

DECISION RECORD
Anadarko Petroleum Corporation, Table Mountain Deep (TMD) Plan of Development (POD)
Environmental Assessment (EA), WY-070-EA14-193
Bureau of Land Management, Buffalo Field Office, Wyoming

DECISION: The BLM approves applications for permit to drill (APDs) from Anadarko Petroleum Corporation (APC) to drill, complete, and equip 10 horizontal oil and gas wells from 5 pads, each with supporting infrastructure (roads, storage, etc.), as described in the EA, WY-070-EA14-193, which BLM incorporates here by reference.

Compliance. This decision complies with:

- Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701); DOI Order 3310.
- National Environmental Policy Act of 1969 (NEPA) (42 USC 4321).
- National Historic Preservation Act of 1966 (16 USC 470).
- Endangered Species Act of 1974 (16 USC 1531).
- Buffalo and Powder River Basin Final Environmental Impact Statement (FEIS), 1985, 2003 (2011).
- Buffalo Resource Management Plan (RMP) 1985, Amendments 2001, 2003, 2011.

Consultation. This decision considered:

- BLM Washington Office Instruction Memorandum (IM)-2009-078, Processing Oil and Gas Application for Permit to Drill for Directional Drilling into Federal Mineral Estate from Multiple-Well Pads on Non-Federal Surface and Mineral Locations, 2009.
- Wyoming BLM State Director Review, (SDR) No. WY-2011-010, EOG Resources, Inc. v. Pinedale Field Office, 2011.
- WY BLM IM-2012-019, Greater Sage-Grouse Habitat Management Policy on Wyoming Bureau of Land Management (BLM) Administered Public Lands Including the Federal Mineral Estate.
- WY Game and Fish Department (WGFD) letter of general support, June 13, 2013
- WO IM 2013-142, Interim Policy, *Draft - Regional Mitigation Manual Section – 1794, AR.*

Approvals. BLM approves 10 horizontal oil/natural gas APDs on 5 pads and associated infrastructure:

Table 1. BLM Approved 10 APDs for Table Mountain Deep (TMD) Table Mountain Federal Unit (TMFU) (Left Column administrative numbering is consistent with the EA, decision record (DR), conditions of approval (COAs) & recommended mitigation measures (RMMs). Constructed pads and drilled wells are in **bold**.)

#	Pad	Well Name & #	Sec	Twp	Rng	Lease (SHL)	Lease (BHL)
8		TMD TMFU 10-12SH-H				WYW0275186	WYW89853
9	D	TMD TMFU 15-14SH-H	10	45N	77W	WYW0275186	WYW089854
10		TMD TMFU 15-44SH-H				WYW0275186	WYW0275187
11	E	TMD TMFU 14-11SH-H	14	45N	77W	WYW125418	WYW0275187
12	F	TMD TMFU 16-42SH-H	9	45N	77W	FEE	WYW0275186
13	G	TMD TMFU 22-41SH-H	27	45N	77W	WYW0275199	WYW0275187
14		TMD TMFU 27-44SH-H				WYW0275199	WYW0275199
15	H	TMD TMFU 24-13SH-H	25	45N	77W	WYW0275188	WYW0275188
16		TMD TMFU 26-41SH-H				WYW0275188	WYW0275188
17		TMD TMFU 36-44SH-H				WYW0275188	WYW0275188

A summary of the details of the approval follows:

- APC proposed horizontally drilling 17 conventional wells from 8 pads. BLM approved 10 and deferred decisions on 7 APDs, in a consolidated categorical exclusion 3, (CX3) on August 15, 2013.

- After August 15, 2013, APC constructed 3 pads and spudded 7 of the 10 approved wells.
- After August 15, 2013, APC completed treatment of invasive weed species in Greater Sage-Grouse (GSG) Priority Habitat as mitigation for impacts described in the consolidated CX 3 and in the EA.
- BLM set aside and remanded the decision on February 20, 2014 via SDR 2014-006.
- BLM completed the WY-070-EA14-193 EA analysis, above, which includes the project description, including site-specific mitigation measures which BLM incorporated from earlier analysis.
- The proposed and existing wells are 38 miles southeast of Gillette, Johnson County, WY. For a breakdown of the TMD POD disturbance calculations refer to the TMD EA's APDs (AR).

Limitations. BFO defers decision on the following 7 APDs on 3 pads, below in Table 2, and their appurtenant infrastructure – as the proponent has not provided BLM with a certification that a surface access agreement (SAA) with a landowner or proof of posting bond. BLM should be able to make a decision on each of the deferred APDs upon written receipt certification of an SAA or posting of bond.

Table 2. Deferred 7 APDs for Table Mountain Deep (TMD) Table Mountain Federal Unit (TMFU) (Left column administrative numbering is consistent with the EA, decision record (DR), conditions of approval (COAs) and recommended mitigation measures (RMMs).)

#	Pad	Well Name & #	Sec	Twp	Rng	Lease (SHL)	Lease (BHL)
1	A	TMD TMFU 31-13SH-H	7	44N	76W	WYW41486	WYW101449
2		TMD TMFU 7-14SH-H				WYW41486	WYW106324
3		TMD TMFU 7-44SH-H				WYW41486	WYW112963
4	B	TMD TMFU 13-22SH-H	11	44N	77W	WYW128630	WYW64500
5		TMD TMFU 2-32SH-H				WYW128630	WYW52285
6	C	TMD TMFU 11-32SH-H	2	44N	77W	WYW0311396A	WYW64500
7		TMD TMFU 34-31SH-H				WYW0311396A	WYW82934

THE FINDING OF NO SIGNIFICANT IMPACT (FONSI). Analysis of Alternative B of the EA, WY-070-EA14-193, and the FONSI (both incorporated here by reference) found APC's proposal, including the existing wells and infrastructure, will have no significant impacts on the human environment, beyond those described in the PRB FEIS. There is no requirement for an EIS.

COMMENT OR NEW INFORMATION SUMMARY. Since receipt of these APDs BFO received clarified policies on reducing wildlife mortality, BLM Instruction Memorandum (IM) 2013-033, APD processing, BLM IM 2013-104, and State Director Review 2014-006.

