# United States Department of the Interior

# Bureau of Land Management

## Environmental Assessment

## DOI-BLM-UT-W020-2015-0004-EA

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**December 2015**

# August 2015 Oil and Gas Lease Sale

**(Auction Date February 16, 2016)**

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|---|---|
| Location: | West Desert District<br>Fillmore Field Office<br>Juab County |
| Applicant/Address: | Not Applicable |

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# August 2015 Oil and Gas Lease Sale

## Table of Contents


1.0 PURPOSE & NEED ..... 3
1.1 Introduction ..... 3
1.2 Background ..... 3
1.3 Purpose and Need of the Proposed Action ..... 5
1.4 Conformance with BLM Land Use Plan ..... 5
1.5 Relationship to Statutes, Regulations, or Other Plans ..... 6
1.6 Documents Incorporated by Reference: ..... 6
1.61 EISs/EAs ..... 6
1.62 Other Documents ..... 7
1.7 Identification of Issues ..... 7
1.8 Summary ..... 7
2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION ..... 9
2.1 Introduction ..... 9
2.1.1 Reasonably Foreseeable Development Scenario ..... 9
2.1.2 Well Pad and Road Construction ..... 10
2.1.3 Hydraulic Fracturing ..... 10
2.1.4 Production Operations ..... 11
2.1.5 Produced Water Handling ..... 12
2.1.6 Maintenance Operations ..... 12
2.1.7 Plugging and Abandonment ..... 12
2.2 Alternative A – Leasing with no Lease Notices ..... 12
2.3 Alternative B – Proposed Action, Leasing with Lease Notices ..... 14
2.4 Alternative C – No Action ..... 17
2.5 Alternatives Considered but Not Carried Forward ..... 18
3.0 AFFECTED ENVIRONMENT ..... 19
3.1 Introduction ..... 19
3.2 General Setting ..... 19
3.3 Resources/Issues Brought Forward for Analysis ..... 19
3.3.1 Air Quality and Greenhouse Gas Emissions ..... 19
3.3.2 Migratory Birds ..... 22

3.3.3 Wildlife Excluding Special Status Species ..... 23
3.3.4 Threatened Endangered, Candidate Species or Special Status Species ..... 24
4.0 ENVIRONMENTAL IMPACTS ..... 25
4.1 Introduction ..... 25
4.2 Direct and Indirect Impacts ..... 25
4.2.1 Alternative A – Leasing With no Lease Notices ..... 25
4.2.2 Alternative B – Proposed Action, Leasing with Lease Notices ..... 27
4.2.3 Alternative C – No Action ..... 32
4.3 Cumulative Impacts ..... 33
4.3.1 Air Quality and Greenhouse Gas Emissions ..... 34
4.3.2 Migratory Birds ..... 35
4.3.3 Wildlife Excluding Special Status Species ..... 36
4.3.4 Threatened Endangered, Candidate Species or Special Status Species ..... 36
5.0 CONSULTATION AND COORDINATION ..... 37
5.1 Introduction ..... 37
5.2 Persons, Groups, and Agencies Consulted ..... 37
5.3 Summary of Public Participation ..... 38
5.3.1 Modifications Based Upon Public Comments and Internal Review ..... 38
5.3.2 Response to Public Comment ..... 39
5.4 List of Preparers ..... 40
6.0 REFERENCES, ACRONYMS AND APPENDICES ..... 41
6.1 References Cited ..... 41
6.2 List of Acronyms ..... 42
6.3 Appendices ..... 43
APPENDIX A – PRELIMINARY FFO OIL AND GAS LEASE SALE LIST ..... 44
APPENDIX B – MAP ..... 55
APPENDIX C – INTERDISCIPLINARY TEAM CHECKLIST ..... 57
**APPENDIX D – RESPONSE TO COMMENTS** ..... 70

# August 2015 Oil and Gas Lease Sale
**DOI-BLM-UT-W020-2015-0004-EA**

## 1.0 PURPOSE & NEED

### 1.1 Introduction

The Fillmore Field Office (FFO) of the Bureau of Land Management (BLM) has prepared this environmental assessment (EA) to disclose and analyze the environmental consequences for the sale of parcels during the August 2015 oil and gas lease sale and subsequent lease issuance to successful bidders. For various reasons, the August 2015 lease sale was deferred to November 2015, then to February 2016 but for consistency, this document will continue to be referred to as the August 2015 Oil and Gas Lease Sale. The EA is a site-specific analysis of potential impacts that could result from the implementation of a proposed action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any significant impacts could result from the analyzed actions. Significance is defined by NEPA and the regulations implementing NEPA at Title 40 of the Code of Federal Regulations (CFR) section 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of Finding of No Significant Impacts (FONSI). If the decision maker determines that this project has significant impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A DR, including a FONSI statement, for this EA would document the reasons why implementation of the selected alternative would not result in significant environmental impacts (effects) beyond those already addressed in the 1987 House Range Resource Area Resource Management Plan and Record of Decision (BLM, 1987) ("HRRA RMP/ROD").

### 1.2 Background

The BLM policy is to make mineral resources available for use and to encourage their orderly development to meet national, regional, and local needs. This policy is based in various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976. The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Sec. 5102(a)(b)(1)(A)) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are available for leasing.

Expressions of Interest (EOI) to nominate parcels for leasing by the BLM are submitted by the public. From these EOIs, the BLM Utah State Office (UTSO) forwards a preliminary parcel list to the West Desert District Office (WDD), which includes the FFO and the Salt Lake Field Office (SLFO), for review and processing. The FFO determines whether or not the existing analyses in the land use plan, as amended, provides an adequate basis for leasing oil and gas resources or that additional NEPA analysis is needed before making a leasing recommendation. In order to meet the requirements of Washington Office (WO) Instruction Memorandum (IM) 2010-117, in most instances an EA will be initiated for the parcels within the FFO.

After the EA is prepared, it and the unsigned FONSI are made available to the public along with the list of available lease parcels and stipulations and notices for a 30-day public comment period on the UTSO Oil and Gas Leasing webpage[1] (webpage) and the BLM's ePlanning webpage. After the end of the public comment period, the BLM analyzes and incorporates the comments where appropriate and changes to the document and/or lease parcels list are made, if necessary. The final parcel list with stipulations and notices is made available to the public through a Notice of Competitive Lease Sale which starts the protest period (30 days) with a copy of the EA and an unsigned FONSI. The protest period ends 30 days after the Notice of Competitive Lease Sale is posted. The Utah BLM resolves any protests within the 60 days between the end of the protest period and the lease sale when possible. If any changes are needed to the parcels or stipulations/notices, an erratum is posted to the BLM website to notify the public of the change.

The parcels would be available for sale at an auction held by the UTSO tentatively scheduled for November 17, 2015. If a parcel is not purchased at the lease sale by competitive bidding, it may still be leased within two years after the initial offering. A lease may be held for ten years, after which the lease expires unless oil or gas is produced in paying quantities. A producing lease can be held indefinitely by economic production.

A lessee must submit an Application for Permit to Drill (APD) (Form 3160-3) to the BLM for approval and must possess an approved APD prior to any surface disturbance in preparation for drilling.[2] Any stipulations attached to the standard lease form must be complied with before an APD may be approved. Following BLM approval of an APD, a lessee may produce oil and gas from the well in a manner approved by BLM in the APD or in subsequent sundry notices. The operator must notify the appropriate authorized officer (AO), 48 hours before starting any surface disturbing activity approved in the APD.

Standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, or users (Standard Lease Terms are contained in Form 3100-11, Offer to Lease and Lease for Oil and Gas, U.S. Department of the Interior, BLM, October 2008 or later edition). Once a lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands with exceptions for restrictions that may be imposed consistent with the standard lease terms and the stipulations and notices attached to the lease. Operations must be conducted in a manner that avoids unnecessary or undue degradation of the environment and minimizes adverse impacts to the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users. Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms and would apply to all lands and operations that are part of all of the alternatives.

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[1] Utah BLM's Oil and Gas Leasing program webpage can be accessed online at: http://www.blm.gov/ut/st/en/prog/energy/oil_and_gas/oil_and_gas_lease.html

[2] Additional information regarding the BLM's oil and gas management program can be accessed online at: http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas.html

Nondiscretionary actions include the BLM's requirements under federal environmental protection laws, such as the Clean Water Act, Clean Air Act, Endangered Species Act, National Historic Preservation Act, and Federal Land Policy Management Act, which are applicable to all actions on federal lands even though they are not reflected in the oil and gas stipulations in the governing land use plans and would be applied to all potential leases regardless of their category. Also included in all leases are the two mandatory stipulations for the statutory protection of cultural resources (BLM Washington Office (WO) Instruction Memorandum (IM) 2005-003, Cultural Resources and Tribal Consultation for Fluid Minerals Leasing) and threatened or endangered species (BLM WO IM 2002-174, Endangered Species Act Section 7 Consultation).

The WDD preliminary parcel list originally contained 20 parcels consisting of 18,590.31 acres (9 parcels/12,943.50 acres within the FFO and 11 parcels/5,646.81 acres within the SLFO). All of the SLFO parcels were recommended for deferral and therefore not addressed in this EA.

This EA has been prepared to disclose and analyze the environmental consequences of leasing nine (9) parcels (12,943.50 acres) located in the FFO to be included as part of a competitive oil and gas lease sale tentatively scheduled to occur November 17, 2015. For reference, Appendix A contains the proposed August 2015 FFO Oil and Gas Lease Sale Parcel List and Appendix B contains maps of the subject parcels.

## 1.3 Purpose and Need of the Proposed Action

The parcels proposed for leasing were nominated by industry. The need for the lease sale is to respond to the nomination requests. Offering parcels for competitive oil and gas leasing provides for the orderly development of fluid mineral resources under BLM's jurisdiction in a manner consistent with multiple use management and environmental consideration for the resources that may be present.

The purpose for analyzing the preliminary parcels for potential sale is to ensure that adequate provisions are included in the lease stipulations to protect public health and safety, and assure full compliance with the objectives of NEPA and other federal environmental laws and regulations designed to protect the environment and mandating multiple use of public lands. The BLM is required by law to review areas that have been nominated, and there has been ongoing interest in oil and gas exploration in the FFO area. Oil and gas leasing is a principal use of the public lands as identified in Section 102(a)(12), 103(1) of the Federal Land Policy and Management Act of 1976 (FLPMA), and it is conducted to meet requirements of the Mineral Leasing Act of 1920, as amended, the Mining and Minerals Policy Act of 1970, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act). Leases would be issued pursuant to 43 CFR Subpart 3100.

## 1.4 Conformance with BLM Land Use Plan

The alternatives described below are in conformance with the governing land use plan (as amended and supplemented) because they are specifically provided for in the planning decisions as follows:[3]

[3] The page numbers, maps or figures referenced in the decisions are found in the House Range Resource Area RMP and are not those found directly in this document.

- The HRRA RMP/ROD decisions for Mineral Resources - Oil and Gas (at page 76, Table 2-6, and Map 9), which identify the leasing categories for Juab County, as augmented by the DR prepared for the HRRA RMP Oil and Gas Leasing Implementation EA (EA UT-050-89-025, BLM, 1988) ("HRRA Oil and Gas Leasing Implementation EA") and the DR prepared for the Oil and Gas Leasing in the Fillmore Field Office EA (EA UT-010-2008-050, BLM, 2009).

The alternatives are also consistent with the RMP decisions related to the management of the following resources, including but not limited to: soil, water, visual resources, cultural resource and range management.

## 1.5 Relationship to Statutes, Regulations, or Other Plans

The proposed action is consistent with federal environmental laws and regulations, Executive Orders, and Department of Interior and the BLM policies and is in compliance, to the maximum extent possible, with state laws and local and county ordinances and plans to the maximum extent possible, including the following:

- Federal Land Policy and Management Act (1976) and the associated regulations at 43 CFR, Part 2800
- National Environmental Policy Act (1969) and the associated Council on Environmental Quality (CEQ) regulations at 40 CFR §§ 1500 - 1508
- National Historic Preservation Act (1966), as amended and the associated regulations at 36 CFR Part 800
- Bald and Golden Eagle Protection Act (1962)
- Endangered Species Act (1973), as amended
- Migratory Bird Treaty Act (1918)
- BLM Manual 6840 – Special Status Species Management
- MOU Among the USDA, USDI and EPA Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions Through the NEPA Process (2011)
- Determining Conformity of Federal Actions to State or Federal Implementation Plans (40 CFR Part 93 Subpart E)
- Juab County General Plan, as revised
- Oil and Gas Leasing Reform – Land Use Planning and Lease Parcel Reviews (BLM WO IM 2010-117)
- Oil and Gas Leasing Program NEPA Procedures Pursuant to Leasing Reform (BLM Utah IM 2014-006)

## 1.6 Documents Incorporated by Reference:

In order to reduce redundant paperwork and analysis in the NEPA process (*See* 40 CFR §§ 1502.20 and 1502.2) the following documents and their associated information or analysis are hereby incorporated by reference. The FEISs in Section 1.61 have associated RODs that explicitly apply to the proposed action, and this EA is tiered to those documents.

### 1.61 EISs/EAs

- HRRA Oil and Gas Leasing Implementation EA (EA UT-050-89-025, BLM , 1988)
- Oil and Gas Leasing in the Fillmore Field Office FONSI and DR (2009) (EA UT-010-2008-050, BLM, 2009)

- Proposed House Range Resource Area RMP and Final EIS (BLM, 1986)
- Draft House Range Resource Area RMP and Draft EIS (BLM, 1986)
- Utah Greater Sage Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement (BLM 2015)

### 1.62 Other Documents

- Inventory of Onshore Federal Oil and Natural Gas Resources and Restrictions to Their Development 2008 Phase III Inventory – Onshore United States[4]

The attached Interdisciplinary Team Checklists, Appendix C, was also developed after consideration of these documents and their content. These resources are either analyzed later in this document or, if not impacted, are also listed in Appendix C.

## 1.7 Identification of Issues

The proposed action was reviewed by an interdisciplinary parcel review (IDPR) team composed of resource specialists from the BLM's FFO. This team identified resources in the parcel area which might be affected and considered potential impacts using current office records, geographic information system (GIS) data, and site visits. The UTSO specialists for air quality and solid minerals also reviewed the proposal and contributed the analysis in this EA. The results of the IDPR team and UTSO specialist's reviews are contained in the Interdisciplinary Team Checklist in Appendix C.

On October 30, 2014, the UTSO sent letters to the National Park Service (NPS), United States Fish and Wildlife Service (USFWS), United States Forest Service (USFS) and the State of Utah's Public Lands Policy Coordination Office (PLPCO), Utah Division of Wildlife Resources (UDWR) and the State Institutional Trust Lands Administration (SITLA) to notify them of the pending lease sale, solicit comments and concerns on the preliminary parcel list and invite them to participate in site visits. The UTSO also provided GIS shapefiles to contact points within the NPS, USFWS and UDWR.

Site visits (completed on 12/16/2014, 1/20/2015, 1/21/2015, and 1/22/2015) and data searches were conducted by the BLM staff on the proposed action parcels to validate the existing data and gather new information in order to make informed leasing recommendations. None of the other agencies participated in the site visits with the FFO IDPR team.

The deadline for the public to nominate areas or otherwise submit EOIs was October 6, 2014. As per WO IM 2010-117 (Leasing Reform), public notification was initiated by entering the project information on the ENBB on 1/5/2015. Public participation is also documented in section 5.3.

## 1.8 Summary

This chapter has presented the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed

[4] EPCA Phase III Inventory is located online at: http://www.blm.gov/style/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy/0.Par.4483.File.dat/EPCA2008LOfront.pdf

project in a way that resolves the issues, the BLM has considered and/or developed a range of action alternatives. These alternatives are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative considered in detail are analyzed in Chapter 4 for each of the identified issues.

# 2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

## 2.1 Introduction

This EA addresses three alternatives (Alternative A – Leasing Under the Existing Land Use Plan; Alternative B – Proposed Action, Leasing Under the Existing Land Use Plan with Additional Protective Measures; and Alternative C – No Action, No Leasing).

Other alternatives were not considered because the issues identified during scoping did not indicate a need for additional alternatives or protective measures beyond those contained in the proposed action. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action.

Leasing is an administrative action that affects economic conditions but does not directly cause environmental consequences. However, leasing is considered to be an irretrievable commitment of resources because the BLM generally cannot deny all surface use of a lease unless the lease is issued with a No Surface Occupancy (NSO) stipulation. Potential oil and gas exploration and production activities, committed to in a lease sale, could impact other resources and uses in the planning area. Direct, indirect, or cumulative effects to resources and uses could result from as yet undetermined and uncertain future levels of lease exploration or development.

**Analysis Assumptions**

### 2.1.1 Reasonably Foreseeable Development Scenario

Although at this time it is unknown when, where, or if future well sites or roads might be proposed on any leased parcel, should a lease be issued, site specific analysis of individual wells or roads would occur when a lease holder submits an APD. For the purposes of the analysis for each resource, the BLM assumed that one well pad with the associated road and pipeline would be constructed on each of the lease parcels analyzed in this EA subject to the terms and conditions, including the lease notices and stipulations, applicable to each lease parcel. However, in general, activities are anticipated to take place as described in the following sections. The HRRA Oil and Gas Leasing Implementation EA (EA UT-050-89-025), which was prepared to implement the HRRA RMP/ROD, outlines the reasonably foreseeable development scenario (RFD) for the lands addressed by the HRRA RMP/ROD.

