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March 9, 2018

VIA EMAIL AND UNITED PARCEL SERVICE

Mike Robinson
Bureau of Land Management
Casper Field Office
2987 Prospector Drive
Casper, WY 82604

RE: *Converse County Oil and Gas EIS Project*

Dear Mr. Robinson:

Anadarko Petroleum Corporation ("Anadarko") appreciates the opportunity to comment on the draft *Environmental Impact Statement* ("DEIS") *for the Converse County Oil and Gas Project* ("Project"). Anadarko is one of several project proponent companies (known as the "Operator Group" or "OG") that initiated this project planning effort in 2014. Anadarko hereby references and incorporates the comments provided by the OG in a separate letter submitted by Davis Graham & Stubbs LLP. Here, Anadarko seeks to both highlight certain elements of the DEIS that we find particularly important, as well as provide a subset of specific and unique comments.

Anadarko is among the world's largest independent oil and natural gas exploration and production companies. Anadarko has fee ownership of mineral rights under nearly eight million net leasehold acres across the West and holds significant fee and federal mineral leases within the planning areas associated with this DEIS. Anadarko appreciates the Bureau of Land Management's ("BLM") identification of the Proposed Action as the Preferred Alternative, and seeks expeditious completion of the final Environmental Impact Statement ("FEIS") and Record of Decision ("ROD") before the end of 2018.

Rendering a positive economic impact, the Project provides at its peak over 8000 direct and indirect jobs, as well as extensive tax revenue for Wyoming counties, the State of Wyoming, and the federal government. Furthermore, the Project minimizes surface disturbance with use of horizontal wells, reducing surface disturbance by as much as 70 percent in comparison to historic vertical oil and gas development.[1] Anadarko has the following comments and observations on the DEIS:

1. **Year-Round Drilling:** The Proposed Action includes *year-round drilling* that is understood to mean ongoing drilling and completions operations on well pads located within non-core sage grouse breeding habitat and non-eagle, raptor nest buffers during the Timing Limitations Stipulation ("TLS") period. With the advent and implementation of horizontal drilling, multi-well pads, and long-reach laterals, year round drilling, as contemplated in the

[1]Applegate and Owens, 2014, *Oil and gas impacts on Wyoming's sage-grouse: summarizing the past and predicting the foreseeable future,* Human and Wildlife Interactions, 8(2): 284-290, Fall 2014.

Proposed Action, has become a crucial aspect to reducing overall environmental impacts. The following benefits of year-round drilling should be noted in the FEIS in comparison to a similar project absent year-round drilling:

- Year-round drilling provides the benefits of less overall surface disturbance and reduced time from project initiation to interim reclamation;

- Year-round drilling coupled with operator-committed measures such as those envisioned in the Migratory Bird Conservation Plan ("MBCP") **(DEIS, p. 4.18-30)** will facilitate increased raptor nest monitoring and heightened infrastructure planning, affording protections to the most valuable raptor nests; and

- Year-round drilling results in fewer drilling rig moves, resulting is less vehicular traffic (i.e., potentially fewer accidents, leaks, and spills) and lower air emissions (e.g., dust).

2. **Year-Round Drilling and Avian Impact Analysis:** The exploratory nature of the Proposed Action does not make it possible to determine the exact locations and configuration of well pads and supporting infrastructure such as roads during the development of this Environmental Impact Statement ("EIS"). As such, the DEIS analyses purports to be conceptual in nature **(DEIS, p. 1.5)**, and further evaluation of impacts would provide necessary information for BLM decision-making. Although Anadarko does not dispute the need for site-specific NEPA evaluations in certain circumstances, *Anadarko strongly believes, based on the information provided below, that year round drilling has less impacts than a similar project absent year-round activity*. ***See*** **below Conceptual Example: Inclusive is information and analysis showing no significant impacts to avian resource from year-round drilling, as envisioned by the Proposed Action.**

   Conceptual Example of Analysis of Year-round Drilling Impacts on Avian Resources: The OG explored and presented to BLM during the development of the DEIS one possible approach to field wide-development by mapping a *conceptual well pad placement example* ("*conceptual example*").

   The first step in presenting the *conceptual example* was to develop a map (Figure 1) illustrating the currently identified raptor and sage-grouse nesting buffers within the Proposed Project Area. At least 1400 nest buffers exist in the Proposed Project Area. These nest buffers would include both active and inactive nests (i.e., some nests would not be used by birds in a given year). Nest buffers can have radii from a quarter mile to two-miles, encompassing from 0.2 to 12.5 square miles. One half mile buffers, common to many raptors, encompass about 0.8 square miles, or about one square mile of land for each nest buffer.

   To demonstrate the number of well pads potentially located within these nesting buffers across the Proposed Project Area, the OG applied the *conceptual example* of one pad per two sections (i.e., one pad per each 1280-acre drilling and spacing unit) to the overall Proposed Project Area.