DECISION RATIONALE. The approval of this project is because:

1. Mitigation measures and conditions of approval (COAs), analyzed in the EA, will reduce environmental impacts while meeting the BLM's need. Selective or non-application of recommended mitigation measures (RMMs) on Pad F will have minimal resource impacts.
2. BLM defers decision on the 7 APDs on 3 pads, in Table 2, and their appurtenant infrastructure, because the proponent has not provided BLM with a certification that it has a surface access agreement (SAA) with a relevant landowner or posted a bond; see Onshore Oil and Gas Order #1, III.E, and VI. The date of the APDs' deferrals is the date of this decision.
3. BLM analyzed and accepts the NEPA analysis for the Irigaray & Christensen Ranch ISR (hereinafter, Willow Creek) from the Nuclear Regulatory Commission (NRC), 2011, NRC Docket 40-8502, as these APDs overlap and are adjacent to the Willow Creek analysis area.
4. The approved project, conditioned by its design features and COAs, will not result in any undue or unnecessary environmental degradation. The impact of this development cumulatively contributes to the potential for local extirpation of Greater Sage-Grouse (GSG) yet its effect is acceptable because it

- is outside priority habitats, is within the parameters of the PRB FEIS/ROD and current BLM and Wyoming GSG conservation strategies, and incorporates measures to improve GSG priority habitat.
5. Exceptions to GSG timing restrictions, where applied, were approved with a condition that APC will treat cheat grass infestation in GSG priority habitat. See the EA's Appendix D.
 - a. The exception pad locations are not in BLM designated priority habitats for GSG. The mitigation area is in the Buffalo GSG Core Population Area, and is considered priority habitat.
 - b. The approved exception for GSG seasonal timing restrictions is a pilot effort implemented from March 15 to June 30, 2014, and will aid develop in the development of a regional mitigation approach that restores and/or enhances GSG priority (core) habitat.
 - c. BLM approved invasive species treatments for cheat grass and leafy spurge in GSG priority connectivity habitat of about 1,250 acres in areas of Sections 4, 5, 9, and 10 of T53N, R78W conditioned on APC's approved pesticide use proposal (PUP). The treatments are complete.
 - d. The offsite mitigation in this proposal, in priority GSG habitat, was designed in coordination with habitat biologists for the WGF.
 6. BLM granted single nesting season raptor exceptions for the 2014 nesting season for those raptors that are not of conservation concern and only if the surface disturbing activity on the well location will be continuous during the nesting season. Nesting may be precluded by drilling and completion; however, precluding nesting is not a violation of the Migratory Bird Treaty Act.
 7. Approval of this project conforms to the terms and the conditions of the 1985 Buffalo RMP (BLM 1985) and subsequent update (BLM 2001) and amendments (BLM 2003, 2011).
 8. The selected alternative will help meet the nation's energy need, revenues, and stimulate local economies by maintaining workforces.
 9. The operator, in their APDs, shall:
 - a. Comply with all applicable federal, state, and local laws and regulations.
 - b. Offer water well agreements to the owners of record for permitted water wells within 0.5 mile of a federal producing well in the POD (PRB FEIS ROD, p. 7).
 - c. Provide water analysis from a designated reference well in each coal zone. The project is clearly lacking in wilderness characteristics as it is amidst mineral development.
 10. This decision does not foreclose the lessee or operator to propose a new or supplementary plan for developing the federal oil and gas leases in this project area, including submission of additional APDs to drain minerals in accord with lease rights and law. This decision does not foreclose the lessee or operator to propose using external pumping units via a sundry application process.
 11. Anadarko certified there is a surface access agreement with the landowners for the 10 approved APDs in Table 1, above. The 10 APDs in Table 1, above, have an approval date of August 15, 2013.
 12. This approval is subject to adherence with all of the operating plans, design features, and mitigation measures contained in the master surface use plan of operations, drilling plan, water management plan, and information in the individual APDs.

ADMINISTRATIVE APPEAL: This decision is subject to administrative appeal in accord with 43 CFR 3165. Request for administrative appeal must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, no later than 20 business days after this Decision Record is received or considered to have been received. Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Field Manager: _____

Date: _____

3/5/14

FINDING OF NO SIGNIFICANT IMPACT
Anadarko Petroleum Corporation, Table Mountain Deep Plan of Development (POD)
Environmental Assessment (EA), WY-070-EA14-193
Bureau of Land Management, Buffalo Field Office, Wyoming

FINDING OF NO SIGNIFICANT IMPACT (FONSI). Based on the information in the EA, WY-070-EA14-193, which BLM incorporates here by reference; I find that: (1) the implementation of Alternative B will not have significant environmental impacts beyond those addressed in the Buffalo Final Environmental Impact Statement (FEIS) 1985, and the Powder River Basin (PRB) FEIS, 2003, 2011; (2) Alternative B conforms to the Buffalo Field Office (BFO) Resource Management Plan (RMP) (1985, 2001, 2003, 2011); and (3) Alternative B does not constitute a major federal action having a significant effect on the human environment. Thus an EIS is not required. I base this finding on consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), with regard to the context and to the intensity of the impacts described in the EA, and Interior Department Order 3310.

CONTEXT. Mineral development is a common PRB land use, sourcing over 42% of the nation's coal. The PRB FEIS foreseeable development analyzed the development of 54,200 wells. The additional development analyzed in Alternative B is insignificant in the national, regional, and local context.

INTENSITY. The implementation of Alternative B will result in beneficial effects in the forms of energy and revenue production however; there will also be adverse effects to the environment. Design features and mitigation measures included in Alternative B will minimize adverse environmental effects. The preferred alternative does not pose a significant risk to public health and safety. The geographic area of project does not contain unique characteristics identified in the 1985 RMP, PRB FEIS, or other legislative or regulatory processes. BLM used relevant scientific literature and professional expertise in preparing the EA. The scientific community is reasonably consistent with their conclusions on environmental effects relative to oil and gas development. Research findings on the nature of the environmental effects are not highly controversial, highly uncertain, or involve unique or unknown risks. The PRB FEIS predicted and analyzed oil development of the nature proposed with this project and similar projects. The selected alternative does not establish a precedent for future actions with significant effects. The proposal may relate to the PRB Greater Sage-Grouse and its habitat decline having cumulative significant impacts; yet the small size of this project is within the parameters of the impacts in the PRB FEIS. There are no cultural or historical resources present that will be adversely affected by the selected alternative. The project area is clearly lacking in wilderness characteristics because it lacks federally owned surface. No species listed under the Endangered Species Act or their designated critical habitat will be adversely affected. The selected alternative will not have any anticipated effects that would threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment.

ADMINISTRATIVE REVIEW AND APPEAL. This finding is subject to administrative review according to 43 CFR 3165. Request for administrative review of this finding must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, no later than 20 business days after this FONSI is received or considered to have been received. Parties adversely affected by the State Director's finding may appeal that finding to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Field Manager: 

Date: 3/5/14

ENVIRONMENTAL ASSESSMENT (EA), WY-070-EA14-193
Anadarko E&P Onshore, L.L.C., Table Mountain Deep Plan of Development (POD)
Bureau of Land Management, Buffalo Field Office, Wyoming

1. INTRODUCTION

Anadarko Petroleum Corporation (APC) proposes applications for permit to drill (APDs) 17 horizontal oil and gas wells located on 8 well pads with supporting infrastructure (roads, storage, etc.), in the Table Mountain (Federal) Unit, WYW125236X (TMFU); refer to the Table Mountain Deep (TMD) well list in Table 1.1, below. The proposed wells are 38 miles southeast of Gillette, Johnson County, WY (see, Table 1.1. The TMD POD area is about 120.64 acres, targets the Shannon Formation from 9309 to 9790 vertical feet deep. The surface owners are Larry Brubaker and John O. Christensen.

