

**Operators Annual Planning Meeting on Air, Water, and Socioeconomics
Pinedale Anticline Project Area (PAPA), August 9, 2012, BLM**

Please refer to handouts and presentations for detailed information.

In attendance (presenter):*

ENCANA: Pati Smith

PAWG: Michael Kramer

PRESS: Andy Seapholm

PUBLIC: Judy West

QEP: Melissa Cunningham, Peter Guernsey, Ronald LaPlatt, Joe Redman, Debbie Stanberry, Simon Testa, and Kevin F. Williams*

SCCD: Delsa Allen* and Eric Peterson

SWEPI: Phil Barnes, Aime Davidson, Carolyn Tucker, and Angela Zivkovich*

ULTRA: Brad Johnson, Cally McKee*, and Erika Tokarz

USFS: Ali Guio, Terry Svalberg*, and Shane Walker

USQ: Kelly Bott and Art Reese

UW: Dr. Robert Field and Jeff Soltis

WDEQ: Jeni Cederle (AQD) and Deb Harris (WQD)

US Rep Cynthia Lumnis: Pat Huffman

US Sen John Barrasso: Irene Parsons

BLM: Janet Bellis (PFO), Liz Dailey (PFO), Shane DeForest (FM-PFO), Nancy Farour (RSFO), Merry Gamper (WYSO)*, Alex Kienker (HDD), and Charis Tuers (WYSO)*

9:00 - 9:15 Welcome and Introductions, BLM (Shane DeForest, PFO Field Manager)

- Made adjustments to meetings outlined in the ROD. In late 2010/2011, meetings were divided into planning meetings to provide more focus on each topic.
- PAPA wildlife meeting will be Oct 24th, PAWG meeting will be Oct 25th, and Wyoming Resource Advisory Council will be Oct 25 - 26 in Gillette.
- Next PAPO board meeting will be on Dec 6th in Cheyenne.
- PAPA operators' development meeting will be Feb 2013.
- Can hold another focus meeting if need be.
- Because this meeting is for presentations, rather than planning, the operators can remain seated in the audience instead of up at the meeting tables. Please provide feedback on how this meeting arrangement works.
- PAWG meeting minutes will be on the PAWG website.

9:15 - 9:25 2012 Pinedale Anticline Rolling 10-Year Drilling Forecast, ULTRA, SWEPI LP, QEP (Cally McKee from Ultra)

- The total number of rigs is down from 14 rigs in January 2012 to 8 rigs currently
- Near-term forecasts include an increase in drilling activity beginning in mid-2013
- Demand for locally provided services and infrastructure due to development of the PAPA is forecast to remain relatively steady until mid-2013, with an increased demand beyond 2013.

Questions:

- Q: Judy West (Public): What triggers increase in rig counts in 2014?
A: Brad Johnson (Ultra): Demand. It is all a projection.
Q: Shane DeForest (BLM): What is different in this cycle?
A: Brad Johnson (Ultra): NY markets project gas prices to continue to rise to \$5/gallon in 2014. There are no guarantees; it is simply a supply/demand factor.
A: Cally McKee (Ultra): Rig counts will not be as high as in 2007, for example, because the current technology allows 24-26 wells/rig/year versus 12 wells/rig per year previously.
Q: Judy West (Public): What causes drilling and production to go up?
A: Brad Johnson (Ultra): Supply and demand. Electricity generating companies are switching to natural gas from coal. Storage levels also trigger supply and projection of commodity prices.
Q: Judy West (Public): Does the hot weather affect this?
A: Brad Johnson (Ultra): Yes, warm winter affects demand for air conditioning and vice versa.