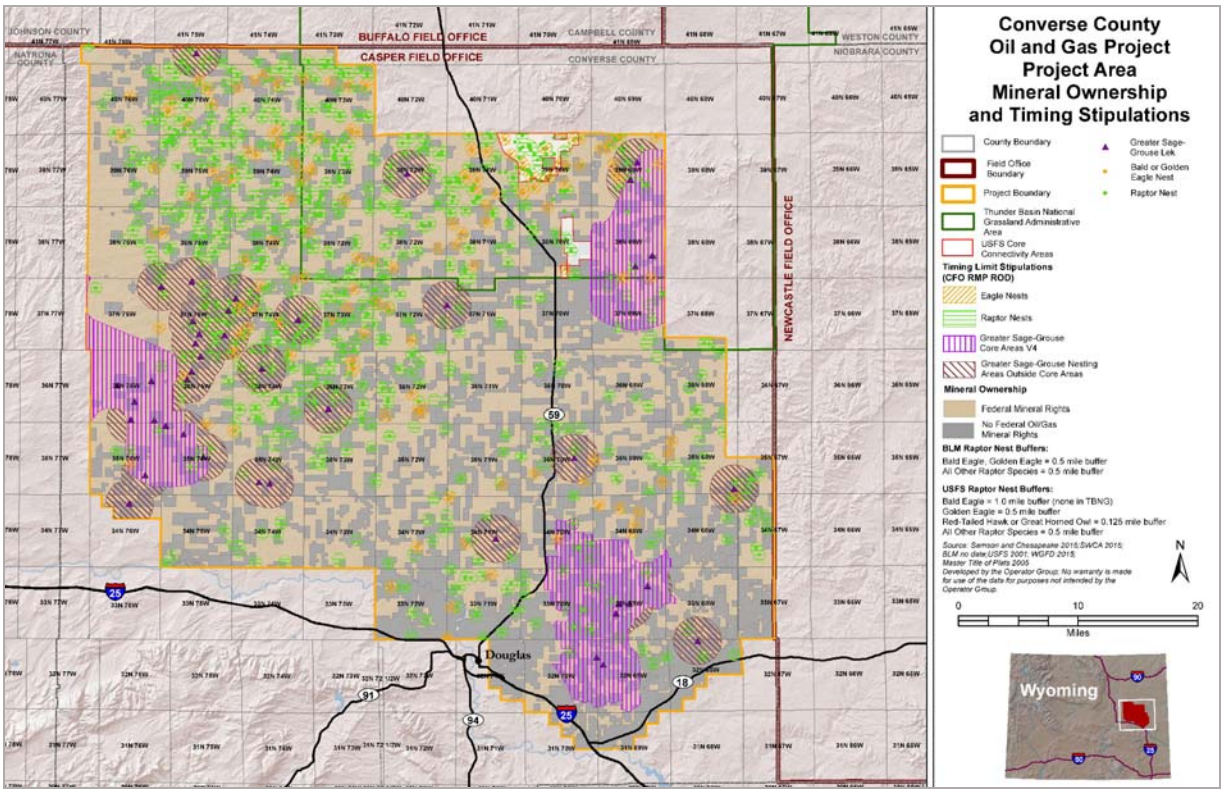

Figure 1 – Nest buffers across the Project Area

Figure 2 (T38N R75W) represents this *conceptual example* for a single township. The well pads are shown to scale as 12 acres in size, consistent with the estimated initial disturbance for well pad construction within the Proposed Action. In this particular township, four well pads (green) are not within nest buffers, while five well pads (yellow) would slightly overlap nest buffers, but would likely be re-located to avoid the nest buffer. Nine well pads (shown as red) could not be moved outside of the nest buffer in a manner that would still allow recovery of the mineral resource and would therefore be provided TLS relief as envisioned by the Proposed Action.

Even if operators are able to re-locate well pads to avoid nest buffers, interferences with nest buffers can occur due to roads and associated infrastructure. This *conceptual example* illustrates that road and well pad planning efforts to avoid activity or intrusion in all nest buffers is impossible. The Figure 2 Township has over 55 percent of the overall area with overlapping nest buffers and is not atypical for the Proposed Project Area overall. In fact, the results of this *conceptual example* suggests about 45 percent of all well pads in the Proposed Project Area would fall within nest buffers even after careful planning. Importantly, this *conceptual example* does not account for the other constraints on well pad and road locations such as avoidance of other resources such as wetlands, cultural artifacts, topographic constraints such as steep slopes, or private property-owner preferences – all of which make avoiding all nest buffers in the Proposed Project Area impossible.

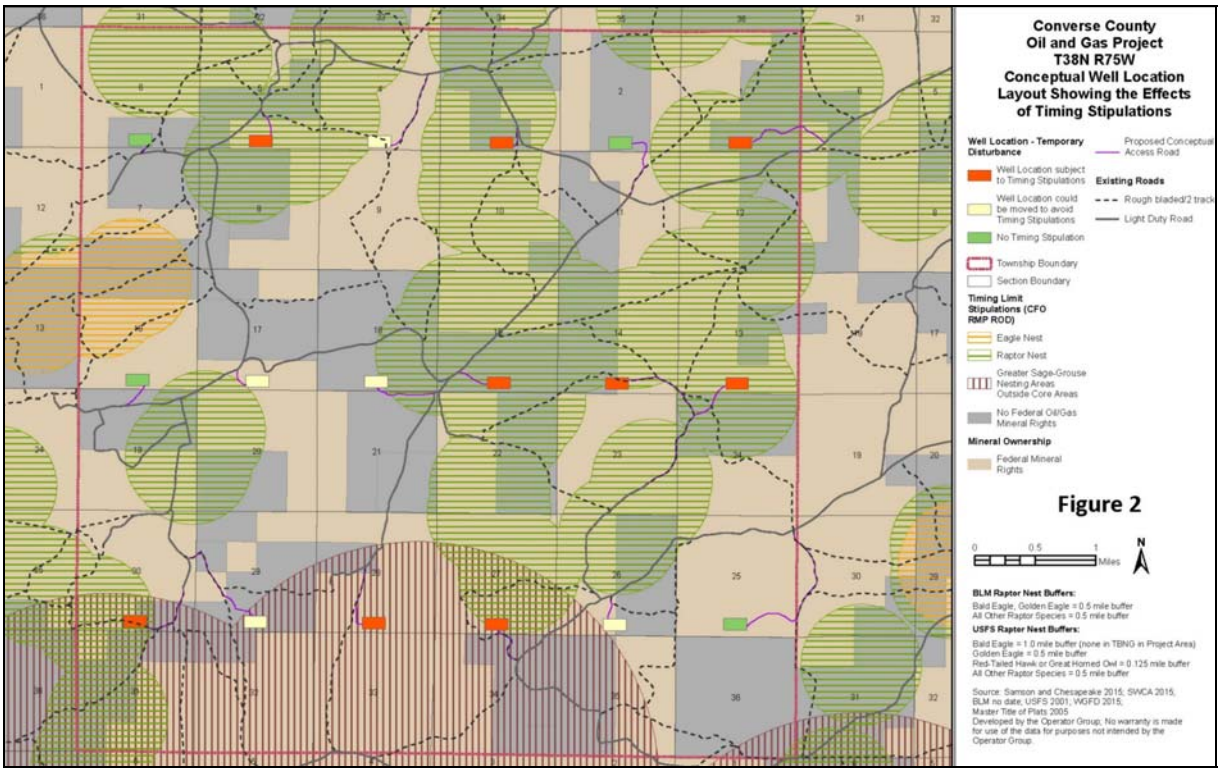

Figure 2 – Nest buffers and drilling pad location in one township – illustrative only

The c*onceptual example* indicates as many as 28 percent of all Proposed Action well pads within the Proposed Project Area would be within nest buffers that are non-core leks and non-eagle, raptor nest buffers in which operators would maintain continuous drilling and completion activities during the TLS period under the Proposed Action. About 17% of all Proposed Action well pads would fall within eagle or core area buffers, but the Proposed Action does not include year-round drilling within these nesting areas, as these are deemed by existing law and policy as higher priority wildlife habitats in comparison to non-core lek and non-eagle nest buffers.

To estimate avian impacts, one can use this *conceptual example* to estimate how many nest buffers might be impacted in a given year if operators were to implement the Proposed Action. The estimated number of nest buffers impacted on an annual basis is provided below by combining a) the results of the *conceptual example* explained above with b) the rate of development as described in the Proposed Action:

150 pads constructed/year x 28% within nest buffers with proposed continuous operations = 40 pads/year

(Assume these 40 pads can be located such that only one raptor nest is impacted by each of these pads)
40 pads/year in nest buffers = 40 potentially impacted raptor nests/year

40 raptor nests impacts per year/1400 nests in Project Area = 2.8% of total raptor nests impacted in a given year

Hence, on an annual basis, only about 2.8 percent of all nest buffers in the project area are potentially impacted by maintaining year round continuous drilling and completion operations as envisioned by the Proposed Action. BLM should further clarify that in a given year only a subset of nests are actually active. Hence, less than the 2.8 percent of nest buffers impacted by continuous operations annually would even be expected to be active in a given year. This quantitative impact assessment just described on avian resources from year-round drilling as envisioned in the Proposed Action suggests avian impacts from the Proposed Action are not significant and should be included in *4.18.2.2 Impacts on Migratory Bird Species from Alternative B – Proposed Action* **(DEIS. P. 4.18-27)** to allow a clear disclosure of avian impacts incurred by the Proposed Action.

