

Pinedale Anticline Ground Water Data Summary

Data collected by the Sublette County Conservation District
August 1, 2009 through December 31, 2009

Bi-Annual Report
To
Pinedale Anticline Working Group - Water Resource Task Group
March 30, 2010

Volume 1 of 4



Sublette County Conservation District - www.sublettecountycd.com

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Introduction

The Pinedale Anticline Project Area (PAPA), which is currently undergoing gas exploration development, is located south of Pinedale, WY and north of the Jonah gas field. It is bordered by the Green River to the west and Highway 191 to the east. The Record of Decision (ROD) for the Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project, Sublette County Wyoming was released in July of 2000. The Conditions of Approval within this ROD states, "...the operators will conduct a survey and a complete water analysis (ex. static water level, alkalinity, salinity, benzene, oil, etc.) of all water wells within a one mile radius of existing and proposed development, and annually monitor and maintain a complete record of water analysis of all new water supply wells drilled in the project area to evaluate the quality of source options in the event some mitigation is required." (section 3, p. 25). See Map 1.

The Sublette County Conservation District (SCCD) was selected to perform the above requirements. The ground water monitoring program was developed in 2001 and ground water sampling began in 2004. As of December 31, 2009, the SCCD has collected 1432 ground water samples from water wells within one mile of an existing or proposed gas well within the PAPA.

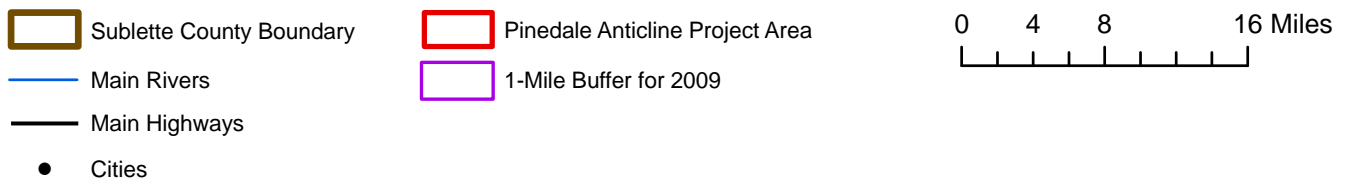
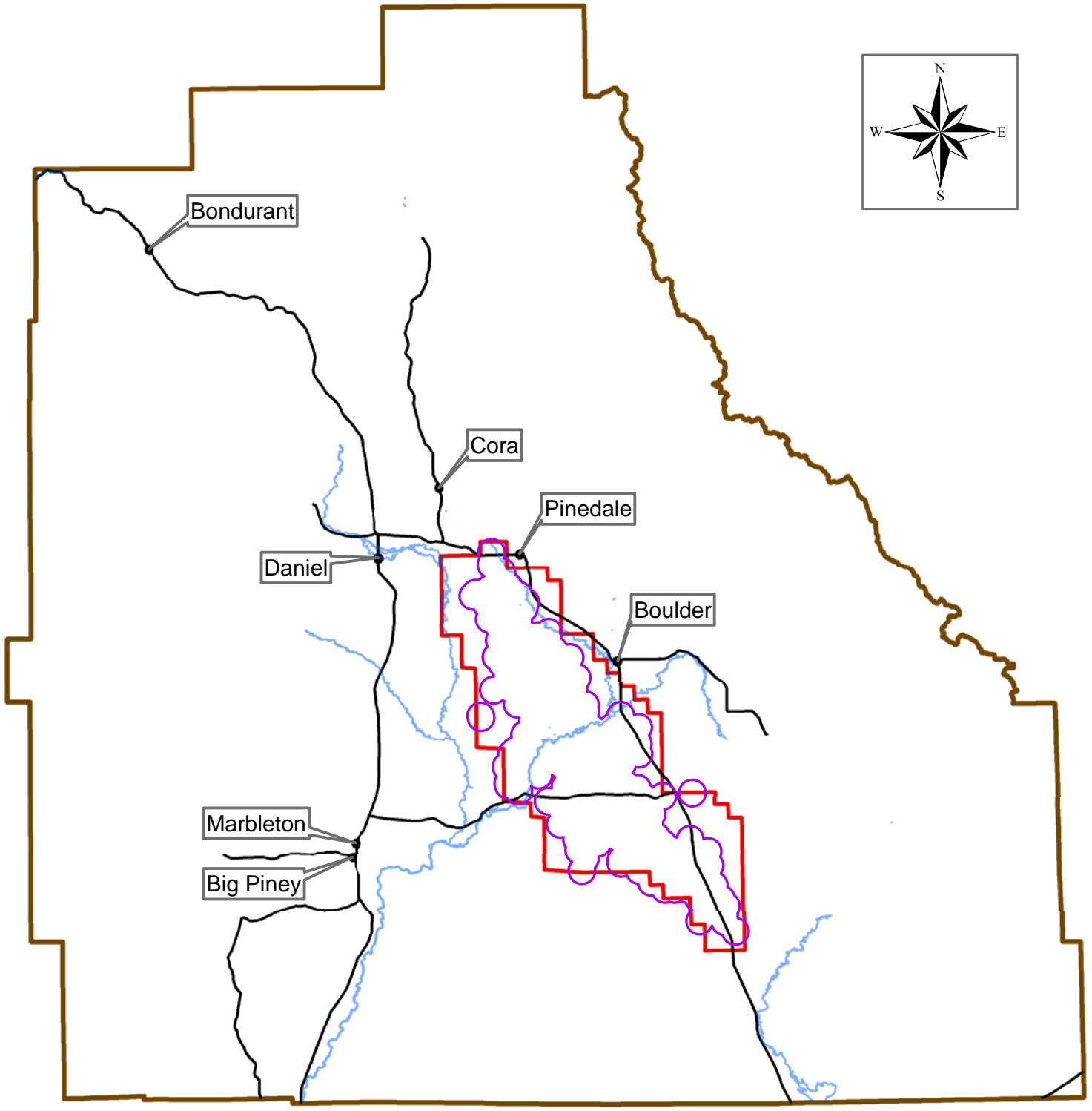
Report Objective