The RFD scenario for the HRRA RMP/ROD, as established in the HRRA O&G Leasing Implementation EA, identifies the following RFD:

- Exploration drill pads (including roads):
  - Anticipate one well every two years or 5 wells every 10 years
  - 1 acre per well pad plus 5 acres for access (6 acres of total disturbance per well)
  - 5 wells x 6 acres disturbed per well = 30 acres disturbed every 10 years
- Producing wells
  - No producing wells anticipated

The RFD would appear to be reasonable in light of the fact that only nine (9) Federal wells have been drilled on 54 acres in Juab County, which is the county where all of the proposed lease

parcels are located, over the last 60 years and all of these wells have been plugged and abandoned (State of Utah Well History Database, 2013).[5] The most recent APD (Nephi City #1-36, API# 43-023-50002; T12S-R1E), was approved in September 2013 for a well that is located on private surface and private mineral estate and was plugged and abandoned in 2014. Therefore, the RFD is still appropriate for the analysis in this EA because the actual amounts of disturbance and wells drilled in the area have not exceeded and are in fact less than what was anticipated by the RFD for the HRRA RMP/ROD.

### 2.1.2 Well Pad and Road Construction

Equipment for well pad construction could consist of dozers, scrapers, excavators and graders. All well pads would be reclaimed. All available topsoil from each well pad would be stripped and stockpiled around the edge of the pad for future reclamation. When needed, topsoil would be spread over interim reclamation areas, seeded, left in place for the life of the well, and the remaining topsoil would be used during the final reclamation process. For this analysis, it was assumed that disturbance would be 6 acres per well to account for well pads and any infrastructure (e.g., pipelines) that would be required if the wells were to go into production (section 2.1.3). Disturbed land would be seeded with a mixture (certified weed free) and rate as recommended or required by the BLM.

Depending on the locations of the proposed wells, it is anticipated that some new or upgraded access roads would be required to access well pads and maintain production facilities. Any new roads constructed for the purposes of oil and gas development would be utilized year-round for maintenance of the proposed wells and other facilities, and for the transportation of fluids and/or equipment, and would remain open to other land users. Construction of new roads or upgrades to existing roads would require a 30-foot construction width and would be constructed of native material. After completion of road construction activities, the 30-foot construction width would be reclaimed to an 18-foot wide crowned running surface as well as drainage ditches. It is not possible to determine the distance of road that would be required because the location of the wells would not be known until the APD stage.

### 2.1.3 Hydraulic Fracturing

Hydraulic fracturing (HF) is a well stimulation technique used to increase oil and gas production from underground rock formations. As summarized below, HF technology is not used on all wells drilled. As a result, HF will be evaluated at the APD stage should the lease parcel be sold/issued, and a development proposal submitted. The following paragraphs provide a general discussion of the HF process that could potentially be implemented if development were to occur, including well construction information and general conditions encountered within the FFO.

HF involves the injection of fluids through a wellbore under pressures great enough to fracture the oil and gas producing formations. The fluid is generally comprised of a liquid such as oil, carbon-dioxide or nitrogen, and proppant (commonly sand or ceramic beads), and a minor percentage of chemicals to give the fluid desirable flow characteristics, corrosion inhibition, etc.

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[5] State of Utah Well History Database data accessed online at: http://oilgas.ogm.utah.gov/Data_Center/LiveData_Search/well_history_lookup.cfm

The proppant holds open the newly created fractures after the injection pressure is released. Oil and gas flow through the fractures and up the production well to the surface.

HF has been used by oil and natural gas producers since the late 1940s and, for the first 50 years, was mostly used in vertical wells in conventional formations. HF is still used in these settings, but the process has evolved. Technological developments (including horizontal drilling) have led to the use of HF in "unconventional" hydrocarbon formations that could not otherwise be profitably produced.

The use of horizontal drilling through unconventional reservoirs combined with high-volume water based multi-stage HF activities has led to an increase in oil and gas activity in several areas of the country which has, in turn, resulted in a dramatic increase in domestic oil and gas production nationally. However, along with the production increase, HF activities are suspected of causing contamination of fresh water by creating fluid communication between oil and gas reservoirs and aquifers.

### 2.1.4 Production Operations

If wells were to go into production, facilities would be located at the well pad and typically include a well head, a dehydrator/separator unit, and storage tanks for produced fluids. The production facility would typically consist of two storage tanks, a truck load-out, separator, and dehydrator facilities. Construction of the production facility would be located on the well pad and not result in any additional surface disturbance.

All permanent surface structures would be painted a flat, non-reflective color (e.g., juniper green) specified by the BLM in order to blend with the colors of the surrounding natural environment. Facilities that are required to comply with the Occupational Safety and Health Act (OSHA) would be excluded from painting color requirements. All surface facilities would be painted immediately after installation and under the direction and approval of the BLM.

If oil is produced, the oil would be stored on location in tanks and transported by truck to a refinery. The volume of tanker truck traffic for oil production would be dependent upon production of the wells.

If natural gas is produced (which is more likely to occur than the production of oil), construction of a gas sales pipeline would be necessary to transport the gas. An additional Sundry Notice, right of way (ROW) and NEPA analysis would be completed, as needed, for any pipelines and/or other production facilities proposed across public lands. The BLM BMPs (Best Management Practices), such as burying the pipeline or installing the pipeline within the road, would be considered at the time of the proposal.

All operations would be conducted following the "Gold Book", *Surface Operating Standards for Oil and Gas Exploration and Development*. The Gold Book was developed to assist operators by providing information on the requirements for conducting environmentally responsible oil and gas operations on federal lands. The Gold Book provides operators with a combination of guidance and standards for ensuring compliance with agency policies and operating requirements, such as those found at 43 CFR 3000 and 36 CFR 228 Subpart E; Onshore Oil and Gas Orders (Onshore Orders); and Notices to Lessees. Included in the Gold Book are environmental BMPs; these measures are designed to provide for safe and efficient operations while minimizing undesirable impacts to the environment.

Exploration and development on split-estate lands is also addressed in the Gold Book, along with IM 2003-131, Permitting Oil and Gas on Split-Estate Lands and Guidance for Onshore Oil and Gas Order No. 1, and IM 2007-165, Split-Estate Report to Congress – Implementation of Fluid Mineral Leasing and Land Use Planning Recommendations. Proper planning and consultation, along with the proactive incorporation of these BMPs into the APD Surface Use Plan of Operations by the operator, would typically result in a more efficient APD and environmental review process, increased operating efficiency, reduced long-term operating costs, reduced final reclamation needs, and less impact to the environment.

### 2.1.5 Produced Water Handling

Water is often associated with either produced oil or natural gas. Water is separated out of the production stream and can be temporarily stored in the reserve pit for 90 days. Permanent disposal options include discharge to evaporation pits or underground injection. Handling of produced water is addressed in Onshore Oil and Gas Order No. 7.

### 2.1.6 Maintenance Operations

Traffic volumes during production would be dependent upon whether the wells produced natural gas and/or oil, and for the latter, the volume of oil produced. Well maintenance operations may include periodic use of work-over rigs and heavy trucks for hauling equipment to the producing well, and would include inspections of the well by a pumper on a regular basis or by remote sensing. The road and the well pad would be maintained for reasonable access and working conditions. Portions of the well pad not needed for production of the proposed well, including the reserve pit, would be re-contoured and reclaimed, as an interim reclamation of the site.

### 2.1.7 Plugging and Abandonment

If the wells do not produce economic quantities of oil or gas, or when it is no longer commercially productive, the well would be plugged and abandoned. The wells would be plugged and abandoned following procedures approved by a BLM Petroleum Engineer, which would include requiring cement plugs at strategic positions in the well bore. All fluids in the reserve pit would be allowed to dry prior to reclamation work. After fluids have evaporated from the reserve pit, sub-soil would be backfilled and compacted within 90 days. If the fluids within the reserve pit have not evaporated within 90 days (weather permitting or within one evaporation cycle, i.e. one summer), the fluid would be pumped from the pit and disposed of in accordance with applicable regulations. The well pad would be re-contoured, and topsoil would be replaced, scarified, and seeded within 180 days of the plugging the well.

## 2.2 Alternative A – Leasing with no Lease Notices

Alternative A would offer for lease the nine (9) nominated parcels (12.943.50 acres) within the administration of the FFO which have been proposed for auction at the August 2015 oil and gas lease sale and identified in Appendix A. Currently areas are offered for oil and gas leasing subject to measures necessary to mitigate adverse impacts, according to the categories, terms, conditions, and stipulations identified in the HRRA RMP and its O&G Leasing Implementation EA. In addition to the RMP (as amended), the HRRA O&G Leasing Implementation EA outlines specific stipulations for resources. This document also defined the RFD for the specific planning area. Measures identified in all of these documents are applied through a category system at the time of leasing and the on- the-ground implementation of those stipulations and categories is

accomplished through the APD process. There are four fluid mineral leasing categories located within the analysis area Categories I through IV.

Category 1 lands within the FFO would be available for leasing with standard lease terms (BLM Form 3100-11). In addition to protections provided for under standard terms of the lease, two mandatory stipulations are imposed by policy by the BLM on every lease issued: one refers to the statutory protection of cultural resources and one for the statutory protection of threatened or endangered species, as described below.

All leases issued subsequent to October 5, 2004, would include the lease stipulation for the protection of cultural resources (WO IM 2005-003, Cultural Resources and Tribal Consultation for Fluid Minerals Leasing), which states:

> *"This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated."*

All leases issued would include the lease stipulation for the protection of threatened or endangered species (WO IM 2002-174, Endangered Species Act Section 7 Consultation), which states:

> *"The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that would contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity until it completes its obligations under applicable requirements of the ESA as amended, 16 United States Code (USC) 1531 et seq. including completion of any required procedure for conference or consultation."*

In addition, BLM regulations at 43 CFR 3101.1-2 allow, at a minimum, for the relocation of proposed oil and gas leasing operations up to 200 meters and/or timing limitations up to 60 days to provide additional protection to ensure that proposed operations minimize adverse impacts to resources, uses, and users.

There are five parcels with Category 2 lands within the FFO being offered in the August 2015 Lease Sale. Category 2 lands would be available for leasing subject to the moderate constraints provided by the standard lease terms, the two mandatory lease stipulations described above, and the special stipulations identified in the HRRA RMP and the HRRA O&G Leasing Implementation EA. The special stipulations applied to Category 2 lands include timing limitations (TL) and/or controlled surface use (CSU) stipulations for resources such as wildlife habitat, riparian/wetland areas, drinking water source protection zones and visual resource management.

Stipulations serve to modify the rights granted by the standard lease terms when the BLM determines that conflicts exist between the relative resource values, uses, and/or users and oil and gas operations that cannot be adequately managed under the standard lease terms or by relocating the proposed operations up to 200 meters or delaying operations by up to 60 days. In addition to stipulations, lease notices can be attached to a lease to inform the lease purchaser of other resource issues that may occur on the parcel.

Category 3 lands would be available for leasing only with major constraints on the use of the surface, such as the No Surface Occupancy (NSO) stipulations identified in the HRRA RMP and HRRA O&G Leasing Implementation EA. Major constraints would be applied to those leases where adverse impacts would occur through surface use of the land for oil and gas exploration and development.

Category 4 areas would include portions of the FFO that have been identified in the RMP, amendments, wilderness designation or interim policy such as the Interim Management Policy for Lands Under Wilderness Review (H-8550-1) that designated the land as closed to leasing.

## 2.3 Alternative B – Proposed Action, Leasing with Lease Notices

The Proposed Action alternative would offer for lease nine (9) nominated parcels (12,943.50 acres) within the administration of the FFO which have been proposed for auction in the August 2015 oil and gas lease sale and identified in Appendix A. This alternative would lease these parcels in accordance with the existing land use planning, but would attach Lease Notices to inform potential lesees that protective Conditions of Approval (COAs) may be necessary at the development stage. The effects of implementing the Proposed Action alternative would be similar to Alternative A but would facilitate future resource protection if needed. The addition of prescribed lease notices could be applied to all leasing categories.

**Table 1: Lease Notices Included in the Proposed Action Alternative**

| | |
|---|---|
| UT-LN-02 | CRUCIAL WINTER MULE DEER AND ELK HABITAT<br>The lessee/operator is given notice that lands in this lease have been identified as containing crucial mule deer and/or elk winter habitat. Exploration, drilling and other development activities would be restricted from December 1 through April 30 to protect crucial winter range. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. |
| UT-LN-36 | BALD EAGLE HABITAT<br>The Lessee/Operator is given notice that the lands in this parcel contains nesting/winter roost habitat for the bald eagle. Avoidance or use restrictions may be placed on all or portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the bald eagle breeding or roosting season. A temporary action is completed prior to the following breeding or roosting season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding or roosting season and/or causes a loss of eagle habitat or displaces eagles through disturbances, i.e. creation of a permanent structure. |
| UT-LN-37 | BALD EAGLE HABITAT<br>The lessee/operator is given notice that lands in this lease have been identified as containing Bald Eagle Habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect the Bald Eagle and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2. |
| UT-LN-40 | GOLDEN EAGLE HABITAT<br>The lessee/operator is given notice that lands in this lease have been identified as containing Golden Eagle Habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect the Golden Eagle and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2. |
| UT-LN-44 | RAPTORS<br>Appropriate seasonal and spatial buffers shall be placed on all known raptor nests in accordance with Utah Field Office Guidelines for Raptor Protection from Human and Land use Disturbances (USFWS 2002) and Best Management Practices for Raptors and their Associated Habitats in Utah (BLM 2006). All construction related activities will not occur within these buffers if pre-construction monitoring indicates the nests are active, unless a site specific evaluation for active nests is completed prior to construction and if a BLM wildlife biologist, in consultation with USFWS and UDWR, recommends that activities may be permitted within the buffer. The BLM will coordinate with the USFWS and UDWR and have a recommendation within 3-5 days of notification. Any construction activities authorized within a protective (spatial and seasonal) buffer for raptors will require an on-site monitor. Any indication that activities are adversely affecting the raptor and/or its' young the on-site monitor will suspend activities and contact the BLM Authorized Officer immediately. Construction may occur within the buffers of inactive nests. Construction activities may commence once monitoring of the active nest site determines that fledglings have left the nest and are no longer dependent on the nest site. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. |

| | |
|---|---|
| UT-LN-45 | MIGRATORY BIRD<br>The lessee/operator is given notice that surveys for nesting migratory birds may be required during migratory bird breeding season whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within priority habitats. Surveys should focus on identified priority bird species in Utah. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations. |
| UT-LN-48 | CONSERVATION AGREEMENT SPECIES<br>Development within this parcel could potentially impact an aquatic Conservation Agreement Species and its native habitats. To comply with the intent of the Conservation Agreement, the lessee is hereby on notice that they will need to coordinate with BLM, UDWR, and USFWS to meet special requirements needed specific to the agreement.<br>For aquatic species: appropriate measures to minimize the risk of spreading aquatic exotic species (mussels, purple loosestrife, mosquito fish, and melanoides snail) should be developed in coordination with UDWR. Surface pumping for water may not be allowed depending on the sources proximity to sensitive habitat, no surface disturbance within the 100-year floodplain, and project activities should avoid changing ground and surface hydrology. |
| UT-LN-49 | UTAH SENSITIVE SPECIES<br>The lessee/operator is given notice that no surface use or otherwise disruptive activity would be allowed that would result in direct disturbance to populations or individual special status plant and animal species, including those listed on the BLM sensitive species list and the Utah sensitive species list. The lessee/operator is also given notice that lands in this parcel have been identified as containing potential habitat for species on the Utah Sensitive Species List. Modifications to the Surface Use Plan of Operations may be required in order to protect these resources from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, Migratory Bird Treaty Act and 43 CFR 3101.1-2. |
| UT-LN-52 | NOXIOUS WEEDS<br>The lessee/operator is given notice that lands in this lease have been identified as containing or are near areas containing noxious weeds. Best management practices to prevent or control noxious weeds may be required for operations on the lease. |
| UT-LN-60 | STEEP SLOPES<br>The lessee/operator is given notice that this lease has been identified as containing steep slopes. No surface use or otherwise disruptive activity allowed on slopes in excess of 30 percent without written permission from the Authorized Officer. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. |

| | |
|---|---|
| UT-LN-96 | AIR QUALITY MITIGATION MEASURES<br>The lessee is given notice that the Bureau of Land Management (BLM) in coordination with the U.S. Environmental Protection Agency and the Utah Department of Air Quality, among others, has developed the following air quality mitigation measures that may be applied to any development proposed on this lease. Integration of and adherence to these measures may help minimize adverse local or regional air quality impacts from oil and gas development (including but not limited to construction, drilling, and production) on regional ozone formation.<br>• All internal combustion equipment would be kept in good working order.<br>• Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.<br>• Open burning of garbage or refuse would not occur at well sites or other facilities.<br>• Drill rigs would be equipped with Tier II or better diesel engines.<br>• Vent emissions from stock tanks and natural gas TEG dehydrators would be controlled by routing the emissions to a flare or similar control device which would reduce emissions by 95% or greater.<br>• Low bleed or no bleed pneumatics would be installed on separator dump valves and other controllers.<br>• During completion, flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.<br>• Well site telemetry would be utilized as feasible for production operations.<br>• Stationary internal combustion engine would comply with the following standards: 2g NOx/bhp-hr for engines <300HP; and 1g NOx/bhp-hr for engines >300HP.<br>Additional site-specific measures may also be employed to avoid or minimize effects to local or regional air quality. These additional measures will be developed and implemented in coordination with the U.S. Environmental Protection Agency, the Utah Department of Air Quality, and other agencies with expertise or jurisdiction as appropriate based on the size of the project and magnitude of emissions. |
| UT-LN-101 | AIR QUALITY<br>All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower. AND All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. |
| UT-LN-102 | AIR QUALITY ANALYSIS<br>The lessee/operator is given notice that prior to project-specific approval, additional air quality analyses may be required to comply with the National Environmental Policy Act, Federal Land Policy Management Act, and/or other applicable laws and regulations. Analyses may include dispersion modeling and/or photochemical modeling for deposition and visibility impacts analysis, control equipment determinations, and/or emission inventory development. These analyses may result in the imposition of additional project-specific air quality control measures. |

Legal descriptions of each FFO nominated parcel along with the stipulations and the lease notices that would be attached to the parcels under this alternative can be found in Appendix A.

