

DECISION RECORD
EOG Resources Inc., Project 808
Environmental Assessment (EA), WY-070-EA11-284
Buffalo Field Office, Bureau of Land Management

DECISION:

The BLM approves EOG Resources Inc. (EOG) Project 808 oil conventional and or natural gas well applications for permit to drill (APDs) as described in Alternative B of EA WY-070-EA11-284. This approval includes the well's associated infrastructure.

Compliance. This decision complies with:

- Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701).
- Mineral Leasing Act of 1920 (MLA) (30 U.S.C. 181); to include On Shore Order No. 1.
- National Environmental Policy Act of 1969 (NEPA) (42 USC 4321).
- National Historic Preservation Act of 1966 (NHPA) 16 USC 470).
- Buffalo Resource Management Plan (RMP) 1985, Amendments 2001, 2003, 2011.
- DOI Order 3310.

Consultation. This decision considered:

- BLM Instruction Memorandum No. 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-2011-10, EOG Resources, Inc. v. Pinedale Field Office, 2011.

Details of the approval of Alternative B are summarized below. The project description, including specific changes made at the onsite, and site-specific mitigation measures, is included in the EA.

Well Site:

BLM approves the following 40 APD(s) and associated infrastructure on 25 pads:

	APD	Pad #	Township	Range	QTR Section	Lease
1	Crossbow 49-06H	1	41N	71W	SESW Sec 6	WYW147267
2	Crossbow 50-06H	1	41N	71W	SESW Sec 6	WYW108556
3	Arbalest 14-01H	3	41N	72W	SWSE Sec 1	WYW129506
4	Arbalest 15-01H	3	41N	72W	SWSE Sec 1	WYW142788
5	Arbalest 32-01H	4	41N	72W	SESW Sec 1	WYW129506
6	Arbalest 51-02H	5	41N	71W	NENW Sec 2	WYW143526
7	Arbalest 16-03H	6	41N	72W	NENW Sec 3	WYW138124
8	Arbalest 33-03H	7	41N	72W	SWSE Sec 3	WYW138124
9	Arbalest 17-04H	8	41N	72W	SESW Sec 4	WYW147274
10	Arbalest 18-04H	8	41N	72W	SESW Sec 4	WYW147274
11	Arbalest 209-04H	8	41N	72W	SESW Sec 4	WYW147274
12	Arbalest 21-08H	9	41N	72W	SESW Sec 8	WYW136948
13	Arbalest 38-08H	10	41N	72W	SWSE Sec 8	WYW147274
14	Arbalest 34-09H	11	41N	72W	NWNE Sec 9	WYW160402
15	Arbalest 242-09H	11	41N	72W	NWNE Sec 9	WYW160402
16	Arbalest 43-13H	12	41N	72W	SESE Sec 13	WYW140777
17	Arbalest 24-14H	13	41N	72W	NENW Sec 14	WYW147274
18	Arbalest 25-14H	13	41N	72W	NENW Sec 14	WYW136677
19	Arbalest 42-14H	14	41N	72W	NWNE Sec 14	WYW142789
20	Arbalest 22-15H	15	41N	72W	NENW Sec 15	WYW147274

21	Arbalest 23-15H	15	41N	72W	NENW Sec 15	WYW136677
22	Arbalest 39-15H	16	41N	72W	NWNE Sec 15	WYW138124
23	Arbalest 40-15H	16	41N	72W	NWNE Sec 15	WYW143520
24	Arbalest 58-16H	17	41N	72W	SWSE Sec 16	WYW143520
25	Arbalest 19-18H	18	41N	72W	NENW Sec 18	WYW129506
26	Arbalest 20-18H	18	41N	72W	NENW Sec 18	WYW140216
27	Arbalest 36-07H	19	41N	72W	SWSE Sec 7	WYW143519
28	Arbalest 37-07H	19	41N	72W	SWSE Sec 7	WYW140216
29	Arbalest 225-07H	19	41N	72W	SWSE Sec 7	WYW143519
30	Arbalest 226-07H	19	41N	72W	SWSE Sec 7	WYW140216
31	Arbalest 45-22H	20	41N	72W	SESW Sec 22	WYW140778
32	Arbalest 46-22H	20	41N	72W	SESW Sec 22	WYW143521
33	Arbalest 26-22H	21	41N	72W	SESW Sec 22	WYW140778
34	Arbalest 27-22H	21	41N	72W	SESW Sec 22	WYW143521
35	Arbalest 28-23H	22	41N	72W	SESW Sec 23	WYW143520
36	Arbalest 29-23H	22	41N	72W	SESW Sec 23	WYW115187
37	Arbalest 49-24H	23	41N	72W	SESE Sec 24	WYW140777
38	Arbalest 50-24H	23	41N	72W	SESE Sec 24	WYW144482
39	Bolt 08-25H	25	42N	72W	SWSE Sec 25	WYW105937
40	Bolt 09-26H	27	42N	72W	SWSE Sec 26	WYW105937

Deferrals:

BLM defers the following 1 APD and associated infrastructure until resolution of the deficiencies.

	Well Pad Name	Well Name	Well #	TWP/Rng/Sec / QTR Sec	Environmental Issue/Deficiency	Remedy
1	Crossbow 53-18H	Crossbow	53-18H	T41N R71W SESE Sec. 18	Original well pad design blocked off drainages to the south and north as a connected part of the federal action as pad location bases on location to federal minerals. This will cause unnecessary environmental degradation.	New well designs were submitted avoiding drainages. Field verification needs to be completed to ensure environmental protection of the drainages.

THE FINDING OF NO SIGNIFICANT IMPACT (FONSI). Analysis of Alternative B of EA, WY-070-EA11-284, and the FONSI found EOG’s proposal for Project 808 will have no significant impacts on the human environment, beyond those described in the PRB FEIS, thus an EIS is not required.

COMMENT OR NEW INFORMATION SUMMARY.

Since development of the EOG’s Project 808 proposal BFO received a new Interior Department policy on wilderness and EOG’s SDR of another field office’s decision.

DECISION RATIONALE:

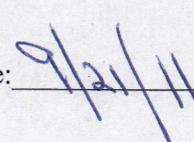
The decision authorizing Alternative B, as summarized above, is based on the following:

1. EOG and BLM included mitigation measures and design features reducing environmental impacts while meeting the project’s need. For a complete description of all site-specific conditions of approval (COA’s) associated with this approval, see the COAs, including the recommended surface COAs (“recommended” because in this project BLM has little to no jurisdiction over federal surface).

2. The BLM commits to assist EOG to clear the deferral condition for proposed APD Crossbow 53-18H in the Fall of 2011. BLM recognizes that EOG readily submitted a new design and that the BLM's workload, in addition to the original design, contributed to the temporary necessity of the deferral.
 - a. I conclude that the proposed surface well pad (Pad #2) for APD Crossbow 53-18H is determined by the downhole location of the proposed federal well to federal fluid minerals. Pad #2, thus APD Crossbow 53-18H, are directly above the federal mineral lease WYW108556 though EOG will directionally drill to the south to minimize surface disturbance and maximize recovery. Alternatively rules of split estate may also apply to APD Crossbow 53-18H. Regardless, the analytical results are the same in the case of this APD - whether the impact is direct or indirect.
 - b. The analysis to temporarily defer the above APD is the result of an indirect effect of the federal action, to allow EOG to proceed with development of the rest of the project, and to have a few weeks to field-evaluate the indirect effects of the new design proposed by EOG.
3. The selected alternative will not result in any undue or unnecessary environmental degradation and BLM requires surface access to inspect compliance with the conditions for the federal action.
4. The selected alternative will help meet the nation's energy needs, and help stimulate local economies by maintaining workforce stability.
5. The Operator committed to:
 - Comply with all applicable federal, state, and local laws and regulations.
 - The operator incorporated several measures to alleviate resource impacts into their surface use plan and drilling plan submitted.
6. The Operator certified it has a surface use agreement with the Landowner(s) or bonded.
7. The project is clearly lacking in wilderness characteristics as it has no DOI managed surface acres.

ADMINISTRATIVE REVIEW AND APPEAL: This decision is subject to administrative review according to 43 CFR 3165. Request for administrative review of this decision 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.

for Field Manager: 

Date: 

FINDING OF NO SIGNIFICANT IMPACT
EOG Resources Inc., Project 808
Environmental Assessment (EA), WY-070-EA11-284
Buffalo Field Office, Bureau of Land Management

FINDING OF NO SIGNIFICANT IMPACT (FONSI): Based on the information in EA WY-070-EA11-284 which is incorporated here by reference; I find that: (1) the implementation of Alternative B will not have significant environmental impacts beyond those already addressed in the Buffalo Final Environmental Impact Statement (FEIS) 1985, and the Powder River Basin (PRB) FEIS, 2003, to which the EA tiers; (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 my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and to the intensity of the impacts described in the EA, and in consideration of Interior Department Order 3310.

CONTEXT: Mineral development is a long-standing and common land use in the PRB. About 40% of the nation's coal comes from the PRB. The PRB FEIS reasonably foreseeable development predicted and analyzed the development of 51,000 CBNG wells and 3,200 oil wells. The additional oil and or gas development described 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 within the 1985 RMP, 2003 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. 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 is less than 5,000 acres, has no outstanding opportunities for solitude, and is in the middle of oil and gas development and its infrastructure. 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. Any party who is 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: _____

**BUREAU OF LAND MANAGEMENT, BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT (EA), WY-070-EA11-284
EOG Resources Inc., Plan of Development (POD) Project 808**

1. INTRODUCTION

This site-specific analysis tiers to, and incorporates by reference, the information and analysis in the Powder River Basin Oil and Gas Project Environmental Impact Statement (PRB FEIS), and Resource Management Plan (RMP) Amendment #WY-070-02-065 (2003), pursuant to Title 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21. The PRB FEIS and Record of Decision (ROD) is available for review at the Bureau of Land Management (BLM) Buffalo Field Office (BFO). The following Arbalest Multi-Well Pads Project (Project No. 808 or P808) EA further addresses site-specific resources and impacts that were not specifically addressed in the PRB FEIS.

1.1. Background

The history of western surface and mineral ownership is a patchwork – exemplified in this project. EOG Resources, Inc. (EOG) P808 uses intermingled federal, state and fee surface to tap oil and conventional natural gas in intermingled federal, state, and fee fluid mineral leases – so much so that proposed wells on a pad tap leases under different jurisdictions. The totality of EOG’s P808 at this date includes a total of 84 applications for permit to drill (APDs) on 27 pads – but not all have a federal interest. This EA focuses on the federal issues, federal APDs, and leases (41 APDs on 25 pads). EOG submitted to BLM, a combination of 41 notices of staking (NOSs) and APDs, as a federal portion of their project.

- BLM received NOS applications for EOG’s P808 on September 20, 22, October 14, November 6, 12, and 24 of 2010.
- EOG and BLM held an initial planning meeting for the project on August 16, 2010.
- EOG and BLM conducted pre-approval onsite reconnaissance of the 27 proposed well pad locations on May 2, 2011 to May 5, 2011, by Meleah Corey and Scott Jawors – BLM; Brad Rogers – U.S. Fish and Wildlife Service (USFWS); L.B. Myers and Kaylene Gardner – EOG; Chad Baker – SWCA Environmental Consultants (SWCA); and Lee Isenberger and Pete Reno – surface landowners.
- EOG submitted APDs for the wells Arbalest 14-01H, 34-09H, 25-14H, 42-14H, 46-22H, 45-22H, 20-18H, 40-15H, 39-15H, 23-15H, 50-24H, 17-04H, 27-22H, 19-18H, 22-15H, 36-07H, 51-02H, 33-03H, 18-04H, 21-08H, 26-22H, 28-23H, 29-23H, 49-24H, 15-01H, 32-01H, 37-07H, 24-14H, 58-16H, 43-13H, 16-03H and Crossbow 50-06H, 53-18H, and 49-06H on June 15 to 22, 2011, and July 8, 2011. The APDs include the surface access agreement self-certifications, drilling plans, and master surface use plan of operations (MSUP) for these proposed wells.
- EOG submitted NOSs for the remainder of the wells identified in this EA.
- BLM only analyzes APDs for Cultural or Historic Values Sections, and not NOSs.
- The U.S. Forest Service, Douglas Ranger District (USFS) is a cooperating agency per the working protocol long worked out by the respective offices. EOG must acquire a USFS road use permit for the proposed access road that crosses USFS land in T41N R72W NENW Section 18 prior to construction. The road will access the Arbalest 20-18H and Arbalest 20-18H wells (Pad 18).
- Hilaire W. Peck of the USFS, contacted Meleah Corey of the BLM on June 3, 2011 stating the USFS was aware of EOG’s P808. Additionally the USFS asked whether the BLM would analyze this section of road in the BLM’s EA. The BFO responded to the USFS on June 8, 2011 stating that BLM would analyze the road in the BLM’s EA.

Table 1.1. APDs and Lease Number

	APD	Pad ID #	Twp	Rng	QTR Sec	Lease
1	Crossbow 49-06H	1	41N	71W	SESW Sec 6	WYW147267
2	Crossbow 50-06H	1	41N	71W	SESW Sec 6	WYW108556
3	Crossbow 53-18	2	41N	71W	SESE Sec 18	WYW108556
4	Arbalest 14-01H	3	41N	72W	SWSE Sec 1	WYW129506
5	Arbalest 15-01H	3	41N	72W	SWSE Sec 1	WYW142788
6	Arbalest 32-01H	4	41N	72W	SESW Sec 1	WYW129506
7	Arbalest 51-02H	5	41N	71W	NENW Sec 2	WYW143526
8	Arbalest 16-03H	6	41N	72W	NENW Sec 3	WYW138124
9	Arbalest 33-03H	7	41N	72W	SWSE Sec 3	WYW138124
10	Arbalest 17-04H	8	41N	72W	SESW Sec 4	WYW147274
11	Arbalest 18-04H	8	41N	72W	SESW Sec 4	WYW147274
12	Arbalest 209-04H	8	41N	72W	SESW Sec 4	WYW147274
13	Arbalest 21-08H	9	41N	72W	SESW Sec 8	WYW136948
14	Arbalest 38-08H	10	41N	72W	SWSE Sec 8	WYW147274
15	Arbalest 34-09H	11	41N	72W	NWNE Sec 9	WYW160402
16	Arbalest 242-09H	11	41N	72W	NWNE Sec 9	WYW160402
17	Arbalest 43-13H	12	41N	72W	SESE Sec 13	WYW140777
18	Arbalest 24-14H	13	41N	72W	NENW Sec 14	WYW147274
19	Arbalest 25-14H	13	41N	72W	NENW Sec 14	WYW136677
20	Arbalest 42-14H	14	41N	72W	NWNE Sec 14	WYW142789
21	Arbalest 22-15H	15	41N	72W	NENW Sec 15	WYW147274
22	Arbalest 23-15H	15	41N	72W	NENW Sec 15	WYW136677
23	Arbalest 39-15H	16	41N	72W	NWNE Sec 15	WYW138124
24	Arbalest 40-15H	16	41N	72W	NWNE Sec 15	WYW143520
25	Arbalest 58-16H	17	41N	72W	SWSE Sec 16	WYW143520
26	Arbalest 19-18H	18	41N	72W	NENW Sec 18	WYW129506
28	Arbalest 36-07H	19	41N	72W	SWSE Sec 7	WYW143519
29	Arbalest 37-07H	19	41N	72W	SWSE Sec 7	WYW140216
30	Arbalest 225-07H	19	41N	72W	SWSE Sec 7	WYW143519
31	Arbalest 226-07H	19	41N	72W	SWSE Sec 7	WYW140216
32	Arbalest 45-22H	20	41N	72W	SESW Sec 22	WYW140778
33	Arbalest 46-22H	20	41N	72W	SESW Sec 22	WYW143521
34	Arbalest 26-22H	21	41N	72W	SESW Sec 22	WYW140778
35	Arbalest 27-22H	21	41N	72W	SESW Sec 22	WYW143521
36	Arbalest 28-23H	22	41N	72W	SESW Sec 23	WYW143520
37	Arbalest 29-23H	22	41N	72W	SESW Sec 23	WYW115187
38	Arbalest 49-24H	23	41N	72W	SESE Sec 24	WYW140777
39	Arbalest 50-24H	23	41N	72W	SESE Sec 24	WYW144482
40	Bolt 08-25H	25	42N	72W	SWSE Sec 25	WYW105937
41	Bolt 09-26H	27	42N	72W	SWSE Sec 26	WYW105937

Table 1.2. Well Pad Name/Location/Wells (Provided for Cross-reference)

Well Pad Name	Pad ID #	Twp	Rng	QTR Sec	Wells On Pad	APD	NOS
Crossbow 49-06H	1	41N	71W	SESW Sec 6	Crossbow 49-06H, 50-06H, 243-06H, 244-06H	Crossbow 49-06H, 50-06H	Crossbow 243-06H, 244-06H
Crossbow 53-18H	2	41N	71W	SESE Sec 18	Crossbow 53-18, 221-18H	Crossbow 53-18	Crossbow 221-18H
Arbalest 14-01H	3	41N	72W	SWSE Sec 1	Arbalest 14-01H, 15-01H, 235-01H, 236-01H	Arbalest 14-01H, 15-01H	Arbalest 235-01H, 236-01H
Arbalest 32-01H	4	41N	72W	SESW Sec 1	Arbalest 32-01H, 237-01H	Arbalest 32-01H	Arbalest 237-01H
Arbalest 51-02H	5	41N	71W	NENW Sec 2	Arbalest 51-02H, 208-02H, 52-02H (<i>State only</i>), 238-02H (<i>State only</i>)	Arbalest 51-02H	NA
Arbalest 16-03H	6	41N	72W	NENW Sec 3	Arbalest 16-03H, 239-03H	Arbalest 16-03H	Arbalest 239-03H
Arbalest 33-03H	7	41N	72W	SWSE Sec 3	Arbalest 33-03H, 240-03H	Arbalest 33-03H	Arbalest 240-03H
Arbalest 17-04H	8	41N	72W	SESW Sec 4	Arbalest 17-04H, 18-04H, 209-04H, 241-04H	Arbalest 17-04H, 18-04H, 209-04H	Arbalest 241-04H
Arbalest 21-08H	9	41N	72W	SESW Sec 8	Arbalest 21-08H, 227-08H	Arbalest 21-08H	Arbalest 227-08H
Arbalest 38-08H	10	41N	72W	SWSE Sec 8	Arbalest 38-08H, 228-08H	Arbalest 38-08H	Arbalest 228-08H
Arbalest 34-09H	11	41N	72W	NWNE Sec 9	Arbalest 34-09H, 242-09H, 35-09H (<i>Fee only</i>), 243-09H (<i>Fee only</i>)	Arbalest 34-09H, 242-09H	NA
Arbalest 43-13H	12	41N	72W	SESE Sec 13	Arbalest 43-13H, 222-13H	Arbalest 43-13H	Arbalest 222-13H
Arbalest 25-14H	13	41N	72W	NENW Sec 14	Arbalest 24-14H, 25-14H, 234-14H, 210-14H	Arbalest 24-14, 25-14H	Arbalest 234-14H, 210-14H
Arbalest 42-14H	14	41N	72W	NWNE Sec 14	Arbalest 41-14H, 42-14H, 233-14H, 246-14H	Arbalest 42-14H	Arbalest 41-14H, 233-14H, 246-14H
Arbalest 23-15H	15	41N	72W	NENW Sec 15	Arbalest 22-15H, 229-15H, 230-15H	Arbalest 22-15H, 23-15H	Arbalest 229-15H, 230-15H

Well Pad Name	Pad ID #	Twp	Rng	QTR Sec	Wells On Pad	APD	NOS
Arbalest 39-15H	16	41N	72W	NWNE Sec 15	Arbalest 39-15H, 40-15H, 231-15H, 232-15H	Arbalest 39-15H 40-15H	Arbalest 231-15H 232-15H
Arbalest 58-16H	17	41N	72W	SWSE Sec 16	Arbalest 58-16H, 251-16H	Arbalest 58-16H	Arbalest 251-16H
Arbalest 20-18	18	41N	72W	NENW Sec 18	Arbalest 19-18H, 20-18H, 223-18H, 224-18H	Arbalest 19-18H 20-18H	Arbalest 20-18H
Arbalest 36-07H	19	41N	72W	SWSE Sec 7	Arbalest 36-07H, 37-07H, 225-07H, 226-07H	Arbalest 36-07H 37-07 225-07H 226-07H	NA
Arbalest 45-22H	20	41N	72W	SESW Sec 22	Arbalest 45-22H, 46-22H, 214-22H, 216-22H	Arbalest 45-22H 46-22H	Arbalest 214-22H 216-22H
Arbalest 26-22H	21	41N	72W	SESW Sec 22	Arbalest 26-22H, 27-22H, 213-22H, 215-23H	Arbalest 26-22H 27-22H	Arbalest 213-22H 215-23H
Arbalest 28-23H	22	41N	72W	SESW Sec 23	Arbalest 28-23H, 29-23H, 217-18H, 218-23H	Arbalest 28-23H 29-23H	Arbalest 217-18H 218-23H
Arbalest 49-24H	23	41N	72W	SESE Sec 24	Arbalest 49-24H, 50-24H, 220-24H, 221-24H	Arbalest 49-24H 50-24H	Arbalest 220-24H 221-24H
Bolt 05-25H	24	42N	72W	SESW Sec 25	Bolt 05-25H, 203-25H	NA	Bolt 05-25H 203-25H
Bolt 08-25H	25	42N	72W	SWSE Sec 25	Bolt 08-25H 204-25H	Bolt 08-25H	Bolt 204-25H
Bolt 06-26H	26	42N	72W	SESW Sec 26	Bolt 06-26H 205-26H	NA	Bolt 06-26H 205-26H
Bolt 09-26H	27	42N	72W	SWSE Sec 26	Bolt 09-26H 206-26H	Bolt 09-26H	Bolt 206-26H

Presently there are no federal wells and there is no federal interest in Pads 24 and 26.