9:25 - 9:30 *Annual Water Summary, ULTRA, SWEPI, and QEP*

ULTRA: (Cally McKee)

- Completion Water: Total - 4,098,900 bbls (100% of completion water is recycled)
- Produced Water: Total - 9,714,400 bbls
 - 69% (6,654,900 bbls) of produced water is now injected for disposal
 - 19% (1,803,400 bbls) sent directly to completions
 - 12% (1,256,100 bbls) is sent to a facility for recycle or disposal
- 15 Fresh Water Wells: Total - 754,700 bbls (drilling and construction operations)

SWEPI LP (Phil Barnes)

- Water use: Total - 840,000 bbls of fresh water from 36 industrial water supply wells
- Produced water: Total - 5,617,000 bbls
 - 74% of produced water used for completions is recycled water
- Produced Water Disposal: Total - 4,549,000 bbls (injected)
 - 87% of disposed water went into the South Mesa Injection Facility
 - 13% of disposed water went into the Big Piney Injection Facility

QEP (Kevin Williams)

- Water use: Total - 939,487 bbls (fresh water from water supply wells used for operations)
 - Drilling – 650,959 bbls
 - Completions – 114,380 bbls
 - Dust control – 135,748 bbls
 - Stock water – 38,400 bbls
- Produced water: 2,999,560 bbls
 - Piped via QEP's LGS to Anticline for processing or to QEP's water disposal well facility for disposal
- Completions: Total - 2,172,933 bbls of water used for completion operations.
 - 94.7% of this volume was recycled produced water (2,058,553 bbls)

Questions:

- Q: Deb Harris (WDEQ-WQD): What accounts for difference between operators?
A: Phil Barnes (SWEPI): Each company has a different process or method.

9:30 - 9:35 *Update On Surface Water And Groundwater Monitoring, SCCD (Delsa Allen)*
(No handouts or powerpoint presentation)

- Surface water program: There are 9 PAPA sites along the New Fork River. Chemical data has been collected 3 times this field season with 2 more collections remaining.
 - SCCD is also collecting macroinvertebrates (aquatic insects) in the New Fork River.
 - The 2011 biological report will be available at the end of November.
- Groundwater program: SCCD has 270 water wells to sample in 2012; 15 on the original well list were removed from program due to sampling area changes. Of the 270 water wells:
 - 130 water wells were domestic or domestic/livestock
 - 113 water wells were miscellaneous-use wells (90 industrial, 23 private)
 - 27 water wells were stock wells (20 on BLM land or state sections)
- To date: SCCD has sampled 159 water wells, 111 remain (41 industrial).

Questions:

Q: Mike Kramer (PAWG): We are in a drought, have you noticed changes in water levels?

A: Delsa Allen (SCCD): Quite a few water levels have actually risen, no one knows why.

9:35-10:15 *PAPA SEIS Interim Groundwater/Aquifer Pollution Prevention, Mitigation and Monitoring Update, BLM (Merry Gamper)*

Information on the AMEC groundwater study is on the following website and the Hydrogeologic Data Gaps Study is available for review in hardcopy at the library and BLM.

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

- AMEC PAPA groundwater study has followed the 7-step process outlined in the Regional Framework designed by USGS. The interim plan consist of 4 reports:
 - Hydrogeologic Data Gaps (HDG, completed May 2012)
 - Low Level Petroleum Hydrocarbon evaluation (LLPHC, completion Nov 2012)
 - SOP Evaluation (SOP, completion Aug 2012)
 - Numerical Model (NM)
- Next Steps and Report Status
 - Numerical model and mitigation measures to incorporate LLPHC findings
 - Draft Final Monitoring Plan expected to be out by Dec 2012
 - LLPHC will require 3rd party technical review and comments
 - Draft report out for agency and operator comment (review and comments incorporated)
 - Final report release expected in Oct 2012
 - NM report, operators proffered 3/12 to inform design of monitoring network
 - Modeling top 1000 feet (saturated zone only)
 - Draft report is undergoing agency review
 - Final determination of adequacy and/or utility is pending LLPHC report
 - SOP Evaluation, report is undergoing revision
 - Received draft; BLM updated standard operating tables
 - Completion is pending LLPHC and NM reports

- Draft Final Groundwater/Aquifer Plan, expected in Dec 2012, will incorporate:
 - Mitigation, monitoring network design, sampling and analysis plan, how, where, when, what, industrial, stock and domestic well monitoring schedule, triggers for action, and response plan
 - Will incorporate results of the Final HDG report (completed May 2012), and the LLPHC detection investigation after peer review (Nov 2012), NM transport scenarios (Aug 2012), and the SOP evaluation (Aug 2012)
 - BLM and regulatory agencies will finalize the network and mitigation measures implementation and adaptive management framework within 6 months
- Groundwater flow (Referencing the two maps on wall):
 - Groundwater in the northern portion of the anticline flows towards the New Fork River, as does the Boulder area.
 - The southern portion is flowing toward the Green River.

