WILDLIFE MONITORING PLAN
FOR THE
JONAH INFILL DRILLING PROJECT

Prepared for the Bureau of Land Management, Pinedale Field Office

Prepared by the Jonah Interagency Mitigation and Reclamation Office

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1.0 INTRODUCTION

This wildlife monitoring and protection plan (WMPP) serves as a revision of the previous wildlife monitoring plan (2013) and was prepared by the Jonah Interagency Office (JIO) in coordination with the Bureau of Land Management (BLM) as directed by the Record of Decision (ROD) for the Jonah Infill Drilling Project Area (JIDPA), 2006 (Map 1). The ROD provided guidance that this wildlife monitoring/inventory would be specific to the JIDPA; however, it has been the recommendation of this office that operators responsible for the monitoring consider the need for added monitoring adjacent to the field (e.g. 3-mile buffer). This data would fulfill various needs including 1) identification of wildlife populations which exhibit increases due to emigration from existing disturbance, 2) information may suggest disturbances associated with the existing field, 3) potential information may provide for or identify potential mitigation needs directly adjacent to the field, and 4) as a potential "control" area to compare trends within and outside of the field.

The goals of this WMPP are to: 1) determine the effects of the JIDPA on wildlife resources; 2) determine the effectiveness of wildlife mitigation measures contained in the ROD; 3) modify the mitigation measures as deemed appropriate to achieve the stated goal/objective; 4) assure non-oil–and-gas BLM wildlife decisions (such as grazing, recreation, etc.) regarding the JIDPA are coordinated with gas-related development; 5) provide a rapid response to unnecessary/undue environmental change; 6) collect data in a manner compatible with larger landscape level monitoring efforts; 7) assure that monitoring efforts are not resulting in added disturbance or stresses to wildlife; 8) provide for monitoring associated with mitigation projects which are essential and assess whether mitigation objectives are attained through pre and post – treatment studies and ongoing monitoring of control sites; 9) validate environmental impact statement (EIS) wildlife models and revise the models/projections as necessary based on field observations and monitoring; 10) accurately monitor and predict cumulative impacts through BLM maintenance of a Geographic Information System (GIS) for the JIDPA including all activities (natural gas, agricultural, etc.) on federal and non-federal lands and how they are affecting resources; 11) allow for stakeholder participation in future decision-making; and 12) provide guidance for monitoring (surveys) upon which the need to initiate Endangered Species Act of 1973, as amended (ESA) Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) will be determined.

Implementation of the plan will assist land managers and project personnel in efforts to achieve and maintain desired levels of wildlife populations in the JIDPA. Continued inventory and monitoring, and comparing with previous data will aid in the establishment of any added mitigation/protection measures which may minimize and/or avoid potential adverse impacts to wildlife species/habitats as per the adaptive management protocol established with the infill direction.

Implementation of the WMPP began in 2007, replacing previous wildlife monitoring efforts. This document describes revised and previous wildlife inventory/monitoring/mitigation measures and seeks to compile existing needs from the ROD, as well as enact potential monitoring which may not have been done in the past, or modify existing protocol as needed to provide for future standardization of data to be collected within field development areas and outside of those areas where the monitoring/inventory work is feasible. Annual reviews of this monitoring and mitigation protocol will be conducted to determine the need for continued implementation of these measures and/or the need to implement new measures.

2.0 IMPLEMENTATION PROTOCOL

This section provides wildlife inventory, monitoring, and protection protocol that will be used for the life of these efforts, unless modified in future years as added needs are identified and changes are made. Specific monitoring methodologies and protocol are provided for each wildlife species or category. Methodologies have been identified which may be used inside and outside of field level development areas; in hopes of standardizing methodologies between agencies, and for future use in other areas. Primary consultation for these methods was from BLM, WGFD and USFWS.

2.1 ANNUAL REPORTS AND MEETINGS

2.1.1 Reports and Meetings

Operators will provide an annual report detailing the results from annual inventory and monitoring efforts throughout the life of project development or as otherwise directed by the JIO and/or BLM. These reports will be prepared by an Operator-financed, BLM-approved biologist. In addition, data associated with these efforts will be provided and due as collected as per the next section of this report. All data collected will follow the protocols and data standards found in the most recent version of the "Wildlife Survey Protocols Pinedale Field Office" unless otherwise instructed by a BLM biologist. This document can be found online at the Pinedale Field Office website http://www.blm.gov/wy/st/en/field_offices/Pinedale/wildlife.html or by contacting a BLM biologist.

In order to allow for BLM use of data in a timely fashion, time frames for the submission of certain data will be dependent upon the season and type/nature of the survey/inventory data collected. These "reports" only involve submission of data collected to the BLM, and do not require an analysis. Data will be submitted to the BLM as follows:

- Data pertaining to raptor nesting and productivity data (including burrowing owl) will be submitted on a monthly basis no less than 2 weeks after the final survey for that round of surveys.
- Data pertaining to mountain plover surveys will be submitted on a monthly basis no less than 2 weeks after the final survey for that round of surveys.
- All other data will be submitted October 1 with the draft report (see below).

A draft report and draft data set for all inventories/surveys will be issued by the Operator biologist to the BLM and JIO by **October 1** of each year. The BLM and JIO will provide comments and feedback on the draft report and data to the Operator biologist by **November 1** of each year. A final detailed annual report will be issued by the Operator biologist to the BLM, JIO, WGFD, USFWS, and Operators by **November 15** of each year.

A minimum of 2 hard copies of the final report will be submitted to each agency, unless additional copies are needed. In addition, an electronic copy of the report will also accompany the hard copy with one going to each agency and/or attached to the copies which are distributed. A specific distribution list will be included in the prefix of the report.

Annual reports will detail the following:

- A summary of previous years' wildlife inventory and monitoring results illustrating trend information across all years' data collection efforts (since 1998).

- Identification and assessment of protection measures implemented during past years, and recommendations of their application for future years.
- Methodologies utilized in data collection and/or inventory efforts.
- Maps illustrating areas where sampling occurred.
- Sources of potential wildlife disturbance (e.g. development activities, weather conditions).
- Recommendations for adaptive management needs and/or added mitigation needs, based on identification and assessments of ongoing protection and other measures.

All data that is of a sensitive nature which could be detrimental to wildlife (maps, specific locations, etc.) will be included in the appendices of the annual report. Annual reports (excluding appendices) will be posted on-line for public viewing on the JIO website.