1.2. Need for the Proposed Project

The need for this project is to determine how and under what conditions to balance natural resource conservation with allowing the operator to exercise lease rights to develop fluid minerals on federal leaseholds as described in their proposed project. Information contained in the APDs is an integral part of this EA and is incorporated by reference (CFR 1502.21). The extraction of fluid minerals is important to meeting the nation's energy needs, as is natural resource conservation. The fluid mineral leasing programs fall under the authority of the Mineral Leasing Act of 1920 and 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 of oil and or conventional gas resources on the federal leasehold referred to as Arbalest Multi-Well Pads (Project 808), and if so, under what terms and conditions.

BLM Instruction Memorandum (IM) No. 2009-078 established policy and procedures for processing federal applications for permit to drill (APD) for directional drilling into federal mineral estate from multiple well pads on non-federal locations.

In accordance with IM No. 2009-078 drilling, and producing the subject wells is a federal action. Construction, operation, and reclamation of infrastructure on non-federal land are not federal actions.

Drilling and producing mitigation can be found in Appendix 2 of Conditions of Approval for Conventional Application for Permit to Drill.

In accordance with IM No. 2009-078 the approval of an APD is a federal undertaking under section 106 of NHPA, even when the resulting impacts are non-federal land. Actions that intentionally, significantly, and adversely affect a historic property with the intent to avoid the requirements of NHPA Section 106 are in violation of NHPA Section 110(k) and require the field office to deny the APD.

The BLM's inspection and enforcement authority and responsibility would include compliance with any mitigation or other conditions established for approval of the APD as a result of the NHPA and ESA consultation process. Cultural mitigation can be found in Appendix 2 of Conditions of Approval for Conventional Application for Permit to Drill.

It is the BLM's responsibility and obligation to analyze the full effects of the action, and identify mitigation measures, regardless of the BLM's authority to enforce the mitigation. The BLM needs to identify mitigation measures that would reduce or eliminate the effects of a non-federal action when it is a connected action to the BLM proposed action (see the NEPA handbook, section 6.8.2.1.1, connected Non-federal Actions).

Identifying mitigation outside of the BLM's jurisdiction serves to alert the other agencies that can implement the mitigation. The probability of the other agencies implementing the mitigation measures is likely to occur, although these agencies may vary specific parameters recommended by the BLM.

Full effects of the action and recommended mitigation measures can be found in Section 4 of the EOG Resources Inc., Plan of Development (POD) Project 808 EA, WY-070-EA11-284 and Appendix 1, BLM Recommended Conditions of Approval for Conventional Application for Permit to Drill.

1.4. Scoping and Issues

The BLM interdisciplinary team (ID team) conducted internal scoping by reviewing the proposed development and project location to identify potentially affected resource and land uses. This EA addresses those site-specific impacts that were unknown at the time of the PRB FEIS analysis that would help in making a reasoned decision or may be related to a potentially significant effect.

The following are not present in the project area and will not be further analyzed:

Floodplains Wilderness Values Environmental Justice Prime or Unique Farmlands
Wild and Scenic Rivers Areas of Critical Environmental Concern Native American Religious Concerns

2. PROPOSED PROJECT AND ALTERNATIVES

BLM evaluated 2 alternatives (Alternative A and Alternative B) to determine how to best meet the stated need for the proposed action. A brief description of each alternative follows.

2.1. Alternative A – No Action Alternative

The PRB FEIS considered a No Action Alternative, Volume 1, pp. 2-54 to 2-62. This alternative must also consider and combine the PRB FEIS analysis with the subsequent analysis and development from the adjacent and intermingled PODs: Antelope 11, WYW-070-05-132; Antelope Flat, WYW-070-05-175; Uprising, CX 04-305; Uprising Add, CX070-08-3-009 and 038; SW Reno Flats, WYW-070-07-196; Project, WY-070-10-238; and EOG Crossbow wells 5-18H, 6-18H, and 19-18H, WYW-070-09-155. (See table below.) This comports to the PRB FEIS which analyzed the reasonably foreseeable development rolling across the PRB of over 51,000 gas and 3,200 oil wells. The no action alternative would consist of no new federal wells. This alternative would deny these APDs and /or POD requiring the operator to resubmit APDs or a POD that complies with statutes and the reasonable measures in the PRB RMP ROD in order to lawfully exercise conditional lease rights. This alternative could, through secretarial discretion suspend the senior leasehold, or could administratively cancel or withdraw the lease if improperly awarded, or seek to cancel the lease through a theory of superior title. It is not possible in the abstract to identify every interest and that is beyond the scope here.

Adjacent or Overlapping Development to the Project 808 Proposal

POD Name	Environmental Assessment #	Decision Date
Antelope 11	WYW-070-05-132	7/1/2005
Antelope Flat	WY-070-05-175	4/29/2005
Uprising	CX 04-305	9/29/2004
Uprising Add	CX070-08-3-009 and 038	1/18/2008
SW Reno Flats	WYW-070-07-196	9/21/2007
Project 785	WY-070-10-238	8/18/2010
EOG Crossbow well #s 5-18H, 6-18H, 19-18H	WYW-070-09-155	9/18/2009

2.2. Alternative B – Proposed Action (see Table 1.1. APDs and Lease Number)

PROJECT NAME: Arbalest Multi-Well Pads (Project No. 808 or P808)

OPERATOR/APPLICANT: EOG Resources, Inc.

SURFACE OWNERS: Isenberger Land, LLC, Sioux Ranch, Inc., Jeanne and Janelle Louise Jarosh, Floyd C. Reno and Sons, Inc., USFS, and State of Wyoming

COUNTY: Campbell County, see Figures 1 and 2.

EOG proposes to explore for and develop oil and conventional natural gas reserves underlying oil and gas leases it possesses in southern Campbell County, Wyoming. EOG proposes to drill, produce, and eventually reclaim up to 84 well bores to the Turner and Mowry Formations from 27 separate well pad locations (Table 2.1) (41 proposed wells on 25 of the pads being federal). Up to 4 wells would be horizontally drilled from each well pad to minimize surface disturbance and habitat fragmentation. The number of wells proposed on each well pad is dependent on spacing rules, mineral estate, and geological factors. EOG proposes developing 13 double bore well pads, and 15 quad well pads. Associated infrastructure would include access roads, gathering lines, and possible future power lines required for access to the well pads and transport of gas from the well sites. EOG anticipates the life of each productive well is up to 40 years.

The BLM previously completed NEPA documents and issued FONSI covering 37 oil or gas wells on 10 pads in the project area for EOG. The Wyoming Oil and Gas Conservation Commission also earlier approved wells in the project area on fee and State leases (identified in Table 2.1). Some of the previously

approved wells have been drilled, completed, and are in production. Others are planned for drilling and completion in 2011 and 2012.

The project area is approximately 12 miles south of the town of Wright and approximately 4.5 miles west of Teckla, Wyoming, and bisected by Wyoming State Highway 59 in southern Campbell County (Figures 1 and 2). The project area consists of 20,713 acres covering 32.36 square miles of land in 3 townships: Township (T) 41N-Range (R) 72W, T42N-R72W, and T41N-R71W.

Well Pads: EOG will build well pads from the native soils and rock material present on site at each well pad location. Well pad locations would be constructed and leveled by balancing cut and fill areas to the maximum extent possible to create a flat and level workable surface for drilling equipment while alleviating the need for imported materials. EOG designed cut-and-fill slopes to allow for the detention of topsoil and subsoil fill material. EOG will strip and remove topsoil and native vegetation from the pad footprint for future use during the reclamation process, prior to well pad cut and fills and to help facilitate proper reclamation. The stockpiling of topsoil and stripped vegetation will allow for a native seed bank that should assist the re-establishment of vegetation.

On average, a typical 2-well pad would have a level surface of approximately 305 feet by 439 feet, or 3.07 acres working surface. A 4-well pad would typically be approximately 335 feet by 487 feet, resulting in a 3.75-acre level working pad. Total surface disturbance for each well pad, including spoil and topsoil piles, would range from 3.87 acres to 5.43 acres, depending on cut and fill slopes necessary to balance the pad. The variations in well pad size and total surface disturbances are the result of specific well pad location and topography which results in differing cuts and fills for each well pad. In addition, these sizes are necessary to accommodate drilling and completing multiple wells on each pad, and to allow for safe distances from wellheads to production equipment on the pad, per State of Wyoming requirements.

Surface disturbances for each well pad vary slightly depending on the amount of cuts, fills, associated side slopes, and soil stockpiling. See Tables 2.1 and 2.2 for estimated surface disturbances associated with each proposed well pad. In total it will require 120 acres of surface disturbance to drill all 84 wells (of which 41 are federal) on the 27 pads (25 being federal), including all soil piles. EOG would perform interim reclamation on portions of the well pads not needed for production after all wells are drilled, unless no drilling takes place for more than 6 months, at which point interim reclamation would take place. After interim reclamation, the remaining surface disturbance for the 25 well pads would total approximately 42 acres (assuming all 27 wells pads are constructed and 84 well bores are drilled), which results from interim reclamation of 77.5 acres of the initial surface disturbance.

Access: Primary access to the P808 area is from Wyoming State Highway 59, which runs north/south through the project area. New access roads would be constructed off of existing well field and two-track ranch roads to access each proposed well pad (Figure 2). Existing roads and newly-built roads would be maintained in the same or better condition than existed prior to the commencement of EOG operations. Maintenance of roads to the proposed well locations would continue until abandonment and reclamation of wells. Road rights-of-way (ROW) for construction in the project area would be 40 feet wide. The new roads would typically be a single lane, 16 feet wide, 40 feet subgrade, crowned road with best management practices (BMPs) used. EOG will build the access road with a 4:1 slope for ditches. Rip rap would be used as needed. A minimum of four inches of topsoil would be stripped from the new access road prior to any further construction activity; topsoil would be stored along the sides of the road for back spreading following road construction. Approximately 12.07 miles of new access roads would be required to provide equipment and vehicle access to the proposed 27 well pads. New access road construction would result in approximately 58.63 acres of surface disturbance (Tables 2.1 and 2.2). Approximately 730 feet of existing two-track road located in the SW1/4 SW1/4 of S7, T41N, R72W on National Grasslands administered by the USFS will need to be upgraded to access the Arbalest 20-18H well pad.

For specifics on construction practices, drilling, and production operations, refer to the MSUP and Drilling Plans submitted for the APDs. Site-specific location maps, engineered drawings for production facility diagrams, and interim reclamation areas are included in the plats submitted with each APD.

Reasonably Foreseeable Development: The PRB FEIS and ROD foresaw development of up to 51,000 gas and 3,200 oil wells in the PRB. It is reasonably foreseeable that if EOG’s project is even moderately successful that companies will likely fill in development for fluid mineral resources in the Turner, Mowry, and perhaps other formations in the roughly 9-township analysis area of P808 – west of Teckla, south of Wright, within servicing distance of state highway 59.

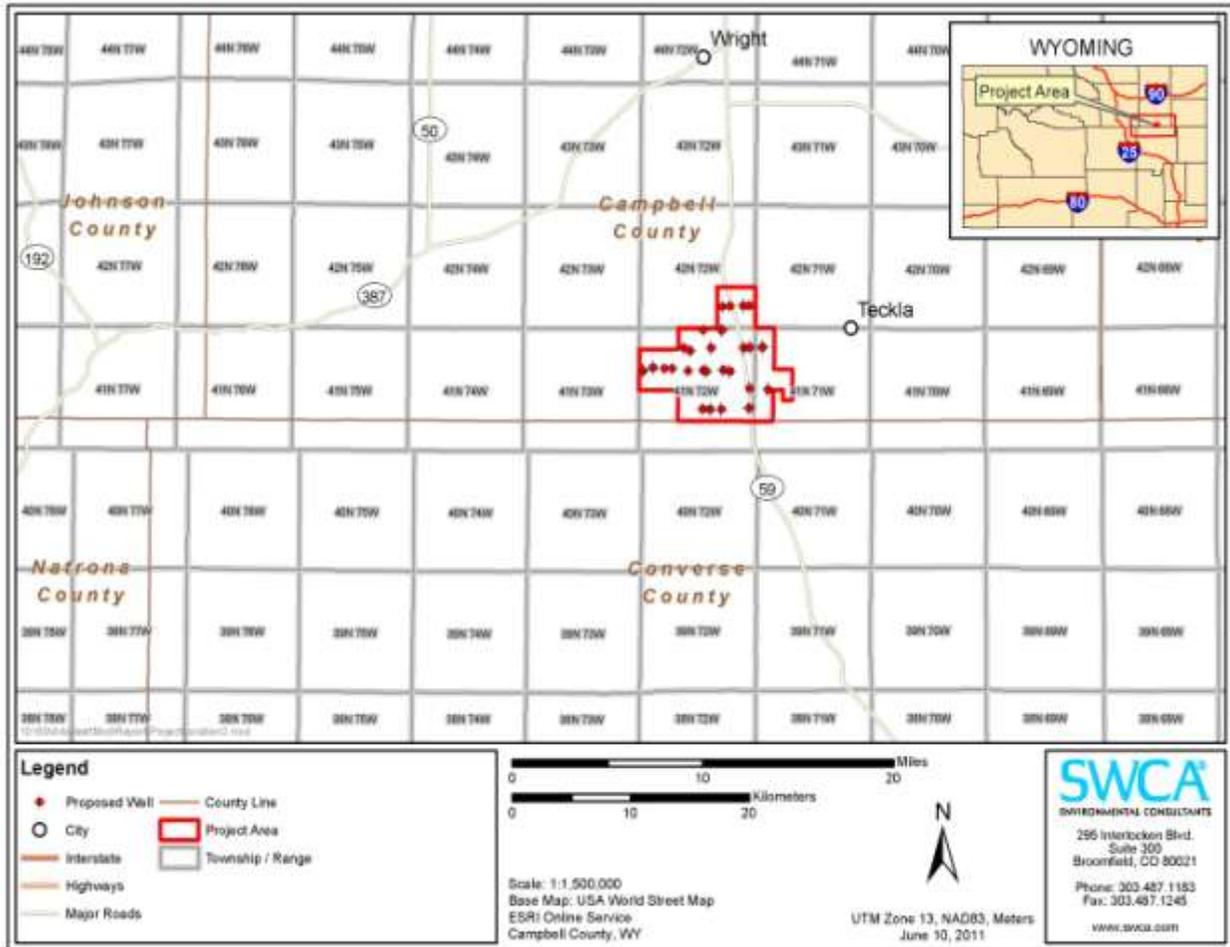


Figure 1. Project location in Campbell County, Wyoming

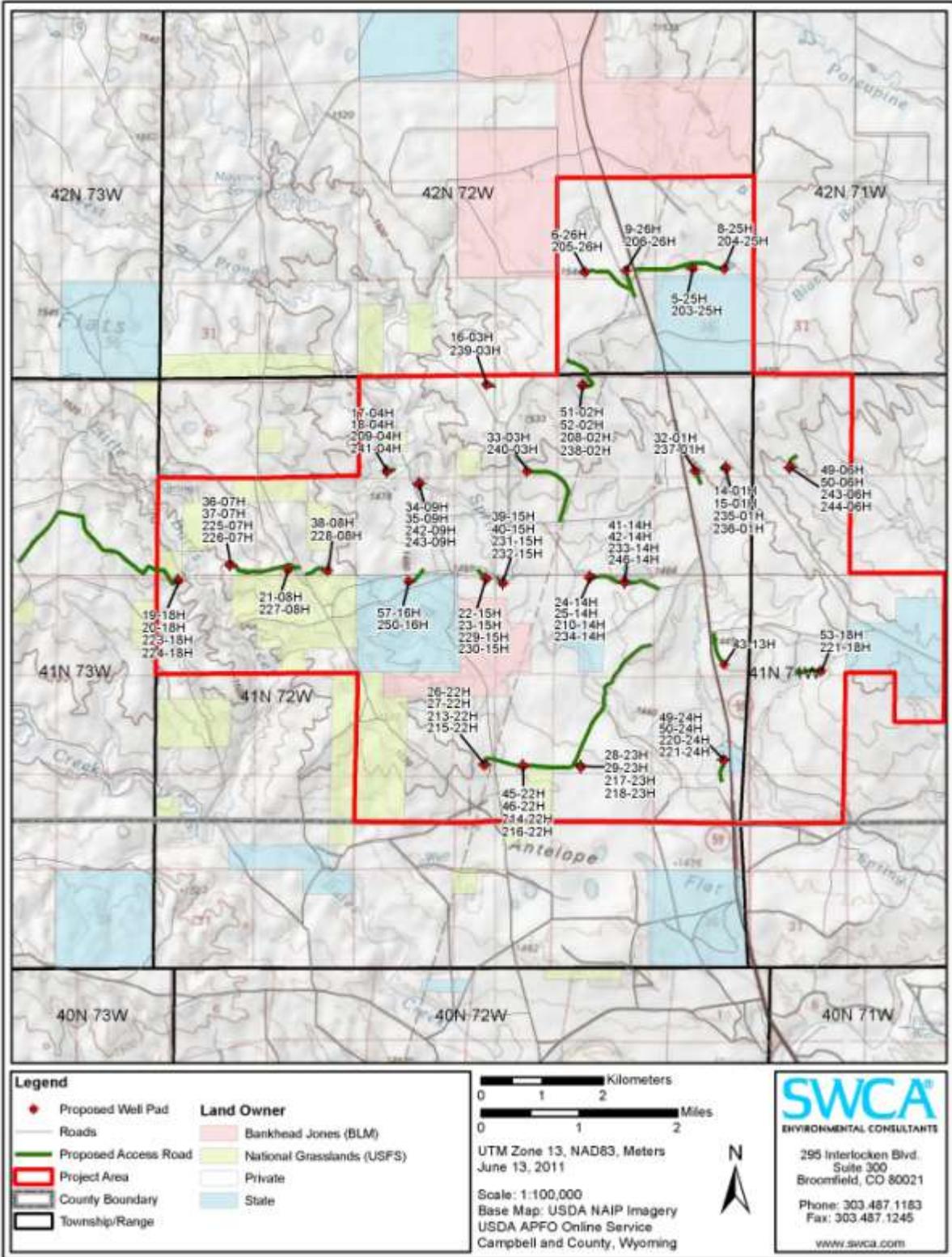


Figure 2. Map of 27 proposed well pad locations, access roads, and surface ownership for the Arbalest multi-well project in Campbell Co, WY

Table 2.1. Summary of All Proposed Drilling Pads (no Federal Wells on Pads 24 and 26)

Well Pad Name	Pad ID No.	Maximum # of wells	Acres of Pad Disturbance	Approx. Acres of Interim Reclamation	Access Road Miles	Access Road Acres
Crossbow 49-06H	1	4	5.43	3.73	0.09	0.41
Crossbow 53-18H	2	2	4.26	3.18	0.23	1.12
Arbalest 14-01H	3	4	4.35	3.20	0.02	0.11
Arbalest 32-01H	4	2	3.87	2.15	0.10	0.53
Arbalest 51-02H	5	4	5.08	3.50	0.45	2.20
Arbalest 16-03H	6	2	4.39	3.25	0.05	0.22
Arbalest 33-03H	7	2	3.89	2.15	0.80	3.87
Arbalest 17-04H	8	4	4.76	3.35	0.10	0.48
Arbalest 21-08H	9	2	4.49	3.14	0.09	0.44
Arbalest 38-08H	10	2	4.59	3.47	0.23	1.12
Arbalest 34-09H	11	4	5.07	3.50	0.94	4.59
Arbalest 43-13H	12	2	4.44	3.20	0.31	1.53
Arbalest 25-14H	13	4	3.89	2.15	0.27	1.33
Arbalest 42-14H	14	4	4.77	3.35	0.50	2.41
Arbalest 23-15H	15	4	3.94	2.25	0.09	0.43
Arbalest 39-15H	16	4	3.88	0.81	0.23	1.10
Arbalest 58-16H	17	2	4.59	3.00	0.36	1.75
Arbalest 20-18H	18	4	4.97	3.50	2.25	10.90
Arbalest 36-07H	19	4	5.23	3.53	0.69	3.36
Arbalest 45-22H	20	4	3.87	2.15	2.01	9.73
Arbalest 26-22H	21	4	4.45	2.75	0.36	1.76
Arbalest 28-23H	22	4	4.06	2.31	0.04	0.20
Arbalest 49-24H	23	4	4.72	0.99	0.29	1.39
Bolt 05-25H	24	2	4.38	3.23	0.59	2.87
Bolt 08-25H	25	2	4.32	3.33	0.23	1.13
Bolt 06-26H	26	2	4.22	3.14	0.50	2.42
Bolt 09-26H	27	2	4.27	3.19	0.25	1.23
Total 27 Well Pads	27	84 well bores	120.18 acres	77.5 acres	12.07 miles	58.63 acres