The proposal would be subject to conditions of approval (COAs) for drilling of a well on private surface land over and draining federal minerals in the Buffalo Field Office (BFO) jurisdiction (split estate); with the exception of the TMD TMFU 16-42SH-H well which the surface hole location (SHL) sits over fee surface and fee minerals with the bottom hole location being in federal minerals – resulting in reduced BLM jurisdiction; see BLM Instruction Memorandum (IM) 2009-078. For more detail on project area access, design features, and construction practices of the proposed action, refer to the master surface use plan (MSUP) in the POD’s administrative record (AR). APC wrote and BLM reviewed the plan to minimize environmental impacts to both surface and subsurface resources. Also see the AR for maps showing the proposed access road, existing roads, well locations, and supporting infrastructure.

Table 1. Proposed 17 Wells on 8 Pads: Table Mountain Deep (TMD) Table Mountain Federal Unit (TMFU) (Left column administrative numbering is consistent with the EA, decision record (DR), conditions of approval (COAs) & recommended mitigation measures (RMMs). Constructed pads and drilled wells are in **bold**.)

#	Pad ID & Name	Well Name & #	Sec	Twp	Rng	Lease (SHL)	Lease (BHL)
1	A	TMD TMFU 31-13SH-H	7	44N	76W	WYW41486	WYW101449
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5		TMD TMFU 2-32SH-H				WYW128630	WYW52285
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9		TMD TMFU 15-14SH-H				WYW0275186	WYW089854
10		TMD TMFU 15-44SH-H				WYW0275186	WYW0275187
11	E	TMD TMFU 14-11SH-H	14	45N	77W	WYW125418	WYW0275187
12	F	TMD TMFU 16-42SH-H	9	45N	77W	FEE	WYW0275186
13	G	TMD TMFU 22-41SH-H	27	45N	77W	WYW0275199	WYW0275187
14		TMD TMFU 27-44SH-H				WYW0275199	WYW0275199
15	H	TMD TMFU 24-13SH-H	25	45N	77W	WYW0275188	WYW0275188
16		TMD TMFU 26-41SH-H				WYW0275188	WYW0275188
17		TMD TMFU 36-44SH-H				WYW0275188	WYW0275188

1.1. Background

BLM approved 10 and deferred decisions on 7 APDs, all incorporated here by reference, in a consolidated categorical exclusion 3, (CX3), WY-070-390CX3-13-201 to -217, on August 15, 2013, incorporated here by reference. APC spudded 7 of the 10 approved wells. BLM then set aside and remanded the decision on February 20, 2014 via state director review, SDR 2014-006, incorporated here by reference.

1.2. Need for the Proposed Project

The BLM's need for this project is to meet the management objectives of the Buffalo Resource Management Plan (RMP), 1985, 2001, 2003, and 2011 (to which this EA tiers). BLM must determine how and under what conditions to balance natural resource conservation with allowing APC to exercise lease rights to develop fluid minerals, as described in their APDs associated plans. Conditional fluid mineral development supports the RMP, the Mineral Leasing Act of 1920, the Federal Land Policy Management Act (FLPMA), and other laws and regulations.

1.3. Decision to be Made

The BLM will decide whether or not to approve the proposed development, and if so, under what terms and conditions agreeing with the Bureau's multiple use mandate, environmental protection, and RMP.

1.4. Scoping and Issues

BLM posted the proposed APDs for 30 days and will timely publish the EA, any finding, and decision on the BFO website. This project is similar in scope to other fluid mineral development the BFO analyzed. External scoping is unlikely to identify new issues, as verified with recent fluid mineral EAs that BLM externally scoped. External scoping of the horizontal drilling in Crazy Cat East EA, WY-070-EA13-028, 2013, in the PRB area received 3 comments, revealing no new issues. The BFO interdisciplinary team conducted internal scoping by reviewing the proposal, its location, and a resource (issue) list (see, AR), to identify potentially significantly affected resources, land uses, resource issues, regulations, and site-specific circumstances not addressed in tiered or incorporated analyses. This EA will not discuss resources and land uses that are not present, unlikely to receive significant or material affects, or that the PRB FEIS or other analyses adequately addressed. The extensive development in the area was material to this scoping; see Section 3, below.

2. PROPOSED PROJECT AND ALTERNATIVES

2.1. Alternative A – No Action

The no action alternative would deny these APDs requiring the operator to resubmit APDs that comply with statutes and the reasonable measures in the PRB RMP Record of Decision (ROD) in order to lawfully exercise conditional lease rights. The no action alternative would also include 3 constructed pads, 7 drilled wells and associated infrastructure that are contained in the Proposed Action. See the introduction to Section 3, under "Site specific elements of the general affected environment".

The PRB FEIS considered a no action alternative, pp. 2-54 to 2-62. The BLM keeps the no action alternative current using the aggregated effects analysis approach – incorporating by reference the analyses and developments approved by the subsequent NEPA analyses for overlapping and intermingled developments to the proposal area. See, Table 3.1.

2.2. Alternative B Proposed Action (Proposal)

Overview. APC requests BLM's approval for 17 APDs from 8 pads and supporting infrastructure; see Table 1.1. The wells will be drilled from a non-federal surface into underlying federal or fee minerals on lease numbers listed in Table 1.1. The proposals are to explore for, and possibly develop oil and gas reserves in the Shannon Formation at depths found in the AR; see Tables 2.1 and 2.2. [BLM repeats the summarized proposal and project description here for reader convenience.] Refer to Table 2-5, Crazy Cat East EA, WY-070-EA13-028, for Approximate Timing of Construction/Drilling/Completion Activities.

Storage Areas. Fresh water and reserve mud for drilling operations will be stored in aboveground steel tanks on the well pads. Drill cuttings will be stored in a lined cuttings collection area during drilling, then subsequently either buried in place in the cuttings collection area or transferred to a cuttings remediation area (trench) that would be dug (in cut) along the pad edge. Cuttings collection and remediation areas are

shown on the well pad layouts. Completions operations will use multiple steel tanks, or a large capacity water tank in conjunction with smaller steel tanks, for water storage. A working pit will be constructed for wells where a pre-set rig will be used to set surface casing (prior to the drill rig coming on location). Working pits are about 16 x 30 x 12 feet wide, long, and deep, and maintain at least 2 feet of freeboard. The working pit would be lined with 12 mil liner (minimum), used only for cuttings generated during the setting of conductor and/or surface casing, and backfilled before the drill rig comes on location.