3. **Year-Round Drilling Rig Move Analysis:** The second factor (the first is the high density of nests across the project area) driving the need for year-round drilling is the length of time needed to construct, drill and complete multiple horizontal wells on a single pad. The OG provided information to BLM during the development of the DEIS as to the time it takes to complete multi-well drilling and completion operations on a given pad. The OG estimated that if four or more wells emanate from an individual pad, the time it takes to construct, drill, and complete the wells exceeds the time between annual nest buffer TLS periods. For an eight-well pad, three separate drill rig mobilizations might be needed to complete the pad while adhering to TLS as indicated on Figure 3 below:

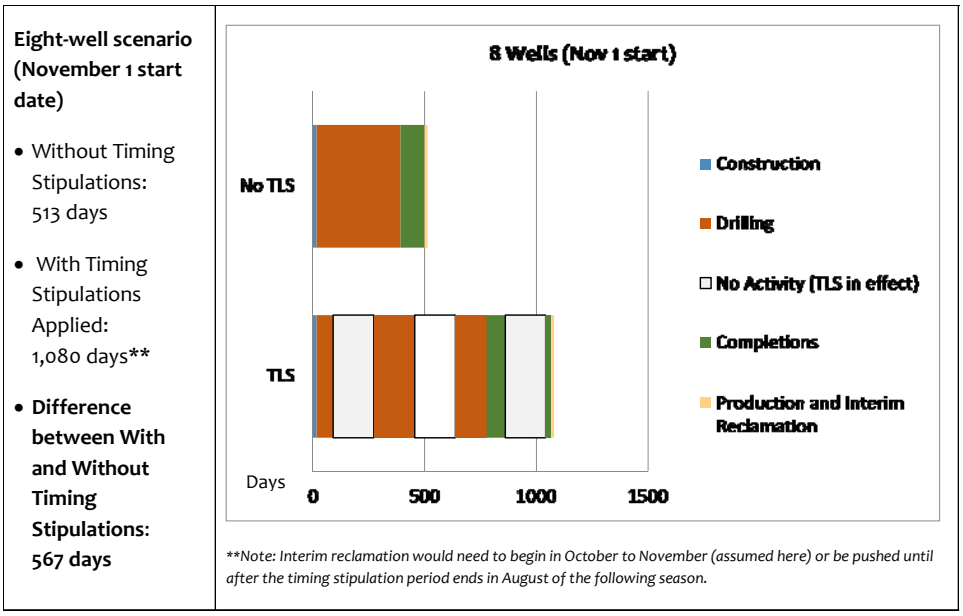

Figure 3 – Eight-well Pad Scenario – Overall Construction-Drilling-Completions Schedule

In summary, as many as 45 percent of pads constructed in the project area are within nest buffers and cannot be avoided by pad placement planning. If these pads have more than four wells on them, operators will either:

a) need to stop operations during the TLS period (the scenario for eagle nests and core area sage grouse leks under the Proposed Action) - resulting in a rig demobilization before the TLS period starts, followed by a re-mobilization after the TLS ends or

b) continue operations through the nest TLS period (the scenario for non-eagle and non-core sage grouse leks envisioned under the Proposed Action).

BLM needs to bolster in the FEIS the description of the timing it takes to drill and complete multi-well pads and highlight that the Proposed Action includes year-round drilling to reduce the environmental and socio-economic impacts associated with increased rig mobilizations.

4. **Year-Round Drilling and BLM TLS Exceptions/Waiver Approval Processes:** BLM analyzes year-round drilling in the DEIS but fails to describe a clear process by which operators would achieves TLS exceptions/waivers on surface lands for which BLM has authority to manage surface impacts.

- In *Section 2.4.1 Development Overview* for Alternative B, the BLM notes that each site-specific request for year-round development would require an environmental assessment ("EA") to be completed analyzing the effects of development on wildlife within the site-specific project area and include the requirement for an intensive wildlife monitoring plan **(DEIS, p. 2-25)**. It is unclear what is meant by a site-specific request and whether this could be one well and road, an entire unit, or a township? The MBCP should suffice as the "intensive wildlife monitoring plan." Anadarko assumes these documents are the same and if so, BLM should clarify that they are. The State of Wyoming Executive Order 2015-4 Greater Sage-Grouse Core Area Protection ("WY EO") does not require monitoring for non-core sage grouse TLS relief so it is unclear what other monitoring would be required;

- Acknowledge in the FEIS that the OG has described year-round drilling as envisioned by the Proposed Action as a programmatic approach that grants TLS relief at the point of application for permit to drill ("APD") approval. The current DEIS fails to acknowledge that reliance on the existing exception process for granting TLS relief will not allow programmatic year round drilling on well pads over which BLM has authority to manage surface impacts and will therefore increase rig moves and associated impacts;

- *4.13.2 Impacts to Transportation from Alternative B* in the FEIS. Anadarko recommends indicating in the text that the vehicle trip counts in Table 4.13-1 **(DEIS, p. 4.13-3)** assume only one rig mobilization per well pad and that rig remobilizations for well pads left incomplete to avoid a nest buffer during the TLS will result in an additional 300 additional heavy truck trips per rig re-mobilization;

- Anadarko recommends indicating that even under the Proposed Action, some well pads will require a second mobilization because they fall in eagle or core habitat sage grouse lek nesting buffers; and

- Add to Section *4.18.2.2 Impacts on Migratory Bird Species from Alternative B – Proposed Action* **(DEIS. P. 4.18-30)** a fourth bullet that recognizes the operational flexibility contemplated by the United State Fish and Wildlife Service ("USFWS") and the OG by the MBCP: "*Facilitate TLS exception/waiver at the APD approval step for wells over which BLM has authority to manage surface impacts."*

5. **Alternative C Impact Analyses:** Anadarko does not support Alternative C and notes that the DEIS fails to disclose the scope of adverse impacts that are attributable to a lack of year-round drilling as envisioned by the Proposed Action. The number of pads impacted by not granting TLS relief is underestimated **(DEIS, 4.11-45, bullet five)** for Alternative C. Although Alternative C has arbitrarily reduced the well pad count by 562 pads, all of the remaining 938 pads have four or more wells per pad by definition of the alternative and, consequently, will take longer than a year to construct, drill and complete. In the Proposed Action, the average well count per pad is 3.3 wells per pad (5000/1500). By definition under Alternative C, TLS exceptions would not be granted for the allocated 938 pads, yet nearly half of them are expected to be in nesting buffers given the previous *conceptual example* (figures 1 and 2). The BLM should more clearly compare in the FEIS this offset of fewer pads but a higher percentage of pads requiring a second or even third drilling rig mobilization. The statement "The overall number of rig mobilizations and demobilization activities would be lower than Alternative B due to the higher average number of wells per pad" needs to be quantitatively qualified.