## 2.4 Alternative C – No Action

The No Action Alternative would not offer any of the nominated parcels for sale.

## 2.5 Alternatives Considered but Not Carried Forward

A total of nine (9) parcels were nominated and forwarded to the FFO IDPR for review. No unresolved impacts or issues arose from the IDPR review or scoping (internal or external) so there were no alternatives considered but not carried forward.

# 3.0 AFFECTED ENVIRONMENT

## 3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the FFO Interdisciplinary Team Checklist found in Appendix C and introduced in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4. Only those aspects of the affected environment that are potentially impacted are described in detail in this chapter. Resources or uses that are either not present or present, but not affected to a degree where detailed discussion in Chapters 3 and 4 is needed are addressed in the Interdisciplinary Team Checklist in Appendix C.

## 3.2 General Setting

The proposed action would result in the leasing for oil and gas development of nine (9) parcels within the FFO (Appendix B, Juab County Parcels Map). The parcel legal land descriptions are contained in Appendix A.

The FFO parcels UT0815-001, UT0815-002, UT0815-003, UT0815-004, UT0815-005, UT0815-006, UT0815-007, UT0815-008, and UT0815-009 are located west of Levan, Utah and Interstate 15 near the area generally known as Sage Valley.

## 3.3 Resources/Issues Brought Forward for Analysis

The affected environment of the proposed action and no action alternatives were considered and analyzed by the interdisciplinary team as documented in the Interdisciplinary Team Checklist, Appendix C. The checklist indicates which resources of concern are either not present in the project area or would not be impacted to a degree that requires detailed discussion in Chapters 3 and 4 of this EA. Resources which could be impacted to a level requiring further analysis are described in this Chapter and impacts to these resources are analyzed in Chapter 4.

### 3.3.1 Air Quality and Greenhouse Gas Emissions

Air quality is affected by various natural and anthropogenic factors. Industrial sources such as oil and gas extraction activities within Central Utah contribute to local and regional air pollution. Air pollutants generated by motor vehicles include tailpipe emissions and dust from travel over dry, unpaved road surfaces. Strong winds can generate substantial amounts of windblown dust.

Air pollution emissions are characterized as point, area, or mobile. Point sources are large, stationary facilities such as power plants and manufacturing facilities and are accounted for on a facility by facility basis. Area sources are smaller stationary sources and, due to their greater number, are accounted for by classes. Production emissions from an oil and gas well and dust from construction of a well pad would be considered area source emissions. Mobile sources consist of non-stationary sources such as cars and trucks. Mobile emissions are further divided into on-road and off-road sources. Engine exhaust from truck traffic to and from oil and gas locations would be considered on-road mobile emissions. Engine exhaust from drilling operations would be considered off road mobile emissions.

The Clean Air Act required the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Utah Division of Air Quality (UDAQ) is responsible to ensure compliance

with the NAAQS within the state of Utah. Table 2 shows NAAQS for the EPA designated criteria pollutants (EPA 2008).

**Table 2: National Ambient Air Quality Standards**

| Pollutant | Primary Standards | | Secondary Standards | |
|---|---|---|---|---|
| | Level | Averaging Time | Level | Averaging Time |
| Carbon Monoxide (CO) | 9 ppm (10 mg/m$^3$) | 8-hour [(1)] | None | |
| | 35 ppm (40 mg/m$^3$) | 1-hour [(1)] | | |
| Lead (Pb) | 0.15 µg/m$^3$ [(2)] | Rolling 3-Month Average | Same as Primary | |
| | 1.5 µg/m$^3$ | Quarterly Average | Same as Primary | |
| Nitrogen Dioxide (NOx) | 0.053 ppm (100 µg/m$^3$) | Annual (Arithmetic Mean) | Same as Primary | |
| | 100 ppb | 1-hour | Same as Primary | |
| Particulate Matter ($PM_{10}$) | 150 µg/m$^3$ | 24-hour [(3)] | Same as Primary | |
| Particulate Matter ($PM_{2.5}$) | 15.0 µg/m$^3$ | Annual [(4)](Arithmetic Mean) | Same as Primary | |
| | 35 µg/m$^3$ | 24-hour [(5)] | Same as Primary | |
| Ozone ($O_3$) | 0.075 ppm (2008 std) | 8-hour [(6)] | Same as Primary | |
| Sulfur Dioxide ($SO_2$) | 0.03 ppm | Annual (Arithmetic Mean) | 0.5 ppm (1300 µg/m$^3$) | 3-hour [(1)] |
| | 0.14 ppm | 24-hour [(1)] | | |
| | 75 ppb | 1-hour [(1)] | None | |

Not to be exceeded more than once per year.
Final rule signed October 15, 2008.
Not to be exceeded more than once per year on average over 3 years.
To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.
To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).
To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008).

Air quality in the area of the parcels meets the NAAQS, State Department of Environmental Quality and the Division of Air Quality Standards (Utah Division of Air Quality 2013 Annual Report).[6]

An "unclassified" designation indicates that sufficient air monitoring is not available to make a determination as to attainment status. For regulatory purposes an unclassified county is considered the same as attainment. The UDAQ 2013 annual report includes a 2011 emissions inventory (EI) by county (Table 3).

[6] Accessed online at: http://www.airquality.utah.gov/docs/2013AnnualReport_FINAL.pdf

**Table 3. 2011 Triennial Inventory (tons/year)**

| County | CO | $NO_X$ | $PM_{10}$ | $PM_{2.5}$ | $SO_X$ | VOC |
|---|---|---|---|---|---|---|
| Juab | 12,021.12 | 1,994.33 | 1,557.70 | 426.40 | 89.63 | 29,287.15 |

Although not listed as a NAAQS criteria pollutant, volatile organic compounds (VOC) are also considered in this EA as they, along with NOx, are precursors to the formation of ozone and are listed by UDAQ as a pollutant that, if the threshold is exceeded, would require an approval order.

This EA addresses mobile off road engine exhaust emissions from drilling activities, venting and flaring emissions from completion and testing activities, emissions from ongoing production activities, and fugitive dust emissions, specifically emissions of total particulate matter of less than 10 micrometers ($PM_{10}$), from heavy construction operations. $PM_{10}$ emissions are converted from total suspended particulates by applying a conversion factor of 25%. $PM_{2.5}$ is not specifically addressed as it is included as a component of $PM_{10}$. $PM_{2.5}$ is converted from $PM_{10}$ by applying a conversion factor of 15%. This EA does not consider mobile on road emissions as they are dispersed, sporadic, temporary, and not likely to cause or contribute to an exceedance of the NAAQS.

## Greenhouse Gas Emissions

According to National Oceanic and Atmospheric Administration (NOAA) and National Aeronautic and Space Administration (NASA) data, Earth's average surface temperature has increased by approximately 1.2 to 1.4 ºF in the last 100 years. The 8 warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 2005. Most of the warming in recent decades is very likely the result of human activities. The past 18 years have had negligible increase in maximum temperature even though they have been some of the hottest in the continental US. Equilibrium climate sensitivity quantifies the response of the climate system to constant radiative forcing on multicentury time scales. It is defined as the change in global mean surface temperature at equilibrium that is caused by a doubling of the atmospheric CO2 concentration. Equilibrium climate sensitivity is likely in the range 1.5°C to 4.5°C (high confidence), extremely unlikely less than 1°C (high confidence), and very unlikely greater than 6°C (medium confidence). The lower temperature limit of the assessed likely range is thus less than the 2°C in the AR4, but the upper limit is the same. This assessment reflects improved understanding, the extended temperature record in the atmosphere and ocean, and new estimates of radiative forcing. No best estimate for equilibrium climate sensitivity can now be given because of a lack of agreement on values across assessed lines of evidence and studies (IPCC, 2013).

### Regional Effects

The IPCC and Global Change Research Program include the planning area in the “southwest” region. Recent warming in the southwest region has been among the most rapid in the Nation, with the average temperature increasing approximately 1.5 °F compared to a 1960 through 1979 baseline period. Temperature increases are driving declines in spring snowpack in the region and flows in the Colorado River, combining with other factors to affect water supply. Projections suggest continued strong warming, with much larger increases under higher emissions scenarios. By the end of the century (2100), average annual temperature is projected to rise approximately 4º F to 10º F above the historical baseline, averaged over the southwest region.

Current Conditions

The BLM recognizes the importance of climate change and the potential effects it could have on natural and socioeconomic environments. Throughout the planning area, the BLM authorizes numerous types of activities and actions that result in GHG emissions, with the largest contributor being the combustion of fossil fuels for on-road and off-road vehicles, engines, and construction equipment. Additional activities that result in GHG emissions include prescribed burns and other fire management activities; authorization of ROWs for energy development and transmission, roads, pipelines, and other uses; grazing permits; and oil and gas and other mineral exploration and development. Although individually these activities result in small amounts of GHG emissions, they do contribute to the regional, national, and global pool of GHG emissions.

In addition to direct GHG emissions, indirect GHG emissions and other factors potentially contributing to climate change include fires; land use changes (e.g., converting rangelands to urban use); and wind erosion, fugitive dust from roads, and entrained atmospheric dust that darkens glacial surfaces and snow packs and results in faster snowmelt. Other activities could help sequester carbon, such as managing vegetation to favor perennial grasses and increase vegetation cover, which could help build organic carbon in soils and function a “carbon sinks.”

Additionally, significant research and development efforts are underway in the field of carbon capture and sequestration (CCS) technology. This technology is expected to become available in the next two decades and would allow the power generation industry to capture carbon dioxide and store it underground, drastically reducing emissions to the atmosphere. There is also an increased emphasis on the development of renewable energy projects. Policy developments worldwide will likely accelerate the process of emissions reduction. In the near future, the US is expected to join the European Union and other nations in placing mandatory caps on carbon dioxide emissions (there is also a possibility of a carbon tax). Such mandatory caps would be even more effective in reducing global carbon dioxide emissions with the participation of developing nations such as China and India. Vehicle fuel economy standards will further serve to reduce carbon dioxide emissions worldwide. Ultimately, the levels of global dioxide emissions in the future will be determined by a mix of these technological, economic, and policy developments; thus, future increases and decreases in carbon dioxide emission rates remain uncertain at present.

### 3.3.2 Migratory Birds

A variety of migratory song bird species use habitats within the parcels for breeding, nesting, foraging, and migratory habitats. Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (MBTA). The MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products unless it is a permitted action. The Executive Order 13186 sets forth the responsibilities of Federal agencies to further implement provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that Federal actions evaluate the effects of proposed actions and agency plans on migratory birds. BLM’s role under the Migratory Bird Treaty Act (MBTA) is to adequately manage migratory birds and their habitats, and to reduce the likelihood of a sensitive bird species from being listed under the Endangered Species Act.

In addition, a Memorandum of Understanding (MOU) between the BLM and United States Fish and Wildlife Service (USFWS) (BLM MOU WO-230-2010-04) provides BLM further direction for project-level NEPA guidance for meeting MBTA conservation and compliance. The emphasis is on identifying sensitive bird species and habitats through the USFWS 2008 Birds of Conservation Concern (BCC) Species List, the Utah Partners in Flight (UPIF) Species List (IM 2008-050), and BLM Sensitive Species List. The MOU direction includes evaluating the effects of BLM's actions on these species during the NEPA process; including effects on bird population and habitat. The BLM is to implement approaches to lessen the likelihood of impacts by having project alternatives that avoid, minimize and mitigate adverse impacts for migratory birds the habitats they depend upon that are most likely to be present in the project area.

Migratory birds that could be found in this portion of Juab County that could potentially utilize the environment within the vicinity of the proposed oil and gas lease parcels include, but are not limited to: golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), Ferruginous hawk (*Buteo regalis*), black-throated gray warbler (*dendroica nigrescens*), Brewer's sparrow (*Spizella breweri*), broad-tailed hummingbird (*selasphorus platycercus*), loggerhead shrike (*Lanius ludovicianus*) northern harrier (*Circus cyaneus*), pinyon jay (*Gymnorhinus cyanocephalus*), prairie falcon (*Falco mexicanus*), and sage sparrow (*amphispiza belli*).

The migratory bird sensitive period occurs from March 1 through July 15. Any exploration drilling, or development during this period would require that nest surveys be conducted by a qualified biologist and appropriate spatial and temporal buffers applied to mitigate any nest destruction or abandonment.

All of the parcels lie within habitat used by a variety of raptors. The default raptor spatial and temporal nest buffers and timeframes are species specific and are defined by the Utah Field Office Guidelines for Raptor Protection from Hunan and land Use Disturbances (USFWS 2002). Prior to any exploration, drilling, and other development, nest occupancy surveys by a qualified biologist would need to be conducted and the appropriate spatial and temporal buffers applied.

All the proposed parcels lie within golden eagle habitat. Default nest spatial and temporal conservation measures are in effect from January 1 through August 31 and require a 1.0-mile buffer. Prior to any exploration, drilling, and other development, nest occupancy surveys by a qualified biologist will need to be conducted and the appropriate spatial and temporal buffers applied.

All the proposed parcels also lie within the seasonal range of bald eagles. Bald eagles are not known to nest in this area but are known to visit during the winter months from November 1 through February. Any exploration, drilling, or other development activities within 0.5-miles of any potential roosting habitat will be required to confirm if bald eagles are roosting within the vicinity of the development site. Appropriate spatial and daily timing measures may need to be applied accordingly.

### 3.3.3 Wildlife Excluding Special Status Species

Wildlife species that could be found to utilize habitat within or reasonably near the proposed oil and gas leases include, but are not limited to: mule deer (*Odocoileus hemionus*), mountain lion (*Felis concolor*), blacktail jackrabbits (*Lepus californicus*), coyote (*Canis latrans*), Great Basin

rattlesnake (*Crotalus oreganus lutosus*), and greater short-horned lizard (*Phrynosoma hernandesi*).

The proposed parcels lie within critical mule deer winter range. Default conservation measures would include, but are not limited to: no exploration, drilling, and other development are to occur from December 1 through April 30 in parcels identified as critical winter range for mule deer.

### 3.3.4 Threatened Endangered, Candidate Species or Special Status Species

The management of special status species is guided by the BLM 6840 Manual, Special Status Species management (2008). The objective of the 6840 Manual is to: 1) To conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species and 2) To initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA.

At this time, there are no Federally listed threatened, endangered, or candidate species or critical habitat known to occur within or reasonably near the proposed oil and gas lease parcels.

The least chub is a special status species that does not occur within any of the proposed parcels but is known to inhabit waters on the UDWR Mills Valley Wildlife Management Area 0.25-miles south of parcel-009. Least Chub was delisted as candidate species by the USFWS in 2014 and remains a BLM special status species. The species was largely delisted because of ongoing restoration efforts and existing protection measures. Currently the species is managed under a Conservation Agreement signed by the BLM, UDWR, and USFWS. Lands around and in between the parcel-009 and the Mills Valley Wildlife Refuge are private property.

Special status species as identified by the BLM Utah Special Status Species 2010 that have the potential to occur within or reasonably near the proposed oil and gas lease parcels include bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), dark kangaroo mouse (*Microdipodops megacephalus*), Ferruginous hawk *(Buteo regalis*), golden eagle (*Aquila chrysaetos*), kit fox (*Vulpes macrotis*), least chub (*Iotichthys phlegethontis)* long-billed curlew (*Numenius Americana*), pygmy rabbit (*Brachylagus idahoensis*), short-eared owl (*Asio flammeus*), Townsend's big-eared bat (*Corynorhinus townsendii*).

# 4.0 ENVIRONMENTAL IMPACTS

## 4.1 Introduction

This chapter discusses the environmental consequences of implementing the alternatives described in Chapter 2. Under NEPA, actions with the potential to affect the quality of the human environment must be disclosed and analyzed in terms of direct and indirect effects (whether beneficial or adverse and short or long term) as well as cumulative effects. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by an action and occur later or farther away from the resource but are still reasonably foreseeable. Beneficial effects are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. Adverse effects involve a change that moves the resource away from a desired condition or detracts from its appearance or condition. Cumulative effects are the effects on the environment that result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions.

The No Action alternative (offer none of the nominated parcels for sale), serves as a baseline against which to evaluate the environmental consequences of the Proposed Action alternative (offer nine (9) nominated parcels for lease sale with additional resource protective measures). For each alternative, the environmental effects are analyzed for the resource topics that were carried forward for analysis in Chapter 3.