Meetings related to data collection efforts will be held at a minimum of once per year, or on an as-needed basis. One meeting per year should be held in the winter (mid- to late February) after submission of the annual report to discuss the report and future monitoring efforts for the upcoming season. All wildlife-related monitoring/inventory/mitigation needs may be discussed at the annual meeting, for the intent of identifying any additional monitoring needs, adaptive management needs and/or unneeded monitoring that can be eliminated. Any additional meetings which may be needed can be recommended by any of the wildlife proponents involved with the monitoring efforts.

Raw data collected each year will also be provided to management agencies (e.g., BLM, WGFD, JIO, USFWS, Wyoming Natural Diversity Database [WYNDD]) at the request of those agencies. Any/all wildlife observations will be recorded on the Wyoming Game and Fish Wildlife Observation System. Information and forms will be provided as needed from any Wyoming Game and Fish Department Office.

Additional reports may be prepared in any year, as necessary, to comply with other relevant wildlife laws, rules, and regulations (e.g. black-footed ferret survey reports).

2.2 WILDLIFE INVENTORY AND MONITORING METHODS

The wildlife species/categories for which specific inventory and monitoring procedures were developed based on concerns identified during the preparation of the EIS for the Jonah Field II project (BLM, 1998), the EA for the Modified Jonah Field II Project (BLM 2000), modified due to added concerns and needs from the Jonah Infill Drilling Project ROD (BLM, 2006), and added needs identified in the WGFD Comprehensive Wildlife Strategy for Wyoming (WGFD 2005). Specific inventory and monitoring techniques and data standards will follow the methods presented in the most recent version of the "Wildlife Survey Protocols Pinedale Field Office" unless otherwise instructed by a BLM biologist. This document can be found online at the Pinedale Field Office website http://www.blm.gov/wy/st/en/field_offices/Pinedale/wildlife.html or by contacting a BLM biologist.

According to the ROD for the Jonah Infill Drilling Project (BLM 2006) specific monitoring can only be required within existing field development areas. After discussion during the initial monitoring meeting in 2006, operators agreed to gather monitoring data in a 3-mile buffer area surrounding the JIDPA. This will potentially identify other impacts which may be occurring; as well as identifying areas for off-site mitigation and/or other projects.

2.2.1 Raptors

Raptor nest inventories of the JIDPA will be conducted annually by a BLM-approved biologist following survey procedures outlined in the most recent version of the "Wildlife Survey Protocols Pinedale Field Office - Raptor Survey Procedures and Data Standards" (available on the BLM website or by contacting a BLM biologist). Two surveys will be conducted on all nest locations provided by the BLM (including historic nests) during the period April 15-June 15, three weeks to 1 month apart. Any nests which are deemed occupied or active during the surveys will be subsequently monitored until sufficient data is obtained to make productivity determinations. In the case of nest failure or abandonment, an attempt to identify the causative factor(s) will be made. In 2014, the area surveyed will include the entire JIDPA and 3-mile buffer; where the JIDPA is adjacent to the Anticline in the north and east, the survey buffer will be decreased to 1-mile (Map 2). Prior to conducting raptor surveys, the Operator biologist will contact the BLM for guidance on nest locations and the perimeter of the survey area.

2.2.2 Threatened, Endangered, Proposed, Candidate Species; BLM Wyoming Sensitive Species; and Species of Greatest Conservation Need

Federally listed, proposed or candidate species, BLM Wyoming Sensitive Species, and those species identified as species of greatest conservation need by the WGFD will be monitored and or documented within the JIDPA and a 3-mile buffer excluding that portion that overlaps the Anticline (Map 3). Some of these "sensitive" species will be monitored following specific survey protocols as identified in the following section while others will be recorded incidentally. Lists for these "sensitive" species can be found at the following websites:

USFWS Federally listed, Proposed and Candidate Species by County, Wyoming
http://www.fws.gov/wyominges/Pages/Species/Species_Endangered.html
BLM Wyoming Sensitive Species Policy and List
http://www.blm.gov/wy/st/en/programs/Wildlife.html
WGFD "Comprehensive Wildlife Conservation Strategy for Wyoming"
http://gf.state.wy.us/wildlife/CompConvStrategy/Introduction.pdf

2.2.2.1 Bald Eagle, Ferruginous Hawk and Golden Eagle

Inventory and monitoring protocols for bald eagle, ferruginous hawks, and golden eagles will follow protocols and be done simultaneously with the raptor surveys as described above in Section 2.2.1.

2.2.2.2 Western Burrowing Owl

Western burrowing owl nest inventories of the JIDPA will be conducted annually by a BLM-approved biologist following survey procedures outlined in the most recent version of the "Wildlife Survey Protocols Pinedale Field Office – Burrowing Owl Survey Protocol" (available on the BLM Website or by contacting a BLM biologist). Three surveys will be conducted on all nest locations provided by the BLM (including historic nests) during the period May 1- October 31, three weeks to 1 month apart. Surveys will be conducted in the early morning (0.5 hours before sunrise until 2 hours after sunrise) and early evening (2 hours before sunset until 0.5 hours after sunset). Any nests which are deemed occupied or active during the surveys will be subsequently monitored until sufficient data is obtained to make productivity determinations. In the case of nest failure or abandonment, an attempt to identify the causative factor(s) will be made. In 2014, the area surveyed will include the entire JIDPA and 3-mile buffer; where the JIDPA is adjacent to the Anticline the survey buffer will be decreased to 1-mile (Map 2). Prior to conducting burrowing owl surveys, the

Operator biologist will contact the BLM for guidance on nest locations and the perimeter of the survey area.

2.2.2.3 Mountain Plover

Mountain plover habitat will be assessed every three years in order to document the condition and occurrence of suitable plover habitat within the JIDPA and a 3-mile buffer excluding that portion that overlaps with the Anticline (Map 3). Previously mapped habitats will be assessed for condition per the *Survey for Mountain Plover (Charadrius montanus) on Federal Lands in the Powder River Basin*, prepared by Douglas A. Keinath and Donna Ehle for the Cheyenne, WY BLM 2001. Any new suitable habitats found during searches will be mapped and assessed for condition using the previously mentioned protocol. Prior to conducting mountain plover mapping and habitat assessment, the Operator biologist will contact the BLM for guidance. Mapping and assessment of suitable mountain plover habitat occurred in 2013 and will be required every three years (2016).

