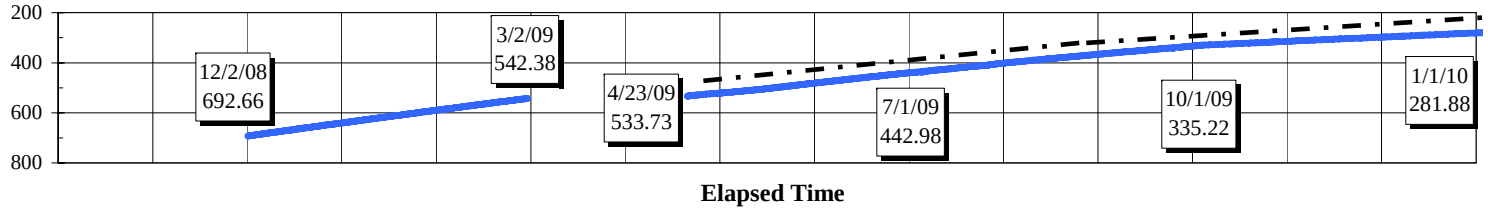
Table 3-1 and Figure 3-1 show an overall 190.59 psi net increase in down-hole pressure for the entire 1-year period of record from December 2, 2008 (75.35 psia) to January 1, 2010 (265.94 psia). During the first 3-month period of monitoring, Figure 3-1 shows an overall increase of 103.28 psi in down-hole pressure, from 75.35 psia on December 2, 2008 to 178.63 psia on March 2, 2009. No data is available from March 3, 2009 to April 22, 2009 due to Level Troll malfunctions. After Level Troll replacement on April 23, 2009, the down-hole pressure curve shows a steady build up to 213.88 psia prior to the July 30, 2009 well inspection and blow down.

In contrast to the declining wellhead pressure pattern since July 30, 2009, the down-hole pressure curve shows a build up pattern similar to the build up prior to July 30, 2009 and then a more gradual build up after September 2009 to a high of 265.94 psia on January 1, 2010. This down-hole pressure trend is attributed to a rising water level trend during the entire 1-year period of record and a net decline in wellhead pressure. Between December 2, 2008 and January 1, 2010 the water level curve shows a net rise of about 411 feet (see Table 3-1) from 692.66 fbgs to 281.66 fbgs.

Figure 3-1
Pressure Transducer Data
Wagon Gulch Well MW-34-5-4-1



Calculated Water Level in Well (fbgs)



3.1.2 MW 34-5-4-2

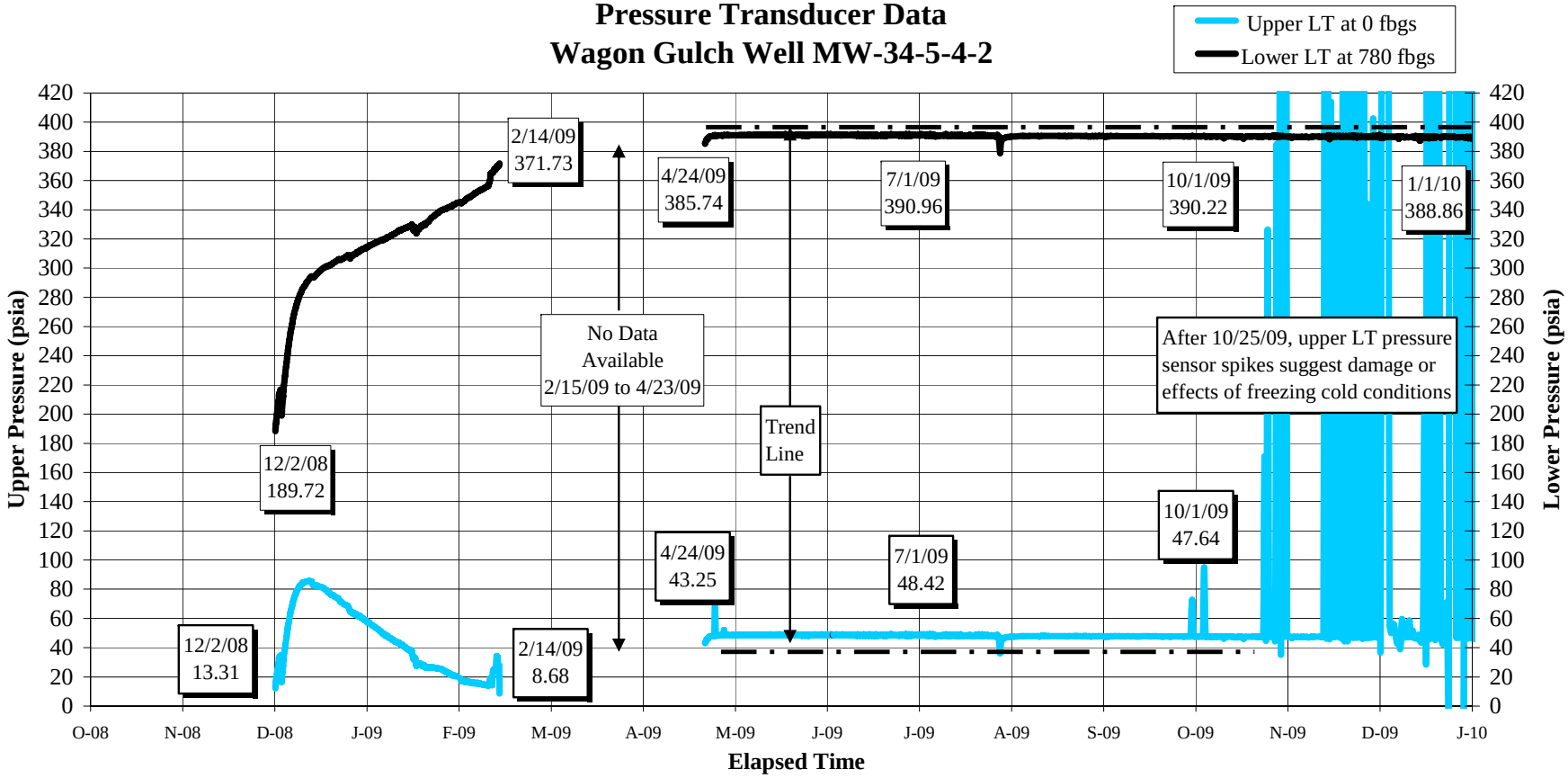
Figure 3-2 charts the upper and lower pressure transducer data and the calculated water level in the well. During the first 2.5-month period of monitoring, Figure 3-2 shows an initial build up in wellhead pressure from 13.31 psia on December 2, 2008 to 85.74 psia on December 13, 2008 followed by a decrease in wellhead pressure to an anomalous 8.68 psia on February 14, 2009. This low pressure suggests a pressure sensor malfunction because the pressure cannot be less than atmospheric pressure, which is approximately 11 psia. No data are available from February 15, 2009 to April 23, 2009 due to Level Troll malfunctions.