## 4.2 Direct and Indirect Impacts

### 4.2.1 Alternative A – Leasing With no Lease Notices

#### 4.2.1.1 Air Quality and Greenhouse Gas Emissions

The HRRA RMP/ROD and HRRA O&G Leasing Implementation EA do not have specific restrictions addressing air quality or greenhouse gas emissions

Under this alternative, lessees would not receive notice that additional air quality analysis would be required at the APD stage, of internal combustion gas field engine requirements, or required regional ozone formation BMPs. The addition of COAs at the development stage to implement appropriate provisions of the State Implementation Plan would be at higher risk of appeal by the operator.

#### 4.2.1.2 Migratory Birds

Section 3.3.2 Migratory Birds, identifies the migratory birds that are most likely to inhabit the parcels based on known occurrence and available habitats. As discussed previously, migratory birds receive protections from “take” under the Migratory Bird Treaty Act and Executive Order (EO) 13186.

Construction and development activities proposed during the migratory bird nesting season (March 1 through July 15) can impact migratory birds by disrupting breeding behavior and breeding success. Examples of impacts to nesting migratory birds include nest abandonment, nest failure and chick mortality. Other impacts include breeding or wintering habitat loss and fragmentation from development and human disturbance through noise, dust and construction.

Under this alternative, implementation of avoidance measures, typically within the 200 meter/60-day rule would provide protection where necessary to protect these species during crucial

seasonal periods, such as nesting and wintering and in important habitats. However, under this alternative, lessees would not receive notice that additional Migratory Bird protective measures could be required at the APD stage, The addition of COAs at the development stage to include the BMPs identified for raptors and their associated habitats (BLM 2006a) would have higher risk of appeal by the operator.

#### 4.2.1.3 Wildlife Excluding Special Status Species

Oil and gas exploration and development could affect wildlife resources in a variety of direct and indirect ways. Sufficient information – gathered from oil and gas exploration and development activities elsewhere in Utah, coupled with documented observation of environmental consequences of habitat alterations – exists to assess the potential impacts of oil and gas leasing and exploration on these lands. Environmental effects of the alternatives are likely to be similar to other surface and habitat-disturbing activities that affect big game species and would be direct loss of habitat; physiological stress; disturbance and displacement of individuals or populations; habitat fragmentation; introduction of competitive or non-native organisms; and secondary effects and indirect habitat loss. The majority of the lands in the analysis area would be available for leasing with standard lease terms. General protection for wildlife species is provided in accordance with 43 CFR 3162.5-1(a) and Section 6 of the standard lease form (Form 3100-11), which states that the "Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air and water, and to cultural, biological, visual, and other resources, and other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section."

The HRRA RMP/ROD identified lands in the analysis area that would be leased with special stipulations, such as timing or controlled surface use stipulations for crucial deer and elk winter and seasonal wildlife habitat, and crucial raptor nesting areas. In areas where these wildlife species or range were identified in the HRRA RMP/ROD, including these stipulations would protect these resources by limiting disturbance within this habitat during the time period when it would have the most detrimental impact.

The HRRA RMP/ROD and HRRA O&G Leasing Implementation EA include timing limitations that restrict exploration, drilling, and other development activity between December and May within crucial mule deer winter range identified in the Leasing Implementation EA maps, which were prepared in 1988 and may not reflect updated boundaries for crucial habitat. Under this alternative, lessees would not receive notice that additional areas could be subject to additional timing restrictions at the APD stage, The addition of COAs at the development stage to include additional areas for timing restriction would have higher risk of appeal by the operator.

#### 4.2.1.4 Threatened Endangered, Candidate Species or Special Status Species

The HRRA RMP/ROD does not have specific management criteria for least chub but rather states "Manage wildlife habitat to favor a diversity of game and non-game species" and "Protect crucial and high priority habitat from encroachment by incompatible uses."

Least chub occur 0.25 miles south of parcel 009. Leasing in itself would not impact this species. However, if exploration, drilling, or development of the site does occur, consideration of any direct and indirect impact to water and habitat quality could be detrimental to this species. Any APD would need to consider any activity that can result in increased runoff or potential spills associated with development and appropriate mitigation measures established. Although not

specifically identified, conservation measures would be applied at some level to protect least chub, water quality, and its habitat.

Under this alternative, lessees would not receive notice that additional areas could be subject to additional protective measures at the APD stage, The addition of COAs at the development stage to include additional protective measures would have higher risk of appeal by the operator.

### 4.2.2 Alternative B – Proposed Action, Leasing with Lease Notices

#### 4.2.2.1 Air Quality and Greenhouse Gas Emissions

The act of leasing would not result in changes to air quality. However, should the leases be issued, development of those leases could impact air quality conditions.

There are no direct impacts related to GHG emissions and climate change in leasing. Likely indirect impacts could potentially include GHG emissions from a well drilling for exploratory purposes. Estimated GHG emissions can be calculated using a generic emissions calculator available on the BLM Utah Air Quality webpage (http://www.blm.gov/ut/st/en/prog/more/air_quality/airprojs.html) which shows emissions of 1,192 tons per year CO2-e for a single operational well, and 2,305 tons per year CO2-e for a single drill rig. Based on this analysis a single exploratory well is unlikely to exceed the 25,000 ton per year reference point recommended by CEQ, and no further analysis is warranted at this stage.

At this stage (the leasing stage), specific information regarding the location, extent, and the operating procedures and technologies that might be utilized for oil and/or gas development operations on the subject lease parcels does not exist. As such, it is not possible to accurately estimate potential air quality impacts with computer modeling for the lease sale project due to the variation in emission control technologies as well as construction, drilling, and production technologies applicable to oil versus gas production and utilized by various operators, so this discussion remains qualitative.

Prior to authorizing specific proposed projects on the subject lease parcels, quantitative computer modeling using project specific emission factors and planned development parameters (including specific emission source locations) may be conducted to adequately analyze direct and indirect potential air quality impacts. In conducting subsequent project specific analysis BLM will follow the policy and procedures of the National Interagency MOU Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions through NEPA, and the FLAG 2010 air quality guidance document. Air quality dispersion modeling which may be required includes impact analysis for demonstrating compliance with the NAAQS, plus analysis of impacts to Air Quality Related Values (i.e. deposition, visibility), particularly as they might affect regional Class 1 areas (national parks and wilderness areas).

An oil or gas well, including the act of drilling, is considered to be a minor source under the Clean Air Act. Minor sources are not controlled by regulatory agencies responsible for implementing the Clean Air Act. In addition, control technology is not required by regulatory agencies at this point, since all of the parcels occur in NAAQS attainment areas. Different emission sources would result from the two site specific lease development phases: well development and well production.

Well development includes emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. $NO_X$, $SO_2$, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. Drill rig and fracturing engine operations would result mainly in $NO_X$ and CO emissions, with lesser amounts of $SO_2$. These temporary emissions would be short-term during the drilling and completion times.

During well production there are continuous emissions from separators, condensate storage tanks, and daily tailpipe and fugitive dust emissions from operations traffic. During the operational phase of the Proposed Action, $NO_X$, CO, VOC, and HAP emissions would result from the long-term operation of condensate storage tank vents, and well pad separators. Additionally, road dust ($PM_{10}$ and $PM_{2.5}$) would be produced by vehicles servicing the wells.

Project emissions of ozone precursors, whether generated by construction and drilling operations, or by production operations, would be dispersed and/ or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background or cumulative conditions. The primary sources of hazardous air pollutants (HAPs) are from oil storage tanks and smaller amounts from other production equipment. Small amounts of HAPs are emitted by construction equipment. However, these emissions are estimated to be less than 1 ton per year. Based on the negligible amount of project-specific emissions, the Proposed Action is not likely to violate, or otherwise contribute to any violation of any applicable air quality standard, and may only contribute a small amount to any projected future potential exceedance of any applicable air quality standards.

The construction, drilling, completion, testing, and production of an oil and gas well could result in various emissions that affect air quality. Construction activities result in emissions of $PM_{10}$. Well drilling activities result in engine exhaust emissions of NOx, CO, and VOC. Completion and testing of the well result in emissions of VOC, $NO_X$, and CO. Ongoing production results in the emission of NOx, CO, VOC, and $PM_{10}$.

Due to the very small level of anticipated development, an emissions inventory (EI) has not been conducted for the August 2015 Oil and Gas Lease Sale. A typical oil and gas well EI is estimated for the purpose of this analysis and is based on the following assumptions:

- Each oil and gas well would cause 6 acres of surface disturbance. This acreage includes access.
- Construction activity for each well is assumed to be 10 days. It is further assumed that, based on the acreage disturbed, 4.5 days would be spent in well pad construction and 5.5 days would be spent in road and pipeline construction.
- Control efficiency of 25% for dust suppression would be achieved as a result of compliance with Utah Air Quality regulation R307-205.
- Post construction particulate matter (dust) emissions are likely to occur on a short term basis due to loss of vegetation within the construction and staging areas. Assuming appropriate interim reclamation, these emissions are likely to be minimal to negligible and will not be considered in this EA.
- Drilling operations would require 14 days.
- Completions and testing operations would require 3 days.

- Off road mobile exhaust emissions from heavy equipment during construction activities and on road mobile emissions would not be considered as they are dispersed, sporadic, temporary, and not likely to cause or contribute to exceedance of the NAAQS.

If exploration occurs, short-term impacts would be stabilized or managed rapidly (within two to five years), and long-term impacts are those that would substantially remain for more than five years.

An air quality best management practice (BMP) which discusses the amounts of $NO_X$ emission per horse-power hour based on internal combustion engine size, would be attached to all parcels. A lease notice (UT-LN-101) would be attached to all leases and would consist of the following provisions:

- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gram of NOx per horsepower-hour.

Emission factors for activities of the Proposed Action were based on information contained in the EPA's Emission Factors & AP 42, Volume I, Fifth Edition (EPA.1995), available at: http://www.epa.gov/ttn/chief/ap42/index.html. The production emissions from oil storage tanks was estimated based on the emission factor contained in the Colorado Department of Public Health and Environment PS Memo 05-01, Oil & Gas Atmospheric Condensate Storage Tank Batteries Regulatory Definitions and Permitting Guidance (CDPHE 2009), available at: http://www.cdphe.state.co.us/ap/down/ps05-01.pdf.

**Table 4: Emissions Estimate**

| | Construction Emissions (Tons) | Drilling Emissions (Tons) | | | Completions Emissions (Tons) | | | | Ongoing Production Emissions (Tons/year) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $PM_{10}$ | $NO_X$ | CO | VOC | VOC | $NO_X$ | CO | $PM_{10}$ | $NO_X$ | CO | VOC | $PM_{10}$ |
| Typical Well | 0.34 | 13.31 | 1.83 | 0.23 | 0.85 | 0.07 | 0.07 | 0.00 | 0.01 | 0.01 | 6.44 | 0.00000 |
| Sub Total | 0.34 | 13.31 | 1.83 | 0.23 | 0.85 | 0.07 | 0.07 | 0.00 | 0.01 | 0.01 | 6.44 | 0.00000 |
| | | | | | | | | | | | | |
| | | | | | $PM_{10}$ | $NO_X$ | CO | VOC | | | | |
| Activity Emissions (Total emissions for drilling and completion the well) | | | | | 0.34 | 13.37 | 1.89 | 1.08 | Tons | | | |
| Production Emissions (Ongoing annual emissions for the well) | | | | | 0.00000 | 0.01 | 0.01 | 6.44 | tpy | | | |

Based on the emissions estimates contained in Table 4, and considering the location of the proposed leasing relative to population centers and Class 1 areas, substantial air resource impacts

are not anticipated as a result of this leasing action, and no further analysis or modeling is warranted. Emissions resulting from the August 2015 Oil and Gas Lease Sale are not likely to result in major impacts to air quality nor are they likely to cause a violation of the NAAQS.

Best management practices (BMP) would be developed to address oil and gas development emissions that may have an effect on regional ozone formation and these BMP would be required at the time of development on any of the leases (UT-LN-96). The regional ozone formation BMPs are:

- All internal combustion equipment would be kept in good working order.
- Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse would not occur at well sites or other facilities.
- Drill rigs would be equipped with Tier II or better diesel engines.
- Vent emissions from stock tanks and natural gas TEG dehydrators would be controlled by routing the emissions to a flare or similar control device which would reduce emissions by 95% or greater.
- Low bleed or no bleed pneumatics would be installed on separator dump valves and other controllers.
- During completion, flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.
- Well site telemetry would be utilized as feasible for production operations.
- Stationary internal combustion engine would comply with the following standards: 2g NOx/bhp-hr for engines <300HP; and 1g NOx/bhp-hr for engines >300HP.

Additional air quality control measures may be warranted and imposed at the APD stage (e.g. UT-LN-102). These control measures are dependent on future regional modeling studies, other analysis or changes in regulatory standards.

#### 4.2.2.2 Migratory Birds

The subject leasing action in its self would not impact any of the migratory bird species potentially present in the project area; however, oil and gas construction and development activities that may follow lease issuance could affect migratory birds nesting success. Direct and indirect impacts include nest destruction, nest abandonment, nest failure and chick mortality. Other impacts include breeding or wintering habitat loss and fragmentation from development and human disturbance through noise, dust and construction. This alternative includes an additional lease notice to inform the lessee that surveys for nesting migratory birds may be required during the primary migratory bird breeding season (March 1 through July 15) whenever surface disturbances and/or occupancy is proposed on any of the lease parcels. Surveys are to be conducted by qualified biologists and appropriate spatial and temporal buffers applied accordingly.

This alternative also would include adding a lease notice for the protection of raptors wherein surveys would be required whenever disturbances and/or occupancy is proposed in association with oil and gas exploration and development within potential raptor protection buffer areas. Prior to any surface disturbing activities, raptor nest surveys are required to be conducted by a qualified biologist. If any active nests are confirmed, appropriate default buffers and timing

limitations would be applied as determined based on the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (USFWS 2002).

Lease Notices and stipulations that would be applied to the subject lease parcels include: UT-LN-36 (Bald Eagle Habitat), UT-LN-37 (Bald Eagle Habitat), UT-LN-40 (Golden Eagle Habitat), UT-LN-44 (Raptors), UT-LN-45 (Migratory Birds), and UT-S-263 (Crucial Raptor Nesting Area).

#### 4.2.2.3 Wildlife Excluding Special Status Species

Additional protections for general wildlife and crucial habitats would be implemented under this alternative and the location and timing of some activities may be changed compared to Alternative A. Special stipulations for the protection of wildlife were identified in the HRRA RMP/ROD for areas where those resources were known. Since that time, however, additional information has become available and the ranges of some animals have expanded into areas that would not be protected with the stipulations, as applied in the HRRA RMP/ROD or HRRA O&G Leasing Implementation EA. Oil and gas development activities that may follow the issuance of leases for the subject parcels could adversely affect wildlife. More specifically, oil and gas exploration and development could disrupt mule deer and elk seasonal behavioral patterns and use of near-by ranges. Increased occurrence of human, traffic, and infrastructure activities will contribute to further stress big game species primarily during the winter season. Big game animals are highly dependent on these ranges for forage and shelter during this critical period for survival and future reproduction. If exploration and development occur, oils and gas activities could further fragment habitat and travel patterns, resulting in big game species avoiding these areas and relocating to other ranges that are in short supply and populated by other herds as well. To address potential impacts to wildlife, the Proposed Action alternative would include wildlife protection measures (which are identified in Table 1 and Appendix A) that would inform the lessee of action that may be taken at the project level to mitigate the impacts of exploration and development activities on wildlife species.

Section 6 of the Standard Lease Form (BLM Form 3100-11) requires that lessees “take reasonable measures deemed necessary by [BLM]…” in order to “minimize adverse impacts to…other resources….” Under this alternative, specific restrictions which may be deemed reasonable and applied for the protection of wildlife have been identified. The specific protective measures identified in this alternative, such as a restriction of surface disturbances within crucial winter mule deer and elk habitat from December 1 – April 15, are in addition to the protections discussed in the HRRA RMP/ROD and HRRA O&G Leasing Implementation EA.

Applicable Lease Notices that would apply to these parcels would include: UT-LN-02 (Crucial Winter Mule Deer and Elk Habitat).

#### 4.2.2.4 Threatened Endangered, Candidate Species or Special Status Species

Least chub occur .25 miles south of parcel 009.Leasing in itself would not impact this species. However, if exploration, drilling, or development of the site does occur, consideration of any direct and indirect impact to water and habitat quality could be detrimental to this species. Any APD will need to consider any activity that can result in increased runoff or potential spills associated with development and appropriate mitigation measures established.

Applicable Lease Notice that would apply to these parcels would include: UT-LN-48 (Conservation Agreement Species), and UT-LN-49 (Utah Sensitive Species).

### 4.2.3 Alternative C – No Action

This alternative (not to offer any of the nominated parcels for sale) may not meet the purpose and need for agency action. All parcels may be subject to drainage of Federal reserves by development on adjacent state or private leases.

Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on unleased public lands, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, this alternative would not prevent direct, indirect or cumulative environmental impacts relating to oil and gas exploration activities through denial of the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased lands.

#### 4.2.3.1 Air Quality and Greenhouse Gas Emissions

The No Action alternative would prevent future potential impacts relating to lease operations. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on unleased public lands, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, this alternative would not prevent direct, indirect or cumulative environmental impacts relating to oil and gas exploration activities through denial of the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels. Lease notices would not be required for the No Action alternative.