    - Alternative C assumes that more wells would be drilled from single pads yet assumes that development would occur at the same pace in terms of the same number of wells per year as Alternative B. The *pace of activity* during the period *between* raptor nest and sage grouse lek TLS would in fact be significantly higher than the same annual activity if it were spread out over the course of an entire year and impacts from this periodicity of activity should be noted in the FEIS;

    - BLM asserts "A wildlife review of federal APDs for fiscal year 2016 conducted by the BLM determined that approximately 50 percent of federal applications were subject to TLS. Applying that 50 percent coverage to the approximately 65 percent of the [Converse County Project Area] CCPA under federal mineral ownership yields an estimated 33 percent of the CCPA that would be subject to TLS. The spatial extent of lands in the CCPA subject to timing limitation stipulations on federally managed lands would be further reduced, to approximately 15 to 20 percent based on the consideration for horizontal well laterals that could extend up to 2 miles." (**DEIS, p. 2-36**) This analysis is not correct. Reduction of the estimate from 33 percent to 15 to 20 percent because there are long laterals is a false assumption – longer laterals actually increase the chance than an individual well bore will intercept federal minerals. Anadarko would suggest BLM maintain a range from 20 to 33 percent of federal permits might have an associated TLS. Furthermore, BLM should clearly indicate whether they intend to impose TLS on split estate well pads and on well pads located on off-lease, non-federal surface, and the legal and policy basis for such conclusions;

- BLM asserts that 80 to 85 percent of sites on federal mineral ownership are not affected by TLS **(DEIS, p. 4.11-45, bullet two)**. See Anadarko's comment in the bullet above. It is unclear how this percentage is derived (it appears low) and it is not clear how this percentage accounts for split estate ownership or well pads located on off-lease, non-federal surface where BLM has historically requested that operators commit to honoring raptor timing stipulations as an operator-committed measure in order to reach a Finding of No Significant Impact (FONSI) on the underlying NEPA analysis; and

- BLM needs to address the change in traffic impacts associated with fewer rig moves associated with programmatic TLS relief (Alternative B) and no TLS relief (Alternative C). Anadarko estimates non-eagle, non-core timing stipulations impact 28% of all pads. Not granting TLS relief could result over the course of 10 years in extra rig move for 100s of pads over which BLM potentially has jurisdiction.

6. **Water Usage, Groundwater Well Locations, and Waste:**

- The OG provided information in a 2014 White Paper[2] indicating water usage for the drilling and completion of wells. Longer lateral lengths and experimentation with different completion techniques now suggest that the previously provided water usage numbers were under-estimated. *Anadarko does not anticipate this higher volume will result in higher usage of groundwater resources or in higher disposal volumes.* In light of this potential increase in completion volumes the following should be included in the FEIS:

    i. In section *2.2.2.4 Water Requirements, Supply, and Use* (**DEIS, p. 2-12**) and in section *2.4.3.4 Water Requirements, Supply, and Use* (**DEIS, p. 2-27**) it should note that recycling of flowback water and supplemental water from the North Platte River are additional sources for completion water.

    ii. In section *2.2.3.4 Produced Water Management and Disposal* (**DEIS, p. 2-13**) and in section *2.4.4.3 Produced Water Management and Disposal* (**DEIS, p. 2-29**) it should note that recycling of flowback water is anticipated in the play.

    iii. Disposal volumes are not expected to increase from the increase in completion volumes noted above, as recycling of flowback water is expected to become prevalent in the Proposed Project Area. A change or increase in the number of disposal wells outlined in the Proposed Action is not anticipated or requested. **(DEIS, p.2-27)**.

- BLM notes "to prevent drawdown of 10 feet or greater reaching any existing water wells, any proposed new well would need to be located 2,000 feet or greater from existing wells." **(DEIS, Appendix E, p. E-78).** Groundwater well permitting is the responsibility of the State Engineer and BLM does not have the authority to establish

[2] *Converse County Oil and Gas Project; Water Sources, Volumes, and Management White Paper*, 2014

water well setbacks. Evaluation of potential drawdown impacts to surrounding water wells and any associated permitting requirements to address such potential impacts fall under the jurisdiction of the State Engineer.

- 2.2.2.3 Well Completion (**DEIS, p. 2-11**). BLM needs to change the word "states" to "stages" in Line 23.

- *2.2.5.1 Hazardous Materials* **(DEIS, p. 2-14)**. BLM should clarify that while wastes associated with drillings, completion, and operations may be considered hazardous from an OSHA perspective they are often not deemed hazardous when it comes to disposal.

- *2.2.5.3 Spills of Hazardous Materials and Solid Wastes* **(DEIS, p. 2-15)**. Anadarko recommends use of the more appropriate term "well control situations" rather than "blow outs" in Line 15.

- *3.4.1.3 Regulatory Definition of Solid Waste* **(DEIS, P 3.4-4)**. NORM and TENORM can both be associated with oil and gas operations. The DEIS appears to only associate TENORM with oil and gas operations. The DEIS references "Schieffelin 2017" (Colorado Department of Health and Environment Solid Waste and Materials Management Program Manager) notice to landfills as it's basis for determining what waste streams TENORM occurs in. The reference is incorrect in the listing from Scheiffelin's May 12, 2017 notice which states the following: "The department believes the following subset of the E&P Waste stream has a potential to contain TENORM:" followed by a listing of wastes they "believe" has a "potential" to contain TENORM, which is not correctly cited in the DEIS. The DEIS language "TENORM occurs in the following waste streams" is not correct and should be removed. The Schieffelin notice is an interim policy and guidance pending rulemaking from EPA. WDEQ Solid and Hazardous Waste Division Guideline #24 is for NORM not TENORM. All references to TENORM should be removed from this language. "TENORM (or NORM)" as written in the DEIS is inaccurate as NORM and TENORM are not the same.

7. **Air Modeling:** In Section *4.1.3.3 Assessing Impacts to Criteria Pollutants* **(DEIS, 4.1-23)** it states: *As discussed in the Air Quality Technical Support Document (Appendix A), the model–predicted AAQS exceedance of cumulative daily PM_{10} primarily was due to large fires in the vicinity of the assessment area; however, Alternative B would not be expected to contribute to further AAQS exceedances in the assessment area."* Anadarko notes that the phrase "large fires in the vicinity..." implies emissions from wildfire events were included <u>every day</u> in the Community Multiscale Air quality ("CMAQ") modeling. Such inclusion would result in an overestimation of PM10 impact to air quality. The DEIS lacks a rationale as to why the BLM selected to approach air modeling with constant wild fires included in the regional cumulative emission inventory, and Anadarko recommends that the DEIS recognize that the air modeling took an extremely conservative, perhaps unrealistic approach.

