

Frequently Asked Questions regarding the Draft Pinedale Anticline Groundwater Pollution Prevention, Monitoring, and Response Action Plan (draft Plan)

The purpose of this document is to further inform the public about the draft Plan and process to assist in their commenting on the draft Plan

1. Is the groundwater monitoring plan that has been in place since 2004 being replaced?

No, it is being improved upon as required by the 2008 Final Supplemental Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project (PAPA) Record of Decision (ROD). The ROD states that the interim groundwater monitoring program, which began in 2004, would be augmented and updated by results obtained from completing activities described in Section 4.2 of the ROD (p. 29). This plan is more comprehensive because it includes Pollution Prevention, Monitoring, and Response Action Programs, which, when implemented together will ensure that groundwater remains safe.

2. What are those activities described in the PAPA ROD?

The activities outlined in the PAPA ROD focused on characterizing the groundwater system in the PAPA. The PAPA ROD states that the BLM's *Regional Framework for Water Resources Monitoring Related to Energy Exploration and Development* (Framework) would guide the groundwater monitoring and subsequent identification and implementation of any additional mitigation (Section 4.2, p. 29). The Framework consists of three steps:

- a. Step 1: Compilation of existing information;
- b. Step 2: Characterization of the groundwater system; and,
- c. Step 3: Modification of the interim Groundwater Pollution Prevention, Mitigation and Monitoring Plan.

3. What is the interim monitoring plan?

Sublette County Conservation District (SCCD) began sampling water wells in the PAPA in 2004, in accordance with the 2000 PAPA ROD. SCCD sampled water wells within a one-mile radius of existing and proposed development. The 2000 PAPA ROD can be found at:

<http://www.blm.gov/wy/st/en/info/NEPA/documents/pfo/anticline.html>.

When low-level concentrations of hydrocarbons were discovered in industrial water wells after beginning more sophisticated analytical testing in 2006-07, subsequent sampling and investigations found that there were rational explanations for the detections, including but not limited to:

- a. The use of hydrocarbon-based pipe dope and lubricants in water-well construction and pump installation;
- b. Inadequate flushing of water-well production systems; and,
- c. No backflow prevention devices when tanks, connected to the industrial water wells, were filled for natural gas well drilling and completions.

See: http://www.blm.gov/wy/st/en/field_offices/Pinedale/anticline/water.html).

How were SCCD's groundwater-sampling results used?

On an annual basis, the SCCD has presented results of their annual groundwater sampling to the public, representatives of BLM and operators at the Annual Socio-economic, Air, and Water Planning meetings. Individual sample results were also provided to each well owner. Annual reports from SCCD can be found at:

(http://www.blm.gov/wy/st/en/field_offices/Pinedale/pawg/DataResults.html).

Data generated by the SCCD was analyzed and incorporated into the hydrogeologic characterization studies which were required by Step 2 of the PAPA ROD. SCCD-collected data were also used in preparing the draft Plan, as these data provided important historic records and were used in establishing water quality thresholds for the draft Plan. All SCCD groundwater data through 2011 along with data obtained during the hydrogeologic characterization studies have been compiled in a geodatabase (Low Level Petroleum Hydrocarbon Compounds report, Appendix A) at: http://www.blm.gov/wy/st/en/field_offices/Pinedale/anticline/water/IP-GWreports.html. The draft Plan expanded the geodatabase by including SCCD-collected data in 2012 and 2013, along with other publically available water quality information.

4. What activities were done prior to this draft Plan?

- a. Step 1 was completed in the Final Hydrogeologic Conceptual Model, in March 2008, prior to issuance of the PAPA ROD;
- b. Step 2 was completed in November 2013 and consisted of three comprehensive studies and reports:
 - i. The Hydrogeologic Data Gaps Investigation (May 2012), which characterized groundwater occurrence, flow and quality in the two primary hydrostratigraphic units of the PAPA: alluvium along the New Fork River and the Wasatch Formation;
 - ii. A Numerical Groundwater Flow and Transport Model (October 2013), which simulates the regional groundwater flow system and was used to assess fate and transport of petroleum hydrocarbons and chloride from hypothetical releases; and,
 - iii. The Low Level Petroleum Hydrocarbon Compounds (LLPHC) study (October 2013), which determined the potential causes of low-level hydrocarbons detected in groundwater samples collected from industrial water wells in the PAPA.

