



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

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In Reply Refer To:
6500 (WYD01)

MAR 10 2014

Ms. Kelly Bott
3218 Reynolds Street
Laramie, WY 82072

Dear Ms. Bott:

Thank you for your letter dated November 7, 2013 regarding Ultra Resources, Inc. (Ultra), SWEPI LP (Shell) and QEP Energy Company (QEP) comments on the Sound Levels of Gas Field Activities at Greater Sage-grouse Leaks, Pinedale Anticline Project Area, Wyoming, April 2013.

The Bureau of Land Management's Pinedale Field Office (BLM PFO), in coordination with the Pinedale Anticline Project Office (PAPO), prepared the following responses to specific comments including additional follow-up responses to concerns expressed by Operators, during a January 30, 2014 meeting with Operators, BLM, PAPO and Sandhill Company.

SPECIFIC COMMENTS:

It would be valuable to include a map depicting exact monitoring locations within the report and spatial coordinates for those locations.

Due to the proximity to leaks the WGFD does not support providing maps of specific monitoring locations. A map of monitoring locations can be obtained from WGFD following the agencies sage grouse data request procedures.

Page 6, Introduction, first sentence: "*A potential threat to the greater sage-grouse is anthropogenic noise associated with human activity, specifically noise from oil and gas 3 development and production. Of particular concern is such noise near leaks used for display and mate selection during spring.*" Please provide references.

Bureau of Land Management. 2008. Record of Decision, Final Supplemental Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration

and Development Project, Sublette County, Wyoming. US Department of the Interior, Bureau of Land Management, Cheyenne, Wyoming.

Patricelli, G. L., J. L. Blickley, and S. L. Hooper. 2013. Recommended management strategies to limit anthropogenic noise impacts on greater sage-grouse. Human-Wildlife Interactions 7(2) Fall 2013.

State of Wyoming. 2011. Greater sage-grouse core area protection. Office of the Governor, State of Wyoming Executive Order 2011-5. Cheyenne, WY.

Page 6, Objectives: See general comments above.

The PAPO staff elected to collect data at reference area leks to identify baseline levels accurate to the local landscape. A concern that 39 dBA may not be accurate as a baseline level for the sagebrush steppe was first discussed beginning in 2009 after KC Harvey's noise monitoring report was submitted. Monitoring conducted by staff in 2010 in the reference areas suggested the ambient level for this region was below the 39dBA identified in the ROD. Upon investigation to the original source of this number it was determined that it came from a rural southern California farm atmosphere not typical of the Pinedale regional environment. This prompted an analysis of the data collected in this region for the PAPO. This analysis was conducted by G. Patricelli and J. Blickley with UC Davis. The need to identify local baseline ambient noise levels was also recommended by the review conducted by Wyoming COOP. Protocols were developed were developed by G. Patricelli and J. Blickley to insure standard data collection methods would be used.

The contractor was asked to include ambient sound data collection in the PAPA reference areas following PAPO protocols to identify local baseline sound levels. Any change to the current 39 dBA would only occur following a completed adaptive management process outlined in the ROD. A detailed discussion of the results of the 2013 monitoring project will be included during the Annual Wildlife Meeting in February 2014.

The BLM must follow the precise wording in the ROD. Managers will consider this as it relates to the future in the field, when the noise standard has been established, managers will then look at this and one of the considerations may be to change the wording or modify the matrix to say noise levels may not exceed 49 decibels. Managers could create a decision to modify the decimal levels in the matrix.

The PAPO is working cooperatively with a sub-committee of the Sage Grouse Implementation Team to develop state-wide protocols for collecting ambient measures. The PAPO protocols may be revised to comport with state-wide methods.

Page 7, Introduction, 2nd and 3rd sentences: While it is clear that the focus area included the PAPA, ambient sound measurements were taken rather than source-specific sound measurements. Therefore, non-oil and gas related sounds (wind through foliage, water sources, precipitation, non-oil and gas related vehicle traffic on nearby roads, etc.) cannot be eliminated or isolated from the sound measurements taken. While oil and gas development and production activities may be contributing to ambient noise levels, it is inappropriate to single out oil and gas development and production activities as the single contributing "potential threat." We recommend that this verbiage be modified here and throughout the report.