Figure 3-2 shows a relatively constant wellhead pressure of about 47 - 48 psia between April 24, 2009 and October 25, 2009 then an abnormal pattern after October 25, 2009. This erratic pressure spiking pattern suggests wellhead Level Troll pressure sensor damage or effects from freezing cold. COGCC staff will schedule an inspection and testing of wellhead components and instruments after the 2010 spring snowmelt period when all monitoring well sites are safely accessible.

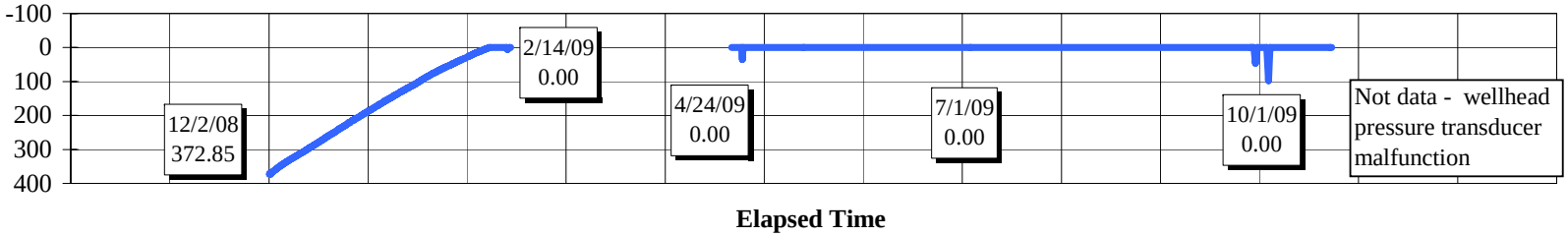
During the first 3-month period of monitoring, Figure 3-2 shows an initial build up of 182.01 psi in down-hole pressure from 189.72 psia on December 2, 2008 to 371.73 psia on February 14, 2009. No data are available from February 15, 2009 to April 23, 2009 due to transducer malfunctions. After April 24, 2009 the down-hole pressure was relatively constant (388 -391 psia) through January 1, 2010.

The calculated water level in MW 34-5-4-2 shows an increasing trend until February 8, 2009, followed by a pressure differential greater than the equivalent transducer set depth of 337.74 psia. This condition suggests that the wellhead is full of water, which could account for anomalous wellhead pressure readings under freezing cold conditions.

Figure 3-2
Pressure Transducer Data
Wagon Gulch Well MW-34-5-4-2



Calculated Water Level in Well (fbgs)



3.2 FOSSET GULCH

Monitor wells MW 34-5-14-1 and MW 34-5-14-2 have been monitored since December 4, 2008. Initial and ending monitoring well pressures and calculated water levels in the wells for the period of record are summarized in Table 3-2.

Table 3-2
Well Pressure Data Summary for Fosset Gulch Monitoring Wells

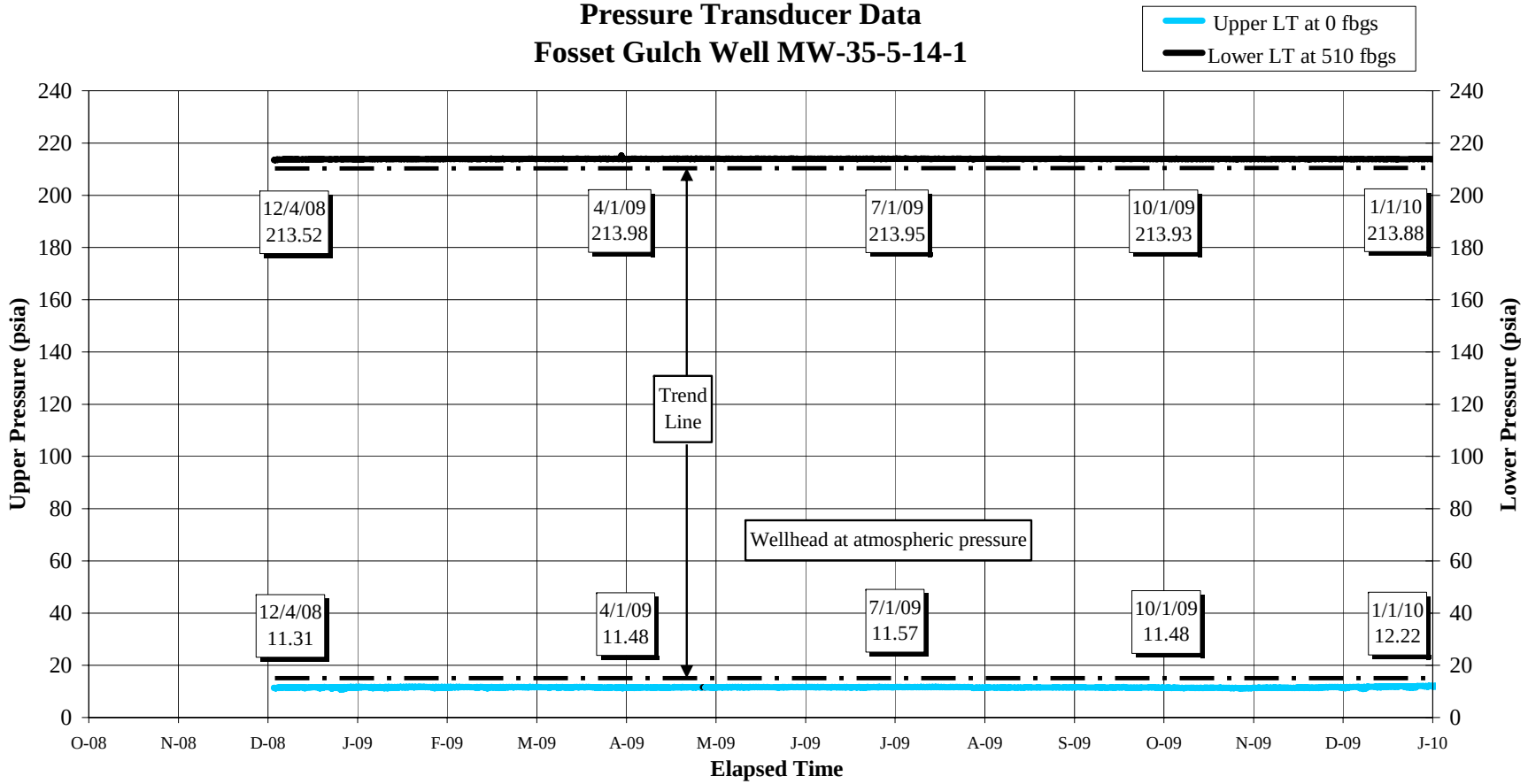
Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 34-5-14-1 Upper	12/4/08 to 1/1/10	11.31	12.22	Atmospheric Pressure	43.58	44.57	-0.99
Lower		213.52	213.88	0.36			
MW 34-5-14-2 Upper	12/4/08 to 1/1/10	11.22	14.83	3.61	27.66	33.94	-6.28
Lower		241.87	242.76	0.89			