Table 2.2. Surface Disturbance Specifics by Drilling Pad

Activity	Length Surface (feet)	Width Surface (feet)	Acres of Disturbance
Crossbow 49-06H			
Well Pad	547	315	3.96
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.47
Access Road	450	40	0.41
Total Initial Disturbance			5.84
Crossbow 53-18H			
Well Pad	487	305	3.40
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.86
Access Road	1221	40	1.12
Total Initial Disturbance			5.38

Activity	Length Surface (feet)	Width Surface (feet)	Acres of Disturbance
Arbalest 14-01H			
Well Pad	448	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.21
Access Road	117	40	0.11
Total Initial Disturbance			4.43
Arbalest 32-01H			
Well Pad	424	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.73
Access Road	579	40	0.53
Total Initial Disturbance			4.40
Arbalest 51-02H			
Well Pad	487	335	3.75
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.33
Access Road	2393	40	2.20
Total Initial Disturbance			7.28
Arbalest 16-03H			
Well Pad	439	335	3.38
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.01
Access Road	242	40	0.22
Total Initial Disturbance			4.61
Arbalest 33-03H			
Well Pad	424	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.75
Access Road	4212	40	3.87
Total Initial Disturbance			7.76
Arbalest 17-04H			
Well Pad	487	335	3.75
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.01
Access Road	528	40	0.48
Total Initial Disturbance			5.24
Arbalest 21-08H			
Well Pad	439	335	3.38
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.11
Access Road	477	40	0.44
Total Initial Disturbance			4.93
Arbalest 38-08H			
Well Pad	439	335	3.38
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.21
Access Road	1224	40	1.12
Total Initial Disturbance			5.71
Arbalest 34-09H			
Well Pad	512	335	3.94
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.13
Access Road	4995	40	4.59
Total Initial Disturbance			9.66

Activity	Length Surface (feet)	Width Surface (feet)	Acres of Disturbance
Arbalest 43-13H			
Well Pad	415	335	3.05
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.39
Access Road	1662	40	1.53
Total Initial Disturbance			5.97
Arbalest 25-14H			
Well Pad	448	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.76
Access Road	1443	40	1.33
Total Initial Disturbance			5.25
Arbalest 42-14H			
Well Pad	487	335	3.75
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.02
Access Road	2624	40	2.41
Total Initial Disturbance			7.18
Arbalest 23-15H			
Well Pad	448	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.80
Access Road	474	40	0.43
Total Initial Disturbance			4.37
Arbalest 39-15H			
Well Pad	448	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.74
Access Road	1195	40	1.10
Total Initial Disturbance			4.98
Arbalest 58-16H			
Well Pad	439	335	3.38
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.02
Access Road	1911	40	1.75
Total Initial Disturbance			6.15
Arbalest 20-18H			
Well Pad	487	335	3.75
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.22
Access Road	11873	40	10.90
Total Initial Disturbance			15.87
Arbalest 36-07H			
Well Pad	487	335	3.75
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.48
Access Road	3663	40	3.36
Total Initial Disturbance			8.59
Arbalest 45-22H			
Well Pad	448	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.73
Access Road	10593	40	9.73
Total Initial Disturbance			13.60

Activity	Length Surface (feet)	Width Surface (feet)	Acres of Disturbance
Arbalest 26-22H			
Well Pad	448	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.31
Access Road	1915	40	1.76
Total Initial Disturbance			6.21
Arbalest 28-23H			
Well Pad	3448	305	3.14
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.92
Access Road	213	40	0.20
Total Initial Disturbance			4.26
Arbalest 49-24H			
Well Pad	487	335	3.75
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.97
Access Road	1514	40	1.39
Total Initial Disturbance			6.11
Bolt 05-25H			
Well Pad	439	335	3.37
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	1.00
Access Road	3126	40	2.87
Total Initial Disturbance			7.24
Bolt 08-25H			
Well Pad	439	335	3.37
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.95
Access Road	1229	40	1.13
Total Initial Disturbance			5.45
Bolt 06-26H			
Well Pad	439	335	3.37
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.85
Access Road	2635	40	2.42
Total Initial Disturbance			6.64
Bolt 09-26H			
Well Pad	439	335	3.37
Cut/fills & Topsoil/spoil stockpile	Varies	Varies	0.90
Access Road	1346	40	1.23
Total Initial Disturbance			5.50

2.3. Operator Committed Measures

EOG incorporated several measures to alleviate resource impacts into the MSUP, submitted to BLM on June 15, 2011. Implementation of committed mitigation measures contained in the MSUP and Drilling Program, in addition to the standard conditions of approval (COAs) from the PRB FEIS ROD's Appendix A, are incorporated and analyzed in this alternative.

Operator committed mitigation measures for all pads include: wellhead telemetry for remote monitoring to reduce maintenance traffic, non-emergency operational visits during daylight hours for raptor mitigation between February 1 and July 31, 30 day stabilization measures applied for sandy soils and wind erosion, cattle guards installed at all fence crossings (unless requested otherwise by the landowner), and bird screens installed on all applicable equipment with stacks.

1. All fence crossings along access roads will be replaced by cattle guards unless otherwise requested by the surface owner.
2. Implement a closed loop drilling system for all wells and construct only drill cuttings pits to an average of 150 x 50 x 3 foot specification.
3. All well pads will be initially powered by generators. Conversion to electricity from electrical power lines may be conducted in the future
4. Final reclamation would be conducted by recontouring all disturbed areas, including access roads to the original contour that blends with the surrounding topography, unless otherwise requested by the surface owner. EOG will submit a final reclamation plan to the BLM via a sundry notice form 3160-5.
5. Grading and site preparation BMPs and other soil retention measures would mitigate for potential soil losses and other erosive forces. Topsoil segregation would occur at the proposed well pads to be used during future pad reclamations and project restorations, thereby mitigating impacts to soils at the proposed locations.
6. All well pads will be designed to prevent storm water and sheet flow from entering the well pad.
7. Well site maintenance visits would be minimized during the nesting season. Once the well is on production, a pumper would be on location daily to monitor the production facilities and to ensure that the equipment is functioning properly. Daily well visits may last from 20 to 60 days, as this is an exploratory well. No other daily traffic would be anticipated after production facilities are installed. If the well is determined to be capable of producing economically, EOG would install SCADA systems and automation to minimize well site visits to less than daily. As required by law, oil wells would still be visited at least once per week to monitor production equipment and detect leaks or spills.
8. Design well pads and access roads to minimize disturbance to drainages and environmental resources.
9. Access roads will have a maximum of a 16 foot drivable surface and will be improved by template unless otherwise noted.

Site specific on-site comments for the well pads were:

- Pad #1 – Pull in corner 7-20 feet. Narrow pad along pit side by 20 feet and extend pad towards road to get out of head cuts and provide a vegetative buffer. Fill slopes 2:1 with matting and waddles for specific erosion control.
- Pad #2 – Road plan and profile required for road crossings of drainage. Reshape well pad to avoid the drainages and provide vegetative buffer. All well pad corners cut off to minimize impact to drainages.
- Pad #10 – Vegetative buffer will be maintained between pad and drainage.
- Pad #11 – Round and armor corner #6 to keep out of drainage. Vegetative buffer will be maintained between pad and drainage.
- Pad #15 – Re-route fence around well pad.
- Pad #17 – Armored low water crossing. Reinforce dam. Build-up existing road.
- Pad #18 – Move and twist pad to avoid pipeline. Move access road to come off Turner Crest Road to minimize drainage crossing.
- Pad #19 – Move location 200-300 feet, Round corners and place waddles for erosion mitigation and to maintain a vegetative buffer. The names of these wells have changed to: Arbalest: 36-07H, 37-07H, 225-07H, 226-07H to reflect the surface hole location change from section 18 to section 7.
- Pad #20 – Evaluate vegetative buffer and erosion control measures for corner #8.
- Pad #23 – CMP will be installed along access road.

2.4. Surface Use Site-Specific Conditions of Approval:

2.4.1. Vegetation and Soils

1. All fill material is to be placed in shallow lifts (6 to 12 inches), moisture applied, and compacted to a 95% maximum standard density as determined by AASHTO T-99. (justification, see EOG Arbalest Project 808 EA# WY-070-11-284, pp. 49 - 50)

2. Initiate interim reclamation measures within 30 days following well drilling and completion activities. Interim reclamation will be completed within 6 months of the completion of well pad and location development, per Onshore Order 1. (justification, see EOG Arbalest Project 808 EA# WY-070-11-284, pp. 49 - 50).

2.4.2. Wildlife

1. Heater/treater units on well pads will have bird perch deterrents installed. (justification, see EOG Arbalest Project 808 EA# WY-070-11-284, p. 47)

4 Recommended COAs.

1. No surface disturbing activity shall occur within ½ mile of all identified raptor nests from February 1 through July 31, annually, prior to a raptor nest occupancy survey for the current breeding season. This timing stipulation will affect those nests and wells referenced in Table 2.3. Below (justification , see EOG Arbalest Project 808 EA# WY-070-11-284, p. 47):

Table 2.3. Active Raptor Nests in the Project 808 POD

HWA Nest ID	BLM Nest ID	Species	2011 Status	Nest Condition	Wells within 0.5 mile	Distance (miles)	Direction from Well
162	3723	Red-tailed Hawk	Active	Excellent	Arbalest 19-18H	0.36	E
					Arbalest 20-18H	0.35	E
					Arbalest 223-18H	0.33	E
					Arbalest 224-18H	0.32	E
					Arbalest 225-07H	0.21	SW
					Arbalest 226-07H	0.22	SW
					Arbalest 36-07H	0.23	SW
					Arbalest 37-07H	0.24	SW
164	4586	Red-tailed Hawk	Active	Excellent	Arbalest 22-15H	0.27	E
					Arbalest 229-15H	0.26	E
					Arbalest 230-15H	0.26	E
					Arbalest 23-15H	0.25	E
					Arbalest 231-15H	0.15	NW
					Arbalest 232-15H	0.16	NW
					Arbalest 39-15H	0.13	NW
					Arbalest 40-15H	0.14	NW
150	2890	Ferruginous Hawk	Active	Excellent	Arbalest 214-22H	0.32	N
					Arbalest 216-22H	0.32	N
					Arbalest 45-22H	0.31	N
					Arbalest 46-22H	0.32	N
89	2014	Great Horned Owl	Active	Good	Arbalest 220-24H	0.43	N
					Arbalest 221-24H	0.44	N
					Arbalest 49-24H	0.39	N
					Arbalest 50-24H	0.41	N

HWA: Hayden Wing Associates, a wildlife consulting firm hired by EOG to conduct wildlife and habitat surveys.

2. Surveys to document nest occupancy shall be conducted by a biologist following BLM protocol, between April 15 and June 30. All survey results shall be submitted in writing to a Buffalo BLM biologist and approved prior to surface disturbing activities. Surveys outside this window may not depict nesting activity. If a survey identifies active raptor nests, a ½ mile timing buffer will be implemented. The timing buffer restricts surface disturbing activities within ½ mile of occupied raptor nests from February 1 to July 31.). (Justification, see EOG Arbalest Project 808 EA# WY-070-11-284, p. 47)
3. For any surface-disturbing activities proposed in sagebrush shrublands, EOG will conduct clearance surveys for sage grouse breeding activity during the sage grouse’s breeding season before initiating

the activities. The surveys must encompass all sagebrush shrublands within 0.5 mile of the proposed activities.

4. Pre-construction surveys would be conducted for mountain plover at well pads with potential habitat between May 1 and June 15. If plovers are found, a disturbance-free buffer zone of 0.25 mile will be established around all mountain plover nesting locations (Arbalest 49-24H) between March 15 and July 31. (Justification, see EOG Arbalest Project 808 EA# WY-070-11-284, p. 49)

2.5. Cultural or Historic Values

In addition to the mitigation measure above, several stipulations for cultural resources include:

1. The Operator is responsible for informing all persons who are associated with the project operations that they would be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts.
2. If subsurface archaeological features are located during ground disturbing activities or during well pad or access road clearing or construction, all such activities on the well pad are to cease immediately within 30 meters (100 feet) of the discovery. The Authorizing Officer (AO) (i.e., Field Manager or his/her acting) are to be notified immediately. Within 5 working days the AO would inform the Operator as to:
 - a. whether the subsurface features or materials found appear eligible for the NRHP.
 - b. the mitigation measures the Operator would likely have to undertake before the site can be used (assuming that in situ preservation is not necessary).
 - c. a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer (SHPO), that the findings of the AO are correct and that the mitigation is appropriate.
 - d. At any time, if the Operator wishes to relocate the construction activities to avoid the expense of mitigation and/or the delays associated with the process, the AO would take on the responsibility of recording and/or stabilizing the exposed materials, if required. Mitigation technical guidelines and procedures would be provided by the AO. The Operator may resume construction once the AO verified that mitigation is complete.
 - e. Pursuant to 43 CFR 10.4 (g) the holder of the authorization must notify the AO, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Pursuant to 43 CFR 10.4 (c) and (d), the operator or the operator's contractors must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.

2.6. Alternatives Considered but Eliminated from Detailed Study

An alternative was considered for relocation of the Crossbow 07-06H access road, but EOG confirmed following the on-sites that this was not feasible from a construction and operations standpoint due to the sharp turns in the alternate access route. Based on the on-site inspection, existing two-tracks nearby are not feasible for use during construction and operation and would need to be realigned and rebuilt, resulting in similar or greater surface disturbance due to increased length of access route. EOG considered an alternative to drill each well, or each set of 2 wells, from separate pads. EOG's planning determined that this would result in unnecessary increased surface disturbance; therefore, this alternative was eliminated from detailed study.

2.7. Conformance with 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, and supporting FEISs, 1985, 2003. Processing these APDs did not use the rebuttable presumption in the 2005 Energy Policy Act to process via a categorical exclusion to save time since this EA initiation pre-dated the 12 August 2011 decision by the Federal District Court of Wyoming.

3. AFFECTED ENVIRONMENT

This section describes the physical and regulatory environment in the areas that would be affected by implementation of the Alternatives described in Section 2. Aspects of the affected environment described in this section focus on the relevant major issues. Resources unaffected, or not affected beyond the level analyzed in the PRB FEIS, are outside the scope of this EA.

3.1. Topographic Characteristics

The project area is of moderately low relief ranging from a low of approximately 4,760 feet above sea level at the Arbalest 22-15 location to a high of 5,082 feet above mean sea level at the Bolt 9-26 location. The named drainages include Spring Creek, Little Bates Creek, and Horse Creek. The topography of the area is flat to rolling grasslands with minimal sagebrush inclusion. The area falls in a 12- to 16-inch precipitation zone, with most of the precipitation falling during late winter and spring. The surface ownership in the general area is a mixture of private, state, and federal surface, with cattle grazing, coal mining, and oil and gas development being the primary surface uses.

3.2. Air Quality

Existing air quality throughout most of the PRB is in attainment with all ambient air quality standards. Air quality monitoring is conducted from 3 sites in the PRB. Air quality conditions in rural areas are likely to be very good, as characterized by limited air pollution emission sources (few industrial facilities and residential emissions in the relatively small communities and isolated ranches) and good atmospheric dispersion conditions, resulting in relatively low air pollutant concentrations. Existing air pollutant emission sources in the region include following:

- Exhaust emissions (primarily CO and nitrogen oxides [NO_x]) from existing natural gas fired compressor engines used in production of natural gas and CBNG; and, gasoline and diesel vehicle tailpipe emissions of combustion pollutants;
- Dust (particulate matter) generated by vehicle travel on unpaved roads, windblown dust from neighboring areas and road sanding during the winter months;
- Transport of air pollutants from emission sources located outside the region;
- Dust (particulate matter) from coal mines;
- NO_x, particulate matter, and other emissions from diesel trains and;
- SO₂ and NO_x from power plants.

Refer to the PRB Final EIS Volume 1, pp. 3-291 to 3-299 for a description of PRB air quality in 2003.

3.3. Surface Water

Surface water resources in the project area consist of small agricultural impoundments and reservoirs in slight isolated depressions or gullies with associated named ephemeral and intermittent streams. The majority of well pads and their associated roads are in the Spring Creek-Antelope Creek watershed (hydrologic unit code [HUC] 101201010302) (Figure 5). Major named surface water features in the project area and vicinity include Spring Creek, Horse Creek, and Little Bates Creek. Spring and Horse Creek flow southwest and eventually drain into the Cheyenne River approximately 20 miles east-southeast of the project area. Little Bates Creek flows southeast along the western edge of the project area and forms confluence with Antelope Creek, a tributary to the Cheyenne River, 4 miles south of the P808.

3.3.1. Groundwater

Groundwater in the project area originates from regional and localized aquifers. Typical groundwater depth for the localized aquifer in the area is approximately 60 to 100 feet below the surface (state of Wyoming 2011d.). Based on information from the Wyoming State Engineers Office for permitted wells, 315 water wells are within 1 mile of the proposed wells (State of Wyoming 2011d). Of these well bores, 287 are associated with CBNG development. The CBNG wells have an average static depth ranging from

300 to 773 feet from the surface. Twelve of the well bores are monitoring wells and 4 are domestic wells. The domestic wells range in depth from 179 to 300 feet below the surface. The Wyoming State Engineers Office designates 1 water well for a reservoir and the remaining wells as storage.

3.4. Vegetation & Soils

3.4.1. Vegetation

The project area has flat to rolling shortgrass prairie with minimal big sagebrush (*Artemisia tridentata* and *A. tridentata* ssp. *wyomingensis*) inclusion, Figures 3.0 to 3.4. Vegetation is primarily of upland grassland with widely scattered pockets of sagebrush. Most drainages are dry by mid to early summer, and harbor few trees. Scattered cottonwood trees (*Populus deltoides*) are found in the Spring Creek, Little Bates and Horse Creek drainages and along the smaller feeder draws. Larger and more frequent groves of trees are found along Bates Creek and Antelope Creek; both located within 1 mile of the south edge of the project area (Hayden-Wing Associates [HWA] 2010). Wyoming GAP (<http://www.uwyo.edu/wygisc/>) spatial vegetation data and field observations were used to determine the vegetation classifications that are found within the project area. Land cover types and their estimated aerial coverage are in Table 3.1.