Several public meetings were held to inform the public of the status and conclusions of these studies between 2007 through November 2013, specifically as part of the Annual Planning meetings for Socioeconomics, Air and Water Quality. Presentations from these meetings can be found at: http://www.blm.gov/wy/st/en/field_offices/Pinedale/anticline/airwatermtg.html). Reports can be found at: http://www.blm.gov/wy/st/en/field_offices/Pinedale/anticline/water.html.

5. What did the investigations conclude?

- a. The Hydrogeologic Data Gaps Investigation (HDG) included the drilling and testing of 30 study wells (monitoring wells) and 13 shallow piezometers (shallow monitoring wells) throughout the PAPA to determine aquifer characteristics in the two principal hydrostratigraphic units: alluvium along the New Fork River and the Wasatch Formation. Information from 81 domestic water wells (6 alluvial and 77 Wasatch), 26 stock wells

(Wasatch) and 156 industrial water wells (Wasatch) was included in the study. Findings of the investigation included:

- i. Groundwater occurs in discontinuous sandstone lenses in the Wasatch Formation;
 - ii. The New Fork River bisects the PAPA, and the PAPA can be subdivided into three zones: north, south and the river corridor;
 - iii. In the Wasatch Formation, groundwater in the north zone flows in a southerly direction toward the New Fork River, located in the central portion of the PAPA. In the south zone, there is an area near the river where groundwater flows toward the New Fork River, but groundwater in most of the south zone flows to the southwest;
 - iv. In the river corridor, the direction of groundwater flow in the alluvial material is down-valley toward the Green River; and,
 - v. Aquifer testing of study wells completed in the Wasatch Formation indicates groundwater velocity ranges of less than one foot to 40 feet per year, whereas aquifer testing of alluvial wells indicates groundwater flow velocities ranging from about 1,400 to 4,200 feet per year.
- b. The Numerical Model (NM) was constructed to simulate regional groundwater flow in three dimensions and assess the fate and transport of petroleum hydrocarbons and chloride that could result from hypothetical releases. Key findings include:
- i. Natural gas activities will not affect groundwater in or around the town of Pinedale;
 - ii. Potential contaminant particles do not travel more than 1.5 miles in 110 years in areas within the PAPA outside of river corridors;
 - iii. The area most susceptible to potential groundwater quality impacts from natural gas activities is along the New Fork River in the central portion of the PAPA; and,
 - iv. An individual release of petroleum hydrocarbons is unlikely to affect large portions of the Wasatch or Alluvial systems due to relatively low groundwater velocities and naturally attenuating processes.
- c. The Low Level Petroleum Hydrocarbon Compound study (LLPHC) was performed under terms of the 2008 PAPA ROD (Section 4.2, p. 29) to identify and evaluate the sources of low-level organic constituents (defined as below applicable groundwater quality standards, with respect to organic compounds or organic constituents) detected in samples collected from a number of industrial water wells. Groundwater was first tested for many of these organic constituents beginning in 2006. Based on extensive analytical testing of groundwater samples, gas, and potential sources; and the evaluation of spatial, temporal, physical and operational evidence, the study concluded that:
- i. Low-level volatile organic constituents detected in groundwater are largely attributable to natural gas that seeps upward from deep geologic layers and into groundwater by natural processes over time.
 - ii. The source or sources of semivolatile organic constituents detected at low-levels in groundwater samples is not readily apparent. These constituents likely originate from the products and practices used to drill, install, or operate water wells and/or from naturally occurring organic matter present in groundwater or associated with particles of sediment suspended in water wells during sample collection.