8. **Consistency with the Wyoming Executive Order for Greater Sage Grouse:** Section 4.18.3.2 *Impacts on Special Status Species Wildlife Species from Alternative B – Proposed Action* **(DEIS, p 4.18-60).** Anadarko recommends that the FEIS and Record of Decision ("ROD") provide a statement recognizing primacy of the WY EO, including but not limited to split estate ownership and on well pads located on off-lease, non-federal surface. The FEIS should not provide recommendations, management objectives or mitigations that contradict the WY EO, which provides increased flexibility in sage-grouse general habitat for energy development, primarily in the form of TLS relief for non-core leks, as an incentive to shift development away from sage-grouse core (priority) habitats.

9. **Mitigation Measures – Chapter 4 and 6:** As a general comment, it is important the BLM include a statement that NEPA does not require mitigation, rather only evaluation of environmental impacts, and therefore these recommended mitigation measures may be considered and utilized but are not intended to be imposed as binding requirements in all circumstances. Additionally, BLM needs to state clearly that for each of the following mitigation measures, they do not apply to lands for which BLM does not control surface use. Anadarko recommends the following revisions to both Chapter 4 and 6 to correct and clarify the scope and appropriateness of certain mitigation measures.

    - **AQ-1** *"If located on BLM surface estate, gas plants and compressor stations will be located at least 2,000 meters from residences or other occupied dwellings."*

      Anadarko Comment: Anadarko recommends removing this mitigation, as the State of Wyoming, not the BLM, is the appropriate government entity to address permitting of compressor stations and gas plants. The Wyoming Department of Environmental Quality ("WDEQ") air quality permitting process provides abundant review, regulation and planning measures to ensure the well-being of its residents;

    - **ABR-4** *"Hydrostatic test waters from pipeline construction will not be released to stream channels. Test Waters will be dispersed onto upland areas using proper erosion and sediment control techniques."*

      Anadarko Comment: Anadarko recommends that the FEIS substantiate the need, legal authority, and whether permitting is implicated for this recommendation;

    - **CR-1**: "*A qualified professional archeologist will monitor surface disturbing activities during construction in areas that may contain buried cultural materials…"*

      Anadarko Comment: Anadarko recommends removal of this mitigation. Such monitors are not required by Section 106 of the National Historic Preservation Act ("NHPA"), the regulations at 36 C.F.R. part 800, or any BLM manuals or handbooks. Furthermore, BLM generally does not require archeological monitors for oil and gas activities, and BLM has not identified any characterizations that compel monitoring. At a minimum, BLM must refine where monitoring will be required. As drafted, the monitoring requirement could be interpreted to apply throughout the Proposed Project

Area. Anadarko requests clarification in the FEIS on when this mitigation measure would be deployed in terms of land ownership. Provide examples of what defines "cultural materials" and how these areas "that may contain" such materials be identified? It is typical to receive a Condition of Approval (COA) for monitoring if through cultural surveys buried cultural material are identified in an area where surface disturbing activities are planned. BLM needs to acknowledge private property rights in this mitigation;

- **CR-4**: *"For areas most likely to contain resources of Native American Concern, tribal monitors will monitor sediment-disturbing activities during construction."*

  Anadarko Comment: Anadarko recommends removal of this mitigation. Such monitors are not required by Section 106 of the NHPA, the regulations at 36 C.F.R. part 800, or any BLM manuals or handbooks. Furthermore, BLM generally does not require tribal monitors for oil and gas activities, and BLM has not identified any characterizations that compel monitoring. At a minimum, BLM must refine where tribal monitoring will be required. As drafted, the monitoring requirement could be interpreted to apply throughout the Proposed Project area. Anadarko requests clarification in the FEIS on when this mitigation measure would be deployed in terms of land ownership (provide examples of what "resources of Native American Concern" might be and how will these areas be identified?) and otherwise acknowledge private property rights in this mitigation;

- **MIG-1**: *"When surface-disturbing activities must occur during the avian breeding season (February 1 to July 31), a qualified biologist will conduct nest searches no more than 7 days prior to these activities."*

  Anadarko Comment: Anadarko recommends removal of this mitigation as raptor nest monitoring will be outlined in the MBCP;

- **SOIL-2**: *To the extent possible, disturbance to soils with limiting characteristics will be avoided.*

  Anadarko Comment: As suggested by *Table 3.12-1,* **(DEIS, p. 3.12-3)** 114% of the Proposed Project Area has soil with limiting soil characteristics; therefore, all soil disturbance would potentially be avoided. Anadarko recommends removal of this mitigation as it is not practical. Anadarko also recommends further text description for Table 3.12-1 to indicate that multiple characteristics can apply to the same soil within the Proposed Project Area.

Table 3.12-1 Acreage of Limiting Soil Characteristics

Limiting Soil Characteristic	Acres in CCPA					Percent of CCPA
	BLM	USFS	State	Private	Total	
Water Erodible	23,506	4,985	13,410	166,852	208,753	14
Wind Erodible	24,092	4,202	19,801	234,679	282,773	19
Droughty Soils	37,240	23,031	44,321	555,757	660,349	44
Hydric Soils[1]	1,545	1,124	4,315	49,644	56,874	4
Shallow Depth to Bedrock	0	0	119	262	381	<1
Prime Farmland	0	0	127	604	731	<1
Compaction Prone	26,525	38,428	29,254	352,652	446,859	30
Limited Reclamation Potential	14	0	76	4,106	4,196	<1

[1] The acreage of hydric soils likely is overestimated because it is based on the acreage of entire map unit, which m partially hydric.

114% ?

Source: NRCS 2014.

- **SOIL-3**: "*The upper 12 inches of the soil will be separated, salvaged, and used when revegetating disturbed areas.*"

  Anadarko Comment: Anadarko recommends revision to this mitigation. Specifically, that topsoil segregation and the amount salvaged be based on individual site characteristics. The 12-inch requirement is not an accurate description for the Proposed Project Area, as many well pad locations will have less suitable soil for salvaging. This mitigation also contradicts Mitigation SOIL-1 that requires characterizing soil for reclamation potential;

- **SOIL-4: "Surface runoff control structures will be installed to limit erosion and sediment loading."**

  Anadarko Comment: Anadarko recommends removing this mitigation as it is duplicative as there are existing requirements for stormwater pollution prevention plans (SWPPP) as administered by WYDEQ.