Methods used to collect data are outlined in the PAPA Noise Monitoring Protocols. The L90 metric is the standard (ANSI) used to establish ambient sounds absent human caused sounds such as non-oil and gas related sounds (wind through foliage, water sources, precipitation, non-oil and gas related vehicle traffic on nearby roads, etc. Oil and gas development and producing activities and other human caused sounds generated within in the PAPA are compared to ambient to determine if/where these sounds exceed 10 dBA over background as described in the WMMP (currently identified as 39 dBA)

Page 7, bulleted list: It is unclear why reference area metrics include the L90 (Background Ambient Sound Level, which includes all sounds of nature but is absent most human-caused sounds such as vehicles, aircraft and other mechanical and electrical sounds that are actually removed from the analysis), while the treatment leks use the L50 exceedance level (i.e., the median or "average" of all the sounds within a given area). This seems to present an "apples and oranges" comparison, which distorts the comparable analysis between reference and treatment areas. This discrepancy should be addressed throughout the report. Note that this becomes especially problematic in the results section on page 15, where individual values are presented (15.8 dBA L90 (background) for reference leks and 26.9 dBA L50 (ambient) for treatment leks). Without a solid explanation in this section about these different metrics, readers are likely to assume that these values are directly comparable when, in fact, they aren't.

The L90 metric is commonly used to establish, as closely as possible, the background ambient sound levels (this is the level that would exist in the absence of human-caused sounds, and only the sounds of nature). Because human-caused sounds occur everywhere, it is impossible to measure this level, and the L90 metric is the generally recognized as the best approach to establishing a background ambient sound level. The L50, on the other hand, is often considered the best metric to use for establishing an "average" sound level of a given activity.

While the use of the L90 and the L50 may appear to be "apples and oranges," they really are not and the use of both as described above has been standard practice in acoustic measurement and reporting for many years. See references below.

American National Standards Institute (ANSI). 1994. Procedures for Outdoor Measurement of Sound Pressure Level, American National Standards, Inc., New York, NY.

American National Standards Institute (ANSI). 2005. Quantities and Procedures for Description and Measurement of Environmental Sound. S12.9 Part 4, Noise Assessment and Prediction of Long-term Community Response, American National Standards, Inc, New York, NY.

Pg.7 Method: Please clarify. It is stated that the Wyoming Game and Fish Department (WGFD) requested the Request For Proposal for this project. It is our understanding that the PAPO staff requested this study, and it was funded by the PAPO Board.

While the PAPO staff requested the monitoring effort, the contract is processed through WGFD. The statement in the Report is correct.

Pg. 7 Methods Bullets 3 & 4: Not ROD WMMM requirements

Data collected for bullets 3 & 4 were used to better inform management decisions and have been identified as necessary information during numerous public meetings. The PAPO staff elected to collect this data following the protocols developed by Gail Patricelli with UC Davis for monitoring noise in the Pinedale Anticline Project Area and reference areas.

Page 8, 4th paragraph: While it is clear that an arithmetic average is not used because sound levels are logarithmic, it would be helpful to include more information about how the actual calculations were done.

Both logarithmic and exceedence computations are explained in the Methods section. More details can be added in future reports.

Page 12, paragraph 1, line 3: Change the word "levels" to "level".

Typo, corrected.

Page 12, paragraph 1, line 4: Change the word "measurement" to "measure".

Typo, corrected.

Page 12, first paragraph, 2nd to last sentence: It is noted here that "The sound levels meters used in this study could measurement [sic] down to about 14 dBA." However, data presented in tables throughout the report (e.g., Table 2 on page 17) reflects values below 14 dBA. Please include an explanation within the report as to how this is possible, and what the confidence level is for values below 14 dBA.

The term "about" would imply "not exactly but close to." All sound level meters are not exactly the same; the noise floor for one might be 13.9 and the noise floor another might be 14.1. You are correct in that some meters recorded levels below 14.0 dBA.

To explain sound level readings near the noise floor of the meter is complicated, but basically when sound level readings are near the noise floor of the meter, it means that actual sound levels are much lower. "Actual" levels can be re-computed (and estimated) using the log additive function. To give an example: At reference lek PAPA103, the noise floor of the instrument was 13.1 dBA. The L90 for the site was 14.2 dBA. When we re-calculated the L90 at this site using the log additive function and a noise floor of 13.1 dBA, the new estimated L90 is 11.5 dBA. While this estimated L90 of 11.5 dBA is almost certainly more accurate than the reported L90 of 14.2 dBA, such estimates are generally not reported and only recorded values are used. The authors of the report will include a more detailed explanation in a revised report.

Page 13, paragraph 1, line 3: What is meant by "land over," Please define.

Typo, corrected. "Land cover" not "land over."