- iii. No widespread impact to groundwater in the PAPA is evident as a result of spills or leaks of materials used in, or by-products of, natural gas development.
- iv. Based on this study, existing BMPs are functioning adequately to protect groundwater resources and no additional measures are necessary to mitigate either the low-level volatile or semivolatile organic constituents detected in water wells in the PAPA.

6. What is the Draft Plan and why is it needed?

The draft Plan was prepared for the Pinedale Anticline Project Area (PAPA) to comply with requirements of two agencies, the BLM and the Wyoming Oil and Gas Conservation Commission (WOGCC):

- a. The Plan represents Step 3 of the 2008 PAPA ROD: augmentation of the groundwater pollution prevention, mitigation and monitoring plan by the BLM for natural gas development in the PAPA (as described above); and
- b. To satisfy regulations promulgated by the WOGCC in 2014 which require a groundwater baseline sampling, analysis and monitoring plan as part of the Application for Permit to Drill or Deepen a Well.

7. Who wrote the draft Plan?

The 2008 PAPA ROD states that within six months of completion of Step 2, technical specialists from BLM and regulatory agencies would update the interim Groundwater/Aquifer Pollution Prevention, Mitigation, and Monitoring Plan (Step 3), which was written to be utilized during the time period that Steps 2 and 3 were being prepared (Section 4.2, p. 29). Those agencies with regulatory authority over groundwater resources in Wyoming are the BLM, Wyoming Oil and Gas Conservation Commission (WOGCC), Wyoming Department of Environmental Quality (DEQ), Wyoming State Engineer's Office (SEO), and the U.S. Environmental Protection Agency (EPA), collectively referred as the Regulatory Team members.

The draft Plan was developed through a *deliberate, collaborative process* as outlined in the Administration Plan (April 2014) involving the Regulatory Team members and two PAPA oil and gas operators (Ultra Resources, Inc. (Ultra) and QEP Energy Company (QEP), or "UQ", collectively referred to as the Operator Team members (see Figure 1-4 of the draft Plan). The Regulatory Team members and Operator Team members made up the Review Team. Linn Energy also participated in discussions and reviews of pertinent documents in the draft Plan.

An independent environmental consultant with extensive expertise in designing and implementing groundwater programs, NewFields Mining, Energy, and Environmental Services, LLC (NewFields), prepared the draft Plan based on input and direction from the Review Team. Development and drafting of the Plan was funded by the Operators.

8. How is the draft Plan organized?

The Report is organized into five sections:

- a. **Section 1 - Introduction.** This introductory section provides a substantial amount of information including agencies involved and their jurisdictions, project administration, a high-level summary of the three previous groundwater studies in the PAPA and groundwater data sources used to develop the Plan. This information has been largely reported on since

2007 (see http://www.blm.gov/wy/st/en/field_offices/Pinedale/anticline/water.html). This section also describes how to understand this Plan (See Section 1.2 and Figure 1-1).

- b. **Section 2 - Goals and Objectives.** The Review Team members worked to develop, review, comment, and agree to the Goals and Objectives upon which the Plan is based. The plan was deliberately written to meet each of the 17 specific objectives.
- c. **Section 3 - Groundwater Pollution Prevention Program (GPPP).** This section summarizes natural gas activities according to five project phases (planning, construction, drilling, production and closure), and presents the best management practices being employed to prevent or minimize the potential for future groundwater pollution. A comprehensive matrix presenting activities, BMPs and applicable state and federal rules and regulations is presented in Appendix 3-B. The Review Team dedicated a full-day meeting to discuss and debate more than 100 best management practices on September 25, 2014, which was preceded by an opportunity to tour the field and see the practices being employed.
- d. **Section 4 - Groundwater Monitoring Program (GMP).** This section presents the monitoring program developed to meet the 10 specific monitoring objectives and provides data quality objectives for the GMP, describes technical approaches for establishing monitoring locations and water quality parameters, and presents groundwater quality thresholds. Also described in this section are the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) that will dictate data collection activities; each of these plans is appended to this section. At the end of this section, procedures for data management and validation are presented along with the results reporting system, GMP review cycles, and a discussion of decommissioning the monitoring network. NewFields' technical approaches for defining the well network and water quality thresholds were presented to the Review Team on September 25, 2014. The protocol was sent to the Review Team to provide comments; their comments and suggestions were addressed and were used to improve the technical approaches.
- e. **Section 5 - Response Action Program (RAP).** This section presents the third of three interrelated programs that form the Plan. The primary goal of the RAP is to specify responses to measured exceedences of established water quality thresholds. This section describes the conditions that must occur to launch the RAP, and the process steps associated with implementing the RAP. The RAP is not absolutely prescriptive; rather it was designed to permit flexibility in responding to a variety of possible future situations. Besides describing key components of the RAP, this section discusses the overall Plan review cycle, and how success of the overall Plan will be measured. The regular "review cycle" to be held by regulatory and Operator representatives assigned to the Review Team (Section 1.5.2) is an important part of the Plan, and provide opportunities to scrutinize results of implementing the Plan and offer suggestions to adapt or amend the Plan, if necessary.
- f. **Figures/Tables/Appendices.** Like any large document, the draft Plan includes a number of appendices. Six appendices with supporting technical information are included. The five sections of the plan are also supported by many tables and figures which were included to