#### 4.2.3.2 Migratory Birds

The No Action alternative would prevent future potential impacts relating to lease operations at this time. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on public lands that are not leased, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, no direct, indirect or cumulative environmental impacts relating to oil and gas exploration would occur by denying the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels. However, both of these other actions would be analyzed in a separate document but would be analyzed in a separate document. Stipulations or lease notices would not be required for the No Action alternative.

#### 4.2.3.3 Wildlife Excluding Special Status Species

The No Action alternative would prevent future potential impacts relating to lease operations at this time. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas geophysical exploration operations may also be authorized on unleased public lands, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, this alternative would not prevent direct, indirect or cumulative environmental impacts relating to oil and gas exploration activities through denial of the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels. However, both of these other actions would be analyzed in

a separate document. Stipulations or lease notices would not be required for the No Action alternative.

#### 4.2.3.4 Threatened Endangered, Candidate Species or Special Status Species

The No Action alternative would prevent future potential impacts relating to lease operations at this time. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on public lands that are not leased, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, no direct, indirect or cumulative environmental impacts relating to oil and gas exploration would occur by denying the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels. However, both of these other actions would be analyzed in a separate document but would be analyzed in a separate document. Stipulations or lease notices would not be required for the No Action alternative.

## 4.3 Cumulative Impacts

A cumulative impact (effect) is defined by the Council on Environmental Quality (CEQ) regulations (40 CFR §1508.7) as ―the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively major actions taking place over a period of time. Past and present actions and reasonably foreseeable future actions with the potential to contribute to cumulative effects are discussed below followed by an analysis of cumulative effects. All resource values addressed in Chapter 3 and Appendix C have been evaluated for cumulative effects. If, through the implementation of mitigation measures or project design features, no net effect to a particular resource results from an action, then no cumulative effects result.

A variety of activities, such as sightseeing, camping, and hunting, have occurred and are likely to continue to occur near or within some or all of the nominated parcels; these activities likely result in negligible impacts to resources because of their dispersed nature. Other activities, such as, livestock grazing, vegetation projects and wildland fire, have also occurred within some or all of the nominated parcels and are likely to occur in the future. These types of activities are likely to have a greater impact on resources in the project area because of their more concentrated nature. Because these activities are occurring within the nominated parcel boundaries, they have the potential to contribute to cumulative effects.

The cumulative impacts as described in the HRRA RMP/ROD and HRRA O&G Leasing Implementation EA are incorporated by reference here. The proposed action would contribute to these cumulative impacts by making nine (9) parcels available for oil and gas leasing, which could result in future surface disturbance should the leases be utilized for future oil and gas development activities. It is assumed that the proposed action would add one well pad with road on each lease. The No Action alternative would not contribute any cumulative impacts. The past, present, and foreseeable future actions with the potential to contribute to surface disturbance include development of new and existing mineral rights or realty actions (for example, pipeline or road rights of way) or the continuation of agricultural activities.

### 4.3.1 Air Quality and Greenhouse Gas Emissions

The Cumulative Impact Analysis Area (CIAA) for air quality is central Utah. Based upon the relatively minor levels of oil and gas development and emissions anticipated for the proposed action, and the application of BMPs as previously discussed, it is unlikely that emissions from any subsequent development of the proposed leases would contribute to regional ozone formation in the project area, nor is it likely to contribute or cause exceedances of any NAAQS, including those exceedances already occurring within the adjacent ozone non-attainment area of Utah County. Other emission contributors would continue at present rates such as construction, urban development, and personal vehicle use along the Wasatch Front.

**Greenhouse Gas Emissions**

The BLM follows draft guidance released in December 2014 from the Council on Environmental Quality (CEQ) to determine the extent and adequacy of NEPA analysis related to the emissions of greenhouse gas (GHG) emissions and climate change impacts that could result from these emissions. The presentation of GHG emissions and climate change analysis in this Lease EA is consistent with that guidance based on the following rational:

Rule of Reason

Agencies should be guided by a "rule of reason" in ensuring that the level of effort expended in analyzing GHG emissions or climate change effects is reasonably proportionate to the importance of climate change related considerations to the agency action being evaluated. This concept of proportionality is grounded in the fundamental purpose of NEPA to concentrate on matters that are truly significant to the proposed action (40 CFR §§ 1500.4(b), 1500.4(g), 1501.7.). In a leasing EA there is no substantive difference between any possible alternative, including the no action alternative, when addressing GHG emissions and their potential to impact global climate. Project-specific impacts from GHG's are by definition not project-area specific, but global in nature. While CEQ guidance cautions against using a comparison of global GHG emissions to project-specific GHG emissions as a stand-alone reason for no detailed analysis, that comparison related to potential impacts is crucial to an understanding on why project-specific GHG emissions can't be reasonably analyzed in a leasing EA. Any potential estimation of GHG emissions in a leasing EA will only represent a minute fraction of global GHG emissions, and by extension only represent an even smaller fraction of any potential impacts. It is not possible, nor reasonable, to try to calculate an exceedingly small fraction of potential impacts to some specific defined impact (e.g. average global temperature at X time in the future) using these metrics. What this means in practice is that a predication of a specific global impact based on project-specific GHG emissions estimations will invariably be so small as to be indistinguishable from no project-specific impact( i.e. no action alternative).

CEQ recommends that when an agency determines that evaluating the effects of GHG emissions from a proposed Federal action would not be useful to the decision-making process and the public to distinguish between the no-action and proposed alternatives and mitigations, the agency should document the rationale. This Lease EA discloses why additional analysis on GHG emissions and their relation to climate change is not possible, and is based on the relationship between project-specific emissions to potential predicted project-specific impacts. This rational is not a stand-alone reason for why no detailed analysis is possible, instead being part of a reasoned evaluation of the potential for the NEPA analysis to produce information useful to the decision-making process.

Availability of Input Data

In light of the difficulties in attributing specific climate impacts to individual projects, CEQ recommends agencies use the projected GHG emissions as a proxy for assessing a proposed action's potential climate change impacts. CEQ provides a reference point of 25,000 metric tons of CO2-e emissions on an annual basis below which a GHG emissions quantitative analysis is not warranted unless quantification below that reference point is easily accomplished. This is considered an appropriate reference point that would allow agencies to focus their attention on proposed projects with potentially large GHG emissions.

A leasing EA by its nature does not include input data necessary to develop a reasonably accurate estimate of potential GHG emissions. There are many factors that significantly impact the potential for GHG emissions estimates within specific lease sales: a lease could not be purchased so no GHG emissions likely; a lease could be purchased but never explored so again no GHG emissions; a lease could be purchased and an exploratory (or wildcat) well drilled that showed no development potential, so minimal GHG emissions; or a lease could be purchased, explored, and developed. If developed there are huge differences in the potential for emissions related to a wide variety of variables, including the production potential of the well, economic considerations, regulatory considerations, and company dynamics to name a few. Given the extremely wide variety of potential GHG emissions scenarios resulting from a lease sale it is not reasonable, nor good NEPA practice, to analyze all these outcomes. If a lease parcel is sold, explored, and developed a separate NEPA analysis will be required to implement a field development project. At that time more complete data will be available to analyze potential GHG emissions and their relationship to climate impacts.

Appropriate Level of Action for NEPA Review

CEQ recommends that an agency select the appropriate level of action for NEPA review at which to assess the effects of GHG emissions and climate change, either at a broad programmatic or landscape-scale level or at a project- specific level, and that the agency set forth a reasoned explanation for its approach. A specific example CEQ cited of a project- specific action that can benefit from a programmatic NEPA review is authorizing leases for oil and gas drilling. Given the aggregate nature of GHG contributions to global climate change, and the aggregate nature of climate change impacts to area-specific impacts analyzed in a field office NEPA document, analysis at this scale is not appropriate and would not provide meaningful information to inform the decision.

### 4.3.2 Migratory Birds

General cumulative impacts may include loss of habitat, habitat fragmentation, and disruption or alteration of seasonal migration routes.

The CIAA includes northern portion of Juab County. Impacts in this area that are occurring and will continue to occur, such as dispersed recreational use, motorized vehicles, fire and invasive plant species, are the major threats to wildlife caused by human disturbance and habitat fragmentation. The proposed action would have very minimal impacts to migratory birds cumulatively in this area because of the very small RFD. There could potentially be additional disturbance to habitat yet not enough to effect the population of any migratory bird species.

### 4.3.3 Wildlife Excluding Special Status Species

The act of leasing parcels for oil and gas development does not necessarily result in additive cumulative impacts to general wildlife species. Current land uses which add incrementally to the cumulative effect environment present on these parcels include Off Highway Vehicle recreation, transmission lines, land development, and livestock grazing. Incremental effects from exploration drilling or production would be analyzed in a site specific impact analysis document if and when any such actions are proposed for the parcels. Impacts to wildlife from the proposed action would be adequately reduced by the application of the available protective measures and through the use of BMPs.

### 4.3.4 Threatened Endangered, Candidate Species or Special Status Species

General cumulative impacts to least chub may include impaired water quality, loss of habitat, habitat fragmentation, and disruption or alteration of seasonal migration routes.

The CIAA for least chub would include the UDWR Mills Valley Wildlife Refuge and the adjacent private property. Activities on these lands, such as farming, livestock grazing, and water withdrawals, are expected to continue. Because of the distance (at least 1320 ft.) from parcel 009, the incremental effects of the proposed action will have a low probability of negatively impacting least chub populations in the Mills Valley Wildlife Refuge. Therefore, when added to the impacts associated with the existing human disturbances, any cumulative impacts are anticipated to be low or negligible.

# 5.0 CONSULTATION AND COORDINATION

## 5.1 Introduction

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. The Interdisciplinary Team Checklist (Appendix C) provides the rationale for issues that were considered but determined not to require detailed discussion in Chapter 4. The issues were identified through the public and agency involvement process described in sections 5.2 and 5.3 below.

## 5.2 Persons, Groups, and Agencies Consulted

**Table 5: List of all Persons, Agencies and Organizations Consulted for Purposes of this EA.**

| Name | Purpose & Authorities for Consultation or Coordination | Findings & Conclusions |
|---|---|---|
| National Park Service | Coordinated with as leasing program partner. | Letter transmitting the preliminary list of parcels was sent on October 30, 2014. In addition, on November 4, 2014, GIS data depicting the preliminary parcels was sent to the NPS via electronic mail in order to further facilitate the reviews by that organization. Comments or concerns were not expressed. |
| United States Fish and Wildlife Service | Coordinated with as leasing program partner. | Letter transmitting the preliminary list of parcels was sent on October 30, 2014. Because there are no listed species present in the area of the parcels, the FFO is concluding there is no impact. |
| United States Forest Service | Coordinated with as leasing program partner. | Letter transmitting the preliminary list of parcels was sent on October 30, 2014. Comments or concerns were not expressed. |
| Public Lands Policy Coordination Office | Coordinated with as leasing program partner. | Letter transmitting the preliminary list of parcels was sent on October 30, 2014. A letter with wildlife habitat comments was received 2/10/2015. Additional comments were not received during the EA comment period. |
| Utah Division of Wildlife Resources | Coordinated with as leasing program partner. | Letter transmitting the preliminary list of parcels was sent on October 30. 2014. In addition, on October 21, 2014, GIS data depicting the preliminary parcels was sent to the Utah DWR via electronic mail in order to further facilitate the reviews by that organization. BLM received a comment letter from Utah DWR via the PLPCO on February 10, 2015. Additional comments were not received during the EA comment period. |

| | | |
|---|---|---|
| State Institutional Trust Lands Administration | Coordinated with as leasing program partner. | Letter transmitting the preliminary parcel list was sent on October 30, 2014. Comments or concerns were not expressed. |
| State Historic Preservation Office | Consultation as required by NHPA (16 USC 1531) | On February 2, 2015, the BLM consulted with the SHPO regarding the August 2015 Oil and Gas Lease Offering. The BLM determined the undertaking would have No Adverse Effect on Historic Properties. The SHPO Concurred with this determination on February 12, 2015. |
| Hopi Tribe, Skull Valley Goshute Tribe, Kanosh Band of Paiutes, the Paiute Tribe of Utah, the Ute Indian Tribe, the Goshute Tribe, The Navajo Tribe, and the Kaibab Band of Paiute Indians | Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531) | Consultation was initiated on February 9, 2015. In a letter received on February 23, 2015, the Hopi deferred to the Paiute Tribe of Utah (PITU). On March 5, 2015, the BLM received a letter from the PITU stating no objections to the proposed project. |

## 5.3 Summary of Public Participation

Section 1.7 Identification of Issues of this EA, describes the public participation process used to identify the issues that are analyzed. The public participation process included a notification posted on the ENBB (https://www.blm.gov/ut/enbb) and 30 day review and comment period (March 27, 2015 to April 27, 2015).

A letter was received on February 10, 2015, from the Utah Public Lands Policy Coordinating Office (PLPCO), supporting BLM's August 2015 Oil and Gas lease sale. The letter had comments and recommendations concerning various wildlife resources including least chub habitat.

The BLM consulted with Indian tribes on a government-to-government basis in accordance with Executive Order 13175 and other policies. Tribal concerns, including impacts on Indian trust assets and potential impacts to cultural resources, were given due consideration. Federal, State, and local agencies, along with tribes and other stakeholders that may be interested in or affected by the proposed project/action/approval were invited to participate in the scoping process.

### 5.3.1 Modifications Based Upon Public Comments and Internal Review

The internal review identified necessary corrections or clarifications to this EA. These modifications include:

1. Corrections to grammar, sentence structure, and formatting were made throughout the EA. In general, these changes were made without further clarification. Examples include: updates to the Table of Contents, changes in font size, changes in verb tense and style or insertion of footnotes. The March 2015 date of the title page and at each page header was changed to August 2015 to distinguish from the March 2015 version of the EA.
2. Section 5.2: Edits were made to findings and conclusions column within Table 5. Changes were made to the paragraph describing feedback from UDWR through the PLPCO's office.
3. Section 5.3.1: Updates to the EA are captured here for ease of reference.
4. Section 5.3.2: Added to reflect summary of public comments.

5. Appendix C: The checklist was signed by the environmental coordinator and the FFO manager.
6. Appendix D: Added response to substantive public comments.

### 5.3.2 Response to Public Comment

A 30-day public review and comment period for the EA and unsigned FONSI was offered from March 27, 2015 to April 27, 2015. The FFO received two (2) comment letters from individuals and organizations as follows:

- Andrea Palmer
- WildEarth Guardians

The BLM acknowledges the support and concerns expressed by the public regarding the leasing of oil and gas resources on the public lands within the FFO, including the subject lease parcels.

Information within the comments that is background or general in nature was reviewed; however, responses to or clarifications made to the EA from these items are not necessary. Likewise, expressions of position or opinion are acknowledged but do not cause a change in the analysis. As identified in the NEPA Handbook (H-1790-1, section 6.9.2.2 comment response), the BLM looked for modifications to the alternatives and the analysis as well as factual corrections while reviewing public comments.

Of the letters received, comments were focused primarily on renewable energy, climate change, and social cost of carbon. Many of the issues raised were addressed in the EA. Section 5.3.1 Modifications Based on Public Comments and Internal Review identifies changes to this EA that were made as a result of public comments. Public comments and the BLM responses are addressed in Appendix D.

## 5.4 List of Preparers

**Table 6: The Preparers of This Environmental Analysis.**

| Name | Title | Responsible for the Following Section(s) of this Document |
|---|---|---|
| Cindy Ledbetter | Environmental Coordinator | Project Lead and NEPA Compliance |
| Joelle McCarthy | Archaeologist | Cultural Resources; Native American Religious Concerns |
| Jim Priest | Wildlife Biologist | Fish and Wildlife, Threatened, Endangered, Candidate and Sensitive Species; Migratory Birds |

Refer also to the interdisciplinary team members identified on the checklist (Appendix C).

# 6.0 REFERENCES, ACRONYMS AND APPENDICES

## 6.1 References Cited

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BLM. 2009. Finding of No Significant Impact and Decision Record. Oil and Gas Leasing in the Fillmore Field Office Environmental Assessment UT-010-2008-050. Bureau of Land Management.

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State of Utah Natural Resources. Division of Wildlife Resources. Utah Natural Heritage Program. 2012. http://dwrcdc.nr.utah.gov/ucdc/.

Utah Division of Air Quality, 2013, Annual Report for the Year 2013, Salt Lake City, Utah, 52 p.

United States Department of the Interior and United States Department of Agriculture. (2007). Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development. BLM/WO/ST-06/021+307/REV 07. Bureau of Land Management. Denver, Colorado. 84 pp.

United States Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at <http://www.fws.gov/migratorybirds/>]

U. S. Global Change Research Program (USGCRP) 2009 U. S. *Global Climate Change Impacts in the United States*, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.).Cambridge University Press, 2009.