In addition, mountain plover surveys will be conducted annually in accordance with 2002 USFWS guidelines (USFWS 2002) within previously identified habitats having the potential for serving as breeding habitat (refer to most recent mapping effort (2013) where these habitats have been documented) within the JIDPA and a 3-mile buffer excluding that portion that overlaps the Anticline (Map 3). For 2014, all medium quality habitats, low quality habitats that have had plover observations in the past (habitat patch 6), and low quality habitats adjacent to medium quality habitats will be surveyed. A shape file of habitat patches that are required to be surveyed will be provided to the Operator biologist by the BLM. If incidental observations of mountain plovers are found in areas outside of the required survey areas then further survey efforts may be necessary.

2.2.2.4 White-tailed Prairie Dog

To document occurrence and distribution of white-tailed prairie dogs, suitable habitat will be mapped and surveyed every 3 years within the JIDPA and a 3-mile buffer excluding that portion that overlaps with the Anticline (Map 3). This survey effort includes mapping the perimeter of the towns with GPS units. Previously identified prairie dog towns were remapped in 2007, 2010 and 2013. Mapping and surveys will occur in 2016 and will be required every 3 years.

2.2.2.5 Pygmy Rabbits

Pygmy rabbit habitat will be surveyed every three years within the JIDPA (Map 1). Occupancy surveys were conducted in 2013 and followed techniques used in the 2010 monitoring surveys which were similar to monitoring occurring in the other areas (NPL, PAPA). Surveys included seventy eight randomized 400 x 400 meter plots distributed throughout the JIDPA. In addition, five survey plots occupied in 2010 were re-surveyed to document occupancy in 2013 for a total of 83 survey plots. Prior to conducting pygmy rabbit surveys the Operator biologist will contact the BLM for guidance on randomized point locations and protocols. Pygmy rabbit monitoring will occur in 2016 and is required every three years.

2.2.2.6 Greater Sage-grouse

Annual lek counts and inventories will be conducted by WGFD and BLM personnel on existing known lek locations within the JIDPA and a 3-mile buffer.

2.2.2.7 Black-footed Ferret

Specific requirements for black-footed ferret surveys are no longer specified since the entire JIDPA

is included within an area identified by the USFWS as no longer requiring surveys (BLM 2006). The Operator biologist will contact the BLM if a black-footed ferret is observed within the JIDPA or associated buffers.

2.2.2.8 Landbirds

Landbird surveys will be conducted annually to document species diversity and relative abundance within the JIDPA (Map 1). Species of particular importance are sagebrush obligate songbirds that include the following: sage thrasher, Brewer's sparrow, and sage sparrow. The Handbook of Field Methods for Monitoring Landbirds (Ralph 1993) along with the RMBO protocol (Hanni et al, 2009) has been used to design point count surveys throughout the JIDPA. Point count surveys will continue annually following the design described in the 2010 Jonah Field Wildlife Inventory and Monitoring Report (Aster Canyon 2010).

2.2.2.9 Other TEPC, WSS & SGCN Species

Other species considered as being of a "sensitive" nature that were not addressed in the previous sections should also be recorded. Past efforts involving species under this heading have primarily involved documentation of observations and/or habitat characteristics of sensitive species in conjunction with other monitoring surveys for the JIDPA. All observations found within the JIDPA survey areas should be recorded using the WGFD Wildlife Observation System (WOS) and include GPS locations.

2.2.3 Fence Inventory/Survey

A fence inventory was conducted in 2010 documenting all non-industrial fences within the JIDPA and the 3-mile buffer (excluding that portion that overlaps the anticline). Information gathered during the surveys included fence characteristics (length, height, fence type, etc.), gates, cattle guards, wildlife collisions with the fence, wildlife crossings and entanglements. In 2010, several locations were observed where sage-grouse fence strikes occurred near the leks in the northeastern section of the JIDPA (Aster Canyon 2010).

In the spring of 2011, fence markers were placed on a portion of fence along the northern border of the JIDPA where sage-grouse strikes were documented in 2010. Fence monitoring for wildlife strikes was conducted in 2011 by the Operator biologist following the Jonah Field Fence Inventory Protocol (Appendix 2). Monitoring surveys to document fence strikes were conducted in April once per week between the hours of 9am to 7pm on the entire designated fence line (8.2 miles). In May, two monitoring surveys were conducted (at least 14 days apart) for this same fence line between the hours of 9am to 7pm. In addition, a fence inventory of non-industrial fences was conducted in 2011 in the remaining portions of the 3-mile buffer (the area that overlaps the anticline) that was not inventoried in 2010 (approximately 20.5 miles of non-industrial fence). Fence inventories for the JIDPA and a 3-mile buffer are now complete.

In 2012, monitoring surveys to document fence strikes were conducted on 9.3 miles of designated fence line in the northern portion of the JIDPA. Monitoring surveys were conducted once per week during the last two weeks of March, once per week in April, and two surveys were conducted in May (at least 14 days apart). In addition, all inventoried fences located within the 3-mile buffer of the JIPDA were monitored once in July and once in August to document fence strikes throughout the JIDPA and a 3-mile buffer.

In 2013, monitoring surveys to document fence strikes were conducted on 9.3 miles of designated fence line in the northern portion of the JIDPA. Monitoring surveys were conducted once per week during the last two weeks of March, once per week in April, and two surveys were conducted in May (at least 14 days apart). In addition, all inventoried fences located within the 3-mile buffer of the JIPDA were monitored once in April and once in May (at least one month apart) to document fence strikes throughout the JIDPA and a 3-mile buffer.

In 2014, monitoring surveys to document fence strikes will be conducted on 9.3 miles of designated fence line in the northern portion of the JIDPA (Map 4). Monitoring surveys will be conducted once per week during the last two weeks of March, once per week in April, and two surveys will be conducted in May (at least 14 days apart). All surveys will be conducted between the hours of 9am and 7pm following the Jonah Field Fence Inventory protocol (Appendix 2).

2.2.4 General Wildlife

Observation information for wildlife is desirable for future reference on "presence/occurrence" of species in varying locales. This, however, should be tempered with a realization that some common species could be documented daily. This is not the overall intent. Common species which may be present in uncommon numbers would be a desirable need; and/or their occurrence during uncommon seasons. It's difficult to develop a comprehensive list of those species common enough to ignore for these efforts, but the following should be considered as those common enough not to document, unless it is under uncommon circumstances:

Pronghorn antelope
Magpies and Ravens
Jackrabbits
Cottontails
Ground squirrels

BLM, WGFD, Operator personnel (including the Operator-funded biologist and associated staff), and other BLM-approved parties will keep records, on a voluntary basis, of the wildlife species observed during the course of their activities within and adjacent to the JIDPA. Observations of big game (excluding pronghorn) within the Jonah Infill and general area should also be recorded. All observations should be recorded using the WGFD Wildlife Observation System and include GPS locations.

