

## **Petroglyph Operating Company, Inc. Monthly Report – July 2008**

Petroglyph Operating Company, Inc. (Petroglyph) is submitting this monthly report for the activities that have occurred at their Little Creek Field in the Raton Basin from the last date of data collection for the June Monthly Report (June 15, 2008) through July 15, 2008. Along with this monthly report, Petroglyph is submitting an electronic copy of all data including Microsoft Excel spreadsheets from which the attached summaries and graphs were created.

### **1.0 Investigation**

Aquifer Characterization: Testing of the injection and recovery wells began on July 7<sup>th</sup> and continues as of the date of this report. Most wells will be pumped tested if well yields allow pump testing. If well yields are too low, those wells will be tested with injection testing. Injection 2 Gonzales will not be tested as part of this program due to problems believed to be a result of a break in the well casing. As of the date of this report testing has been completed on 2 recovery wells and 3 injection wells. Testing of all wells is expected to be completed within the next one to two weeks. Results of the pump testing will be presented in a detailed report to be submitted within 3-4 weeks of completion of testing, assuming receipt of water quality monitoring results. Following is a brief summary of the testing results to date. Table 1 includes a summary of the well completion details.

- Recovery 1 Kittleson – Well was shut-in from 6/04 to 6/17. Pump testing was performed on 7/08 to 7/09. The testing ended early because maximum pump production at 15 gallons per minute (gpm) could not keep up with the well yield. This well will be retested using a higher production pump.
- Recovery 4 Barrett – Well was shut-in from 6/03 to 6/17. Pump testing was performed on 7/10 to 7/11. The testing ended early because the well yield was very low and could not sustain 0.5 gpm for more than approximately six hours.
- Injection 6 Masters – Pump testing was performed on 7/11 to 7/15. The initial testing ended due to low well yield and a smaller pump was placed and the well retested.
- Injection 3 Benevides – Pump testing was performed on 7/17 to 7/18. Testing was completed although the yield was low for this well.
- Injection 4 Rohr – Pump testing was performed on 7/21 to 7/23. Testing showed the well yield will sustain flows at approximately 15 gpm.

Petroglyph continues to monitor gas production from the wells. Only Recovery 1 Kittleson, Recovery 3 PEI and Recovery 4 Barrett showed any gas production during this reporting period as indicated in Attachment 1. As shown on the graphs, ongoing pumping tests as well as the shut-in period for the recovery wells has had effects on the gas production from these wells during the reporting period. POCI 55 is no longer producing gas at the surface as shown in Attachment 1.

In addition to completing the drilling for all injection and recovery wells, Petroglyph has almost completed the pipeline system. The injection line was pressure tested on June 17<sup>th</sup> to 125 psig for 90 minutes as discussed in the previous monthly report. The recovery gas and water lines were pressure tested on June 19<sup>th</sup> to 100 psig for 60+ minutes. The system just needs to be tied together once approvals are received to begin pumping. A 210 barrel tank has been installed for holding water. The separator for water/methane has been installed. The flare will be installed during the next reporting period.

Dissolved Methane Sampling: Petroglyph's consultant, Norwest Applied Hydrology, has completed initial sampling for dissolved methane in water wells within a one mile radius of the remediation system. Sampling results were included in the April monthly report. No additional sampling of these wells occurred during this reporting period.

## **2.0 Monitoring**

### Gas Pressure Monitoring

Barrett, Bergman, Coleman, and Meyer have continuous pressure monitoring for fluid levels that have been installed by Petroglyph. Information from these wells is downloaded monthly by Petroglyph and included in electronic format with this monthly report. Attachment 2 shows graphically the changes in pressure for each of these wells. As can be seen on the graphs, pressure is trending downward in all wells and this downward trend has not changed from previous monthly reports. The downward trend does appear to be leveling off in Barrett and Coleman. Water levels are also measured in the Barrett and Meyer wells. As shown in Attachment 2, the water levels in both wells are trending downward as well and this downward trend has not changed from previous monthly reports.

Gas flow monitors have been installed by Petroglyph at the Angely, Bruington, Coleman, and Smith wells. Continuous gas flow monitoring occurs at Coleman and Smith, while gas flow is spot monitored with a gage and orifice tester at Angely and Bruington. Gas pressure at Bounds and Angely wells is currently monitored by COGCC or their consultant, however the data is presented in this report. The data from this monitoring is provided in Attachment 3. While gas flow can be variable, in general gas flow has shown an overall decrease in all wells. Gas flows from the Smith and Angely wells have dropped to zero in recent measurements and appear to be sustained at or near zero for the last several months. The Bruington well has decreased from approximately 35 mcf/day in January to near 0 in the most recent readings. In late May the Bounds well showed a decrease from approximately 2 mcf/day to less than 1 mcf/day, which continues to hold through the most recent measurements.

### Fluid Levels in Petroglyph Production Wells

Eleven Petroglyph production wells are monitored for fluid level and casing pressure. An additional four Petroglyph production wells are continuously monitored for fluid level pressures. Three monitoring wells are also monitored for water levels. Changes in fluid levels in Petroglyph's production wells are shown graphically in Attachment 4. As shown in the attachment and as would be expected since Petroglyph is no longer pumping these

wells to draw down water levels, water levels continue to rise in all wells although the rate of rise is slowing. There is no data provided for the Rohr 09-05 well because the power in the well is off and waiting some repair work.

#### Bi-Weekly and Monthly Water Well Monitoring

Petroglyph monitors or has monitored approximately 77 wells in the vicinity of the site. Table 2 shows all of the wells that have ever been sampled, the sampling start date, the date of the last sample, the number of samples since the last reporting period and a description of the sampling results and any changes from the previous reporting period.

Of these 77 wells, 10 are no longer sampled or were not sampled during this reporting period. Sampling may vary during any one reporting period due to a variety of reasons. During this reporting period 10 wells were sampled once, 7 wells were sampled twice, 48 wells were sampled three times and 2 wells had five sampling results. The 2 wells with five sampling results are wells sampled by the COGCC and included data from the previous reporting period that had not been received as of the date of the last report so in actuality only three of the five results are from this reporting period.

As shown on Table 2, the monitoring results for the 67 wells sampled showed that 44 wells had no or insignificant change from the previous monitoring period measurements. Changes in % LEL, % by volume CH<sub>4</sub>, and % volume O<sub>2</sub> were evaluated to determine if the wells were showing an indication of increasing or decreasing methane gas content. Of the remaining 23 wells, 8 showed increases, with 5 of those only slight increases and 13 showed decreases with 2 only slight decreases. Two wells showed variable results which could be interpreted as both increasing and decreasing.

#### Hand Held Measurements

Petroglyph conducts periodic ground surveys using a hand held methane detector at locations where gas has previously been detected, at locations where a property owner requests such a survey or at locations where previous surveys such as the helicopter survey have detected gas seepage. These surveys are conducted based on need or urgency so can range from several times a week to a one time survey based on concerns from a property owner. During this reporting period hand held measurements occurred at the Janet Campbell property. Results for this most recent and for past hand held measurements are included in the electronic database with the recent measurements during this reporting period summarized in Table 3.

#### Helicopter Survey

Petroglyph completed a helicopter survey for methane seepage (May 16, 17, and 18) and provided that data to the COGCC under separate cover. Hand held methane detector ground surveys have been conducted for areas where the helicopter survey indicated a potential new presence of methane or to confirm other helicopter readings. The hand held surveys conducted during this reporting period in response to the helicopter survey results are described in Table 4.

### **3.0 Mitigation**

#### Methane Alarms

There are currently a total of 14 homes with alarm systems provided by Petroglyph and that number has not changed from previous reports. During the last reporting period Petroglyph's contractor completed the updating of alarm systems for 9 homeowners who requested the updated system with both visual and audible alarms. Note that the attached electronic file does not list Mitch Sample as having an alarm system, either new or upgraded, however Mr. Samples was given an alarm system in March of 2008.

#### Water Supply

Petroglyph is currently providing water to 13 homes. One new name was added to the list during this reporting period, Richard McEntee. Table 5 provides a list of the homes currently receiving water. Water is delivered as needed and can vary from month to month due to residential water use and whether or not the homes are occupied.

#### Other

In addition to providing water several homeowners approached Petroglyph with other requests. These are detailed in the electronic data base under the Excel spreadsheet file titled Water Well contacts\_activities and summarized below.

- The Todd Eddleman family called and said their cistern collapsed and asked if Petroglyph would help replace it. Petroglyph has provided a 1,500 gallon cistern that the Eddlemans will install.
- Scott Billstrand requested that Petroglyph check his well for methane. He currently pumps to an unvented cistern that is under his house. His well was checked for methane and no methane was detected. His cistern was also checked for methane while the well pump was operating and no methane was detected.
- Lawrence Waltz water well was checked for methane and no methane was detected.

#### Public Outreach

Craig Saldin of Petroglyph attended the River Ridge Ranch Board of Managers meeting during the reporting period.

A newsletter with an update on Petroglyph's activities in the Little Creek Field was sent to many Huerfano County residents. The newsletter was dated June 20, 2008 and a copy is included as Attachment 4.

#### Health and Safety/Emergency Planning

The new employee responsible for safety has started and has assumed the safety duties for the site as well as the routine and event-specific methane monitoring.

#### 4.0 Schedule

The following is the currently anticipated schedule for the completion of testing for the injection system and implementation of Phase I, pumping and injection of water from the Poison Canyon Formation.

- Testing of the injection and recovery began July 7<sup>th</sup> and is expected to until August 1 –August 8 to complete.
- Upon completion of testing, a report will be prepared and submitted to the COGCC and the EPA. Report preparation will take approximately three to four weeks and the report submittal is currently expected to occur in approximately late August.
- At the time of submittal of the report, Petroglyph will request approval of the rule authorization and permission to inject Poison Canyon water from the EPA.
- Commencement of injection of the Poison Canyon water is currently anticipated to begin in late August or once all needed regulatory approvals have been obtained.
- Routine bi-weekly and monthly sampling will continue with new sampling sites added as needed. Sampling will be adjusted based on the monitoring results in accordance with the Petroglyph Monitoring and Response Plan submitted to the COGCC on April 7, 2008
- Hand held seep monitoring will continue as needed.

The currently anticipated schedule for the completion of Phase I is outlined in table form below. The schedule is contingent on a number of factors including weather conditions and equipment problems.

<b>Phase I Steps</b>	<b>Estimated Completion Date</b>
1. Testing of Mitigation Wells	Through August 1-8, 2008
2. Submittal of Final Mitigation Well Report	August 27, 2008 (depending on data availability)
4. Start of injection activities	August 28, 2008 (or once approval is obtained from the EPA)

**Table 1  
Remediation System Well Summary**

<b>Permit Number</b>	<b>Well Designation</b>	<b>Date Completed</b>	<b>Total Depth (feet below ground surface)</b>	<b>Water Flows While Drilling</b>	<b>Well Completion</b>	<b>Gas Flow</b>
275619	POCI 55 Monitoring Well	2/15/08	1050	Moderate to heavy	Slotted intervals at 526-541, 687-701, 744-754, 778-788, 896-976, and 1010-1049.	Maximum gas flow at 50 mcf/d when well first drilled. Measured at 34 on 3/6/08 and 0 on 5/9/08.
66755	Recovery Well 1 (Kittleson)	3/29/08	715	Moderate	Slotted intervals at 496-535, 614-625, 649-668	Significant gas encountered at 510 to 530 feet. Initially measured at 135 mcf/d on 3/25/08. Gas flow measured at 68 mcf/d on 4/14/08, 60 on 5/10/08, and 53.5 on 5/18/08.
66754	Recovery Well 2 (Reiss)	4/4/08	840	None	No water or gas encountered so well plugged and abandoned	No gas
66753	Recovery Well 3 (PEI)	4/7/08	625	Slight	Slotted interval 466-515 and 578-588	Encountered gas at 485 feet, Gas flow, 4.2" water column through a 1" orifice measured at 12 mcf/d initially. Reading of 15.5 mcf/d on 5/12/08 and 11 on 5/18/08.
66999	Recovery Well 4 (Barrett)	5/10/08	500	None	Slotted interval at 387-475	Initial gas flow of 3.8 mcf/day with a reading of 3.5 on 5/18/08.
276424	Injection Well 1 (Pascual)	4/29/08	600	Slight	Slotted intervals at 413-433 and 464-484	No gas
276425	Injection Well 2 (Gonzales)	4/14/08	600	Very slight	Slotted interval at 348-358, 399-499, 555-565	No gas

**Table 1  
Remediation System Well Summary**

<b>Permit Number</b>	<b>Well Designation</b>	<b>Date Completed</b>	<b>Total Depth (feet below ground surface)</b>	<b>Water Flows While Drilling</b>	<b>Well Completion</b>	<b>Gas Flow</b>
276426	Injection Well 3 (Benevides)	4/19/08	725	None	Slotted intervals at 411-431 and 599-609	No gas
276427	Injection Well 4 (Rohr)	5/6/08	675	Moderate	Slotted intervals at 551-570, 601-611, and 647-657	Slight detectable gas production
276428	Injection Well 5 (Rohr)	5/1/08	750	Very slight	Slotted intervals at 405-415, 497-507, 590-610, 694-714	5.6 mcf/day on 5/09/08
276430	Injection Well 6 (Masters)	4/10/08	725	Heavy	Slotted intervals at 414-424, 504-524, 576-596, and 680-690	Slight detectable gas production, not measured
276431	Injection Well 7 (Walden)	4/25/08	750	Very slight	Slotted intervals at 507-517, 559-579, 631-651	Slight detectable gas production, not measured
276432	Injection Well 8 (Haeffner)	4/22/08	650	Slight	Slotted intervals at 342-362, 466-486, 591-601	No gas

**Table 2**  
**Water Well Measurements for the Period of May 15 to June 15, 2008**

<b>Permit Number</b>	<b>Name</b>	<b>Sampling Start Date</b>	<b>Last Sample</b>	<b>Samples Since Last Monthly Report</b>	<b>If sampled, comparison of results from this period to last period</b>
20783	Goemmer Cattle	9/24/07	7/14/08	7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
230572	Willis	7/11/07	7/15/08	6/17/08, 7/01/08, and 7/15/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
84106	Rohr	7/06/07	7/14/08	6/16/08, 6/30/08, and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
93386	Lowry	7/12/07	7/14/08	7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
203536	Hurley	8/2/07	6/03/08	6/17/08, 7/01/08, and 7/15/08	At the well head: <ul style="list-style-type: none"> <li>• No change in LEL</li> <li>• H2S decreased from 28 ppm to 3.5 ppm</li> <li>• O2 % volume increased from 9 to 16.9</li> <li>• CO decreased from 5 to 0</li> <li>• CH4 % volume decreased from 47 to 17</li> </ul> No change at the cistern
121013	Schafer	8/15/07	6/17/08	6/17/08	No change from previous measurements, except H2S increased from 0 to 1 ppm. No detectable methane and O2% volume at 20.9
123144	Searle	7/11/07	7/14/08	6/15/08, 6/30/08, and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
145915	Carsella	7/11/07	7/15/08	6/17/08, 7/01/08, and 7/15/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
169043	Burge	7/11/07	7/15/08	6/18/08, 7/02/08, and 7/15/08	6/18 and 7/15 data showed no change from previous measurements. 7/02 data showed a spike in methane with %LEL increasing from 0 to >100, CH4% volume increasing from 0 to 3, and O2% volume decreasing from 20.9 to 17.5.
181278	Bounds	7/12/07	7/09/08	6/04/08, 6/11/08, 6/19/08, 6/25/08, and 7/09/08	No change from previous measurements except H2S increased from 0.5 ppm to 2.5 ppm and then decreased to 0. %LEL at 100, CH4% at 100, O2% at 0 and CO at 0 ppm.



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Permit Number	Name	Sampling Start Date	Last Sample	Samples Since Last Monthly Report	If sampled, comparison of results from this period to last period
191079	Brian Dale (?)	8/15/07	7/15/08	6/17/08, 7/15/08	No change from previous measurement for Well #1 Well #2 showed changes: <ul style="list-style-type: none"> <li>• %LEL decreased from &gt;100 to 0</li> <li>• CH4% vol decreased from 13 to 0</li> <li>• O2% vol increased from 0 to 20.9</li> <li>• CO decreased from 22 ppm to 0</li> <li>• H2S ppm decreased from 11.5 to 0</li> </ul>
192144	Snow	8/2/07	7/01/08	6/18/08, 7/01/08	<ul style="list-style-type: none"> <li>• %LEL remained at &gt;100 with decrease to 0 in 6/18 reading</li> <li>• CH4 % vol decreased from 5 to 1 with 0 in 6/18 reading</li> <li>• O2 % vol increased from 0 to 10.4</li> <li>• CO decreased 10 to 0</li> <li>• H2S decreased from 1.5 to 0</li> </ul>
192203	Rankins	7/12/07	7/14/08	7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
193520X	McEntee	8/2/07	7/14/08	6/17/08, 6/30/08, and 7/14/08	Slight change at wellhead with O2 decreasing from 20.9 to 18.2 and CH4% vol increasing from 0 to 0.25. At east wellhead: <ul style="list-style-type: none"> <li>• %LEL increased from 23 to 82 and then decreased to 49</li> <li>• CH4 % increased from 1.15 to 4.10 and then decreased to 2.45</li> <li>• O2 % steadily decreased from 20.9 to 9.8</li> <li>• CO and H2S remain at 0</li> </ul>
193521	Ping	7/11/07	10/19/07	None	No longer sampled
196371	Lyon	8/15/07	7/15/08	6/17/08, 7/15/08	<ul style="list-style-type: none"> <li>• %LEL decreased from &gt;100 to 0</li> <li>• CH4 % decreased from 5 to 0</li> <li>• O2 % increased from 4.3 to 20.9</li> <li>• Co decreased from 5 to 0</li> <li>• No change to H2S</li> </ul>
197472	Williams/Bartlett	8/15/07	8/15/07	None	No longer sampled

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Permit Number	Name	Sampling Start Date	Last Sample	Samples Since Last Monthly Report	If sampled, comparison of results from this period to last period
205195	Johnson	8/15/07	6/02/08	6/17/08, 6/30/08, and 7/14/08	<ul style="list-style-type: none"> <li>• %LEL decreased from 13 to 0</li> <li>• CH4 % decreased from 0.65 to 0</li> <li>• O2 % increased from 16.9 to 20.9</li> <li>• No change to CO and H2S</li> </ul> Values at the cistern have remained unchanged 2 <sup>nd</sup> Well <ul style="list-style-type: none"> <li>• %LEL went from &gt;100 to 0 and then up to 39</li> <li>• CH4 % went from 11 to 0 and then up to 1.95</li> <li>• O2 % went from 0 to 20.9 and then to 17</li> <li>• CO went from 10 to 0</li> <li>• H2S decreased from 1.5 to 0</li> </ul>
210526	Bruington	8/7/07	7/22/08	7/22/08	<ul style="list-style-type: none"> <li>• %LEL has increased from 100 to &gt;100</li> <li>• CH4% has decreased slightly from 98 to 97</li> <li>• O2 % has decreased from 1.2 to 0</li> <li>• CO was not measured at last monitoring, but is 16 ppm</li> <li>• H2S has decreased from 5.5 to 5</li> </ul> Values at the cistern were 0 for all except O2 which was 20.9.
215322	Petroglyph	7/6/07	9/24/07	None	Not sampled during this reporting period
216732	Petroglyph	7/11/07	9/24/07	None	Not sampled during this reporting period
	Petroglyph	2/13/08	2/13/08	None	Not sampled during this reporting period
215706	Brice	7/12/07	7/14/08	6/16/08, 7/12/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
219376	White	8/2/07	6/17/08	6/17/08	<ul style="list-style-type: none"> <li>• %LEL decreased from &gt;100 to 0</li> <li>• CH4 % decreased from 5 to 0</li> <li>• O2 % increased from 2.2 to 16</li> <li>• CO remained at 0</li> <li>• H2S decreased slightly from 1 to 0</li> </ul>
221465	Evenden	8/2/07	7/15/08	6/17/08 and 7/15/08	<ul style="list-style-type: none"> <li>• %LEL decreased from 29 to 0</li> <li>• CH4 % decreased from 1.45 to 0</li> <li>• O2 % increased from 10.2 to 20.9</li> <li>• No change to CO and H2S from 0</li> </ul>

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Permit Number	Name	Sampling Start Date	Last Sample	Samples Since Last Monthly Report	If sampled, comparison of results from this period to last period
222294	Cramer	8/3/07	6/17/08	6/17/08	<ul style="list-style-type: none"> <li>• %LEL decreased from &gt;100 to 0</li> <li>• CH4 % decreased from 5 to 0</li> <li>• O2 % increased from 1.3 to 20.9</li> <li>• CO decreased from 43 to 0</li> <li>• No change to H2S at 0</li> </ul> No change at cistern
222539	Lively	7/6/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
235292	Kerman/Hanson	7/6/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	No change until final sampling event on 7/14 then: <ul style="list-style-type: none"> <li>• %LEL went from 0 to 5;</li> <li>• CH4 % went from 0 to 0.25</li> <li>• O2% went from 20.9 to 16.9</li> <li>• CO and H2S remain at 0</li> </ul> Well vent not measured. Cistern measured in last two sampling events and all values at 0 except O2 which is 20.9.
235516	Colorado Switzer	7/12/07	7/14/08	6/16/08, 7/02/08, and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
236272	Houghtling	7/6/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	<ul style="list-style-type: none"> <li>• % LEL remains unchanged at &gt;100</li> <li>• CH4 % volume has increased slightly from 87 to 94</li> <li>• O2% volume increased slightly from 0 to 0.2 with a value of 3.8 on 6/16</li> <li>• H2S remains unchanged at 0 ppm</li> <li>• CO has fluctuated between 0 and 15</li> </ul> No change at cistern
238209	Salazar	8/15/07	6/17/08	6/17/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
238689	Angely	7/5/07	7/09/08	6/04/08, 6/11/08, 6/19/08, 6/25/08, and 7/09/08	All measurements at 0 during the reporting period except for O2% which was at 20.9.