- **SOIL-5**: *"If more than one month will pass between the end of construction and initiation of reclamation, erosion controls will be applied to disturbed areas."*

  Anadarko Comment: Anadarko recommends this requirement include a higher degree of timing flexibility in application as it will not always be possible to comply given winter weather conditions in Wyoming;

- **SSPS-1:** *"If potential habitat cannot be avoided, two years of surveys in suitable habitat will be required and consultation with USFWS may be necessary."*

Anadarko Comment: Anadarko recommends that BLM add language that allows alternative survey protocols for the presence of Ute ladies'-tresses to be recommended by operators during the APD permitting process for evaluation by BLM;

- **SSWS-2:** *"A Raven Management Plan will be developed…"*

  Anadarko Comment: Anadarko recommends removal of this mitigation. Operators should not be subject to a Raven Management Plan requirement. The FEIS should state that management of Ravens is not the obligation of operators. Ravens are a controversial species; both protected under the MBTA while at the same time subject to efforts to reduce their populations by both the USFWS and the State of Wyoming. See links to the EA for Bird Damage Management in the Wyoming Wildlife Services Program (USDA, APHIS and WS prepared along with the DOI, USFWS, FAA, WGFD, WDH and WDA) as well as the associated FONSI: [3]

- **SSWS-4:** *"Coordination with all applicable federal and state wildlife management agencies will occur prior to application of any herbicides."*

  Anadarko Comment: Anadarko recommends removal of this mitigation, as commercial herbicide applicators are already required to take precautionary measures for various wildlife and domestic species. Operators commonly spray herbicides on roads/wells/pipelines and requiring this degree of coordination is not justified.

- **SSWS-5:** *"A 0.25 mile buffer no surface use buffer will be maintained in any areas identified as occupied special status bat roosts."*

  Anadarko Comment: Anadarko recommends removal of this mitigation, as there is no justification for this mitigation provision found in the DEIS or supporting materials;

- **SSWS-6:** *"...Any areas where herbicides would be used for vegetation treatment will be searched for bat roosts prior to spraying, and a 0.5-mile no-spray buffer will be established around roost sites."*

  Anadarko Comment: Anadarko recommends that BLM qualify by what criteria they would impose this requirement, as this type of habitat is not widespread in the project area;

- **VEG-1** *"The OG will organize native seed collection efforts to increase native local seed stock"*

[3] https://www.aphis.usda.gov/regulations/pdfs/nepa/WY%20Bird%20EA%20_4-2-08_.pdf
https://www.aphis.usda.gov/regulations/pdfs/nepa/WY%202008%20Bird%20Damge%20Management%20FONSI.pdf

Anadarko Comment: Anadarko recommends changing the mitigation to: "The OG will support the collection of native seed, specifically through statewide efforts that are already in place." This requirement as written is unnecessary and it is not clear who would oversee quality control, processing, and preservation. This would be a significant commitment with limited to no return on the investment. The University of Wyoming ("UW") has a group that undertakes this effort;

- **WLF-2**: *"…'Bird cones' will be installed on open-vent stacks."*

  Anadarko Comment: Anadarko recommends more specificity for this mitigation such as "Exhaust stacks greater than 2-inches in diameter on fired vessels (e.g., line heaters and heater-treaters) should be fitted with protective measures such as cone-shaped wire or expanding metal devices that fit over the end of the exhaust stack."

- **WLF-5**: *". . . Also, temporary walls and distance will be considered for use to reduce sound levels in important habitats."*

  Anadarko Comment: Anadarko recommends that this requirement be qualified to clarify for what habitats, species, and landowners it applies and whether it is required or supported by the Casper RMP;

- **WLF-6**: *"New structures, including fences, will be designed and built to reduce hazards to big game and to allow big game movement throughout the year."*

  Anadarko Comment: Anadarko requests that this requirement be qualified to clarify for what habitats, species, and landowners it applies and whether it is required or supported by the RMP. Clarify the meaning of the term "movement" and how it is measured in the context of big game; and

- Section *6.6.2.2 Wildlife*: "*The Record of Decision and Approved RMP Amendment (BLM 2015b) states that when authorizing third-party actions that would result in greater sage-grouse habitat loss and degradation, the BLM would require and ensure mitigation that would provide a net conservation gain to the species (i.e., the actual benefit or gain above baseline conditions).*" **(DEIS, p. 6-30)**.

  Anadarko Comment: Anadarko recommends that the FEIS language be consistent and supported by current BLM policy as it relates to "net conservation gain", as this language has recently been removed from DOI policy and guidance documents.

10. Reclamation: Anadarko provides the following specific comments on reclamation:

- Soils Data for Limiting Soil Characteristic **(DEIS, p. 3.12-1, Table 3.12-1)**;

  Anadarko Comment: Anadarko recommends acknowledgement in the FEIS that using and relying on the Natural Resource Conservation Service ("NRCS") soil ratings and guidance is not practical for reclamation practices related to oil and gas

development-related disturbances. Rather, NRCS guidelines are appropriate for commercial farming practices and active tillage operations that are not comparable to the nature of oil and gas development disturbance. Using NRCS data to identify "compaction prone" soils in the Proposed Project Area **(DEIS, p 3.12-4, lines 20-24, Figure 3.12-4)** is helpful when soils are undergoing active long-term cultivation but again are not relevant to the short-term nature of oil and gas soil disturbance.

- *"For all alternatives, Project-related impacts that may affect vegetative productivity include the disturbance of shrub and woody dominated vegetation that would require 10 to 100 years to reestablish (Avirmed et al. 2015)."* **(DEIS, p. 4.14-15)**;

  Anadarko Comment: Anadarko recommends removing this statement as the Avrimed et al 2015 study[4] only evaluated Wyoming Big Sagebrush and overestimates the time needed for successful reclamation. He did not study "shrub and woody dominated vegetation." This statement misrepresents the recovery time for shrub and woody vegetation. Moreover, the DEIS lacks quantitative data on how much of the Proposed Project Area is dominated by shrub and woody vegetation. Much of the Proposed Project area is upland prairie grassland with limited shrub density. Furthermore, the Avirmed study only evaluated sites with no reclamation practices implemented, so its applicability to this project is highly speculative.

- *"Woody-dominated shrubland habitats would require at least 10 to 100 years for the shrubs to recolonize the area and for re-establishment of mature woodlands (Avirmed et al. 2015; WGFD 2017d)."* **(DEIS, p. 4.18-4)**;

  Anadarko Comment: Anadarko recommends removing this statement for the reasons noted in the previous comment.

- Section *5.3.18.1 Terrestrial Wildlife and Section 5.3.18.2 Migratory Birds: "... such time that reclamation of wildlife habitat is deemed successful (approximately 10 to 100 years, depending on the vegetation cover type. . ."* **(DEIS 5-59, lines 28-29 and 5-65, lines 11-12)**;

  Anadarko Comment: Anadarko recommends this requirement be removed from the DEIS. There is no supportive evidence for this reclamation timeframe. It is extremely speculative, as noted in the previous comments, and misrepresents the successful reclamation of oil and gas disturbances ongoing in the Powder River Basin within upland prairie grassland habitats.

[4] Avirmed's study was on oil and gas sites in south central Wyoming big sagebrush ecosystems. Avirmed states: "In this study, we measured the natural recovery of the big sagebrush plan community across the chronosequence of 29 oil and gas well sites that were abandoned without reclamation between 1923 and 1980." Avirmed also states, "We estimated that it takes at least 87 years for Wyoming big sagebrush cover to recover naturally, although big sagebrush density recovered in fewer than 70 years. Grasses and non-sagebrush shrubs recovered rapidly, as shown by the high cover of those groups in the youngest sites."