Table 3.1. Land Cover Types in the Arbalest EA Project 808 Area

Land Cover Type	Acres
Inter-Mountain Basins Big Sagebrush Steppe	12,325
Northwestern Great Plains Mixed Grass Prairie	5,967
Western Great Plains Riparian Woodland and Shrubland	782
Pasture/Hay	544
Introduced Wetland Vegetation	324
Western Great Plains Badland	238
Depressional Wetland	169
Developed, Open Space	117
Western Great Plains Sand Prairie	85
Inter-Mountain Basins Greasewood Flat	59
Introduced Upland Vegetation - Annual Grassland	57
Total	20,713

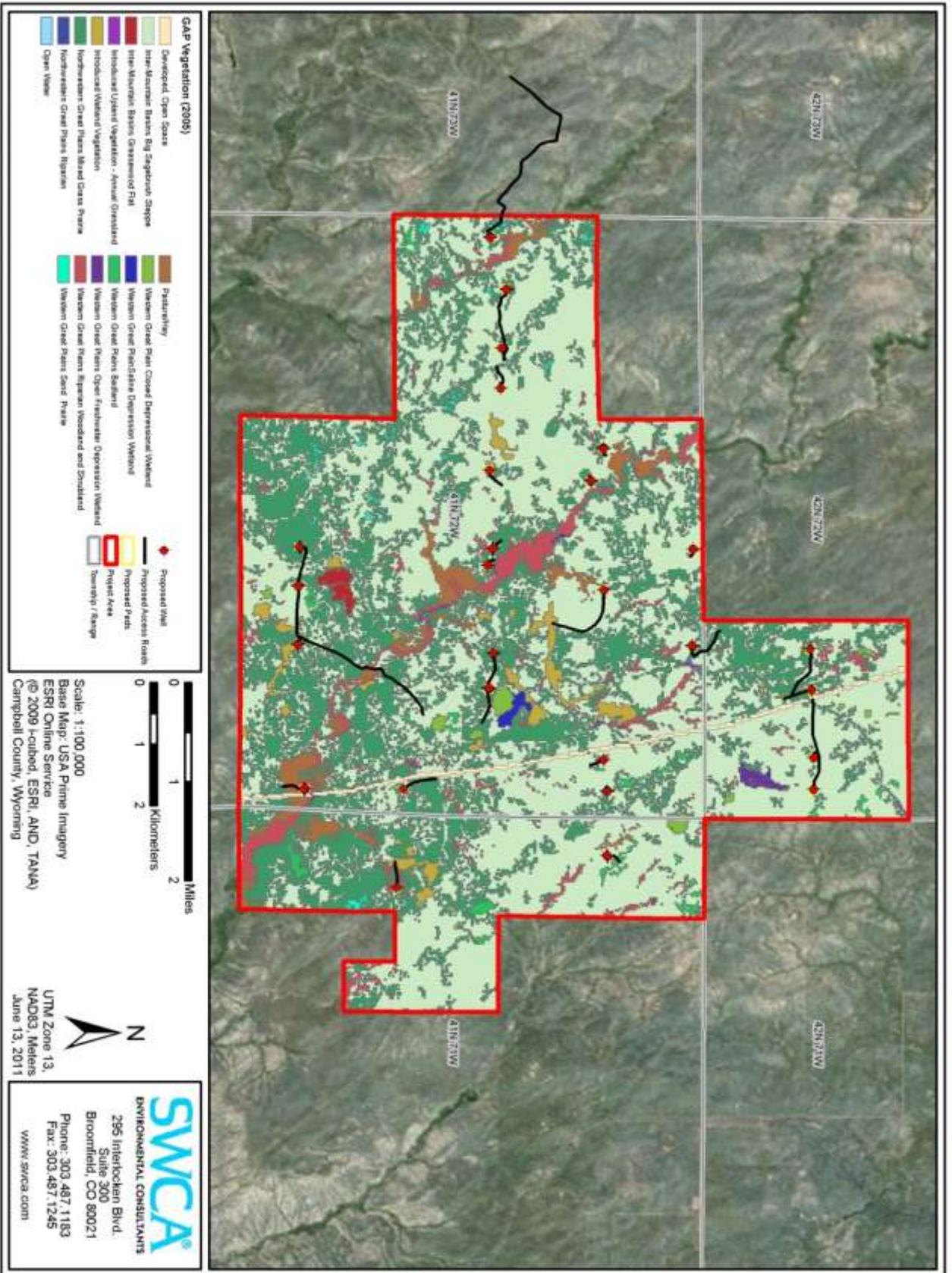


Figure 3.0 Vegetation Classes in the project area (overview).

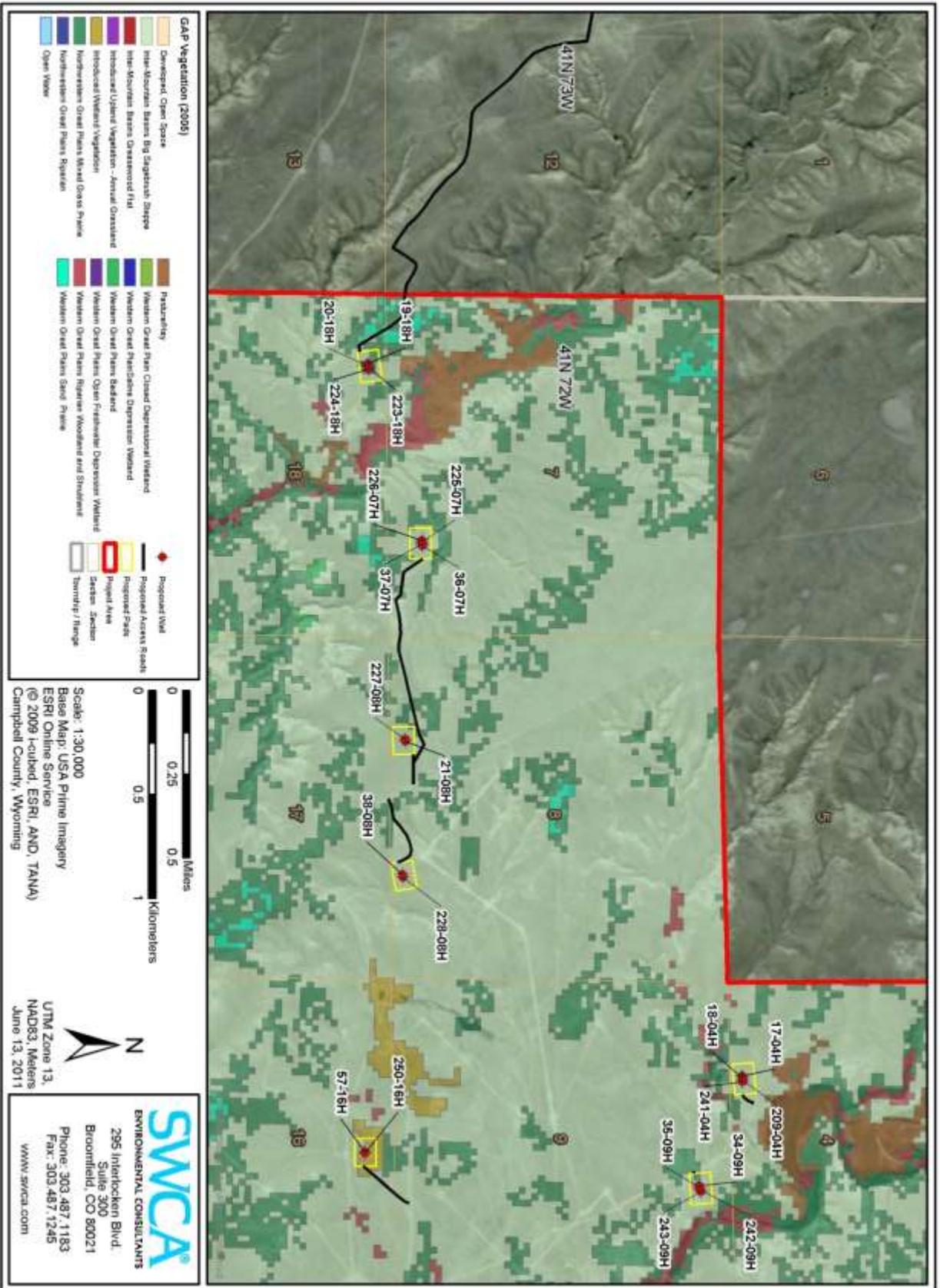
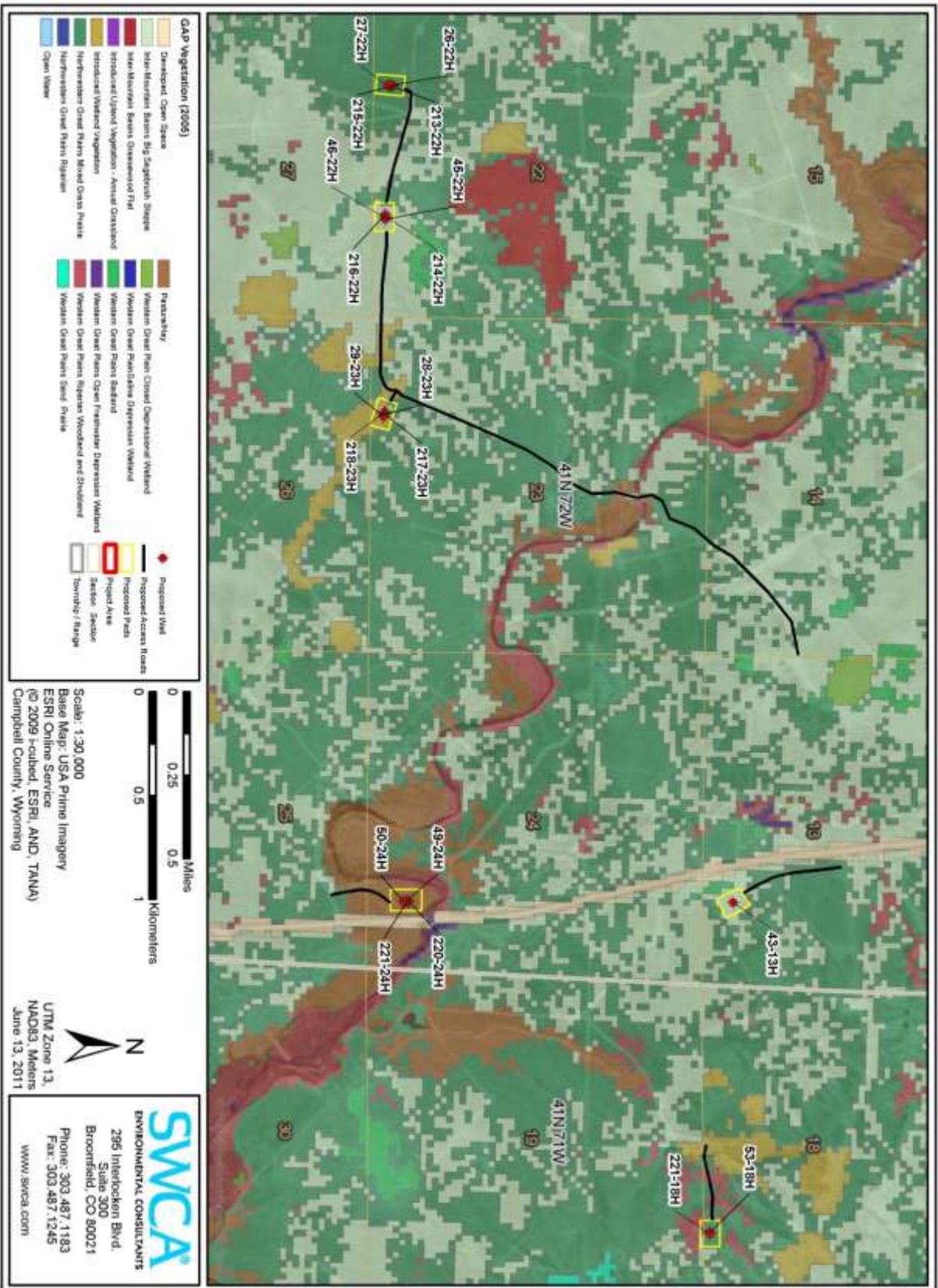


Figure 3.2 Vegetation Classes in the project area (close-up view).



3.4.1.1. Invasive, Nonnative Species

Twenty-five invasive plant species are on the State of Wyoming Designated Noxious Weeds and Prohibited Noxious Weeds list (State of Wyoming 2011a). EOG found no state-listed noxious weed populations or weeds of concern in the project area. Additional weeds are listed by Campbell and Converse counties (State of Wyoming 2011b). “Declared weeds” are plants which the Wyoming weed and pest council found detrimental to the general welfare of persons residing in a district. Cheatgrass (*Bromus tectorum*), also called downy brome, is an opportunistic grass and prolific seed producer listed by Converse County. EOG observed cheatgrass at a majority of the proposed well pad locations and throughout the project area during the May 2011 on-site evaluations. At some well pads, cheatgrass was one of the dominant plant species. Russian thistle (*Salsola kali*), also known as tumbleweed, is another weed found at proposed well pad locations, including Arbalest 36-07, Arbalest 21-08, and Arbalest 49-24. This weed invades areas with disturbed soils such as areas along ROWs, well pads, and fence lines.

3.4.2. Soils

The Natural Resources Conservation Service (NRCS) mapped soils in the proposed project area. Figure 4.0 provides an overall illustration of the various soils and soil complexes that are found in the general project area. Figures 4.1 to 4.4, through displays the soil composition that surrounds each proposed well pad and associated access road. Soils complexes derived from different soils series that are mapped on the well pads and access roads, and their respective acreages, are summarized in Table 3.2. The acreage shown is based on the spatial extent of soil series combinations derived from NRCS data; therefore, the acreage is approximate and used as a best estimate of soil series distribution at each of the proposed project areas.

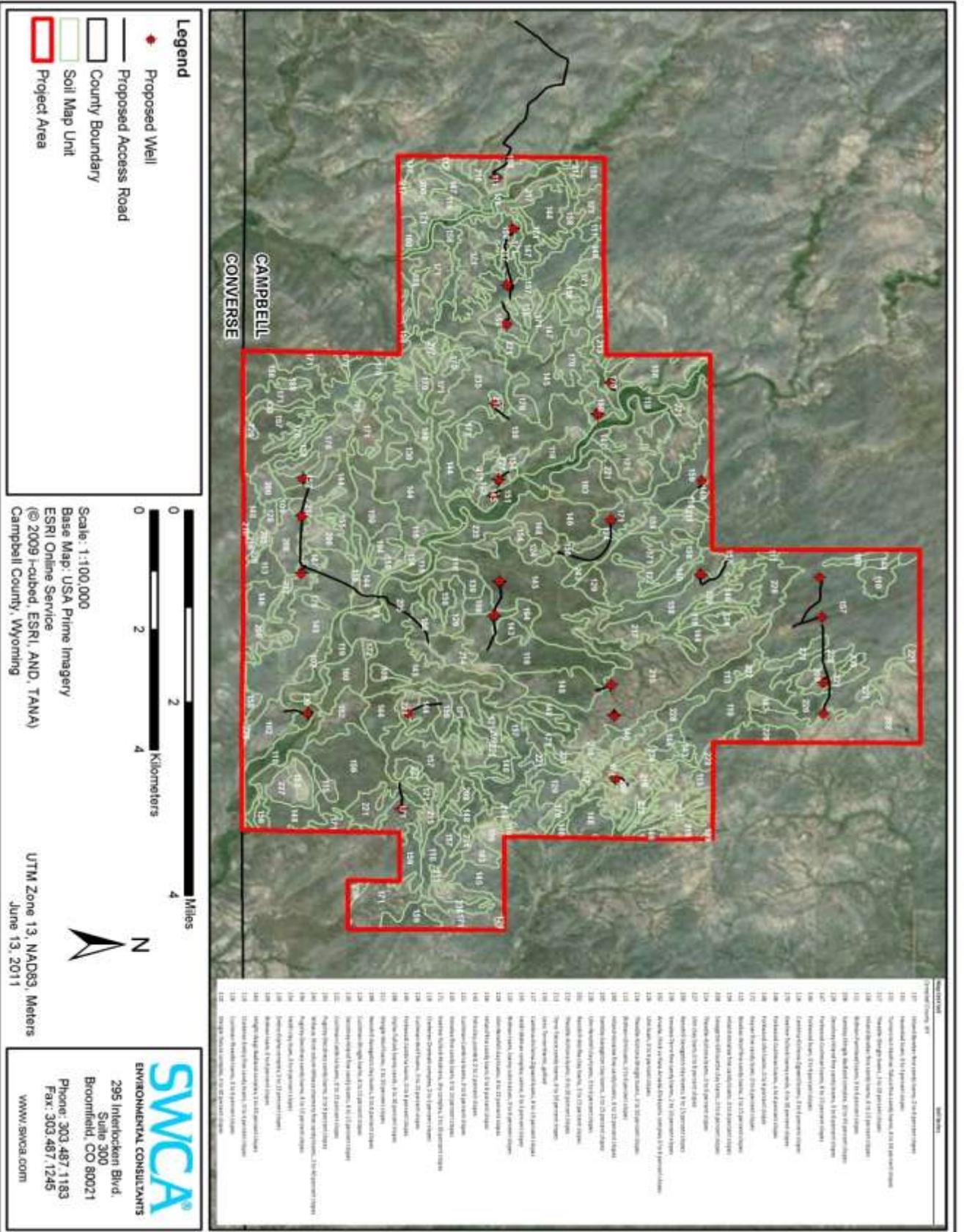


Figure 4.0 Soils and soil complexes found in the project area (overview).

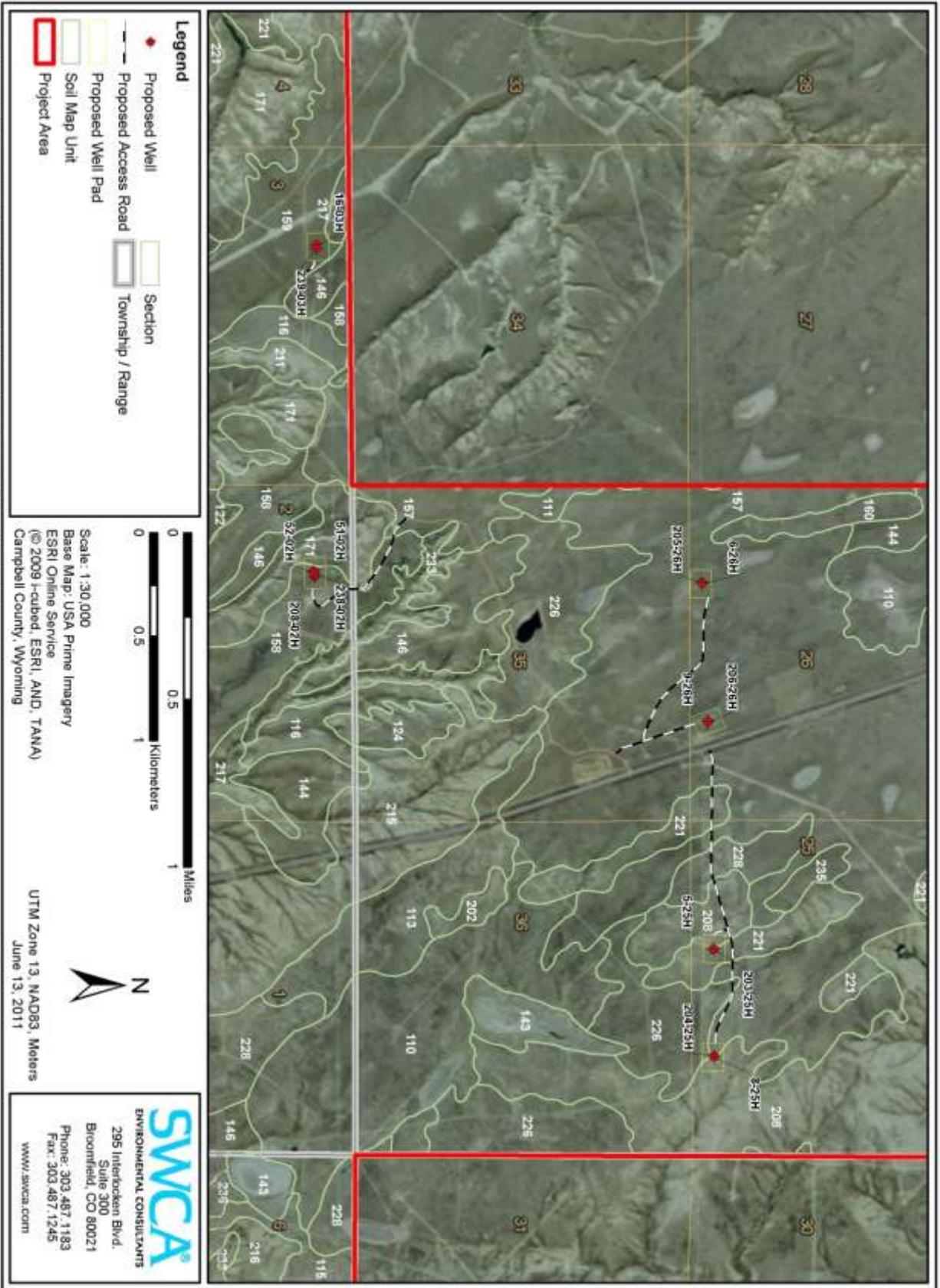


Figure 4.1 Soils and soil complexes found in the project area (close-up view).