The purpose of this report is to provide a summary of the data collection procedures, field data and the lab analysis results from August 1, 2009 through December 31, 2009. See Map 2. Historical results have been included in Appendix A, Table 1 and Table 2, for reference purposes.

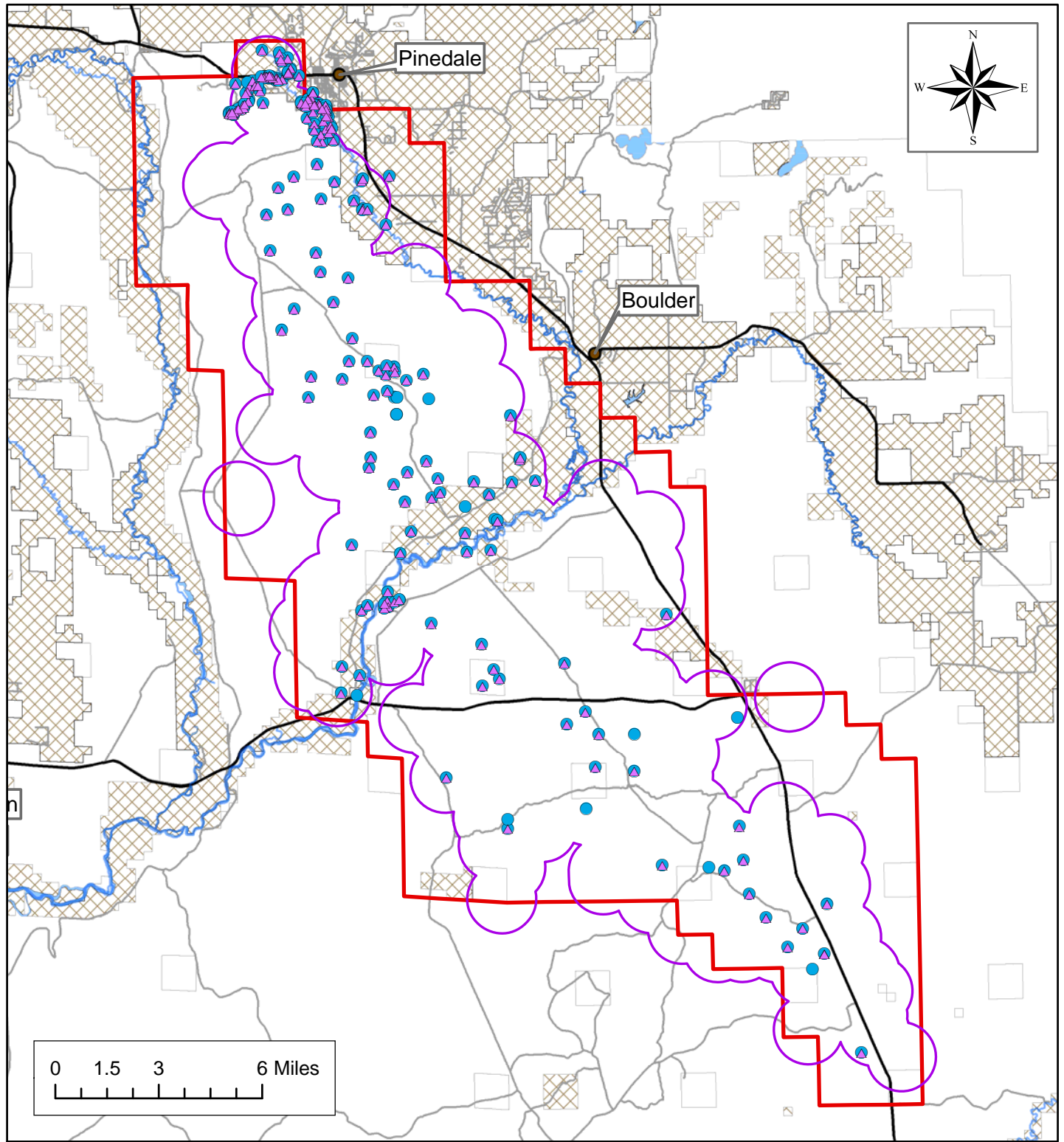
(See Map 1. Papa Boundary Within Sublette County)