- Section *6.4.14 Vegetation*: **(DEIS, p. 6-21)**. "Prior to re-seeding, compacted areas would be scarified by ripping or chiseling to loosen compacted soils…"

  Anadarko Comment: Separate the portion discussing ripping/de-compaction from vegetation monitoring. Anadarko recommends placing the ripping and de-compaction requirements in Section *6.4.12 Soils*.

- "Newly constructed pipelines would be hydrostatically tested to ensure structural integrity of the line." **(DEIS, p. 2-13)**;

  Anadarko Comment: Due to the variety of pressure testing methods for pipelines, it would be more accurate to say, "Newly constructed pipelines would be pressure tested to ensure structural integrity of the line." Poly lines are typically pneumatically tested.

11. **Noise Level Impacts to Sage-Grouse:** Anadarko provides the following specific comments on noise level impacts to sage-grouse:

- Section *3.7.1 - Regulatory Guidance: Wyoming EO2015-4, as adopted by BLM, specifies Wyoming's statewide requirements for protecting greater sage-grouse. General stipulations in Wyoming EO 2015-4 related to noise are further discussed in Section 3.18, Wildlife and Aquatic Biological Resources.* **(DEIS. P. 3.7-1)**;

  Anadarko Comment: The WY EO states, "New project noise levels, either individual or cumulative, should not exceed 10 decibels (as measured by L50) above baseline at the perimeter of a lek from 6:00 pm to 8:00 am during the breeding season (March 1 to May 15)." Anadarko supports use of this EO definition and recommends it be included in the FEIS.

- Section *3.7.2 Acoustics and Existing Background Noise Levels*: *Ambient noise levels in rural rangeland areas of Wyoming typically are near 24 dBA (Ambrose and MacDonald 2015).* **(DEIS, p. 3.7-1)**;

  Anadarko Comment: Anadarko recommends removing any and all statements suggesting "typical" background noise levels are 24 dBA "in Wyoming." This background noise level is based on one study. Either this section needs to be revised per the comments provided, herein, or Section 3.7.2 needs to be omitted from the DEIS. There is limited data regarding what the ambient noise level is in Wyoming. Data collected by Hessler Associates, Inc. an acoustical engineering firm for a project site in Converse County, Wyoming found the average sound level in a lower valley with a wind speed of ten miles per hour ("mph") was 45 A-weighted decibels ("dB(A)"), while at two open plain elevations with wind speeds of 18-20 mph the ambient noise level was 50-52 dB(A).[5] Suggesting that a sound pressure level of 24dBA is the ambient noise level associated with sagebrush ecosystems in Wyoming

[5]http://deq.state.wy.us/isd/downloads/Permit%20Wasatch.pdf

based on one study is not scientifically defendable. This low ambient background level fails to recognize the significant impact that wind has in Wyoming on ambient noise levels. The proposed ambient background level is presumptive and fails to recognize the acoustical contributions of the natural environment (e.g. wind).

- Section *4.7.2.1 Impacts from Noise*: *"Noise from production potentially would affect greater sage grouse as well. See Section 4.18, Wildlife, for a more detailed discussion on noise impacts to greater sage grouse and other wildlife."* **(DEIS, p. 4.7-3)**;

  Anadarko Comment: Activities generating noise may have, under certain conditions, the potential to disrupt normal behavior patterns of greater sage-grouse or other animals. However, correlating actual disruption of behavior patterns to noise is extremely uncertain. Further, animals may rapidly habituate to noises that they learn do not pose a threat (Grubb et al. 1992, Brown et al. 1999, Krausman et al. 2004), which can complicate gathering and interpreting dose-response data.[6] BLM should provide a balanced discussion of noise impacts in the FEIS.

- Section *4.7.2.1 Impacts from N*oise: *Limit noise to less than 10 decibels above ambient measures (20 to 24 dBA) at sunrise at the perimeter of a lek during active lek season. See previous comment.* **(DEIs, p. 4.7-4)**;

  Anadarko Comment: Anadarko recommends the values "20 to 24 dBA" in parenthesis be deleted in the FEIS as these values do not necessarily define background noise levels in the PRB, especially under windy conditions.

12. **Wildlife:** Anadarko provides the following specific comments on wildlife:

- Section *3.14.3.3 Endangered, Threatened, Proposed and Candidate Species*: *Western Prairie Fringed Orchid Water: "Water depletions upstream could cause a reduction of soil moisture, which could adversely affect the western prairie fringed orchid…..If water-related activities associated with the Project exceed 0.1 acre-foot of depletion in the Platte River Basin, then consultation with the USFWS will be mandatory.* **(DEIS, p. 3.14-14)**;

  Anadarko Comment: Anadarko has concerns that this paragraph as currently drafted is an inaccurate portrayal of available information. First, it is highly speculative and

[6] References:

- Brown, B. T., G. S. Mills, W. A. Russell, G. D. Therres, and J. J. Pottie. 1999. The influence of weapons-testing noise on bald eagle behavior. Journal of Raptor Research 33:227–232.
- Grubb, T. G., W. W. Bowerman, J. P. Giesy, and G. A. Dawson. 1992. Responses of bald eagles, Haliaeetus leuocephalus, to human activities in north-central Michigan. Canadian Field Naturalist 106:443–453.
- Krausman, P. R., L. K. Harris, C. L. Blasch, K. K. G. Koenen, and J. Francine. 2004. Effects of military opertions on behavior and hearing of endangered Sonoran pronghorn. Wildlife Monographs 157.

draws unsubstantiated conclusions that consultation is necessary. Second, it does not mention and fails to consider that the North Platte River system is highly regulated. Water use from the river and its tributaries is permitted through the State Engineer.

- Section *4.14.1.3 Impacts to Special Status Plant Species*: *Western Prairie Fringed Orchid*: *"The western prairie-fringed orchid is not found within the CCPA; however, it does occur downstream of the CCPA among riparian habitats of the North Platte River in Nebraska and potentially could be affected by water depletions upstream.* **(DEIS, P. 4.14-13-14)**.

  Anadarko Comment: Anadarko recommends revising this section significantly to represent an analysis based on available information and eliminate speculation. As the analysis of Section 4.14.1.3 is currently drafted it is highly speculative rendering it misleading and uncertain. It also fails to account for the North Platte River Consent Decree and the Platte River Recovery Implementation Program (2006) and other regulatory mechanisms (permitting by the State Engineer) that are in place to protect endangered species in and near the North Platte River.