Pad Size. Size ranges for the 8 pads in the TMD POD are as follows, but refer to the well pad layouts and their attached Surface Use Data Summary (SUDS) form for additional details; AR. See, Table 2.1, below.

- Total Pad Disturbance Area: 9.80 to 12.54 acres
- Well Pad (Working Room) Area: 8.22 to 10.63 acres
- Interim Reclamation Area: 3.30 to 4.58 acres (30 to 38% of total pad disturbance area)

Pad size is driven by several factors, including topography, number of wells on a pad, spacing between wells, space requirements for drill rig laydown, efforts to balance cut and fill at the location, and the need to accommodate completions equipment. On multi-well pads, wells are typically spaced 100 feet apart to provide enough room for simultaneous operations (drilling, completions, and/or production), although wells are spaced 30 feet apart where back-to-back drilling is planned. Current drilling plans (subject to change) for the 6 multi-well pads are: Pads A, D, and H, TMFU #s 4476-7-11, 4577-10-44, and 4577-25-34: Two wells back-to-back (30 feet), third well-spaced at 100 feet; and Pads B, C, and G, TMFU #s 4477-11-41, 4477-2-11, and 4577-27-31: Two wells back-to-back (30 feet)

Table 2.1. Construction Disturbance/ Interim Disturbance Associated with TMD POD:

Facility	Construction Disturbance (Short Term)	Interim Disturbance (Long Term)
Number of Horizontal Wells	17	17
Engineered Pads	8 (88.26)	8 (30.83 acres)
Engineered Roads	1.40 miles (8.47 acres)	1.40 miles (3.73 acres)
Template Roads	1.36 miles (7.40 acres)	1.36 miles (3.62 acres)
Power Drops	8 (0.17 acres)	8 (0.17 acres)
Overhead Power	11.87 acres	11.87 acres
Buried Power	4.35 acres	4.35 acres
Total Acre Disturbance	120.64 Acres	54.69 Acres

Pad construction will not begin using frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur. Approximately one-half of APC’s horizontal well pads consist of fill, due to efforts to balance cut and fill quantities for construction and reclamation. APC places the drilling rig’s substructure on cut and wells are located no closer than 20 feet to the cut/fill line for this reason (refer to well pad layouts). APC prefers to place large capacity water tanks on leveled cut for safety reasons. The large capacity water tank, used for well completion, may range from 18,000 to 44,000 bbl in capacity and up to 160 feet in diameter (varies by vendor). APC also prefers to place tank batteries and other permanent production facilities on leveled cut for safety reasons, and also to provide more opportunity for interim pad reclamation. Adequate compaction for structural stability would be achieved if the drilling rig, large capacity water tanks, or production facilities will be placed on fill.

Multi-stage horizontal completions are the primary driver for pad size, to allow safe working space for the amount of equipment and materials needed for completions activities. The following completions summary and the Crazy Cat East EA, WY-070-EA13-028, pp. 4-13, provide more details:

- Two options may be used for water storage on the well pad. Approximately 120 to 170 hydraulic fracturing (HF) tanks (500 bbl each) may be used (see, Figure 2-4, Crazy Cat East Environmental

Assessment (EA), WY-070-EA13-028), although APC prefers to use a large capacity water tank for completions. The large water tank (18,000 to 44,000 bbl) would be used with approximately thirty (30) 500-bbl HF tanks. The HF tanks and large capacity water tank are typically spotted and filled up to 2 weeks prior to completions. APC typically spots all completions water prior to beginning stimulation operations. During winter, HF water may be heated using indirect-fired propane.

- Permanent production facilities are typically placed on the well pad prior to beginning completions operations. These facilities include the tank battery, heater treater/separator, emissions control devices, and flare. Typical completions equipment and facilities include pump trucks, chemical mixing equipment, flowback equipment and tanks, sand storage silos and conveyor belts, coiled tubing equipment, hot water heaters, hydraulic fracturing data van, lights, and temporary living facilities.
- Completions equipment is usually spotted 2 to 3 days prior to pumping.
- During pumping, sand is periodically hauled to the well pad in semi-trucks and loaded into the sand storage silos. A safe turning radius on the well pad is needed for these trucks to operate safely.
- Completions operations usually last for 5 to 8 days, depending on the number of stages and stimulation type (packers/sleeves or plug-and-perf). Completions operations occur as 24-hour operations.
- About 22,500 to 37,500 bbls of load recovery is temporarily contained in several above ground 500-bbl open-top and closed-top tanks. Load recovery will be hauled to a WY-permitted disposal facility.
- Upon conclusion of pumping, the pump trucks and chemical mixing equipment are rigged down and moved off location, and the coiled tubing is rigged up.
- Well pads reach maximum capacity during completions operations, typically 3 to 10 days including staging and stimulation. The duration depends on the number of stages, stimulation type, and delays.

APC will take preventative measures to prevent injury or death to migratory birds, livestock, and wildlife; see the MSUP, AR. Temporary housing units are planned for support personnel due to 24-hour drilling, completions, and flowback testing operations. Temporary housing would be placed on the well pads and will typically consist of 4 to 6 living/office trailers. No permanent living facilities are planned. Electric power for the TMD POD will be served by Powder River Energy Corporation or APC substations, as determined by the respective utility. See the APDs for the electric power plan, AR.

Production Facilities. For wells successfully completed for production, the production facilities will typically consist of the following equipment on the pad (quantities and dimensions may vary):

7 x 400-bbl tanks per well (oil and water) (12 × 20 feet)	Horizontal or vertical heater treater (6 × 20 feet)
Vertical two-phase inlet separator (30 inches × 10 feet)	Vertical outlet separator (30 inches × 6 feet)
Flare stack to temporarily burn produced gas (25 feet tall)	Electric or gas-driven recycle pump

For spill containment, steel berms will be installed around the oil/water tanks and the heater treater and separators. Production facilities are spaced 150 feet minimum from wellheads due to APC safety protocol. Refer to the surface water containment or Interim Reclamation Layouts in the APDs, see the AR, or for production facility locations, and to the Crazy Cat EA, WY-070-EA13-028, pp. 13-14.

Artificial Lift. Artificial lift options used by APC for horizontal wells in the Powder River Basin (PRB) include rod pump, jet pump, electric submersible pump, gas lift, and plunger lift. A pumping unit would be installed at some time during the life of a well, and intermediate lift is sometimes required between flow back and the permanent lift method. APC currently plans to install pumping units for the wells in the TMD POD, if these wells produce similar to APC’s other Shannon wells. Pumping units require 75 hp, with surface dimensions approximately 9 feet wide × 50 feet long × 36 feet tall.