## 6.2 List of Acronyms

| | |
|---|---|
| APD | Application for Permit to Drill |
| BLM | Bureau of Land Management |
| BMP | Best Management Practice |
| BCR | Bird Conservation Region |
| CFR | Code of Federal Regulations |
| CIAA | Cumulative Impact Analysis Area |
| COA | Condition of Approval |
| CWCS | Comprehensive Wildlife Conservation Strategy |
| DR | Decision Record |
| EA | Environmental Assessment |
| EAR | Environmental Analysis Record |
| EIS | Environmental Impact Statement |
| ENBB | Environmental Notification Bulletin Board |
| EOI | Expression of Interest |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| FLPMA | Federal Land Policy and Management Act |
| FONSI | Finding of No Significant Impact |
| GIS | Geographic Information Systems |
| IDPR | Interdisciplinary Parcel Review |
| IM | Instruction Memorandum |
| LN | Lease Notice |
| LWC | Lands with Wilderness Characteristics |
| MS | Mineral Survey |
| MBTA | Migratory Bird Treaty Act |
| MMRP | Military Munitions Response Program |
| MOU | Memorandum of Understanding |
| NCLS | Notice of Competitive Lease Sale |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NHT | National Historic Trail |
| NRHP | National Register of Historic Places |
| NSO | No Surface Occupancy |
| OSHA | Occupational Safety and Health Act |
| PLPCO | Public Lands Policy Coordination Office |
| RFAS | Reasonably Foreseeable Action Scenario |
| RFD | Reasonably Foreseeable Development |
| ROD | Record of Decision |
| ROW | Right of Way |
| RMP | Resource Management Plan |
| S | Stipulation |
| SHPO | State Historic Preservation Office |
| SITLA | State Institutional Trust Lands Administration |
| SLFO | Salt Lake Field Office |
| SUPO | Surface Use Plan of Operations |
| TCP | Traditional Cultural Property |
| UDAQ | Utah Division of Air Quality |
| UDWR | Utah Division of Wildlife Resources |
| USFS | United States Forest Service |
| USFWS | United States Fish & Wildlife Service |
| USC | United States Code |
| UTSO | Utah State Office |
| WO | Washington Office |
| FFO | Fillmore Field Office |
| SLFO | Salt Lake Field Office |
| WDD | West Desert District |

## 6.3 Appendices

Appendix A, Preliminary FFO Oil and Gas Lease Sale List

Appendix B, Map of Parcels

Appendix C, Interdisciplinary Team Checklist

Appendix D, Response to Comments

# APPENDIX A – PRELIMINARY FFO OIL AND GAS LEASE SALE LIST

The Stipulations and Lease Notices listed below would be applied to all parcels, unless noted otherwise:

| Stipulations | Notices |
|---|---|
| WO IM 2005-003 (Cultural Resources) | UT-LN-02 Crucial Winter Mule Deer and Elk Habitat |
| WO IM 2002-174 (Endangered Species Act) | UT-LN-36 Bald Eagle Habitat |
| UT-S-263: Crucial Raptor Nesting Sites | UT-LN-37 Bald Eagle Habitat |
| | UT-LN-40 Golden Eagle Habitat |
| | UT-LN-44 Raptors |
| | UT-LN-45 Migratory Birds |
| | UT-LN-48 Conservation Agreement Species – Parcel UT0815-009 only |
| | UT-LN-49 Utah Sensitive Species |
| | UT-LN-52 Noxious Weed |
| | UT-LN-60 Steep Slopes – all except Parcel UT0815-009 |
| | UT-LN-96 Air Quality Mitigation Measures |
| | UT-LN-101 Air Quality |
| | UT-LN-102 Air Quality Analysis |

**UT0815 - 001**
T. 12 S., R. 1 W., Salt Lake
Sec. 34: Lot 2, NESW, W2SE.
162.98 Acres
Juab County, Utah
Fillmore Field Office

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat
UT-LN-37: Bald Eagle Habitat
UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed
UT-LN-60: Steep Slopes
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality

UT-LN-102: Air Quality Analysis

**UT0815 - 002**
T. 13 S., R. 1 W., Salt Lake
Sec. 20: W2NE, SENE, SE;
Sec. 21: NENW, SWNW, SW;
Sec. 29: E2.
840.00 Acres
Juab County, Utah
Fillmore Field Office

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat
UT-LN-37: Bald Eagle Habitat
UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed
UT-LN-60: Steep Slopes
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality
UT-LN-102: Air Quality Analysis

**UT0815 - 003**
T. 13 S., R. 1 W., Salt Lake
Sec. 27: W2NE, SENE, W2, SE;
Sec. 28: E2E2;
Sec. 33: E2, W2NW;
Sec. 34: N2NE, W2, S2SE;
Sec. 35: SWSW.
1,680.00 Acres
Juab County, Utah
Fillmore Field Office

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat
UT-LN-37: Bald Eagle Habitat

UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed
UT-LN-60: Steep Slopes
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality
UT-LN-102: Air Quality Analysis

**UT0815 - 004**
T. 14 S., R. 1 W., Salt Lake
Sec. 3: N2SW, NWSE;
Sec. 4: Lots 1, 2, 7-12, N2SW, SWSW, SE;
Sec. 9: NWNE, NWNW, S2N2, S2;
Sec. 10: SW;
Sec. 15: NW, N2SW.
1,616.74 Acres
Juab County, Utah
Fillmore Field Office

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat
UT-LN-37: Bald Eagle Habitat
UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed
UT-LN-60: Steep Slopes
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality
UT-LN-102: Air Quality Analysis

**UT0815 - 005**
T. 14 S., R. 1 W., Salt Lake
Sec. 5: S2S2;
Sec. 6: S2SE;
Sec. 7: Lots 1, 2, 17-20, 35, 36, E2;
Sec. 8: All;
Sec. 17: E2NE, W2, SE;

Sec. 18: Lots 1-3, 16-18, 20, 21, 34, E2NE;
Sec. 19: Lot 3.
2,560.00 Acres
Juab County, Utah
Fillmore Field Office

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat
UT-LN-37: Bald Eagle Habitat
UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed
UT-LN-60: Steep Slopes
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality
UT-LN-102: Air Quality Analysis

**UT0815 - 006**
T. 14 S., R. 1 W., Salt Lake
Sec. 19: Lots 19, 36, E2;
Sec. 20: All;
Sec. 21: W2NW, SENW, NWSW;
Sec. 28: NENW;
Sec. 29: All;
Sec. 30: Lots 1, 18-21, 34-36, E2.
2,520.00 Acres
Juab County, Utah
Fillmore Field Office

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat
UT-LN-37: Bald Eagle Habitat
UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed

UT-LN-60: Steep Slopes
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality
UT-LN-102: Air Quality Analysis

**UT0815 - 007**
T. 15 S., R. 1 W., Salt Lake
Sec. 5: Lots 3-7, SENW, SESW;
Sec. 6: All.
1,008.70 Acres
Juab County, Utah
Fillmore Field Office

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat
UT-LN-37: Bald Eagle Habitat
UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed
UT-LN-60: Steep Slopes
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality
UT-LN-102: Air Quality Analysis

**UT0815 - 008**
T. 15 S., R. 1 1/2 W., Salt Lake
Sec. 1: Lots 1, 2, 7-14, SW, W2SE;
Sec. 11: E2E2;
Secs. 12 and 13: All;
Sec. 14: Lots 3, 4, E2NE, SE.
2,195.08 Acres
Juab County, Utah
Fillmore Field Office

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat

UT-LN-37: Bald Eagle Habitat
UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed
UT-LN-60: Steep Slopes
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality
UT-LN-102: Air Quality Analysis

**UT0815 - 009**
T. 15 S., R. 2 W., Salt Lake
Sec. 13: SW;
Sec. 24: W2W2;
Sec. 35: SWSW.
360.00 Acres
Juab County, Utah
Fillmore Field Office Stipulations

STIPULATIONS
UT-S-263: TL – Crucial Raptor Nesting Area

NOTICES
UT-LN-02: Crucial Winter Mule Deer and Elk Habitat
UT-LN-36: Bald Eagle Habitat
UT-LN-37: Bald Eagle Habitat
UT-LN-40: Golden Eagle Habitat
UT-LN-44: Raptors
UT-LN-45: Migratory Birds
UT-LN-48: Conservation Agreement Species
UT-LN-49: Utah Sensitive Species
UT-LN-52: Noxious Weed
UT-LN-96: Air Quality Mitigation Measures
UT-LN-101: Air Quality
UT-LN-102: Air Quality Analysis

# Stipulation and Lease Notice Summary Tables

## Stipulations

| | |
|---|---|
| WO IM 2005-003 (Cultural Resources) | **CULTURAL RESOURCE PROTECTION STIPULATION**<br>This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated. |
| WO IM 2002-174 (Endangered Species Act) | **THREATENED AND ENDANGERED SPECIES ACT STIPULATION**<br>The lease area may now or hereafter contain plants, animals or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that would contribute to a need to list such species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. 1531 et seq. including completion of any required procedure for conference or consultation. |
| UT-S-263 | **TIMING LIMITATION – CRUCIAL RAPTOR NESTING AREA**<br>In order to protect the crucial Raptor Nesting Area, exploration, drilling, and other development activity will not be allowed during the period from **February 15 through June 30**. This stipulation does not apply to maintenance and operation of producing wells.<br>**Exception**: Exceptions to this stipulation in any year may be specifically authorized in writing by the authorized officer of the BLM if it can be shown that the activity would not impact any active raptor nests.<br>**Modification**: None<br>**Waiver**: None |

## Lease Notices

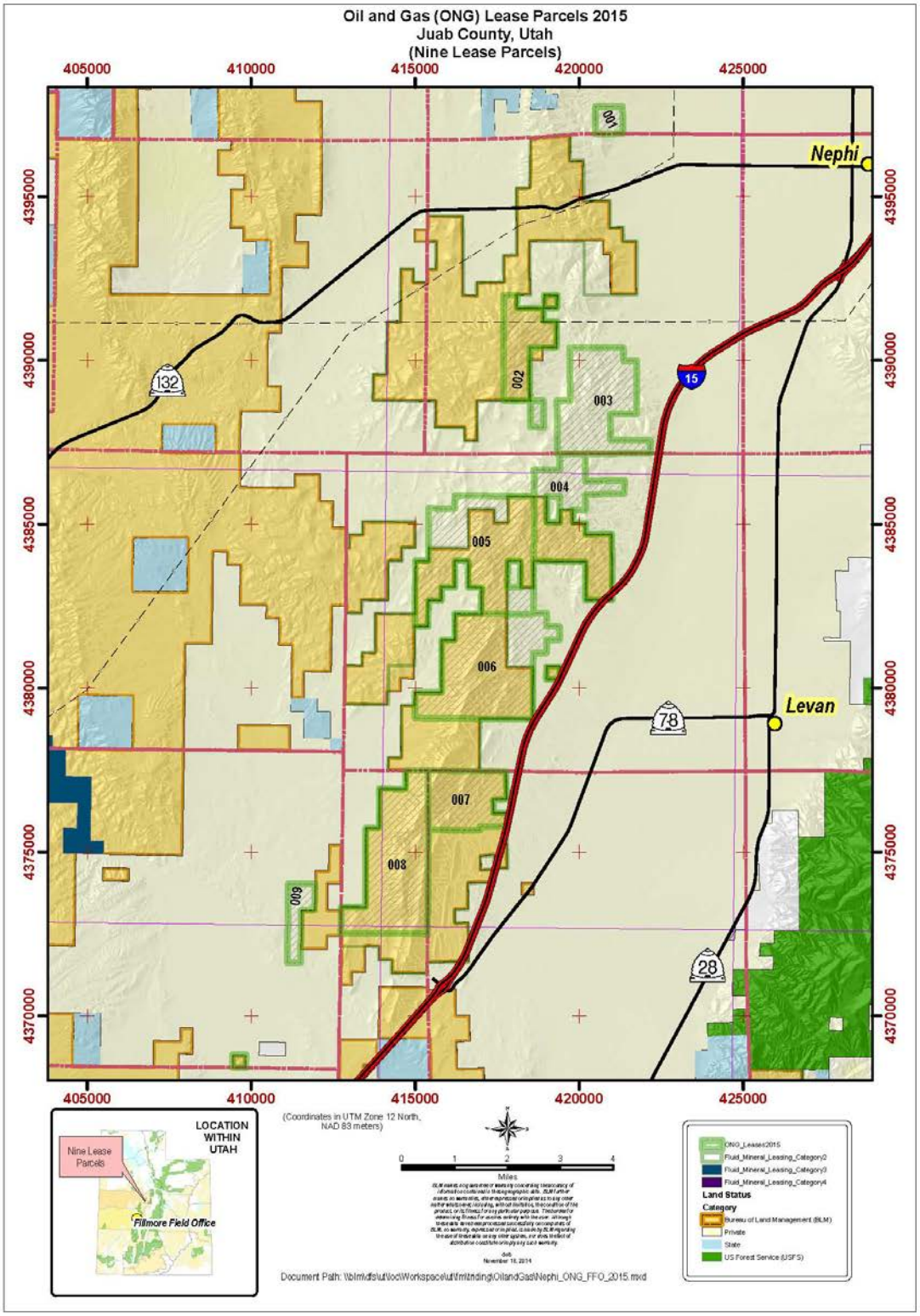
| | |
|---|---|
| UT-LN-02 | **CRUCIAL WINTER MULE DEER AND ELK HABITAT**<br>The lessee/operator is given notice that lands in this lease have been identified as containing crucial mule deer and/or elk winter habitat. Exploration, drilling and other development activities would be restricted from December 1 through April 30 to protect crucial winter range. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. |
| UT-LN-36 | **BALD EAGLE HABITAT**<br>The Lessee/Operator is given notice that the lands in this parcel contains nesting/winter roost habitat for the bald eagle. Avoidance or use restrictions may be placed on all or portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the bald eagle breeding or roosting season. A temporary action is completed prior to the following breeding or roosting season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding or roosting season and/or causes a loss of eagle habitat or displaces eagles through disturbances, i.e. creation of a permanent structure. |
| UT-LN-37 | **BALD EAGLE HABITAT**<br>The lessee/operator is given notice that lands in this lease have been identified as containing Bald Eagle Habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect the Bald Eagle and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2. |
| UT-LN-40 | **GOLDEN EAGLE HABITAT**<br>The lessee/operator is given notice that lands in this lease have been identified as containing Golden Eagle Habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect the Golden Eagle and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2. |
| UT-LN-44 | **RAPTORS**<br>Appropriate seasonal and spatial buffers shall be placed on all known raptor nests in accordance with Utah Field Office Guidelines for Raptor Protection from Human and Land use Disturbances (USFWS 2002) and Best Management Practices for Raptors and their Associated Habitats in Utah (BLM 2006). All construction related activities will not occur within these buffers if pre-construction monitoring indicates the nests are active, unless a site specific evaluation for active nests is completed prior to construction and if a BLM wildlife biologist, in consultation with USFWS and UDWR, recommends that activities may be permitted within the buffer. The BLM will coordinate with the USFWS and UDWR and have a recommendation within 3-5 days of notification. Any construction activities authorized within a protective (spatial and seasonal) buffer for raptors will require an on-site monitor. Any indication that activities are adversely affecting the raptor and/or its' young the on-site monitor will suspend activities and contact the BLM Authorized Officer immediately. Construction may occur within the buffers of inactive nests. Construction activities may commence once monitoring of the active nest site determines that fledglings have left the nest and are no longer dependent on the nest site. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. |

| | |
|---|---|
| UT-LN-45 | **MIGRATORY BIRD**<br>The lessee/operator is given notice that surveys for nesting migratory birds may be required during migratory bird breeding season whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within priority habitats. Surveys should focus on identified priority bird species in Utah. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations. |
| UT-LN-48 | **CONSERVATION AGREEMENT SPECIES**<br>Development within this parcel could potentially impact an aquatic Conservation Agreement Species and its native habitats. To comply with the intent of the Conservation Agreement, the lessee is hereby on notice that they will need to coordinate with BLM, UDWR, and USFWS to meet special requirements needed specific to the agreement.<br>For aquatic species: appropriate measures to minimize the risk of spreading aquatic exotic species (mussels, purple loosestrife, mosquito fish, and melanoides snail) should be developed in coordination with UDWR. Surface pumping for water may not be allowed depending on the sources proximity to sensitive habitat, no surface disturbance within the 100-year floodplain, and project activities should avoid changing ground and surface hydrology. |
| UT-LN-49 | **UTAH SENSITIVE SPECIES**<br>The lessee/operator is given notice that no surface use or otherwise disruptive activity would be allowed that would result in direct disturbance to populations or individual special status plant and animal species, including those listed on the BLM sensitive species list and the Utah sensitive species list. The lessee/operator is also given notice that lands in this parcel have been identified as containing potential habitat for species on the Utah Sensitive Species List. Modifications to the Surface Use Plan of Operations may be required in order to protect these resources from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, Migratory Bird Treaty Act and 43 CFR 3101.1-2. |
| UT-LN-52 | **NOXIOUS WEEDS**<br>The lessee/operator is given notice that lands in this lease have been identified as containing or are near areas containing noxious weeds. Best management practices to prevent or control noxious weeds may be required for operations on the lease. |
| UT-LN-60 | **STEEP SLOPES**<br>The lessee/operator is given notice that this lease has been identified as containing steep slopes. No surface use or otherwise disruptive activity allowed on slopes in excess of 30 percent without written permission from the Authorized Officer. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. |

| | |
|---|---|
| UT-LN-96 | **AIR QUALITY MITIGATION MEASURES**<br>The lessee is given notice that the Bureau of Land Management (BLM) in coordination with the U.S. Environmental Protection Agency and the Utah Department of Air Quality, among others, has developed the following air quality mitigation measures that may be applied to any development proposed on this lease. Integration of and adherence to these measures may help minimize adverse local or regional air quality impacts from oil and gas development (including but not limited to construction, drilling, and production) on regional ozone formation.<br>• All internal combustion equipment would be kept in good working order.<br>• Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.<br>• Open burning of garbage or refuse would not occur at well sites or other facilities.<br>• Drill rigs would be equipped with Tier II or better diesel engines.<br>• Vent emissions from stock tanks and natural gas TEG dehydrators would be controlled by routing the emissions to a flare or similar control device which would reduce emissions by 95% or greater.<br>• Low bleed or no bleed pneumatics would be installed on separator dump valves and other controllers.<br>• During completion, flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.<br>• Well site telemetry would be utilized as feasible for production operations.<br>• Stationary internal combustion engine would comply with the following standards: 2g NOx/bhp-hr for engines <300HP; and 1g NOx/bhp-hr for engines >300HP.<br>Additional site-specific measures may also be employed to avoid or minimize effects to local or regional air quality. These additional measures will be developed and implemented in coordination with the U.S. Environmental Protection Agency, the Utah Department of Air Quality, and other agencies with expertise or jurisdiction as appropriate based on the size of the project and magnitude of emissions. |
| UT-LN-101 | **AIR QUALITY**<br>All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower. AND All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. |
| UT-LN-102 | **AIR QUALITY ANALYSIS**<br>The lessee/operator is given notice that prior to project-specific approval, additional air quality analyses may be required to comply with the National Environmental Policy Act, Federal Land Policy Management Act, and/or other applicable laws and regulations. Analyses may include dispersion modeling and/or photochemical modeling for deposition and visibility impacts analysis, control equipment determinations, and/or emission inventory development. These analyses may result in the imposition of additional project-specific air quality control measures. |