Literature Cited

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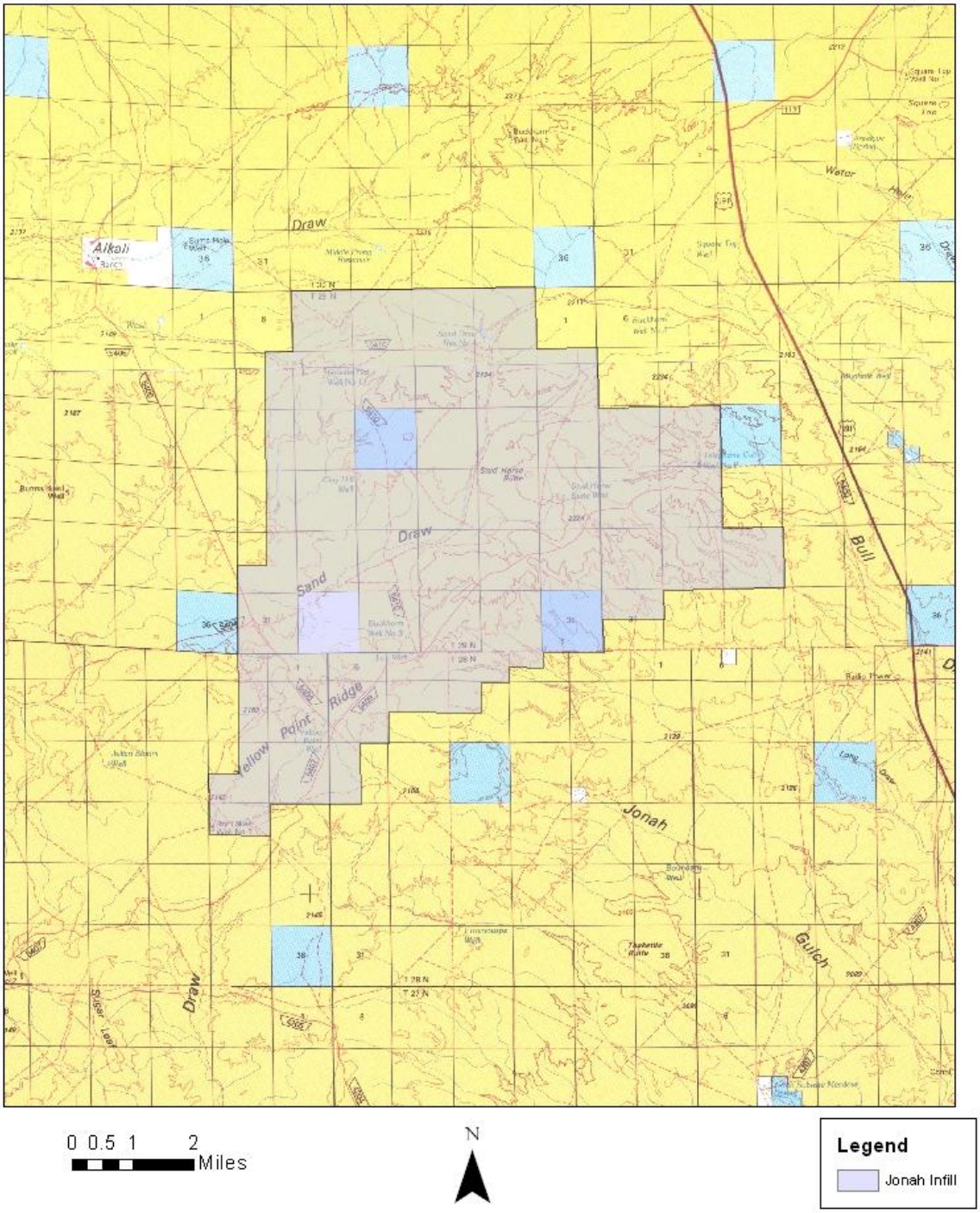
Appendix 1

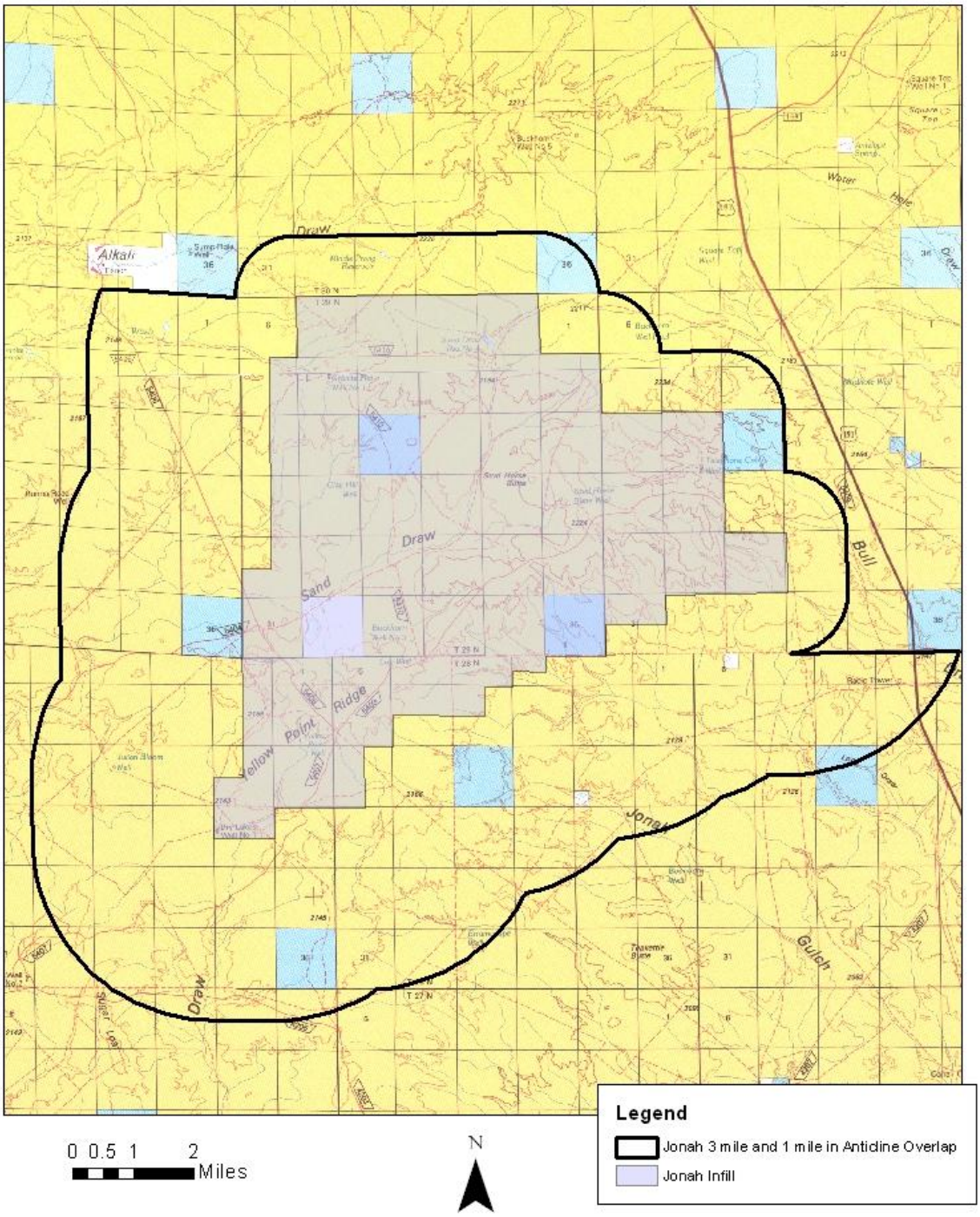
Map 1:

Jonah Infill Drilling Project Area (JIDPA)



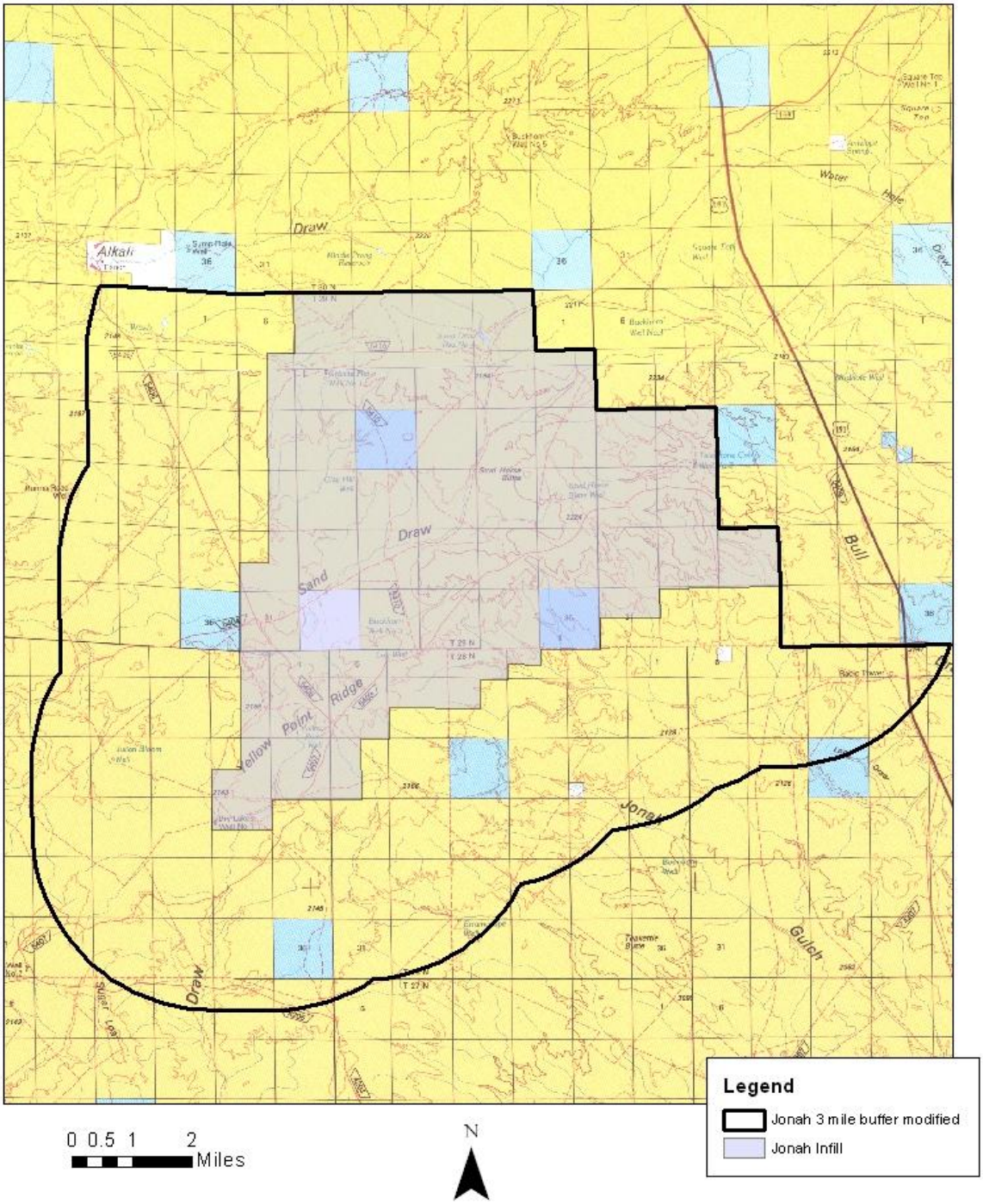
Map 2:

Jonah Infill 3-mile Buffer and Modified Anticline Overlap with 1-mile Buffer



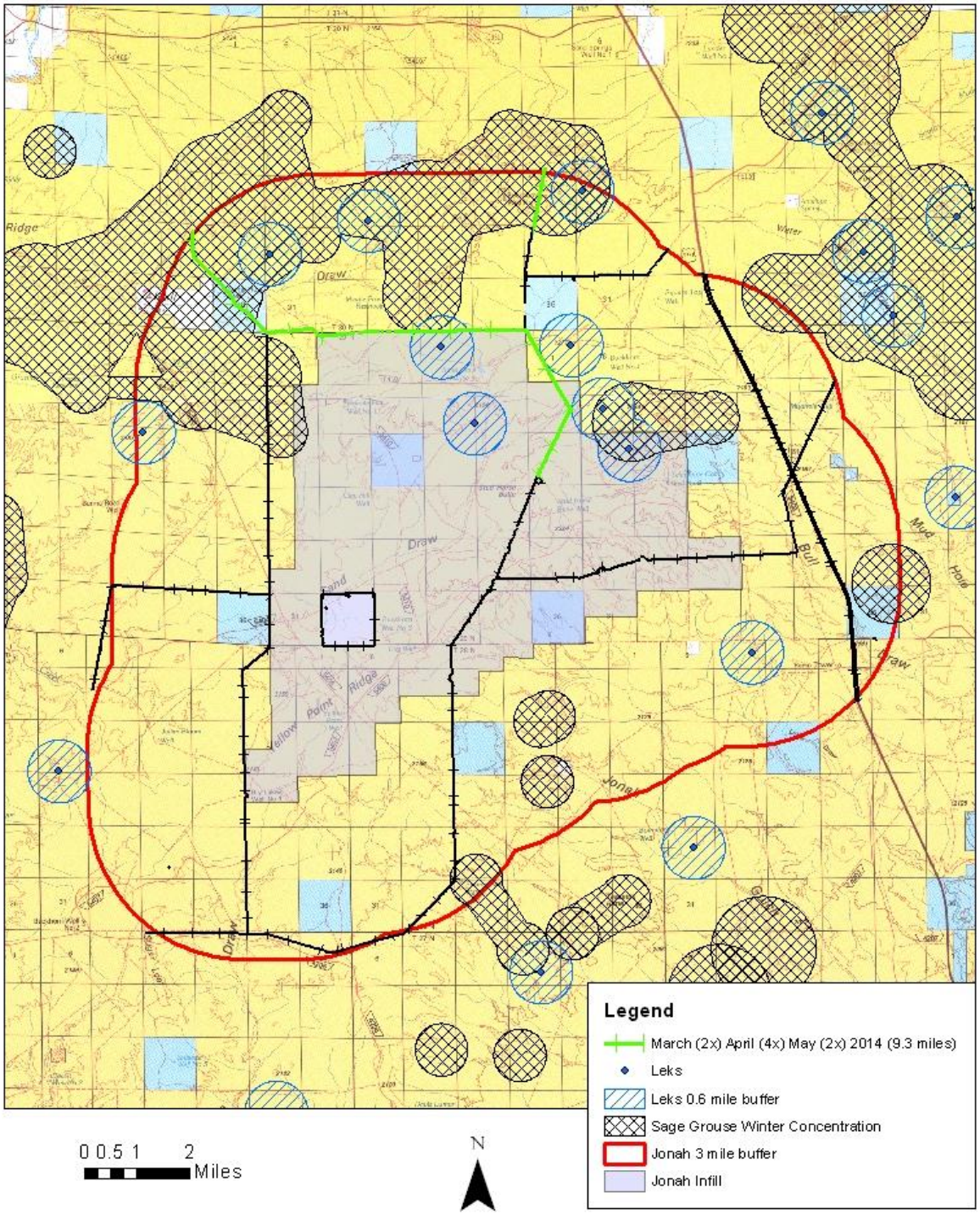
Map 3:

Jonah Infill and Modified 3-mile Buffer



Map 4:

2014 Fence Monitoring



Appendix 2

Jonah Field Fence Inventory Protocol

All non-industrial fences (allotment, pasture, and range or habitat treatment exclosure fences) within the boundaries of the Jonah Infill and a 3 mile buffer of the Jonah Infill will be inventoried and will be surveyed for wildlife collision, crossings and entanglement locations.

METHODS

- All surveying should be done on foot or from a vehicle travelling slow enough to identify fence strike and fence crossing locations and any change in fence construction (vehicles must remain on existing roads).

- Fence lines, cattle guards, gates, wildlife fence strike and fence crossing, and any notable areas of concern along surveyed fences will be recorded spatially. Attribute data for these spatial records will also be gathered in adherence with the Jonah Field Fence Inventory Survey Key and Codes provided in this protocol.

- Any change in fence construction that stretches beyond 50 feet in length will be recorded as a separate spatial record (line feature). Any stretch of fence in which there is a fence construction change or a fence condition area of concern that is less than 50 feet in length will be recorded as a "Notable Area" (point feature) as discussed in the Jonah Field Fence Inventory Survey Key and Codes provided in this protocol.

- All identified wildlife strike locations should be cleared of carcasses, feathers or hair so that subsequent fence surveys do not re-record those areas as strikes.

- If sage-grouse fence strike areas are indentified, those problem areas of fence will be subsequently equipped with strike deterrents in accordance with the methods developed by Sutton Avian Research Center in Oklahoma. Undersill strips of vinyl house siding cut into 3- 4 inch pieces will be clipped onto the top strand of problem fence; spacing and distance from strikes in which the fence is marked will be determined by the BLM biologists with consultation from other BLM specialists and Wyoming Game and Fish Department personnel on an individual problem area basis. Certain unique conditions (topography, fence location, lek location, visual concerns, functionality of the fence etc.) may determine the placement of strike deterrents for each problem area. Strike deterrents will be placed by the contractor once spacing and distance from fence strikes is determined.

- Fences will be monitored for fence strikes annually. Fences that have been equipped with strike deterrents will be monitored for their effectiveness in deterring sage-grouse. Monitoring of certain fences may be required at various times of year in an attempt to detect further fence collision during or directly after the season in which

the collision may occur (i.e. fence lines within 0.6 mile of occupied leks will be surveyed during the first 2 weeks of May; after peak lek attendance but before carcasses are eaten or removed by scavengers).

- Upon completion of fence surveying and inventorying of the Jonah and its 3 mile buffer, a summary report will be submitted to the BLM Pinedale Field Office (PFO). Key inclusions to this report consist of but are not limited to the following: total length of fence inventoried/surveyed, total number of fence strikes (broken down by species), total number of fence induced mortalities (broken down by species), total number of fence crossings, total number of gates, total number of cattle guards, total number of notable concern areas, an assessment of number of strikes per mile on problem stretches of fences, and maps that clearly show all inventoried fence and all recorded locations taken during the survey. Any other relevant information, suggestions or analyses the contractor feels would benefit the project may also be included.