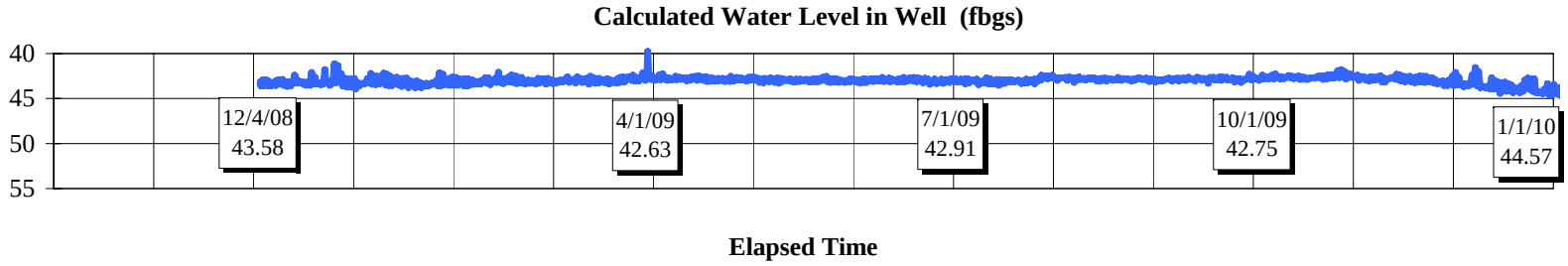
3.2.1 MW 34-5-14-1

Figure 3-3 charts the upper and lower pressure transducer data and the calculated water level in the well. Table 3-2 and Figure 3-3 show the wellhead pressure regime continues to be at atmospheric pressure and fluctuates between 11 psia and 12 psia. The down-hole pressure for the entire period of record was constant from December 4, 2008 (213.52 psia) to January 1, 2010 (213.88 psia). Since the wellhead pressure equals atmospheric pressure, the bottom-hole pressure equals atmospheric pressure plus water pressure as a function of the water level in the well.

The calculated water level in MW 34-5-14-1 shows a relatively flat trend for the first 11 months of record varying between 42 fbgs and 43.5 fbgs. Figure 3-3 shows a gradually declining water level trend during the last 2 months of record with a water level of 44.57 fbgs on January 1, 2010.