display key ideas, information and explain the decision processes. These are intended to be to-the-point and clearly communicate key information.

9. What are the Goals of the Plan?

The Regulatory Team met from March 2014 through June 2014 to develop goals and objectives. The complete list of Goals and Objectives is presented in Section 2 of the draft Plan. The goals include:

- a. Identify Best Management Practices (BMPs) for a Pollution Prevention Program to reduce the potential for groundwater impacts from oil and gas activities;
- b. Establish a Groundwater Monitoring Program to monitor groundwater for impacts from oil and gas activities that is based on the PAPA groundwater characterization, is appropriate to the level of risk, and will include constituents that are: most indicative of impacts from oil and gas activities; most likely to appear first at monitoring sites; and most hazardous to public health and the environment.
- c. Develop a Response Action Program that specifies responses to exceedences of established thresholds.

10. What are the components of the draft Plan?

The draft Plan describes the means to be used to protect groundwater resources from potential impacts that could result from natural gas exploration and production activities based on the agreed upon Goals and Objectives. It is composed of three distinct but interrelated components, called programs:

- a. Groundwater Pollution Prevention Program;
- b. Groundwater Monitoring Program; and
- c. Response Action Program.

11. How are these components interrelated?

Fundamentally, this Plan was developed to protect groundwater resources from potential impacts that could result from natural gas exploration and development activities in the PAPA. The primary means of gaining protection is through employment of an array of best management practices (BMPs) designed to prevent groundwater pollution.

To evaluate the adequacy and effectiveness of the suite of BMPs, the Plan will rely on results from routine, comprehensive groundwater monitoring at locations throughout the PAPA development area. Confirming both the adequacy of the BMPs and evaluating monitoring results for evidence of potential groundwater degradation will occur on an on-going basis.

Should monitoring indicate that a BMP has failed or a new BMP is needed, and/or that a groundwater quality threshold has been exceeded, specific actions for response are set forth in this Plan. Figure 1-1 is a schematic showing how the pollution prevention, monitoring and response action programs (the Plan) interrelate.

12. Can you describe the Groundwater Pollution Prevention Program?

The Pollution Prevention Program is the foundation of the draft Plan because it identifies more than 100 individual best management practices (BMPs) to be employed by the oil and gas industry to reduce the potential for groundwater impacts from oil and gas exploration and production (E&P) activities in the Pinedale Anticline Project Area (PAPA). The objective of the Pollution Prevention Program is to specify

BMPs applicable to prevent or minimize the potential for future groundwater impacts from oil and gas activities (Objective O1.1, listed in Section 2.1 of the draft Plan).

Please note that Operators were successfully employing BMPs for the prevention of groundwater pollution during the period when technical groundwater studies were completed as required by Step 2 of the groundwater resources section of the 2008 PAPA ROD (Section 4.2, p. 29). A finding from the 2013 Low-Level Petroleum Hydrocarbon Compounds (LLPHC) study is that no additional measures were found (beyond those already being employed) to be necessary to mitigate low-level volatile or semivolatile organic constituents detected in water wells in the PAPA.