- An addendum to the summary report will be submitted to the PFO subsequent to installation of strike deterrents on problem fences. The addendum will identify stretches of fence where strike deterrents were placed, the spacing of the deterrents, and the distance from the strike in which deterrents were installed. Maps of strike locations and fence stretches in which deterrents were installed should also be submitted along with any other relevant information or analyses the contractor feels would best summarize and/or benefit the installation effort.

Jonah Field Fence Inventory Data Standards

- Jonah Field Fence Inventory data meant for incorporation into the BLM PFO corporate Geographic Information System (GIS) data must follow these data standards.

- Jonah Field Fence Inventory data will be broken into 6 separate data features categories: Fence Line (Line Feature and associated attributes) and Fence Strike, Fence Crossings, Notable Areas, Cattle guard and Gate (Point Features and associated attributes).

- All spatial data will be collected using NAD83 datum zone 12 and will be submitted in 6 separate shapefiles (1 for each of the aforementioned data features collected).

- All Jonah Field Fence Inventory data submitted to BLM PFO will use the exact data field headers in the order they appear in the Jonah Field Fence Inventory Survey Key and Codes and will use the data and codes supplied therein. Do not leave data fields blank, empty or unpopulated! Data field headers are indicated by bracketed text [FIELDHEADER] for each piece of data and data codes are supplied in the data pick lists supplied under those data headers.

- All data will be entered in capital letters. For all qualitative data in which more than one word is used within a data field, each word should be followed by a single space and then the subsequent word should be entered. For example: A surveyor discovers that a stretch of fence has been damaged by migrating elk. An acceptable comment in the proper format would be: FENCE DOWN. DAMAGED BY MIGRATING ELK.

Jonah Field Fence Inventory Survey Key and Codes

Note: Data for all data fields in this protocol will be required to be procured and submitted by the surveyor unless otherwise not required by the authorized officer on a project by project basis.

Fence-line Data. (Line Feature)			
Attribute	**Data Type**	**Pick List**	**Description**
[TYPE] Fence Type	Text	ALL WOOD	All Wood construction (i.e. buck and rail etc.).
		WOOD-WIRE	Wood posts with wire strands.
		STEEL-WIRE	Steel posts (T-posts etc.) with wire strands.
		WOOD_STEEL-WIRE	Wood and steel posts with wire strands.
		OTHER	Any other type of fence.
[NUM_STR] Number of Strands	Numeric	Numeric Value Entered	Total number of strands will be recorded. <u>If more than 6 strands exist, enter the number of strands and supply spacing measurements of additional strands in the comments field.</u> *Woven wire or net fencing should be considered as 2 strands of wire (strand 1-the bottom strand of the woven wire panel, strand 2 – the top strand of the woven wire panel)*
[FEN_HEIGHT] Fence Height	Numeric	Numeric Value Entered	Measurement (in) to the top strand of the fence (average height that is representative of the stretch of fence being inventoried)
[POST_DIST] Distance between posts	Numeric	Numeric Value Entered	Measurement (ft) representing most common distance between posts.
[STR1_TYPE] Strand 1 Type	Text	SMOOTH	Type of fence strand 1 (strand closest to ground) *For woven wire or net fencing, the bottom of the woven wire panel should be considered as strand 1.*
		BARBED	
		WOOD	
		WOVEN WIRE	
[STR1_SPACE] Strand 1 Spacing	Numeric	Numeric Value Entered	Measurement (in) from ground to the bottom strand; taken at center of fence panel (average height that is representative of the stretch of fence being inventoried).
[STR2_TYPE] Strand 2 Type	Text	SMOOTH	Type of fence strand 2 (2nd strand up from the ground) *For woven wire or net fencing, the top of the woven wire panel should be considered as a strand 2.*
		BARBED	
		WOOD	
		WOVEN WIRE	
[STR2_SPACE] Strand 2 Spacing	Numeric	Numeric Value Entered	Measurement (in) from ground to the 2nd strand; taken at center of fence panel (average height that is representative of the stretch of fence being inventoried).

[STR3_TYPE] Strand 3 Type	Text	SMOOTH BARBED WOOD NOT APPLICABLE	Type of fence strand 3 (3rd strand up from the ground).
[STR3_SPACE] Strand 3 Spacing	Numeric	Numeric Value Entered	Measurement (in) from ground to the 3rd strand; taken at center of fence panel (average height that is representative of the stretch of fence being inventoried). If strand 3 doesn't exist, enter the number -999.
[STR4_TYPE] Strand 4 Type	Text	SMOOTH BARBED WOOD NOT APPLICABLE	Type of fence strand 4 (4th strand up from the ground)
[STR4_SPACE] Strand 4 Spacing	Numeric	Numeric Value Entered	Measurement (in) from ground to the 4th strand; taken at center of fence panel (average height that is representative of the stretch of fence being inventoried). If strand 4 doesn't exist, enter the number -999.
[STR5_TYPE] Strand 5 Type	Text	SMOOTH BARBED WOOD NOT APPLICABLE	Type of fence strand 5 (5th strand up from the ground)
[STR5_SPACE] Strand 5 Spacing	Numeric	Numeric Value Entered	Measurement (in) from ground to the 5th strand; taken at center of fence panel (average height that is representative of the stretch of fence being inventoried). If strand 5 doesn't exist, enter the number -999.
[STR6_TYPE] Strand 6 Type	Text	SMOOTH BARBED WOOD NOT APPLICABLE	Type of fence strand 6 (6th strand up from the ground)
[STR6_SPACE] Strand 6 Spacing	Numeric	Numeric Value Entered	Measurement (in) from ground to the 6th strand; taken at center of fence panel (average height that is representative of the stretch of fence being inventoried). If strand 6 doesn't exist, enter the number -999.
[FEN_CON] Fence Condition	Numeric	1	Virtually New; complete new fence posts, wire, and batten.
		2	Still fully stock proof; may require maintenance in 1-2 years.
		3	Relatively minor maintenance required to replace occasional missing posts, braces, tension, wires etc. Fence is generally stock proof but may have places where stock can/are passing through.
		4	Major maintenance required (replacement of posts, batten, wire) but still can be rebuilt. No longer stock proof (many places where stock can pass through).
		5	Fence is no longer functional (does not restrict stock).