(See Map 2. Water Wells Visited vs Sampled)

Map 1. PAPA Boundary Within Sublette County



Map 2. Water Wells Visited vs Sampled



- | | | | |
|---------------|---------------|---------------------------------|---|
| Private Lands | Main Rivers | Pinedale Anticline Project Area | Wells Sampled 08/01/09 through 12/31/09 |
| Public Lands | Main Highways | 1-Mile Buffer for 2009 | Wells Visited 08/01/09 through 12/31/09 |
| Cities | Other Roads | | |

Sublette County Conservation District / Pinedale Anticline Ground Water Data / Created by Delsa Allen / March 2010

The Sublette County Conservation District shall not be held liable for improper or incorrect use of the data described and/or contained herein. These data are not legal documents and are not intended to be used as such. The information contained in the data is dynamic and changes over time. It is the responsibility of the data user to use the data appropriately and consistently within the limits of the data. The Sublette County Conservation District provides no warranty, expressed or implied, as to the accuracy, reliability, or completeness of the data. Although these data have been processed successfully on a computer system at the Sublette County Conservation District offices, no warranty expressed or implied is made regarding the utility of the data on another system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and consolidated use with other data.

Methods

Water wells that become part of the SCCD ground water monitoring program are monitored annually. The data collected includes water level, GPS coordinates, field parameters and laboratory analysis data. Field parameters are measured just prior to the laboratory bottles being filled. The parameters measured in the field include pH, conductivity, total dissolved solids (TDS) and temperature (reported in Celsius). Water level is also measured when well access is possible. Field notes are made regarding procedure used to sample, and other field observations.

Samples have been tested further for alkalinity, calcium, chloride, fluoride, magnesium, potassium, sodium and sulfate by Energy Laboratories Inc in Casper, Wyoming. Also, all samples are tested for Total Petroleum Hydrocarbons (TPH): Diesel Range Organics (DRO) and Gasoline Range Organics (GRO) using method SW8015B. Samples which show detections for DRO or GRO are sampled a second time and also analyzed for benzene, ethylbenzene, m+p-Xylenes, o-Xylene and toluene (commonly known as BTEX) using method SW8021B.

The Quality Assurance Program Manual and Performance Evaluations for Energy Laboratories, Inc. is located at the following web address in PDF format:

<http://www.energylab.com/QualityControlList.asp?branch=Casper>

Prior to release, all lab and field data is entered into the Sublette County Conservation District database and quality control measures are taken to insure credibility.

Results

Starting August 1, 2009 through December 31, 2009, 220 field visits took place with 211 samples being collected. Some of these were duplicate samples taken as a quality control measure. Others were second sample sets taken due to previous DRO and / or GRO detections. See Map 2.

The Wyoming Department of Environmental Quality (WYDEQ) and Environmental Protection Agency (EPA) have established drinking water and livestock water quality standards for a handful of parameters. Some of these are analyzed in the SCCD Groundwater Monitoring Program, both in the field and through further lab analysis. The standards for these parameters are given below:

- *Drinking Water Standards:* chloride, 250 mg/L; fluoride, 4 mg/L; sulfate, 250 mg/L; and total dissolved solids, 500 mg/L.
- *Livestock Standards:* chloride, 2000 mg/L; sulfate, 3000 mg/L; and total dissolved solids, 5000 mg/L.

Water Wells Permitted Through the Wyoming State Engineer's Office for Domestic, Stock and Domestic/Stock Use

Field Data

The following results were taken with a Hanna HI 991300 field meter and represent the range of data collected from the specific well-use group.

| <i>Field Data Collected</i> | <i>Range</i> |
|------------------------------------|---------------------|
| <i>Conductivity (us/cm)</i> | |
| Domestic | 81 to 1829 |
| Domestic/Stock | 173 to 932 |
| Stock | 194 to 2399 |
| <i>TDS (ppm)</i> | |
| Domestic | 40 to 920 |
| Domestic/Stock | 86 to 467 |
| Stock | 97 to 1199 |
| <i>Temperature (Celcius)</i> | |
| Domestic | 6.0 to 24.7 |
| Domestic/Stock | 7.6 to 18.9 |
| Stock | 5.0 to 17.8 |
| <i>pH</i> | |
| Domestic | 6.09 to 9.50 |
| Domestic/Stock | 6.09 to 9.45 |
| Stock | 6.65 to 9.43 |
| <i>Water Levels (feet)</i> | |
| Domestic | 0 to 109.47 |
| Domestic/Stock | 2.20 to 27.10 |
| Stock | 4.70 to 367.52 |

When comparing TDS results from field analysis with the standards listed earlier in this summary, 4 domestic wells (AD213, AD215, AD222 and AD234) exceeded the drinking water standard, 0 domestic/stock wells exceeded the drinking water standard, and 0 stock wells exceeded the livestock standard.