In 2014 the Operators, as members of the Review Team (see Section 1.5 of the draft Plan), proposed a comprehensive list of BMPs to the Review Team for inclusion in the Pollution Prevention Program. As a basis they used an inventory of standard E&P operating practices and procedures which were prepared for the regulatory agencies in 2010 and 2011. The practices and procedures were re-organized, updated to reflect changes in field conditions and infrastructure improvements, and full references to state and federal rules and regulations were added. This resulted in a listing of BMPs that are inclusive of all measures that directly or indirectly contribute to groundwater protection in the PAPA. An exhaustive evaluation of the BMPs was conducted by the entire Review Team on September 25, 2014 and the Review Team members completed independent review and comment on October 31, 2014. After addressing Review Team comments, the BMPs or “pollution prevention matrix” were incorporated into the draft plan; it is contained in Appendix 3-B of the Pollution Prevention Program.

The Pollution Prevention Program is organized according to five distinct phases of E&P activities: planning; construction; drilling; production; and closure. The text of the Program provides brief descriptions of activities in each project phase and Tables 3-1 through 3-5 summarize the following: Project Phase, Activity, Source of Potential Groundwater Contamination, Practice Identification, Operator Practice (e.g., BMP), and, Operator Mitigation Measure.

Should it be discovered that a BMP has failed, or that a new BMP is required due to changes in technology or a new E&P activity, the Response Action Program would be launched. The Response Action Program is the third program comprising the Plan and is contained in Section 5.0.

13. Can you describe the Groundwater Monitoring Program?

The Groundwater Monitoring Program is the second program comprising the draft Plan and is coupled to both the Pollution Prevention Program and the Response Action Plan. To evaluate the adequacy and effectiveness of the suite of BMPs specified in the Pollution Prevention Program, the Plan will rely on results from routine, comprehensive groundwater monitoring at locations throughout the PAPA. The goal was to develop a Groundwater Monitoring Program (GMP) to monitor groundwater for impacts from oil and gas activities that is based on the PAPA groundwater characterization, is appropriate to the level of risk, and will include constituents that are:

- a. Most indicative of impacts from oil and gas activities;
- b. Most likely to appear first at monitoring sites; and,
- c. Most hazardous to public health and the environment.

Besides complying with the 2008 PAPA ROD, the GMP was developed to conform with requirements of the Wyoming Oil and Gas Conservation Commission's (WOGCC's) groundwater baseline sampling, analysis and monitoring rule (WOGCC 2014a; Section 46 and Appendix K of Chapter 3 – Operational Rules, Drilling Rules). In particular, the GMP will serve as a “master plan” under WOGCC rules for the Pinedale Anticline Project Area (PAPA). The GMP will be more stringent than the WOGCC rules.

The Review Team specified 10 objectives for the GMP; these are listed in Section 2.0 of the draft Plan. After describing data quality objectives required to satisfy GMP Objective O2.1, the GMP presents the technical approach to identify groundwater monitoring locations in accordance with Objectives O2.3, O2.5 and O2.6. These required the GMP consider well locations based on risk and proximity to active natural gas development, and to monitor at locations to provide early detection of potential groundwater impacts in areas of greatest environmental sensitivity. Lastly these monitoring location objectives required consideration of spatial monitoring coverage.

The well network design to achieve these objectives involved dividing the area of active natural gas development into four zones to monitor two hydrostratigraphic units (HSU) (Wasatch Formation and alluvium associated with the New Fork River):

- a. River Corridor Envelope downgradient of potential sources and upgradient of potential receptors to monitor the Wasatch HSU;
- b. Core of the River Corridor Envelope to monitor the Alluvial HSU;
- c. Area encompassing development areas (DA) DA-1 and DA-2 north of the River Corridor Envelope to monitor the Wasatch HSU (i.e., North Zone); and,
- d. Area encompassing DA-3, DA-4 and DA-5 south of the River Corridor Envelope to monitor the Wasatch HSU (i.e., South Zone).