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Permit Number	Name	Sampling Start Date	Last Sample	Samples Since Last Monthly Report	If sampled, comparison of results from this period to last period
239657	Smith	7/5/07	7/14/08	6/16/08, 6/30/08, and 7/14/08	At Wellhead: No change from last measurements. All values at 0 except O2% which is at 20.9. At Well Vent: <ul style="list-style-type: none"> <li>• % LEL decreased from &gt;100 to 0</li> <li>• CH4 % decreased from 86 to 0</li> <li>• O2% volume increased from 0 to 20.9</li> <li>• H2S decreased from 4.5 to 0 ppm</li> <li>• CO decreased from 15 to 0</li> </ul> The cistern showed unchanged values except that H2s varied from 2.5 to 0 to 2 ppm.
240947	Wolahan	7/12/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	No change from previous measurements. O2 % decreased slightly in 7/14/ measurement from 20.9 to 19.6. No detectable methane.
244403	Bergman	7/6/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	<ul style="list-style-type: none"> <li>• % LEL remains unchanged at &gt;100</li> <li>• CH4 % volume has increased from 18 to 54</li> <li>• O2% volume has decreased from 15.9 to 7.9</li> <li>• H2S and CO remain unchanged at 0 ppm</li> </ul>
246775	Sharp	9/9/07	7/15/08	6/17/08, 7/01/08 and 7/15/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
248680	Campbell	8/14/07	7/19/08	7/19/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
248862	Meyer	8/14/07	6/03/08	6/17/08, 7/2/08 and 7/15/08	<ul style="list-style-type: none"> <li>• % LEL no change &gt;100</li> <li>• CH4 % volume has increased from 67 to 85</li> <li>• O2% volume has decreased from 3.4 to 1.2</li> <li>• H2S remains at 0</li> <li>• CO has decreased from 10 to 0</li> </ul>
248983	Tobias	8/3/07	6/03/08	6/17/08, 7/02/08 and 7/15/08	<ul style="list-style-type: none"> <li>• % LEL has increased 8 to &gt;100 with a 0 value on 7/02</li> <li>• CH4 % volume has increased from 0.4 to 8.00 with a 0 value on 7/02</li> <li>• O2 has increased slightly from 17.6 to 18.8 with two values of 20.9</li> <li>• No change in CO</li> <li>• H2S has decreased from 1.5 to 0</li> </ul>

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<b>Permit Number</b>	<b>Name</b>	<b>Sampling Start Date</b>	<b>Last Sample</b>	<b>Samples Since Last Monthly Report</b>	<b>If sampled, comparison of results from this period to last period</b>
249181	Hentschel	9/9/07	7/15/08	6/17/08, 7/01/08, 7/15/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
249362	Andexler	9/9/07	9/9/07	None	No longer sampled (at landowner request)
250369	Martin	7/12/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
252931	Derowitsch	7/6/07	7/14/08	6/18/08, 7/02/08 and 7/14/08	No change from previous measurements at wellhead. The last measurement at well vent showed an increase in %LEL from 0 to 16, an increase in CH4% from 0 to 0.8, with no change to other measured parameters. The cistern showed an increase in %LEL in final measurement of the period from 0 to 6 and an increase in H2S from 0 to 8.5 ppm.
253317	Gonzalez	7/12/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
254577	Ryerson	9/9/07	7/15/08	6/17/08, 7/01/08 and 7/15/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
255929	Conley	7/11/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
256504	Hopke	7/5/07	7/14/08	6/18/08, 7/02/08 and 7/14/08	At wellhead: <ul style="list-style-type: none"> <li>• No change in % LEL at 0</li> <li>• CH4 % volume has increased from 32 to 45</li> <li>• O2% volume has decreased from 12.5 to 10.5</li> <li>• H2S has decreased from 2.5 to 0 ppm</li> <li>• CO has remained at 0</li> </ul> No change at cistern with no detectable methane and O2% volume at 20.9
257113	Masters	7/6/07	7/14/08	6/18/08, 7/02/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
257994	Barrett	7/12/07	7/14/08	6/18/08, 7/02/08 and 7/14/08	<ul style="list-style-type: none"> <li>• % LEL increased from 0 to &gt;100</li> <li>• CH4 % volume increased from 0 to 22</li> <li>• O2% volume has decreased from 20.9 to 16</li> <li>• CO and H2S show no change</li> </ul>
259122	Higgins	9/26/07	7/15/08	6/17/08, 7/01/08 and 7/15/08	No change from previous measurements with no detectable methane and O2% volume at 20.9

**Table 2**  
**Water Well Measurements for the Period of May 15 to June 15, 2008**

<b>Permit Number</b>	<b>Name</b>	<b>Sampling Start Date</b>	<b>Last Sample</b>	<b>Samples Since Last Monthly Report</b>	<b>If sampled, comparison of results from this period to last period</b>
260097	Dee	7/5/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9. A slight increase in H2S from 0 to 3 ppm in 7/14/ measurement
264581	Ireland	7/12/07	7/14/08	6/16/08, 7/02/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
267694	Coleman	7/5/07	7/14/08	6/18/08, 7/02/08 and 7/14/08	No changes from previous measurements for wellhead with no detectable methane and O2% volume at 20.9. At well vent % LEL increased from 0 to 10, CH4% increased from 0 to 0.5 with other parameters remaining the same.
267695	Speh	9/4/07	7/14/08	6/16/08, 7/02/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
269435	Goacher	7/11/07	7/14/08	6/16/08, 7/02/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
270552	Chaves	9/9/07	7/15/08	7/01/08 and 7/15/08	No change from previous measurements with no detectable methane and a slight drop in O2 from 20.9 to 20.4
271136	May	7/12/07	7/14/08	6/16/08, 7/02/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
274468	Roloff	9/9/07	6/02/08	None	Reading attempted 6/16/08, 6/30/08 and 7/15/08 but gate locked so no access
235515	English	8/16/07	7/14/08	6/16/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9. Reading also attempted 7/02/08 but locked gate prevented access.
258815	Goodwin	7/12/07	7/14/08	6/16/08, 7/02/08 and 7/14/08	No change at wellhead or cistern from previous measurements with no detectable methane and O2% volume at 20.9
16861-F	Golden Cycle Land	7/12/07	7/14/08	6/16/08, 7/02/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
84108-A	McPherson	7/6/07	7/14/08	6/16/08, 6/30/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
16861-F <sup>1</sup>	Unknown	8/13/07	7/14/08	6/18/08, 7/02/08 and 7/14/08	No change from previous measurements with no detectable methane and O2% volume at 20.9

**Table 2  
Water Well Measurements for the Period of May 15 to June 15, 2008**

<b>Permit Number</b>	<b>Name</b>	<b>Sampling Start Date</b>	<b>Last Sample</b>	<b>Samples Since Last Monthly Report</b>	<b>If sampled, comparison of results from this period to last period</b>
	Andreatta	8/14/07	7/15/08	6/17/08, 7/01/08 and 7/15/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
	Anselmo	8/14/07	8/14/07	None	No longer sampled
	Dernell	8/15/07	6/17/08	6/27/08	No change from previous measurements with no detectable methane and O2% volume at 20.9
	Unknown	8/15/07	8/15/07	None	No longer sampled
	Lang	10/29/07	6/02/08	None	Sampling attempted 6/16/08, 6/30/08 and 7/14/08 but locked gate prevented access
220100	Cordova	10/30/07	7/14/08	6/17/08, 6/30/08 and 7/14/08	No change from previous measurements for first two samples. Last sample showed: <ul style="list-style-type: none"> <li>• %LEL increased from 0 to 5</li> <li>• CH4% increased from 0 to 0.25</li> <li>• All other values remained unchanged</li> </ul>
234836	White, Jim	1/4/08	7/15/08	6/17/08, 7/01/08 and 7/15/08	At wellhead <ul style="list-style-type: none"> <li>• % LEL decreased from &gt;100 to 0 in last measurement</li> <li>• CH4 % volume decreased from 5 to 0 in last measurement</li> <li>• O2% volume increased from 0 to 19.9</li> <li>• CO remain unchanged at 0</li> <li>• H2S increased from 0 to 2.5 ppm in last reading</li> </ul> No change at cistern except H2S went from 0 to 2 ppm. At wellhead all readings were 0 except for O2% which is 20.9.

**Table 2  
Water Well Measurements for the Period of May 15 to June 15, 2008**

<b>Permit Number</b>	<b>Name</b>	<b>Sampling Start Date</b>	<b>Last Sample</b>	<b>Samples Since Last Monthly Report</b>	<b>If sampled, comparison of results from this period to last period</b>
192509	Eddleman, Paul	1/17/08	6/03/08	6/17/08, 7/01/08 and 7/15/08	<p>At the wellhead:</p> <ul style="list-style-type: none"> <li>• % LEL went from &gt;100 to 0 and back to &gt;100 in sampling</li> <li>• CH4 % volume went from 11 to 0 and then 12 in sampling</li> <li>• O2% volume went from 0 to 20.9 and back down to 0.2</li> <li>• H2S decreased from 3 ppm to 0</li> <li>• CO went from 27 to 0 and back up to 16 ppm</li> </ul> <p>At the well vent %LEL was &gt;100, CH4% was 21, O2% was 10.3, CO was 25 ppm and H2S was 0.</p> <p>At the cistern all values were 0 except O2 was 20.6.</p>
226536	Eddleman, Todd	1/17/08	7/15/08	6/17/08, 7/01/08 and 7/15/08	<p>Values showed large swings during the period</p> <ul style="list-style-type: none"> <li>• % LEL went from &gt;100 to 0 to &gt;100 to 0</li> <li>• CH4 % volume went from 5 to 0 to 2 to 0</li> <li>• O2% volume went from 7.8 to 20.9 to 17.5 to 20.9</li> <li>• H2S remains unchanged at 0</li> <li>• CO went from 15 to 0 to 22 to 0 ppm</li> </ul>
31935	Garza-Vela	1/30/08	7/15/08	6/17/08, 7/01/08 and 7/15/08	<ul style="list-style-type: none"> <li>• % LEL decreased from &gt;100 to 0</li> <li>• CH4 % volume decreased from 5 to 0</li> <li>• O2% volume increased from 0 to 18.6</li> <li>• H2S increased from 1 to 0</li> <li>• CO went from 5 to 0 to 17 to 2 ppm</li> </ul>
271524-A	Modlish	1/30/08	7/15/08	6/17/08, 7/01/08 and 7/15/08	<p>No change from previous measurements for % LEL, and CH4% with both a 0. O2% increased from 14.5 to 20.9. H2S decreased from 1 to 0. CO remains at 0 with one reading of 15 on 7/01..</p>
271748	Sample	3/10/08	7/15/08	6/17/08, 7/01/08 and 7/15/08	<ul style="list-style-type: none"> <li>• %LEL decreased from &gt;100 to 0</li> <li>• CH4 % decreased from 5 to 0</li> <li>• CO decreased from 15 to 0</li> <li>• H2S remains unchanged at 0</li> <li>• O2 % volume increased from 5.3 to 20.9</li> </ul> <p>All values at cistern were 0 except for O2% at 20.9.</p>



**Table 2  
Water Well Measurements for the Period of May 15 to June 15, 2008**

<b>Permit Number</b>	<b>Name</b>	<b>Sampling Start Date</b>	<b>Last Sample</b>	<b>Samples Since Last Monthly Report</b>	<b>If sampled, comparison of results from this period to last period</b>
197128	Roberts	4/08/08	7/15/08	6/17/08, 7/01/08 and 7/15/08	<ul style="list-style-type: none"> <li>• %LEL decreased from &gt;100 to 0</li> <li>• CH4 % volume decreased from 5 to 0</li> <li>• O2 % increased from 6.7 to 20.9</li> <li>• CO and H2S remain at 0</li> </ul> <p>All values at well vent are 0 except O2% is 20.9.</p>
	Gonzalez	5/22/08	7/15/08	6/17/08 and 7/15/08	<p>Also attempted on 7/01 but gate was locked.</p> <ul style="list-style-type: none"> <li>• %LEL decreased from &gt;100 to 0</li> <li>• CH4 % volume decreased from 87 to 0</li> <li>• O2 % increased from 0 to 20.9</li> <li>• CO ppm decreased from 5 to 0</li> <li>• H2S ppm decreased from 2.5 to 0</li> </ul> <p>At well vent %LEL is at &gt;100, CH4% is 39-42, O2% volume is 10.8 to 11.9 with CO and H2S at 0.</p> <p>All cistern values are at 0 except for O2% which is 20.9.</p>

**Table 3  
Hand Held Gas Meter Results for the Period of May 15 through June 15, 2008**

Name	Date	Time	Weather Conditions	RMLD Readings				Notes
				N	E	W	S	
Janet Campbell	7/19/08	8:56	Clear & Windy	20 - 30	20 - 30	20 - 30	20 - 30	SE corner of home outside 40. Well 30 - 4-. NW Basement 18 - 20. NE basement 16 - 22. SE basement 17 - 23. Cistern basement 12 - 17. SW basement 16 - 20. S roof living room 11 - 22. Loft N ceiling 15 - 20. Extra bedroom 12 - 14. Bathroom in loft 10 - 12. Bedroom 12 - 20.

**Table 4  
Hand Held Gas Meter of Helicopter Survey Identified Points**

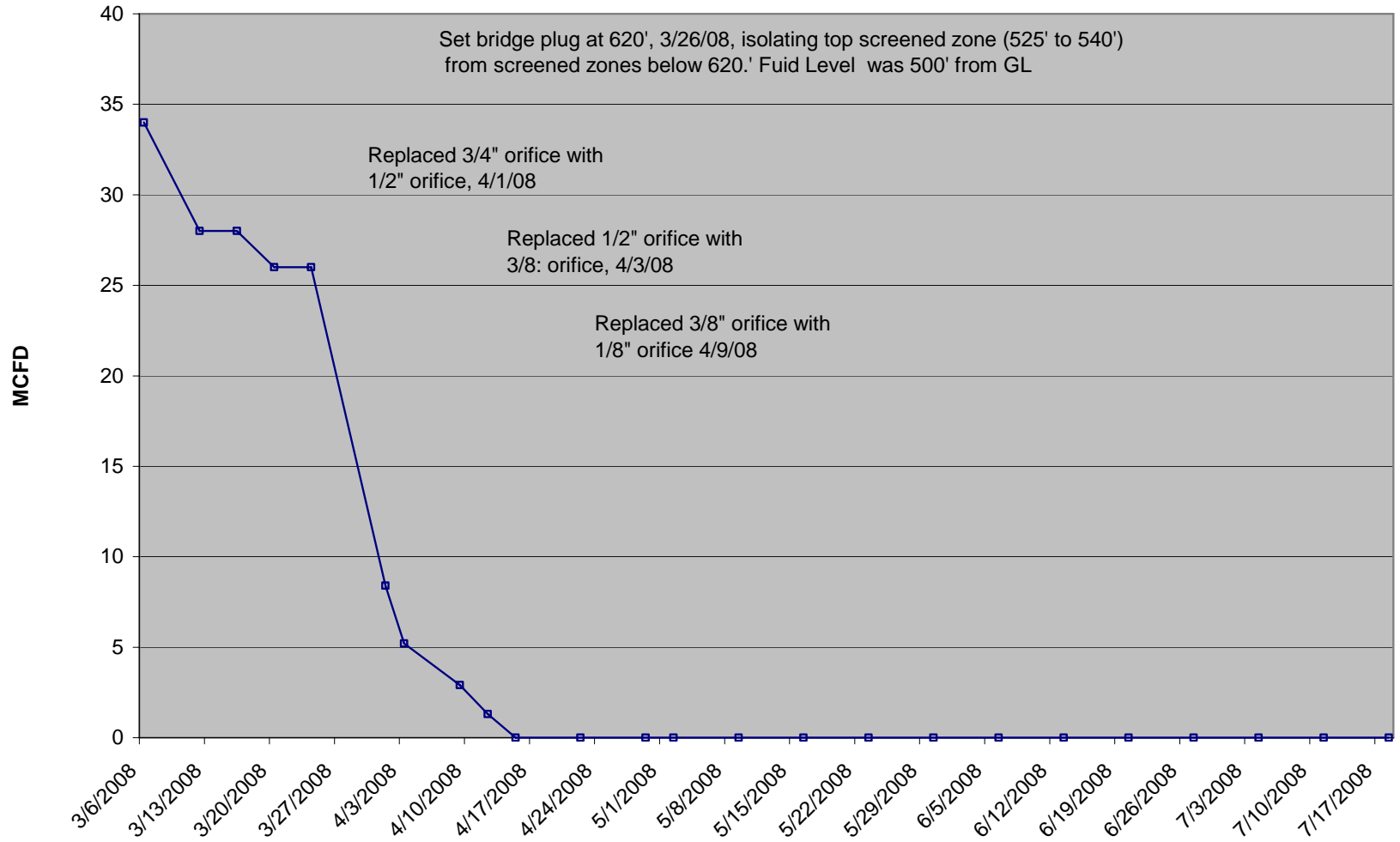
<b>Name</b>	<b>Date</b>	<b>Time</b>	<b>Weather Conditions</b>	<b>Location</b>	<b>Notes</b>
	Date	Time	Weather Conditions	Location	Notes
# 1	6/12/08	11:30	15 Wind	New hit by Hwy 160 & RR Tracks	RMLD 50 - 60 w/ 70 as highest read North & South side of RR track 200 ft West of driveway.
# 2	6/11/08		25-30 Wind	Purple F2 Dike on hill behind 10-02.	Background read 50 - 60. High read 90.
	6/13/08		5-10 Wind		126 by road. 140 150 ft West of road. 150 on ridge.
# 3	6/12/08		10-20 Wind	Dike on hogback behind Lathrop Park. C4 - C2 Purple by Lake.	RMLD Background 30 - 40. High read 70 South side of ridge. High read 110 North side of ridge.
# 4	6/13/08	11:00	5-10 Wind	Mine venting along Ideal Canyon Road. Purple A-14.	Many reading of 90 - 100. High reading 138.
# 6	6/13/08	15:30	5-10 Wind	Old Pictou Camp site (COGCC soil survey area) NW of Walsenburg A - Z.	Background 40 - 60 @ old slag pile. High readings 80 - 95. Highest reading East 100' of slag pile 136.
# 7	6/14/08	10:00	0-5 Wind	River Gas Core Hole SW corner of map (3517) near McVoy Lake	Background 30 - 44. Many reads 50 - 60. High read 78.
# 8	6/11/08	11:00	25-30 Wind	Rohr's Water Well - "A" frame old well near pipe yard.	Background 20. High read 50 in hole by well.
# 9	6/14/08	10:30	0-5 Wind	County Rd seep by Bound's Home Yellow/Purple H 1-3	Background 30 - 60. High reads on North side of road for distance of 150 yds from Bounds fence corner. Reading from 200 - 1500 high readings.