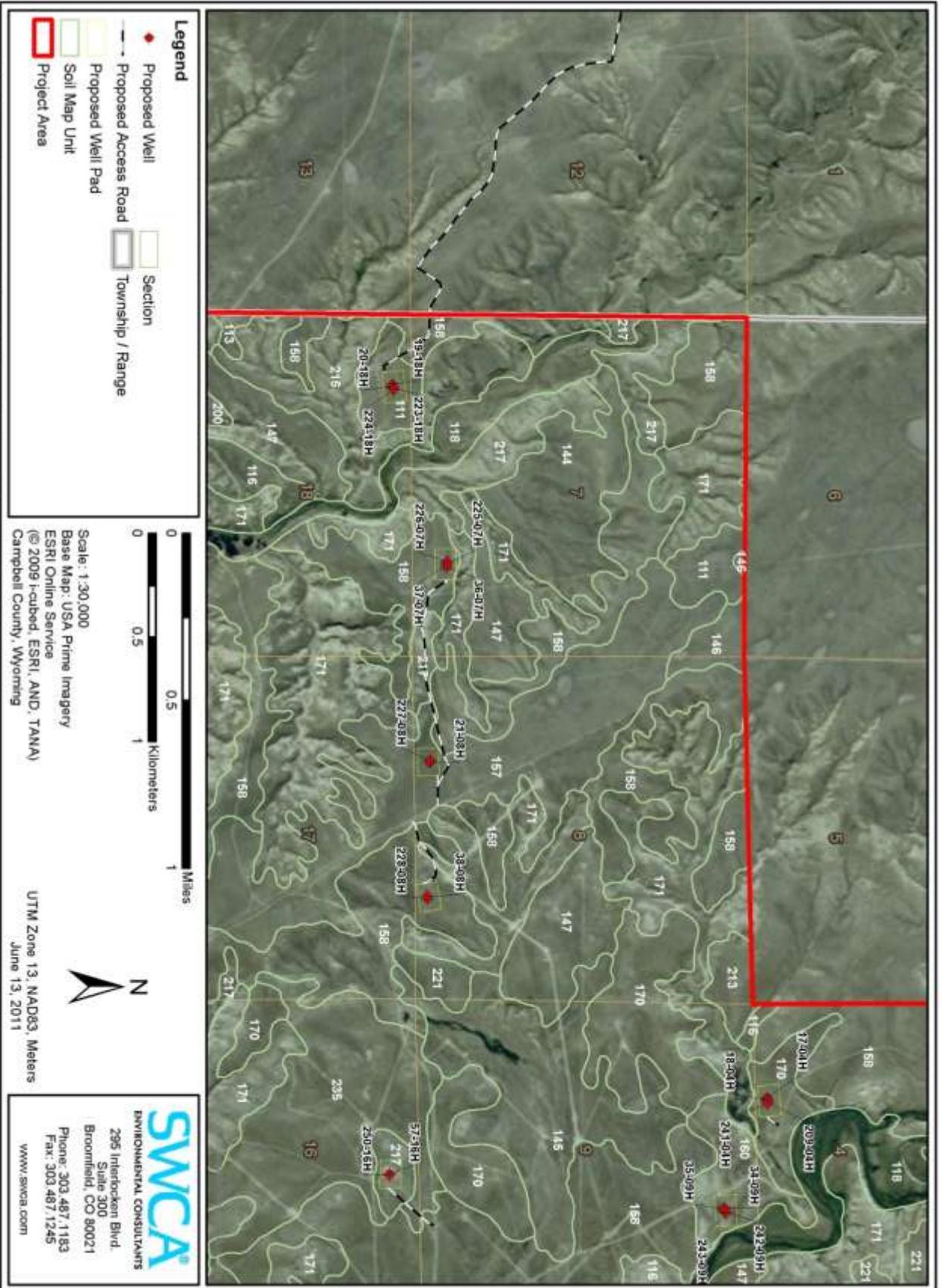


Figure 4.2 Soils and soil complexes found in the project area (close-up view).

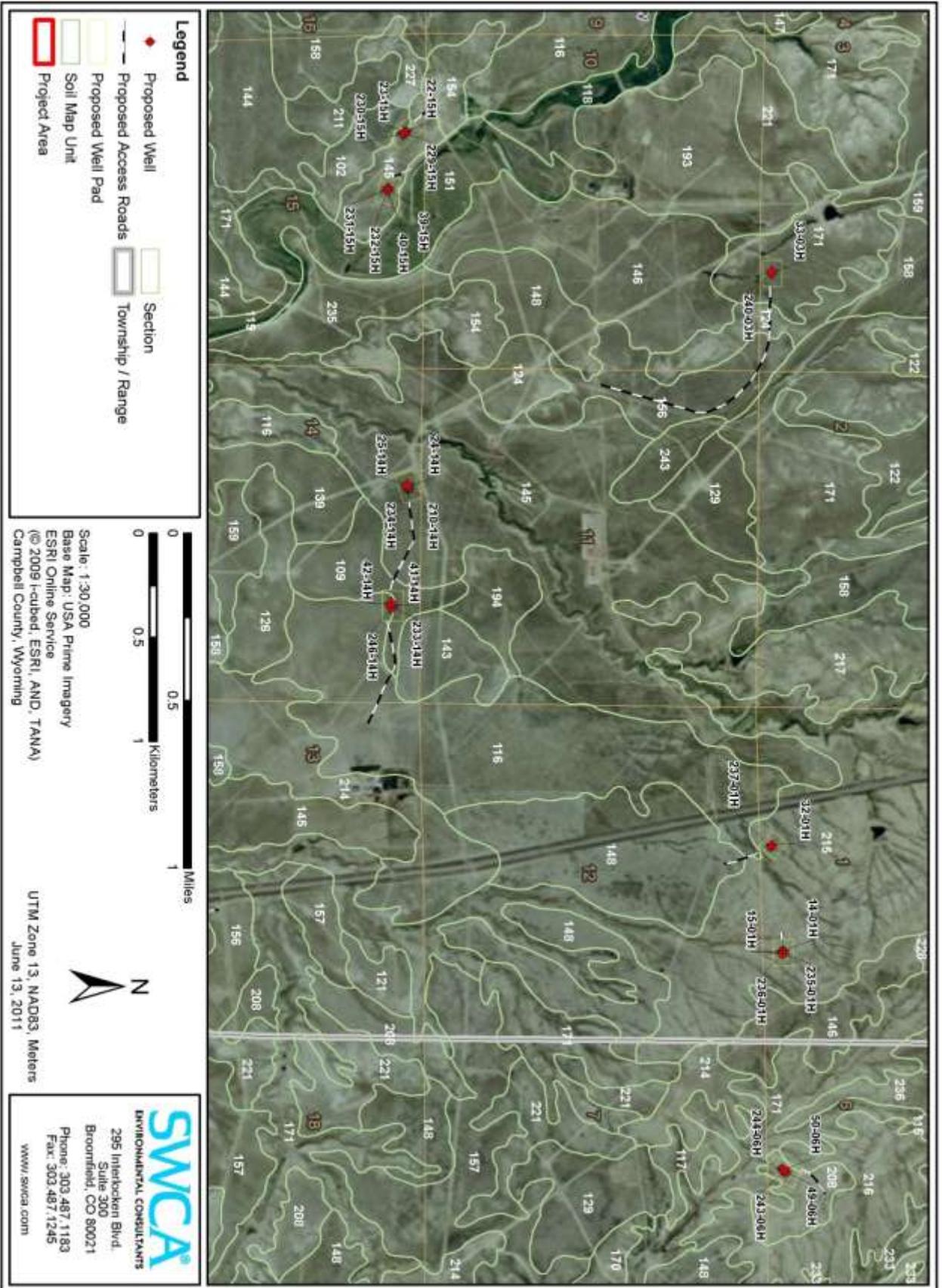


Figure 4.3 Soils and soil complexes found in the project area (close-up view).

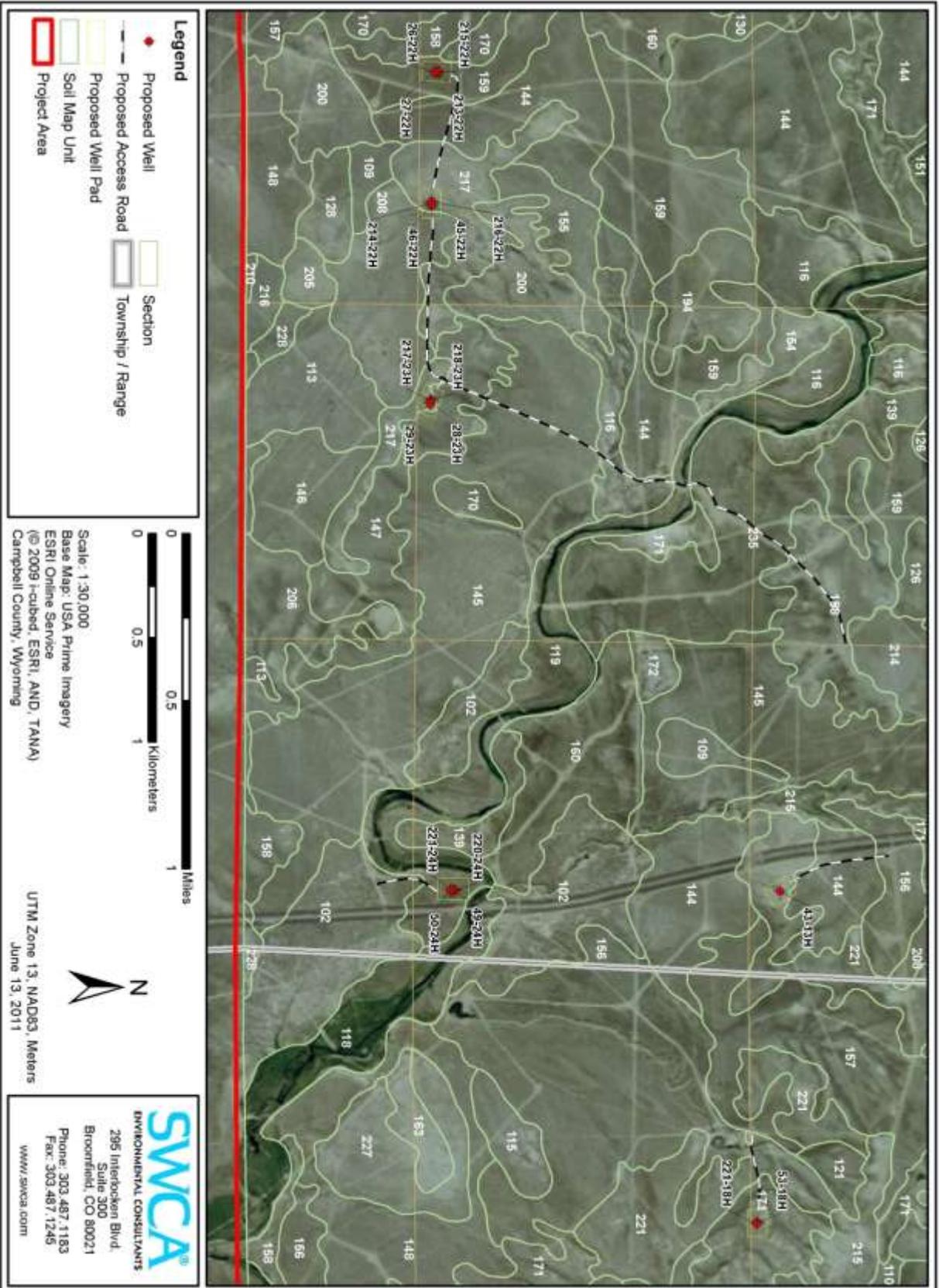


Figure 4.4 Soils and soil complexes found in the project area (close-up view).

Table 3.2. Soil Types at Well Pads and Access Roads

Well Pad ID	Pad No.	Map Unit	Soil Series	Acres
Crossbow 49-06H	1	208	Savageton-Silhouette clay loams, 0 to 6 percent slopes	4.84
		216	Theedle-Kishona-Shingle loams, 3 to 30 percent slopes	0.55
		171	Keeline-Tullock-Niobrara, dry complex, 3 to 30 percent slopes	0.27
Crossbow 53-18H	2	221	Turnercrest-Keeline-Taluce fine sandy loams, 6 to 30% slopes	0.62
		156	Hiland fine sandy loam, 0 to 6 percent slopes	0.08
		171	Keeline-Tullock-Niobrara, dry complex, 3 to 30 percent slopes	4.60
Arbalest 14-01H	3	215	Theedle-Kishona loams, 6 to 20 percent slopes	4.16
Arbalest 32-01H	4	116	Cambria-Kishona-Zigweid loams, 0 to 6 percent slopes	0.27
		148	Forkwood-Ulm loams, 0 to 6 percent slopes	0.35
		215	Theedle-Kishona loams, 6 to 20 percent slopes	3.78
Arbalest 51-02H	5	157	Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes	0.35
		158	Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes	5.21
		171	Keeline-Tullock-Niobrara, dry complex, 3 to 30 percent slopes	1.74
Arbalest 16-03H	6	217	Theedle-Shingle loams, 3 to 30 percent slopes	0.22
		146	Forkwood-Cushman loams, 0 to 6 percent slopes	0.07
		159	Hiland-Vonalee fine sandy loams, 0 to 6 percent slopes	4.34
Arbalest 33-03H	7	156	Hiland fine sandy loam, 0 to 6 percent slopes	3.13
		171	Keeline-Tullock-Niobrara, dry complex, 3 to 30 percent slopes	4.13
		124	Cushman-Shingle loams, 6 to 15 percent slopes	0.48
Arbalest 17-04H	8	170	Keeline-Tullock loamy sands, 6 to 30 percent slopes	5.25
Arbalest 21-08H	9	157	Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes	4.91
		158	Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes	0.03
		171	Keeline-Tullock-Niobrara, dry complex, 3 to 30 percent slopes	0.01
Arbalest 38-08H	10	157	Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes	0.12
		158	Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes	5.27
		171	Keeline-Tullock-Niobrara, dry complex, 3 to 30 percent slopes	0.35
Arbalest 34-09H	11	160	Hiland-Vonalee fine sandy loams, 6 to 15 percent slopes	4.91
		118	Clarkelen-Draknab complex, 0 to 3 percent slopes	0.01
Arbalest 43-13H	12	221	Turnercrest-Keeline-Taluce fine sandy loams, 6 to 30% slopes	4.20
		144	Forkwood loam, 0 to 6 percent slopes	1.29
		156	Hiland fine sandy loam, 0 to 6 percent slopes	0.29
Arbalest 25-14H	13	145	Forkwood-Cambria loams, 0 to 6 percent slopes	5.05
		109	Bidman loam, 0 to 6 percent slopes	0.20
Arbalest 42-14H	14	116	Cambria-Kishona-Zigweid loams, 0 to 6 percent slopes	2.98
		109	Bidman loam, 0 to 6 percent slopes	3.43
Arbalest 23-15H	15	102	Arvada, thick surface-Arvada-Slickspots complex, 0 to 6% slopes	1.25
		145	Forkwood-Cambria loams, 0 to 6 percent slopes	3.02
		154	Heldt clay loam, 0 to 6 percent slopes	0.12

Well Pad ID	Pad No.	Map Unit	Soil Series	Acres
Arbalest 39-15H	16	151	Haverdad loam, 0 to 3 percent slopes	0.10
		145	Forkwood-Cambria loams, 0 to 6 percent slopes	4.11
Arbalest 57-16H	17	217	Theedle-Shingle loams, 3 to 30 percent slopes	4.72
		158	Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes	0.25
		235	Vonalee fine sandy loam, 0 to 10 percent slopes	0.32
Arbalest 20-18H	18	158	Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes	1.83
		111	Bidman-Parmalee loams, 0 to 6 percent slopes	5.29
		116	Cambria-Kishona-Zigweid loams, 0 to 6 percent slopes	2.64
		208	Savageton-Silhouette clay loams, 0 to 6 percent slopes	2.02
		235	Vonalee fine sandy loam, 0 to 10 percent slopes	1.85
		145	Forkwood-Cambria loams, 0 to 6 percent slopes	2.14
Arbalest 36-07H	19	157	Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes	0.86
		217	Theedle-Shingle loams, 3 to 30 percent slopes	1.33
		158	Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes	6.09
		171	Keeline-Tullock-Niobrara, dry complex, 3 to 30 percent slopes	0.33
Arbalest 45-22H	20	217	Theedle-Shingle loams, 3 to 30 percent slopes	4.37
		158	Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes	1.66
		147	Forkwood-Cushman loams, 6 to 15 percent slopes	0.61
		116	Cambria-Kishona-Zigweid loams, 0 to 6 percent slopes	1.16
		208	Savageton-Silhouette clay loams, 0 to 6 percent slopes	1.94
		235	Vonalee fine sandy loam, 0 to 10 percent slopes	1.79
		145	Forkwood-Cambria loams, 0 to 6 percent slopes	1.85
		119	Clarkelen-Embry fine sandy loams, 0 to 4 percent slopes	0.25
Arbalest 26-22H	21	217	Theedle-Shingle loams, 3 to 30 percent slopes	0.73
		144	Forkwood loam, 0 to 6 percent slopes	0.61
		170	Keeline-Tullock loamy sands, 6 to 30 percent slopes	0.04
		159	Hiland-Vonalee fine sandy loams, 0 to 6 percent slopes	4.84
Arbalest 28-23H	22	217	Theedle-Shingle loams, 3 to 30 percent slopes	2.24
		147	Forkwood-Cushman loams, 6 to 15 percent slopes	2.02
Arbalest 49-24H	23	102	Arvada, thick surface-Arvada-Slickspots complex, 0 to 6% slopes	0.72
		118	Clarkelen-Draknab complex, 0 to 3 percent slopes	0.06
		119	Clarkelen-Embry fine sandy loams, 0 to 4 percent slopes	4.89
Bolt 05-25H	24	157	Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes	0.09
		221	Turnercrest-Keeline-Taluce fine sandy loams, 6 to 30% slopes	2.80
		208	Savageton-Silhouette clay loams, 0 to 6 percent slopes	1.73
Bolt 08-25H	25	157	Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes	2.86
		221	Turnercrest-Keeline-Taluce fine sandy loams, 6 to 30% slopes	0.91
		208	Savageton-Silhouette clay loams, 0 to 6 percent slopes	3.42
		226	Ulm loam, 0 to 6 percent slopes	1.04
		228	Ulm-Renohill clay loams, 0 to 6 percent slopes	0.48

Well Pad ID	Pad No.	Map Unit	Soil Series	Acres
Bolt 06-26H	26	157	Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes	6.65
Bolt 09-26H	27	157	Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes	5.52

Dominant soils in the project area are described as fine-loamy, mixed, mesic, Ustic Haplargids, Ustic Torripsamments, and Aridic Ustipsamments. Major soil series and complexes are described below in order of dominance in the project area. More information is available in the *Soil Survey of Campbell County, Wyoming* (NRCS 2007) or at <https://soilseries.sc.egov.usda.gov/osdname.asp>.

The Hiland-Bowbac fine sandy loams consist of moderately deep to very deep, well-drained soils found on slopes ranging from 0 to 15 percent. The Hiland soils are formed in alluvium, and eolian deposits on relict surfaces consisting of terraces, fans, fan remnants, pediments, ridges, hills, and stabilized dunes. The Bowbac soils are residuum derived from a clayey sandstone parent material and are found fan remnants, piedmonts, plateaus, ridges and buttes. These soils have a moderate permeability, medium particle cohesiveness, and a medium to low runoff potential depending on slope and vegetation coverage. The A horizon varies in thickness between 0 and 3 inches for these sand loams.

The Forkwood-Cambria loams consist of very deep, well drained soils that are in alluvium on fan remnants, piedmonts, hills, ridges, and alluvial fans with slopes ranging from 0 to 6 percent. These soils have a moderate permeability and a low to medium runoff potential. The A horizon in these loams varies in thickness between 0 and 5 inches. Both the Forkwood and Cambria series are moderately extensive and are used primarily for grazing.

The Keeline-Tullock-Niobrara dry complex consists of shallow to moderately deep excessively drained soils that are formed in alluvium, residuum, or eolian deposits on slopes ranging from 3 to 30 percent. These soils are found on dune, hills, and ridges with the parent material being primarily weathered sandstone. The soils that form this complex have a rapid permeability and a marginal to low runoff potential depending on slope. The A horizon in the soils has a varying thickness between 0 and 4 inches. These soils within this complex are primarily used as rangeland and are of moderate extent.

Hiland-Vonalee fine sandy loams are moderate to very deep, well drained soils that are found on ridges, hills, alluvial fans, and high terraces on slopes ranging from 0 to 6 percent. These soils form in coarse to moderately coarse eolian or alluvium deposits derived from calcareous limestone and have a moderately rapid permeability with a low to very low runoff potential. These soils have an A horizon of less than 3 inches in thickness and are of moderate extent. The Vonalee soils occur on similar landscapes as the Hiland and Keeline soils are primarily used as rangeland.

The Savageton-Silhouette clay loams consist of very deep well drained soils formed in alluvium derived from shale with slopes ranging between 0 and 6 percent. The Savageton and Silhouette soils are found on alluvial fans, fan remnants, ridges, relict terraces, and hills. Permeability is slow and runoff potential is medium to high depending on slope for these loams. The A horizon in these soils is typically thin and less than 2 inches. These soils are of limited extent and are primarily used for grazing.

The Theedle-Shingle soils consist of well-drained soils that are shallow to moderately deep to bedrock on slopes between 3 and 30%. These soils derive from residuum and colluviums from shale and soft sandstone parent sources and are on hills, ridges, and fan remnants. Runoff potential is slow to high depending on slope and permeability is moderate for the Theedle-Shingle loams. These soils are primarily rangeland and are of moderate extent. The A horizon for these soils varies from 0 to 4 inches thick.

The Bidman-Parmalee loams occur on slopes between 0 and 6 percent and are very deep and well drained. The Bidman soils are formed in alluvium weathered from shale bedrock and are found on alluvial fans, terraces, remnants, ridge, and hills. The Parmalee loams are found along lake plains and are formed from silty lacustrine deposits. The Parmalee loams are a smaller component of this complex compared to the Bidman loams. Runoff potential for the Bidman loams varies between low to high depending on slope gradient and permeability is slow. The primary uses for the Bidman loams include pasturelands and tilled drylands. The Bidman loams are of moderate extent and have a varying E horizon thickness between 0 and 5 inches.

The Kishona soil series consists of very deep, well drained soils formed in alluvium on fan aprons, remnants, terraces, hills, and ridges on slopes ranging between 6 and 20 percent. Runoff potential for the Kishona soils is slow to medium with a moderate permeability. The Kishona soils are of moderate extent and have an A horizon of 0 to 4 inches.