Page 13, 2nd paragraph, and Appendix D: While it is valuable to demonstrate the effects of adding a second windscreen by doing additional testing, it is unclear why the fleece was necessary in conjunction with the wire cylindrical cage. If wind speeds were rarely greater than 5 meters per second, could a wire cage have been used absent the fleece that protected the microphone, while still collecting sound measurements without the addition of error? While the margin of error was low (range -1.3 dB to +2.3 dB), the overall noise measurements were also very low, making these low error margins more significant.

As mentioned in the report, the use of the fleece provided two benefits: more protection from wind and protection of foam wind screen from animals.

The differences in dB levels in the test (foam only versus foam plus fleece) were generally within the ANSI Type 1 specifications for each one-third octave band frequency. In other words, conducting the same test with two meters and both using foam only would likely show very similar results (some slightly higher and some slightly lower).

It should be noted that the usual practice of deleting data when wind speeds >5 m/s effectively means deleting some "loud" periods and the result is lower L50 and L90 metrics. It is, therefore, preferable to use very good but transparent windscreens and include all dB data.

Page 13, Paragraph 4: Was the anemometer utilized at the reference leks different than the one used at the treatment leks? It is not clear.

The anemometers used at the reference leks were Larson-Davis Model SEN029; the anemometers used at treatments leks were HOBO Data Loggers Models S-WSA-M003. These are essentially the same gauge sold under different brands.

Page 14, paragraph 3: While the logic for placing the monitoring equipment 100-200 m from leks is sound, the measurements taken may not adequately reflect the noise at lek perimeters as required by the WMMM.

Measurements were taken following the WMMM and the protocols developed for the PAPO. Lek perimeters are subjective based on general observations of bird locations and not easily defined to a specific line and subject to change over time.

Our protocols recommend placing the monitor between the lek and the noise source being measured. We placed monitors at the edge of the known lek perimeter. The perimeter has been defined by the biologist who monitors the lek and knows the habitat use areas used by the birds during lekking period. These perimeters are not redefined annually. The need to modify a perimeter is up to the discretion of the regional biologist.

Page 14, last paragraph: Why was noise monitoring collected for such a long duration at reference area leks?

Previous studies by NPS and FAA (Hari 2005) determined that natural sounds vary considerably over time due to several factors, including presence or absence of wind, animals, birds, insects, and other natural sound sources. In order to get an accurate estimate of ambient sound levels (to be within ± 5 dBA), a minimum measurement period of 2 weeks was required. Measurements of sounds sources with very consistent levels, such as gas drilling operations or gathering facilities, the sound levels vary little and 1-2 days measurement periods are adequate.

It was determined that in collecting data for baseline, longer duration would help rule out bad weather, strong wind or spurious events, providing the PAPO with a more robust dataset. Sandhill Company provided to us (at no additional costs) equipment they had been developing that they hoped would be able to collect the same quality of data at a much lower cost. This equipment was used alongside the much more expensive equipment we required (based on the UC Davis protocols). Sandhill allowed us to leave the test equipment out for an entire month. This not only gave us additional data – which made our dataset much more defensible but also demonstrated that we could collect the data using this new equipment at a substantial cost savings.

Hari, I. 2005. Determination of Adequate Measurement Periods (temporal sampling). Draft Report to Natural Park Serv. Dept. of Statistics, Colorado State University. 12pp.

Page 14, Last paragraph: How is data collected for one month (April 2013) representative of noise experienced by lekking and nesting sage grouse during the entire cycle?

The intention wasn't to collect data for the entire cycle. It was to collect data during peak leaking period. It is fair to assume this occurred during April.

Page 14, Last paragraph: Why was data collected at the reference leks for greater than 14 days, but only for 1-2 days at the treatment leks and gas field sources?

In 2009 when developing the objectives for noise monitoring the PAPO staff, with industry input elected to collect data at only 19 treatment area occupied leks and 3 reference area leks for only 1-2 days per location due to budget constraints. With equipment availability in 2013 the PAPO staff elected to collect data for longer duration in the reference area to provide a better dataset.

Page 16, Table 1 & throughout document: The names used for the PAPA gas field sources is very inconsistent and often times incorrect (e.g. PAPA 216 is named "Drill rig 321; pad 5-19, 435 m" while PAPA 207 and 208 are labeled "Drill rig 9-24" when in fact they should read "Drill rig 309; pad 9-24" to be consistent). It's also unclear where data was collected, for example PAPA 209 and 210 on Hwy 191 but where on Hwy 191?