**Table 5**  
**Residences Receiving Water**

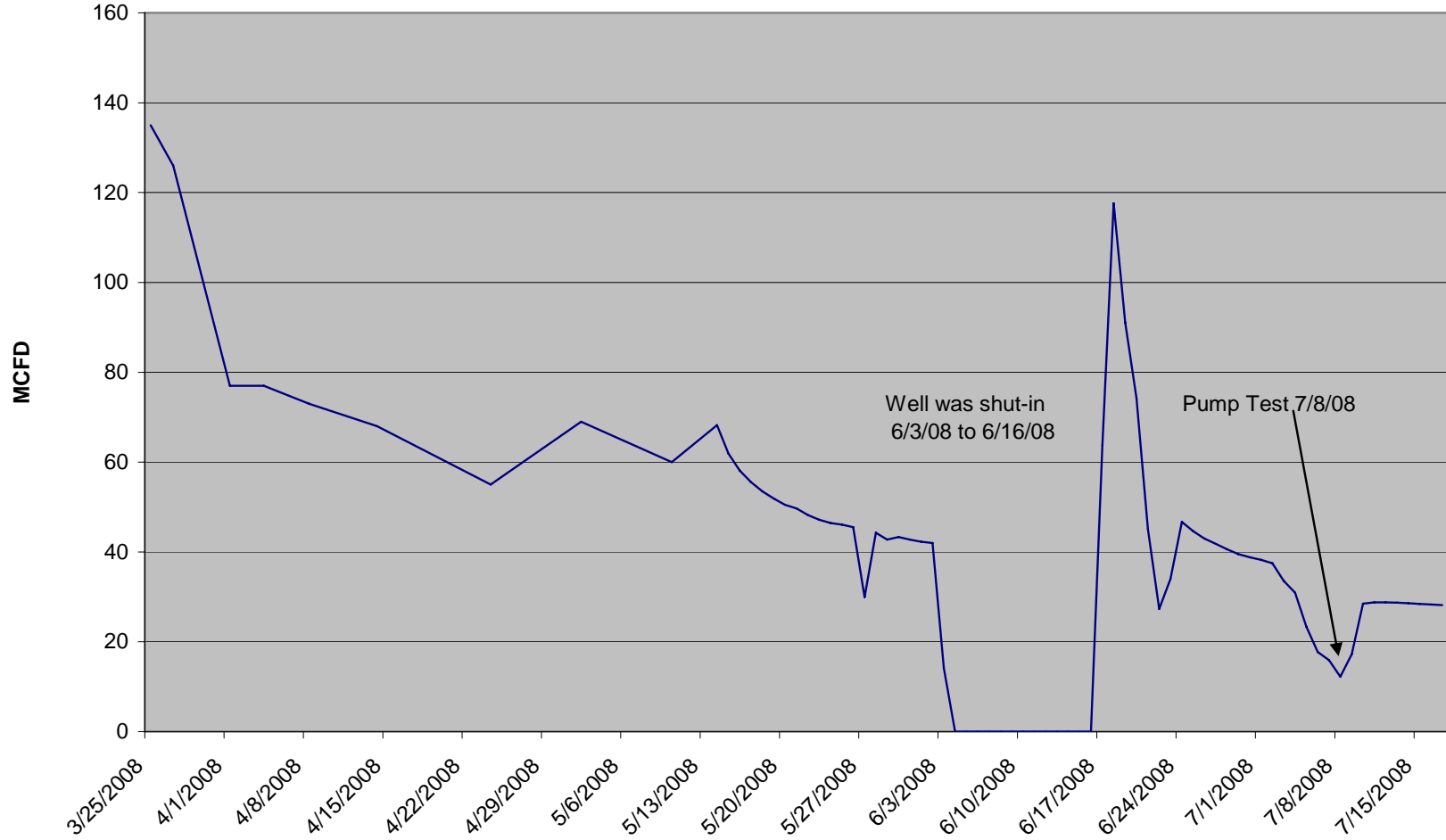
Jerry Angely	Has received water provided by PEI in the past but his well is currently working now
Kent Smith	Has received water provided by PEI
Alan Cramer	Has received water provided by PEI
Tom Gonzales	Has received water provided by PEI
Spencer/Carol Snow	Has received water provided by PEI
Bruington	Has received water provided by PEI
Todd Eddleman	Has received water provided by PEI
Paul Eddleman	Has received water provided by PEI
Jim White	Has received water provided by PEI
Edward Lyon	New to list as of 3/12/08
Donald Sharp	New to list as of 3/14/08
Edward Johnson	New to list as of 6/6/08
Richard McEntee	New to list as of 7/08/08

**Attachment 1**  
**Gas Flow in Monitoring Well POCI 55, Recovery 1 Kittleson,**  
**Recovery 3 PEI and Recovery 4 Barrett**

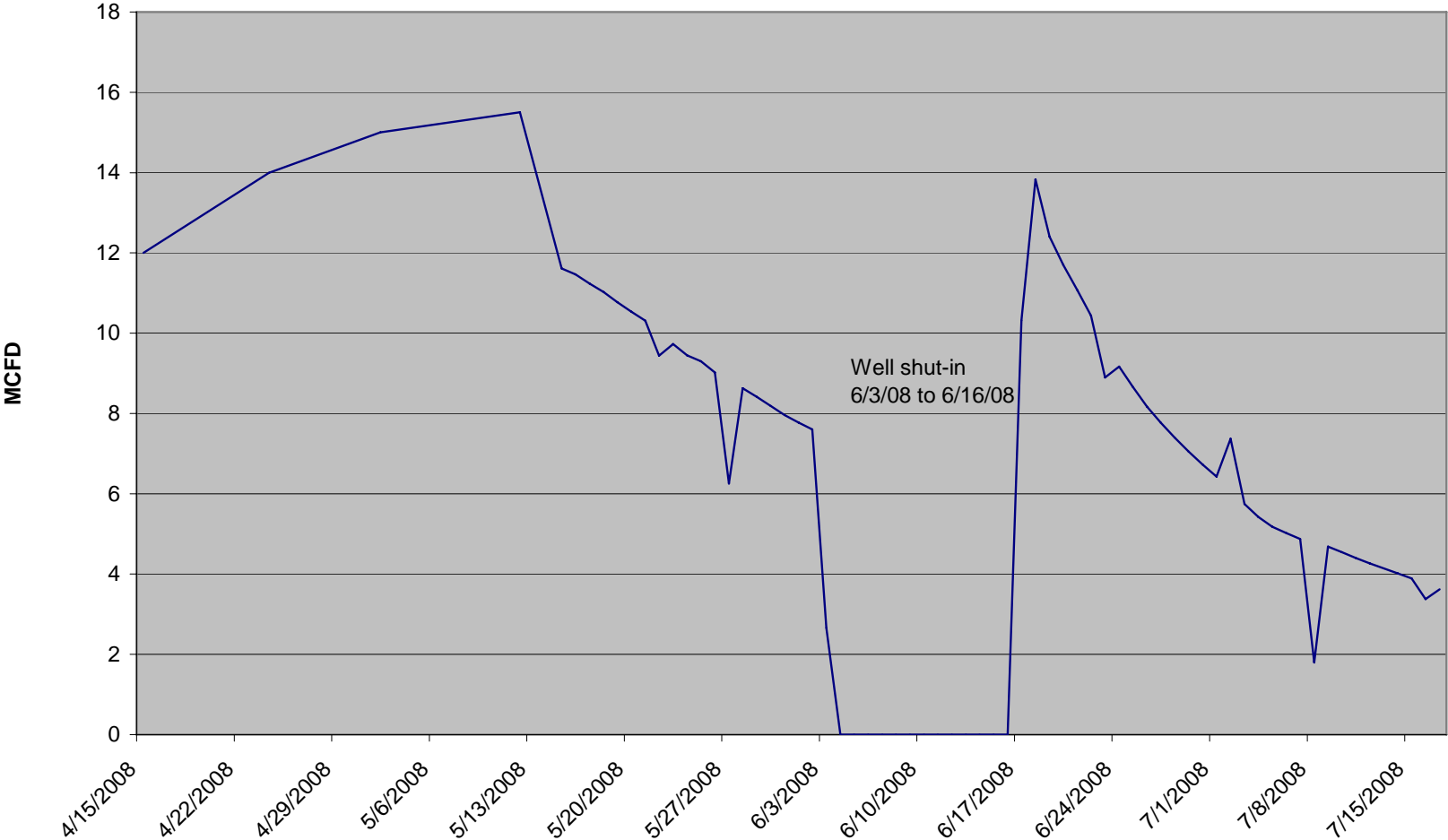
### POCI 55 MW Gas Flow from 3/6/08 to 7/18/08



Recovery 1 Kittleson Gas Flow  
from 3/25/08 to 7/17/08

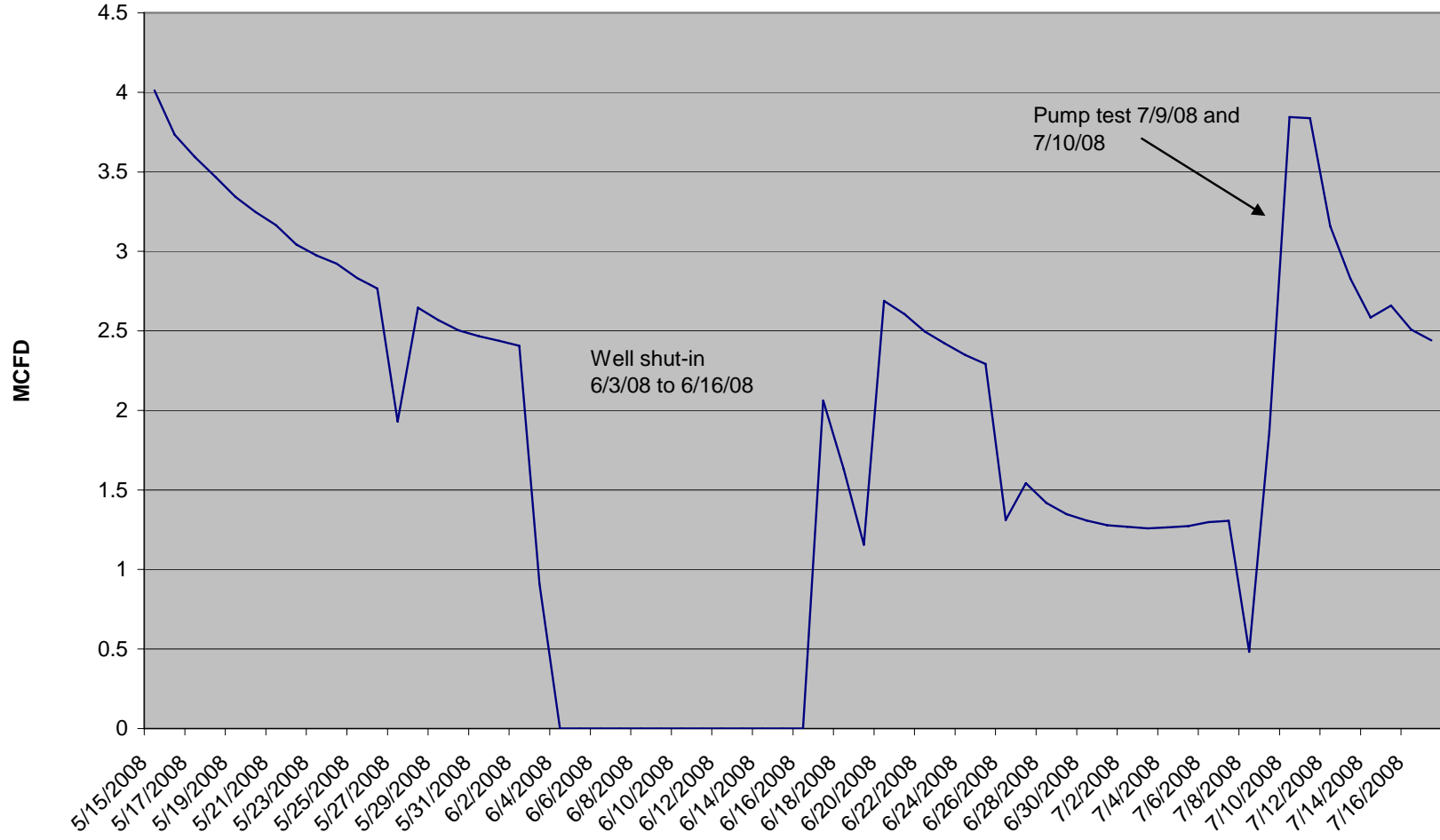


**Recovery 3 PEI Gas Flow  
from 4/15/08 to 7/17/08**



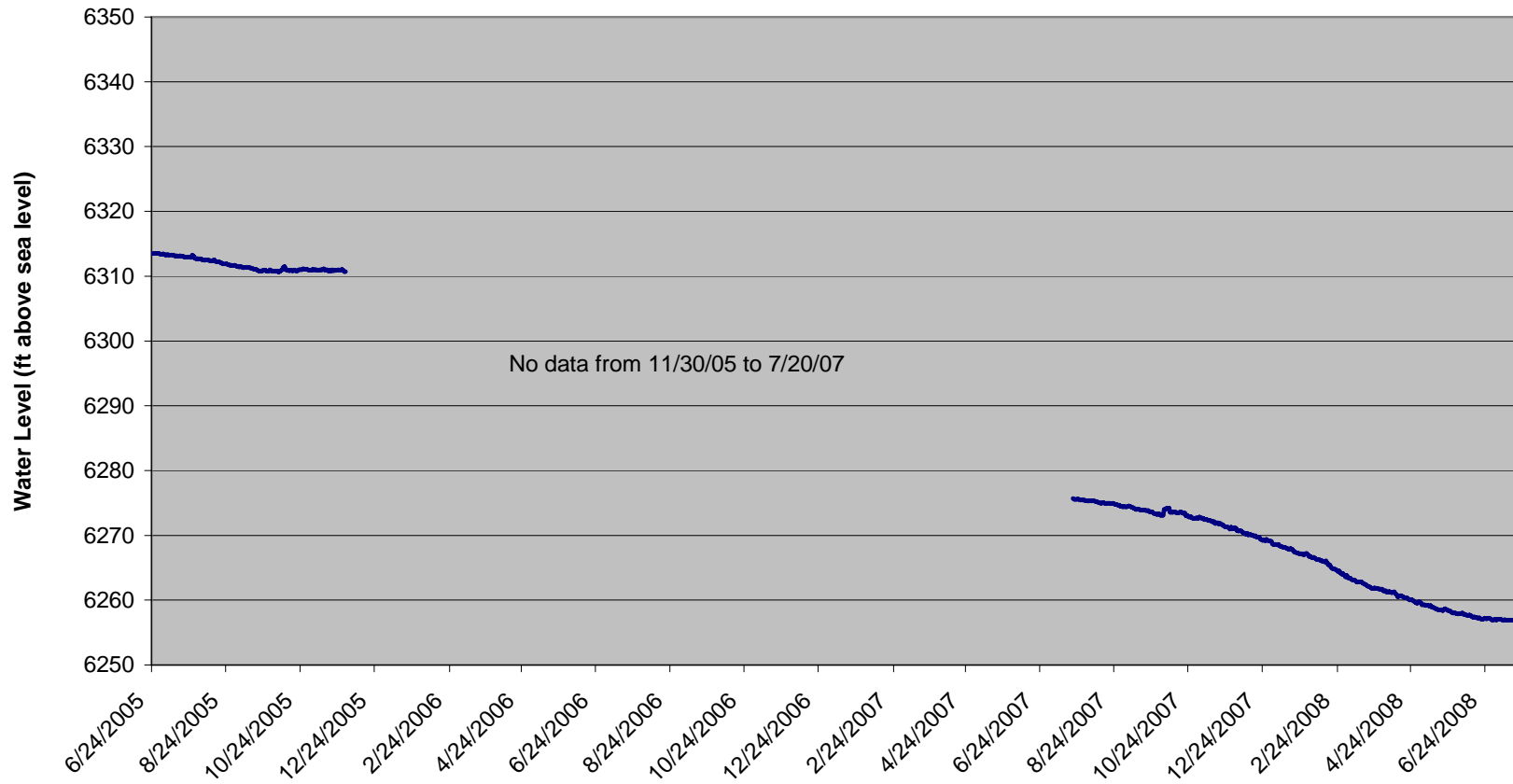


**Recovery 4 Barrett Gas Flow  
from 5/15/08 to 7/17/08**

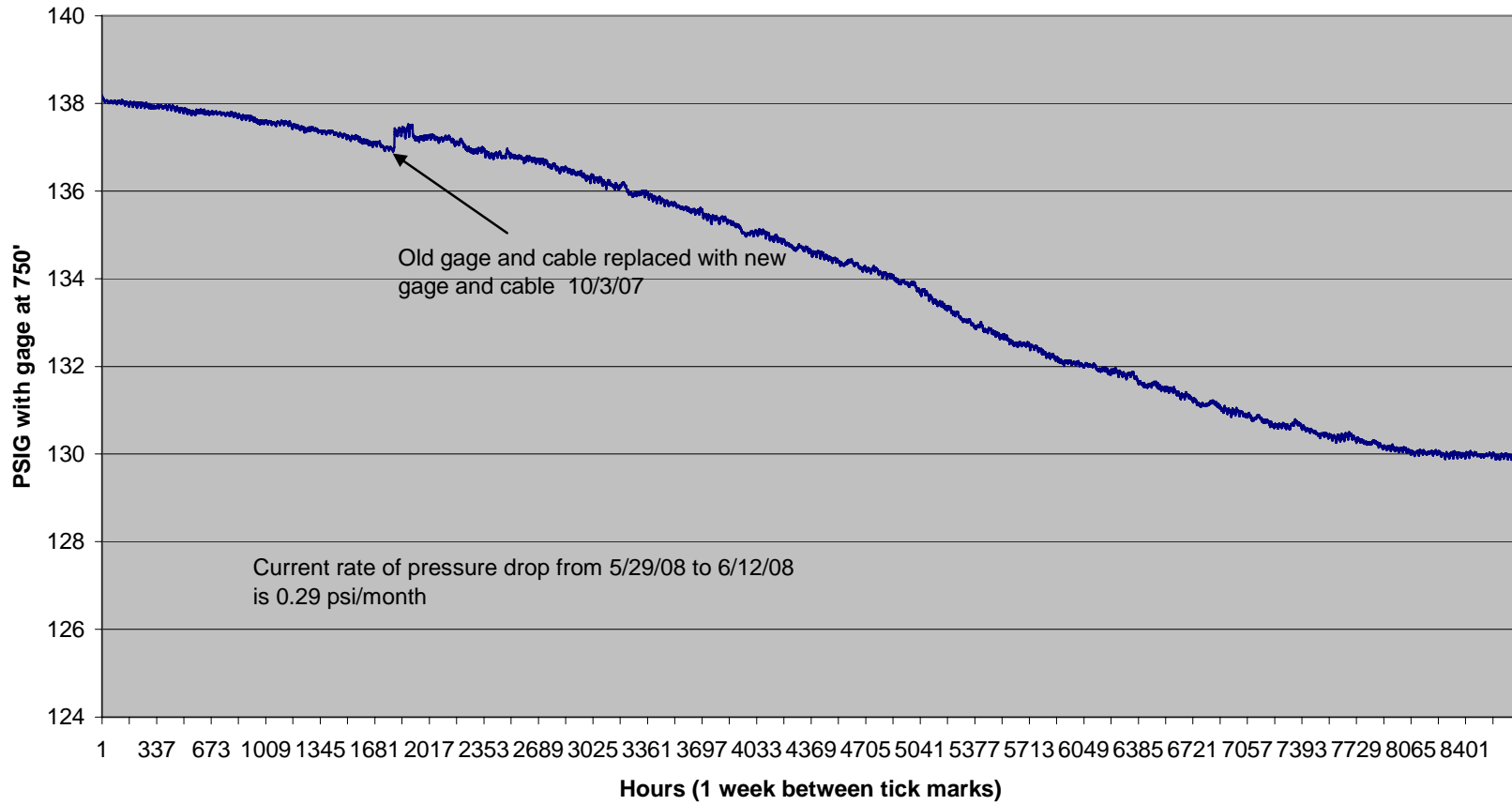


**Attachment 2**  
**Graphs of Pressure and Fluid Level Data From**  
**Barrett, Bergman, Coleman, and Meyer**

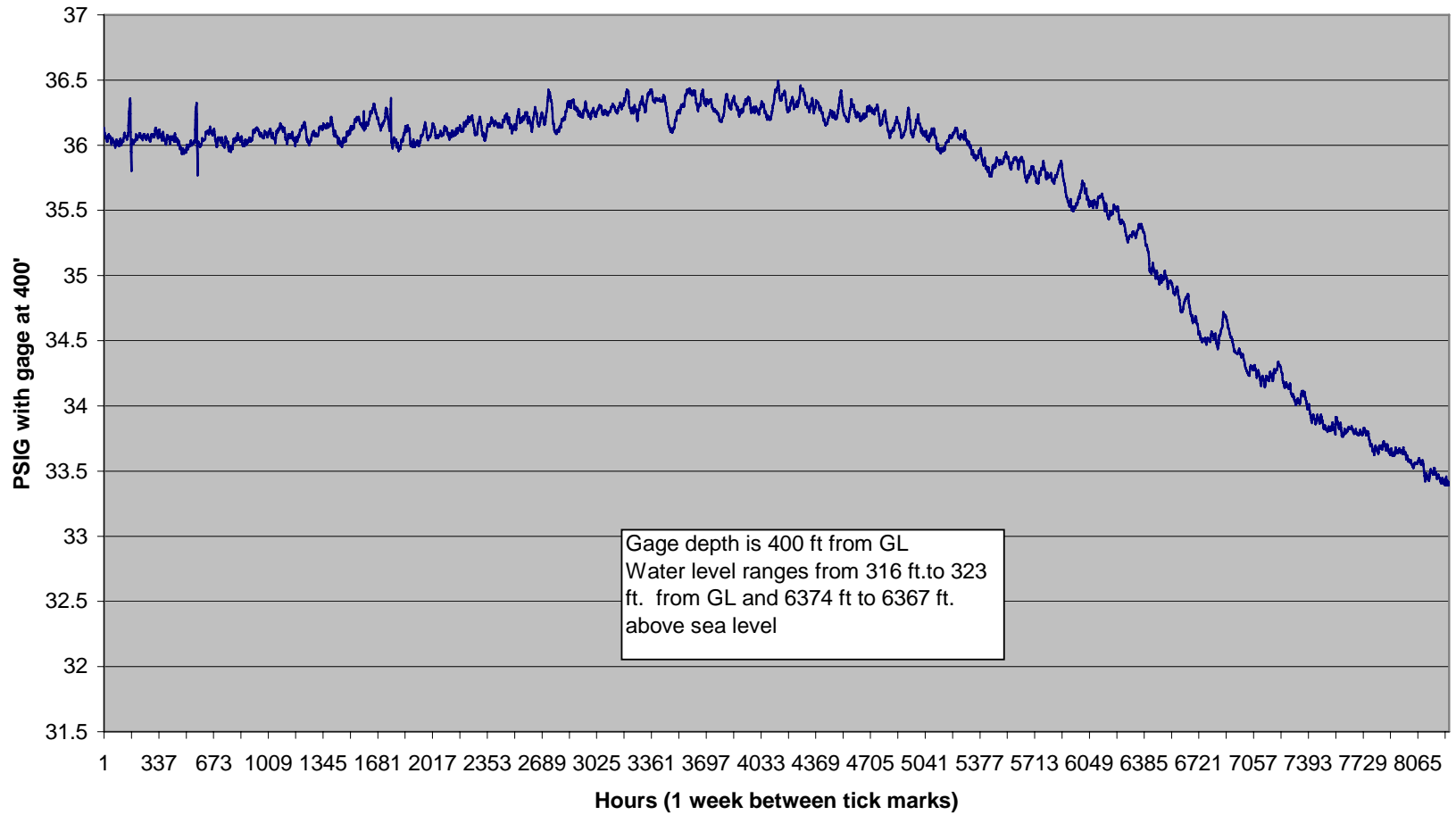
**Barrett WW**  
**Water Level from 6/24/05 to 7/18/08**  
**Permit # 257994**  
**Lot 57 RRR**  
**NW, SE Sec 3, T29S R67W**