Figure 3-3
Pressure Transducer Data
Fosset Gulch Well MW-35-5-14-1



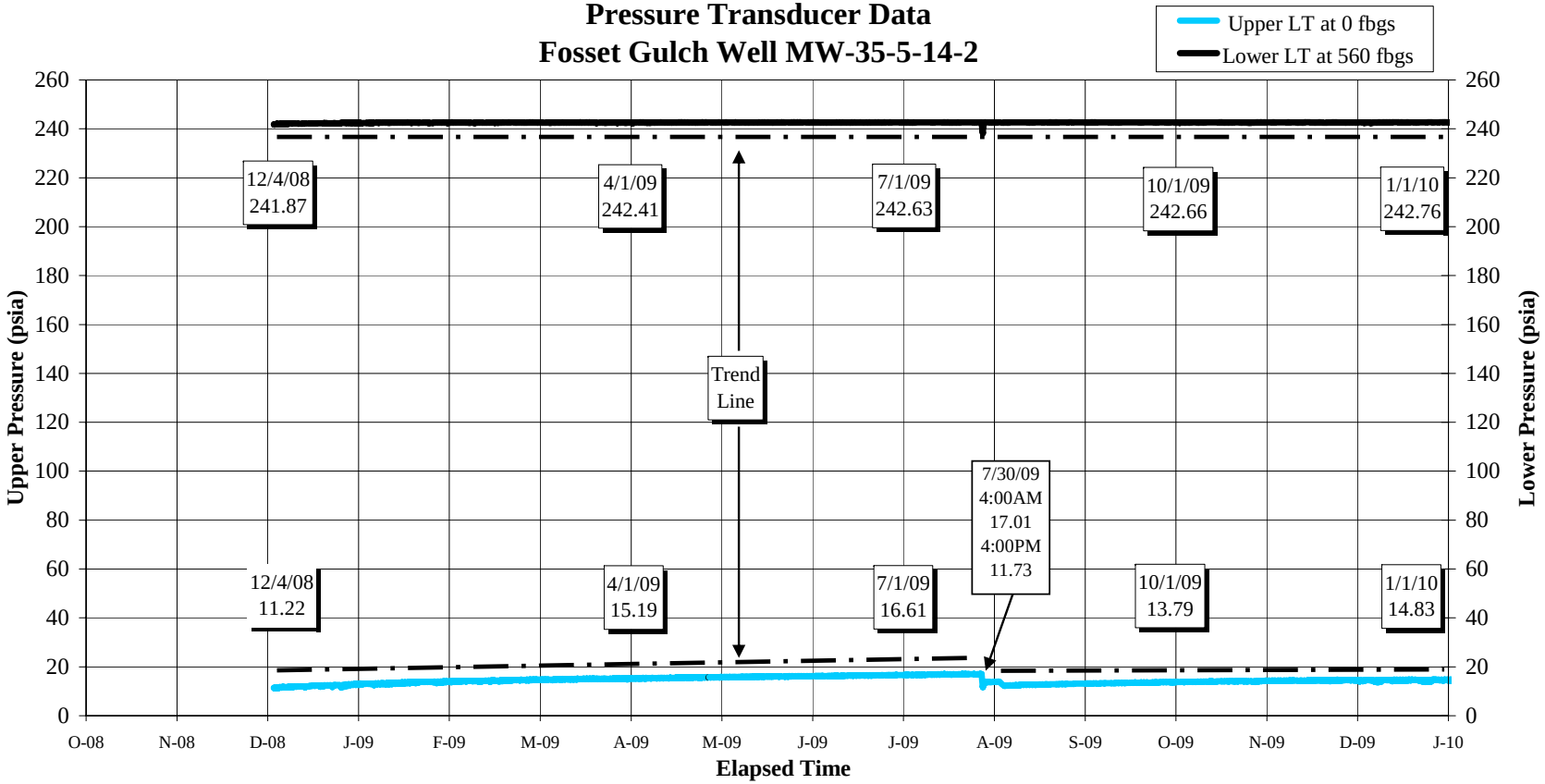


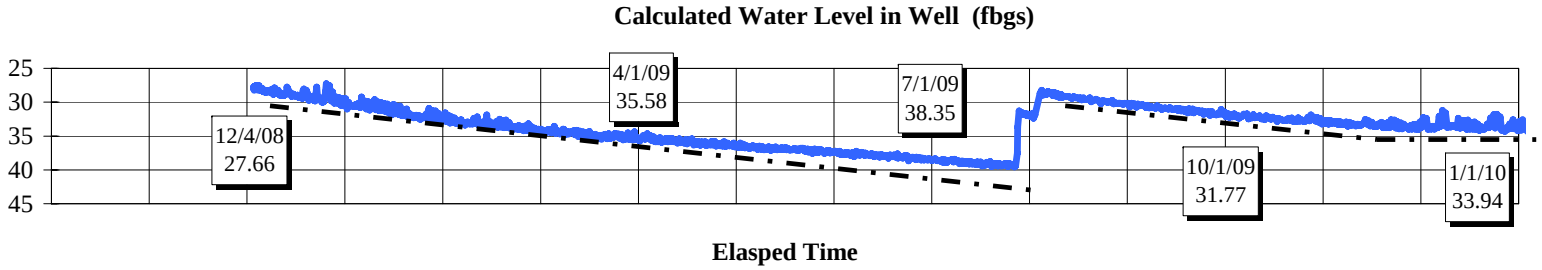
3.2.2 MW 34-5-14-2

Figure 3-4 charts the upper and lower pressure transducer data and the calculated water level in the well. Table 3-2 and Figure 3-4 show an overall increase in wellhead pressure for the entire period of record from December 4, 2008 (11.22 psia) to January 1, 2010 (14.83 psia). On July 30, 2009 the pressure reached a high of 17.01 psia at 4 AM and then decreased to 11.73 psia by 4 PM. This may be attributed to an incomplete shut-in at the wellhead. COGCC staff will schedule an inspection and testing of wellhead components and instruments after the 2010 spring snowmelt period when all monitoring well sites are safely accessible.

The down-hole pressure increased by 0.89 psi from 241.87 psia on December 4, 2008 to 242.76 psia on January 1, 2010. The calculated water level in MW 34-5-14-2 decreased from 27.66 fbgs on December 4, 2008 to 39.43 fbgs on July 30, 2009 then rose to 28.38 fbgs on August 9, 2009. This sudden rise in water level corresponds with the decrease in wellhead pressure shown on Figure 3-4 on July 30, 2009. From August 9, 2009 to January 1, 2010, the water level declined 5.56 feet in the well from 28.38 fbgs to 33.94 fbgs.

Figure 3-4
Pressure Transducer Data
Fosset Gulch Well MW-35-5-14-2





3.3 HIGHWAY 151

Monitor wells MW 34-4-30-1 and MW 34-4-30-2 have been monitored since December 3, 2008. Initial and ending monitoring well pressures and calculated water levels in the wells for the period of record are summarized in Table 3-3.

Table 3-3
Well Pressure Data Summary for Highway 151 Monitoring Wells

Well ID and Transducers	Period of Record	Initial Well Pressure psia	Ending Well Pressure psia	Net Change in Well Pressure psi	Initial Water Level in Well fbgs	Ending Water Level in Well fbgs	Net Water Level Change in Well ft
MW 34-4-30-1 Upper	12/3/08 to 1/1/10	11.56	11.88	Atmospheric Pressure	35.54	31.96	3.58
Lower		104.43	106.35	1.92			
MW 34-4-30-2 Upper	12/3/08 to 1/1/10	13.18	16.14	2.96	41.65	47.21	-5.56
Lower		129.59	130.00	0.41			