The Cambria-Kishona-Zigweid complex is found on 0 to 6 percent slopes on ridges, hills, terraces, and fans. This complex is comprised of the Cambria, Kishona, and Zigweid soils which share similar geographical settings. The runoff potential for these soils varies between medium to rapid depending on slope and each has a moderate permeability. The soils in this complex have a varying A horizon thickness between 0 and 4 inches.

The Turnercrest soils consist of moderately deep, well-drained soils formed in eolian or alluvium deposits and residuum derived from soft sandstone. The Turnercrest soils are comprised of a coarse loam found on bedrock-controlled hills, fan remnants, ridges, and structural benches where slopes range from 0 to 30 percent. These soils have a medium to low runoff potential and a moderate permeability.

The Clarkelen-Embry complex consists of well drained, very deep soils that are formed from mixed sedimentary and sandstone sources. The Clarkelen soils tend to be formed in stratified alluvium and are found on floodplains and terraces. The Embry soils are formed in alluvium and eolian deposits and are found on hills, dunes, terraces, and alluvial fans. The extent of Clarkelen is moderate and the Embry soils are of limited extent. The permeability of both of these soils is moderate to rapid with a runoff potential varying between medium and rapid. The A horizon for these soils is on average 6 inches in thickness. Primary uses of the Clarkelen-Embry complex include rangeland, grazing, and wildlife habitat.

The Arvada soil series consists of very deep, well-drained soils formed in alluvium and colluvium derived from sodic or high sodium concentrated shales. These fine soils are found on alluvial fans, fan remnants, fan terraces, and hillslopes with slopes of 0 to 6 percent. The Arvada soils have a slow permeability and a high to very high runoff potential which is dependent on slope gradient and vegetative coverage. The Arvada soils have a typical E horizon thickness of less than 4 inches and tend to be sodic in nature limiting soil uses to rangeland and wildlife habitat.

The Ulm series consists of very deep, well-drained soils that are formed in calcareous alluvium derived from sedimentary rock. Ulm soils are fine soils are located on relict terraces, alluvial fans, fan remnants, plateaus, ridges, and hills with slopes that are 0 to 6 percent. The Ulm series has an average A horizon thickness of 4 inches and is of moderate distribution within the central Rocky mountain Region. The runoff potential is medium and permeability ranges from slow to moderate. Primary uses for the Ulm soils include dry farming and livestock grazing.

The Renohill series consists of well-drained soils that are moderately deep to soft bedrock. These fine soils are formed in alluvium, colluvium, and residuum. Renohill soils are on bedrock controlled plateaus, alluvial fans, hills, and ridges with slopes that are 0 to 6 percent. Runoff potential for the Renohill soils varies based on slope gradient and can range from low to high. Permeability for the Renohill soils is

slow. The A horizon is on average 4 inches in thickness and primary land uses include rangeland, wildlife habitat, and small inclusions hay or small grain croplands. This series is of moderate extent in the central Rocky mountain region. Less than a half acre of Renohill soils are found in the immediate project area and are associated with the Ulm soils.

3.4.3. Wetlands and Riparian

Wetlands in the proposed project area are predominantly affiliated with the seasonally wet and dry ephemeral and intermittent streams and slight depressions in the area, Figure 5. Several earthen berms, culverts and other surface flow control structures are located along the creek which attain and regulate surface water flows changing the dynamics of these streams. Transitional wetland habitat is typically observed along the bottom of the drainages whereas deeper emergent and obligate wetlands are observed just up gradient from control and surface storage features. Due to preliminary project siting and identification of wetland habitats, only a few wetland areas will be crossed by access roads for the proposed project due to avoidances presented during onsite and the utilization of existing low-water or culvert crossings. The access road alignment of the 19-18H and 20-18H well pad was revised and redesigned to access the location from the west to avoid a new access road crossing of Little Bates Creek.

A narrow riparian corridor and associated wetlands in the bottoms of the active channels are associated with the identified streams in the project area. Unnamed tributaries exhibit even less riparian and wetland characteristics depending on catchment size, drainage gradient, and substrate composition. The hydrology of these ephemeral drainages is relatively localized by catchment with influx limited to localized precipitation events and snow melt during the spring months. Surface flows are highly regulated by the surface impoundments and controls found in these creeks. One well pad location, the Arbalest 39-15H and 40-15H, is within 200 feet of associated wetlands. The siting of this well pad was conducted to provide an adequate vegetative buffer between the well pad and riparian corridor. Other well pads in the project area were sited to avoid and not encroach into other drainage features that may not exhibit wetland and riparian habitat but provide catchment surface flow conveyance to down gradient wetlands, streams and other waters. The Crossbow 52-18H well pad was reconfigured to cut off all corners to minimize impacts to drainages. Structural BMPs and other storm water management controls would be installed as necessary to avoid inadvertent indirect impacts to wetlands and riparian areas during and after project construction and development. Project administrative BMPs such as avoidance and minimization of wetlands and riparian areas in the project area and access road alignment and location design negate direct impacts to these aquatic and mesic habitats.

Wetland soils in the isolated depressions in the overall project area and in the riparian and stream corridors are primarily characterized as poorly to somewhat well-drained and comprised of a fine sandy skeletal mix or a fine sandy clay loam within a fine granular structure. Wetland soils in these small depressions are generally smaller units of the Forkwood-Ulm and Hiland-Bowbac complexes. The Clarkelen-Draknab complex is the dominant soils within the identified streams.

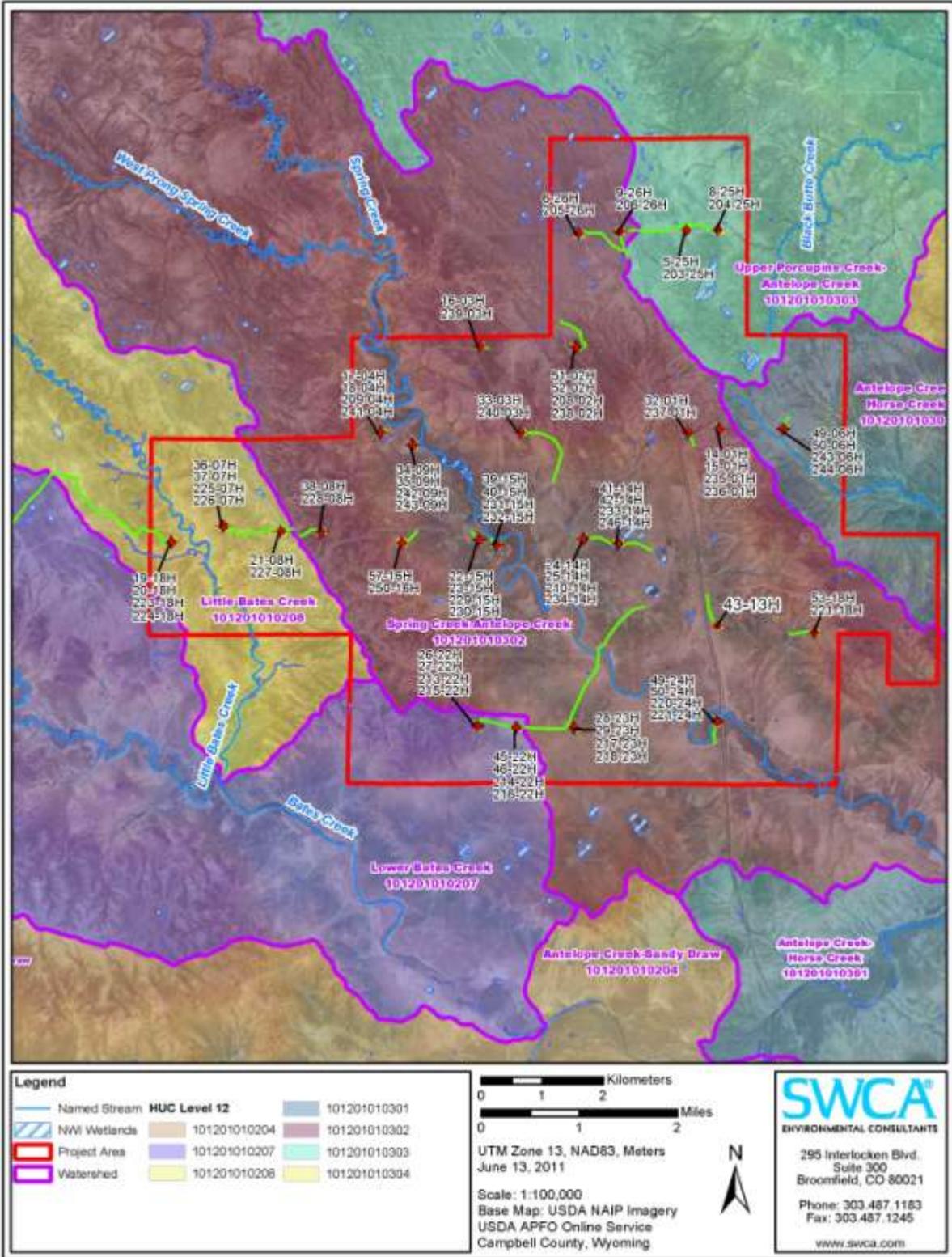


Figure 5. Watersheds and Hydrological Unit Codes in the project area.

3.5. Wildlife

The project area has flat to rolling shortgrass prairie with minimal sagebrush inclusion. Wildlife that may potentially occur in this habitat type includes several migratory bird and raptor species. A comprehensive list of wildlife species typical of shortgrass prairie in the PRB is in the PRB FEIS (BLM 2003).

Raptors, or birds of prey, and the majority of other birds in the U.S. are protected by the Migratory Bird Treaty Act, 16 U.S.C. 703 (MBTA). The MBTA protects migratory birds, eggs and nests from possession, sale, purchase, barter, transport, import, export, and take. The regulatory definition of take, defined in 50 CFR 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect a migratory bird. Activities that result in the unpermitted take (e.g., result in death, possession, collection, or wounding) of migratory birds or their eggs are illegal and fully prosecutable under the MBTA. Removal or destruction of active nests (i.e., nests that contain eggs or young), or causing abandonment of an active nest, could constitute a violation of the MBTA. Removal of any active migratory bird nest or any structure that contains an active nest (e.g., tree) where such removal results in take is prohibited.

Red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*B. swainsoni*), American kestrel (*Falco sparverius*), golden eagle (*Aquila chrysaetos*), great horned owl (*Bubo virginianus*), and ferruginous hawks (*B. regalis*) are known to nest in the area. According to the BLM raptor database, approximately 49 historical nests are within 0.5 mile of proposed wells (BLM 2011). Aerial and ground surveys conducted from April to July 2011 recorded 4 active nests within 0.5 mile of 1 or more proposed wells (see Table 4.2). The 2011 surveys recorded 13 active raptor nests during 2011, and 3 potentially active nests in and within 0.5 mile of the overall P808 in 2011 (HWA 2010, 2011). A table of all raptor nests, condition, and 2011 status within 1 mile of the project area is in Appendix A. The location of all known raptor nests relative to proposed well pads and roads is presented in Table 4.2. Table 4.2 presents the distances from 2011 active nests to proposed well pads.

Other migratory birds observed during previous project area surveys in 2009 include western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), killdeer (*Charadrius vociferous*), mourning dove (*Zenaidura macroura*), and common raven (*Corvus corax*) (SWCA 2009). Additionally, clay-colored sparrow (*Spizella pallida*), lark bunting (*Calamospiza melanocorys*), McCown's longspur (*Calcarius mccownii*), northern rough-winged swallow (*Stelgidopteryx serripennis*), rock wren (*Salpinctes obsoletus*), Say's phoebe (*Sayornis saya*), and vesper sparrow (*Pooecetes gramineus*) were observed during August 2010 surveys (HWA 2010).

Mammals observed in the project area included pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), white-tailed deer (*O. virginianus*), coyote (*Canis latrans*), Wyoming ground squirrel (*Spermophilus elegans*), and cottontail (*Sylvilagus nuttallii*). Wyoming Game and Fish Department (WGFD) maps were reviewed to determine whether the proposed new well sites and access roads are located in big game ranges, parturition areas, or migration corridors. Most of the P808 Area, excluding the northern portion, overlaps mule deer year-long range. Mule deer winter year-long range is located to the south and west of the P808 Area, approximately 1 mile southwest of the Arbalest 26-22H well pad. The entire P808 Area is in the year-long range for pronghorn. The closest winter year-long range is approximately 4 miles to the northeast and severe winter range is approximately 2 miles to the southeast of the project. Elk crucial winter range is approximately 9 miles to the east of the P808 Area.

3.5.1. Threatened, Endangered, and Sensitive Species

BFO consulted the USFWS list of endangered, threatened, and candidate species for Campbell and Converse Counties, Wyoming (USFWS 2011), the BLM Wyoming sensitive species list (BLM 2010a), and the Buffalo FO RMP (BLM 1985, 2001) to determine species potentially affected by the proposed action (Table 3.3). An approximately 690-foot section of existing two-track will require an upgrade to

access the Arbalest 19-18H and 20-18H location. This section of road is on the Thunder Basin National Grassland (TBNG) and species that are also on the Region 2 Regional Forester’s Sensitive Species List (USFS 2009) are also in Table 3.3.

Table 3.3. Threatened, Endangered, and Sensitive Species Listed for the Region.

Species	Scientific Name	Status	Status in Project Area
Mammals			
Long-eared myotis	<i>Myotis evotis</i>	BLM sensitive	Unlikely; no suitable habitat
Fringed myotis	<i>Myotis thysanodes</i>	BLM, USFS sensitive	Unlikely; no suitable habitat
Spotted bat	<i>Euderma maculatum</i>	BLM, USFS sensitive	Outside known range
Townsend’s big-eared bat	<i>Corynorhinus townsendii</i>	BLM, USFS sensitive	Unlikely; no suitable habitat
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	BLM, USFS sensitive	Possible; no known colonies within project area
Gray wolf	<i>Canis lupus</i>	USFWS EXPN, XN	Unlikely; no suitable habitat
Swift fox	<i>Vulpes velox</i>	BLM, USFS sensitive	Known
Birds			
Trumpeter swan	<i>Cygnus buccinators</i>	BLM, USFS sensitive	Unlikely; no suitable habitat
White-faced ibis	<i>Plegadis chihi</i>	BLM sensitive	Unlikely; no suitable habitat
Northern goshawk	<i>Accipiter gentilis</i>	BLM, USFS sensitive	Unlikely; no suitable habitat
Bald eagle	<i>Haliaeetus leucocephalus</i>	BLM, USFS sensitive	Known to roost and forage in Project Area
Ferruginous hawk	<i>Buteo regalis</i>	BLM, USFS sensitive	Known nests in project area
Peregrine falcon	<i>Falco peregrinus</i>	BLM, USFS sensitive	Possible
Greater sage-grouse	<i>Centrocercus urophasianus</i>	USFWS candidate	Possible; known lek within 0.25 mile
Plains sharp-tailed grouse	<i>Tympanuchus phasianellus jamesi</i>	BLM sensitive	Unlikely; not known to occur
Least tern	<i>Sterna antillarum</i>	USFWS endangered	Unlikely; project does not drain into the Platte River system
Mountain plover	<i>Charadrius montanus</i>	BLM, USFS sensitive	Possible; suitable habitat present
Piping plover	<i>Charadrius melodus</i>	USFWS threatened	Unlikely; project does not drain into the Platte River system
Whooping crane	<i>Grus americana</i>	USFWS endangered	Unlikely; project does not drain into the Platte River system
Long-billed curlew	<i>Numenius americanus</i>	BLM, USFS sensitive	Possible
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	BLM, USFS sensitive	Unlikely; no suitable habitat
Burrowing owl	<i>Athene cunicularia</i>	BLM, USFS sensitive	Possible; closest known prairie dog town is over 2 miles away
Sage thrasher	<i>Oreoscoptes montanus</i>	BLM sensitive	Known

Species	Scientific Name	Status	Status in Project Area
Loggerhead shrike	<i>Lanius ludovicianus</i>	BLM, USFS sensitive	Possible
Brewer's sparrow	<i>Spizella breweri</i>	BLM, USFS sensitive	Known
Sage sparrow	<i>Amphispiza belli</i>	BLM, USFS sensitive	Possible
Baird's sparrow	<i>Ammodramus bairdii</i>	BLM sensitive	Possible
Grasshopper sparrow	<i>Ammodramus savannarum</i>	USFS sensitive	Possible occurrence on TBNG
Short-eared owl	<i>Asio flammeus</i>	USFS sensitive	Possible occurrence on TBNG
American bittern	<i>Botaurus lentiginosus</i>	USFS sensitive	Not known to occur on TBNG
McCown's longspur	<i>Calcarius mccownii</i>	USFS sensitive	Possible occurrence on TBNG
Chestnut-collared longspur	<i>Calcarius ornatus</i>	USFS sensitive	Possible occurrence on TBNG
Black tern	<i>Chlidonias niger</i>	USFS sensitive	Known to occur on TBNG
Northern harrier	<i>Circus cyaneus</i>	USFS sensitive	Possible occurrence on TBNG
Lewis' woodpecker	<i>Melanerpes lewis</i>	USFS sensitive	Known to occur on TBNG
Black-backed woodpecker	<i>Picoides arcticus</i>	USFS sensitive	Possible but unconfirmed on TBNG
Fish			
Yellowstone cutthroat trout	<i>Oncorhynchus clarki bouvieri</i>	BLM, USFS sensitive	Not present; outside known range
Pallid sturgeon	<i>Scaphirhynchus albus</i>	USFWS endangered	Not present; project does not drain into the Platte River system
Sturgeon chub	<i>Macrhybopsis gelida</i>	USFS sensitive	Unlikely to occur on TBNG
Plains minnow	<i>Hybognathus placitus</i>	USFS sensitive	Known to occur on TBNG
Amphibians			
Northern leopard frog	<i>Rana pipiens</i>	BLM, USFS sensitive	Unlikely; no suitable habitat
Columbia spotted frog	<i>Rana luteiventris</i>	BLM, USFS sensitive	Outside known range
Plants			
Porter's sagebrush	<i>Artemisia porteri</i>	BLM sensitive	Outside known range
Iowa moonwort	<i>Botrychium campestre</i>	USFS sensitive	Suspected to occur on TBNG
Foxtail sedge	<i>Carex alopecoidea</i>	USFS sensitive	Suspected to occur on TBNG
Williams' wafer-parasnip	<i>Cymopterus williamsii</i>	BLM sensitive	Outside known range
Blowout penstemon	<i>Penstemon haydenii</i>	USFWS endangered	Unlikely; no suitable habitat
Common twinpod	<i>Physaria didymocarpa var. lanata</i>	USFS sensitive	Suspected to occur on TBNG
Limber pine	<i>Pinus flexilis</i>	BLM sensitive	Unlikely; no suitable habitat
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	USFWS threatened	Unlikely; no suitable habitat
Highbush cranberry	<i>Viburnum opulus var. americanum</i>	USFS sensitive	Suspected to occur on TBNG
Insects			
Ottoe skipper	<i>Hesperia ottoe</i>	USFS sensitive	Unlikely to occur on TBNG
Regal fritillary	<i>Speyeria idalia</i>	USFS sensitive	Unlikely to occur on TBNG

EXPN, XN = experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species (e.g., red wolf) are treated as threatened species on public land, for consultation purposes, and as species proposed for listing on private land.

3.5.2. Threatened, Endangered, and Candidate Species

No USFWS-listed species are known to occur in the project area or immediate vicinity. Least tern, piping plover, whooping crane, and pallid sturgeon are listed for Converse County due to potential effects to downstream habitat in the Platte River system. However, the project is primarily located in southern Campbell County and does not drain into the Platte River Basin.

3.5.2.1. Gray Wolf

USFWS removed gray wolves in a portion of the Northern Rocky Mountain Distinct Population Segment (DPS) from the list of endangered and threatened wildlife (76 FR 25590) in May 2011. Gray wolves remain listed under the ESA in Wyoming, although the USFWS is developing a wolf management plan that would remove wolves in Wyoming from the list in the future. Gray wolf is unlikely to occur in the project area due to human conflicts. Gray wolves primarily inhabit northwestern Wyoming, but occasionally pass through the PRB. An officer of Wildlife Services, USDA, photographed a collared gray wolf about 20 miles north of the P808 area April 16, 2011, but it is unlikely they regularly use the area.

3.5.2.2. Greater Sage-grouse

Greater sage-grouse is a candidate for listing under the ESA. Wyoming identified greater sage-grouse core areas that contain important nesting or breeding grounds. The closest core area (known as E Clareton) is 14 miles to the east of the project area (State of Wyoming 2010). There are no greater sage-grouse leks in the project area; the nearest lek is 0.25 mile north. No signs of sage-grouse were detected at or near this lek during 2011 surveys (HWA 2011). There were no other leks discovered during aerial surveys in or within 2 miles of the project area (HWA 2011). Sage-grouse may occasionally pass through the project area.