Water level is taken only when access into the well is possible.

The complete field data is provided in Appendix A, Table 1. Water Well Field and Lab Analysis Data, 08/01/09 – 12/31/09 Plus Historical Results 01/01/04 – 12/31/09: Domestic-use and Stock-use.

Laboratory Data

The following laboratory results are from 59 samples collected from domestic water wells, 15 from domestic/stock wells and 17 from stock wells. They represent the range of data collected from the specific well-use group. "ND" represents non-detectible.

| <i>Lab Data</i> | <i>Range</i> |
|--------------------------|---------------------|
| <i>Alkalinity (mg/L)</i> | |
| Domestic | 45 to 368 |
| Domestic/Stock | 88 to 258 |
| Stock | 71 to 242 |
| <i>Calcium (mg/L)</i> | |
| Domestic | ND to 106 |
| Domestic/Stock | ND to 53 |
| Stock | ND to 69 |
| <i>Chloride (mg/L)</i> | |
| Domestic | ND to 90 |
| Domestic/Stock | ND to 11 |
| Stock | 2 to 65 |
| <i>Fluoride (mg/L)</i> | |
| Domestic | ND to 9.4 |
| Domestic/Stock | 0.1 to 5.5 |
| Stock | ND to 8.2 |
| <i>Magnesium (mg/L)</i> | |
| Domestic | ND to 22 |
| Domestic/Stock | ND to 10 |
| Stock | ND to 14 |
| <i>Potassium (mg/L)</i> | |
| Domestic | ND to 4 |
| Domestic/Stock | ND to 2 |
| Stock | ND to 3 |
| <i>Sodium (mg/L)</i> | |
| Domestic | 2 to 322 |
| Domestic/Stock | 12 to 241 |
| Stock | 8 to 545 |
| <i>Sulfate (mg/L)</i> | |
| Domestic | ND to 700 |
| Domestic/Stock | 0 to 277 |
| Stock | 0 to 1070 |
| <i>TDS (mg/L)</i> | |
| Domestic | 45 to 1390 |
| Domestic/Stock | 90 to 654 |
| Stock | 120 to 1690 |

When comparing chloride results from lab analysis with the standards listed earlier in this summary, there were no drinking or livestock water exceedences for domestic, domestic/stock or livestock water wells.

When comparing fluoride results from lab analysis with the standards listed earlier in this summary, 2 domestic wells (AD197 and AD203) exceeded the drinking water standard, 1 domestic/stock well (ADS004) exceeded the drinking water standard, and there were 0 stock wells that exceeded the livestock standard.

When comparing sulfate results from lab analysis with the standards listed earlier in this summary, 3 domestic wells (AD213, AD222 and AD234) exceeded the drinking water standard, 1 domestic/stock well exceeded the drinking water standard (ADS028), and there were 0 stock wells that exceeded the livestock standard.

When comparing TDS results from lab analysis with the standards listed earlier in this summary, 8 domestic wells (AD137, AD174, AD213, AD215, AD222, AD224, AD234 and AD242) exceeded the drinking water standard, 1 domestic/stock well exceeded the drinking water standard (ADS028), and there were 0 stock wells that exceeded the livestock standard.

The complete lab analysis data is provided in Appendix A, Table 1. Water Well Field and Lab Analysis Data, 08/01/09 – 12/31/09 Plus Historical Results 01/01/04 – 12/31/09: Domestic-use and Stock-use.

Water Wells Permitted Through the Wyoming State Engineer's Office for Miscellaneous Use

Field Data

Wells permitted for miscellaneous-use may include wells used for industrial purposes within the PAPA.

The following results are from field visits taken with a Hanna HI 991300 field meter.

| Field Data Collected | Range |
|------------------------------|----------------|
| <i>Conductivity (us/cm)</i> | 271 to 2547 |
| <i>TDS (ppm)</i> | 135 to 1273 |
| <i>Temperature (Celcius)</i> | 4.4 to 24.8 |
| <i>pH</i> | 6.27 to 9.88 |
| <i>Water Levels (feet)</i> | 4.47 to 692.92 |

The complete field data is provided in Appendix A, Table 2. Water Well Field and Lab Analysis Data, 08/01/09 – 12/31/09 Plus Historical Results 01/01/04 – 12/31/09: Miscellaneous-use.