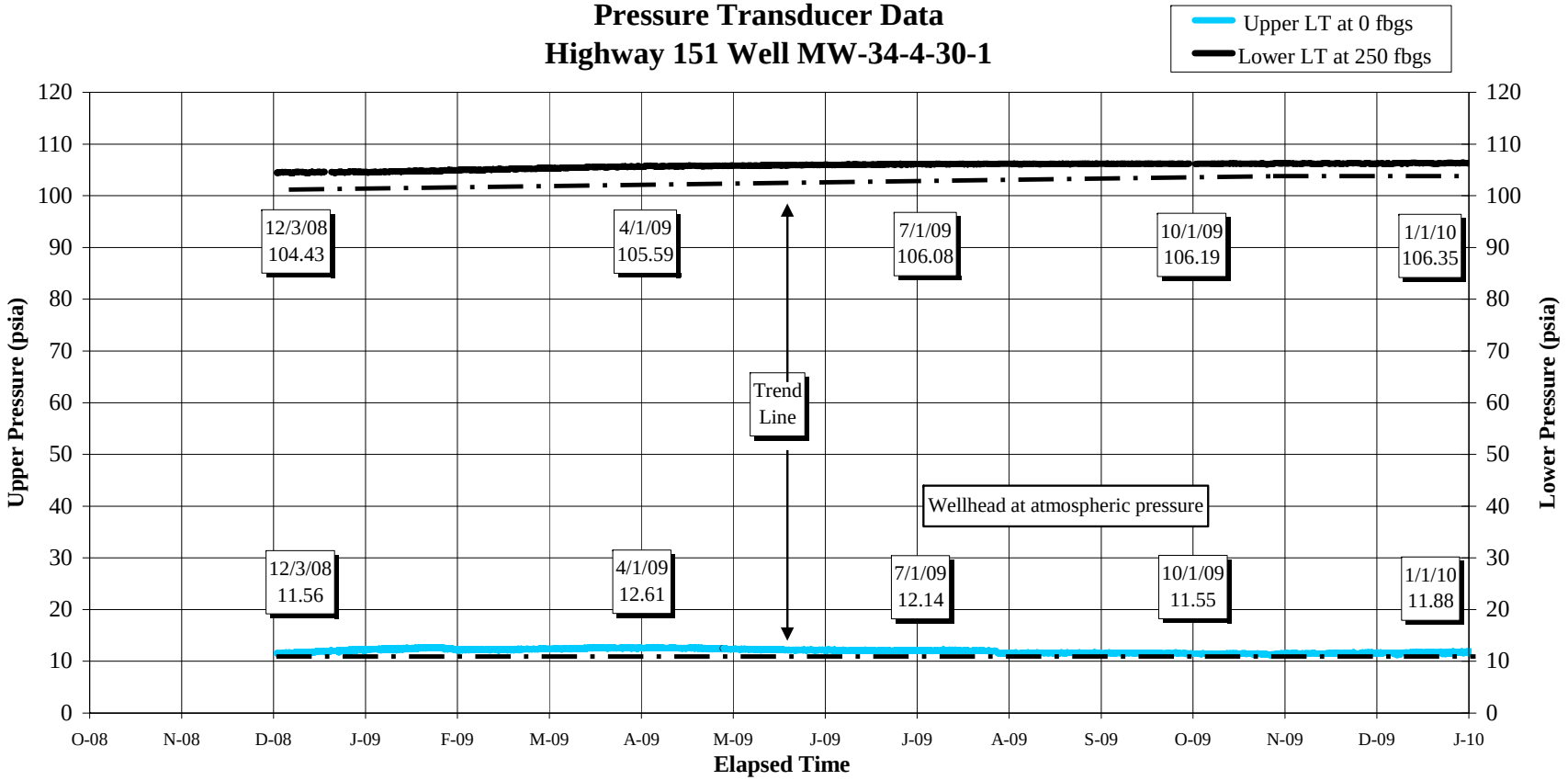
3.3.1 MW 34-4-30-1

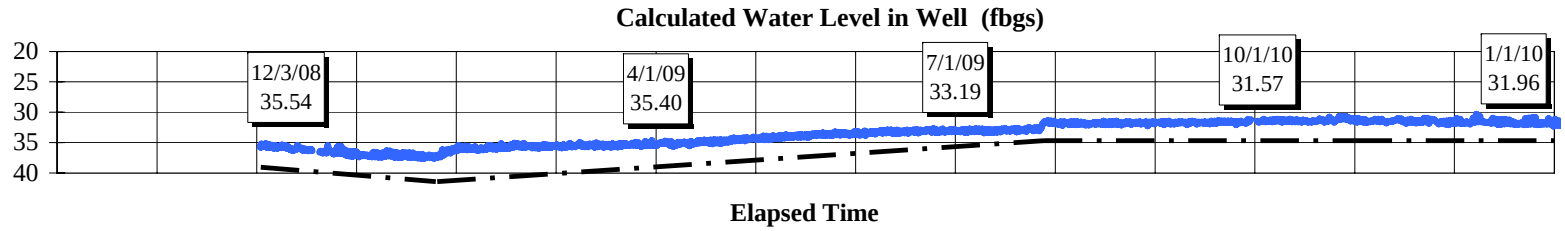
Figure 3-5 charts the upper and lower pressure transducer data and the calculated water level in the well. Table 3-3 and Figure 3-5 show the wellhead pressure regime continues to be at atmospheric pressure and fluctuates between 11 psia and 12 psia.

Down-hole pressure for the entire period of record rose from 104.43 psia on December 4, 2008 to 106.35 psia on January 1, 2010. Since the wellhead pressure equals atmospheric pressure, the bottom-hole pressure equals atmospheric pressure plus water pressure as a function of the water level in the well.

The calculated water level in MW 34-4-30-1 shows an overall increasing trend for the period of record. As shown on Figure 3-5, the water level on December 3, 2008 was 35.54 fbgs. The water level on January 1, 2010 was 31.96 fbgs for a total increase in water level of 3.58 feet.