Hydrocarbon Management. Hydrocarbon liquids will be transferred from the on-site oil storage tanks to trucks, and then hauled off-site. Gas is typically flared; however, if gas volumes are greater than expected, gathering lines would be evaluated at that time. If a well is completed as a gas producer, a buried 3 to 6

inch high density polyethylene (HDPE) gas gathering pipeline of at least 125 psi rating will be installed from the well to transport natural gas from the well to a gas gathering trunk line and on to a compressor facility. Gas gathering trunk lines typically consist of 6 to 24 inch HDPE buried lines of at least 125 psi rating. Wherever possible, gas pipelines will be coridored within the road disturbance.

Table 2.2. Proposed Produced Water Pipeline Lengths

		Pipeline Origination Point		Pipeline Length (feet, approx.)
Pad ID & Name	Well Name: TMD TMFU:			
A	TMFU 4476-7-11	4476-7-14SH-H, 4476-7-44SH-H, 4576-31-13SH-H		3,110
B	TMFU 4477-11-41	4477-2-32SH-H, 4477-13-22SH-H		3,880
C	TMFU 4477-2-11	4477-11-32SH-H, 4577-34-31SH-H		4,100
D	TMFU 4577-10-44	4577-10-12SH-H, 4577-15-44SH-H, 4577-15-14SH-H		5,330
E	TMFU 4577-14-24	4577-14-11SH-H		4,560
F	TMFU 4577-9-31	4577-16-42SH-H		8,400
G	TMFU 4577-27-31	4577-22-41SH-H, 4577-27-44SH-H		2,340
H	TMFU 4577-25-34	4577-24-13SH-H, 4577-26-41SH-H, 4577-36-44SH-H		8,350

Note: The TMFU 4577-10-44 and TMFU 4577-9-31 pads share 3,500 feet of proposed right-of-way. This distance is only included in the total for the TMFU 4577-10-44 pad.

Future Pipeline Plans. Refer to the CX3, WY-070-390CX3-13-201 and the AR. These require separate future analysis when APC finalizes any proposals.

Plan of Operations.

The proposal conforms to all Bureau standards and incorporates appropriate best management practices, required and designed mitigation measures determined to reduce the effects on the environment. BLM reviewed and approved a surface use plan of operations describing all proposed surface-disturbing activities pursuant to Section 17 of the Mineral Leasing Act, as amended. This analysis also incorporates and analyzes the implementation of committed mitigation measures in the SUP, drilling plan, and the standard conditions of approval (COAs) found in the PRB FEIS ROD, Appendix A.

Reasonably Foreseeable Activity.

The RFA in the project analysis area consists of 33 proposed notices of staking (NOSs) and APDs. The project analysis area is the area within 5 miles of these proposed wells. Potential APD submittals or reasonably foreseeable activity included in this analysis could consist of multiple wells on an existing pad or tie into existing supporting infrastructure; tank batteries, pipelines, power lines, and transportation.

2.3. Conformance to the Land Use Plan and Other Environmental Assessments

This proposal does not diverge from the goals and objectives in the Buffalo Resource Management Plan (RMP), 1985, 2001, 2003, 2011, and generally conforms to the terms and conditions of that land use plan, its amendments, supporting FEISs, 1985, 2003 (2011), and laws including the Clean Air Act, 42 USC 7401-7671q (2006), the Clean Water Act, 33 USC 1251 et seq. (1972), etc.

3. AFFECTED ENVIRONMENT

This section briefly describes the physical and regulatory environment that may be significantly affected by the alternatives in Section 2, or where changes in circumstances or regulations occurred since the approval of analyses to which this EA incorporates by reference; see Table 3.1.

The PRB FEIS considered a no action alternative (pp. 2-54 to 2-62) in evaluating a development of up to 54,200 fluid mineral wells. Nearly all of the PRB’s coalbed natural gas (CBNG) wells and over 60% of the deep oil and gas wells are hydraulically fractured; BLM and Goolsby 2012. The BLM uses the

aggregated effects analysis approach - incorporating by reference the circumstances and developments approved via the subsequent NEPA analyses for overlapping and intermingled developments coincident to this proposal area to retain currency in the no action alternative. 615 F. 3d 1122 (9th Cir. 2010). There are over 2,700 wells completed draining the Shannon Formation, including 40 in the township hosting most of TMD, Wyoming Oil and Gas Conservation Commission (WOGCC) 2014. The number of conventional wells in the Buffalo planning area is 1313, which includes 783 horizontal wells (federal, fee, and state) (as of April 2013). This represents 41% of the projected 3,200 in the 2003 PRB ROD. This agrees with the PRB FEIS which analyzed the reasonably foreseeable development rolling across the PRB of 51,000 CBNG and 3,200 natural gas and oil wells. BLM determined a minimum of 115 townships from the northern borders of Sheridan and Campbell Counties to the southern borders of Campbell and Johnson Counties are a developed field for fluid minerals because of existing federal developments. The TMD APDs are in the developed field. The State of Wyoming and BLM also approved approximately 45 wells within 5 miles of the project area that operators may develop in the near future. In addition, other operators are likely to continue seeking permits to develop unconnected leases in or in the affects analysis areas near the project area; decisions to approve or deny future proposals will occur following APD submittal. Development occurring on non-federal surface and non-federal mineral estate would continue.

Table 3.1. Overlapping NEPA Analyses Which BLM Incorporates by Reference either as similar drilling analyses or as substantially similar analyses in the semi-arid sage-brush, short grass prairie

#	POD / Project Name	NEPA Analysis	# Type / Wells	Approved Mo/Yr/Update
1	APC Table Mountain Phase 1	WY-070-CX10-1-058 etc. WY-070-06-288	50 CBNG	8/2010 9/2006
2	APC Table Mountain Phase 2 & 4	WY-070-390CX1-14-19 WY-070-10-376 WY-070-10-258	86 CBNG 52 CBNG	11/2013 9/2010 9/2010
3	WPX Culp/Hartzog Draw POD	WY-070-10-121	53 CBNG	5/2010 9/2011
4	BBC Willow Creek	WY-070-390CX1-11-276 WY-070-390CX3-10-196 WY-070-EA06-211	88 CBNG	7/2011 6/2010 9/2006
5	APC Crazy Cat East POD	WY-070-13-028	36 Oil & Gas	3/2013
6	Lance [APC] Sahara POD	WY-070-EA13-72	5 Oil & Gas	3/2013
7	Ft. Creek Habitat Project	WY-070-EA11-217	Cheat Grass	5/2011
8	Invasive Species Management	WY-070-EA09-099	Cheat Grass	10/2010 3/2012

See also: SDR WY-2013-005, particularly noting pp. 2-3, incorporating the entire SDR here by reference.