Laboratory Data

The following results are from 88 samples. “ND” represents non-detectible.

| Lab Data | Range |
|--------------------------|--------------|
| <i>Alkalinity (mg/L)</i> | 80 to 324 |
| <i>Calcium (mg/L)</i> | ND to 118 |
| <i>Chloride (mg/L)</i> | 1.0 to 209 |
| <i>Fluoride (mg/L)</i> | .2 to 14.4 |
| <i>Magnesium (mg/L)</i> | ND to 29 |
| <i>Potassium (mg/L)</i> | ND to 6 |
| <i>Sodium (mg/L)</i> | 12 to 616 |
| <i>Sulfate (mg/L)</i> | ND to 1030 |
| <i>TDS (mg/L)</i> | 166 to 1710 |

The complete lab analysis data is provided in Appendix A, Table 2. Water Well Field and Lab Analysis Data, 08/01/09 – 12/31/09 Plus Historical Results 01/01/04 – 12/31/09: Miscellaneous-use.

Total Petroleum Hydrocarbon Results

When dealing with TPH in water wells, WYDEQ uses a set of ground water clean-up levels to help guide them in determining a point of contamination:

- *Ground Water Cleanup Levels:* DRO, 1.1 mg/L or 10 mg/L; GRO, 7.3 mg/L; benzene, 5 ug/L; ethylbenzene, 700 ug/L; m+p-Xylenes, 10,000 ug/L; o-Xylene, 10,000 ug/L; and toluene, 1,000 ug/L.

The cleanup level for DRO can be either 1.1 mg/L or 10 mg/L depending on the results of other parameters, some of which were not tested for by SCCD prior to 2010.

TPH reported as Diesel Range Organics (DRO), Gasoline Range Organics (GRO) or BTEX have been detected in a total of 15 wells from August 1, 2009 through December 31, 2009. Thirteen of these water wells are miscellaneous-use and two are domestic-use water wells.

The following laboratory results are from samples collected from August 1, 2009 through December 31, 2009. BTEX (benzene, ethylbenzene, m+p-Xylenes, o-Xylene, and toluene) was only tested for when previous results showed a detection of DRO and / or GRO for a particular water well.

- *DRO* was detected in a total of 3 wells with results ranging from 1.4 mg/L to 6.0 mg/L. Of those, 2 were miscellaneous-use wells (AMI228 and AMI258). The remaining well is AD223, a domestic use well.
- *GRO* was detected in a total of 8 wells with results ranging from .042 mg/L to .65 mg/L. Of those, 7 were miscellaneous-use wells (AMI017, AMI043, AMI134, AMI146, AMI182, AMI237 and AMI258). The remaining well is AD238, a domestic use well. All levels were under the cleanup level.
- *Benzene* was detected in a total of 2 wells with results ranging from 6.8 ug/L to 79 ug/L. Both were miscellaneous-use wells (AMI146 and AMI237) with levels over the cleanup level.
- *Ethylbenzene* was detected in a total of 2 wells with results ranging from 1.8 ug/L to 4.2 ug/L. Both were miscellaneous-use wells (AMI237 and AMI258) with levels under the cleanup level.
- *m+p-Xylenes* was detected in a total of 3 wells with results ranging from 2.6 ug/L to 32 ug/L. All 3 were miscellaneous-use wells (AMI237, AMI258 and AMI301) with levels under the cleanup level.
- *o-Xylene* was detected in a total of 2 wells with results ranging from 1.1 ug/L to 7 ug/L. Both were miscellaneous-use wells (AMI237 and AMI258) with levels under the cleanup level.
- *Toluene* was detected in a total of 9 wells with results ranging from 1.4 ug/L to 140 ug/L. All were miscellaneous-use wells (AMI017, AMI033, AMI182, AMI198, AMI213, AMI228, AMI237, AMI258 and AMI279) with levels under the cleanup level.

Status of wells with TPH detections prior to 08/01/09

Wells with detections below WYDEQ clean-up levels

- AMI017 / Antelope 15-4
- AMI132 / Riverside 15-12
- AMI160 / Mesa 12-28W
- AMI210 / Warbonnet 10-9D **
- AMI213 / Petrogulf State 36-9
- AMI233 / Boulder 15-4
- AMI252 / Boulder 15D-7D **
- AMI258 / Riverside 11-25
- AMI265 / Warbonnet 5D-1D
- AS014 / N.W. Square Top

Wells with detections at or over WYDEQ clean-up levels

- AD238 / DC-6
- AMI146 / Antelope 11-10
- AMI182 / Highway-Federal #7
- AMI187 / Antelope 1-16
- AMI198 / Warbonnet 16-5
- AMI209 / Warbonnet 15-26
- AMI228 / Rainbow 16-30
- AMI237 / Warbonnet 7-15
- AMI255 / Mesa 15B-27D
- AMI279 / Warbonnet 1-9
- AMI301 / Warbonnet 11-4