Figure 3-5
Pressure Transducer Data
Highway 151 Well MW-34-4-30-1



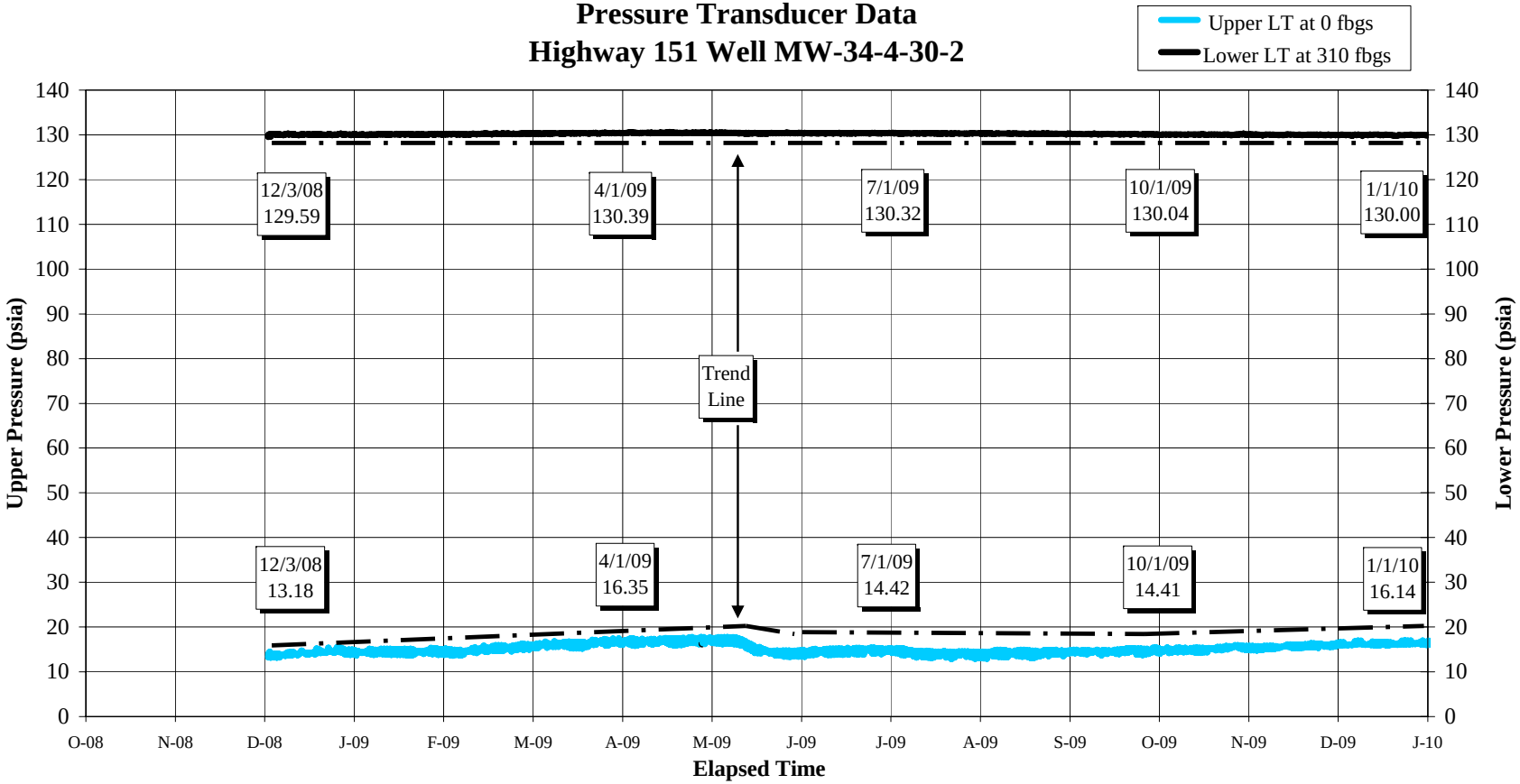


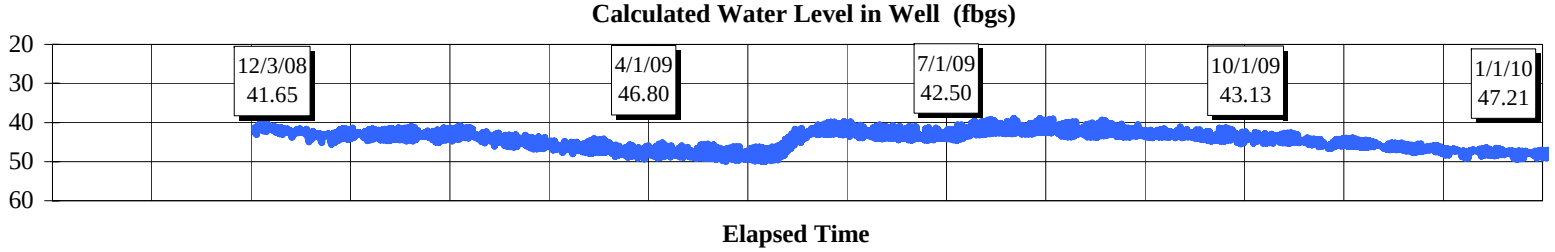
3.3.2 MW 34-4-30-2

Figure 3-6 charts the upper and lower pressure transducer data and the calculated water level in the well. Table 3-3 and Figure 3-6 show an overall increase in wellhead pressure for the entire period of record from December 3, 2008 (13.18 psia) to January 1, 2010 (16.14 psia).

Down-hole pressure data form a flat pattern with a mere 0.41 psi change from 129.59 psia on December 3, 2008 to 130.00 psia on January 1, 2010. The calculated water level in MW 34-4-30-2 decreased from 41.65 fbgs on December 3, 2008 to 49.54 fbgs on May 13, 2009 then rose to 39.85 fbgs on June 4, 2009. This rise in water level corresponds with the decrease in wellhead pressure shown on Figure 3-6 on May 13, 2009. From June 4, 2009 to January 1, 2010, the water level decreased 7.36 feet from 39.85 fbgs to 47.21 fbgs.

Figure 3-6
Pressure Transducer Data
Highway 151 Well MW-34-4-30-2





4.0 FUTURE WORK

Future routine work will consist of periodic field checks of each monitoring system and remote retrieval of recorded pressure measurement data using the In-Situ Inc. TROLL® Link telemetry system and ISI Data Center. COGCC staff will schedule an inspection and testing of all wellhead components and instruments after the 2010 spring snowmelt period when all monitoring well sites are safely accessible.