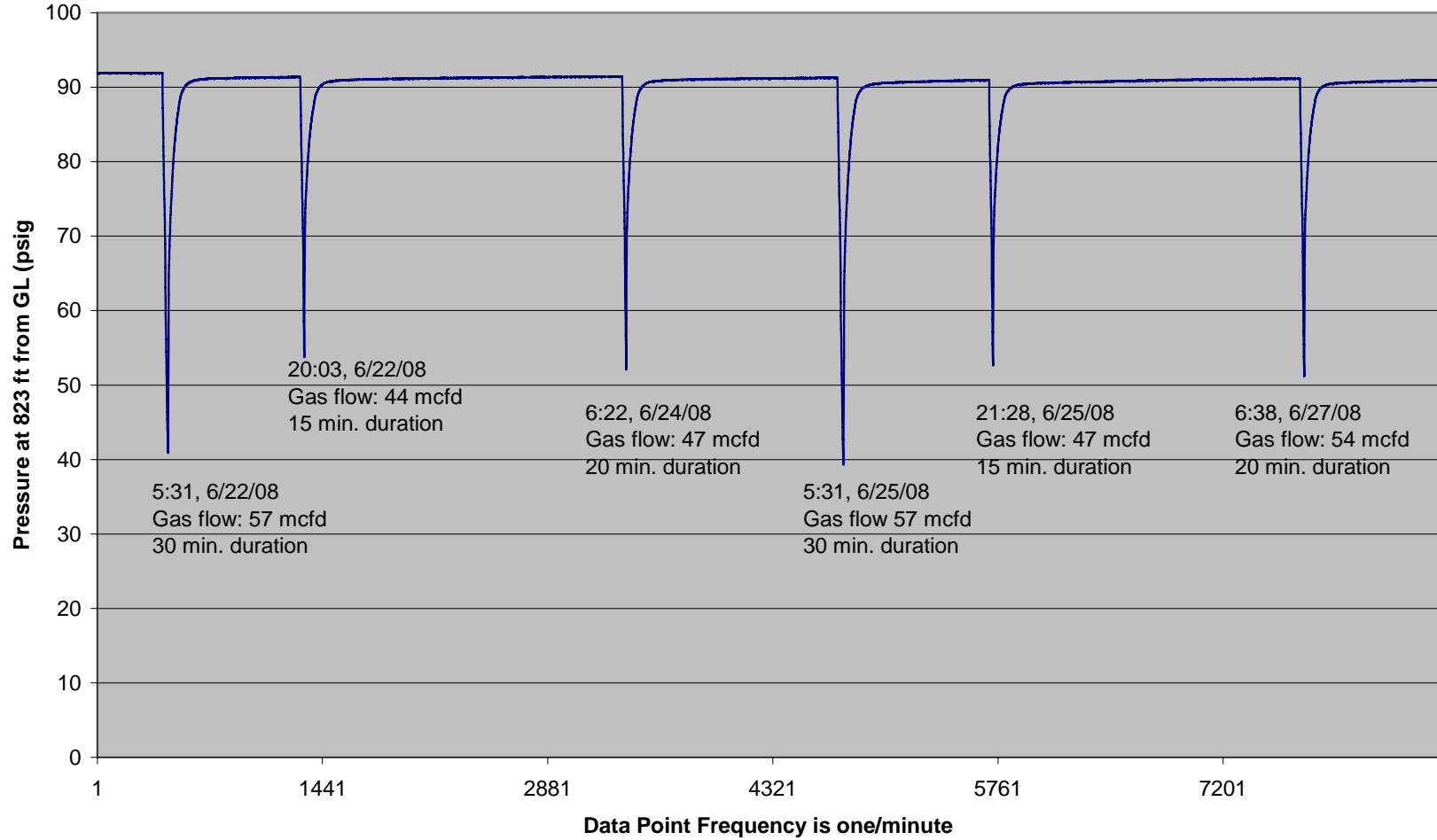
Barrett WW from 7/20/07 to 7/18/08  
Permit # 257994  
Lot 57 RRR  
NW, SE Sec 3, T29S R67W  
G.L. elev. 6707'



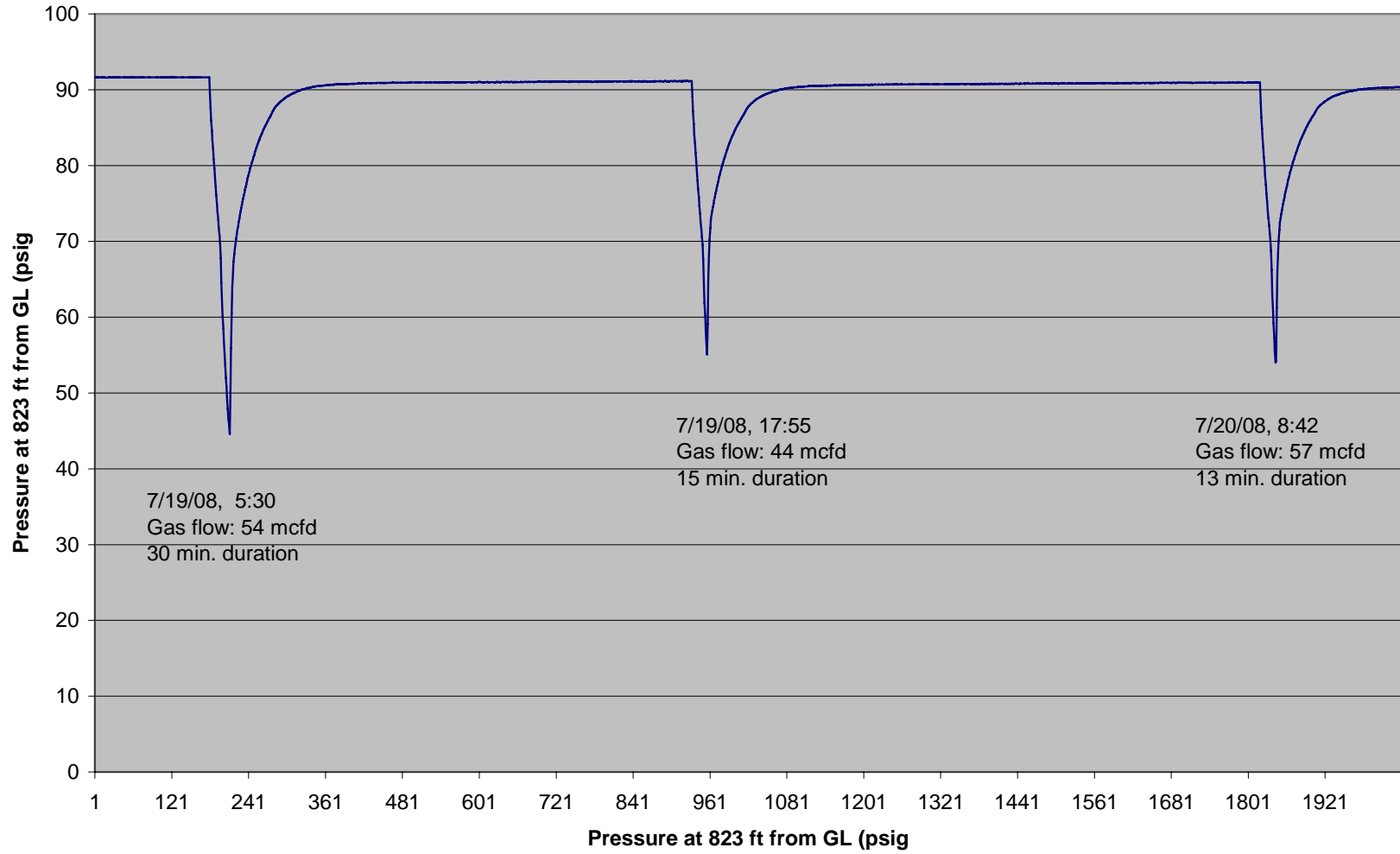
**Bergman WW pressure data from 8/9/07 to 7/18/08**  
**Permit # 24403, SW NW Sec 3 29S 67W**  
**Lot 48 RRR**



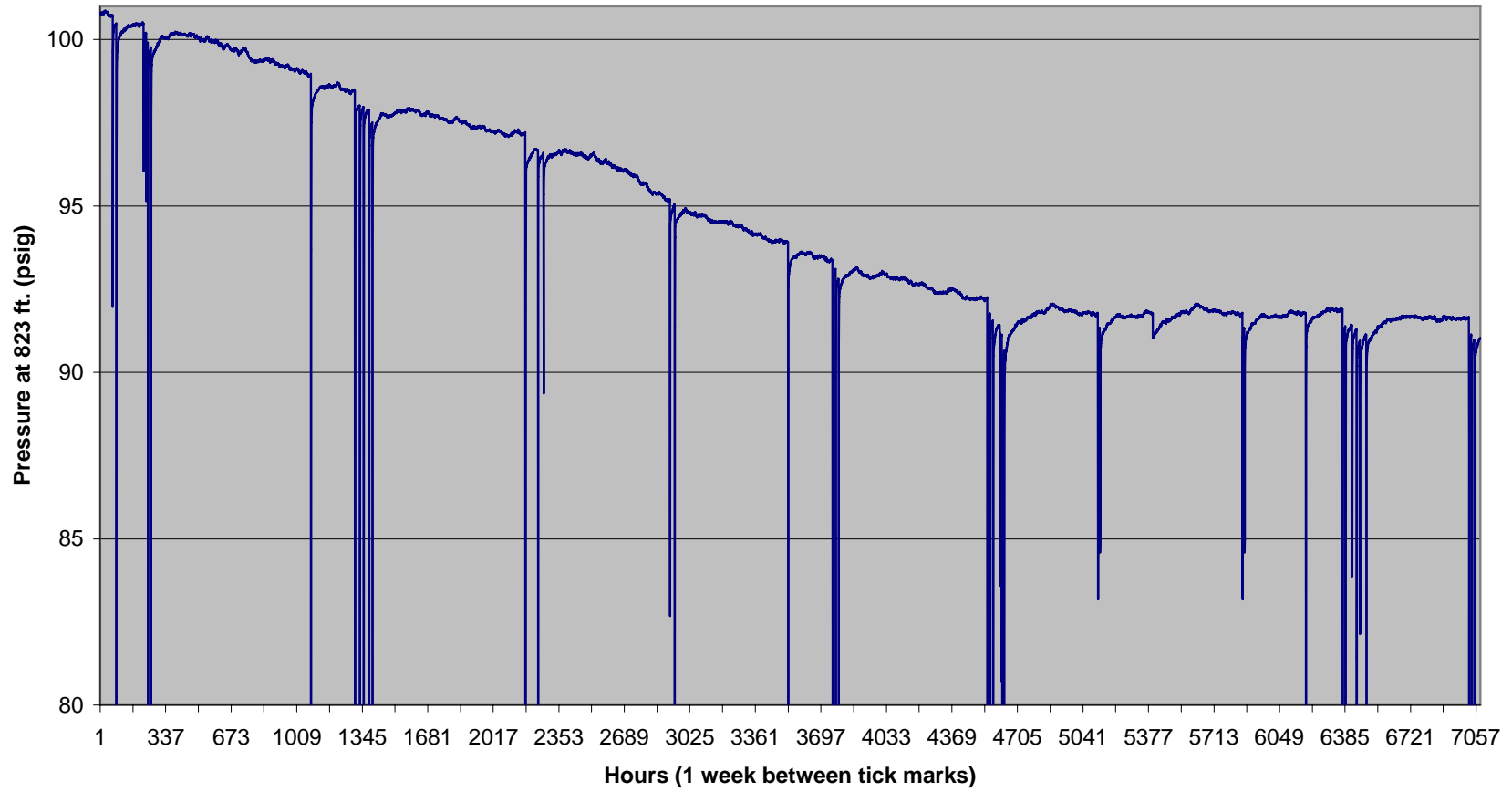
**Coleman WW (GL elev. 6848') Pressure Data from 6/21/08 to 6/28/08**



**Coleman WW (GL elev. 6848') Pressure Data from 7/19/08 to 7/20/08**

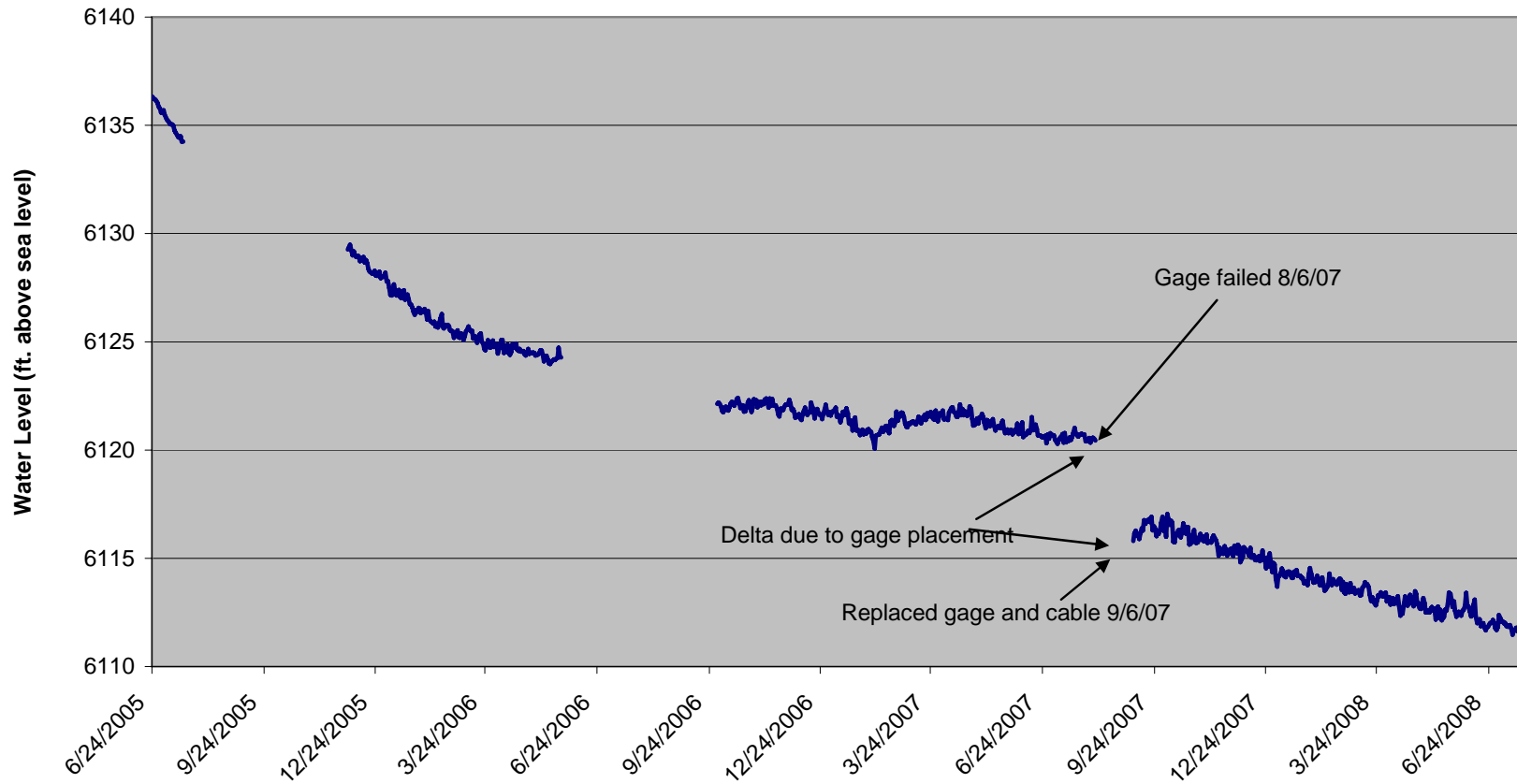


**Coleman WW Pressure Data from 10/31/07 to 7/21/08**  
**Permit # 267964 NE SW Sec 10 29S 67W**  
**Lot 70 RRR**  
**G.L. elev. 6848'**

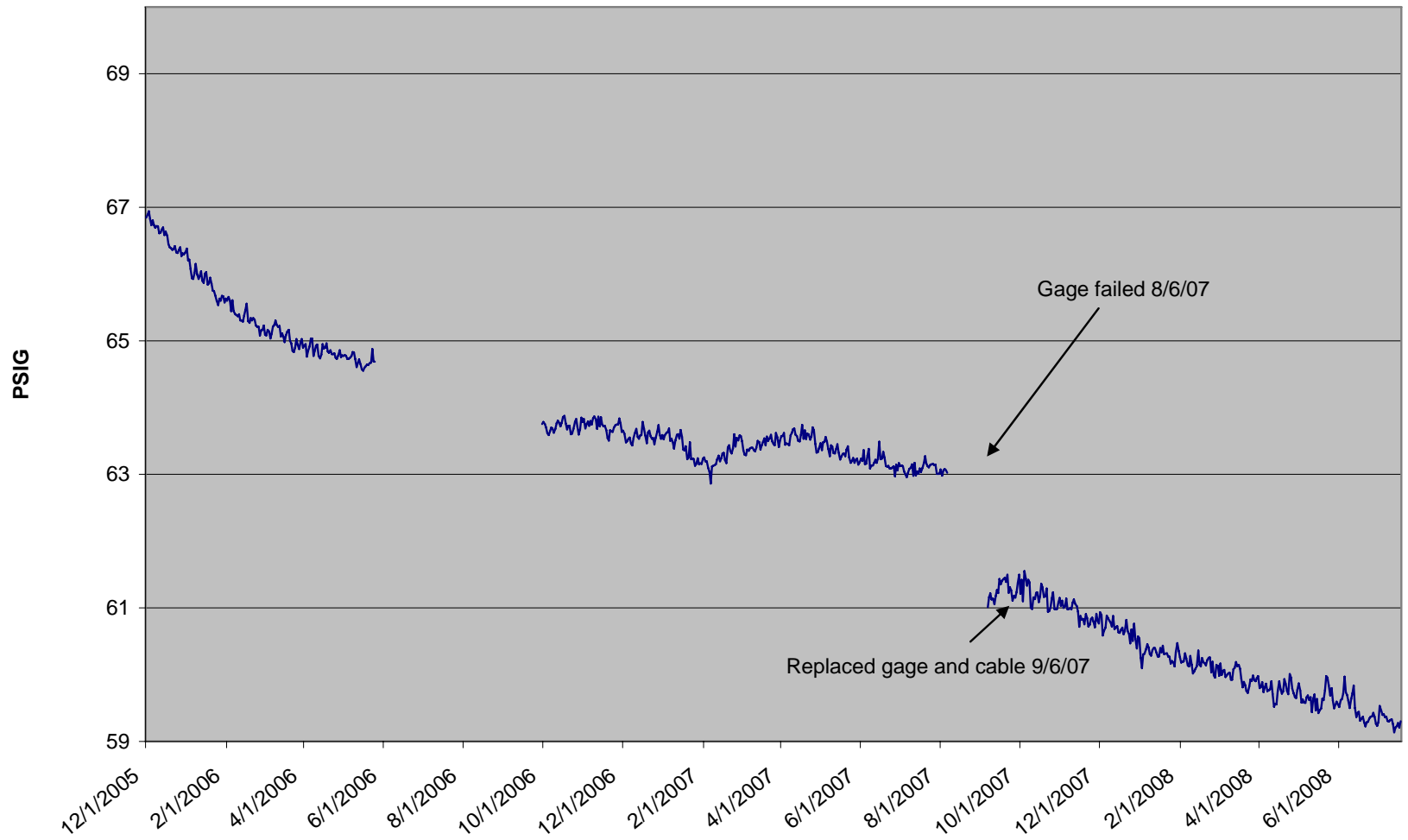




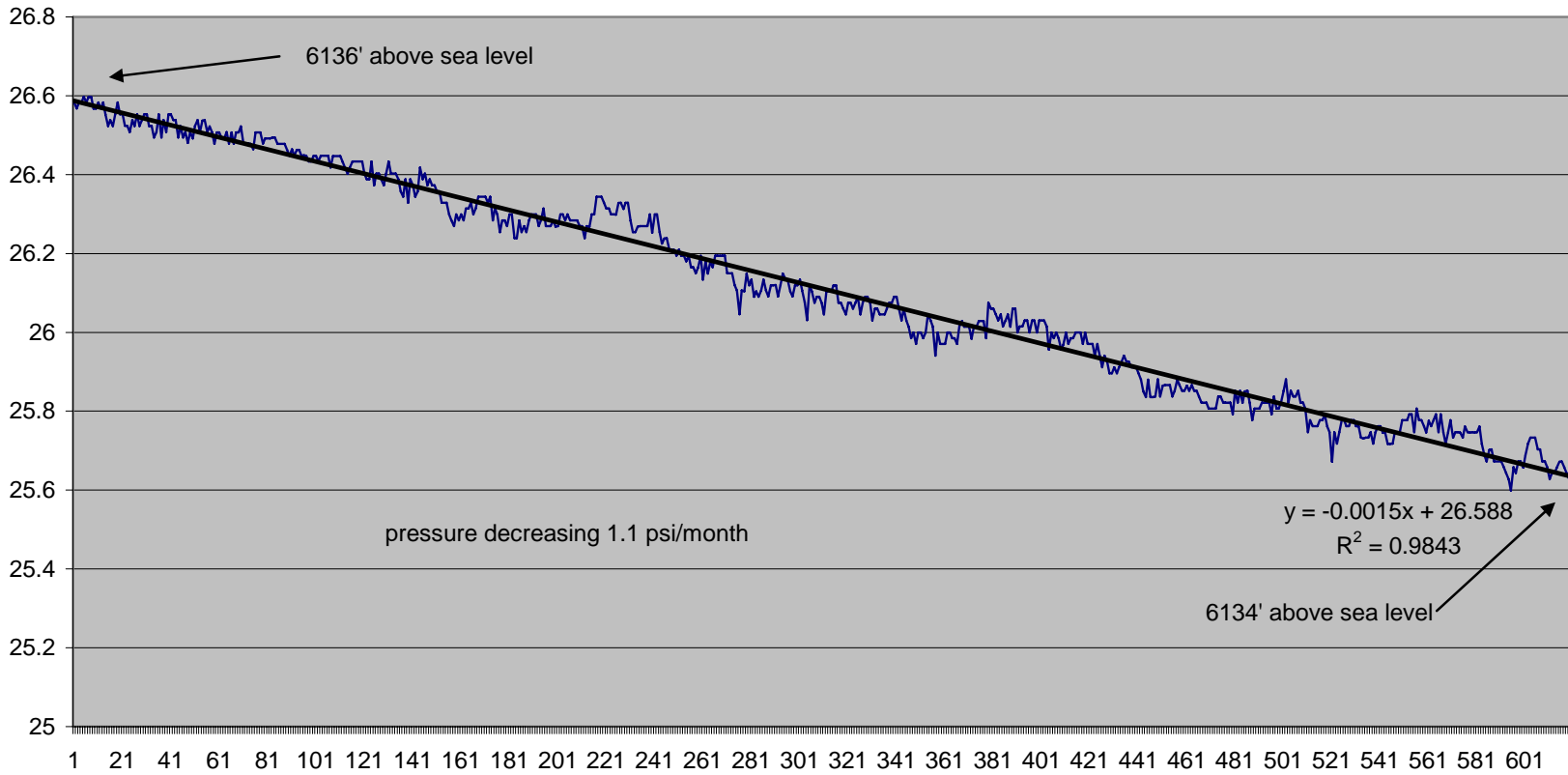
Meyer WW Water Level from 6/24/05 to 7/18/08  
Permit # 248862  
Lot 120 RRR  
SW, NE Sec 30 T28S R66W