Status of wells with TPH detections after 08/01/09

Wells with detections below WYDEQ clean-up levels

- AMI017 / Antelope 15-4
- AMI033 / Highway #11
- AMI043 / Mesa Lovett Draw 15-8 *
- AMI134 / Rainbow 13-32 *
- AMI182 / Highway-Federal #7
- AMI198 / Warbonnet 16-5
- AMI210 / Warbonnet 10-9D **
- AMI213 / Petrogulf State 36-9
- AMI228 / Rainbow 16-30
- AMI233 / Boulder 15-4 **
- AMI252 / Boulder 15D-7D **
- AMI255 / Mesa 15B-27D **
- AMI258 / Riverside 11-25
- AMI265 / Warbonnet 5D-15D **
- AMI279 / Warbonnet 1-9
- AMI301 / Warbonnet 11-4

Wells with detections at or over WYDEQ clean-up levels

- AMI146 / Antelope 11-10
- AMI187 / Antelope 1-16
- AMI237 / Warbonnet 7-15

* Well has not had any TPH detections prior to 08/01/09.

** Well has since been plugged and abandoned.

Status details of water wells with detectible TPH since last reported (Pinedale Anticline Ground Water Data Summary, October 15, 2009).

AD223 / Tri County Sanitation #1

The first year this well was sampled was 2008 with no DRO or GRO detections. The 8/04/09 sample showed a DRO detection of 1.5 mg/L. The second confirmation sample, taken 12/15/09, showed ND for all hydrocarbon-related parameters.

AD238 / DC – 6

The first sample collected from this well was on 6/23/09. TPH parameters were detected, some over WYDEQ clean-up levels. The second sample, collected 7/22/09, showed further TPH presence. These two samples were grab samples, collected with polyethylene bailers. The well was drilled approximately two years ago and had never had a pump installed.

SCCD made arrangements with the well owner to have a pump installed for further sampling which took place 11/03/09. After 3 casing volumes of water had been pumped, which took a little over 12 minutes, a sample was collected. During the time water was being pumped, pH, conductivity, TDS and temperature was being monitored with field equipment. It was noticed that the conductivity and TDS levels were dropping at a significant rate while the pH was rising, even after the first sample was collected. Because of this observation, SCCD staff chose to take another sample after another 30 minutes. It wasn't until about 2 hours later that the field parameter levels started to stabilize, at which point a third sample was collected. The results from the first sample set showed a low level of GRO at .05 mg/L; the second set showed GRO at .042 mg/L; and the third set showed GRO at ND.

AMI017 / Antelope 15-4 / BP

The first TPH detection in the well was found in 2008. The first 2009 sample showed a toluene detection of 18 ug/L. The second 2009 sample showed a toluene detection of 8.9 ug/L and a GRO detection of .046 mg/L.

AMI033 / Highway #11 / Yates

The first TPH detection in the well was found in 2008. A second sample, taken a month later, showed ND for all hydrocarbon-related parameters. The first sample for 2009 was not able to be collected until December. Duplicates were taken, as it was unlikely a second sample could be collected by the end of the year, if necessary. Results from both sample sets showed toluene detections, one at 6.3 ug/L and one at 4.9 ug/L.

AMI043 / Mesa Lovett Draw 15-8

This well was drilled for industrial purposes, then later turned over for livestock use. We have sampled this well since 2004. The 2009 sample showed a GRO detection of .15 mg/L. After talking to the livestock producer who is using the well, it was discovered that they had pulled the pump and replaced the piping for this well earlier in the spring. It was decided that the well would be sampled first thing in the spring of 2010.

AMI132 / Riverside 15-12 / Ultra

This well has been sampled numerous times by SCCD with results showing TPH presence. Results from the first sample collected in 2009 showed a toluene detection of 9.7 ug/L. The second sample collected showed ND for all hydrocarbon-related parameters.

AMI134 / Rainbow 13-32 / Shell

The first TPH detection was from a 2009 sample that showed a GRO detection of .064 mg/L. SCCD was not able to get a second sample of the well before the end of 2009.

AMI140 / North Mesa 4-7-32-109W / Shell

Results from the 2008 sample showed ND for all hydrocarbon-related parameters. Results of the 2009 sample were the same.

AMI146 / Antelope 11-10 / Shell

Results from the first 2009 sample showed TPH presence similar to the previous year's results. The second sample, once again, showed similar results of a GRO detection of .21 mg/L and a benzene detection of 6.8 ug/L.

AMI149 / Blue Rim State # 2 / Yates

Results were ND for DRO and GRO from the 2008 sample. SCCD was not able to collect a sample from this well in 2009. It should be noted this well is located within a state section, not BLM.

AMI160 / Mesa 12-28W / Shell

The first 2009 sample showed a toluene detection of 2.3 ug/L. The second sample showed ND for all hydrocarbon-related parameters.