APPENDIX A
4M PROJECT MONITOR WELL CHRONOLOGY

4M Project Monitor Well Chronology

Location	Well	2001				2002								
		Jan	Sep	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Oct - Nov	Dec
Basin Creek	MW 34-9-7-1	Jan. 24-28: Drill & install well	Sept. 27: Perforate well	Nov. 28: Set up telemetry unit; replace bad xds cables	Survey	Jan. 18:Tighten wellhead fittings; rewire telemetry sys	Replace telemetry 12v battery sys, In-Situ assist							Lost telemetry communitcation with data logger
	MW 34-9-7-2								April 24-25: Drill & install well	May 5: Perforate well May 9: Fish out cable May 22: Install xds	Survey			
Palmer Ranch	MW-35-8-19-1													
Fiddler	MW-35-8-10-1													
South Fork Texas Creek	MW 35-7-8-1		Sept. 17-20: Drill/install well; Sept. 27: Perforate well	Nov. 29: Set up telemetry unit; replace bad xd cables	Survey	Jan. 18: Tighten wellhead fittings; rewire telemetry sys	Replace telemetry 12v battery sys, In-Situ assist			May 21: Ck for leaks				Dec. 4: Data lost through end of year due to Hermit internal battery failure; lost telemetry communitcation with data logger Dec 7: Tightened wellhead fittings
	MW 35-7-8-2		Sept. 20-21: Drill/install well Sept. 27: Perforate well	Nov. 29: Set up telemetry unit; replace bad xd cables	Survey	Jan. 18: Tighten wellhead fittings				May 21: Ck for leaks			Oct 25: Vent well; replaced strain relief fittings; shut in well	
BP Highlands	MW-34-7-15-1													
Beaver Creek Ranch	MW 35-6-17-1						Replace telemetry 12v battery sys, In-Situ assist	Mar. 5-Apr 4: Drill & install well		May 2: Perforate well; May 20-21: Install xds	Survey	July 10: Replace lower xd cable with unvented cable		Dec 13: Insp by Raymond Const.- no wellhead gas leak; : logger batt @ 0% capacity; modem problem Dec. 19: Data lost through end of year due to bad data logger bkup battery
	MW 35-6-17-2		Sept. 22-Oct. 4: Drill/install well	Nov. 26: Perforate well Nov. 27: Set up telemetry unit	Survey	Jan. 17 - Install new xd cables with SwageLok fittings; rewire telemetry unit			Apr 8: Pull lower xd cable; no data Apr 8 to May 20	May 21: Install unvented, heavy duty xd cable; shut in well		Gas leak @ top bushing; July 10: Vent well & ck bushing galls; July 11: shut in well	Nov. 14: Vent well; replaced valve and reseal all connections	
Shamrock Mines	MW 35-6-13-1									May 3-7: Drill/install well May 10: Perforate well May 20, 21: Install pad, telemetry & data logger systems, & xds	Survey			Lost telmetry communitcation with data logger
Wagon Gulch	MW-34-4-30-1													
	MW-34-4-30-2													
Fossett Gulch	MW-35-5-14-1													
	MW-35-5-14-2													
Highway 151	MW-34-4-30-1													
	MW-34-4-30-2													

4M Project Monitor Well Chronology

Location	Well	2003 Jan	2003 Feb - Apr	2003 May - Jun	2003 Aug	2003 Oct - Dec	2004 Jan - Mar	2004 Apr	2004 Aug
Basin Creek	MW 34-9-7-1	Jan 20: New well 34-9-7-1 upper xd (30 psig, sn 7201); rewire pwr regultr; replace logger bkup lith. batt; re-flash modem memory; enable modem auto pwr-up	Telemetry system malfunction	May 20: Replace modem and cell phone	Aug 21: Vent both wells and tighten wellhead xd cable strain relief fittings	Oct 8: Conduct rapid blowdown & shutin test			Aug 25: New data logger battery pack; vent well; gas sample
	MW 34-9-7-2				Aug 21: Vent both wells and tighten wellhead xd cable strain relief fittings	Oct 8: Conduct rapid blowdown & shut-in test		Apr 23: vent well & raise upper xd from 5 fbgs to ground surface	Aug 25: vent well; raise upper xd to 1.65 ft above ground; gas sample
Palmer Ranch	MW-35-8-19-1								
Fiddler	MW-35-8-10-1								
South Fork Texas Creek	MW 35-7-8-1	Jan 20: rewire pwr regultr; replace logger bkup lith. batt; re-flash modem memory; enable modem auto pwr-up	Telemetry system malfunction;	June 16: lower xd failed		Oct 8: Well pressure buildup test	No data reported for 6/16/03 to 4/22/04 - lower xd failed	Apr 22: vent well; temperarily replaced lower xd with 1000 psia xd	Aug 25: New data logger battery pack; vent well; tighten xd fittings; gas sample
	MW 35-7-8-2			May 20: Replace modem and cell phone		Oct 8: Well pressure buildup test	Well pressure data suggest that wellhead xd cable strain relief fittings leak intermittently in winter	Apr 22: vent well; replaced strain relief fittings	Aug 25: vent well; tighten xd fittings replace lwr 1000 psia xd with new 500 psia xd; gas sample
BP Highlands	MW-34-7-15-1								
Beaver Creek Ranch	MW 35-6-17-1	Jan 7 & Jan 21: No wellhead gas leak @ MW35-6-17-2 Jan 21: rewire pwr regultr; replace logger bkup lith. batt; re-flash modem memory; enable modem auto pwr-up	Telemetry system malfunction	May 20: Replace modem and cell phone;		Oct 7 & 21: Well pressure buildup test			Aug 24: New data logger battery pack; vent well; Aug 25: gas sample
	MW 35-6-17-2		Wellhead bushing leak	May 20: Wellhead bushing leak; wellhead assembly to be redesigned	Aug 20: New flanged wellhead assembly; xd cable leak at swagelok fitting	Oct 8 & 21: Well pressure buildup test; wellhead leaks @ pressure >570 psia;	Wellhead leaks @ pressure >570 psia	Apr 22: vent well/removed lower xd; attached upper xd externally to wellhead; no leaks	Aug 24: vent well; Aug 25: gas sample
Shamrock Mines	MW 35-6-13-1	Jan 21: rewire pwr regultr; replace logger bkup lith. batt; re-flash modem memory; enable modem auto pwr-up	Telemetry system malfunction	May 20: Replace modem and cell phone;	Aug 20: Modem pwr down; replaced 12v battery	Oct 7: Replaced 12v battery pack Oct 8: well pressure buildup tests Oct 21: Replaced solar panel			Aug 24: New data logger battery pack; vent well, no gas to sample
Wagon Gulch	MW-34-4-30-1								
	MW-34-4-30-2								
Fossett Gulch	MW-35-5-14-1								
	MW-35-5-14-2								
Highway 151	MW-34-4-30-1								
	MW-34-4-30-2								