3.5.2.3. Ute Ladies'-Tresses Orchid

Ute ladies'-tresses (ULT) is threatened under the ESA. The affected environment for ULT is discussed in the PRB FEIS. Drainages with documented orchid populations include Wind Creek and Antelope Creek in northern Converse County, Bear Creek in northern Laramie and southern Goshen Counties, Horse Creek in Laramie County, and Niobrara River in Niobrara County. A WYNDD model predicts undocumented populations may be present particularly within southern Campbell and northern Converse Counties. The project area lacks suitable habitat and ULT is not expected to occur.

3.5.3. BLM and USFS Sensitive Species

Several BLM sensitive species are unlikely to occur in the project area due to lack of suitable habitat. Species listed in Table 7 as “unlikely” or “possible” are not expected to regularly occur in the project area. Unless noted below, bird species listed as “unlikely” or “possible” in Table 3.3 may occur in or near the project area on an irregular basis or fly through the area occasionally during periods of migration. Additionally, there are several USFS sensitive species that are known to, or have potential to, occur on the TBNG, which would be crossed to access Arbalest 19-18H well pad location (USFS 2000, 2006).

3.5.3.1. Black-Tailed Prairie Dog

No black-tailed prairie dog (*Cynomys ludovicianus*) colonies are in the project area. HWA located and mapped one black-tailed prairie dog colony approximately 2.25 miles outside of the proposed project area boundary in Section 3 T41N, R71W; the colony is approximately 2.25 acres in size (HWA 2010). Six historic colonies were previously recorded in the project area. However, surveys of these areas did not find any sign of prairie dog colonies (SWCA 2010, HWA 2010). Other sensitive species, including mountain plover and burrowing owl may use nearby prairie dog colonies.

3.5.3.2. Mountain Plover

Mountain plover are known from southeastern Campbell County and northern Converse County (Smith and Keinath 2004) and may nest in or near the project area. The BLM database indicates 4 historical observations in section 27 of T41N, R72W and one observation in section 36 of T41N, R72W in the

southern portion of the project area (BLM 2011). The species prefers areas with short herbaceous vegetation in flat topography with some measure of disturbance, typically heavy grazing (e.g., prairie dog colonies, sheep and cattle grazing allotments). Most of the project area is grazed by cattle or sheep but not heavy enough to significantly increase the suitability of mountain plover habitat (HWA 2010). There are no prairie dog colonies in the project area or within one mile. In 2010, eight patches of potential mountain plover habitat, totaling 153 acres (range 4.6- 43.1 acres), were mapped in the P808. All mapped plover habitat appeared marginal, due to a fairly high cover of grass greater than 4 inches tall, and relatively little bare ground (HWA 2010). HWA detected no plovers during spring 2010 surveys in sections 23-26, T41N, R72W (SWCA 2010).

3.5.3.3. Swift Fox

Swift fox are known to occur in the project area. A personal communication with the landowner during on-site visits suggests that an active swift fox den may be present near the Arbalest 49-24 well pad. A search for this den was conducted during mountain plover surveys in May and June 2011 and found 2 dens in the vicinity of the Arbalest 49-24H, but the dens lacked evidence of recent use (i.e. digging, prey remains, tracks) and no foxes were observed in the area.

3.5.3.4. Bald Eagles

Bald eagles are not likely to nest in the project area due to lack of suitable nesting sites, and no records exist in the BLM database for bald eagle nests within 1-mile of any of the proposed well pad locations. However, during the winter of 2010/2011, several bald eagles were observed within 1 mile of the project area and a winter roost was located along Little Bates Creek in Section 18 T41N, R72W. The roost is approximately within 1 mile from 4 proposed well pads (Arbalest 21-08H, Arbalest 38-08H, Arbalest 36-07H, and Arbalest 20-18H). It is assumed that due to the lack of open water for hunting in the project vicinity, bald eagles would be hunting at nearby prairie dog colonies or eating road-killed carrion in the winter from the nearby state highway and are likely adapted to disturbance from road traffic and nearby well and mining operations.

3.5.3.5. Ferruginous Hawks

Ferruginous hawks are known to nest and forage in the project area and vicinity. The BLM raptor database (BLM 2011) indicated several historical ferruginous hawk ground nests in and within 0.5 mile of the Project Area. During surveys conducted in 2010 and 2011, many previously recorded nests appeared to be abandoned and not recently active. Three new nests were recorded in 2010 in Section 6, T41N, R72W, but all three of those nests were gone during 2011 surveys (see Table 4.2). A personal communication with the landowner suggested that ferruginous hawks in the project vicinity have not been active in the area in recent years since the installation of CBNG wells nearby. In April 2011, aerial and ground surveys recorded 3 active, plus 3 potentially active, ferruginous hawk nests in the Project Area (HWA 2011). One active nest is 0.32 mile north of the proposed well pad Arbalest 45-22 (Table 6). The nest has existing disturbance from CBNG wells and roads closer than the proposed well pad. The nest is also somewhat shielded from the proposed pad by a ridge. Other previously discovered nests in the vicinity of the Arbalest 45-22H well pad were all inactive in 2010 and 2011 with many no longer present; however, activity in years prior to 2010 is unknown since no surveys were conducted. All previously discovered nests are shown in Table 4.2.

The PRB FEIS discussed the affected environment for ferruginous hawk, p. 3-183. The Memorandum of Understanding (BLM MOU WO-230-2010-04) between the U.S. Department of the Interior's BLM and the USFWS outlines a collaborative approach to promote the conservation of migratory bird populations through Executive Order 13186, 66 Fed. Reg. 3853 (January 17, 2001). This MOU reads that "the BLM will follow all migratory bird permitting requirements for activities subject to 50 CFR part 21, p. 8, item Q. While working through the permitting process with USFWS, the BLM will, to the maximum extent

practicable, minimize the intentional take of species of concern and, if necessary, develop standards and procedures regarding such take.”

Wyoming is the approximate center of the ferruginous hawk breeding range and has one of the largest breeding populations of any state or province. Ferruginous hawks are a WGFD SGCN, with a rating of NSS3 because the species is widely distributed with ongoing habitat loss, known population status and trends have declined in the PRB (BLM database). Research suggests that ferruginous hawks are sensitive to disturbance during the breeding season (Olendorff 1973, Gilmer and Stewart 1983, Schmutz 1984, White and Thurow 1985, Bechard et al. 1990). Ferruginous hawks’ strong tendency is to select nest sites that avoid human habitation or disturbance (Lokemoen and Duebbert 1976, Schmutz 1984). Once they select a nest site, ferruginous hawks are likely to abandon nest sites that are subject to disturbance (Snow 1974, White and Thurow 1985). When abandonment occurs, it tends to happen prior to hatching, so incubation represents a critically important time for reduced disturbance (Snow 1974, White and Thurow 1985). Sensitivity to disturbance may be inversely related to prey availability (White and Thurow 1985). Nests in proximity to disturbance produce fewer young (Olendorff 1973, Blair 1978, White and Thurow 1985). Ferruginous hawks tend to not return to breed in territories where breeding attempts in a previous year failed as a result of disturbance (White and Thurow 1985).

Trends evaluated from the data collected by the BLM and stored in the BFO database indicate that ferruginous hawk populations in the PRB declined in recent years. Ferruginous hawks frequently reuse nests, but several nests may be built in an area (territory). Typically, 1 or 2 alternate nests may exist but some territories hold up to 8. Ferruginous hawk chicks are known to kick the nest apart before they fledge the nest. Later the adults may rebuild nests even when nests were inactive within 3 years, according to observations documented in the BLM BFO database.

The RMP (1985, 2001 Amendment) defines an active nest as “one that has been used at least once during the previous three years.” The BFO collected field office area raptor data since completion of the 2003 PRB FEIS ROD. In an evaluation of a sample dataset, about 14% of the known ferruginous hawk nests would not be protected by applying the 3-year inactivity rule. For ferruginous hawks, which use multiple nests over multiple years, the period between activities for any given nest should be longer.

3.5.3.6. Sage-Obligate Birds

A majority of the project area is classified as Inter-Mountain Basins Big Sagebrush Steppe (Table 3). Therefore, sage-obligate birds are likely to nest in the project area. Brewer’s sparrow and sage thrasher were observed during wildlife surveys in 2010 (HWA 2010). No sharp-tailed grouse or leks were found in or within one mile of the project area during 2011 surveys (HWA 2011).

3.6. Cultural or Historic Values

Previously reviewed and accepted class III inventories covered portions of the Arbalest Multi-Well Pads Project (BFO project #'s 70990122, 70020207, 70030112, 70050071, 70070055). For the remaining portions, class III cultural resource inventories following the Archeology and Historic Preservation, Secretary of the Interior's Standards and Guidelines (48CFR190) and the *Wyoming State Historic Preservation Office Format, Guidelines, and Standards for Class II and III Reports* were provided to BFO by EOG. (See BFO project #'s 70110061, 70110062, 70110063, 70110064, 70110065, 70110066, 70110067, 70110069, 70110070, 70110074, 70110076, and 70110078. Clint Crago, BLM Archaeologist, reviewed the reports for technical adequacy and compliance with BLM standards, and determined them adequate. The following resources are in or near the project area:

Table 3.4. Cultural Resource Sites within the Project 808 Area

Site Number	Site Type	Eligibility
48CA3317	Historic Homestead	Not Eligible
48CA3322	Prehistoric Campsite	Eligible
48CA5214	Prehistoric Lithic Scatter	Not Eligible
48CA5215	Prehistoric Lithic Scatter	Eligible
48CA6977	Historic Foundation	Not Eligible
48CA7093	Prehistoric Open Camp	Eligible

4. ENVIRONMENTAL EFFECTS

The environmental effects of the proposed action for each resource are described below. Mitigation measures designed to minimize impacts are listed for the resource when applicable.

4.1. Alternative A

The No Action Alternative was analyzed as Alternative 3 in the PRB FEIS, and is incorporated by reference into this EA, as are the approved EAs mentioned in Section 2.1. Information specific to resources for this alternative is included in the PRB Final EIS on pages listed in Table 4.1.

Table 4.1. Location of Discussion of the No Action Alternative in the PRB FEIS

Resource		Type of Effect	Page(s) of PRB FEIS
Project Area Description	Geologic Features and Mineral Resources	Direct and Indirect Effects	4-164 and 4-134
		Cumulative Effects	4-164 and 4-134
Soils, Vegetation, and Ecological Sites	Soils	Direct and Indirect Effects	4-150
		Cumulative Effects	4-152
	Vegetation	Direct and Indirect Effects	4-163
		Cumulative Effects	4-164
	Wetlands/Riparian	Direct and Indirect Effects	4-178
		Cumulative Effects	4-178
Wildlife	Sensitive Species - Greater Sage-Grouse	Direct and Indirect Effects	4-271
		Cumulative Effects	4-271
	Aquatic Species	Direct and Indirect Effects	4-246
		Cumulative Effects	4-249
	Migratory Birds	Direct and Indirect Effects	4-234
		Cumulative Effects	4-235
	Waterfowl	Direct and Indirect Effects	4-230
		Cumulative Effects	4-230
	Big Game	Direct and Indirect Effects	4-186
		Cumulative Effects	4-211
	Raptors	Direct and Indirect Effects	4-224
		Cumulative Effects	4-225
Water	Ground Water	Direct and Indirect Effects	4-63
		Cumulative Effects	4-69
	Surface Water	Direct and Indirect Effects	4-77
		Cumulative Effects	4-69
Economics and Recovery of CBNG Resources	Direct and Indirect Effects	4-362	
	Cumulative Effects	4-370	
Cultural Resources	Direct and Indirect Effects	4-286	

Air Quality	Direct and Indirect Effects	4-386
	Cumulative Effects	4-386
Visual Resources	Direct and Indirect Effects	4-313
	Cumulative Effects	4-314

4.1. Alternative B

4.1.1. Air Quality

4.1.1.1. Direct and Indirect

Air emissions would result from construction, drilling, and completion activities, and production. Construction emissions would occur from earth-moving equipment, vehicle traffic, and fugitive dust. Drilling rig, workover rig, and vehicle engine exhaust would result in additional emissions. Well production equipment would result in fugitive emissions as well.

4.1.1.2. Cumulative

The PRB FEIS analyzed the cumulative effects associated with air quality, p. 4-404

4.1.1.3. Mitigation

Per the PRB FEIS no mitigation is required beyond project design features.

4.1.1.4. Residual

Residual impacts will likely be a nearly indiscernible decrement in air quality that the PRB winds will soon clear from the region.

4.1.2. Surface Water

4.1.2.1. Direct and Indirect

Removal of vegetation can lead to increased erosion and sedimentation of surface water, increasing the runoff potential for any of the proposed well pads and access roads. Stormwater runoff would flow to Spring Creek, Horse Creek, and Little Bates Creek. However, the well pads and roads would be engineered and constructed to minimize the suspended solid concentration of surface runoff, avoid disruption of drainages, and avoid direct impacts to surface water. Topography, natural drainage, and erosion control were considered during planning for each proposed location.

4.1.2.2. Cumulative

The PRB FEIS analyzed the cumulative effects associated with surface water, p. 4-405.

4.1.2.3. Mitigation

BLM will consider that:

- One of the proposed well pads, Pad #2, Crossbow 53-18H, as originally designed, would block two tributary drainages of Spring Creek. The well pad was subsequently redesigned to avoid the drainages. This redesign resulted in avoidance of impacts to the water flow and sideslope stability within the drainages. The redesign will also result in increased pad stability with the avoidance of the drainages. Field verification of these changes still needs to be completed to ensure environmental protection of the drainages.
- The BLM commits to assist EOG to clear the deferral condition for proposed APD Crossbow 53-18H in the Fall of 2011. BLM recognizes that EOG readily submitted a new design and that the BLM's workload, in addition to the original design, contributed to the temporary necessity of the deferral.
 - a. BLM will consider that the proposed surface well pad (Pad #2) for APD Crossbow 53-18H is determined by the downhole location of the proposed federal well to federal fluid minerals. Pad #2, thus APD Crossbow 53-18H, are directly above the federal mineral lease WYW108556 though EOG will directionally drill to the south to minimize surface disturbance and maximize

recovery. Alternatively rules of split estate may also apply to APD Crossbow 53-18H. Regardless, the analytical results are the same in the case of this APD - whether the impact is direct or indirect.

- b. The analysis to temporarily defer the above APD is the result of an indirect effect of the federal action, to allow EOG to proceed with development of the rest of the project, and to have a few weeks to field-evaluate the indirect effects of the new design proposed by EOG.
- In addition, other well pads and roads were designed to avoid and minimize impacts to surface waters and drainages by armoring, creating non-square shaped pads, installing erosion control protective measures, and engineering roads for low-water crossings. Pad- and road-specific measures are detailed in the Proposed Action Section above.
- No surface water would be used for well drilling operations. Produced water would be temporarily stored in tanks on the well pad, as described in the proposed action. Berms would be constructed around all production facilities on well pads to contain fluids, if spilled. Any chemicals or potentially hazardous materials would be handled in accordance with the EOG's Spill Prevention, Control and Countermeasure Plan (SPCCP). Provisions established under the SPCCP would minimize or eliminate potential impacts to any surface waters associated with an accidental spill.

4.1.2.4. Residual

Compliance with the WYDEQ water quality rules minimizes residual impacts to waters.

4.1.3. Groundwater

4.1.3.1. Direct and Indirect

Due to the depth of the proposed well bores, minimal domestic or agricultural wells in the area, and well casing requirements, no direct impacts to groundwater would result from the proposed action. Indirect impacts to groundwater resources potentially could occur if significant dewatering and other large-volume groundwater removal occurs during well operations and production.

4.1.3.2. Cumulative

The PRB FEIS analyzed the cumulative effects associated with groundwater, p.4-392.

4.1.3.3. Mitigation

BLM will consider that:

- Water for drilling, completion, and dust control would be obtained from an approved and permitted off-site water haul site. Each well would require approximately 1,200 barrels of water to perform drilling operations using a combination of water based and oil based drilling fluids. Water use for drilling would be reduced by the recycling of up to 1,500 barrels of drilling mud for use in subsequent drilling operations. Approximately 40,000 to 80,000 barrels of water would be required to complete the horizontal wells, depending on the number of stimulations required on an individual well.

4.1.3.4. Residual

Compliance with the WYDEQ water quality rules minimizes residual impacts to waters.

4.1.4. Vegetation and Soils

4.1.4.1. Direct and Indirect

Approximately 171 acres of native vegetation would be removed or disturbed by the proposed action. Applicant-committed BMPs to implement interim reclamation and drill multiple wells from a single well pad would reduce the long-term impacts to vegetation in the project area. Grasses and forbs are expected to re-establish within a few growing seasons after reclamation, while woody species, such as sagebrush, would take several years to return. Reclaimed areas would be fenced to prevent grazing by livestock and wildlife while vegetation re-establishes.

Impacts to soil resources in the proposed project area are directly related to the amount of surface disturbances resulting from the proposed action. Direct soil impacts include soil horizon disturbances to the E, A1, A2, and upper B horizons resulting from site clearing, cut and fills, and location and access road grading. Secondary impacts to soils include loss of soils to wind, rain, and other erosive forces following horizon disturbances. Some soil erosion is expected to occur due to exposed soils on the proposed well pads and access roads required for construction. For well pad and access road construction, a minimum of 4 inches of topsoil would be stripped from the E and A horizons in each respective footprint and temporarily stored along the sides of the road or per well pad layout to provide access to the subsoils found in the lower B horizon. Implementation of BMPs such as installation and maintenance of straw wattles at the toe of disturbance slopes in or near drainage features, dust suppression on roads, interim reclamation measures, and erosion diversion wings/wattles in roadside ditches by the operator is projected to reduce and maintain negligible levels of erosion throughout the project area.

4.1.4.2. Cumulative

The PRB FEIS analyzed the cumulative effects associated with vegetation and soils, p. 4-406, p. 4-393, and p.4-395.

4.1.4.3. Mitigation

BLM will consider that:

- Reclamation potential for the soil complexes varies by soil series and may need soil amendments to achieve successful reclamation due to the thin layer of organic and biological material available in some of the soils. During interim reclamation, the salvaged topsoil would be spread on the back slopes in preparation for seeding. Areas not needed for the production phase would be reseeded once drilling is complete, or stabilized within 6 months if no drilling takes place. Seeding would be conducted during the most optimal seeding window of early to late fall whenever possible. Additional seeding would be conducted during the early spring months following interim stabilization. Once production ceases, final reclamation would begin by regrading the pad to the original contours and redistributing topsoil. The entire disturbed area, including the former access roads and well pad, would be reseeded with the seed mixture specified in the COAs. The proponent would implement BMPs related to the reclamation effort and conduct all surface activities, including reclamation activities, in accordance with the BLM Gold Book (BLM and USFS 2007).
- All fill material is to be placed in shallow lifts (6 to 12 inch), moisture applied, and compacted to a 95% maximum standard density as determined by AASHTO T-99.
- Temporarily fence reseeded areas for at least two complete growing seasons to ensure reclamation success on problematic sites (e.g., close to livestock watering source, erosive soils, etc.).
- Grading and site preparation BMPs and other soil retention measures would mitigate for potential soil losses and other erosive forces. Topsoil segregation would occur at the proposed well pads to be used during future pad reclamations and project restorations, thereby mitigating impacts to soils at the proposed locations.
- Initiate interim reclamation measures within 30 days following well drilling and completion activities. Interim reclamation will be completed within six months of the completion of well pad and location development, per Onshore Order 1.

4.1.4.4. Residual

Residual impacts to soils based on known design features will be minimal, particularly at the well heads.

4.1.5. Invasive, Non-native Species

4.1.5.1. Direct and Indirect

Surface disturbances associated with the implementation and construction of the proposed well sites and access roads would present opportunities for weed invasion and spread. Direct impacts to native

vegetation from weed infestations in the project area may include the loss of wildlife habitat, rangeland productivity, and reduced native plant species diversity. Indirect impacts resulting from weed infestations could be changes in the fire cycle due to the potential for cheatgrass proliferation on disturbed soils and increased costs from weed management efforts.

4.1.5.2. Cumulative

The PRB FEIS analyzed the cumulative effects associated with invasive, non-native species, p.4-406.

4.1.5.3. Mitigation

BLM will consider that:

- Operator-committed measures would control invasive plants on all disturbed areas, and these control measures would be in accordance with BLM, state, county, and other local regulatory agencies.

4.1.5.4. Residual

Residual impacts at the well head locations should be minimal – based on design features.

4.1.6. Wetlands and Riparian

4.1.6.1. Direct and Indirect

Some very minor direct impacts to wetlands or riparian habitats would occur from the construction of one access road in the project area. These direct impacts would occur at the low-water crossing of Spring Creek to access the 28-23H, 45-22H, and 26-22H well pads. The discharge of fill material and wetland surface impacts in this area is minimal and within the parameters of the PRB ROD. Crossing construction would adhere to standard crossing BMPs in compliance with the general conditions of the ROD. No other direct impacts to wetlands or riparian habitats are anticipated by the proposed action.