Questions:

None

Shane DeForest (FM_BLM): Change in agenda because the meeting was running 1 hour earlier than expected, everyone agreed to go straight through lunch.

10:15-11:00 Bridger-Teton National Forest Air Quality Data Summary, USFS (Terry Svalberg)

Overall Conclusions:

- Visibility - Monitors show no significant differences at this time, though they do show localized events.
- Deposition (National Atmospheric Deposition Program (NADP), Bulk); in general, show increases in ammonium, which may contribute to overall increases in nitrogen (N) deposition and decreases in sulfates.
- Long-Term Lakes - Lake chemistry shows overall increases in N, with decreased ammonium nitrate concentrations (ANC) at some lakes. Eutrophication and decreases in ANC are big concerns.
- Lichen Studies – Have shown value in predicting areas of high N deposition. Identified local hot spots for N deposition, and have demonstrated a cause-effect relationship.
- Other Studies – The USFS will continue to support other studies in the Greater Yellowstone area (GYA) to access and define critical loads as a tool to use in resource protection and management.
- Fire – Fire can be a natural process or, it can be man caused. The general rule is, extinguish man caused fires, and let natural fires burn to benefit the natural conditions on the ground with consideration of safety and infrastructure. While many fires occur on USFS lands, WDEQ and EPA are the regulators for smoke emissions. USFS commends industry for their help with the Fontenelle Fire.

Questions:

Q: Judy West (Public): What is the Forest Service's responsibility for accumulation of dead wood and resulting Forest Fires?

- A: Terry Svalberg (USFS): USFS probably contributed by using the best management practices at the time. “Smokey Bear” may not have been correct way - putting all fires out. Bug kill enters in, but it is really a combination of things.
- Q: Judy West (Public): California clears forest land to get rid of this deadwood.
- A: Terry Svalberg (USFS): Congress funded Region 2 for some work on that. It is an awful lot of area to take care of with constrained budgets. Congress has bills pending for Forest Stewardship projects. Contractors could possibly go in and harvest the wood and their payment would be in profits from what they sell.
- Q: Judy West (Public): What is the comparison of air pollution and anticline emissions - it seems out of scale. It is hard to imagine the amount of effort that the government is putting into reducing emissions on the anticline; and then we have these fires.
- A: Terry Svalberg (USFS): Forest fires usually burn pretty clean and are short-term.
- Q: Judy West: But it happens over and over again, each year.
- A: Terry Svalberg (USFS): USFS does not have any numbers or data on this, and doesn't have an annual average to know if fire emissions are worse than industry.
- Q: Judy West (Public): Are the beetles that are taking over the forests responsible for climate change?
- A: Shane Deforest (FM-BLM): There is a brochure that was put out by the State of WY comparing beetles and their expanding range correlated to climate.
- Q: Judy West (Public): Are we responsible for some of the tinder in the forest, and can we do something?
- A: Terry Svalberg (USFS): There are bills pending in congress. The quickest way for the forests to get better is to get the fuels out of the way by letting them burn. They will look at infrastructure – homes, etc., and protect them. We are talking about vast, vast areas. We must also consider the impact of potential roads, erosion, etc. when dealing with this.
- Q: Merry Gamper (BLM): There was a study done about 7 years ago by the USGS on eutrophication.
- A: Terry Svalberg (USFS): Those results are comparable to what we've found here. Some of the same people are helping (GYA) helping.
- Q: Deborah Harris (WDEQ-WQD): It sounds like some bad things are happening. Does the USFS have the authority to take action, what happens when things go south?
- A: Terry Svalberg (USFS): The clean air act gives federal land managers the authority to deal with this. Air quality lies with the DEQ per individual states. The USFS raises the red flag and takes it to the state. The state needs to move forward and help the USFS take action. The USFS only makes suggestions. The Region 4 Regional Forester is very aware of this issue. The USFS is trying to put a package together and make it defensible. Some companies acknowledge that things going on and are proactive to reduce nitrogen.
- Q: Kelly Bott (USQ): Are there similar trends in other areas?
- A: Terry Svalberg (USFS): The regional forester is only focused on the Greater Yellowstone area. Changes in lake chemistry have been documented near Rocky Mountain National Park near Denver, CO. He is focusing on a consistent management pattern throughout the GYA. You can call me for more detailed info.