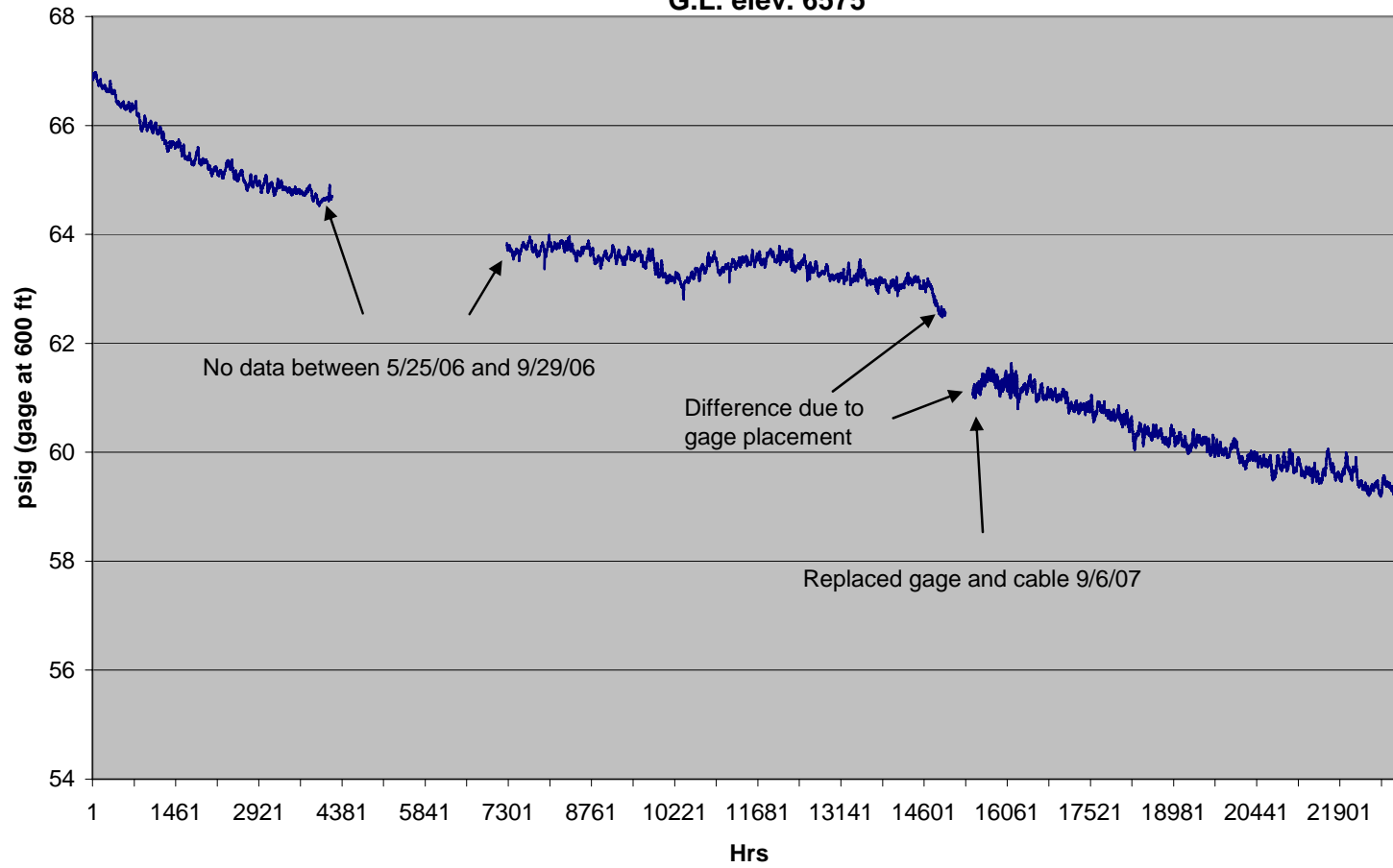
Meyers WW BHP from 12/1/05 to 7/18/08



Meyer WW, Permit # 248862  
Lot 120 RRR  
SW, NE Sec 30 T28S R66W  
2203 FNL 1570 FEL  
6/23/05 to 7/19/05

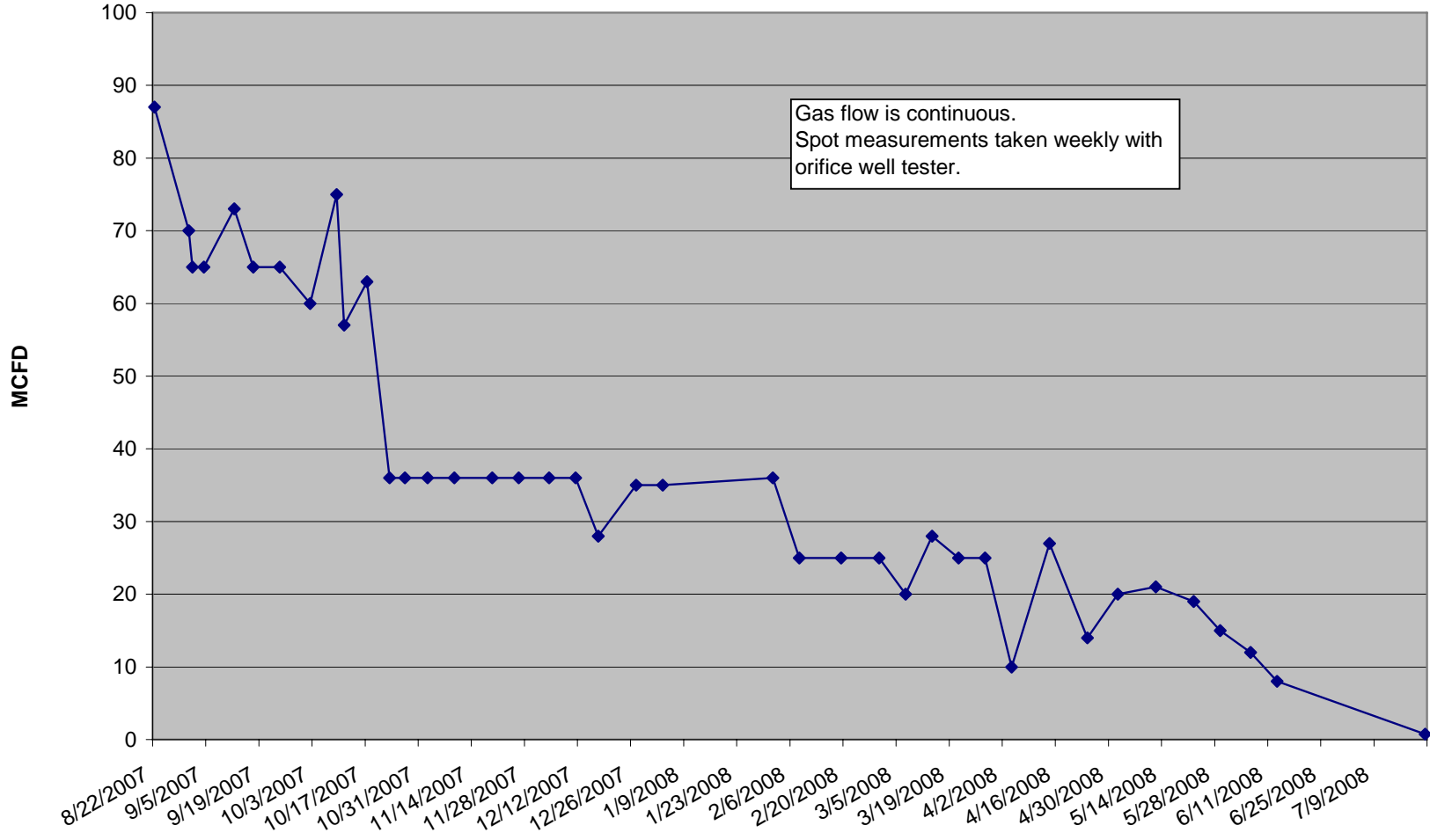


Meyers WW 11/30/05 to 7/18/08  
Permit # 248862  
Lot 120 RRR  
SW, NE Sec 30 T28S R66W  
G.L. elev. 6575'

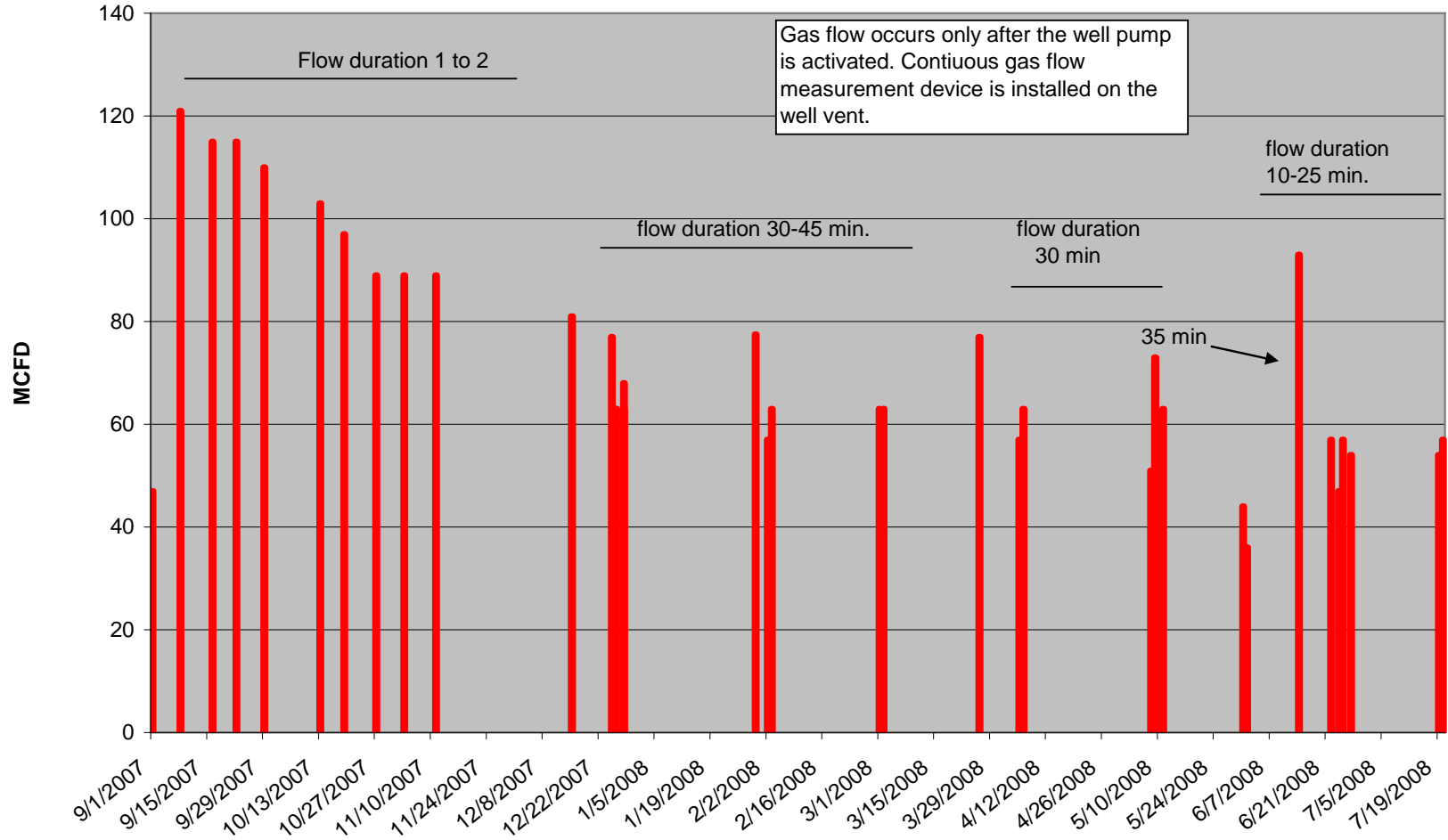


**Attachment 3**  
**Gas Flow Measurements at Bruington, Coleman, Angely, Bounds, and Smith**

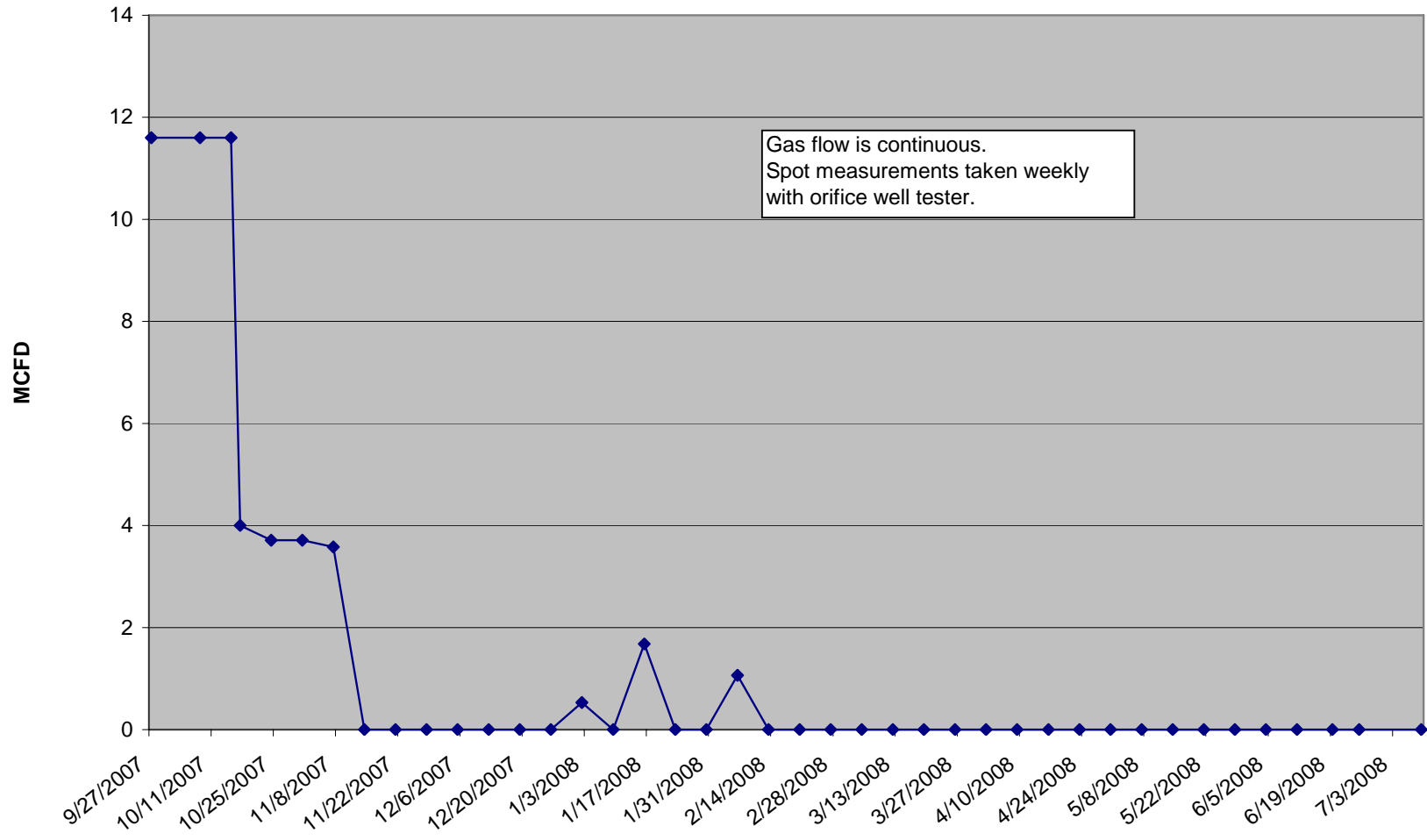
**Bruington WW # 210526 Measured Gas Flow  
from 8/22/07 to 7/22/08**