Qualitative and quantitative approaches were used to design the well network including ArcGIS coupled to the project geodatabase; the PAPA numerical groundwater model to conduct advective particle track simulations; and a geospatial modeling utility in Visual Sample Plan. A technical memorandum presented in Appendix 4-A details the approaches taken, based on GMP well location objectives, to construct a well network for monitoring that includes:

- a. 17 existing industrial supply wells;
- b. 4 existing alluvial wells;
- c. 13 new Wasatch HSU wells in the River Corridor Envelope; and,
- d. 7 new Wasatch wells in the North and South Zones.

Two GMP objectives (O2.2 and O2.4) address selecting water quality parameters (using the WOGCC parameter list as a starting point) and establishing groundwater quality thresholds. These thresholds, if exceeded, would trigger an action that is designed to prevent undesirable change to usable water. Four flow charts (Figures 4-10 through -13) graphically display how parameters were ranked and selected for the GMP. Three types of water quality thresholds were designed to provide early detection of potential groundwater degradation at monitoring sites, and include:

- a. An absolute value;
- b. Test for a statistically significant increasing trend; and,
- c. An increase of 5 mg/L in methane concentrations.

The Response Action Program (Section 5.0) would be implemented if resampling confirms that one of these thresholds is reached at a monitoring site.

Objective O2.1 requires that the GMP be governed by a Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) that are developed in consideration of applicable and appropriate regulatory requirements, in accordance with standard environmental practices, and consistent with the groundwater characterization completed under Step 2 of BLM's 2008 PAPA ROD. The complete SAP and QAPP documents are contained in Appendices 4-C and 4-D, respectively.

The GMP describes how data generated from the monitoring program will be managed and validated, analyzed and reported. An annual summary report will be prepared and submitted to WOGCC, BLM and the Review Team, and would be discussed at the Annual Planning meeting. A monitoring program review cycle is included in the GMP as required by Objective 2.10 to "*evaluate the effectiveness and continued relevance and appropriateness of sampling constituents, methods, thresholds, and the existing hydrogeologic conceptual model.*" A similar overall Plan review cycle is specified by Objective O3.5 for the Response Action Program (see Section 5.3). It is envisioned that reviews of the GMP and the overall Plan would occur during the same Review Team meeting, and would initially occur on an annual frequency.

14. What is the Response Action Program?

As stated repeatedly, the Draft Plan is composed of three unique programs that are coupled together. Descriptions of the Pollution Prevention and Groundwater Monitoring programs are presented herein. Confirming both the adequacy of the Best Management Practices (BMPs) in the Pollution Prevention Program and evaluating Groundwater Monitoring Program results for evidence of potential groundwater degradation will occur on an on-going basis. Should monitoring indicate that a BMP has failed or a new BMP is needed, and/or that a groundwater quality threshold has been exceeded, specific actions for response are set forth in the Response Action Program (RAP).

Three conditions would trigger implementation of the RAP:

- a. **Condition No. 1: Water Quality Threshold Exceeded.** Groundwater quality results for a Groundwater Monitoring Program (GMP) well(s) exceed an absolute value threshold for a monitored parameter, show a statistically significant increase in concentration of at least one parameter, and/or show an increase in dissolved methane of at least 5 milligrams per liter (mg/L) (see Section 4.4 and Figure 4-12). Given the strategy for the GMP, it is understood that the particular well that exceeded a water quality threshold has already been resampled and reanalyzed to confirm the water quality threshold exceedance.
- b. **Condition No. 2: Existing Hydrogeologic Conceptual Model Needs Revision.** Data developed through implementation of the GMP indicate that the existing hydrogeologic conceptual model presented in AMEC (2012, 2013) needs to be changed or improved. These data could include: supplemental geologic information obtained when drilling new water supply or monitoring wells in areas of the PAPA that don't currently have wells; additional groundwater elevation data that may improve the understanding of groundwater flow; and/or new groundwater quality data that suggest the conceptual model should be revised.