Indirect impacts to wetlands and riparian areas would occur if erosion and sedimentation occurred, causing deposition in these down-gradient areas.

4.1.6.2. Cumulative

The PRB FEIS analyzed the cumulative effects associated with wetland and riparian area, p. 4-178.

4.1.6.3. Mitigation

BLM will consider that:

- Due to the avoidance of these types of habitats and operator-committed measures for stormwater management, secondary impacts to the resources would not be expected. Further measures, including installation of structural BMPs near the one road crossing of Spring Creek will further minimize the potential for any secondary impacts to these surface water features.

4.1.6.4. Residual

Residual impacts to wetlands and riparian areas at the well heads should be minimal – based on design features on one redesign.

4.1.7. Wildlife

Construction activities and surface disturbance would occur in mule deer and pronghorn year-long range. These disturbances would be short-term due to the establishment of native vegetation associated with reclamation activities. Mule deer and pronghorn may be temporarily displaced during construction activities, but likely would return following construction. A fence constructed around the perimeter of drill cuttings pits would keep wildlife, including big game, from accessing the pits. Temporary displacement may continue in response to periodic human activities associated with operations and maintenance. The PRB FEIS analyzed direct and indirect impacts to raptors from oil and gas development, (pp. 4-216 to 4-221).

Table 4.2. Active Raptor Nests within 0.5 mile of Proposed Well Pads .

HWA Nest ID	BLM Nest ID	Species	2011 Status	Nest Condition	Wells within 0.5 mile	Distance (miles)	Direction from Well
162	3723	Red-tailed Hawk	Active	Excellent	Arbalest 19-18H	0.36	E
					Arbalest 20-18H	0.35	E
					Arbalest 223-18H	0.33	E
					Arbalest 224-18H	0.32	E
					Arbalest 225-07H	0.21	SW
					Arbalest 226-07H	0.22	SW
					Arbalest 36-07H	0.23	SW
					Arbalest 37-07H	0.24	SW
164	4586	Red-tailed Hawk	Active	Excellent	Arbalest 22-15H	0.27	E
					Arbalest 229-15H	0.26	E
					Arbalest 230-15H	0.26	E
					Arbalest 23-15H	0.25	E
					Arbalest 231-15H	0.15	NW
					Arbalest 232-15H	0.16	NW
					Arbalest 39-15H	0.13	NW
					Arbalest 40-15H	0.14	NW
150	2890	Ferruginous Hawk	Active	Excellent	Arbalest 214-22H	0.32	N
					Arbalest 216-22H	0.32	N
					Arbalest 45-22H	0.31	N
					Arbalest 46-22H	0.32	N
89	2014	Great Horned Owl	Active	Good	Arbalest 220-24H	0.43	N
					Arbalest 221-24H	0.44	N
					Arbalest 49-24H	0.39	N
					Arbalest 50-24H	0.41	N

HWA: Hayden Wing Associates, a wildlife consulting firm hired by EOG to conduct wildlife and habitat surveys.

4.1.7.1. Direct and Indirect

Human activities in close proximity to active raptor nests may interfere with nest productivity. Romin and Muck (1999) indicate that activities within 0.5 miles of a nest are prone to cause adverse impacts to nesting raptors. If mineral activities occur during nesting, they could be sufficient to cause adult birds to remain away from the nest and their chicks for the duration of the activities. This absence can lead to overheating or chilling of eggs or chicks and can result in egg or chick mortality. Prolonged disturbance can also lead to the abandonment of the nest by the adults. Routine human activities near these nests can also draw increased predator activity to the area and resulting in increased nest predation.

Ground clearing would impact habitat for wildlife species, including small birds and small mammals. Proposed project activities may affect raptor and migratory bird species through direct mortality, habitat

degradation, and/or displacement of individual birds. The commitment by the operator to construct only drill cuttings pits with fluid disposal in closed tanks eliminates the potential for pit entrapment of birds. Mesh netting would also be installed over tank drip containers. Migratory birds nesting in heater/treaters, will cause direct mortality. The commitment by the operator to install bird perch deterrents in the heater/treaters will avoid the opportunity for migratory birds to build nests inside of the heater/treaters.. Any direct mortality of migratory birds as a result of the proposed action would be a violation of the Migratory Bird Treaty Act of 1918 (916 United States Code 703–711).

Raptors and migratory birds would also experience some habitat loss; however, impacts would be reduced by reclamation efforts. Impacts would be relatively short-term where effective reclamation is successful in re-establishing native grasses, forbs, and brush species in a relatively short period of time. Human activities may temporarily displace birds occupying areas in close proximity to the well sites and access roads. If these activities are close to raptor nests, nest productivity could be impacted. This would be minimized through surface disturbing activities timing stipulations during nesting seasons and biologic spatial buffers. Potential impacts to raptor nests were evaluated during the on-site evaluations for each proposed well pad and access road. Table 4.2 describes nests that are within 0.5 mile of proposed activities that may be affected by ongoing well maintenance activities, though construction, drilling, and completion activities would not occur during the nesting season unless an exception were granted. Potential impacts to nesting raptors are minimized by the presence of topographic features between the proposed activities and the nesting raptors. In addition, existing surface disturbance such as two-tracks, roads, and active CBNG wells accustomed raptors and other wildlife species to some oil and gas related activity (see Table 4.2).

4.1.7.2. Cumulative

The PRB FEIS analyzed the cumulative effects associated with raptors, p. 4-221.

4.1.7.3. Mitigation

BLM will consider recommending that:

- Surface disturbance activities would be restricted within 0.5 mile of an occupied raptor nest between February 1 and July 31.
- Heater/treater units on well pads would be fitted with EOGs standard bird perch deterrents as requested by BLM.
- No fluid reserve pits would be constructed on the well pads. A closed-loop drilling system would be used to drill all proposed wells.
- Mesh netting and/or other exclusion devices would be fitted over tank drip containers.

4.1.7.4. Residual

The timing restrictions analyzed in the PRB ROD can only be applied to surface disturbing activities. These restrictions do not protect nesting raptors from human disturbance or maintenance actions (disruptive activity that can last from several days to weeks) associated with later phases of CBNG operations at well locations during breeding/nesting season. Impacts associated with noise, additional traffic, human presence, and equipment disruption associated with maintenance actions from well operations remain.

4.1.7.5. Threatened, Endangered, and Sensitive Species

4.1.7.5.1. Direct and Indirect

Impacts to threatened, endangered, and sensitive species would be similar to those described in the Wildlife Section (i.e., habitat loss and human disturbance). No USFWS-listed species are known to occur in the project area or immediate vicinity, and are unlikely to be affected by the project. Sage-grouse and gray wolf may occasionally pass through the area, but are unlikely to be impacted directly, indirectly, cumulatively or residually by the project. Sage-grouse and other sage-obligate birds may be temporarily

deterred from using the project area during construction due to human activity. Sensitive grassland species would also be impacted by habitat loss or deterred from the area due to human presence. Minimal grassland habitat of the TBNG would be removed during construction of the Arbalest 19-18H access road, and no significant impacts to USFS sensitive species are expected.

Indirect impacts to sensitive raptors may include disturbance from human activities during construction and maintenance activities during the nesting season within line of sight or proximity to nests. No direct impacts would be expected as active nests would be avoided through biologic buffers. With appropriate implementation of standard mitigation measures for ferruginous hawks, golden eagles, bald eagles, and other nesting raptors, indirect impacts would be minimized.

Swift fox are generally nocturnal and their periods of activity are not expected to overlap with construction and maintenance activities. However, if present, fox dens could be impacted by construction activities and should be identified and avoided. A personal communication with the landowner during on-site visits suggests that an active swift fox den may be present near the Arbalest 49-24 well pad. A search for this den was conducted in June 2010 and again during mountain plover surveys in May and June 2011, which found 2 dens in the vicinity of the Arbalest 49-24H, but the dens lacked evidence of recent use (i.e. digging, prey remains, tracks) and no foxes were observed in the area. That identified den would not be directly impacted by the proposed action, but foxes may be indirectly affected by noise and human presence during construction, drilling, and completion activities.

Nesting mountain plovers are potentially present in the project area, but currently there are no known nest locations. If undocumented plovers exist in the project vicinity, direct impacts may involve mortality of adult and young from vehicle collisions if access roads are located near plover nesting areas. Indirect impacts may include increased predation pressure if structures are located near nesting areas, disturbance from human activities during the nesting season, and loss of suitable nesting habitat.

4.1.7.5.2. Cumulative

The PRB FEIS analyzed the cumulative effects associated with sensitive species, p. 4-257 to 4-265.

4.1.7.5.3. Mitigation

BLM will consider recommending that

- The 0.5-mile buffer from planned surface disturbances will be surveyed for raptor nest activity by a biologist prior to construction activities between April 15 and June 15. Timing stipulations have already been noted based on 2011 raptor nest surveys as well, and will be included as COAs in the permits, as applicable.
- Surface disturbance activities would be restricted within 0.5 mile of occupied raptor nests between February 1 and July 31.
- Pre-construction surveys would be conducted for mountain plover at well pads with potential habitat between May 1 and June 15. If plovers are found, a disturbance-free buffer zone of 0.25 mile will be established around all mountain plover nesting locations between March 15 and July 31.

4.1.7.5.4. Residual

If EOG and other project-area land stewards with jurisdiction adopt and or improve upon the recommended COAs, then the residual impacts of the project will be minimal. Without adopting the recommended COAs the residual impacts will not rise to significance yet sensitive species – raptors and swift fox.

4.1.8. Cultural or Historic Values

4.1.8.1. Direct and Indirect

Non eligible site 48CA3317 will be impacted by the proposed project. No historic properties will be impacted by the proposed project. Following the Wyoming State Protocol Section VI(A)(1) the Bureau of Land Management electronically notified the Wyoming State Historic Preservation Officer (SHPO) on August 15, 2011 that no historic properties exist within the area of project effects.

4.1.8.2. Mitigation

- If any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Further discovery procedures are explained in the Standard COA (General)(A)(1) (see also, PRB ROD).

4.1.8.3. Residual

BLM anticipates no residual impacts to cultural or historic values.

4.1.8.4. Project Cumulative Effects

Although the proposed action would not have significant impacts, environmental impacts may accumulate either over time or in combination with similar events in the area. Unrelated and dissimilar activities may also have negative impacts on critical elements, thereby contributing to the cumulative degradation of the environment.

Reasonably foreseeable future impacts must also be considered. Past and current disturbances in the vicinity of the project area include farming, grazing, roads, and other oil and gas wells. Should development of the wells included in this EA prove productive, it is likely that EOG and possibly other operators would pursue additional development in the region.

Previously-prepared EAs for the proponent in the area analyzed drilling up to 37 federal wells from 10 well pads. The impacts for these well pads and associated infrastructure were analyzed in previous EAs and will contribute to the cumulative impacts of the project from surface disturbance and air quality during drilling. There will be some minimal additional air quality impacts from development of these wells during the drilling phase of the project.

The most significant foreseeable activity with potential to impact critical elements of the human environment is oil field development. This project is part of the PRB oil and gas project; the cumulative impacts of oil and gas production in the vicinity are discussed in the PRB FEIS (BLM 2003). Current ranching is expected to continue with little change.

5. CONSULTATION/COORDINATION

Contact	Title	Organization	Onsite Presence
Kaylene Gardner	Senior Regulatory Specialist	EOG Resources, Inc.	Yes
Heather Smith	NEPA Coordinator	EOG Resources, Inc.	No
Chad Baker	Environmental Specialist	SWCA Environmental Consultants	Yes
Lee Isenberger	Surface Owner	Isenberger Land, LLC.	Yes
Pete Reno	Surface Owner	Sioux Ranch, Inc.	Yes
Hilaire W. Peck, M.S., P.E.	Civil Engineer	Douglas Ranger District, USFS	No

6. REFERENCES AND AUTHORITIES

The National Environmental Policy Act of 1969 (NEPA), as amended (Public Law 91—90, 42 USC 4321 et seq.)

Code of Federal Regulations (CFR)

- 40 CFR All Parts and Sections inclusive Protection of Environment. Revised as of July 1, 2001.
- 43 CFR All Parts and Sections inclusive – Public Lands: Interior. Revised as of October 1, 2000.

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7. LIST OF INTERDISCIPLINARY TEAM REVIEWERS

Meleah Corey, Natural Resource Specialist, Team Lead
 Scott Jawors, Wildlife Biologist
 Jennifer Morton, Wildlife Biologist
 Clint Crago, Archeologist
 Buck Damone, Archeologist
 Casey Freise, Natural Resource Specialist
 John Kelley, Environmental and Planning Coordinator

LIST OF PREPARERS

Kara Altvater, Environmental Specialist, SWCA Environmental Consultants
 Chad Baker, Environmental Specialist, SWCA Environmental Consultants
 Adrian Hogel, Environmental Specialist, SWCA Environmental Consultants
 Andrew D. Smith, Project Manager, SWCA Environmental Consultants
 Heather Smith, NEPA Coordinator, EOG Resources, Inc.

APPENDIX A. Raptor Nests within 1 Mile of Project Area

HWA Nest ID #	BLM Nest ID #	Raptor Species	Nest Condition	Nest Status
279		Ferruginous Hawk (FEHA)	Good	Inactive
278		FEHA	Excellent	Tended
277		Red Tailed Hawk (RTHA)	Excellent	Active
276		UNK RAPTOR	Excellent	Inactive
273		Golden Eagle (GOEA)	Good	Active
79	1792	FEHA	Fair	Inactive
111	2481	FEHA	Good	Inactive
110	2480	FEHA	Good	Inactive
108	2474	FEHA	Gone*	Inactive
107	2473	FEHA	Poor	Inactive
105	2471	FEHA	Good	Inactive
53	2016	RTHA	Gone	Inactive
52	2017	GOEA	Fair	Inactive
51	2019	FEHA	Good	Inactive
147	2885	FEHA	Poor	Inactive
146	2884	FEHA	Remnants	Inactive
60	1064	FEHA	Gone	Inactive
59	1048	GOEA	Gone	Inactive
163	4356	FEHA	Poor	Inactive
224	945	GOEA	Gone	Inactive
223	934	FEHA	Gone	Inactive
207	5492	FEHA	Unknown Condition	Not Surveyed
206	5490	FEHA	Fair	Inactive
228	998	FEHA	Gone	Inactive
227	992	FEHA	Good	Inactive
62	1080	FEHA	Unknown Condition	Not Surveyed
61	1078	FEHA	Unknown Condition	Not Surveyed
162	3723	RTHA	Good	Active
82	1893	FEHA	Good	Inactive
221	861	RTHA	Good	Active
116	2491	FEHA	Poor	Inactive
171	4794	FEHA	Poor	Inactive
169	4792	RTHA	Gone	Inactive
167	4790	Northern Harrier (NOHA)	Gone	Inactive
166	4789	RTHA	Gone	Inactive
165	4788	RTHA	Gone	Inactive
77	14	FEHA	Unknown Condition	Not Surveyed
93	2190	FEHA	Gone	Inactive
58	1043	RTHA	Gone	Inactive
57	1042	FEHA	Gone	Inactive
115	2490	FEHA	Gone	Inactive
114	2489	FEHA	Gone	Inactive
113	2483	FEHA	Unknown Condition	Not Surveyed

HWA Nest ID #	BLM Nest ID #	Raptor Species	Nest Condition	Nest Status
112	2482	FEHA	Fair	Inactive
150	2890	FEHA	Excellent	Active
149	2889	FEHA	Gone	Inactive
89	2014	GHOW	Good	Active
88	2013	GOEA	Excellent	Active
87	2010	FEHA	Gone	Inactive
86	2009	GOEA	Unknown Condition	Not Surveyed
85	2008	GOEA	Unknown Condition	Not Surveyed
84	2007	FEHA	Unknown Condition	Not Surveyed
126	2514, 2888	FEHA	Poor	Inactive
125	2513, 2876	FEHA	Remnants	Inactive
124	2512	FEHA	Gone	Inactive
123	2511	FEHA	Good	Inactive
122	2508	FEHA	Poor	Inactive
121	2507	FEHA	Poor	Inactive
120	2502	FEHA	Good	Inactive
119	2501	FEHA	Good	Inactive
118	2500	FEHA	Fair	Inactive
117	2499	UNK RAPTOR	Good	Inactive
179	4802	FEHA	Good	Inactive
178	4801	FEHA	Excellent	Inactive
177	4800	FEHA	Remnants	Inactive
176	4799	FEHA	Fair	Inactive
175	4798	FEHA	Good	Visited
174	4797	FEHA	Remnants	Inactive
173	4796	FEHA	Good	Inactive
172	4795	FEHA	Poor	Inactive
222	914	FEHA	Good	Inactive
103	2209	FEHA	Gone	Inactive
102	2207	FEHA	Gone	Inactive
101	2205	UNK RAPTOR	Fair	Inactive
94	2197	FEHA	Gone	Inactive
81	1892	FEHA	Unknown Condition	Not Surveyed
80	1891	FEHA	Unknown Condition	Not Surveyed
91	2018	SWHA	Gone	Inactive
194	5178	FEHA	Good	Inactive
131	2519	FEHA	Gone	Inactive
130	2518	FEHA	Gone	Inactive
129	2517	FEHA	Fair	Inactive
128	2516	FEHA	Poor	Inactive
127	2515	FEHA	Poor	Inactive
189	4815	FEHA	Good	Inactive
188	4813	FEHA	Poor	Inactive
187	4812	FEHA	Poor	Inactive
186	4809	GOEA	Excellent	Active
185	4808	GHOW	Good	Inactive
184	4807	Swainson's Hawk (SWHA)	Good	Inactive

HWA Nest ID #	BLM Nest ID #	Raptor Species	Nest Condition	Nest Status
183	4806	RTHA	Good	Active
182	4805	GHOW	Good	Inactive
181	4804	GOEA	Gone	Inactive
180	4803	FEHA	Fair	Inactive
139	2866	FEHA	Gone	Inactive
138	2864	FEHA	Good	Inactive
137	2863	FEHA	Gone	Inactive
136	2862	FEHA	Gone	Inactive
135	2861	FEHA	Gone	Inactive
134	2860	FEHA	Gone	Inactive
133	2859	FEHA	Gone	Inactive
132	2858	FEHA	Fair	Inactive
202	5186	FEHA	Fair	Inactive
201	5185	FEHA	Gone	Inactive
200	5184	FEHA	Poor	Inactive
199	5183	FEHA	Excellent	Inactive
198	5182	FEHA	Good	Inactive
197	5181	FEHA	Remnants	Inactive
196	5180	FEHA	Fair	Inactive
195	5179	FEHA	Gone	Inactive
170	4793	FEHA	Remnants	Inactive
230		GOEA	Excellent	Active
220	6560	UNDETERMINED	Gone	Inactive
216	5840	FEHA	Poor	Inactive
215	5839	FEHA	Fair	Inactive
214	5681	UNK RAPTOR	Gone	Inactive
213	5680	FEHA	Gone	Inactive
212	5679	FEHA	Gone	Inactive
211	5678	FEHA	Poor	Inactive
210	5677	FEHA	Good	Inactive
209	5676	FEHA	Poor	Inactive
164	4586	RTHA	Gone	Inactive
151	2891	FEHA	Remnants	Inactive
145	2882	RTHA	Fair	Inactive
142	2877	FEHA	Gone	Inactive
140	2869, 978	FEHA	Gone	Inactive
246	2498	SWHA	Gone	Inactive
244	2493	GOEA	Good	Inactive
238	885	FEHA	Poor	Inactive
236	887	FEHA	Unknown Condition	Not Surveyed
233	854	FEHA	Poor	Inactive
229		UNK RAPTOR	Good	Inactive
54	2015	RTHA	Good	Inactive
232		SWHA	Gone	Inactive
231		SWHA	Gone	Inactive
56	2012	GOEA	Gone	Inactive
143	2880	FEHA	Gone	Inactive

HWA Nest ID #	BLM Nest ID #	Raptor Species	Nest Condition	Nest Status
55		FEHA	Remnants	Inactive
144	2881	FEHA	Remnants	Inactive
49	2011	FEHA	Good	Inactive
50		FEHA	Poor	Inactive
168	4791	FEHA	Poor	Inactive
275		FEHA	Excellent	Inactive
271		FEHA	Good	Inactive
129	2517	FEHA	Fair	Inactive
146	2884	FEHA	Remnants	Inactive
272		UNK RAPTOR	Good	Inactive
270	10424	FEHA	Excellent	Active
269		FEHA	Gone	Inactive
268		FEHA	Gone	Inactive
267		FEHA	Gone	Inactive
266		FEHA	Gone	Inactive
257	4816	NOHA	Gone	Inactive
256	4814	FEHA	Fair	Visited
255	4811	FEHA	Gone	Inactive
254	4810	FEHA	Gone	Inactive
248	2510	FEHA	Excellent	Visited
247	2509	FEHA	Unknown Condition	Not Surveyed

*Nest condition of Gone are nests identified in previous years that are no longer present.

HWA: Hayden Wing Associates, a wildlife consulting firm hired by EOG to conduct wildlife and habitat surveys.