**Coleman WW #267294 Measured Gas Flow  
from 9/1/07 to 7/20/08**

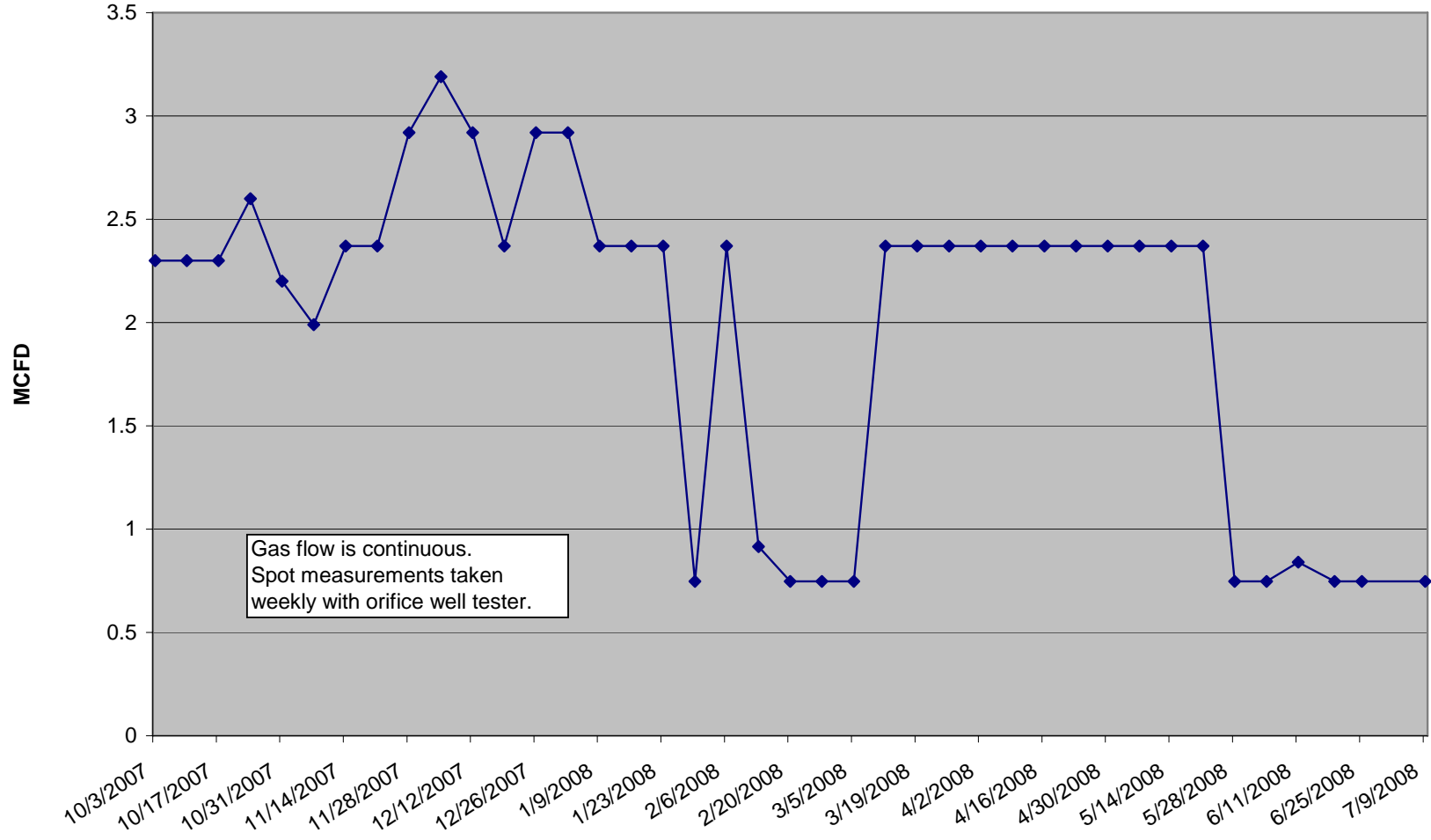


**Angely WW # 238689 Measured Gas Flow  
from 9/27/07 to 7/9/08**

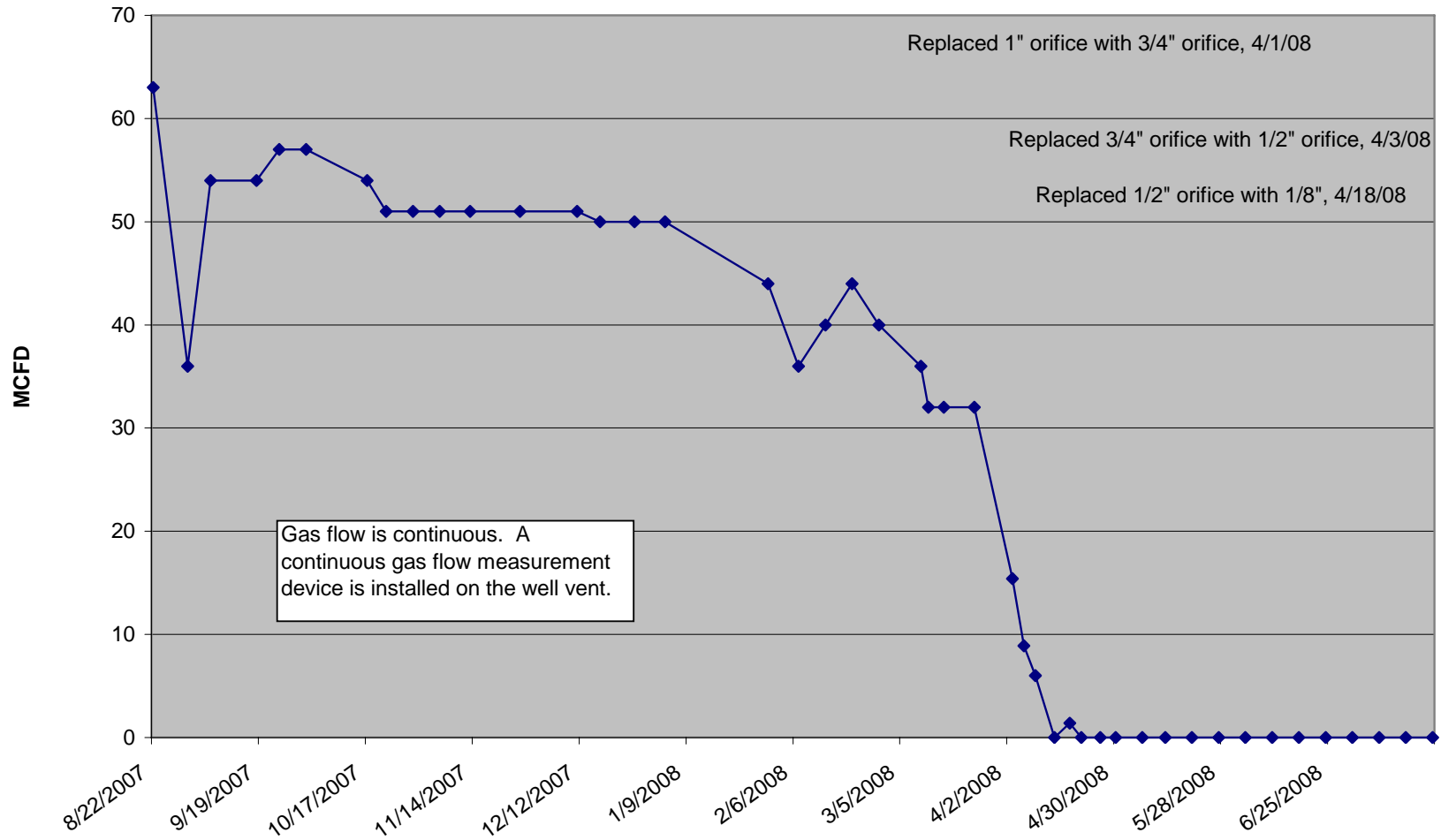




**Bounds WW #181278 Measured Gas Flow  
from 10/3/07 to 7/9/08**

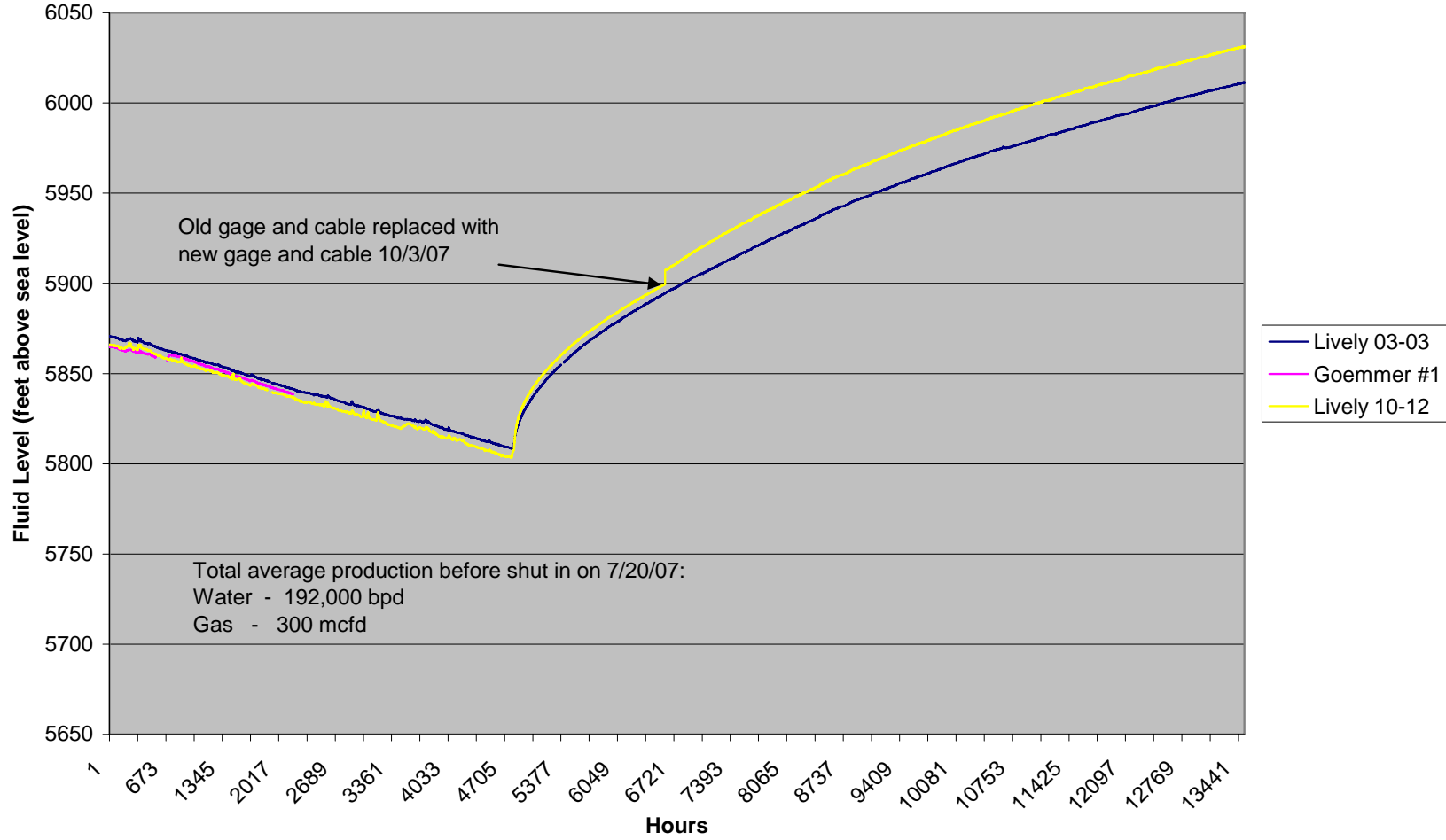


Smith WW # 239657 Measured Gas Flow  
from 8/22/07 to 7/21/08

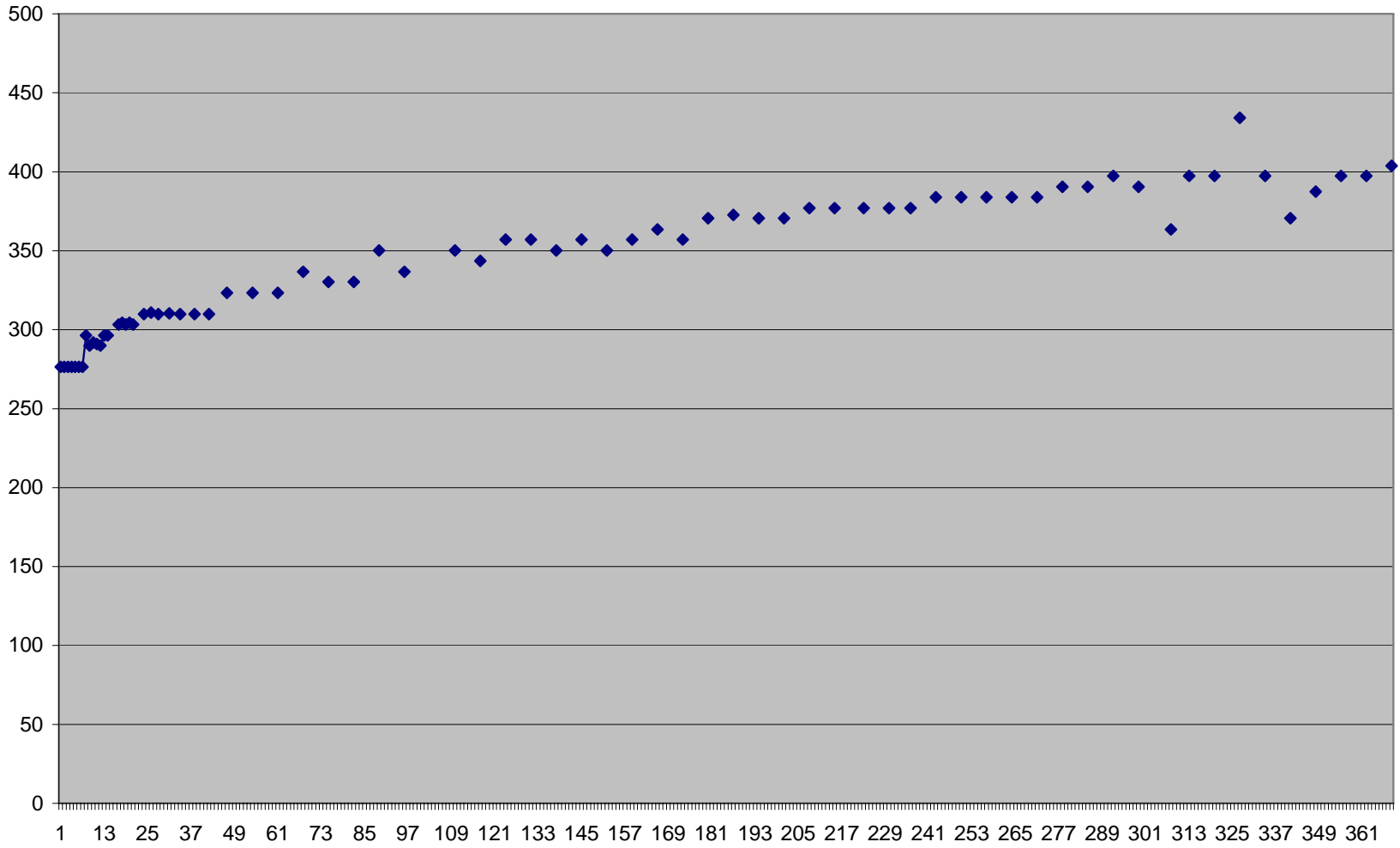


**Attachment 4**  
**Fluid Levels in Petroglyph Production Wells**

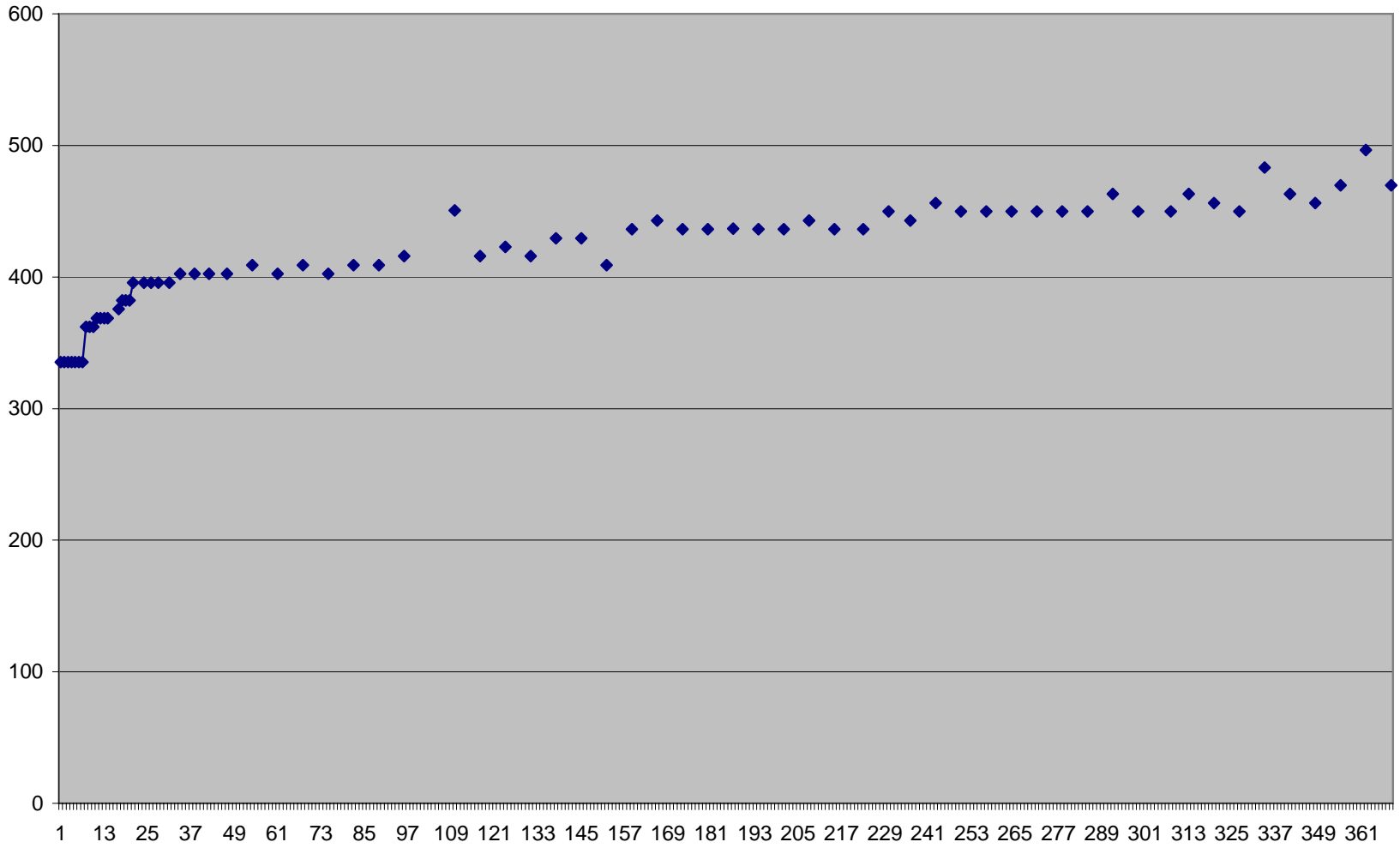
**Monitor Well Fluid Levels PBU**  
from 1/1/07 to 7/18/08