# APPENDIX B – MAP

Juab County Parcels



# APPENDIX C – INTERDISCIPLINARY TEAM CHECKLIST

# INTERDISCIPLINARY TEAM CHECKLIST

**Project Title**: August 2015 Oil and Gas Lease Sale
**NEPA Log Number**: DOI-BLM-UT-W020-2015-0004-EA
**File/Serial Number**:
**Project Leader**: Cindy Ledbetter

**DETERMINATION OF STAFF:** ***(Choose one of the following abbreviated options for the left column)***
NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA

| Determi-nation | Resource | Rationale for Determination | Signature | Date |
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| **RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)** | | | | |
| PI | Air Quality | Leasing would have no impact on air quality. However, there is some expectation that exploration could occur. Any ground disturbing activity would have to first be authorized as a lease operation but only through additional NEPA analysis. Activities which may be authorized on these parcels subsequent to the lease sale may produce emissions of regulated air pollutants and/or pollutants that could impact air quality related values. Emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, separators, oil storage tanks, dehydration units, and daily tailpipe and fugitive dust emissions could affect air quality.<br>Hazardous air pollutants (HAPs) are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane). There are no applicable Federal or State of Utah ambient air quality standards for assessing potential HAP impacts to human health.<br>Application of lease notices UT-LN-96 (Air Quality Mitigation Measures), UT-LN-101 (Air Quality) and LN-UT-102 (Air Quality Analysis) is warranted on all parcels. | /s/ Leonard Herr | 1/5/2015 |
| NP | Areas of Critical Environmental Concern | As per the governing land use plan, ACECs are neither present within nor do any intersect the proposed lease parcels. | /s/Steve Bonar | 1/6/15 |
| NI | Cultural Resources | From 1980-2007, Archaeologists conducted 5 cultural resource inventories, totaling 251.6 acres (12.2%), on the 9 parcels, totaling 12,943.50 acres proposed the August 2015 Oil and Gas lease sale. Survey coverage in each parcel ranges from 0% to 28% of the total land area in each parcel. | /s/ Joelle McCarthy | 3-18-15 |

| Determi-nation | Resource | Rationale for Determination | Signature | Date |
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| | | Archaeologists located one historic cultural resource site during the previous inventories, of which BLM determined it to be eligible to the National Register.<br>Known cultural resources are located in such a fashion (size, density and placement) that avoidance is feasible during development of oil and gas resources. The potential for locating additional cultural resources within the proposed lease parcels reviewed for the August 2015 Oil and Gas Lease Sale is low. A complete inventory of the proposed lease parcels has not occurred; therefore, the following stipulation should be added to each lease parcel:<br>"*This lease may be found to contain historic properties and/ or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves and Protection Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated."*<br>The existing cultural resource records fail to identify significant concerns. Hence, none of these parcels should be excluded from nomination to the August 2015 Oil and Gas lease sale. Due to the limited inventory coverage, no oil and gas development should be approved on any parcel until a Class III inventory has been complete and information from Native American tribes received and addressed.<br>The BLM, therefore, makes a determination of "**No Adverse Effect**" [36 CFR 800.5 (b)] for the August 2015 Oil and Gas Lease Sale. On February 12, 2015, the SHPO concurred with this determination. | | |
| PI | Greenhouse Gas Emissions | Should development occur on any of the leases, Greenhouse Gases could be emitted during the development activities. | /s/ Leonard Herr | 11/10/2015 |
| NI | Environmental Justice | As defined in EO 12898, minority, low income populations and disadvantaged groups may be present within the counties involved in this lease sale. However, all citizens can file an expression of interest or participate in the bidding process (43 CFR §3120.3-2). The stipulations and notices applied to the subject parcels do not place an undue burden on these | /s/ Cindy Ledbetter | 1/5/2015 |

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| | | groups. Leasing the nominated parcels would not cause any disproportionately high and adverse effects on minority or low income populations. | | |
| NI | Farmlands (Prime or Unique) | Having checked a list of the soil map units in the Fairfield-Nephi Soil Survey that qualify as prime & Unique farmlands if irrigated and/or other farmlands of statewide importance, and having gone to the soil survey and found that most of the soil mapping units that are within these nine lease parcels do not match those on the above mentioned list. However, some small areas within the 9 oil and gas lease parcels are mapped in the soil survey as being soils which are on the list as being prime and unique farmlands if irrigated. Leasing these parcels would not impact or affect negatively prime or unique farmlands.<br><br>However, there is an inherent expectation to conduct operations on each leased parcel. Any activity that involves surface disturbance would have to be authorized at the APD stage. At that stage, impacts to soils, prime and unique farmlands and other resources would need to be assessed and mitigated to ensure that soils would not be impacted in a manner that would result in soil degradation to a point that the soil would no longer qualify as prime or unique farmlands. It would be expected that reclamation procedures would be required to ensure impacts to prime and unique farmlands would be minimized. | /s/ Bill Thompson | 1/7/2015 |
| NI | Floodplains | Floodplains, as defined by EO 11988, FEMA, HUD, Corps of Engineers and the LUP, are not present. The lease sale and application of the standard lease terms would not affect a county's ability to obtain and/or maintain Federal flood insurance. Through design features, BLM would avoid occupancy and modification of floodplain development. The hazard degree is low. Impacts to floodplains are not expected to reach a level that would require adding a lease notice to any of the parcels. Refer also to the riparian and wetland areas discussion. Leasing activity would not affect floodplains. However there is some (low) expectation that drilling and development would occur, at which time additional NEPA would occur should an APD be filed. | /s/ Paul Caso | 1/7/15 |
| NI | Fire/Fuels Management | The implementation of appropriate reclamation standards at the APD stage would prevent an increase of hazardous fuels. Fuels and fire management would not be impacted by the lease process. | /S/ Gary Bishop | 2/9/15 |

| Determi-nation | Resource | Rationale for Determination | Signature | Date |
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| NI | Geology / Mineral Resources/Energy Production | The proposed action would not affect any other mineral resources within the proposed areas. There are no geothermal leases, locatable minerals cases, or mineral materials sites which overlap the boundaries of the proposed leases.<br>Depending on the success of oil and gas well drilling, non-renewable natural gas and/or oil would be extracted and delivered to market. Production of oil and/or gas would result in the irretrievable loss of these resources. A RFD was prepared. Environmental impacts of the RFD were analyzed and are documented in the EA. The proposed action would not exceed the level of activity predicted in the RFD.<br>The FEIS and supplemental EAs adequately address the impacts of oil and gas leasing. While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under the regulations 3101.1-2, where proposed oil and gas operations may be moved up to 200 meters or delayed by 60 days and also under the standard lease terms (Sec. 6) where sitting and design of facilities may be modified to protect other resources. | /s/ Duane Bays | 2/2/15 |
| | | The underground injection of 'fracking waste water' in Utah presents little potential for inducing seismic activity. The majority of fracking waste 'fluids' are recycled and reused for future frack jobs. There have been no reported earthquakes in Utah that were suspected of being produced (induced) from injecting fluids into oil and gas disposal wells. (Personal communication from Brad Rogers, Utah Division of Oil, Gas and Mining (“UDOGM”), August 10, 2015). This fluid is predominantly produced water with a high salt brine content. As stated above in order to analyze and predict the potential for earthquakes associated with oil and gas disposal wells three kinds of data will be necessary: (1) seismic data: high-quality, real-time earthquake locations, which require dense seismic instrumentation; (2) geologic data: hydrological parameters, orientation and magnitude of the stress field, and the location and orientation of known faults; and (3) industrial data: injection rates and downhole pressures sampled and reported frequently. This data is not currently available, with the exception of industrial injection data reported to UDOGM, with which to do the analysis. | Mke McKinley | 2/29/2016 |
| NI | Invasive Species/Noxious Weeds (EO 13112) | Noxious/invasive weed species may be present on the subject parcels. Constraints, including the use of certified weed free seed and vehicle/equipment wash stations, would be applied as necessary at the APD stage as documented in filing plans and COAs. | /s/R.B. Probert | 2/9/15 |

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| | | Control measures would be implemented during any ground disturbing activity and documented through a PUP/PAR. Additional control and procedural information is documented in the Programmatic EIS Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States and its Record of Decision, (September 2007). If treatment occurs as part of regular operations, BMPs, SOPs and site specific mitigation are applied at the APD stage as COAs. Negligible impacts would be expected as a result of leasing and exploration. Application of lease notice UT-LN-52 (noxious weed) is warranted on all parcels. | | |
| NI | Lands/Access | The governing land use plan (as amended) allows for oil and gas development with associated infrastructure. Oil and gas leasing is not expected to affect access to public lands. Leasing would be subject to all valid pre-existing rights.<br>Any proposals for future projects within the oil and gas lease area would be reviewed on a site-specific basis and other right-of-way (ROW) holders in the area would also be notified, as per regulations, when an application for right-of- way is received by this office. Off-lease ancillary facilities that cross public land, if any, may require separate authorizations. Coordination with existing ROW holders and application of SOPs, BMPs and design features at the APD stage, would ensure protection of existing rights. The Master Title Plats have been reviewed. There are no withdrawals, right-of-way avoidance or, right-of-way exclusion areas within the oil and gas lease area. | /s/ Teresa Frampton | 1/25/15 |
| NI | Livestock Grazing | Leasing parcels would not impact livestock grazing. However, there is an inherent expectation to conduct operations on each leased parcel. Any activity that involves surface disturbance or direct resource impacts would have to be authorized as a lease operation through future NEPA analysis, on a case-by-case basis, at the APD stage. Impacts to livestock grazing may occur as a result of subsequent actions including exploration development, production, etc. Therefore, reclamation provisions/procedures including re-vegetation (utilizing appropriate seed mix based on the ecological site, elevation and topography), road reclamation, range improvement project replacement/restoration (e.g., fences, troughs and cattle guards), noxious weed control, would be identified in future NEPA/decision documents on a case-by-case basis (at the APD stage). In addition, if any range improvement projects could be impacted by wells or associated infrastructure, well pads could be moved 200 meters to avoid rangeland improvements | /s/ Bill Thompson | 1/7/2015 |

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| | | 43 CFR 3101.1-2. | | |
| PI | Migratory Birds | All of the parcels are located in habitats used by migratory birds at some degree or another throughout the year.<br><br>The leasing action in its self would not impact migratory birds. However, future oil and gas exploration may impact migratory birds and their seasonal habitats through development, operation and maintenance activities. Future oil and gas exploration and development operations could occur after a lessee files an APD, outlining in detail the scope of the proposed action. At that time, potential site-specific impacts to migratory birds could be fully analyzed in the additional environmental documents and the NEPA process that would be required at the APD stage. Conditions of Approval (COAs) would be placed on the APD to reduce impacts to migratory birds to the extent feasible when necessary.<br><br>Appropriate lease notices and stipulations that would apply to these parcels would include: UT-LN-36 (Bald Eagle Habitat), UT-LN-37 (Bald Eagle Habitat), UT-LN-40 (Golden Eagle Habitat), UT-LN-44 (Raptors), UT-LN-45 (Migratory Birds), and UT-S-263 (Crucial Raptor Nesting Area). | /s/ Jim Priest | 2/17/15 |
| NP | National Historic Trails | There are no National Historic Trails within or near the proposed lease parcels. | /s/Joelle McCarthy | 2/9/15 |
| NI | Native American Religious Concerns | The following Tribes were consulted on February 9, 2015 via certified letter between BLM and the Hopi Tribe, Skull Valley Goshute Tribe, Kanosh Band of Paiutes, the Paiute Tribe of Utah, the Ute Indian Tribe, the Goshute Tribe, The Navajo Tribe, and the Kaibab Band of Paiute Indians.<br>A response was received from the Hopi Tribe on February 23, 2015, deferring to the Paiute Tribe of Utah (PITU). On March 5, 2015, the BLM received a letter from the PITU stating no objections to the proposed project. This correspondence is part of the record. Additional consultation would be initiated at the APD stage. | /s/ Joelle McCarthy | 3-18-15 |
| NP | Paleontology | There are no known paleontological resources within the parcel boundaries. If an APD is filed, specific clearances would be conducted and incorporated into that NEPA process. As a COA, if paleontological resources are located, the AO would to be contacted. | /s/ Duane Bays | 2/2/15 |
| NI | Property Boundary Evaluation | Leasing parcels will have no effect on property boundaries. In accordance with WO IM 2011-122, cadastral survey reviews and verifies the legal land | /s/ Chad Kunz | 1/7/2015 |

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| | | descriptions of the parcels prior to lease issuance. | | |
| NI | Rangeland Health Standards | Leasing parcels would not impact Rangeland Health Standards nor would it affect wetlands /riparian areas, water quality, desirable species or soil productivity. However, there is an inherent expectation to conduct operations on each leased parcel. Any activity that involves surface disturbance or resource impacts would have to be authorized at the APD stage. At that stage impacts to soils, vegetation, water quality and wetlands/riparian areas would need to be assessed and mitigated to maintain rangeland heath in accordance with the standards. It would be expected that reclamation procedures identified in the livestock grazing section would be required to ensure impacts to Rangeland Health Standards are minimized. The Gold Book standards also provide mechanisms to achieve Rangeland Health. These include weed control, siting considerations (e.g. well pad, contouring, road alignment), and re-vegetation. It is anticipated that standard operating procedures, Best management practices, and operator design features would be implemented to mitigate possible impacts to those resources for which the rangeland health standards were written. If this is so then it is concluded that rangeland health standards would be met. | /s/ Bill Thompson | 1/7/2015 |
| NI | Recreation | There would be no impacts to casual recreation use around the project area because of limited access due to private land surrounding the area. | /s/Steve Bonar | 1/6/15 |
| NI | Socio-Economics | No quantifiable additional or decreased economic impact to the local area (Juab County) would be caused by the proposed action. | /s/ Cindy Ledbetter | 1/5/2015 |
| NI | Soils | Leasing activity would not affect soils. However, there is some expectation that drilling and development could occur, at which time additional NEPA would be conducted should an APD be filed. If additional site specific resource protection measures are needed to prevent unnecessary or undue degradation, these would be developed at the time of the site specific NEPA. The application of specific stipulations is not warranted, UT-LN-60 (Steep Slopes) applies to all parcels except 009. | /s/ Paul Caso | 1/7/15 |
| NP | Threatened, Endangered, Candidate or Special Status Plant Species | There are no known federally-listed or other special status rare plant species on the nine proposed parcels within the Fillmore Field Office. | /s/ Dave Whitaker | 1/14/15 |
| PI | Threatened, Endangered, Candidate or Special Status Wildlife Species | The only Federally listed threatened, endangered, or candidate species or critical habitat known to occur within or reasonably near the proposed oil and gas lease parcels. Is the Greater Sage Grouse. However, | /s/ Jim Priest | 2/8/16 |

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| | | other Utah special status species *may* be found on all lease parcels.<br><br>The greater sage grouse was a candidate species during the development of the Sage Grouse EIS (BLM 2015) when these leases were presented for consideration. The sage grouse and its habitat were not discussed because the parcels fell outside Preliminary General Habitat. Although potentially suitable habitat may have occurred historically within and near the parcels, no further discussion was carried forward because the current landscape has been altered substantially overtime by wildfires, juniper encroachment, and rangeland conversions; and lacks a viable sagebrush community fundamental to sage-grouse habitat needs.<br><br>The leasing action in its self would not impact any of the special status species identified. However, future oil and gas exploration may impact special status species and their habitats through development, operation and maintenance activities. Future oil and gas exploration and development operations could occur after a lessee files an APD, outlining in detail the scope of the proposed action. At that time, potential site-specific impacts to special status species could be fully analyzed in the additional environmental documents and NEPA process that would be required at the APD stage. Conditions of Approval (COAs) would be placed on the APD to reduce impacts to special status species to the extent feasible and when necessary.<br><br>The least chub is known to inhabit waters on the Mills Valley Wildlife Management Area, which is approximately 0.25-miles from parcel-009. The leasing action in its self would not impact this species, however, if the action proceeds to exploration, drilling and development, this species could be negatively impacted indirectly through increased runoff or potential spills associated with development.<br><br>Applicable Lease Notice that would apply to these parcels would include: Utah Sensitive Species lease notice UT-LN-49. | | |
| NI | Wastes<br><br>(hazardous or solid) | Hazardous materials are not known to exist on the parcels identified. Issues with extraction wastes will be addressed in documentation pertaining directly to extraction at that time. | /s/ RB Probert | 2/9/15 |