AMI162 / Rainbow 3-31 / Newfield

Results from the last 2008 sample showed ND for all hydrocarbon-related parameters. Results of the 2009 sample were the same.

AMI182 / Highway-Federal #7 / Yates

Results for the second sample for 2008 (actually taken 1/20/09) showed a GRO detection of .192 mg/L and a benzene detection of 6.9 ug/L. SCCD was finally able to arrange for the 2009 sample in December of 2009. Duplicates were taken, as it was unlikely a second sample could be collected by the end of the year, if necessary. Results from both samples showed similar hydrocarbon presence with GRO detections of .15 mg/L and .16 mg/L, as well as toluene detections of 1.4 ug/L for both sample sets.

AMI187 / Antelope 1-16 / was Jed Oil, now under new ownership

Results from the 2008 samples showed significant TPH presence (see "Notes related to lab data" for the 12/15/08 sample). SCCD was not able to sample this well in 2009. It should be noted that the well is located within a state section, not BLM land.

AMI198 / Warbonnet 16-5 / Ultra

The first 2009 sample showed a benzene detection of 5.5 ug/L, a m+p-Xylenes detection of 4.7 ug/l, and a toluene detection of 3 ug/l. Duplicate samples were collected the second time with results showing toluene detections of 3.4 ug/L and 2.9 ug/L.

AMI209 / Warbonnet 15-26 / Ultra

The first 2009 sample showed a DRO detection of 1.3 mg/L, a m+p-Xylenes detection of 1.5 ug/L and a toluene detection of 1.8 ug/L. The second sample showed ND for all hydrocarbon-related parameters.

AMI213 / Petrogulf State 36-9 / Roseta Resources

The 2009 sample from this well showed a toluene detection of 6.3 ug/L. SCCD was not able to collect a second sample from this well in 2009. It should be noted this well is located within a state section, not BLM.

AMI228 / Rainbow 16-30 / Newfield

The first 2009 sample showed a DRO detection of 2.9 mg/L. The second sample showed a DRO detection of 1.4 mg/L and a toluene detection of 4.9 ug/L.

AMI233 / Boulder 15-4 / Ultra

The 2009 sample showed a GRO detection of .246 mg/L and a toluene detection of 2 ug/L. This well has since been plugged and abandoned, therefore SCCD could not get a second sample.

AMI237 / Warbonnet 7-15 / Ultra

The first 2009 sample showed a GRO detection of .665 mg/L, a benzene detection of 84 ug/L, a ethylbenzene detection of 4 ug/L, a m+p-Xylenes detection of 31 ug/L, a o-Xylene detection of 4 ug/L, and a toluene detection of 150 ug/L. The second sample showed similar results with detections, again, of every hydrocarbon-related parameter except for DRO.

AMI255 / Mesa 15B-27D / Ultra

The 2009 sample showed a DRO detection of 3.2 mg/L. This well has since been plugged and abandoned, therefore SCCD could not get a second sample.

AMI258 / Riverside 11-25 / Shell

The first 2009 sample showed a GRO detection of .058 mg/L and a m+p-Xylenes detection of 2.6 ug/L. The second sample showed detections of every hydrocarbon-related parameter except for benzene.

AMI265 / Warbonnet 5D-15D / Ultra

The first 2009 sample showed a DRO detection of 1 mg/L. This well has since been plugged and abandoned, therefore SCCD could not get a second sample.

AMI270 / Two Buttes 16-15C / Anschutz

In 2006, results from this well showed a toluene detection of 1.6 ug/L. Since then, there has not been any TPH detections from this well.

AMI279 / Warbonnet 1-9 / Shell

The first 2009 sample showed a DRO detection of 2.1 mg/L. The second sample showed a toluene detection of 1.8 ug/L.

AMI301 / Warbonnet 11-4 / Shell

The first 2009 sample showed a DRO detection of 1.1 mg/L and a GRO detection of .175 mg/L. The second sample showed a m+p-Xylenes detection of 3.3 ug/L.