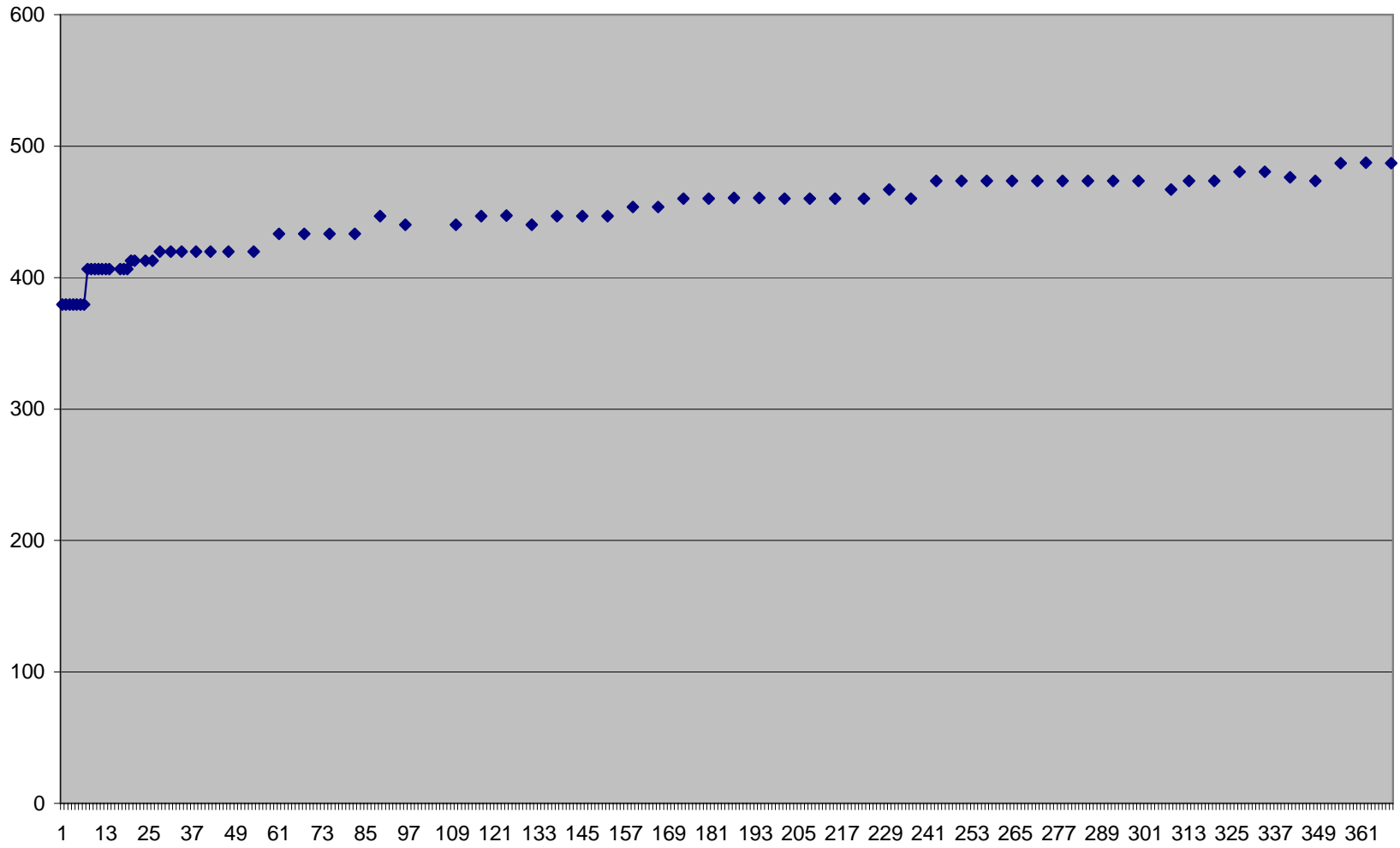
### Lively 02-02



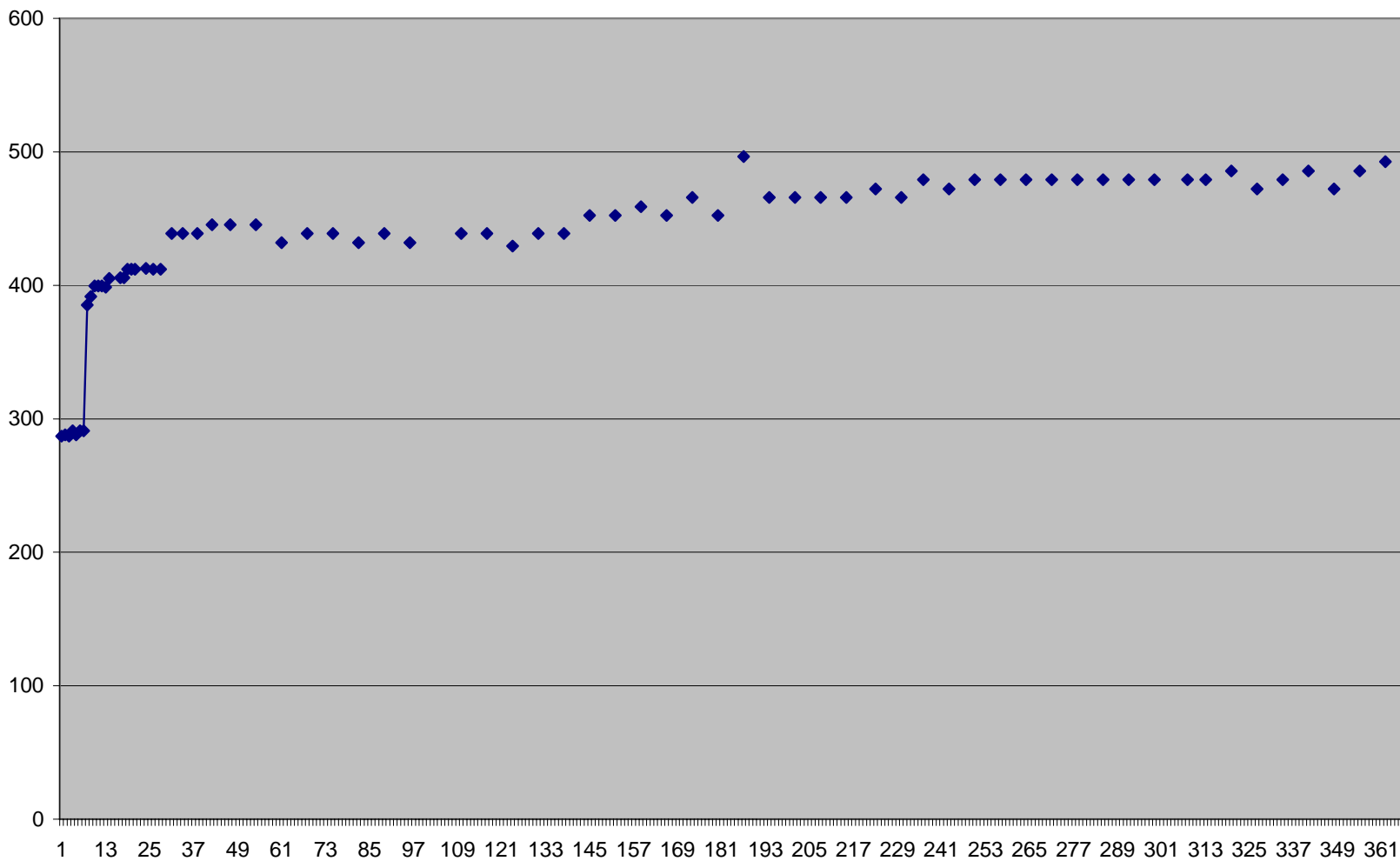
### Lively 02-12



### Lively 03-01

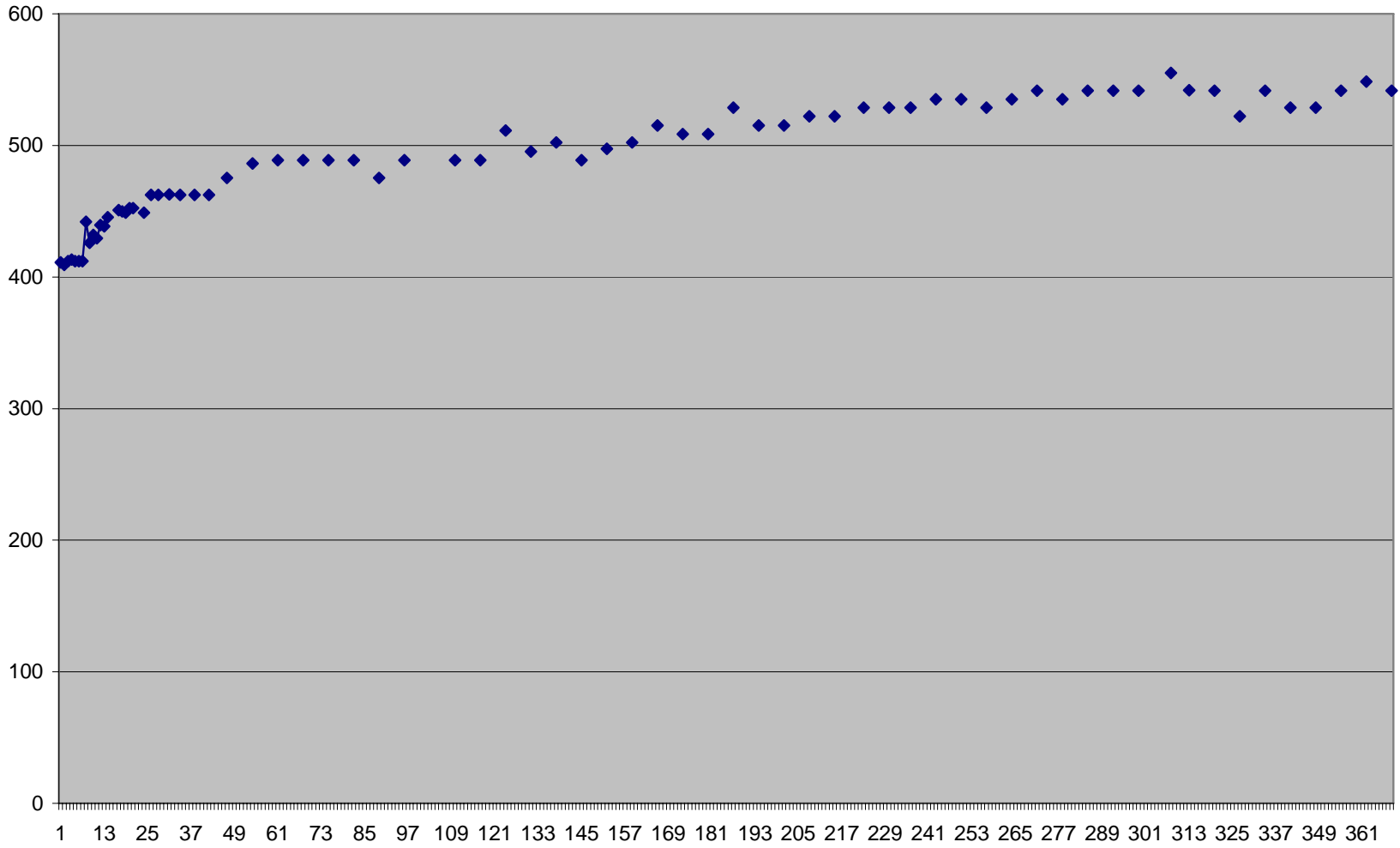


### Lively 03-10

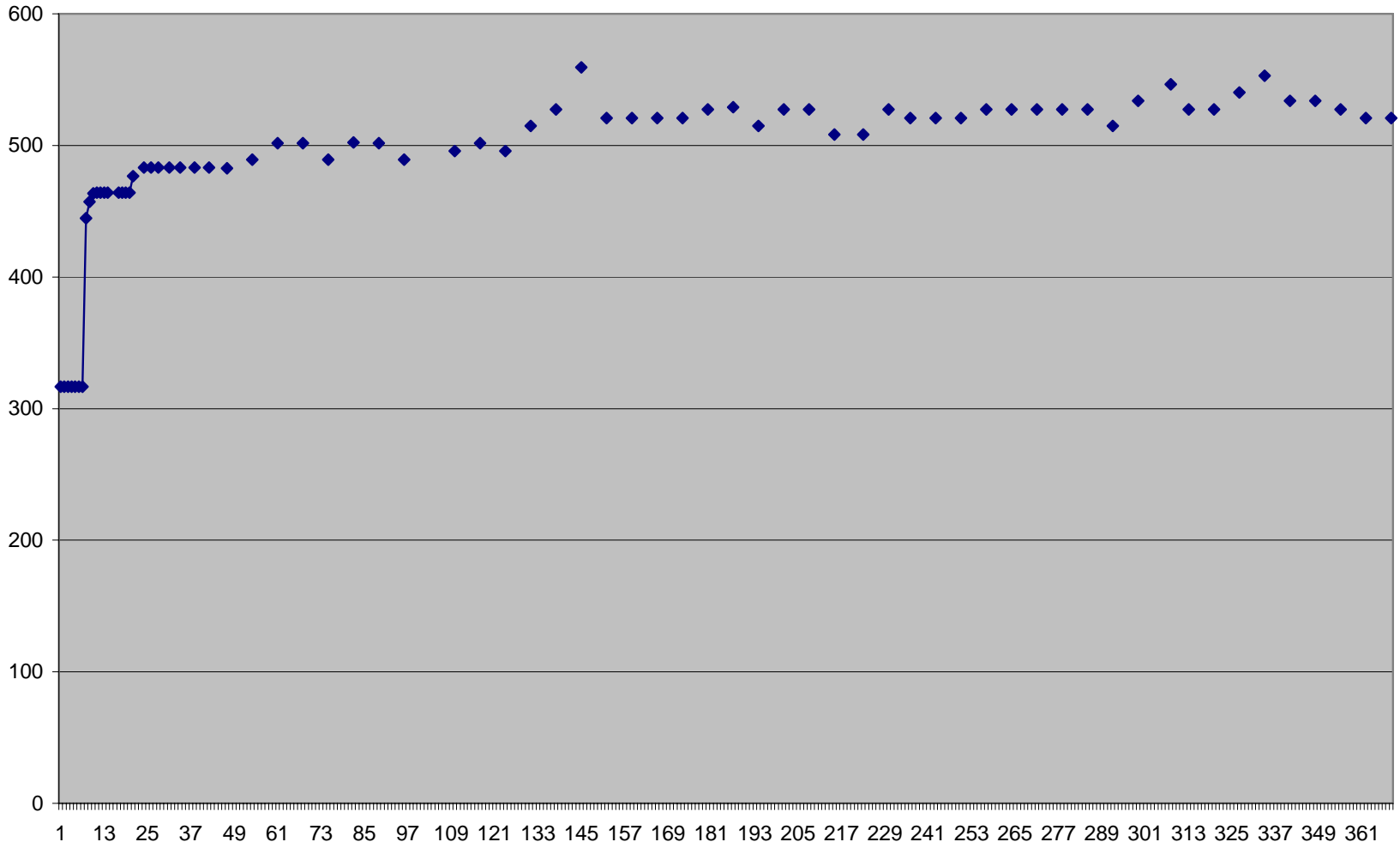




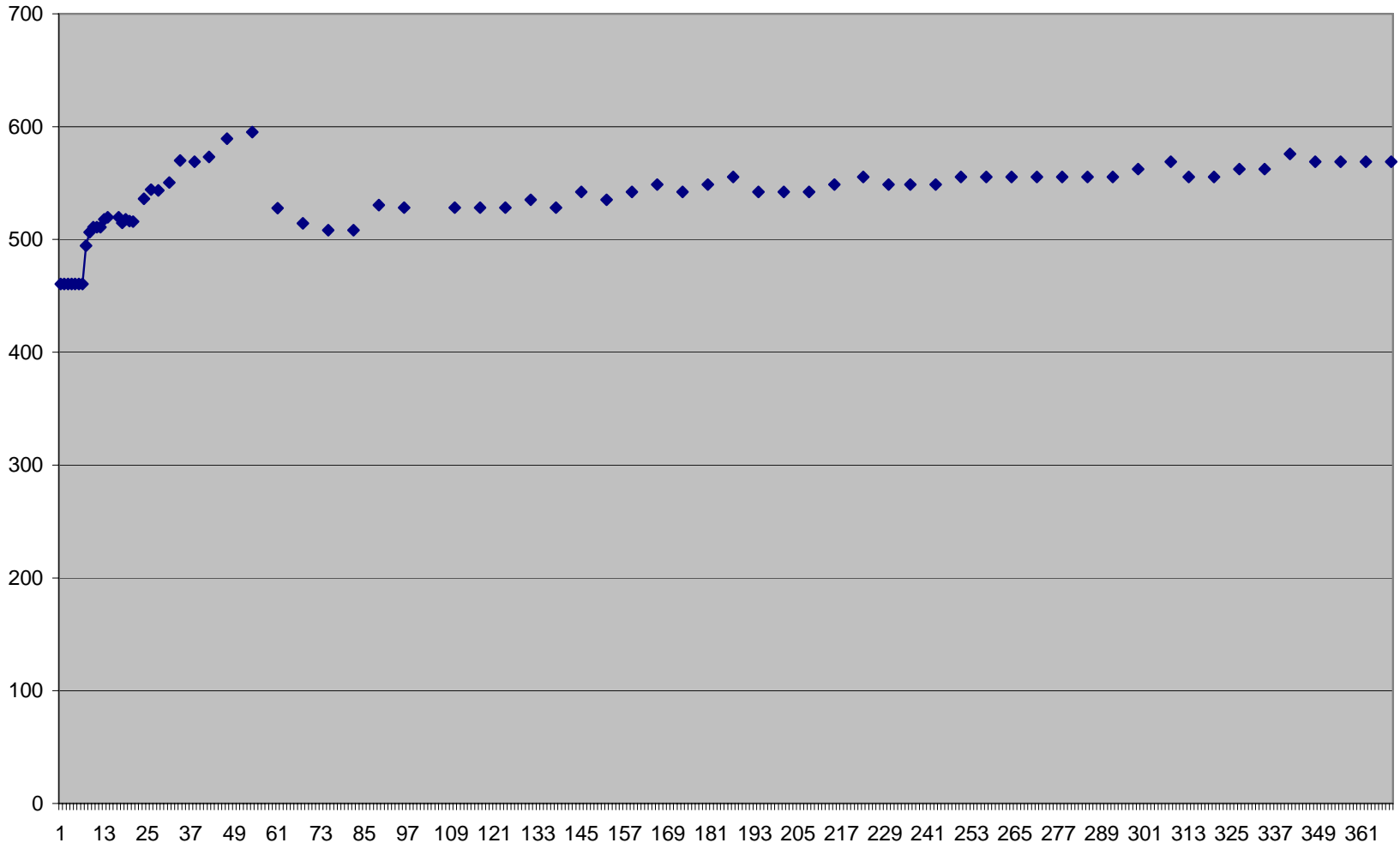
### Lively 03-12



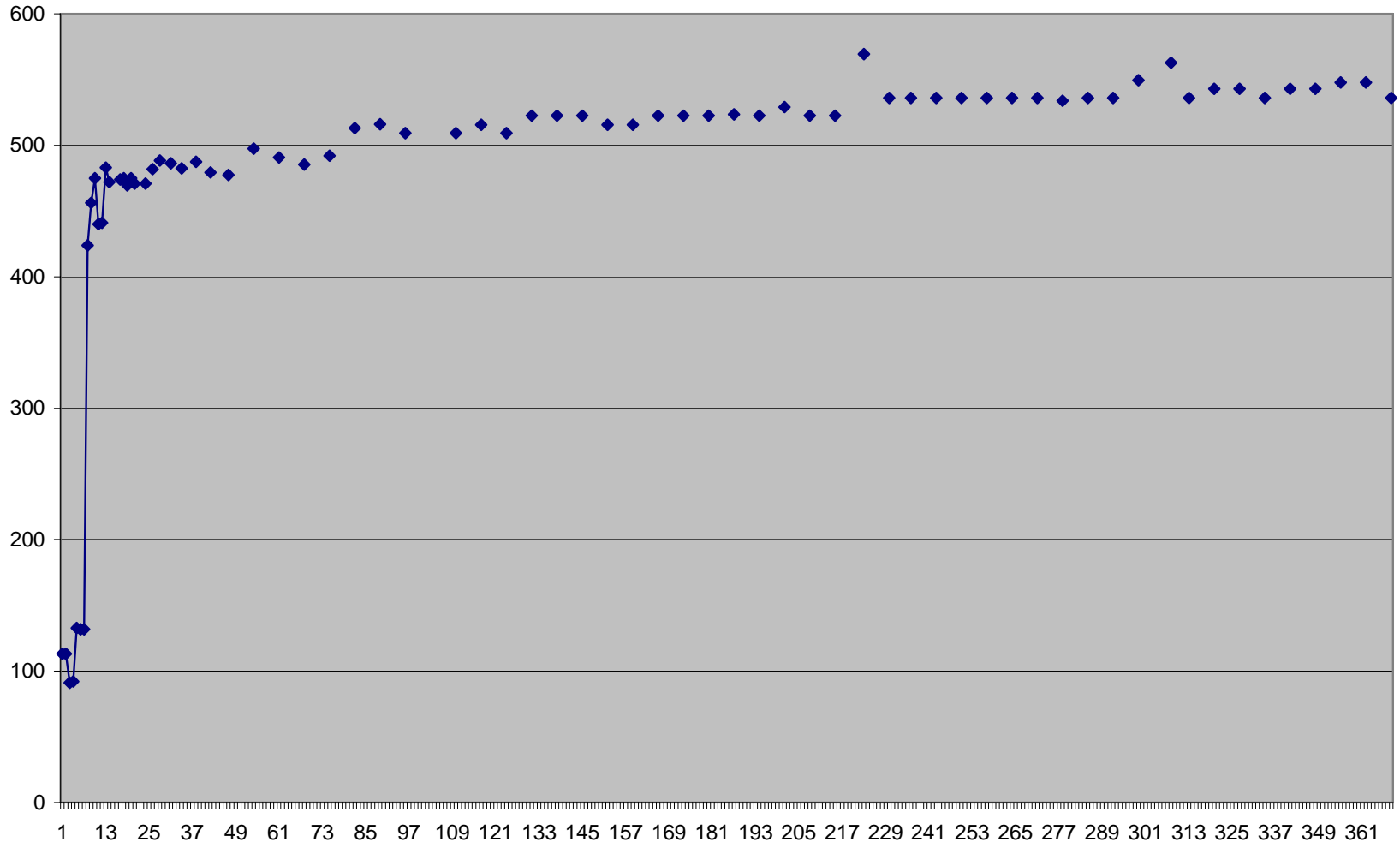
### Lively 10-04



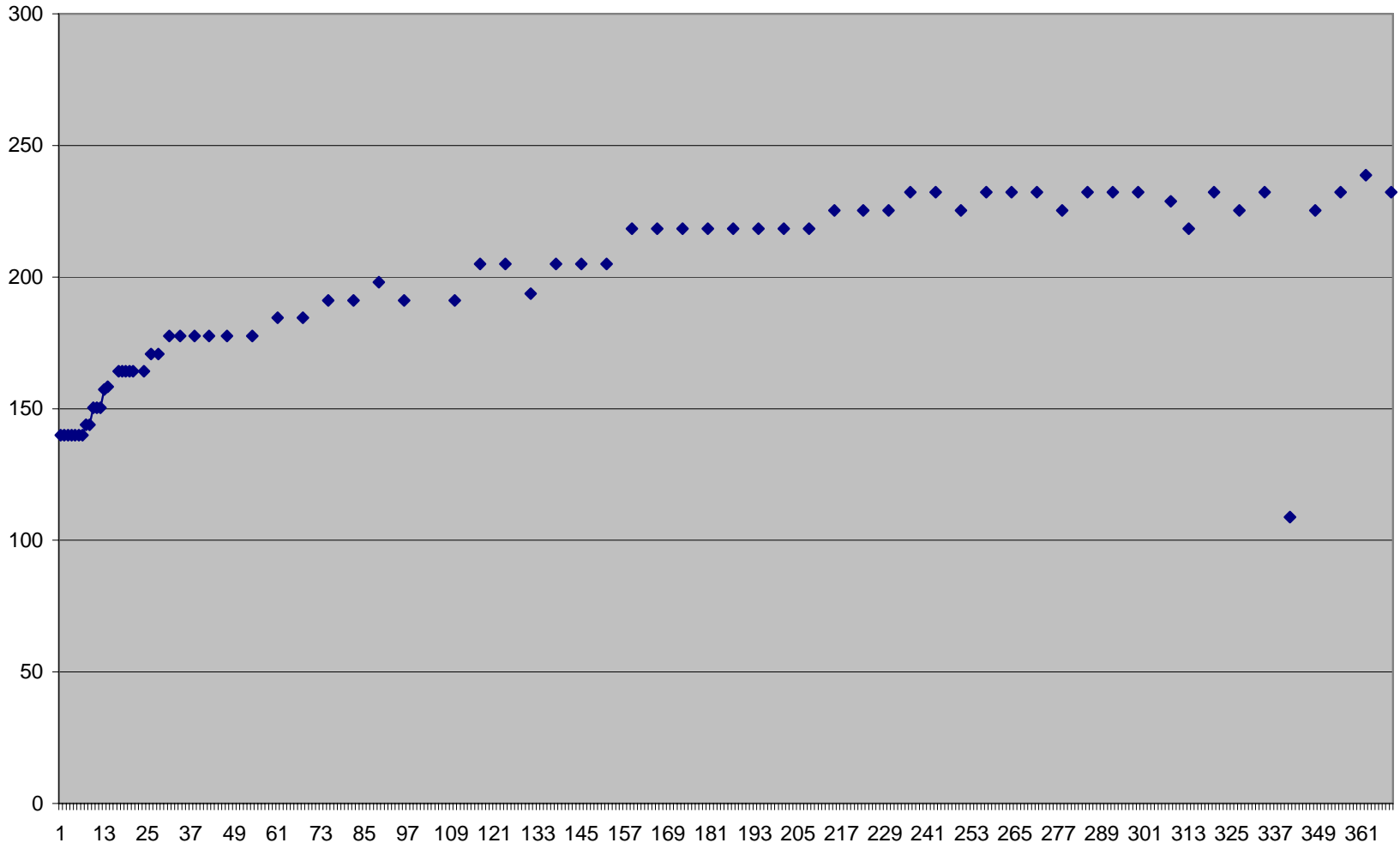
### Rohr 04-10



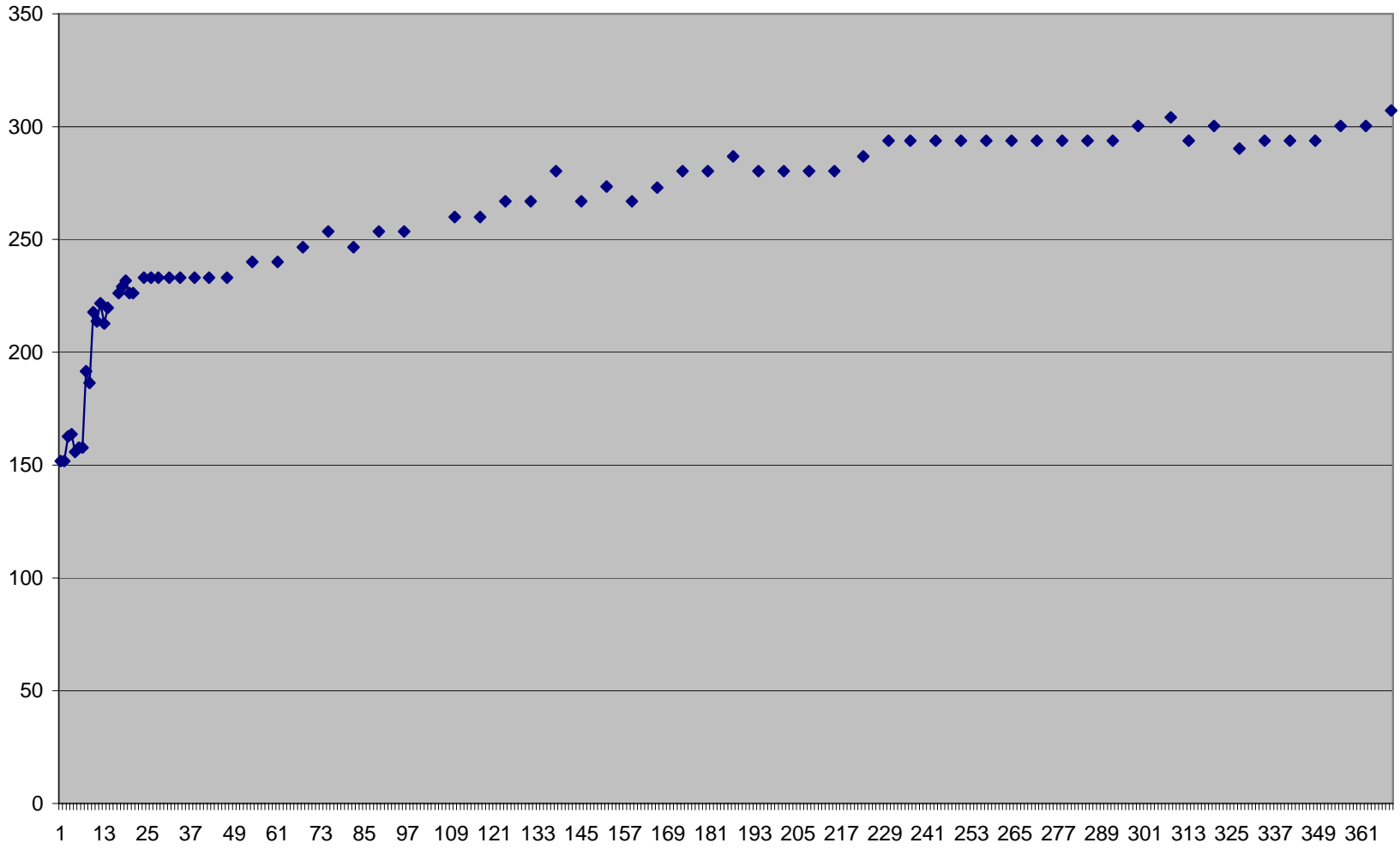
### Rohr 09-10



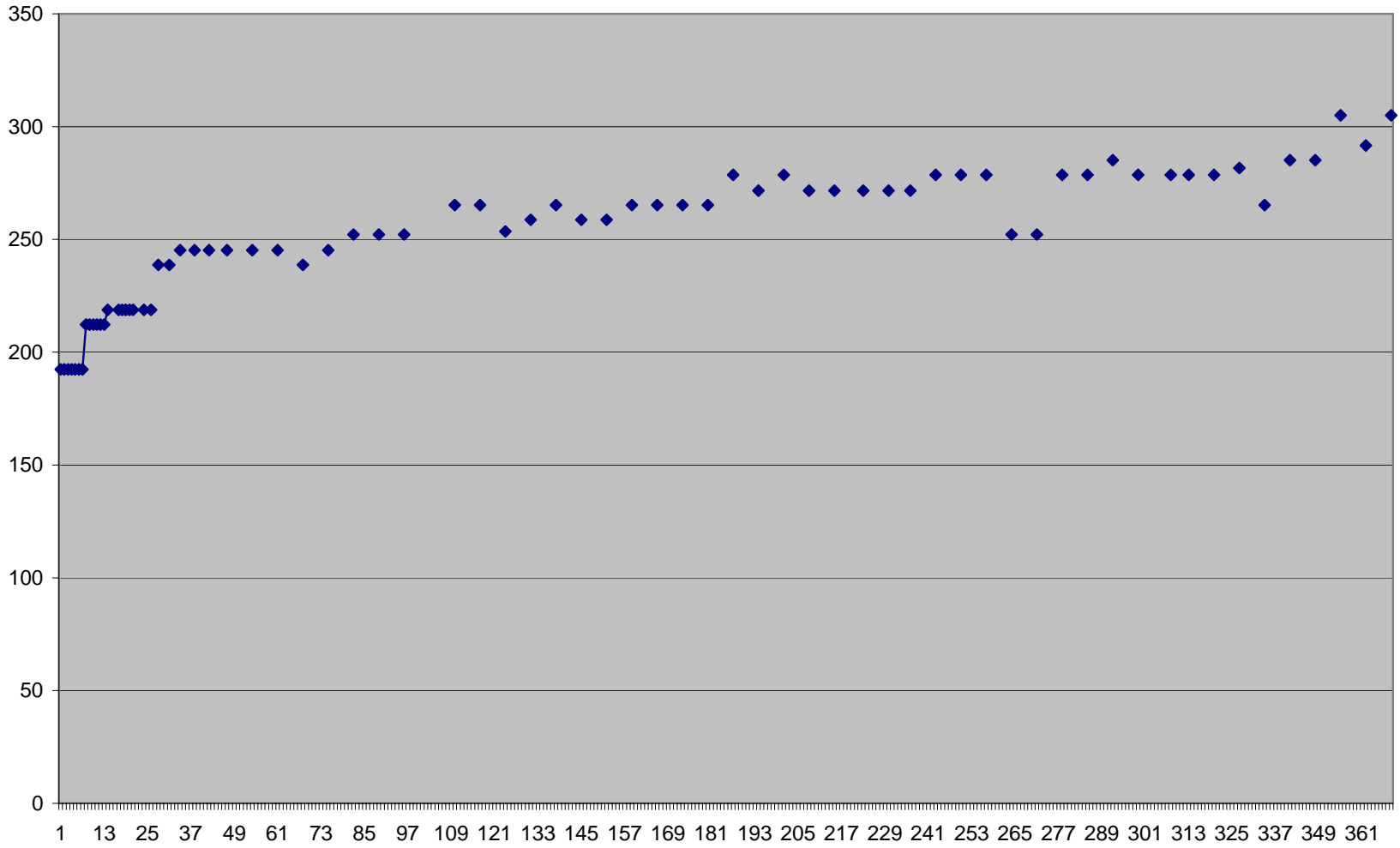
State 36-02



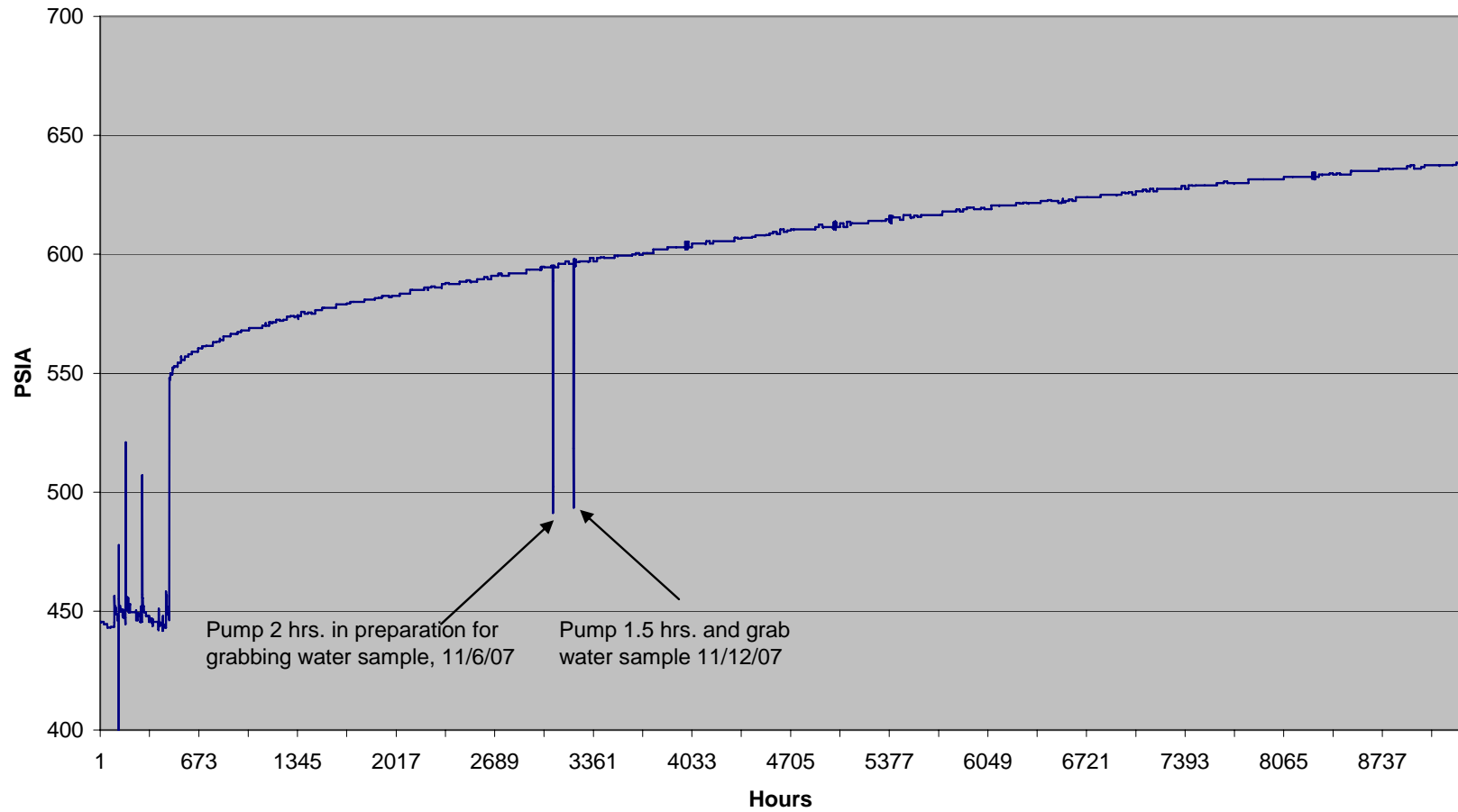
### State 36-05



### State 36-11

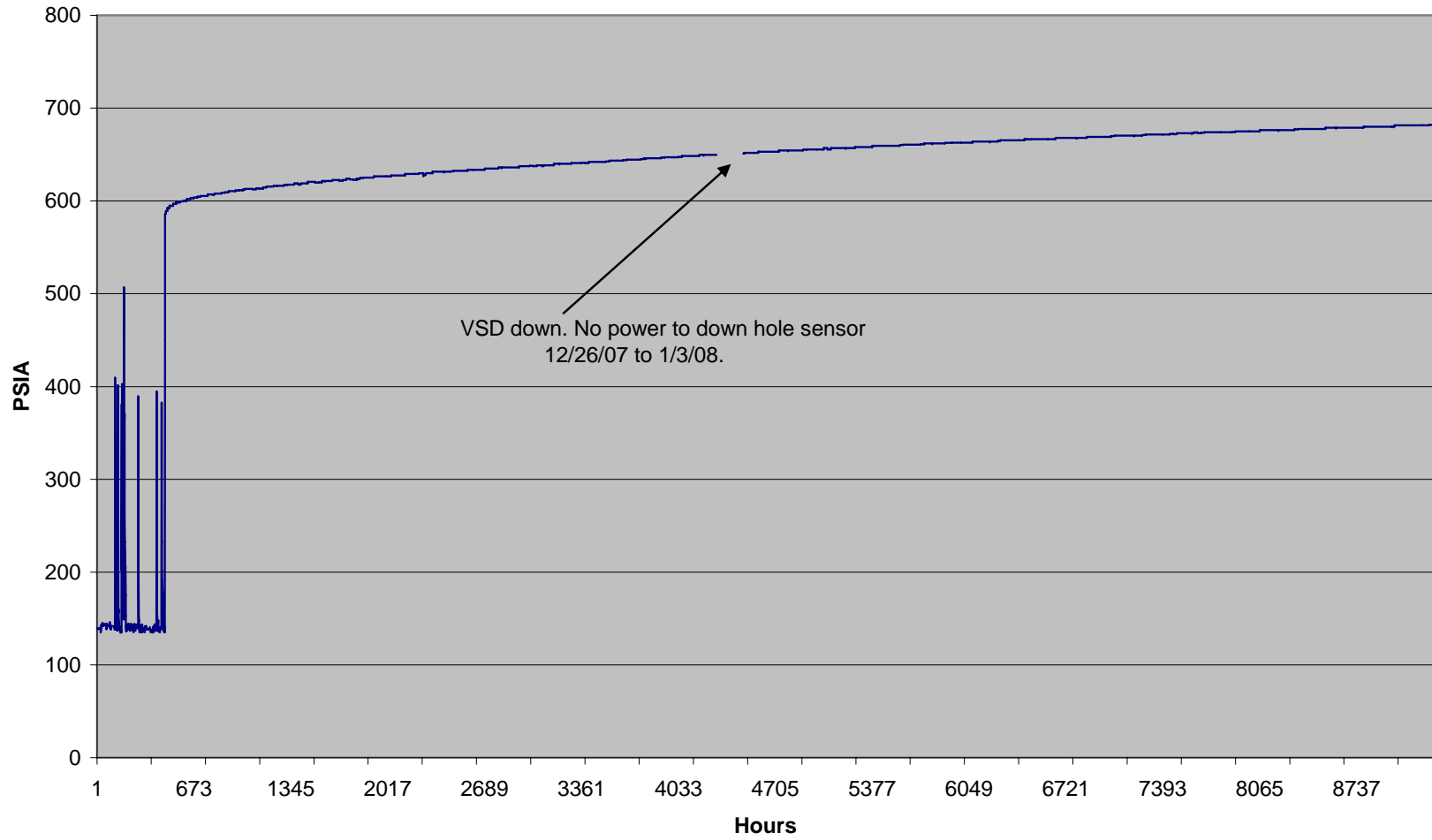


**Rohr 04-14 PBU**  
**from 7/1/07 to 7/21/08**

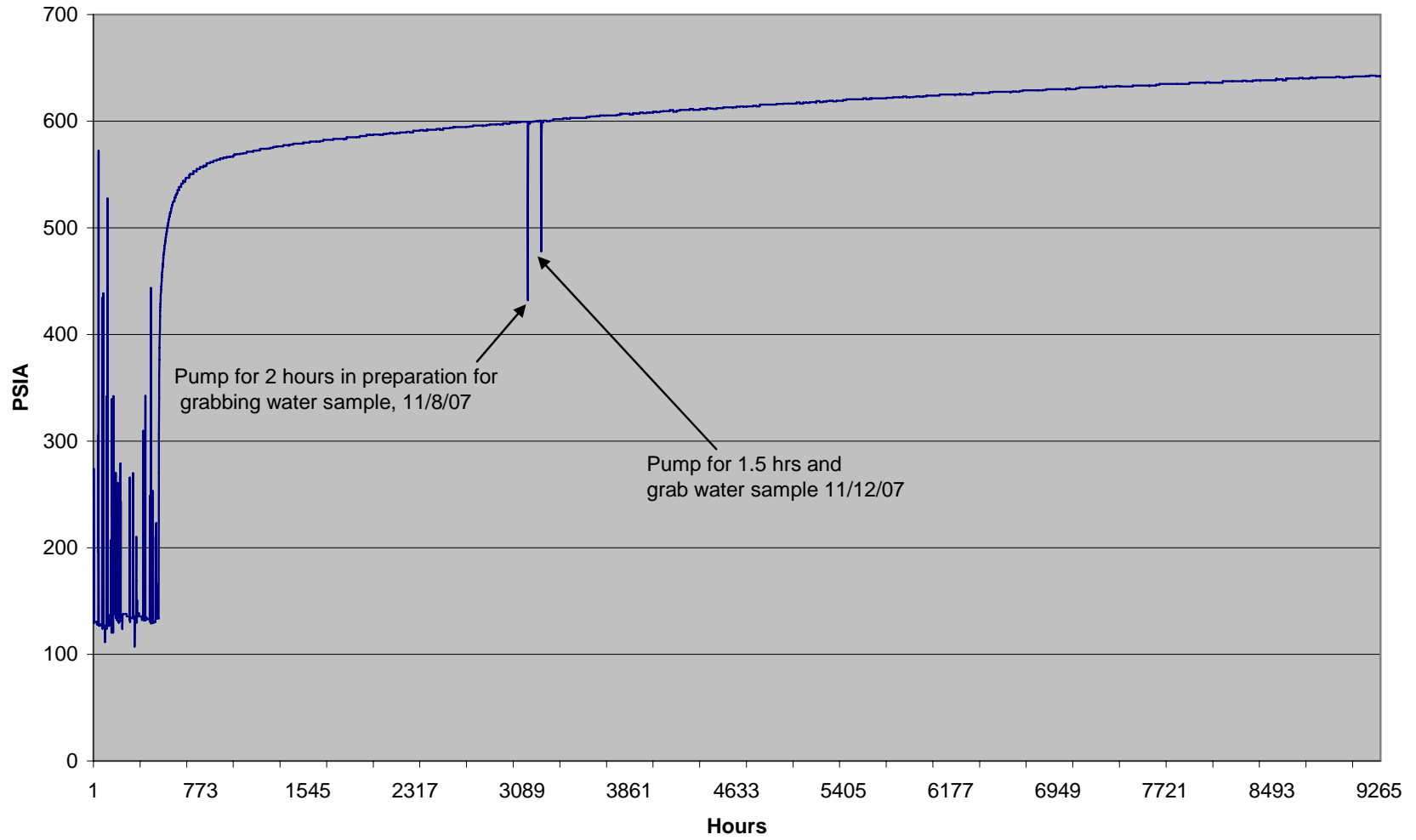




**Rohr 08-01 PBU**  
**from 7/1/07 to 7/21/08**



Rohr 09-04 PBU data (psia) 7/1/07 to 7/21/08



**Attachment 5**  
**Project Update Sent to Huerfano County Residents in Vicinity of Project**



# Little Creek Field Update

## June 2008

### PROJECT UPDATE

Petroglyph has completed another step of the methane mitigation program designed to control the movement of methane from the aquifer using a method known as a hydraulic barrier. By recharging the aquifer with water, the hydraulic barrier will help prevent the migration of methane in groundwater and private water wells.

The hydraulic barrier is still in the design phase and more data is required before the aquifer will be recharged.

In May, four recovery and eight injection wells were drilled. One recovery well did not have any gas detected and was plugged.

The purpose of the injection wells is to fill the aquifer with water to contain methane migration and to prevent additional methane from migrating into the aquifer. The recovery wells are designed to pump water and gas to a central processing station, where the methane gas will be separated from the water utilizing a smokeless/flameless flaring process. The water will then be returned back into the aquifer. The ultimate goal is to move gas out of formation and private water wells.