BLM incorporates by reference the Nuclear Regulatory Commission's EA, Irigaray & Christensen Ranch ISR, (aka, Willow Creek) NRC Docket # 40-8502, 2011 as it overlaps and is adjacent to this TMD POD.

BLM incorporates by reference: Ft. Creek Habitat Improvement Project, WY-070-DNA12-104, March 23, 2012.

Site specific elements of the general affected environment also include:

- APC proposed horizontally drilling 17 conventional wells from 8 pads. BLM approved 10 and deferred decisions on 7 APDs, in a consolidated categorical exclusion 3, (CX3) on August 15, 2013.
- After August 15, 2013, APC constructed 3 pads and spudded 7 of the 10 approved wells.
- After August 15, 2013, APC completed treatment of invasive weed species in Greater Sage-Grouse (GSG) Priority Habitat as mitigation for impacts described in consolidated CX 3 and in the EA.
- BLM set aside and remanded the decision on February 20, 2014 via SDR 2014-006.
- BLM completed this EA analysis, which includes the project description and site-specific mitigation measures which are incorporated through tiering or by reference into that EA from earlier analysis.

For a breakdown of the TMD POD disturbance calculations refer to the TMD EA' APDs (AR).

3.1. Air Quality

BLM incorporates by reference the updated air quality affected environment section from the nearby and upwind Crazy Cat East EA, WY-070-EA13-028, Sections 3.1 and 3.1.1.

3.2. Soils, Ecological Sites, and Vegetation

BLM incorporates by reference the soils and vegetation sections in the Willow Creek EA, WY-070-EA06-211, Section 3.2; from the Culp/Hartzog Draw EA, WY-070-10-121, Sections 3.1, 3.2 (all); Table Mountain Phase 1, 2, & 4 EAs, WY-070-06-288, WY-070-10-376, and WY-070-10-258 – Sections 3.1 (all) and 3.2 (all).

3.3. Water Resources

BLM incorporates by reference the regulatory scheme, topography and waters description from the Crazy Cat East EA, WY-070-EA13-028, Section 3.3 (all); Willow Creek EA, WY-070-EA06-211, Section 3.5 (all); from the Culp/Hartzog Draw EA, WY-070-10-121, Sections 3.3.3, and 3.5 (all); Table Mountain Phase 1, 2, & 4 EAs: WY-070-06-288 - Sections 3.3.2 and 3.5 (all); WY-070-10-376 – Section 3.3.4 and 3.4 (all); and WY-070-10-258 – Section 3.4 (all), respectively.

The Wyoming State Engineer Office (WSEO) Ground Water Rights Database listed 23 water wells in a 1-mile radius from the 17 wells in this proposal. Stock wells numbered 12 from 1 to 733 feet deep (1 was 9,537 feet deep). Domestic/stock wells numbered 3 from 406 to 760 feet deep. There are 3 miscellaneous wells from 600 to 700 feet deep. An additional 21 wells are for industrial, industrial/reservoir, or miscellaneous use from 280 to 800 feet deep. Adherence to the drilling COAs, the setting of casing at appropriate depths, following safe remedial procedures in the event of casing failure, and using proper cementing procedures should protect any fresh water aquifers above the target coal zone. The operator will run surface casing to 2,000 feet, total vertical depth to protect shallow aquifers. The top of cement for the production string will be calculated to isolate from 100 feet above to 100 feet below the Fox Hills Formation and verified by cement bond logging. This will ensure that ground water will not be adversely impacted by well drilling and completion operations.

The volume of water that will be produced in association with these federal minerals is unknown. APC will have to produce a well for a time to be able to estimate the water production. In order to comply with the Onshore Oil and Gas Order #7, Disposal of Produced Water, APC will submit a Sundry to the BLM within 90 days of first production which includes a representative water analysis as well as the proposal for water management. Historically, the quality of water produced in association with conventional oil and gas has been such that surface discharge would not be possible without treatment. Initial water production is low in most cases. There are 3 common alternatives for water management: re-injection, deep disposal, or disposal into pits. All alternatives would be protective of groundwater resources when performed in compliance with state and federal regulations.

3.4. Locatable Minerals

BLM incorporates by reference the locatable mineral section from the Sahara EA, WY-070-EA13-72, Section 3.4. Uranium One's, Irigaray & Christensen Ranch, hereinafter, Willow Creek, Uranium ISR Project, sites are in and adjacent to the TMD POD. Uranium mining exists in the TMD POD in Sections 30, 31, and 33 of T45N, R76W. Adjacent approved uranium mining exists in Sections 19, 20, 31, 32 and 33 of T45N, R76W, Section 24, 25, 34, and 35 of T45N, R77W, and Sections 3, 4, 5, 6, 7, 8, 9, 10, 16, 17, 18, 19, 20, and 21 of T44N, R76W. These areas are directly south, east, and north of this POD.

3.5. Invasive or Noxious Species

BLM incorporates by reference the invasive species sections from the Willow Creek EA, WY-070-EA06-211, Section 3.2.2; from the Culp/Hartzog Draw EA, WY-070-10-121, Section 3.2.3; Table Mountain Phase 1, 2, & 4 EAs: WY-070-06-288 - Sections 3.2.1; WY-070-10-376 – Section 3.2.2.3; and WY-070-10-258 – Section 3.2.2.3, respectively. BLM finds the cheat grass, leafy spurge, and habitat conditions in

priority connectivity habitats of about 1,250 acres in Sections 4, 5, 9, and 10 of T53N, R78W are in need of invasive plant treatments and habitat enhancement; Appendix D, pp. 6, 11-12.

3.6. Wildlife

APC's letters of July and August, 2013, in Appendix D and incorporated here by reference, request exceptions to raptor and GSG timing restrictions for pads D, G, and H, TMFU #s 4577-10-44, 4577-27-31, and 4577-25-34. The affected environment for wildlife was analyzed in, and is materially similar to that analyzed in the wildlife sections in the EAs in Table 3.1, above; thus those wildlife sections are incorporated here by reference in the appropriate sub-sections.

3.6.1. Threatened, Endangered, Candidate, Special Status (Sensitive) Species

The Buffalo BLM receives a species list periodically from the FWS for threatened, endangered, proposed, and candidate species. BLM addresses species on that list impacted by this proposal.

3.6.1.1. Greater Sage-Grouse (GSG)

Specifically note the population viability analysis and updated policies in Section 3.7.4 (all) in the Sahara EA, WY-070-EA13-72. The viability analysis identified that the effects of energy development are detectable at a larger spatial scale than analyzed in the pre-report analyses in Table 3.1, above. There are 9 GSG leks within 4 miles of the proposed TMD POD. The Christensen 3 and 7 Leks are in close proximity to proposed access roads. The Christensen 3 Lek is within 0.40 miles of the proposed Pad A, TMFU 4476-7-11. Well Pads G and H, TMFU #s 4577-27-31 and 4577-25-34 are just inside 2-miles from Irrigary, Irrigary 2, Christensen Ranch 4, and 5 Leks, respectively. Additional information on the population viability analysis and its influence on cumulative effects from energy development is found in Section 3.7.12 of the Mufasa Fed 11-31H Well EA, WY-070-EA12-062, incorporated here by reference.