			Has missing sections and areas of collapse (requires complete replacement or removal).
[COMMENT] Fence Comments	Text	Text entered	Any relevant comment. TEXT SHOULD BE UPPER CASE WITH SINGLE SPACE BETWEEN WORDS AND PHRASE SHOULD END WITH A PERIOD.
[DATE] Date of Collection	Date	Date Entered	mm/dd/yyyy
[SOURCE] Data Source	Text	Text entered	The agency name or an abbreviation or acronym of the agency name (BLM, WGFD, RONS SURVEYS INC, etc.) that conducted the survey. Be consistent in how you represent your department/establishment in all data submissions.
[OBSRVER] Observer	Text	Text entered	The first initial followed by a single space and then the last name of the individual that conducted the survey. For example: R MCWILLIAMS.

Fence Strike Data (Point Feature)			
Attribute	Data Type	Pick List	Description
[FS_TYPE] Fence Strike Type	Text	SIMPLE STRIKE	Feathers or hair on/in or immediately surrounding fence.
		FENCE MORTALLITY	Carcass (at a minimum bones identifiable of the species) present on/in or immediately surrounding fence.
[FS_SPECIES] Fence Strike Species	Text	SAGE-GROUSE	Sage-grouse
		RAPTOR	If discernable enter species in comments.
		PASSERINE	If discernable enter species in comments.
		PRONGHORN	Pronghorn Antelope
		DEER	Mule or White-tailed
		ELK	Elk
		MOOSE	Moose
		DOMESTIC	Any Domestic Species. Enter species into comments.
		OTHER	Any other species. Enter species in comments.
		UNKNOWN	Species is indiscernible.
[NUM_INDVL] Number of Individuals	Numeric	Numeric Value Entered	Number of carcasses or strikes represented by data point.
[DECMP_ST] Decomposition State	Text	NO DECOMPOSISTION	Carcass is intact with no or few signs of decomposition.
		MODERATE DECOMPOSISTION	Carcass is nearly intact or slightly dispersed with some desiccation.
		HIGH DECOMPOSISTION	Carcass is dispersed by heavy decomposition (Bone piles).
		NO CARCASS	Hair or feathers but no carcass (simple strikes).
[FS_COMMENT] Fence Strike Comment	Text	Text entered	Any relevant fence strike comments.
[FS_DATE] Fence Strike Date	Date	Date entered	Date that fence strike data was gathered. mm/dd/yyyy.
[FS_SOURCE] Fence Strike Data Source	Text	Text entered	See discussion in fence attribute table above.
[FS_OBSRVER] Fence Strike Observer	Text	Text entered	See discussion in fence attribute table above.

Fence Crossing Data (Point Feature)			
Attribute	Data Type	Pick List	Description
[X_SPECIES] Species Crossing	Text	PRONGHORN	Pronghorn crossing (trail leading under fence).
		CERVID	Any obvious crossing used by Deer, Elk or Moose.
[X_COMMENT] Crossing Comment	Text	Text entered	Any relevant crossing comments.
[X_DATE] Crossing Date	Date	Date entered	Date that fence crossing data was gathered. mm/dd/yyyy.
[X_SOURCE] Crossing Data Source	Text	Text entered	See discussion in fence attribute table above.
[X_OBSRVER] Crossing Observer	Text	Text entered	See discussion in fence attribute table above.

Notable Concern Data (Point Feature)			
Attribute	Data Type	Pick List	Description
[CONCERN] Notable Concern	Text	CUT FENCE	Fence has been cut or broken.
		DOWNED FENCE	Fence is Down.
		STOCK CONCERN	Any concern with fence in regards to cattle, sheep or horses.
		WILDLIFE CONCERN	Any concern with fence in regards to Wildlife species (potential fence strike areas etc.).
		OTHER	Any other notable concern with fence.
[CN_COMMENT] Notable Concern Comment	Text	Text entered	Any relevant comment that may help to explain concern.
[CN_DATE] Notable Concern Date	Date	Date entered	Date that fence concern was identified. mm/dd/yyyy.
[CN_SOURCE] Notable Concern Source	Text	Text entered	See discussion in fence attribute table above.
[CN_OBSRVER] Notable Concern Observer	Text	Text entered	See discussion in fence attribute table above.

Gate Data (Point Feature)			
Attribute	Data Type	Pick List	Description
[GATE_TYPE] Type of gate	Text	ALL WOOD	Gate construction type.
		WOOD-WIRE	
		STEEL-WIRE	
		STEEL PANEL	
		WOOD_STEEL-WIRE	
		OTHER	
[GATE_HT] Height of Gate	Numeric	Numeric Value Entered	Height of gate (in).
[GATE_WDTH] Width of Gate	Numeric	Numeric Value Entered	Measurement (ft) of the width of the travelling lane in which a vehicle would pass through the gate.
[GATE_CON] Condition of Gate	Numeric	1	Excellent; new construction with no visible weathering. Gate appears to carry its own weight and swings freely.
		2	Good; nearly new construction with some light weathering. Gate appears to have some sag and swings freely.
		3	Fair; older construction with moderate weathering. Gate appears to have considerable sag and does not swing freely.
		4	Poor; old construction with heavy weathering. Gate is falling down and does not swing freely.
[G_COMMENT] Gate Comments	Text	Text entered	Any relevant comments related to the gate.
[G_DATE] Date	Date	Date entered	Date that gate data was gathered. mm/dd/yyyy.
[G_SOURCE] Data Source	Text	Text entered	See discussion in fence attribute table above.
[G_OBSRVER] Observer	Text	Text entered	See discussion in fence attribute table above.

Cattle-guard Data (Point Feature)			
Attribute	Data Type	Pick List	Description
[CG_WIDTH] Cattle guard Width	Numeric	Numeric Value Entered	Measurement (ft) of the width of the travelling lane in which a vehicle would pass over the cattle guard (length of the long axis of a cattle guard).
[CG_CON] Cattle guard Condition	Numeric	1	Excellent; new to nearly new with no damage and/or silting in of cattle guard.
		2	Good; little to no damage and/or only moderate silting in.
		3	Fair; damaged and/or nearly silted in but fully functional.
		4	Poor; major damage and/or completely silted in and no longer functioning.
[CG_COMMENT] Cattle guard Comment	Text	Text entered	Any relevant comment regarding the cattle guard.
[CG_DATE] Cattle guard Date	Date	Date entered	Date that cattle guard data was gathered. mm/dd/yyyy.
[CG_SOURCE] Cattle guard Data Source	Text	Text entered	See discussion in fence attribute table above.
[CG_OBSRVER] Cattle guard Observer	Text	Text entered	See discussion in fence attribute table above.