Methane, an abundant natural resource, has been discovered historically in well water in the Raton Basin. While the exact cause of methane entering this aquifer has not yet been determined, we are continuing to investigate.

#### ***Outdoor Air***

A helicopter survey was conducted in May to detect areas where methane gas may be present. The survey uses an infrared beam that detects light frequencies emitted by methane gas. The results of the survey were similar to the previous 2007 survey.

#### ***Indoor Air***

Petroglyph's contractor is in the process of installing upgraded methane detectors in the 13 homes that had concentrations of methane in their private water wells. These in-home detectors include both an audible alarm and a visible strobe alarm – both indoors and out.

The upgraded detectors are also equipped with an electrical surge protector that will reduce the number of false alarms.

To date, methane has not been detected from methane detectors inside the 13 homes.

### CURRENT/FUTURE ACTIVITIES

Testing of the aquifer started in mid-May after pressure gauges were installed in all recovery and injection wells to gather pressure data.

Testing is currently being conducted on the recovery and injection wells to help determine water flow and injection rates.

Field monitoring of methane flow rates conducted on the three recovery wells indicate a declining trend in methane flow rates.

The next step will be to conduct pump tests on each of the recovery and injection wells to determine how much water the recovery well pumps will produce and how much water the injection wells will take. It is anticipated this work will be completed by mid-July.

Data will then be analyzed to characterize the aquifer and to assist with the design of the hydraulic barrier. Recharging the aquifer with water will not start until the U.S. Environmental Protection Agency (EPA) has approved the injection permit being submitted by Petroglyph later this year.

## **FOR MORE INFORMATION**

We will continue to provide updates as new information about the environmental program becomes available. Please feel free to contact the following representative for more information:

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