3.6.2. Special Status (Sensitive) Species (SSS)

BLM incorporates by reference the updated SSS Section 3.7.5 from the Sahara EA, WY-070-EA13-72.

3.6.3. Migratory Birds

Specifically note the updated policies in Section 3.7.2.2 in the Sahara EA, WY-070-EA13-72. Nesting habitat for BLM sensitive sage-brush obligate migratory birds (AR) is at Pad D, TMFU 4477-10-44.

3.6.4. Raptors

See the Sahara EA, above, in Sections 3.7.1, 3.7.5.2, 3.7.5.3, and 3.7.5.4, for a description and analysis of impacts to raptors from this type of development. The following proposed pads had adjacent nests: D (TMFU #s 4477-10-44) (golden eagle nest), E (4577-14-24) (red-tailed hawk), C (4477-2-11) (unknown raptor), and A (4476-7-11) (great-horned owl). The red-tailed hawk and great-horned owl, BLM ID#s 4469 and 3644, respectively, are not species of conservation concern and are moderately tolerant of human activity. These species tend to return to a nesting area if disturbed during nesting for one season. Red-tailed hawk nest BLM #4469 is the only raptor nest with recent activity within 0.5 miles of Pad G, TMFU 4577-27-31. The nest is 0.33 miles from the proposed pad and is out of line of sight. Great-horned owl nest #3644, the only recently active raptor nest within 0.5 miles of Pad H, TMFU 4577-25-34, is about 300 feet from the proposed well, and in a creek bottom out of line of sight. Extensive existing uranium and a gravel pit mining exists near Pad H, TMFU 4577-25-34.

3.7. Cultural

Per Section 106 of the National Historic Preservation Act, BLM must consider impacts to historic properties (sites eligible for or listed on the National Register of Historic Places (NRHP)). For an overview of cultural resources found in the PRB, refer to the *Draft Cultural Class I Regional Overview, Buffalo Field Office* (BLM, 2010). Class III (intensive) cultural resource inventories (BFO project no. 70130004, 70130005, 70130006) were performed to locate specific historic properties which the

proposals impact. Previously accepted Class III inventories covered portions of the areas (BFO project no. 7070050181, 70060172, 70070136, 70100039). The following resources are in or near the proposals.

Site #	Site Type	NRHP Eligible	Site #	Site Type	NRHP Eligible
48JO82	Multicomponent	Not Eligible	48JO3461	Prehistoric Lithic Scatter	Not Eligible
48JO2438	Prehistoric Lithic Scatter	Not Eligible			

4. ENVIRONMENTAL EFFECTS

No Action Alternative. BLM analyzed the no action alternative as Alternative 3 in the PRB FEIS and it subsequently received augmentation of the effects analysis in this EA through the analysis of mineral projects, their approval, and construction; and through the analysis and approval of other projects. BLM incorporates by reference these analyses in this EA; see Table 3.1. This updated the no action alternative and cumulative effects. The project area has surface disturbance from existing roads, well pads, and oil and gas facilities. Under the no action alternative, on-going well field operations would continue as would the development of approved single and multi-well pads, consisting of horizontal wells with approved APDs and other approved APDs. The production and the drilling and completion of these new wells would result in noise and human presence that could affect resources in the project area; these effects could include the disruption of wildlife, the dispersal of noxious and invasive weed species, and dust effects from traffic on unpaved roads. Present fluid mineral development in the PRB is under half of that envisioned and analyzed in the PRB FEIS. There is only a remote potential for significant effects above those identified in the PRB FEIS to resource issues as a result of implementing the no action alternative.

Alternative B, Proposed Action (Proposal)

4.1. Air Quality

BLM incorporates by reference Section 4.1 (all) from the Sahara EA, WY-070-EA13-72, and Section 4.2.1 (all) from the Crazy Cat East EA, WY-070-EA-13-028, as they are materially similar to those for these proposals. BLM incorporates by reference the analysis in the August 2012 Lease Sale EA, WY-070-EA12-44, pp. 45-51 (air quality, greenhouse gas emissions, and visibility). Air quality impacts modeled in the PRB FEIS and Cumulative Air Quality Effects, 2009 concluded that PRB projected fluid and solid development would not violate state, or federal air quality standards and this project is within the development parameters.

4.2. Soils, Ecological Sites, and Vegetation

BLM incorporates by reference Section 4.2 (all) from the Sahara EA, WY-070-EA13-72, and Section 4.2.2 from the Crazy Cat East EA, WY-070-EA-13-028, as they are materially similar to those for these proposals. These incorporated EA sections analyze the historical values and settings for soils, ecological sites, and vegetation. The soil types in the Table Mountain Deep POD are materially similar to the soils analyzed in the incorporated EAs and proposal effects and mitigation are similar. The project is clearly lacking in wilderness characteristics as it is amidst mineral development. The 7 APDs hosted on Pads A, B, and C lack a surface access agreement; Onshore Oil and Gas Order #1, III.E, and VI.

4.3. Water Resources

Adherence to the drilling COAs, the setting of casing at appropriate depths, following safe remedial procedures in the event of casing failure, and using proper cementing procedures should protect fresh water aquifers above the drilling target zone. Compliance with the drilling and completion plans and Onshore Oil and Gas Orders Nos. 2 and 7 minimize an adverse impact on ground water. BLM incorporates by reference the effects to waters from the Sahara EA, WY-070-EA13-72, Section 4.3 (all), from the Crazy Cat East EA, WY-070-EA13-028, Section 4.2.3 (all), and the surface water effects from Table Mountain 2 EA, WY-070-10-376, Section 4.2.4.2 (all). APC will dispose produced water via one or more of the 3 means addressed in Section 3.3, above – after state approvals. Produced water from the TMD POD tank batteries will be trucked to the disposal sites. Produced water to be disposed in the Culp

Draw or Table Mountain Unit injection systems would be temporarily stored in tanks at the facilities, then conveyed via existing pipelines to permitted injection wells; see the AR.

4.4. Locatable Minerals

Operators from locatable and fluid industries must proactively preclude conflicts by informing others about their status and design plans for pipelines, power, or roads, so they optimize their project without impeding the others' project, or create redundant surface disturbances, and thus precluding top-down federal or state solutions. BLM incorporates by reference here Section 4.2.4 of the Crazy Cat East EA.