- Section *4.18.2.2 Impacts on Migratory Bird Species from Alternative B- Proposed Action. "If exceptions are granted to timing limitation stipulations for raptor nests, it potentially would disrupt breeding activities and success for species that inhabit the CCPA and increase the likelihood of a take occurring from oil and gas activities."* **(DEIS, p. 4.18-28)**;

  Anadarko Comment: Anadarko recommends the FEIS state in this section that the Converse County landscape is one where raptors are already accustomed to a certain level of disturbance. Proposed activities are unlikely to increase the likelihood of a "take" especially in light of applicant-committed measures, such as those outlined in the MBCP, as well as the recent solicitor's opinion, which provides for a narrow interpretation of the term "take." As noted on the USFWS Wyoming Ecological Services Field office website, "Buffer recommendations may be modified on a site-specific or project-specific basis based on field observations and local conditions. The sensitivity of raptors to disturbance may depend on local topography, density of vegetation, and intensity of activities. Additionally, individual birds may be habituated to varying levels of disturbance and human-induced impacts. Modification of protective buffer recommendations may be considered where biologically supported and developed in coordination with the Service's Wyoming Ecological Services Field Office."[7]

- Section *4.18.2.3 Mitigation and Mitigation Effectiveness - Alternative B Table 4.18-16 - Raptor Seasonal and Spatial Buffer Stipulations*:

[7] https://www.fws.gov/wyominges/Species/Raptors.php

Anadarko Comment: Anadarko recommends the FEIS highlight that these stipulations are *general guidelines*, not prescriptive regulatory requirements, and are not required at all times. Failure to present these stipulations with such context in the FEIS will limit flexibility and fact-specific determinations of appropriate action. Given the significant existing development activities within the PRB over the last several decades, it is a safe assumption that raptors, as well as many other species, have become accustom to the infrastructure and machinery utilized in an oil and gas development program. In a 1993 helicopter overflight study involving red-tailed hawks (Buteo jamaicensis), Anderson et al. found that nine out of 12 birds flushed at a site with no previous experience with helicopter overflights, versus one out of 12 at a site with a history of exposure. Habituation is inferred, and presumed to reduce the impact of disturbance. Based on this study and other studies such as Knight and Temple, 1986, it can be assumed that effects resultant from infrastructure presence have likely been mitigated through past exposure and acclimation through the region encompassing oil and gas activity in the PRB. It is important to note that additional disturbances within already altered environments may be less disruptive than disturbances associated with isolated breeding pairs of raptors in unaltered habitats.[8] The FEIS should include a discussion of raptor habituation studies in its impact analyses sections.

- Section *4.18.4.2 Impacts to Aquatic Biological Resources from Alternative B-Proposed Action, Water Quantity Changes and Effects on Habitat and Species*: *"New groundwater withdrawals in this area could result in flow reductions in the North Platte River and some of its tributaries, which could reduce the amount of available habitat for aquatic species."* **(DEIS, p. 4.18-89)**;

  Anadarko Comment: Anadarko recommends revising this section significantly to represent an analysis based on available information and eliminate speculation. As the analysis of Section 4.18.4.2 is currently drafted it is highly speculative and fails to account for the North Platte River Consent Decree and the Platte River Recovery Implementation Program (2006) and other regulatory mechanisms (permitting by the State Engineer) that are in place to protect aquatic species in and near the North Platte River.

- Section *4.18.5.2 Impacts on Special Status Aquatic Species from Alternative B - Proposed Action: Federally Listed Species: "New groundwater withdrawals in this area could result in flow reductions in the North Platte River and some of its*

[8] References:

- Andersen D. E., O. J. Rongstad, and W. R. Mytton 1993. Response of nesting red-tailed hawks to helicopter overflights. Condor 91(2): 296–299.
- Knight. R. L. And S.A. Temple. 1995. Wildlife and Recreationists: Coexistence Through Management. In Wildlife and Recreationists: Coexistence Through Research and Management. R.L. Knight and K.J. Gutzwiller, Eds. Island Press. California. 372 pp.

tributaries. Any new depletions in the North Platte River subbasin in Wyoming would contribute to flow reductions in the Platte River in Nebraska, and result in adverse effects on federally listed species including one fish species, pallid sturgeon." **(DEIS, p. 4-18.94)**;

Anadarko Comment: Presenting an inaccurate portrayal of available information, this section suggests water usage by the project will result in *new* depletions within the North Platte River subbasin and does not adequately acknowledge that the Proposed Action includes the buying or leasing of existing water rights. The Proposed Action does not suggest new depletions within the North Platte River subbasin. This section needs to be revised to more accurately reflect how water from the river would be derived, as in its current form it is highly misleading and high speculative.

13. **Observations on the Economic Benefits of the Project to the State of Wyoming:** The Proposed Action creates significant economic benefit to the citizens and State of Wyoming including:

    - $5.1 to $7.9 billion in Severance Tax revenues to the State of Wyoming with an estimated $2.1 to $3.3 billion going to the permanent Wyoming Mineral Trust Fund and $1.0 to $1.5 billion going to the state's General Fund. (**DEIS, p 4.11-36**);

    - $8.3 to $12.8 billion in Federal Mineral royalties of which 49 percent is allocated to the State of Wyoming and of which $1.36 to $2.09 billion would be distributed to the Wyoming School Foundation (**DEIS, p. 4.11-37**);

    - $4.59 to $7.07 billion in Ad Valorem Tax revenues allocated to Converse County, Converse County School Districts, and the Wyoming School Foundation (**DEIS, p. 4.11-38**);

    - $0.76 to $1.37 billion in Sales and Use Tax revenues allocated to state, county and municipal governments (**DEIS, p. 4.11-39**);

    - $19.9 to $30.8 billion total taxes and royalty revenues from the project for public-sector and private royalty owners (**DEIS, p. 4.11-40**); and

14. **Observations of the Size and Timing of DEIS:** As a general comment, Anadarko seeks process improvement in NEPA reviews as it relates to both timing and costs. The completion of this DEIS has taken nearly 45 months. BLM processes to complete energy-related EIS documents take far too long and are too costly. Consistent with recent Secretarial Orders, BLM needs to improve internal processes in completing its statutory obligations under NEPA. To be consistent with this order, BLM should commit to completing the FEIS and ROD by the end of 2018. In the future BLM should make the following process changes to more expeditiously complete NEPA requirements:

    - Establish, maintain, and update a project schedule quarterly on all NEPA projects; and

- Require cost sharing from agency cooperators who without regard to time or cost add additional alternatives, modeling scenarios, or elements to be analyzed in large-scale energy development projects subject to NEPA reviews and analyses.

Thank you for the opportunity to provide comment on the DEIS. We look forward to an expeditious review of comments and completion of the FEIS and ROD. Anadarko reserves its rights to seek further clarification, protect its interests, and to raise any legal objections to provisions in the FEIS or ROD, including but not limited to those presented in this letter, as may be appropriate and permitted by law.

As a long-standing partner with the federal government through the federal leasing program – jointly focused on meeting the energy needs of our nation - it is imperative that we define the business constraints and uncertainties associated with energy development in federal sage-steppe habitats. The DEIS as currently written does not accurately reflect policy changes that have taken place over the last 18 months that reduce or clarify business uncertainties. We are hopeful that BLM will make serious efforts to reflect new Department of the Interior ("DOI") policies as they relate to sage grouse, the MBTA, the NHPA, the NEPA, and private property rights. Please do not hesitate to contact us if you require clarification on our comments.

Best regards,

ANADARKO PETROLEUM CORPORATION

David Applegate
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