11:00-11:45 UW Air Quality Research in the PAPA 2012, UW (Dr. Robert Field)

PASQUA Conclusions

- High quality BTEX passive sampling surveys show two hotspot areas
- High quality canister surveys have better defined VOC associated with PAPA for ozone modeling
- VOC behavior indicates more than one emission source that is linked to main ethane source
 - Next Steps: For mitigation to be effective we need to know the true balance between contributing sources
 - Next Steps: Water Treatment emissions of highly reactive VOC need further assessment
- Clear influence of two different emission source types at UW BSR
 - Next Steps: Prototype passive VOC samplers can be applied to assess oil and gas emissions
 - Next Steps: Methane can be used a marker of natural gas emission sources, UW has tools for this task

Plans for Winter 2012/2013

- Intensive mobile campaign
 - Source apportionment
 - Gas production
 - Well drilling and completion
 - Water treatment
 - Traffic
 - Surveying
 - Emission measurement inventory
 - Production equipment surveying
- UW Contribution
 - New mobile monitoring vehicle (\$750K value)
 - Including PTR-MS-TOF and Picarro CH4
 - EU samplers at no cost
 - Researcher time and knowledge
- Funding request:
 - ~\$100K per year for a two year definitive study
 - Travel and part-time researcher support
- UW has heavily invested in equipment (~\$1 million)
 - UW is requesting the minimum funding level (~\$100K)

Parting statement: Study in early 1900s that 10% of vehicles in London contribute 90% of pollution. It is important to consider your equipment.

Questions:

None

BREAK

12:00 – 12:30 *Air Quality in the PAPA - Emission Reduction Activities, Ozone Contingency Plans, and Ongoing and Future Emission Reduction, ULTRA, SWEPI, and QEP (Angela Zivkovich from SWEPI)*

Emission Reduction Activities

- NO_x
 - Drill Rig Engine Emissions;
 - All rig engines EPA Tier 1 or Tier 2
 - Selective Catalyst Reduction (SCR)
 - Removes more than 90% of NO_x
 - Minimal operational issues
 - 31% usage on rig engines in Mar 2011, 100% on rig engines in Dec 2011
 - Electrification of natural gas engines
 - Progress to achieve regulatory commitments
 - 2005 NO_x levels (Completed)
 - 80% NO_x reduction rig emissions (Completed)
 - Goal of zero days visibility impact
 - Reduced Air Quality Impacts - ozone and visibility
- VOC
 - WDEQ Best Available Control Technology (BACT, WDEQ-ADQ required)
 - Storage Tanks, dehydration, pneumatic pumps/controls, engines
 - Emission testing
 - Voluntary efforts - grandfathered locations
 - Fugitive emissions - Infrared camera (FUER) inspections
 - Liquids Gathering System (LGS) - storage tanks, liquids loading, and fugitives

Ozone Contingency Plans

- Ozone forecasting – implement required plans – short-term emission reduction

Ongoing & Future Emissions Reductions

- Reviewing operations for additional emission reduction measures
 - New WDEQ BACT requirements (venting/blowdown permits and other concentrated development areas)
- Participated in WDEQ Upper Green River Basin Air Quality Citizen's Advisory Task Force
- Fugitive Leak Surveys at Facilities
- Completed Installation of SCR NO_x technology (100% rig engines by Dec 2011)
- Looking at catalyst technology options for frac engines
- Convert natural gas engines where electricity is available
- Reconvene Operator Best Management Practices (BMP) workgroup