- c. **Condition No. 3: BMP Failed or Absent.** During employment of best management practices (BMPs) described in Section 3.0, evidence is available that indicates an existing BMP has failed, or information becomes available that a BMP is needed for a new or existing E&P activity.

If one of the conditions described above has occurred, the Bureau of Land Management's (BLM's) Project Lead will assemble the Review Team and make the determination of launching the RAP (see Section 5.2). This may occur during a regular Plan review cycle or immediately after BLM's Project Lead is notified of one of the defined conditions triggering the RAP. The RAP communication and notification process is described in Section 5.2.5.

There are five specific objectives for which the RAP was developed. Objective O3.2 specifies an incremental response approach for the RAP. Figure 5-1 shows the process steps identified when implementing the RAP, along with responsibilities for agencies and operators.

Objective O2.10 from the GMP and Objective O3.5 from the RAP both specify a regular Plan review cycle comprised of a regularly scheduled review of the entire Plan by the Review Team. The Plan Review Meetings will be a continual stop-gap for the Plan because all issues that arise that may affect the purpose of this Plan (protecting groundwater resources from potential impacts that could result from natural gas E&P activities) would be deliberately examined by the Review Team, as led by the BLM.

15. What was SCCD's involvement?

The 2008 PAPA ROD specifies that those agencies with regulatory responsibilities related to groundwater be involved in the development of the draft Plan. It identifies the BLM, DEQ and EPA, as well as, the PAPA operators as cooperators for completion of the groundwater characterization of the PAPA. The WOGCC and SEO were invited into the process for the drafting of the Plan because of their regulatory roles (see Section 1.4 and Figure 1-4). SCCD has been involved in PAPA ROD (2000b and 2008) discussions through the present time as an integral part of the annual planning meetings and through discussions with the Operators who funded SCCD's participation in the interim sampling program.

In addition, SCCD data was instrumental in completing the hydrogeologic characterization studies. This data was provided to NewFields and AMEC, including the 2004-2013 water quality dataset for the Pinedale Anticline (all groundwater quality data collected by SCCD). NewFields and others consulted, evaluated and analyzed these data, along with additional data provided by AMEC, during the development of the draft Plan (see response above). The complete dataset has been transferred into a geodatabase and is also being transferred to the DEQ's Risk Based Database Management System.

16. What collaboration and outreach has been done for this draft Plan?

Several public meetings have been held to inform the public of the status and conclusions of Step 2 of the 2008 PAPA ROD between 2007 through November 2013, specifically as part of the Annual Planning meetings for Socioeconomics, Air and Water Quality. On November 22, 2013, a public meeting was held devoted entirely to the conclusions of the Hydrogeologic Data Gaps Investigation, the Numerical Model, and the Low Level Petroleum Hydrocarbon Compounds study. It was announced at that time that the next step in the process was to develop the Final Groundwater Pollution Prevention, Monitoring, and Response Action Plan. Minutes of the meetings and presentations can be found at:

http://www.blm.gov/wy/st/en/field_offices/Pinedale/anticline/airwatermtg.html). The reports can be found at: http://www.blm.gov/wy/st/en/field_offices/Pinedale/anticline/water.html.

The draft Plan, (and the previous studies), were developed through a *deliberate, collaborative process* involving the regulatory agencies as stated in the 2008 PAPA ROD (Section 4.2, p. 29) and at least two PAPA oil and gas operators. The goals and objectives were drafted and agreed upon by all regulatory agencies and all sections of the draft Plan were developed and reviewed by all members of the review team.

The Draft Plan was posted on the public BLM website and a Press Release noticing its availability was sent to news outlets on December 23 with comments due on January 23, 2015. Due to circumstances beyond our control, while the Draft Plan was posted on the BLM website as planned, the public notice did not make the news outlets. Public notices were published on Pinedale Online on January 8, 2015 and in the Pinedale Roundup on January 16, 2015 and the Sublette Examiner on January 20, 2015. This issue has been resolved; the deadline has been extended until 4:30 pm on February 6, 2015, to give the public adequate time to review this plan.