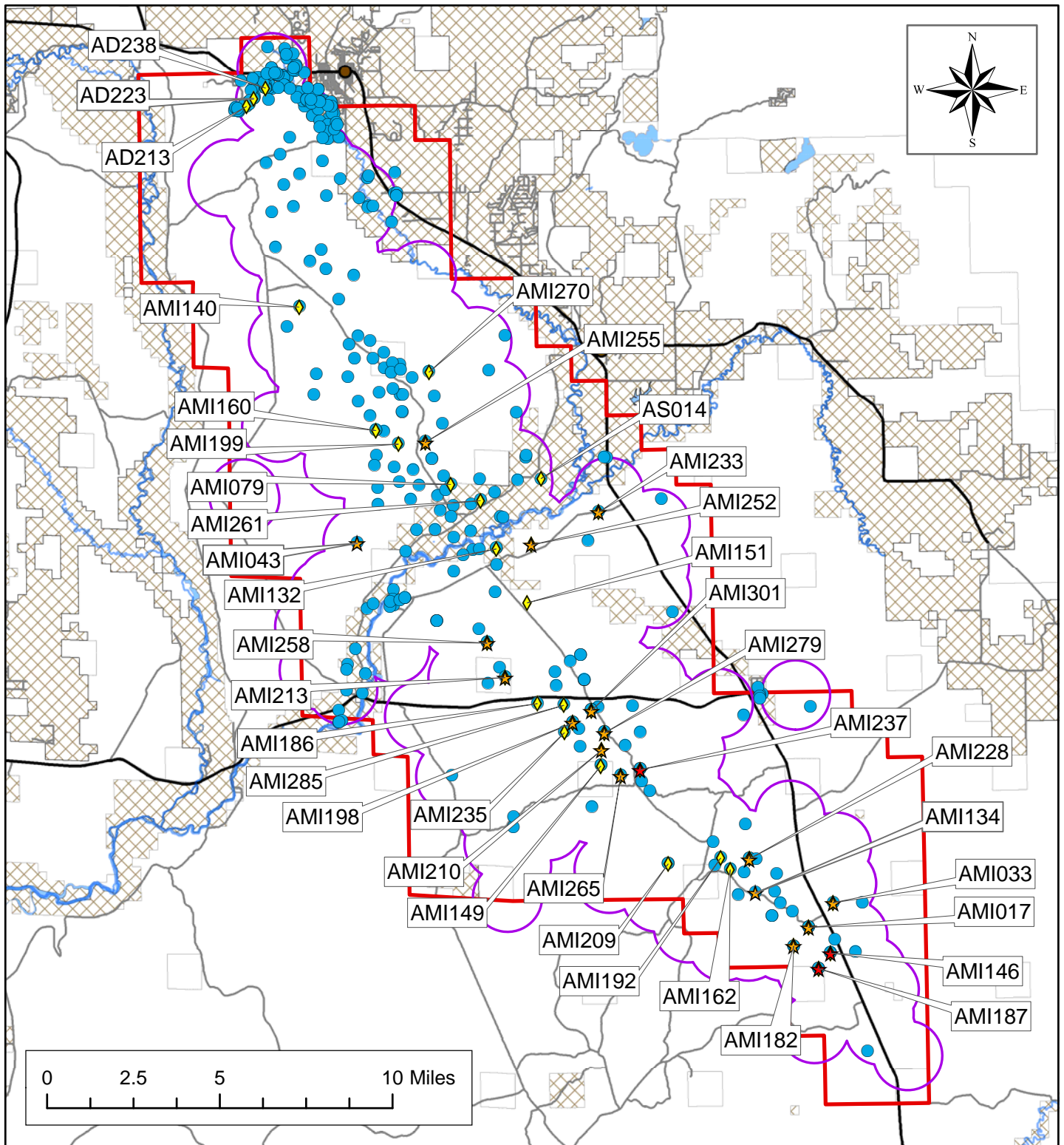
AS014 / N.W. Square Top / BLM – stock well

Results from the three different samples collected in 2008 showed toluene detections. The results from the 2009 sample showed ND for all hydrocarbon-related parameters. It should be noted that the BLM had just installed a new pump in the well prior to the first sample in 2008.

The TPH data for all wells with detectable TPH is provided in Appendix B, Table 3. Water Wells With Historical TPH Detections. Water wells with past TPH detections are included in the report for comparison purposes. See Map 3. for locations of water wells with past TPH detections.

(See Map 3. Water Wells with Past Hydrocarbon Detections)

Map 3. Water Wells With Past Hydrocarbon Detections



- Private Lands
- Main Rivers
- Pinedale Anticline Project Area
- Wells With Hydrocarbon Detections - Under WYDEQ Clean-up Level Last Time Sampled
- Public Lands
- Main Highways
- 1-Mile Buffer for 2009
- Wells With Hydrocarbon Detections - Over WYDEQ Clean-up Level Last Time Sampled
- Cities
- Other Roads
- Wells Visited 01/01/09 through 12/31/09
- Wells With Past Hydrocarbon Detections - No Detections Last Time Sampled

Sublette County Conservation District / Pinedale Anticline Ground Water Data / Created by Delsa Allen / March 2010

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Literature Cited

The Record of Decision for the Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project, Sublette County, Wyoming, Bureau of Land Management, Pinedale Field Office, July 2000.

Water Quality Rules and Regulations, Chapter 8, Wyoming Department of Environmental Quality, 2003.

Voluntary Remediation Program, Fact Sheet #12, Soil Cleanup Level Look-Up Table, Appendix A: Cleanup Levels for Total Petroleum Hydrocarbons in Soil and Groundwater, Wyoming Department of Environmental Quality, 2008

Pinedale Anticline Ground Water Data Summary, Sublette County Conservation District, October 15, 2009