4M Project Monitor Well Chronology

Location	Well	2005			2006			2007		
		Mar	Jun	Oct - Dec	Jan	Jun -Nov	Dec	Jun	Aug	Nov - Dec
Basin Creek	MW 34-9-7-1		June 14: Inspection			June 21: Inspection		June 20: Inspection; replace logger battery; start new test	Analog modem telemtry sys. off line; local telecom. service changed to digital by provider; Hermit logger data must be extracted to a PC on site.	Nov 12 & Dec 12: Inspection and Hermit logger data extraction
	MW 34-9-7-2		June 14: Inspection; pressure gauge leaking; vented well (artesian flow < 0.5 gpm); lowered upper xd to 4.6 fbgs (under water); replaced gauge with plug			June 21: Inspection				
Palmer Ranch	MW-35-8-19-1									
Fiddler	MW-35-8-10-1									
South Fork Texas Creek	MW 35-7-8-1		June 13: Inspection; new data logger test started			June 21: Inspection		June 20: Inspection; replace logger battery; start new test	See above	Nov 12 & Dec 12: Inspection and Hermit logger data extraction
	MW 35-7-8-2	Mar: Well pressure deviation from previous norm; possible wellhead leak or xd failure or decline in well gas pressure	June 13: Wellhead fitting leaks detected June 14: Vented well and replaced both 500 psia xds; new data logger test started	Oct 25: Vent well; replaced strain relief fittings Dec 7: Tightened wellhead fittings	Jan 3: Tightened wellhead fittings	June 21: Tightened wellhead fittings October 31: Replaced all well head fittings November 10: Developed well and water sample collected	Dec 11 &13: Tightened wellhead strain relief fittings	June 20: Wellhead fittings leak; vent well; replaced xd cables with rugged polyethylene cables		Dec 12: Wellhead strain relief cable fitting leak; vent well; installed Swaglok tube fitting on upper xd cable at wellhead
BP Highlands	MW-34-7-15-1									
Beaver Creek Ranch	MW 35-6-17-1		June 13: Inspection			June 21: Inspection		June 20: Inspection; replace logger battery; start new test	See above	Nov 12 & Dec 12: Inspection and Hermit logger data extraction
	MW 35-6-17-2		June 13: Inspection; slight leak detected from wellhead xd bushing			June 21: Inspection; slight leak detected from wellhead xd bushing October 31: Leaky wellhead xd bushing sealed				
Shamrock Mines	MW 35-6-13-1		June 13: Inspection			June 21: Inspection		June 20: Inspection; replace logger battery; start new test	See above	Nov 12 & Dec 12: Inspection and Hermit logger data extraction
Wagon Gulch	MW-34-4-30-1									
	MW-34-4-30-2									
Fossett Gulch	MW-35-5-14-1									
	MW-35-5-14-2									
Highway 151	MW-34-4-30-1									
	MW-34-4-30-2									

4M Project Monitor Well Chronology

Location	Well	2008					2009		
		May	Sep	Oct	Nov	Dec	Jun-Jul	Oct	Nov
Basin Creek	MW 34-9-7-1	May 6: Inspection and Hermit logger data extraction	Sept 3: Inspection and Hermit logger data extraction			Dec 10: Inspection and Hermit logger data extraction	June 25: Inspection and Hermit logger data extraction, removal of data logger equipment from well June 30: Installation of Level Troll data logger equipment		
	MW 34-9-7-2								
Palmer Ranch	MW-35-8-19-1								Nov 10: Installed Well
Fiddler	MW-35-8-10-1								Nov 17: Installed Well
South Fork Texas Creek	MW 35-7-8-1	May 6: Inspection and Hermit logger data extraction	Sept 3: Inspection and Hermit logger data extraction			Dec 10: Inspection and Hermit logger data extraction	June 25: Inspection and Hermit logger data extraction, removal of data logger equipment from well June 30: Installation of Level Troll data logger equipment		
	MW 35-7-8-2	May 6: Inspection and Hermit logger data extraction; Slight leak at lower xd cable wellhead strain relief fitting	Sept 3: Inspection and Hermit logger data extraction; Very slight leak at lower xd cable wellhead strain relief fitting			Dec 10: Inspection and Hermit logger data extraction; Slight leak at lower xd cable wellhead strain relief fitting			
BP Highlands	MW-34-7-15-1							Oct 10: Installed Well	
Beaver Creek Ranch	MW 35-6-17-1	May 6: Inspection and Hermit logger data extraction	Sept 3: Inspection and Hermit logger data extraction			Dec 10: Inspection and Hermit logger data extraction	June 25: Inspection and Hermit logger data extraction, removal of data logger equipment from well June 30: Installation of Level Troll data logger equipment		
	MW 35-6-17-2								
Shamrock Mines	MW 35-6-13-1	May 6: Inspection and Hermit logger data extraction	Sept 3: Inspection and Hermit logger data extraction			Dec 10: Inspection and Hermit logger data extraction	June 25: Inspection and Hermit logger data extraction, removal of data logger equipment from well June 30: Installation of Level Troll data logger equipment		
Wagon Gulch	MW-34-4-30-1			Oct 2: Installed Well		Dec 2: Installation of Level Troll data logger equipment, set up telemetry system			
	MW-34-4-30-2			Oct 13: Installed Well					
Fossett Gulch	MW-35-5-14-1			Oct 31: Installed Well		Dec 4 :Installation of Level Troll data logger equipment, set up telemetry system			
	MW-35-5-14-2			Oct 22: Installed Well					
Highway 151	MW-34-4-30-1				Nov 11: Installed Well	Dec 3: Installation of Level Troll data logger equipment, set up telemetry system			
	MW-34-4-30-2				Nov 7: Installed Well				