4.5. Invasive Species

BLM incorporates by reference Section 4.5 (all) from the Sahara EA, WY-070-EA13-72 for materially similar effects of similar projects. APC cheat grass treatments improved similar habitats. BLM expects APC will submit a pesticide use proposal similar to PUP 070-11-046; see Appendix D, pp. 6, 11-12.

4.6. Wildlife

Alternative B – the Proposal: The impacts associated with Alternative B are discussed below. BLM found that the proposed APDs, combined with the COAs (and design features), are: (1) consistent with the FEIS and its supplements, the RMP and the above tiered EAs; and (2) consistent with the programmatic biological opinion (ES-6-WY-02-F006) - an update from the PRB FEIS, Appendix K. The proposed wells and infrastructure are a result of APC and the BLM reducing impacts to Greater Sage-Grouse (GSG). The environmental effects for wildlife are discussed in, and anticipated to be similar to the EAs BLM incorporated by reference; see Table 3.1. Due to minimal federal jurisdiction associated with Pad F, TMFU 4577-9-31, Well: TMD TMFU 16-42SH-H, BLM is unable to condition mitigation measures for wildlife. BLM does recommend mitigation measures (RMMs) to reduce impacts; however, minimal direct, indirect, cumulative, and residual impacts to wildlife may occur if APC does not adopt the RMMs.

4.6.1. Wildlife Threatened, Endangered, Proposed and Candidate Species

4.6.1.1. Greater Sage-Grouse (GSG)

The EAs in Table 3.1 analyzed effects from oil and gas development on GSG. The BLM typically applies a controlled surface use buffer of 0.25 miles for GSG leks, and a timing restriction (March 15-June 30) within 2 miles of leks. Heavy truck traffic will increase to haul oil or water from the pads, in addition to pumper traffic from equipment inspections. Overhead power will be constructed to provide electrical power to the wells. To mitigate impacts to GSG, BLM will apply a timing limitation restricting surface disturbance to the following pads within 2 miles of leks, from March 15 – June 30: Pads A, B, and C: TMFU #s 4476-7-11, 4476-11-14, and 4476 2-11, respectively. Well Pads G and H: TMFU #s 4577-27-31 and 4577-25-34, respectively, received 1 season exceptions to GSG timing rules in exchange for the APC committed mitigation referenced in Appendix D. Additional population viability analysis information and its influence on cumulative effects from energy development is in Section 4.8.2 – Candidate Species – Greater Sage-grouse (Sage-grouse)) of the Mufasa Fed 11-31H Well EA, WY-070-EA12-062, incorporated here by reference, and the supplemental effects analysis for an exception to timing restrictions, AR. See also, WY BLM IM-2012-019.

4.6.2. Special Status (Sensitive) Species (SSS)

BLM anticipates no direct, indirect, residual, or cumulative effects to SSS (aside from some passerines discussed below). BLM requires no mitigation for SSS.

4.6.3. Migratory Birds

BLM applied a COA prohibiting removal of suitable nesting habitat during the nesting season, or a clearance survey, will be applied to Pad D (TMFU 4477-10-44). See Sahara EA, Section 4.6.2.2 (all), for migratory bird impact analysis, incorporated here by reference.

4.6.4. Raptors

BLM incorporates by reference Section 4.6.2.1 (all) from the Sahara EA, and Section 4.2.7.2 for an analysis of impacts to raptors from this type of development. Surface disturbance is not permitted during the raptor nesting season (February 1 – July 31) within 0.5 mile of active nests. This restriction will apply to well Pads: D, E, C, A; TMFU #s 4477-10-44 (golden eagle nest), 4577-14-24 (red-tailed hawk), 4477-2-11(unknown raptor), and 4476-7-11 (great-horned owl), respectively. BLM considered granting an exception to Pad D, TMFU 4477-10-44, as APC requested in the letter (Appendix D), however, due to the presence of a golden eagle nest and the protections afforded by the non-discretionary Bald and Golden Treaty Act, the BLM cannot grant this exception.

Well Pads G and H, TMFU #s 4577-27-31 and 4577-25-34, respectively, received exceptions to the raptor timing limitation COAs to allow for continuous drill rig running. This allowed disturbance in the area to be confined to one breeding season as opposed to carrying the disturbance over for subsequent seasons, as would be the cases if timing restriction were in place; see Appendix D. The species involved, red-tailed hawk and great-horned owl, are not species of conservation concern and are moderately tolerant of human activity. Continuous construction, drilling, and completion at this location may preclude nesting for a single breeding season at nests BLM ID#s 4469 and 3644; see Raptors Section 3.6.4, above. BLM applies the following COAs, see Appendix D, to mitigate impacts to raptors and should improve impacts to GSG:

1. During the raptor nesting season if there are more than 6 days of rest/quiet between construction, drilling, or completion activities at Pads G and H, TMFU #s 4577-27-31 and 4577-25-34, respectively, then nests must be surveyed and documented to BLM as inactive prior to commencing activities at respective pads.
2. APC will accelerate plugging and abandonment in the Buffalo GSG Connectivity area in and around the Big Corral/Jewell Draw Unit, per Appendix D.
3. APC will complete 1,250 acres of cheat grass control in the Buffalo GSG Connectivity area in and around the Big Corral/Jewell Draw Unit, per Appendix D.

4.7. Cultural Resources

BLM policy is that a decision maker's first choice should be avoidance of historic properties (BLM Manual 8140.06(C)). If historic properties cannot be avoided, mitigation measures must be applied to resolve the adverse effect. The proposal will not impact historic properties. Following the *State Protocol Between the Wyoming Bureau of Land Management State Director and The Wyoming State Historic Preservation Officer*, Section VI(A)(1), BLM notified the Wyoming State Historic Preservation Officer (SHPO) on June 24, 2013 that no historic properties exist in the area of potential effect (APE). If any cultural values (sites, features or artifacts) are observed during operation, they will be left intact and the Buffalo Field Manager notified. If human remains are noted, the procedures described in Appendix L and ROD of the PRB FEIS must be followed. Discovery procedures are in Standard COA (General)(A)(1).

BLM used the aggregate effects analysis to update the EA's cumulative effects; see Table 3.1. The non-application of RMMs on Pad F results in minimal impacts to all resources.

5. List of Preparers: Persons and Agencies Consulted (BFO unless otherwise noted)

Position/Organization	Name	Position/Organization	Name
NRS/Team Lead	Andy Perez	Archaeologist	Clinton Crago
Supr NRS	Casey Freise	Wildlife Biologist	Don Brewer
Petroleum Engineer	Will Robbie	Geologist	Kerry Aggen
Assistant Field Manager	Clark Bennett	NEPA Coordinator	John Kelley

6. References and Authorities (BLM incorporates by reference here the references and authorities from the Porsche Wells EA, WY-070-EA14-84, pp. 29-33.)