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| NI | Water Resources/Quality (drinking/surface/ground) | The lease parcels do not occur within any Sole Source Aquifers. If an APD is filed, SOPs required by regulation and design features would be sufficient to isolate and protect all usable ground or surface water sources before drilling or exploration begin. The SOPs include the requirements for disposal of produced water contained in Onshore Oil and Gas Order (OOGO) No. 7 and the requirements for drilling operations contained in OOGO No. 2. Potential fresh water aquifers would be cased and cemented. The casing would be pressure tested to ensure integrity prior to drilling out the surface casing shoe plug.<br>Potential impacts would be addressed and a design feature would be included utilizing UT IM 2010-055 (Protection of Ground Water Associated with Oil and Gas Leasing, Exploration and Development) prior to APD approval. Standard protocols would minimize possibility of releases (cased drill holes, no surface disturbance or occupancy would be maintained within 660 feet of any natural, new disturbance would be not be allowed in areas equal to the 100-year floodplain or 100 meters on either side of the center line of any stream, stream reach, or riparian area). | /s/ Paul Caso | 1/7/15 |
| | | EPA stated in the draft June 2015, *Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources* ("EPA Draft" http://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=244651), that "We did not find evidence that these mechanisms have led to widespread, systemic impacts on drinking water resources in the United States….The number of identified cases where drinking water resources were impacted are small relative to the number of hydraulically fractured wells….There is insufficient pre- and post-hydraulic fracturing data on the quality of drinking water resources. This inhibits a determination of the frequency of impacts. Other limiting factors include the presence of other causes of contamination, the short duration of existing studies, and inaccessible information related to hydraulic fracturing activities." *See* EPA Draft at ES-23. The potential impacts to surface and/or ground water from hydraulic fracturing activities has not been shown to reach a level requiring detailed analysis.<br>Water resources may be present or high potential for water at some time of the year may occur on the parcels. Further examination and a thorough analysis would be included when an APD is received and before drilling is allowed. | /s/Mike McKinley | 2/29/2015 |

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| NI | Water Rights | Leasing would not impact water rights. However, there is some expectation that exploration, drilling and development could occur. Any activity that involves surface disturbance or direct resource impacts would have to be authorized through future NEPA analysis, on a case-by-case basis, at the APD stage. If additional site specific resource protection measures are needed to prevent unnecessary or undue degradation, these would be developed at the time of the site specific NEPA. | /s/ Paul Caso | 1/7/15 |
| NP | Wetlands/Riparian Zones | Riparian or wetland areas do not occur within any of the parcels.<br>Since there are no wetlands or riparian areas within the parcels being leased, leasing would not affect wetlands and riparian zones. However, there is some (low) expectation that drilling and development could occur, at which time additional NEPA would be conducted at the APD stage. | /s/ Bill Thompson | 1/7/2015 |
| NP | Wilderness/WSA | There are no Wilderness/WSA's within the project area. | /s/SBonar | 2/9/15 |
| PI | Wildlife and Fish Excluding Designated/Special Status Species | All of the proposed oil and gas lease parcels lie within critical mule deer winter range.<br>The leasing action in its self would not impact crucial big game habitats; however, there is some expectation that drilling and development could occur, at which time additional NEPA would be conducted should an APD be filed. At that time, potential site-specific impacts to big game would be addressed again in additional environmental documents through the NEPA process based on the details contained in the APD. The exploration, development, operation and maintenance of oil and gas activities do have the potential for directly impacting big game and their habitats. Stipulations and lease notices would be applied based on known habitats (UDWR and BLM datasets) as follows:<br>Applicable Lease Notices that would apply to these parcels would include: UT-LN-02 (Crucial Winter Mule Deer and Elk Habitat). | /s/Jim Priest | 2/17/15 |
| NP | Woodland / Forestry | Woodland production areas are not present on or adjacent to the parcels. Impacts are not expected to occur as a result leasing or exploration. BMPs, SOPs and site specific mitigation would be applied at the APD stage as COAs. | /s/Eric Reid | 1/7/2015 |
| NI | Vegetation Excluding Designated/Special Status Species | It is expected that reclamation procedures would be required to ensure long-term vegetation impacts are minimized. Reclamation provisions/procedures would include re-vegetation (utilizing appropriate | /s/ Bill Thompson | 1/7/2015 |

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| | | seed mix based on the ecological site, elevation and topography), road reclamation, noxious weed controls, etc.<br>At this stage (lease sale) there would be no impacts to vegetation resources. Impacts (both direct and indirect) would occur if a lease is developed in the future. Potential impacts would be analyzed and would be based on the details (specific site location and supporting infrastructure) contained in an APD. SOPs, BMPs and site specific design features applied at the APD stage including reclamation, would be applied as COAs. COAs would address soil resource issues not already analyzed in the Final EIS for the RMP. | | |
| NI | Visual Resources | The proposed parcels are located in areas managed as VRM Class IV under the current land use plan.<br>Leasing of this area could result in oil and gas exploration. Impacts from exploratory drilling activities could result in short-term temporary impacts to the visual landscape including the introduction of vertical structures into a horizontal landscape.<br>As seen from existing roads in the area, the short-term level of change to the characteristic landscape would be moderate to high; by employing best practices for oil & gas mitigation, the long-term contrast would be low to moderate, which is consistent with management objectives for the area.<br>Leasing these parcels could impact visual resources and scenic quality for these units, but would be analyzed at the APD phase. | /s/Steve Bonar | 1/6/15 |
| NP | Wild Horses and Burros | The parcels do not intersect herd management boundaries. There are no wild horse HMAs present. | /s/Eric Reid | 1/7/2015 |
| NP | Lands with Wilderness Characteristics | The BLM parcels UT0815-001 (162.98 acres); UT0815-002 (840 acres); UT0815-009 (360 acres); UT0815-007 (1,008.70); and UT0815-008 (2,195.08 acres) are not contiguous or of sufficient size for the size requirement of 5,000 acres and therefore not subject to LWC inventory. Parcels UT0815-003 (1,680 acres); UT0815-004 (1,616.74 acres); UT0815-005 (2,560 acres); and UT0815-006 (2,520 acres) are contiguous and meet the size requirement of 5,000 acres and therefore are subject to lands with wilderness characteristics (LWC) inventory. On January 20-22, 2015 a full LWC inventory was conducted by BLM FFO staff for the area including parcels UT0815-003, UT0815-004, UT0815-005, and UT0815-006. The results of this inventory determined that the project area does not contain lands wilderness character. Site visits to the parcel lands | /s/Steve Bonar | 2/9/15 |

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| | | verified existing information and specialist knowledge regarding the status of resources values on the land. | | |

**FINAL REVIEW:**

| Reviewer Title | Signature | Date | Comments |
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| Environmental Coordinator | */s/ Cindy Ledbetter* | 8/17/2015 | |
| Authorized Officer | */s/ Michael D. Gates* | 8/17/2015 | |

## APPENDIX D – RESPONSE TO COMMENTS

**Copies of comments letters are available at the Fillmore Field Office for review.**

**Andrea Palmer – Comment 1:** "The lease of this particular parcel in Millard County should not be leased to oil companies for the following reasons: 1. Millard County was identified in the US Department of Interior/US Department as a "top pick" for Geothermal and wind renewable energy site. 2. The financial opportunities Millard County and US citizens would receive by implementing renewable resources on this land is more financially advantageous then leasing the land to oil companies."
***BLM Response to Comment 1:*** *The parcels offered in the lease sale are not located within Millard County; they are located entirely within Juab County. The BLM believes that Millard County does offer opportunities for renewable energy and regularly works with industry to permit testing for wind and conduct test well exploration for Geothermal. We will continue to work with interested applicants to find viable renewable energy projects. The BLM/Fillmore Field Office reviewed the known locations of interest for renewable energy in Juab County during the development of this EA and determined that there is no known interest in locating renewable energy projects within the vicinity of these parcels.*

**Andrea Palmer – Comment 2:** "3. "Statistics show that Utahns are increasingly supportive of renewable and clean energy sources."
***BLM Response to Comment 1:*** *The Purpose and Need of this document addresses the impacts associated with leasing Oil and Gas parcels. There are no known conflicts with renewable energy project or expression of interest to test renewable energy sources on or near these parcels. Nothing in this document would prevent current or future interest in renewable energy projects in this area other than on these specific parcels.*

**WildEarth Guardians – Comment 1:** "The Project Fails to Meet the Project Purpose and Need".
***BLM Response to Comment 1:*** *The BLM believes the Purpose and Need of this EA to be correct and well-reasoned. The BLM NEPA Handbook (H-1790-1) states that "the purpose and need statement as a whole describes the problem or opportunity to which the BLM is responding and what the BLM hopes to accomplish by the action." This is accomplished in the EA with the Purpose and Need statement.*

**WildEarth Guardians – Comment 2:** "BLM is anticipating "no producing wells." EA at 8."
***BLM Response to Comment 2:*** *The reference of "no producing wells." is taken out of context. EA at 8, this specific reference is located within section 2.1.1 Reasonably Foreseeable Development Scenario (RFD). The reference in question is a quotation directly from the 1988 House Resource Area Resource Management Plan Oil and Gas Leasing Implementation EA. This EA included a section on page 2, which analyzed a development scenario for Oil & Gas in the House Range Resource Area (now part of the Fillmore Field Office), a typical element of BLM activity level leasing implementation NEPA.*

*The RFD is used in Oil and Gas Development as an analytical assumption for analysis purposes because the BLM cannot predict whether or not a lease will be move through the process to*

*production. BLM is not making the statement that categorically there will be no production wells or that there will be production. Based on the RFD the likelihood is low. The BLM simply does not know what will become of these leases after the lease sale, but is making the commitment to address future applications with the stipulations considered in this leasing EA.*

**WildEarth Guardians – Comment 3:** "BLM is left with two choices: 1) deny the project for failure to meet the need of orderly production of fluid mineral resources, or 2) Prepare a supplemental EA that analyzes impacts from reasonably likely production."
***BLM Response to Comment 3:*** *This is an unreasonable standard for the BLM to make decisions on Oil and Gas leasing. Basically, this would mean that the BLM must be completely certain that leases will result in production wells in order to move forward with a lease sale or the lease is not offered. This strategy would arbitrarily limit the Oil and Gas Leasing Program in the BLM. For example, this strategy would eliminate exploration which is an important part of the Oil and Gas development process and is considered an important part of meeting the need of orderly production of fluid minerals. The BLM proposes to move forward with this lease sale even though it is unknown if a production well will be established on these leases.*

**WildEarth Guardians – Comment 4:** "Abandoned Wells – The EA fails to acknowledge that BLM regularly allows operators to abandon wells without properly plugging them or reclaiming the land, and that bond amounts are wholly inadequate to force reclamation by unscrupulous operators."
***BLM Response to Comment 4:*** *The BLM Fillmore Field Office does not have any abandoned wells because it follows the well abandonment policies of the BLM. The BLM Fillmore Field Office is committed to proper reclamation techniques on any wells resulting from leases and the Application for Permit to Drill (APD) process. Please see section 2.1.6 Plugging and Abandonment for further requirements associated with the abandonment process and BLM's commitment to proper abandonment of wells.*

**WildEarth Guardians – Comment 5:** "The EA fails to Analyze Climate Emissions."
***BLM Response to Comment 5:*** *The BLM acknowledges that climate change is happening, and that it is affected by human activity. This EA analyzes the environmental impacts of leasing parcels UT0815-001-009, the BLM presents a quantitative discussion of the affected environment in section 3.3.1 on Air Quality and emissions including GHG emissions. The BLM also presents, from reasonably foreseeable development scenario, the effects of leasing and subsequent development on climate change and socioeconomic factors in Section 4.2.2.1 and in the GHG emissions section of the ID Team Checklist. Consistent with the revised Council on Environmental (CEQ) draft guidance from December 2014, the BLM has used estimated GHG emissions associated with the proposed action as a reasonable proxy for the effects of climate change in its NEPA analysis for the November 2015 Lease Sale. The BLM has placed those emissions in the context of relevant state emissions. In addition, the BLM has considered and disclosed the projected effects of climate change on the resources within the project area. The BLM also has acknowledged that climate science does not allow a precise connection between project-specific GHG emissions and the specific environmental effects of climate change. This approach is consistent with the approach that federal courts have upheld when considering*

*NEPA challenges to BLM federal coal leasing decisions.*[7] *Ultimately, as described in the EA, the calculated potential carbon dioxide (CO2) equivalent emissions for the proposed action (leasing parcels UT0815-001-009) are negligible and well below 25,000 metric tons per year. In the draft guidance issued on December 18, 2014, the CEQ does not recommend that agencies do a quantitative analysis if GHG emissions are below that threshold.*

**WildEarth Guardians – Comment 6:** "The EA Grossly Underestimates Project Emissions"
***BLM Response to Comment 6:*** *This comment suggests that BLM reconsider the RFD to be greater than 4 wells, but does not indicate how many wells might be possible on these leases nor does the commenter give any data that would suggest the RFD to be incorrect for this area. The BLM believes the emissions estimate conducted on an RFD of 4 wells in this area is adequate for analysis of this action.*

**WildEarth Guardians – Comment 7:** "The Social Cost of Carbon Has Been Ignored"

***BLM Response to Comment 7:*** *The BLM finds that including monetary estimates of the SCC in its NEPA analysis for this proposed action, which is not a rulemaking action, would not be useful or appropriate. There is no legal mandate or existing guidance requiring the inclusion of the SCC in the NEPA context. A federal Interagency Working Group on the Social Cost of Carbon (IWG), convened by the Office of Management and Budget, developed an SCC protocol for use in the context of federal agency rulemaking. The IWG issued estimates of the SCC, which reflect the monetary cost incurred by the emission of one additional metric ton of CO2. Estimating the SCC is challenging because it is intended to model effects on the welfare of future generations at a global scale caused by additional carbon emissions occurring in the present.*

**WildEarth Guardians – Comment 8:** "BLM's proposed EA for the August/November 2015 Oil and Gase Lease Parcel sale violates NEPA and E.O. 13514"
***BLM Response to Comment 8:*** *The comment suggests that BLM has violated the hard look doctrine. The BLM NEPA Handbook (H-1790-1) states that, "A "hard look" is a reasoned analysis containing quantitative or detailed qualitative information". The BLM believes that the November Lease Sale EA for the Fillmore Field Office does take a hard look. Analysis based on the RFD throughout the document and specifically the emissions related calculations contained in Section 4.2.2.1 and subsequent analysis, allows the BLM to assess the potential impacts associated with leasing these parcels in Juab County.*

**WildEarth Guardians – Comment 9:** "The EA fails to consider the impacts of hydraulic fracturing oil and gas wells."

***BLM Response to Comment 9:*** *Hydraulic fracturing (HF) is a stimulation technique used to increase oil and gas production from underground rock formations. HF involves the injection of fluids under pressures great enough to fracture the oil- and gas-producing formations. The fluid generally consists of water, chemicals, and proppant (commonly sand). The proppant holds open*

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[7] See *WildEarth Guardians v. Jewell*, 738 F.3d 298, 309 (D.C. Cir. 2013). See also *WildEarth Guardians v. BLM*, 8 F.Supp.3d 17 (D.D.C. 2014).

*the newly created fractures after the injection pressure is released. Oil and gas flow through the fractures and up the production well to the surface.*

*HF has been used since the late 1940s and, for the first 50 years, was mostly used in vertical wells in conventional formations. HF is still used in these settings, but the process has evolved; technological developments (including horizontal and directional drilling) have led to the use of HF in unconventional hydrocarbon formations that could not otherwise be profitably produced.*

*The combined use of HF with horizontal (or more generically, directional) drilling has led to an increase in oil and gas activities in areas of the country with historical oil and gas production, and an expansion of oil and gas activities to new regions of the country. Directional and horizontal drilling may extend to depths greater than 10,000 feet and horizontal sections of a well may extend several thousand feet from the production pad on the surface, minimizing surface disturbance.*

*In EPA's Draft Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources[8] Executive Summary stated in the conclusion "The number of identified cases where drinking water resources were impacted are small relative to the number of hydraulically fractured wells. This could reflect a rarity of effects on drinking water resources, or may be an underestimate as a result of several factors. There is insufficient pre- and post-hydraulic fracturing data on the quality of drinking water resources. This inhibits a determination of the frequency of impacts. Other limiting factors include the presence of other causes of contamination, the short duration of existing studies, and inaccessible information related to hydraulic fracturing activities." There is not sufficient evidence to support the contention that hydraulic fracturing negatively impacts ground water to an unacceptable degree. (External Review Draft | EPA/600/R-15/047a | June 2015 |www.epa.gov/hfstudy)*

*Also, out of the ~ 1.8 million treatments in over ~ 1 million wells, from 1947-2010 drilled in the United States, there are only three reported cases of hydraulic fracturing-induced earth quakes. (Seismological Research Letters, Volume 86, Number 4, July/August 2015). DOGM has stated that there are no reported ground water contamination or fracking-induced problems in Utah associated with oil and gas or disposal wells.*

[8] External Review Draft, EPA/600/R-15/047a, *Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources*, June 2015.