The names used for the gas field sources were what the field crews saw on the signs at the facilities or as best they could determine. While not technically correct, clearly the locations were understandable. The specific locations were not included because latitude and longitude specifics were deleted from the table to protect lek locations. Measurement locations of sound sources could have been included.

Page 17, Table 2: We don't believe that the three reference leks are in the PAPA. Please verify and correct as necessary.

The locations selected for data collection were within the PAPA reference areas. Jewett Flat Reservoir and Onion Spring are in the Ryegrass Complex, Big John is in the Speedway complex

Pg.21. Wind speed: Wind speeds are only referenced in relation to the reference leks. There is no mention of collecting wind speed data for the treatment leks. Please verify.

See page 13. Wind speeds were collected at reference and treatment leks, but in all cases wind speeds >5 m/s occurred <0.02% of the time. As stated in the report, wind speeds >5 m/s can falsely influence dB readings due to wind pressure over the microphone diaphragm. Because the microphones and anemometers were placed at .3 m (12") high, there was no wind influence on the dB data.

As stated above, the usual practice of deleting data when wind speeds >5 m/s effectively means deleting some "loud" periods and the result is lower L50 and L90 metrics. It is, therefore, preferable to use very good but transparent windscreen and include all dB data.

Page 21, paragraph 3, line 6: Inset the word "by" after "influenced".

Typo, corrected.

Page 21, 3rd paragraph, 2nd sentence: Please revise to read: "*Several factors ... activities (including, but not limited to gas field operation), predation...*"

Language added.

Page 21, last paragraph: It would be helpful to include the methodology for how sound levels were estimated/re-computed when obtaining measurements at 100 meters was not possible.

See page 13. Sound levels at specific distances were estimated based on inverse square law and using sound levels measured at known distances.

Page 24, last paragraph: This recommendation makes sense and appears practical for WMMM monitoring cost savings, especially in consideration of recent efforts to reduce spending.

Thank you for your comment

Page 24 last paragraph: Comments received by WY COOP review should be considered as to repeatability and further definition concerning items brought forth from the review should be discussed in this document such as: "The edge of the lek may change within and between years. How will this be defined and accounted for? Also, a lek has many edges because it is largely defined as a polygon so which edge will be measured?"

We placed monitors at the edge of the known lek perimeter. The perimeter has been defined by the biologist who monitors the lek and knows the habitat use areas used by the birds during lekking period. These perimeters are not redefined annually. The need to modify a perimeter is up to the discretion of the regional biologist.

Additionally, it is not clear if all leks will be measured for noise or just a few. If a sample of leks will be used, how will the sample be selected?"

This was determined by the PAPO staff with industries input in 2009. We jointly elected to collect data at only 19 treatment area occupied leks and 3 reference area leks for only 1-2 days per location due to budget constraints.

Page 112, paragraph 4, line 6: Change "*Figure x*" to "*Figure F-1*".

Typo, corrected.

Page 114, line 1: Change "*Figure x*" to "*Figure F-2*"?

Typo, corrected.

Additional requested information:

As requested by Operators, Sandhill will add paired sets of tables: one as presented and second set of tables that will extract noise when grouse are lekking to only represent the values of sound when the birds aren't there.

Request for Proposals sent to contractors soliciting bids for future PAPO wildlife monitoring projects will be posted on the PAPO web page. The Operators and the public can then be apprised of the scope of work being advertised.

The Annual Wildlife meeting presentations will be posted on the PAPO web page when received from the contractors.

This concludes the BLM's response to your November 7, 2013 letter. I also trust the PAPA Noise presentation on February 19, 2014 that you attended provided additional information and clarification on methods used to collect and analyze the data.

Finally, attached for your information is the January 30, 2014 Noise meeting minutes. If you need any additional information, please contact me, Shane DeForest, at 307-367-5302 or sdefores@blm.gov.

Sincerely,



Shane DeForest
Field Manager

Attachment:

January 30, 2014 Noise meeting minutes

cc:

Don Simpson, BLM/Cheyenne

Mark Storzer, BLM/High Desert District

Scott Talbott, WY Game & Fish Department, Cheyenne

Scott Smith, WY Game & Fish Department, Cheyenne

Jason Fearnayhough, WY Dept. of Agriculture, Cheyenne

Todd Parfitt, WY Dept. of Environmental Quality, Cheyenne

Joel Bousman, Sublette County Commissioner, Pinedale

Chris Wichmann, WY Dept. of Agriculture, Cheyenne

John Lund, WY Game & Fish Department, Pinedale

Darla Potter, WY Dept. of Environmental Quality, Cheyenne