Progress to date on Visibility Milestone #3 modeling

- Multiple meetings held with the Operators, WDEQ-AQD and BLM (in consultation with EPA) to review principles of modeling and methodologies, including applicability of model improvements and updates to modeling and federal land manager guidance
- Administration Plan developed
- Protocol currently under development reviewed by operators and agencies, finalizing
 - Emissions inventory under development

- Schedule
 - Protocol to be finalized by Aug 2012
 - Operators, WDEQ, and BLM in consultation with EPA review results, Apr 2013
 - Final report by Aug 2013

Questions:

- Q: Merry Gamper (BLM): The VOC chart excludes fugitive engines & compression. How different would this look if it did not?
- A: Angela Zivkovich (SWEPI): We would see the same trend.
- Q: Merry Gamper (BLM): Can you explain 'other production' VOC vs 'production' VOC?
- A: Angela Zivkovich (SWEPI): 'Other production' means other operators, the drill rig emissions are also split out.
- Q: Charis Tuers (BLM): What is the schedule for conducting infrared inspections?
- A: Angela Zivkovich (SWEPI): Some inspections are done every other month, some are done quarterly; everything is inspected at least annually.
- Q: Dr. Fields (UW): A lot of strategies were outlined in the presentation, which do you think are making the biggest VOC differences?
- A: Angela Zivkovich (SWEPI): The liquid handling facilities have had a significant impact as have the pneumatic sources. The pneumatic controllers are being changed to low or no bleed and will no longer be continuously venting.
- Dr. Field (UW): What is the plan for the future to tighten the ship?
- A: Angela Zivkovich (SWEPI): Some of the operators are already looking at updating the grandfathered equipment.

12:45 - 1:00 Visibility Milestone #2 and Final Determination and General Conformity (40 CFR 93 Subpart B) BLM Responsibilities in the Ozone Nonattainment Area and Implications for Future Oil and Gas Development, BLM (Charis Tuers)

Final Determination of Visibility Milestone #2

- Based on NOx emissions submittals provided by the Operators plus WDEQ 2011 major source NOx emissions, not including Gobblers Knob compressor station, the total projected annual NOx emissions rate for 2012 is calculated to be 1,586.54 tons NOx/year.
- BLM has determined that Operators have met the requirements for Visibility Milestone #2 which is less than the 1,703.5 tons NOx/year emission threshold used to determine compliance.
- The BLM, Operators, WDEQ and EPA are actively engaged in the ongoing efforts to achieve Visibility Milestone #3.

General Conformity - Implications for Future BLM Management Actions

- Upon expiration of the 12 month grace period on July 20th 2013, BLM will implement a process to address General Conformity.
- Operators will be notified of this process and associated requirements before the expiration of the grace period.
- New requirements for processing APDs, EAs, and EISs will be implemented as a result:
 - Emissions inventory and operator-committed mitigation measures to be provided with project proposal.

- Conformity must be addressed in the NEPA document, but many actions will typically be below the de minimis emissions threshold.
- Larger projects that require an EIS will be require a formal conformity determination. The BLM is actively engaged with the WDEQ, EPA and project proponents to ensure that a conformity determination is achieved for these projects.
- The BLM intends to develop a 'Presumed to Conform' list before the grace period expires in order address conformity for day-to-day activities and projects that will clearly be de minimis.
- The BLM will likely be engaging operators and project proponents to complete this task.

Questions:

None

1:00 - 1:05 Wrap-up BLM-FM, (Shane DeForest)

In reference to the Upper Green River Basin Ozone Task Force Group: they met several times over the past few months and concluded that the purpose of the group is to develop recommendations to provide to the WDEQ on how to manage ozone in the area. The approximately 26 members met from February through July and developed 12 to 15 proposed recommendations which have been given to a subcommittee to finalize the recommendations. The full task force will meet again in September to review those recommendations and come to a consensus and submit recommendations to the WDEQ.

General Comments:

None

1:05 Adjourn

*Minutes: Liz Dailey, BLM-PFO
Janet Bellis, BLM-PFO
August 21, 2012*